Version 2 Release 2

IBM IMS Recovery Expert for z/OS
User's Guide
Note:
Before using this information and the product it supports, read the "Notices" topic at the end of this information.

July 2018 Edition
This edition applies to Version 2 Release 2 of IBM IMS Recovery Expert for z/OS (product number 5655-S98) and to all subsequent releases and modifications until otherwise indicated in new editions.
This edition replaces SC19-4368-05.

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About this information

IBM IMS Recovery Expert for z/OS (also referred to as IMS Recovery Expert) is a storage-aware backup and recovery solution that integrates storage processor fast-replication facilities with IMS™ backup and recovery operations.

IMS Recovery Expert allows instantaneous backups, reduces recovery time, and simplifies disaster recovery procedures while using less CPU, I/O, and storage resources.

IMS Recovery Expert provides full integration with other tools in the IMS Recovery Solutions Pack such as the IMS Database Recovery Facility, IMS Database Recovery Facility / Extended Functions, High Performance Change Accumulation, and the High Performance Image Copy; allowing the performance of recovery using standard IMS Recovery assets such as image copies, change accumulations, and archived logs. IMS Recovery Expert provides the intelligence to determine the best and most efficient method for performing recovery, and automatically drives the necessary recovery-related processes.

These topics provide instructions for planning, configuring, and using IMS Recovery Expert.

These topics are designed to help database administrators, system programmers, application programmers, and system operators perform these tasks:

- Plan for a System Level Backup and recovery with IMS Recovery Expert
- Configure IMS Recovery Expert
- Perform a System Level Backup with IMS Recovery Expert
- Diagnose and recover from IMS Recovery Expert problems
- Configure other tools in the IMS Recovery Solutions Pack for integration with IMS Recovery Expert
- Use IMS Recovery Expert with other Db2® or IMS products

Always refer to the IMS Tools Product Documentation page for the most current version of this information:

http://www-01.ibm.com/support/docview.wss?uid=swg27020942

The IMS Tools Product Documentation web page includes:

- Links to the IBM Knowledge Center for the user guides ("HTML")
- PDF versions of the user guides ("PDF")
- Program Directories for IMS Tools products
- Recent updates to the user guides, referred to as "Tech docs" ("See updates to this book!")
- Technical notes from IBM Software Support, referred to as "Tech notes"
- White papers that describe product business scenarios and solutions
Chapter 1. IMS Recovery Expert overview

IBM IMS Recovery Expert for z/OS (also referred to as IMS Recovery Expert) helps you to avoid accidental data loss or corruption by providing the fastest, least costly method of backup and recovery.

IMS Recovery Expert provides a fast and easy-to-use implementation of an IMS System Level Backup and recovery methodology. It reduces backup windows by leveraging storage-based fast-replication such that backups of multi-terabyte IMS environments can be performed in seconds or less. It simplifies backup and recovery methodologies by allowing full-system, application, and database-level recoveries to be performed from a common System Level Backup. Consistent backups can be created using “full” or “data-only” System Level Backup options. It provides IMS System Level Backup and recovery support even for complex applications, when data must be backed up, restored, and recovered as a unit. System Level Backups can be taken while the IMS system remains active. In addition, when creating System Level Backups, IMS Recovery Expert invokes storage-based fast-replication facilities through appropriate storage processor APIs. This reduces host CPU and I/O resource utilization and enabling legacy data copy methods to be used while the IMS system is down.

IMS Recovery Expert has integrated, intelligent recovery and disaster recovery managers that analyze recovery assets and establish optimal recovery procedures to minimize recovery time and recovery point objectives. Recovery jobs are tailored specifically to available backup and hardware resources.

- The Intelligent Recovery Manager supplies the ability to perform local recoveries efficiently using all available recovery resources. Restore operations that invoke fast-replication facilities through appropriate storage processor APIs and parallel recovery can significantly reduce recovery time and complexity.
- The Intelligent Disaster Recovery Manager uses local site procedures to prepare for offsite disaster recovery or disaster restart in advance. The information that is acquired allows Intelligent Disaster Recovery Manager to intelligently perform remote site restoration operations and appropriate recovery or restart procedures.

What's new in IMS Recovery Expert

This topic summarizes the technical changes for this edition.

New and changed information is indicated by a vertical bar (|) to the left of a change. Editorial changes that have no technical significance are not noted.

SC19-4368-06

Application operations redesign

To improve performance and usability, the Application Operations menu and functionality have been redesigned. Application profiles are now segmented into:

- Object profiles
- Utility profiles
- Job profiles
Coordination application profile functionality has not been altered. Users may also now run on-demand operations to build the following jobs without needing a pre-defined profile to work from:

- Recovery jobs
- Create Recovery Point jobs
- Quiet Time Analysis jobs
- Health Check jobs

**New options for controlling spawned job jobname and jobcard**

Using the new **Update Spawned Job Options** option, you can now override the default methods for jobname and jobcard generation.

**New recovery option for System Profile Recovery**

Using the new recovery type option INITONLY, you can set the System Recovery Profile so that the objects in the profile are initialized instead of recovered. This option is only valid for a DR System Recovery Profile.

**SC19-4368-05**

**ACB repository**

The new ACB Repository is a VSAM KSDS that contains ACBs as loaded and/or updated from the active ACB library (ACBLIB). Use of the ACB Repository improves the performance of IMS Recovery Expert functions that access the ACB libraries of large systems.

**New PARMLIB member to create unique default recovery options**

Using the new member BSY#SSID, you can now create unique, default recovery options for each IMS subsystem or IMS group.

**New parameter to control default recovery options**

Using the new BSY#PARM parameter IMS_GENJCL_DFLT_MBR, you can control the default recovery options.

**New recovery options for System Recovery Profiles**

New recovery options for System Recovery Profiles allow you to specify the type of recovery that can be performed at the disaster recovery site. The three types of recovery that can be performed are PITR, LASTPITCA, and LASTIC.

**New parameters for recovery type options PITR, LASTPITCA, and LASTIC**

New parameters for the recovery type options PITR, LASTPITCA, and LASTIC include DR_LASTPITCA_AGE, DR_LASTPITCA_RANGE, DR_LASTIC_AGE, and DR_LASTIC_RANGE.

**SC19-4368-04**

**New parameter to control history information**

The new BSY#PARM parameter DR_HISTORY_RETENTION controls the creation and retention of history information associated with each time the Disaster Recovery preparation job is executed.

**New IDCAMS delete/define cards created upon job execution**

The Disaster Recovery Profile now enables the DR preparation job to create new IDCAMS delete/define cards each time the job executes. The cards can be placed in members in the DR PDS, or a new PDS can be created each time.

**New option to skip marking all DBDS as recovery needed**

The Disaster Recovery Profile can now skip the process to mark all DBDS as recovery needed when the DR preparation job executes. This process
might not be required for your DR environment, and skipping it reduces execution time for the DR preparation job.

**New option to skip writing conditioned RECON to DR site**

You can now skip writing the conditioned RECON data sets to the DR PDS when you have other methods of sending the conditioned RECON to the DR site.

**SC19-4368-03**

**Run IBM IMS Database Recovery Facility/Extended Functions Health**

You can now choose to run the Health Check feature from the following places:

- Run HCHECK against an application profile.
- Run HCHECK against a system level backup.
- In the Disaster Recovery Profile, you can set HCHECK to be run against the conditioned RECON data sets when the disaster recovery preparation job runs.

**Dynamic API enables IBM IMS Database Recovery Facility (DRF) and IBM IMS Database Recovery Facility/Extended Functions (DRF/XF) to use System Level Backups (SLBs)**

A new dynamic API enables a DRF or DRF/XF job to be aware of any SLB that you have taken which contains data that meets your criteria better than data in the RECON data sets. For example, if you are recovering a database to the current time, and the image copy in the RECON is older than the last SLB, then the API will allow DRF to use the SLB as the image copy, thus reducing the number of logs needed to complete the recovery.

**A new Recovery Sensor evaluates information in the RECON data sets to look for problems that can affect recovery**

The Recovery Sensor is a batch job that can either be scheduled by the Autonomics Director, or in any job scheduler, and is control card driven. To look for potential problems related to recovery, the Recovery Sensor obtains information from the RECON data sets that matches the criteria you specify. This information is stored in the IMS Tools Knowledge Base (ITKB). You can then create recovery policies to evaluate this information and notify you when problems are detected.

**SC19-4368-02**

**Checkpoint restart capability for local recovery**

Checkpoint restart capability is now available when performing local recoveries. To enable this capability, you must:

- Add the new RECOV_CHKPT_RESTART = YES parameter to your BSY#PARAM parameter member
- Tailor and execute the SBSYSAMP(BSYCHKPT) member to allocate the new checkpoint restart repository
- Edit your BSYV220 invocation CLIST and:
  - add RBRCHKPT(dsn) on the PROC statement to specify the checkpoint data set
  - add “ISPEEXEC VPUT (RBRCHKPT) ASIS” after the PROC statement

For more information, see [Managing application recovery checkpoint](#) restart
Enhanced application recovery processing

Enhancements have been made in application recovery processing for both local and DR site application recovery, which allows more flexibility in defining and executing the utilities required to complete application recovery. With these changes, there are several areas which must be addressed in order to perform application recovery.

BSY#PARM member changes

The following BSY#PARM parameters are obsolete and must be removed from your BSY#PARM member:

- GENJCL_DRF_RECOV_MEM
- GENJCL_IMS_RECOV_MEM
- GENJCL_HPCA_CA_MEM
- GENJCL_IMS_CA_MEM
- GENJCL_HPIC_PR_MEM
- GENJCL_IMS_PR_MEM
- GENJCL_IMS_FPSI_MEM
- GENJCL_IMS_HALDB_MEM
- GENJCL_IMS_IX_MEM
- IMS_HALDB_UTIL
- IMS_POINTER_CHECK
- IMS_STANDARD_UTILITIES
- IMS_USE_FOR_ILDS_RBLD
- IMS_USE_FOR_PI_RBLD
- IMS_VERIFY
- IMS_VERIFY_LEVEL
- DR_VERIFY
- DR_VERIFY_LEVEL

The following BSY#PARM parameters have been renamed and must be changed in your BSY#PARM member:

<table>
<thead>
<tr>
<th>Old name</th>
<th>New name</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENJCL_USER_FPSI_MEM</td>
<td>GENJCL_USER_FPIX_MEM</td>
</tr>
<tr>
<td>GENJCL_USER_HALDB_MEM</td>
<td>GENJCL_USER_HBIX_MEM</td>
</tr>
<tr>
<td>GENJCL_USER_IX_MEM</td>
<td>GENJCL_USER_FFIX_MEM</td>
</tr>
<tr>
<td>GENJCL_USER_PR_MEM</td>
<td>GENJCL_USER_IC_MEM</td>
</tr>
<tr>
<td>IMS_POST_RECOV_UTIL</td>
<td>IMS_IC_UTIL</td>
</tr>
</tbody>
</table>

The following new parameters have been added to BSY#PARM and must be specified:

- USE_FFIX_FOR_HALDB_RBLD  N  /* Specify "Y" to use the */
  /* FFIX GENJCL member for */
  /* processing HALDB PINDEX/ */
  /* IDLS rebuild or "N" if */
  /* that is not desired */
- INDEX_RBLD_WHEN_RECOV    Y  /* Specify "Y" to have any */
  /* index needing recovery to */
  /* be rebuilt instead of */
  /* recovered or "N" if this */
  /* is not desired. */
- HALDB_RBLD_ON_RECOV_TO_CURRENT Y  /* Specify "Y" to have any */
HALDB PINDEX rebuilt
-\* when the HALDB is
-\* recovered to current or
-\* "N" if this is not
-\* desired.

ACTION_ON_WARNING C -\* Specify the action to be
-\* taken if warnings occur
-\* during recovery, "W" to
-\* issue a WTOR to pause
-\* processing, "C" to
-\* continue, or "A" to
-\* abort.

For more information on the BSY#P ARM changes, see “(Optional)
Configuring the PARMLIB member” on page 46.

GENJCL member changes
To provide more capability and flexibility for generating the jobs
required to perform recovery, index rebuild, change accumulation,
and image copy, the structure of the GENJCL members has
changed. New members that support the IMS base utilities, IBM®
IMS Tools utilities, and user utilities have been supplied using the
new format. You must modify your existing GENJCL skeletons that
are used for application recovery when driven by IMS Recovery
Expert. For more information, see “Creating GENJCL skeletal
members” on page 65.

Recovery options changes
To provide more flexible processing options when performing the
functions associated with application recovery under IMS Recovery
Expert, the recovery options have been modified in the following
places:

- System Recovery Profile recovery options
- Application Profile recovery options
- System Level Backup restore recovery options

Before you can perform any application recovery processing, you
must edit and upgrade the recovery options for any of these areas
you currently have set up. If you do not, then when you try to
perform application recovery, you will receive an error that the
recovery options need to be upgraded and jobs will not process
until that is done. For more information, see “Setting application
recovery options”.

SC19-4368-01
Combined SLB
You can now create a combined SLB for IMS and Db2. For more
information, see Chapter 10, “Performing a Combined System Level
Backup,” on page 237.

SC19-4368-00
Storage group discovery
When creating a backup profile and specifying the Source/Target Mapping,
you can now specify a new option for SMS storage group discovery for
source volumes. With this option, you specify the SMS storage group
names which contain the IMS source volumes and all of the volumes in
that storage group will be included in the backup. For more information, see “Creating System Level Backup profiles for Combined SLB groups” on page 243.

Redesigned ISPF interface
The ISPF interface has been redesigned for this version of the product.

IMS Recovery Expert features and benefits
IMS Recovery Expert offers several unique and significant features that you can use to significantly improve your IMS backup and recovery methodology.

ISPF interface
IMS Recovery Expert provides an easy-to-use ISPF interface to manage all of its main functions. Through the ISPF interface, users can easily create System Level Backup, object, utility, job, and disaster recovery profiles that contain all the information necessary to run backup, restore, and disaster recovery jobs.

IMS System Level Backup and recovery
IMS Recovery Expert provides the ability to backup an entire IMS system (full image or data only) or a partial IMS system at the volume level through the use of System Level Backup profiles. These profiles designate the IMS system, the user options and the resources that will be used to perform the backup. When run, IMS Recovery Expert will validate that all IMS data is included in the backup by performing dynamic discovery of all the data sets and their associated volumes. This will ensure that the entire IMS system is backed up. The System Level Backup can be taken while the IMS system is active or down. When the system is active, the backup can be taken using fast-replication storage devices. When the system is down, the backup can be taken using DFSMSdss or FDR to copy each IMS volume. IMS Recovery Expert also provides the ability to “offload” or copy the System Level Backup to tape. A System Level Backup can be used at the local site to restore an entire IMS system. At the remote site, it can be used to restore the IMS system for disaster recovery purposes. In addition, IMS Recovery Expert can restore individual IMS databases from a System Level Backup.

Using the Combined System Level Backup function, with a single process you can back up and recover multiple IMS subsystems, multiple Db2 subsystems, or a combination of both, to a single, consistent point in time. For more information about using the Combined System Level Backup feature, see Chapter 10, “Performing a Combined System Level Backup,” on page 237.

IMS System Level Backup configuration and management
IMS Recovery Expert includes a System Setup feature that can be used to discover an IMS system and recommend layout and configuration changes so that the IMS system can be set up appropriately to accommodate a System Level Backup and recovery methodology.

Backup validation
IMS Recovery Expert provides extensive backup validation to ensure that the System Level Backup contains all IMS files and catalog structures required for a successful recovery.
Tape offload support

IMS Recovery Expert provides tape offload support to automate copying a System Level Backup or partial System Level Backup from disk to tape. Backups created on disk can be copied to tape using DFSMSdss or FDR so the backup disk volume pool can be reused. IMS Recovery Expert allows you to encrypt the data when offloading to tape or disk. Data encryption can be specified for either DFSMSdss or FDR offloads. IMS Recovery Expert provides a report of backups and offloaded tapes for offsite support. A subsequent IMS system restore operation will restore the backup from disk or tape depending on System Level Backup availability and recovery scope. IMS Recovery Expert will use the most appropriate backup for application-level recovery and will restore the databases from disk, tape, or a previous image copy depending on which backup provides the most expedient recovery process.

IMS application-level recovery

Application-level recovery allows IMS Recovery Expert users to recover IMS databases or groups of related databases that represent applications from a System Level Backup or image copies. From the ISPF interface, users create profiles that include all the IMS databases that represent an application. When an application needs to be recovered, IMS Recovery Expert will analyze all the available backup resources to generate the most appropriate recovery JCL to recover all the databases in the profile. IMS Recovery Expert can also invoke additional recovery utilities after restoring the databases to bring them to a more current point-in-time.

In addition, application-level recovery leverages storage-based data set fast-replication facilities. The use of storage-based data set fast-replication allows database recovery to be performed in parallel to the database restore process. This significantly reduces the overall recovery time. Application or database recoveries that traditionally have taken many hours can be performed in minutes or seconds using IMS Recovery Expert.

Tape-based disaster restart

IMS Recovery Expert provides disaster recovery support by transforming traditional IMS disaster recovery procedures into a tape-based disaster restart methodology. System Level Backups can be tagged for offsite transport to a disaster recovery site during the offload process. The tape-based disaster restart methodology loads the System Level Backup tapes and restarts IMS at the disaster recovery site. The IMS restart process transforms the System Level Backup into a transactionally consistent IMS system that is ready to accept work. Using IMS Recovery Expert to implement an IMS tape-based disaster restart methodology simplifies disaster recovery procedures and reduces recovery time objectives.

Automation and management of disaster recovery

Using IMS Recovery Expert to automate and manage traditional disaster recovery processes simplifies disaster recovery procedures, reduces recovery time, and makes the recovery process less error-prone. Users create disaster recovery profiles which contain the recovery assets that will be sent to the recovery site. These assets can include System Level Backups, archive logs, change accumulation files, and image copies. The IMS Recovery Expert Intelligent Disaster Recovery Manager runs at some set interval at the local site, performing the following functions:

- Analyzes, prepares, and identifies any new assets to be sent to the recovery site.
• Copies and then conditions IMS recovery data sets (RECONS) with the recovery assets to be used at the remote site.

• Creates JCL that can be run at the disaster recovery site to recover the IMS system.

• Produces a detailed report showing all tapes that need to be transported to the disaster recovery site.

To recover the IMS system at the remote site, a user simply submits the predefined jobs created at the local site by the Intelligent Disaster Recovery Manager.

**System restore interface**

IMS Recovery Expert provides an ISPF interface to display all the System Level Backups that have been performed. IMS systems can be restored by selecting a System Level Backup and specifying restore and recovery options. IMS Recovery Expert will then build JCL that can be executed to restore and recover the entire IMS system from the System Level Backup and other recovery resources created since the System Level Backup.

**Copy blades**

IMS Recovery Expert copy blades provide storage processor integration and extensibility to support heterogeneous storage platforms and fast-replication features. IMS Recovery Expert supports IBM, EMC and HDS storage systems and fast-replication facilities using integrated copy blades. IMS Recovery Expert copy blades include:

• IBM FlashCopy® copy blade which provides support for IBM native FlashCopy.

• EMC TimeFinder copy blade which provides support for TimeFinder/Mirror, TimeFinder/Clone, TimeFinder/Snap Virtual Device.

• HDS ShadowImage copy blade which provides HDS ShadowImage support.

• DFSMSdss copy blade which allows backups to be performed using DFSMSdss. DFSMSdss can optionally be used to invoke FlashCopy or SnapShot fast-replication methods.

**Metadata Repository**

IMS Recovery Expert provides a comprehensive metadata repository to record backup information such as backup time, backup type, log byte addresses, and volumes used for the backup. Reports can be generated to monitor information such as backup methods and operations, storage volume usage, System Level Backup volume usage, and archived backups.

**Multi-purpose System Level Backup**

IMS Recovery Expert generated System Level Backups can be used for multiple purposes saving storage and processing resources. An IMS System Level Backup can be used for IMS system recovery, application recovery, database recovery, and for disaster restart or recovery. With this ability, significant CPU, I/O, and storage resources that would otherwise be required to make multiple backups for different purposes are saved.
**IMS recovery performed efficiently**

IMS Recovery Expert reduces recovery time by running restore and recovery operations in parallel. Storage-based fast-replication facilities are used to restore backups quickly while invoking IMS recovery processes, to reduce overall recovery time and minimize IMS and application downtime. IMS systems are restored using volume-based fast-replication, and IMS applications and databases are restored using data set-based fast-replication facilities.

**IMS Version Support**

IMS Recovery Expert supports IMS versions 13, 14, and 15 in either data-sharing or non data-sharing modes of operation.

**IMS Recovery Expert and other IMS tools**

Many IMS tools provide database management features that are not available in IMS itself or provide enhancements to capabilities built into IMS.

IMS Recovery Expert is only one of several IMS tools that provide enhancements to the process of managing backup and recovery operations for your databases in the event of a system outage or application failure.

For example, IMS Database Recovery Facility simplifies your database recovery process by eliminating the need to run a separate recovery job for each database data set that requires recovery.

In addition, IMS Database Recovery Facility provides the capability to automatically invoke the following IMS tools and utilities during the recovery process:

- IMS High Performance Image Copy to create image copies
- IMS Index Builder to rebuild primary and secondary index data sets
- IMS High Performance Pointer Checker to validate database consistency

IMS Recovery Expert provides full integration with the IMS Database Recovery Facility to be able to drive recovery and the integrated utilities as needed to complete IMS database recovery.

The following IMS tools can further assist with database recovery:

- IMS Application Recovery Tool for IMS and Db2 Databases
- IMS Fast Recovery for z/OS®

**IMS Recovery Expert ISPF interface**

IMS Recovery Expert provides an easy-to-use ISPF interface to manage all of its main functions.

**ISPF interface navigation**

The IMS Recovery Expert for z/OS main menu panel (BSY$MAIN) provides quick access to backup and recovery functions.
A functional description of each menu option is provided below.

**Administration**
Specify this option (0) to perform the administration functions that allow you to set system defaults and create subsystems, groups, and system profiles.

**System Operations**
Specify this option (1) to perform system related functions that allow you to create System Level Backup profiles, disaster recovery profiles, and System Level Backups.

**Application Operations**
Specify this option (2) to perform application related functions that allow you to create application profiles and groups, and process coordinated application profiles.

**Exit**
This option is used to exit IMS Recovery Expert.

---

**IMS recovery utilities**

IMS Recovery Expert provides integration with other tools in the IMS Recovery Solutions Pack to provide a complete solution for IMS backup and recovery.

See “Setting up for recovery” on page 64 for a discussion on how to configure IMS Recovery Expert to invoke the utilities in the IMS Recovery Solutions Pack.

---

**Copy blades**

IMS Recovery Expert was developed to integrate with and leverage the benefits of storage-based fast-replication technologies. A copy blade is the term used to group storage-based fast-replication technologies that storage vendors offer. Copy blades provide facilities to invoke various data movement and fast-replication facilities. Copy blades provide fast-replication integration and separate the database backup and recovery processes from the underlying storage devices.

IMS Recovery Expert allows you to take advantage of the specific fast-replication products and features you might have. IMS Recovery Expert supports many of the fast-replication products natively, taking full advantage of the storage processor capabilities and fast-replication facilities that are available. Below is a list of the copy blades that IMS Recovery Expert supports.
IBM FlashCopy
Used to invoke IBM FlashCopy operations to copy data. This blade is also used to invoke FlashCopy emulation products for EMC and HDS storage systems. For more information, see “IBM FlashCopy blade” on page 30.

EMC TimeFinder
Used to invoke EMC TimeFinder operations to copy data. For more information, see “EMC TimeFinder copy blade” on page 31.

HDS ShadowImage
Used to invoke HDS ShadowImage operations to copy data. For more information, see “HDS ShadowImage copy blade” on page 34.

IBM DFSMSdss
Used to invoke IBM DFSMSdss to perform storage-based fast-replication and slow copy processes. For more information, see “IBM DFSMSdss copy blade” on page 34.

For more information about copy blades, see “IMS Recovery Expert and storage system integration” on page 28.

Backup and recovery solutions
IBM solutions help IT organizations maximize their investment in Db2 and IMS databases while staying on top of some of today’s toughest IT challenges. Backup and recovery solutions can protect your data and lessen the negative impact that data loss can have on your business.

The IMS Recovery Expert System Level Backup and recovery methodology is one where the entire IMS system is backed up as a unit. The backup can be used to recover the IMS system as a unit, or it can be used to recover individual applications, or databases. All data relationships are implicitly maintained during the recovery process, guaranteeing that data integrity is preserved for an IMS
application. The IMS Recovery Expert System Level Backup and recovery methodology is much faster to perform than using traditional IMS image copy approaches. In addition, the same IMS Recovery Expert System Level Backup and recovery procedures can be used for local site recovery as well as for offsite disaster recovery purposes.

Using the Combined System Level Backup function, with a single process you can back up and recover multiple IMS subsystems, multiple Db2 subsystems, or a combination of both, to a single, consistent point in time. For more information about using the Combined System Level Backup feature, see Chapter 10, “Performing a Combined System Level Backup,” on page 237.

IMS Recovery Expert System Level Backup solution leverages modern storage processor capabilities and fast-replication products to perform backup and restore operations on behalf of the IMS system. Supported fast-replication products include: IBM FlashCopy, EMC TimeFinder/Mirror, EMC TimeFinder/Clone, EMC TimeFinder/Snap, and Hitachi ShadowImage. The advantages of using the IMS Recovery Expert System Level Backup methodology which uses storage-based fast-replication include:

- Full IMS System Level Backups can be completed in seconds or less.
- There is very little or no impact to applications while the backup is performed.
- Point-in-time restartable backup copies of an entire IMS system are created.
- No host CPU and I/O resources are used to create the backup.
- Incremental fast-copy facilities can be used to reduce backup storage requirements and to reduce the storage processor resources used in the copy process.
- System Level Backups can be used for multiple purposes: local site system recovery; local site application and database recovery; as a source for creating a backup used for offsite disaster recovery; and as a source for performing IMS system cloning operations.
- System Level Backups can be archived using an independent tape copy process to reduce disk storage utilization while preserving the backups created in multiple backup cycles.

The advantages of using the IMS Recovery Expert System Level Backup to perform an IMS system recovery operation include:

- The entire IMS system can be restored from disk instantaneously when storage-based fast-replication is used to restore the data.
- Parallel recovery can be performed. That is, IMS recovery functions can be performed in parallel with the data restoration process, thus reducing overall IMS system recovery time.
- The IMS system is recovered as a unit so that all data relationships are preserved during the restore and recovery processes. This ensures that the application's data integrity is preserved.

The advantages of using the IMS Recovery Expert System Level Backup for offsite disaster recovery include:

- An IMS System Level Backup can be easily copied to tape and transported to a disaster recovery site.
- Traditional IMS disaster recovery procedures are streamlined by using a tape-based disaster restart methodology. A disaster restart methodology is one where tapes containing a System Level Backup are loaded at a disaster recovery site and IMS is restarted. Disaster recovery procedures are implicitly performed
during the normal IMS restart operation. Traditional IMS disaster recovery procedures are not used. The normal IMS restart process using a System Level Backup transforms the System Level Backup data-state into a transactionally-consistent data-state. The IMS system is ready to accept new application work after the restart process is complete. A IMS Recovery Expert disaster restart methodology is a fast and effective way to resume application processing at a disaster recovery site, and minimize recovery time objectives and application downtime.

**Software and hardware requirements**

The following list includes the software and hardware requirements for IBM IMS Recovery Expert for z/OS.

**Hardware requirements**

IBM IMS Recovery Expert for z/OS V2R2 operates on any hardware configuration that supports the required versions of IMS.

For fast-replication backups and restores, if using IBM storage, FlashCopy V2 or a functionally equivalent product for FlashCopy, is required.

**Software requirements**

The following is a list of installation and mandatory operational requirements:

- 5694-A01 z/OS, V1.9 or later

  **Note:** Product is SMP/E installable

The following is a list of mandatory operational requirements. IBM IMS Recovery Expert for z/OS V2.2 requires one of the following:

- IMS V13
- IMS V14
- IMS V15

The following is a list of conditional operational requirements:

- 5694-A01 z/OS, V1.9, or later, DFSMSdss and FlashCopy, V2 for restoring IMS objects from FlashCopy backups on DASD
- 5694-A01 z/OS, V1.9, or later, DFSMSdss and IBM Encryption Facility for z/OS, V1.2 (5655-P97) for performing encryption during offloads
- 5694-A01 z/OS, V1.9, or later, IBM Cryptographic Services Facility (ICSF) required by DFSMSdss for performing encryption during offloads
- 5655-V93 IMS Tools Base for z/OS*, V1.6.0 for creating detailed and summary reports with every backup and restore

  **Note:** IMS Tools Base for z/OS, a no-charge product, is a mandatory installation requisite for IMS Recovery Solution Pack for z/OS.

Refer to the IBM IMS Recovery Expert for z/OS Program Directory for more information about the required and optional software that can run with IBM IMS Recovery Expert for z/OS. Verify that your hardware and software meet or exceed the minimum requirements. If your hardware and software do not meet the minimum requirements, you might be unable to install or run the product.
**APF authorization requirements**

The IMS Recovery Expert SBSYLOAD library requires explicit APF authorization, even if it is displayed in the system link list with the LINKAUTH=LNKLST option.

Although SMS-managed load libraries can be assigned APF authorization, most installation sites prefer to have all authorized libraries reside on specific non-SMS system volumes.

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**Service updates and support information**

Service updates and support information for this product, including software fix packs, PTFs, frequently asked questions (FAQs), technical notes, troubleshooting information, and downloads, are available from the web.

To find service updates and support information, see the following website:


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**Product documentation and updates**

IMS Tools information is available at multiple places on the web. You can receive updates to IMS Tools information automatically by registering with the IBM My Notifications service.

**Information on the web**

The IMS Tools Product Documentation web page provides current product documentation that you can view, print, and download. To locate publications with the most up-to-date information, refer to the following web page:


The IMS Tools Product Documentation web page includes:

- Links to the IBM Knowledge Center for the user guides ("HTML")
- PDF versions of the user guides ("PDF")
- Program Directories for IMS Tools products
- Recent updates to the user guides, referred to as "Tech docs" ("See updates to this book!")
- Technical notes from IBM Software Support, referred to as "Tech notes"
- White papers that describe product business scenarios and solutions

You can also access documentation for many IMS Tools from IBM Knowledge Center:


Search for a specific IMS Tool product or browse the Information Management > IMS family.

IBM Redbooks® publications that cover IMS Tools are available from the following web page:

The Data Management Tools Solutions website shows how IBM solutions can help IT organizations maximize their investment in IMS databases while staying ahead of today's top data management challenges:


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To register with the My Notifications service:
2. Enter your IBM ID and password, or create one by clicking register now.
3. When the My Notifications page is displayed, click Subscribe to select those products that you want to receive information updates about. The IMS Tools option is located under Software > Information Management.
4. Click Continue to specify the types of updates that you want to receive.
5. Click Submit to save your profile.

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- Use the online reader comment form, which is located at [http://www.ibm.com/software/data/rcf/](http://www.ibm.com/software/data/rcf/)
- Send your comments by email to comments@us.ibm.com. Include the name of the book, the part number of the book, the version of the product that you are using, and, if applicable, the specific location of the text you are commenting on, for example, a page number or table number.

Accessibility features

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use a software product successfully.

The major accessibility features in this product enable users to perform the following activities:

- Use assistive technologies such as screen readers and screen magnifier software. Consult the assistive technology documentation for specific information when using it to access z/OS interfaces.
- Customize display attributes such as color, contrast, and font size.
- Operate specific or equivalent features by using only the keyboard. Refer to the following publications for information about accessing ISPF interfaces:
  - z/OS ISPF User’s Guide, Volume 1
  - z/OS TSO/E Primer
  - z/OS TSO/E User’s Guide
These guides describe how to use the ISPF interface, including the use of keyboard shortcuts or function keys (PF keys), include the default settings for the PF keys, and explain how to modify their functions.
Chapter 2. Planning for System Level Backup and recovery

Before configuring IMS Recovery Expert, it is important to consider and understand how the System Level Backups (SLB) will be used in your environment's recovery situations. This section describes the types of recoveries that can be performed from a System Level Backup, and what to consider when selecting a specific type of backup and recovery methodology.

System Level Backup usage considerations

Before configuring IMS Recovery Expert, it is important to consider and understand how the System Level Backups (SLB) will be used in recovery situations.

Your first consideration when planning for System Level Backup and recovery is to decide what you want to recover. For example, you can recover an entire IMS environment, you can recover just an application or database, or you can recover at a remote site. You may decide you need to do only a partial backup of an IMS system, or a data only backup. Once you determine what you want to recover, you will create a backup profile that will be tailored to your specific recovery needs.

System Level Backup (SLB) used for local system recovery

Local system recovery is the process of restoring an entire IMS environment (Full). This includes database data, logs, RECONS, and system data sets, to the point in time of a System Level Backup. Local system recovery can also include running forward recovery processes to apply changes that occurred after the System Level Backup was created. It is also possible to restore only the volumes that contain database data from a System Level Backup, and then run forward recovery processes to bring the databases to a more current state.

When IMS Recovery Expert restores an entire IMS environment, it is important to understand that it does the restore at a volume level. When a volume is restored, it will restore all data sets that were on the volume at the time of the System Level Backup, and it will overlay changes or new data sets that were created on the volumes since the System Level Backup was created. Because of this, if local system level recovery is a viable recovery scenario, it is important to analyze data set isolation (see “Analyzing data set isolation” on page 20) before creating any backups. This ensures that a volume level restore will yield the wanted results.

Things to check for are:

- Are there non-IMS data sets on the volumes being backed up and restored? If so, is it wanted that they are restored to the same point in time as the System Level Backup?
- If forward recovery is wanted after restoring the database data only, then the volumes where any archive logs, RECONS, or IMS system data sets reside must be segregated from the volumes that contain database data.
- If forward recovery is wanted after restoring an entire IMS environment to the time of a System Level Backup, then the RECONS and archive logs should not be on volumes contained in the System Level Backup.
- The MVS™ user catalogs where the data sets being backed up are cataloged must reside on the volumes being backed up. If database data and log segregation is
required for the chosen recovery option, then the segregation also applies to the MVS user catalogs where the database data and log data sets are cataloged.

System Level Backup (SLB) used for application or database level recovery

Once a System Level Backup is created and the option to Enable DB Restore is enabled in the backup profile, then IMS Recovery Expert can be used to restore an entire application (group of databases and indexes) or individual databases or indexes from the System Level Backup. When IMS Recovery Expert restores at the application or database level, it does so at a data set level. After restoring the database data sets from a System Level Backup, IMS Recovery Expert can then run any forward recovery processes using the existing RECONs and archive logs.

If application or database level recovery is the only level of recovery that is needed, then data segregation is not important and IMS System Analysis and Configuration is not needed.

It is important to make sure Enable DB Restore is set to Y before creating the System Level Backup.

System Level Backup (SLB) used for remote disaster restart or disaster recovery

A System Level Backup can be created and shipped to a remote site for use in a disaster restart operation or disaster recovery operation.

Disaster restart is the process of restoring a System Level Backup at the remote site and then doing an emergency restart of IMS. IMS and the databases will be restored to the point in time when the System Level Backup was created. IMS will back out any uncommitted changes. In essence, this is the same as recovering from a power outage.

Disaster recovery operations start with the process of restoring a System Level Backup at the remote site. Then, the forward recovery processes can also be run to apply changes that occurred after the System Level Backup was created.

In either scenario, it is not important that IMS recovery structures (RECONs and logs) be segregated from the database data sets. However, it is important to verify the following by doing the IMS System Analysis and Configuration:

- Non-IMS data sets might reside on the volumes included in the System Level Backup. Since the processes at the remote site will restore these volumes, ensure that you want these data sets to be restored to the point in time the System Level Backup was created.
- The MVS user catalogs where the data sets for the IMS environment are cataloged must be on the volumes that are included in the System Level Backup.

See “Analyzing data set isolation” on page 20 for more information.

Partial System Level Backup (PSLB) for database or application recovery

IMS Recovery Expert provides the capability to create a partial System Level Backup, or PSLB. A PSLB is a backup that does not include all of the volumes where an IMS system resides. A PSLB can be used for large databases or
applications having unique backup requirements. Using a partial System Level
Backup versus a full System Level Backup will also reduce disk utilization and
allow for additional backup generations.

A PSLB can be used for database or application recovery only. A PSLB cannot be
used for system recovery. Using a PSLB for database or application recovery, the
data is restored at the data set level so log and database data isolation is not
required. The wanted application database data should be grouped on volumes as
a best practice.

**Combined System Level Backup (CSLB)**

The Combined System Level Backup feature can be used to include multiple IMS
subsystems in a single backup. These IMS subsystems do not have to be in the
same data sharing group. This backup can then be used for local system recovery,
local application recovery, or disaster recovery. The Combined System Level
Backup feature can also include Db2 subsystems when IMS Recovery Expert is
paired with Db2 Recovery Expert. For more information about using the Combined
System Level Backup feature, see Chapter 10, “Performing a Combined System
Level Backup,” on page 237.

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### Backup frequency and space utilization

When you determine what the System Level Backup will be used for, there are
several other things to consider when you configure IMS Recovery Expert to create
the System Level Backups.

**System Level Backup type**

IMS Recovery Expert allows for the following types of backups:

- **Full**  The System Level Backup will contain the database data, the archive logs,
and the IMS system data sets. A Full backup can be used for system
restore, application or database recovery, and disaster restart or recovery.

- **Data only**  The backup contains only the database data for the IMS environment. A
data only backup is used to restore all of the database data and run
forward recovery processes. A data only backup is done at the volume
level. A data only backup is also used for application or database recovery,
which is performed at the data set level.

- **Partial**  The backup will contain only data for an application or group of
databases. A partial backup is used for application or database recovery
only. Restoring the data sets is done at the data set level.

**Optimal backup frequency and retention**

With the recovery objectives in mind, consider how frequently the System Level
Backups need to be created. Using fast-replication, the CPU and I/O costs to create
a backup are minimal. The impact to online IMS availability is also insignificant, so
the traditional approach of first determining the time when a backup can be
created might not be necessary. When you are using IMS Recovery Expert,
determine the ideal recovery time for your business, and set the backup frequency
(hourly, daily, weekly, and so on) accordingly.
Using fast-replication, IMS Recovery Expert creates a System Level Backup on disk. Having a System Level Backup on disk can greatly reduce recovery time. IMS Recovery Expert can maintain up to 99 generations of a System Level Backup on disk. IMS Recovery Expert can also automate the offloading of a System Level Backup to tape and use a tape-based System Level Backup for recovery if needed. Again, consider the most ideal recovery time for your business when you determine the number of generations to maintain on disk, tape, or both.

If disk space is a premium for creating and maintaining System Level Backups, then the System Level Backups can be configured to immediately offload them to tape. Then, the disk volumes can be used to create System Level Backups for other IMS systems.

The following scenarios show possible implementations of IMS Recovery Expert:

- To maintain a set of SNAP or FlashCopy backups for the previous week, you can configure a profile with a SNAP or FlashCopy backup type and seven generations of full backups. This job is scheduled to run daily.
- To maintain a set of BCV backups for the previous week, you can configure a profile with a BCV backup type and eight generations of full backups. Eight generations are required to maintain one week of backups, since one target volume is always mirroring the current set of volumes. This leaves seven backups available for system restoration. This job is scheduled to run daily.
- A separate profile can be created to run once a week. This profile would create backups that can be used to restore the system to a point farther back than one week ago. Depending on space considerations, you could set the number of generations as low or high as needed.

Fast-replication considerations

- To reduce background copy time and resources, consider incremental fast-replication options.
- To save space, consider using space efficient fast-replication methods like EMC VDEVs.

Analyzing data set isolation

If the intended usage of a System Level Backup requires data set isolation, then the physical location of the data sets and the user catalogs for these data sets must be examined. If the use for the System Level Backup does not require data set isolation, such as Application or Database Recovery only, then you can skip this section.

The requirement to have data isolated for some restore operations is because IMS Recovery Expert invokes a volume level restore for certain operations. When a volume is restored, all of the data sets will be restored as they existed at the time the SLB was created. Considerations must be made for non-IMS data sets that might reside on the volumes being restored. Also, the user catalogs must reflect the data sets on the volumes being restored.

IMS Recovery Expert provides an IMS System Analysis and Configuration function that will help you in analyzing the data set placement for all of the data sets in an IMS environment (see “(Optional) Analyzing IMS data set placement for System Level Backup validation” on page 86). The IMS System Analysis and Configuration function will also report on what type of restores and recoveries are allowed with the current configuration.
The following table summarizes data set isolation requirements based on a System Level Backup's usage:

**Table 1. Data set isolation requirements**

<table>
<thead>
<tr>
<th>System Level Backup usage</th>
<th>Data set isolation requirements</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local site full system restore with forward recovery</td>
<td>1. User catalogs for all IMS data sets need to be included in the System Level Backup.</td>
<td>1. Non-IMS data sets may be restored.</td>
</tr>
<tr>
<td></td>
<td>2. Log and RECON data sets and their associated user catalogs need to be isolated from database data sets and their associated user catalogs.</td>
<td>2. User catalogs should not contain non-IMS data sets if the data sets are not on volumes being backed up.</td>
</tr>
<tr>
<td>Local site full system restore with no forward recovery</td>
<td>User catalogs for all IMS data sets need to be included in the System Level Backup.</td>
<td>1. Non-IMS data sets may be restored.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. User catalogs should not contain non-IMS data sets.</td>
</tr>
<tr>
<td>Application or database recovery</td>
<td>User catalogs for the application or database data sets need to be included in the System Level Backup.</td>
<td>Only SCOPE=Data is needed.</td>
</tr>
<tr>
<td>Disaster, or remote site recovery</td>
<td>User catalogs for all IMS data sets need to be included in the System Level Backup.</td>
<td>1. Non-IMS data sets may be restored.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Partial System Level Backup cannot be used.</td>
</tr>
</tbody>
</table>

The most stringent data set isolation requirements are required when you are using a System Level Backup to do a local site full system restore with forward recovery. To ensure complete and accurate system restoration, follow these recommendations for the IMS system setup:

- The user catalog(s) for the IMS log and RECON data sets should be separate from the user catalog(s) for IMS databases and indexes, and should not reside on the same volume(s) as any other IMS databases or IMS database catalog(s).
- The IMS RECON, active log, and archive log data sets should reside on separate volumes from the IMS database data.

These requirements ensure that your IMS database and log data are contained on separate sets of volumes. When you restore the volumes, the user catalogs will be restored and will reflect the data and log locations as they were at the time of the backup as shown in “Planning for a local site full IMS System Level Backup with forward recovery” on page 22.

**Migrated data set considerations**

Data sets that are migrated at the time a System Level Backup is created are not included in the System Level Backup unless they are recalled first.
When the Disaster Recovery profile indicates that the image copy DR method is being used, and IMS database data sets are migrated when the DR preparation job runs, these migrated data sets are ignored and no IDCAMS delete/define commands are created for them.

When performing a System Level Backup, IMS Recovery Expert has two configurable parameters, RECALL_MIGRATED_DATA and RECALL_MIGRATED_WAIT, which control how IMS Recovery Expert will act when it detects that a data set that should be included in the System Level Backup is migrated at backup execution time. For additional information, see “(Optional) Configuring the PARMLIB member” on page 46.

By default, IMS Recovery Expert will not create a System Level Backup if it detects migrated IMS data sets at backup execution time. IMS Recovery Expert can be configured to try to recall the migrated data sets before executing the System Level Backup. IMS Recovery Expert can also be configured to ignore the migrated data sets and continue with creating the System Level Backup. It is strongly advised that IMS Recovery Expert is not configured to ignore migrated data sets unless these data sets can be recovered by other methods when needed.

Migrated user-included data sets do not affect System Level Backup execution and are not handled by the RECALL_MIGRATED_DATA and RECALL_MIGRATED_WAIT parameters. For more information about specifying user included data sets, see “Providing IMS system information” on page 40. Migrated user included data sets will be shown through a subsystem analysis (see Chapter 5, “Collecting and analyzing data with the System Setup facility,” on page 103), but these data sets should not be allowed to be migrated if they need to be included in the System Level Backup.

When performing DR preparation for the image copy DR method, IMS Recovery Expert has two configurable parameters: DE_RECALL_MIGRATED_DATA and DR_RECALL_MIGRATED_WAIT. These parameters control what IMS Recovery Expert does when it detects that a database data set is migrated at DR preparation time. For additional information, see “(Optional) Configuring the PARMLIB member” on page 46.

Planning for a local site full IMS System Level Backup with forward recovery

This task describes how to set up a local site full IMS System Level Backup with forward recovery.

About this task
The following steps describe implementing a local site full System Level Backup with forward recovery:

**Procedure**

1. The IMS system is discovered and analyzed so that the correct System Level Backup methodology can be chosen for the intended recovery needs.

2. A System Level Backup Profile is created. During the profile creation process, DASD volumes used for the System Level Backup are selected. The target backup volumes can be selected from a range of target units or an SMS Storage Group.

3. A System Level Backup is created using the information provided in the backup profile to drive a storage-based fast replication process. Backups that use the “full” option will back up all volumes of the IMS system (3a, 3b), while backups that use the “data only” option will back up the data volumes only (3b).

4. The backup is recorded in the IMS Recovery Expert metadata repository. Recorded information includes: backup type, time, target volumes used, and data set name mappings for use in application-level recoveries.

5. Online disk volumes can be archived to tape automatically after each System Level Backup or on demand using the System Restore and Offload ISPF menus.

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**Planning for the creation of an IMS System Level Backup**

This task describes how to create an IMS System Level Backup.
About this task

IMS Recovery Expert performs the process of creating a System Level Backup using information specified in System Level Backup profiles and using DASD volume relationships specified in the volume mapping section of the System Level Backup profile. Figure 4 outlines this process:

The following steps describe how to perform a System Level Backup:

Procedure

1. The IMS system is discovered and analyzed. Source volumes are identified, and data set and catalog placement is analyzed to determine if the IMS layout can accommodate the System Level Backup methodology for the intended recovery needs.

2. All source IMS volumes are identified and analyzed to determine if non-IMS data resides on the volumes. Warning messages are issued when non-IMS data is included in an IMS System Level Backup.

3. Source IMS volumes are mapped to target volumes that will contain the System Level Backup. The source to target volume mapping is done during the backup profile creation process.

4. IMS Recovery Expert performs System Level Backup validation checks before each backup to ensure that the backup is complete and can be used for a successful restore operation.

5. IMS Recovery Expert invokes an appropriate storage-based fast-replication process. The backup is performed in the storage processor without using host CPU and I/O resources. The System Level Backup is completed from an IMS system and application perspective when the storage-based fast-replication command is issued. Typically, full IMS System Level Backups complete in
seconds or less. Data consistency functions are employed to ensure that the backup data state can be used for recovery purposes. Data consistency is ensured by suspending IMS logging activity or using the appropriate storage processor consistency functions.

6. When the backup is complete, information about the backup is recorded in the IMS Recovery Expert metadata repository. The metadata information includes an inventory of where each IMS database data set resides on the backup volumes. This information is used to restore individual data sets when performing an IMS application or database recovery operation.

Planning for an IMS system and application recovery

IMS Recovery Expert automates IMS system or application-level recovery from a System Level Backup. System recovery is performed using the System Restore and Offload panels. Application or database recovery is performed using the Application Profiles panel. Both menu option are available from the main ISPF panel.

About this task

System recovery can be a full or data only recovery. When a full system recovery is performed, IMS Recovery Expert will restore all data and log volumes. No IMS log apply recovery is performed on the restored volumes. See figure reference 3a and 3b in “Planning for a local site full IMS System Level Backup with forward recovery” on page 22. Performing a full systems recovery is analogous to performing a “recover to copy” when using image copies for recovery.

Figure 5 depicts the use of a System Level Backup for recovery of applications for an IMS environment.

The following processing steps refer to Figure 5 and describe an IMS system recovery process using a IMS Recovery Expert-generated System Level Backup:
Procedure

1. The appropriate System Level Backup metadata is selected from the metadata repository using the recovery criteria specified in the Restore System Display from the System Restore and Offload panels.

2. IMS Recovery Expert invokes an appropriate, storage-based fast-replication process to perform the system restore process. The restore operation is performed in the storage processor without using host CPU and I/O resources.

3. The IMS recovery processes begin after the volume restore process has started. Thus, the IMS recovery process is performed in parallel with the volume restore process to minimize overall IMS recovery time.

What to do next

Data-only recovery directs IMS Recovery Expert to restore only the data volumes from the System Level Backup (figure reference 3b, “Planning for a local site full IMS System Level Backup with forward recovery” on page 22). This leaves the IMS log data sets unaffected and available to use for IMS recovery processes. IMS Recovery Expert then determines and runs the recovery utilities in order to bring the databases up to the point in time specified. The recovery processes include fast data set restores and running one or more of the following utilities:

- DBRC notifications
- Change Accumulation Utility
- Recover Utility
- Rebuild Index Utility
- Post-Recovery Image Copy Utility

These processes can take place while the storage processor is restoring the data volumes in the background. The recovery process can use a point in time or recover to current to establish the end of the recovery process. Figure 6 depicts how IMS Recovery Expert drives the various recovery processes in order to recover an application.

**Figure 6. IMS Recovery Expert controlled application recovery**

IMS application or database-level recovery is done by creating an application profile. Application profiles describe the methods and options used to recover
databases or groups of related databases representing applications. Recovery profiles are created and stored in the metadata repository and can be recalled for use when an application recovery is required. The application profile specifies a recover to point as either current or a point in time. The application profile also describes which recovery resources to use by specifying whether to recover from disk, an offloaded tape, an image copy, or all available resources.

System and application recoveries can restore data and perform IMS recovery operations in parallel when recovering from a System Level Backup that resides on disk. IMS Recovery Expert will invoke an appropriate data set fast-replication process in the storage processor. While the data is flowing from the backup volume to the source IMS system to restore the data, IMS recovery processes can run in parallel with the data restoration process. The IMS Recovery Expert parallel restore and recovery process significantly reduces overall recovery time and increases application high availability.

Planning a tape-based IMS disaster restart methodology

This task describes how to implement a tape-based IMS disaster restart solution.

About this task

A tape-based disaster restart methodology is one where a restartable IMS system is captured on disk and transferred to a disaster recovery site using tape as a transport mechanism.

Traditional image copy based IMS disaster recovery procedures are not used at the disaster recovery site. Instead, tapes containing a restartable IMS system are loaded onto disk and IMS is restarted at the disaster recovery site. The disaster recovery exercise is complete when the IMS restart process completes.

IMS Recovery Expert creates a restartable IMS system while creating a System Level Backup. IMS Recovery Expert coordinates suspending IMS logging activity or a storage-based consistency function with a storage-based fast-replication procedure to create a System Level Backup that is dependent-write-consistent. A dependent-write-consistent data state is identical to an IMS system that has been exposed to a power failure. When an IMS system is restarted using a System Level Backup, the dependent-write-consistent data state that is inherent in the System Level Backup is transformed to a transactionally-consistent data state by the IMS restart process. Once the restart process is complete, the IMS recovery is done.

IMS Recovery Expert has facilities to pre-process archive logs, change accumulation files, and image copies as they are copied to tape for disaster recovery purposes. The pre-process also creates a copy of the RECON data sets conditioned with the information on what archive logs, change accumulation files, and image copies will be transported to the disaster recovery site. The pre-processing creates a partitioned data set with the information needed to restore the conditioned RECONs and other files needed for recovery. The disaster recovery procedures done at the disaster site: restore the IMS system using the last offsite System Level Backup; restore the conditioned RECON data sets; restore archive logs, change accumulation files, and image copies; run IMS recovery processes; and start IMS. Figure 7 on page 28 shows the steps required to transform traditional IMS disaster recovery procedures into a tape-based disaster restart solution.
The following processing steps refer to Figure 7 and are used to implement an IMS tape-based disaster restart solution:

**Procedure**

1. IMS Recovery Expert creates a System Level Backup that has a dependent-write-consistent data state.

2. The System Level Backup is archived to tape and one of the archive tape copies is targeted to be transported to the disaster recovery site. Tape archival options and offsite specifications are provided in the System Restore and Offload panels.

3. IMS archive logs, change accumulation files, and image copies needed for remote site recovery are identified; a copy of the RECON data sets is created and conditioned with the files to be sent to the disaster recovery site; and information is gathered and sent to the disaster recovery site to restore these files at the disaster recovery site when they are needed.

4. A disaster restart process is exercised where the last offsite System Level Backup is restored, databases are recovered, and IMS is restarted. The IMS restart process transforms the dependent-write-consistent data state created in step 1 into a transactionally-consistent data state. IMS is ready to accept new work after the restart process is complete.

**IMS Recovery Expert and storage system integration**

IMS Recovery Expert leverages storage system capabilities and fast-replication products to perform backup and restore operations on behalf of the IMS system. Using storage-based fast-replication to copy data allows IMS systems to be backed up instantaneously without using host CPU and I/O resources.
IMS system and database recovery operations are expedited by allowing data to be restored using storage system services while IMS recovery operations are performed in parallel. Some storage-based fast-replication products used to support an IMS Recovery Expert System Level Backup approach include: IBM FlashCopy, EMC TimeFinder and Hitachi Data Systems (HDS) ShadowImage.

IMS Recovery Expert integrates storage-based fast-replication facilities with IMS backup and recovery processes through the use of a Data Copy Manager. The Data Copy Manager is a software component used to translate logical database backup and restore requests into physical storage system fast-replication facility requests. It uses the IMS Log Suspend operation or storage-based consistency functions to create a dependent-write consistent copy of the IMS data. The Data Copy Manager invokes appropriate volume and data set fast-replication facilities to leverage the underlying storage system capabilities. These requests copy the data on behalf of the IMS systems using storage system facilities. The Data Copy Manager separates IMS logical backup and restore operations from the physical backup processes. This allows new data copy methods and features to be integrated into the IMS Recovery Expert infrastructure easily.

The IMS Recovery Expert Data Copy Manager integrates with specific storage system services and fast-replication facilities through the use of copy blades. A copy blade is a logical grouping of data copy services that can be invoked to drive specific storage hardware and software facilities using appropriate application programming interfaces. Copy blades invoke specific storage system copy services like storage-based consistency functions and drive fast-replication methods to backup and restore IMS data on behalf of the IMS system. Copy blades are used to copy data at a storage volume level and at a data set level. IMS Recovery Expert supports the following copy blades:

- IBM FlashCopy
- IBM DFSMSdss
- EMC TimeFinder
- HDS ShadowImage

[Figure 8 on page 30](#) depicts the IMS Recovery Expert Data Copy Manager and its use of copy blades.
The copy blade and copy method used to perform IMS backup and restore operations are specified in the Backup Profile Options (see “Setting backup defaults and defining IMS systems and data sharing groups” on page 39). System Level Backup defaults should be set in consultation with your storage administrator. Copy blade usage specifications can be overridden to accommodate specific IMS System Level Backup requirements when creating or updating a System Level Backup profile (see Chapter 6, “Creating and maintaining System Level Backup profiles,” on page 115).

After the copy blade, copy method, and data consistency control mechanisms are specified in the backup profile, then IMS Recovery Expert will drive appropriate data copy services and fast-replication facilities through its respective copy blade interfaces to perform IMS backup or restore operations.

**Copy blade selection considerations**

Before configuring IMS Recovery Expert, it is important to consult with your storage administrator to determine the type of storage processors used in your IMS environment, and the preferred fast-replication facilities to use.

Knowing the type of storage processors and available fast-replication facilities allows you to determine which copy blade, which fast-replication method, and which data consistency mechanism to use for creating an IMS System Level Backup in your environment.

**IBM FlashCopy blade**

The IBM FlashCopy blade provides IMS Recovery Expert interface support for IBM FlashCopy. The FlashCopy blade uses the native IBM ANTRQST macro interface to invoke FlashCopy.

This method of invoking FlashCopy is very fast. It takes a very small amount of time to issue FlashCopy commands, which create a point-in-time copy of an IMS system at the volume level. All tracks are copied in the background for each
System Level Backup. The IMS Recovery Expert Log Suspend operation is used to ensure data consistency while FlashCopy commands are issued.

FlashCopy does not require the use of SMS or HSM. This reduces the complexity of the backup configuration.

FlashCopy V1 can be used to create full IMS System Level Backup and restore operations. However, FlashCopy V2 is required to perform application or database-level restore functions.

When using the FlashCopy blade, the IMS data must reside on FlashCopy capable storage subsystems, and the IMS System Level Backup profile must define identically-sized source and target volumes. In addition, the source and target volumes must both be in the same storage subsystem. Users can specify target volume ranges so there is no need to update a backup profile when IMS expands to new volumes.

FlashCopy commands issued through the FlashCopy blade interface make a backup of the IMS system volumes. The FlashCopy blade uses volume-based copy services to create an IMS System Level Backup, and it uses volume or data set copy services to restore IMS systems or application and databases respectively. Application or database recovery will be performed through DFSMSdss. DFSMSdss will use fast-replication if possible and will use host based I/O (slow copy) if the FlashCopy background copy process is not complete.

When using the FlashCopy blade, the backup target volumes are kept offline. IMS Recovery Expert will perform all the necessary commands to bring the volumes online when they are needed to copy the volumes to tape or to perform application recovery through DFSMSdss or FDR.

When IMS Recovery Expert needs to bring a backup volume online temporarily, it will relabel the backup volume, vary it online, and then read the data from the backup volume. Once the backup volume is no longer needed, IMS Recovery Expert will vary the volume offline and then relabel it to the original volume serial.

The IBM FlashCopy blade can support IBM, EMC and HDS storage processors when FlashCopy or FlashCopy emulation products are available for use. The FlashCopy blade can create System Level Backups for IMS systems that are spread across heterogeneous storage systems when all storage systems are using FlashCopy compatible fast-replication products.

**EMC TimeFinder copy blade**

The EMC TimeFinder copy blade is used to invoke EMC TimeFinder copy services.

The EMC TimeFinder copy blade supports the following EMC copy methods:
- TimeFinder/Mirror
- TimeFinder/Clone Mainframe Volume Snap
- TimeFinder/Snap Mainframe Data Set Snap
- TimeFinder/Snap Virtual Devices
- EMC Enginuity Consistency Assist

IMS Recovery Expert users should consult with their storage administrator to determine which EMC TimeFinder copy blade method is best for their
environment. Storage administrators should be consulted on the use of EMC Consistency Assist technology in their environment.

**EMC TimeFinder/Mirror copy method**

IMS Recovery Expert TimeFinder/Mirror copy method uses EMC TimeFinder/Mirror to make a Business Continuity Volume (BCV) backup of an IMS system. A BCV can be established as a mirror of a standard volume and synchronized with the standard volume. Once synchronization is established, then all data written to the standard volume is also written to the BCV. When the standard and BCV pairs representing the IMS systems are synchronized and IMS Recovery Expert requests an IMS System Level Backup to be created, then the currently established BCV pairs are split from their standard volumes. The data on the BCVs becomes the IMS point-in-time System Level Backup. The IMS system must be on EMC capable TimeFinder/Mirror storage processors.

TimeFinder/Mirror does not require SMS or HSM usage. This reduces the complexity of the backup configuration.

Standard volumes and BCVs must be the same model type (for example, 3380 or 3390) and have the same number of cylinders (for example, 3390-3 or 3390-9). In addition, the source and target volumes must be in the same physical Symmetrix storage subsystem. When IMS expands to new volumes, the backup profile must be updated to add new IMS source and BCV target units. If you have questions about your Symmetrix configuration or TimeFinder/Mirror usage, contact your EMC customer service representative.

When a backup profile is created that keeps more than one generation of BCV backups, then IMS Recovery Expert immediately establishes the next set of BCVs to the standard volumes representing the IMS system when each backup is taken. The second set of BCVs will become the next generation System Level Backup. BCV copies are incremental, so only the changed tracks are copied since the last time the BCVs were used to create a backup.

TimeFinder/Mirror can use EMC Consistency Assist Technology so an IMS log suspend operation is not required during the backup process. An IMS System Level Backup is complete and usable at the time the BCVs are split. If the BCVs have not fully synchronized when the backup is requested, IMS Recovery Expert can optionally wait for the copy process to complete before continuing.

IMS system level restore operations can be performed immediately after the backup is made. The TimeFinder/Mirror copy blade invokes a TimeFinder BCV Restore operation to restore IMS data. The Restore operation copies only the changed tracks made to the source IMS volumes since the backup was made.

IMS application and database recovery use EMC Snap data set to restore IMS data instantaneously. IMS data can be restored using EMC Snap data set without clipping and bringing the volumes online.

BCV volumes containing an IMS System Level Backup must be re-labeled and brought online before they can be offloaded to tape. IMS Recovery Expert will perform this process automatically.

Usage Requirements:
- EMC Symmetrix 6 and higher running with Microcode 5x67 or higher.
To use Enginuity Consistency Assist (ECA), Microcode 5x67 with patch 14882 or Microcode 5x68 with patch 18954 or Microcode 5x69 or higher is required. To use ECA with SNAP VOLUME technology, the EMC SNAP library must be level 5.5 or higher.

**Note:** IMS Recovery Expert performs a “Protected BCV restore” in order to preserve the BCV backup point when a BCV Restore operation is performed. The Protected Restore operation is not supported before Microcode 5x70. If any Symmetrix array is at a microcode level lower than 5x70, then a SNAP type restore will be performed to restore IMS data.

**EMC TimeFinder/Clone copy method**

IMS Recovery Expert uses EMC's TimeFinder/Clone Mainframe Volume Snap Facility (hereafter referred to as the SNAP utility) to create an IMS System Level Backup. The SNAP utility can be used to perform fast-replication for full volumes or for data sets. The IMS system must be on EMC capable TimeFinder/Clone storage processors.

TimeFinder/Clone does not require SMS or HSM usage. This reduces the complexity of the backup configuration.

To use IMS Recovery Expert, you must define source and target volumes to have identical volume size and model types. In addition, the source and target volumes must both be in the same Symmetrix storage subsystem. The target volumes can be either standard volumes or BCVs. Users can specify target ranges so there is no need to update a backup profile when IMS expands to new volumes.

TimeFinder/Clone Mainframe Volume Snap Facility can use EMC Consistency Assist Technology so an IMS log suspend operation is not required. EMC TimeFinder/Clone Mainframe Volume Snap can be performed in phases using a phased snap so performance implications to source volumes can be timed and mitigated. TimeFinder/Clone full volume snap operations are differential so only changed tracks are copied since the last backup was created.

IMS system restore operations need to wait until background copy processing is complete. Application and database restore operations use TimeFinder/Clone Mainframe Data Set Snap for instantaneous restore of IMS data sets. IMS restore operations using Date Set Snap need to wait until the System Level Backup background copy process is complete. Fast data set restore operations can be performed through Data Set Snap without re-labeling and bringing the backup volumes online.

**EMC TimeFinder/Snap virtual device usage**

EMC virtual devices provide for space efficient snap operations. IMS backup target volumes do not need a full backup volume for each source IMS volume. EMC Virtual devices use a "SAVE POOL" to store the original version of source data before it is changed and after the backup has been taken. This type of backup can significantly reduce the amount of backup space that is required.

Users can specify target ranges so there is no need to update a backup profile when IMS expands to new volumes. EMC Consistency Technology can be used so an IMS log suspend operation is not required. The IMS system must be on EMC capable TimeFinder/Snap storage processors with virtual device support.
TimeFinder/Snap does not require SMS or HSM usage. This reduces the complexity of the backup configuration.

The use of EMC virtual devices allows many IMS System Level Backup points to be created and saved on fast-replication disk. However, a true disk backup never exists; only the changed tracks since the last backup are stored in the save pool. Save pools must be monitored to ensure they do not fill up. The virtual device backup can be copied to tape, at which time a full backup of the IMS system is written to tape and can be used for any recovery purpose.

IMS system level restore operations are performed by snapping the virtual volumes back to their source volumes. Only the changed tracks since the backup was created are copied to restore the IMS data. Application and database restore operations copy data sets from the virtual device backup to their respective source volumes with DFSMSdss using host copy services.

**HDS ShadowImage copy blade**

The HDS ShadowImage copy blade supports HDS native ShadowImage volume copy processes. The copy process is very fast so IMS Log Suspend time is minimized.

ShadowImage fast-replication copies are incremental copies so only the changed tracks are copied since the last System Level Backup was created. The incremental process reduces the storage processor overhead associated with copying all the source tracks to the target device for each backup operation. The IMS Recovery Expert Log Suspend operation is used to ensure data consistency while ShadowImage commands are executed.

The HDS ShadowImage copy blade does not require the use of SMS or HSM. This reduces the complexity of the backup configuration.

The ShadowImage copy process requires that the source and target volumes be on the same storage processor. The ShadowImage copy blade supports three backup generations. The ShadowImage copy blade allows coordinated FlashCopy and ShadowImage copy methods to be used. That is, source IMS volumes located on HDS storage processors can use ShadowImage while other source volumes can use FlashCopy fast-replication facilities to perform an IMS System Level Backup operation.

IMS system recovery operations use ShadowImage to restore backup volumes. Application and database recovery operations are performed using DFSMSdss. DFSMSdss will use data set fast-replication, if available. If it is not available, or if the backup background copy process is not complete, it will use host based I/O (slow copy).

When using the ShadowImage copy blade, the target volumes are kept offline. IMS Recovery Expert will perform all the necessary commands to bring the volumes online when needed to copy the volumes to tape or to perform application recovery through DFSMSdss.

**IBM DFSMSdss copy blade**

The IMS Recovery Expert DFSMSdss copy blade can be used to create an IMS System Level Backup. The DFSMSdss copy blade uses the ADRDSSU interface specifying fast-replication (preferred). The copy blade will drive fast-replication
services if they are available and will use host based I/O copy methods if it is not. This copy blade interface can be used to drive data sets or volume based fast-replication facilities.

The IMS backup profile must define identical source and target volumes, as well as model types. The source and target volumes might or might not be FlashCopy capable. If the source and target volumes are all FlashCopy capable, then the IMS Recovery Expert Log Suspend operation is used to ensure data consistency while DFSMSdss commands are issued. Using DFSMSdss will require IMS logs to be suspended for a longer period of time due to the overhead of running the fast replication commands through the DFSMSdss interface. If any source or target volume is not FlashCopy capable, then IMS Recovery Expert requires the IMS system to be down to create the backup.

The DFSMSdss copy blade does not require SMS or HSM usage. This reduces the complexity of the backup configuration.

The DFSMSdss copy blade supports IBM FlashCopy on IBM storage processors and compatible FlashCopy products on EMC and HDS storage processors. It also supports SnapShot on STK or IBM Ramac storage processors. Invoking FlashCopy facilities using the ADRDSSU interface using fast-replication preferred is slower than using the IBM FlashCopy blade which uses the ANTRQST interface.

When using the DFSMSdss blade, the target volumes are kept online and therefore must all have unique volume labels. The z/OS data set placement rules must be set up so that the target units will not be used for new data sets or altered by other processes since they are kept online at all times.
Chapter 3. Configuring IMS Recovery Expert

This section describes the various steps necessary to configure IMS Recovery Expert. These steps include: defining the repository; configuring the ISPF CLIST; setting backup defaults; defining IMS Recovery Expert to your IMS systems and data sharing groups; setting the PARMLIB parameters that will control the various aspects of the backup and restore utilities; and enabling IMS Recovery Expert in your online and batch IMS environments.

Defining the repository and configuring the ISPF CLIST

IMS Recovery Expert provides a comprehensive metadata repository to record backup information. You must define this repository and configure the ISPF CLIST. All of the jobs that are required for these tasks are included as library members. Instructions on how to update the jobs for your environment are included in the members.

Procedure

1. Update the BSYCNTL member in the SBSYSAMP library and submit the job. This job creates the VSAM control file used by IMS Recovery Expert, which contains setup information for each IMS subsystem. Instructions are contained in the member.

2. Update the BSYREPO member in the SBSYSAMP library and submit the job. This job creates the VSAM KSDS repository files needed by the product to save control and execution information. Detailed instructions are contained in the member.

Note: In a data sharing environment, the IMS Recovery Expert repository must be on shared DASD that is seen by all members of the data sharing group.

3. If you plan to use the checkpoint restart capability for local application recovery, update the BSYCHKPT member in the SBSYSAMP library and submit the job. This job creates the VSAM KSDS repository file that is needed to save job execution information for checkpoint restart. Detailed instructions are contained in the member.

4. Add the program BSY$TSOC to the AUTHPGM and AUTHTSF sections of member IKJTSO00 in SYS1.PARMLIB. You can use MVS operator command SET IKJTSO=xx or TSO/E command PARMLIB UPDATE(xx) to make the change to IKJTSO00 effective dynamically. For more information on IKJTSO00, refer to the IBM for z/OS: Initialization and Tuning Guide.

5. Update the BSYV22 and BSYV220 members in the SBSYSAMP library. These members are used when launching the ISPF interface to IMS Recovery Expert. Detailed instructions are contained in the members.

6. Copy the following members from the SBSYSAMP library to your site's CLIST library:
   - BSYV22
   - BSYV220
   - BSYTSOC
   - BSYCAPS
7. Update the BSYGDG member in the SBSYSAMP library and submit the job. This job creates the GDG bases used to hold backups of the product’s VSAM repository files. Detailed instructions are contained in the member.

8. Optional: Update the BSY#PARM member. This member contains default values used when building backup, restore, recovery, and disaster recovery preparation jobs. The default values provided in this member may be sufficient; however, you can edit the parameters as described in the topic “(Optional) Configuring the PARMLIB member” on page 46.

9. The target load library SBSYLOAD must be APF authorized. Include the highlvl.SBSYLOAD library as part of your system APF authorized list. User access to certain functions can be regulated by security settings. The following table describes the profiles needed to control the IMS Recovery Expert functions for either a RACF® or ACF2 environment:

<table>
<thead>
<tr>
<th>Table 2. RACF profiles for authorization</th>
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<tbody>
<tr>
<td>Function</td>
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<tr>
<td>Access</td>
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<table>
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<tr>
<th>Table 3. ACF2 definitions for authorization</th>
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<tbody>
<tr>
<td>$KEY</td>
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<tr>
<td>BSY</td>
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</table>

A user cannot run a IMS Recovery Expert backup or restore utility if they are not granted READ access to the corresponding profile, or if the profile does not exist. If the specific Facility Class Profile does not exist, then the most granular generic Facility Class Profile will be applied in its place. For example, if BSY.ACCESS.ssid does not exist for an IMS Recovery Expert subsystem or group, but a generic Facility Class Profile name BSY.ACCESS.* exists, then the generic profile is used. Only authorization IDs with READ access to the profile is cleared by security checking.

10. Run the BSYV22 CLIST to access the ISPF interface.

**Adding TSO commands to the Command Limiting table**

If your site uses ACF2 to restrict TSO command use, you might need to add the TSO command(s) that IMS Recovery Expert uses to the ACF2 Command Limiting table.

**Procedure**

1. Determine if you must add TSO commands to the ACF2 Command Limiting table (if your site uses ACF2).

2. Add the following TSO command used by IMS Recovery Expert to the ACF2 Command Limiting table:
   - BSY$MAIN
Setting backup defaults and defining IMS systems and data sharing groups

Using the IMS Recovery Expert ISPF interface, you can configure default parameters and specify information about each IMS system that you plan to backup and restore.

Procedure
1. Issue the BSYV22 CLIST to access the ISPF interface.
2. Specify 0 (Administration) on the IMS Recovery Expert for z/OS main menu panel (BSYSMAIN) and press Enter.

   ![Administration Menu panel (BSYS$PNL0)](image)

3. Specify one of the following options on the Option line:
   - Specify 1 to specify defaults when creating a new backup profile or building a backup job.
   - Specify 2 to configure each IMS system on which you will be using IMS Recovery Expert.
   - Specify 3 to define IMS data sharing groups.
   - Specify 4 to define Db2 Recovery Expert for z/OS clist information.
   - Specify 5 to define system recovery profiles. For more information about System Recovery Profiles, see Chapter 13, “Recovering an IMS system using the IMS Recovery Expert disaster recovery feature,” on page 275 and "(Optional) Using system recovery profiles to recover groups of databases” on page 277.
   - Specify 6 to define Combined SLB groups. This option only appears if the Combined SLB feature has been activated. For more information about the Combined System Level Backup feature, see Chapter 10, “Performing a Combined System Level Backup,” on page 237.

(Optional) Setting default values for creating and building backup profiles

The values on the System Backup Profile Defaults panel are used as defaults when creating a new backup profile or building a backup job. These values are specific to the USERID that creates them; each user can set their own default values.
Procedure

1. Specify 1 on the Administration Menu panel (BSY$PLN0) and press Enter.

![System Backup Profile Defaults panel (BSY$PNL1)](image)

2. Specify the following values on the System Backup Profile Defaults panel (BSY$PNL1):

   **Backup Scope**
   
   Specify whether the backup type defaults to full (backup both data and logs) or data only (no logs).

   **Backup Generations**
   
   Specify the default number of backup generations. Valid values are from 1 - 99 for SNAP, FlashCopy, or DFSMSdss backups, and 1 - 8 for BCV backups. IMS Recovery Expert will determine the appropriate number of backup generations when the profile is created.

   **Offline Generations**
   
   Specify the default number of offline generations you want to keep in addition to backup generations. Valid values are from 0 - 99.

   **Backup Method**
   
   Specify the default type of target volume for the backup. Valid values are B for BCV, S for SNAP, F for FlashCopy, or L for DFSMSdss.

   **Issue Log Suspend**
   
   Specify Y or N as the default value for this field. This field determines if IMS Recovery Expert attempts to suspend the IMS log of any active IMS systems when creating a System Level Backup.

   **Validate Volumes**
   
   Specify Y or N as the default value for this field. This field determines whether the volumes in the profile are validated against current IMS volumes when a System Level Backup is going to be created.

   **Backup Repository**
   
   Specify Y or N as the default for whether the IMS Recovery Expert repository is backed up as part of the backup job.

   **Work File Unit Device**
   
   Specify the default work file unit device that will be used when generating utility JCL. Valid values are any tape or dasd esoteric unit.

3. Press Enter.

**Providing IMS system information**

The Register IMS Systems panel allows you to specify information for configuring each IMS system for which you plan to use IMS Recovery Expert.
1. Specify 2 on the Administration Menu panel (BSY$PLN0) and press Enter.

```
BSY$PNL2 V2R2  Register IMS Systems  2018/06/30 13:57:02
Option ==> 
Control File Information
  Current User Ind      ==> BSY     (From Startup Clist)
  IMS Control Dataset   ==> RSQA.BSY.CSLB.CONTROL
                       (Pre-allocated)

Enter IMS System Info:
  IMS Subsystem ID      ==> (1-4 Char Subsystem ID )
                       ( ? For Subsystem list)

Valid command selection values are:
1. IMS System Information
2. Included/Exclude Datasets in System Backup
```

**Figure 11. Register IMS Systems panel (BSY$PNL2)**

**Note:** If your IMS systems are members of a data sharing group, you must specify information for each member of the data sharing group individually on the IMS Recovery Expert setup panels.

2. On the Register IMS Systems panel (BSY$PNL2), review and specify information in the following sections.

Specify information in the following fields under the Control file information section:

**Current User Ind**

Display a user indicator that is specified in the CLIST used to start IMS Recovery Expert. This field is read only.

**IMS Control Data set**

Display the name of the control data set that holds setup information. This field is read only.

For each subsystem, specify the subsystem ID in the IMS Subsystem ID field. Then, specify the commands to complete the IMS System Information. Optionally, you can then identify IMS data sets to be excluded from the System Level Backup, or additional non-IMS system data sets to be included in the backup.

**Note:** If your IMS subsystems are members of a data sharing group, you must enter information for each member of the data sharing group individually on the IMS Recovery Expert setup panels.

3. Specify the subsystem you want to configure in the IMS Subsystem ID field. Either specify a 1-4 character subsystem ID or specify ? to choose from a subsystem list.
4. Specify 1 on the **Option** line and press Enter.

5. On the Parameters for IMS Subsystem ssid panel (BSY$PN2A), specify the following information:

   **IMS Started Task Name**
   Specify the IMS control region procedure name.

   **IMS PROCLIB DSN**
   Specify the PROCLIB data set name where the IMS Started Task JCL is located.

   **Description**
   Enter a user description of this IMS system.

   **IMS Task user parms**
   Enter any additional parameters that are specified on the START command to start the IMS subsystem. Leave this field blank if no additional parameters are specified.

   **IRLM Started Task Name**
   If IRLM is used by the IMS subsystem, specify the name of the procedure used to start the IRLM address space.

   **Resource Manager STC**
   If RM (Resource Manager) is used by the IMS subsystem, specify the name of the procedure used to start the RM address space.
Common Queue Server STC

If Shared Queues are used by the IMS subsystem, specify the name of the procedure used to start the CQS address space.

6. Press PF3 to exit this panel.

(Optional) Including/excluding data sets in System Level Backup

Specify additional data sets to be included or excluded from the System Level Backup. IMS Recovery Expert can discover IMS system and database data sets used in an online environment from the information entered in the IMS System Information. If there are data sets that are not used by an online environment, such as DBDLib or PSBLIB, then these data sets can explicitly be included in a System Level Backup.

Procedure

1. Specify the subsystem you want to configure in the IM Subsystem ID field.
2. Specify 2 on the Option line and press Enter.

The Update Datasets panel (BSY$BINU) displays the following fields:

Subsystem

The subsystem you specified on the Register IMS Systems panel in the IMS Subsystem ID field.

Cmd

The column in which to enter a line command. Specify A on the Cmd line preceding a data set to add a data set mask. Specify D on the Cmd line preceding a data set to delete a data set mask.

Include/Exclude

Indicates if the data sets are to be included or excluded.

DS Name

The data set name or data set mask.

Figure 14. Update Datasets panel (BSY$BINU)
CAUTION:
If using a data set mask, be sure not to specify a mask that will exclude an important IMS system or data base data set, or that will include additional data sets that are not wanted.

3. Specify A on the Cmd line preceding a data set to add a data set mask, or specify D on the Cmd line preceding a data set to delete a data set mask.

4. Press PF3 to exit this panel.

Defining groups for data sharing environments
IMS systems that belong to a data sharing environment must be defined to an IMS Group. After you have defined all of the IMS systems, the IMS Group Display panel allows you to: define a group with the IMS systems in a data sharing environment; view IMS Recovery Expert group names that have been created; and add a new IMS Recovery Expert group, delete or rename a IMS Recovery Expert group, or update system associations.

Procedure
1. Specify 3 on the Administration Menu panel (BSY$PLN0) and press Enter.

```
BSY$PLX0 V2R2  ********** IMS Group Display ********** 2018/06/30 13:57:20
Option ===>  Scroll ===>  Line Commands: A - Add D - Delete U - Update R - Rename

*************************** Bottom of Data ********************************
```

Figure 15. IMS Group Display panel (BSY$PLX0)

The IMS Group Display panel (BSY$PLX0) displays the following fields:

**Cmd** The column in which to specify a line command. On the line preceding the group you want to work with, specify A to add a new IMS Recovery Expert group, D to delete a IMS Recovery Expert group, U to update system associations, or R to rename a IMS Recovery Expert group.
- If you specify A to add a new group, the Enter New BSY Group name panel is displayed. On this panel, you can specify the new group name.

```
Figure 16. Enter New BSY Group name panel (BSY$PLX2)
```

- If you specify D to delete a group, the Delete Group Confirmation panel is displayed. On this panel, you can confirm or cancel the deletion.
If you specify R to rename or U to update a group, the Update SSIDs in a Group panel is displayed. On this panel, you can update the SSIDs in a group.

**Figure 17. Delete Group Confirmation panel (BSY$PLXC)**

- If you specify R to rename or U to update a group, the Update SSIDs in a Group panel is displayed. On this panel, you can update the SSIDs in a group.

**Figure 18. Update SSIDs in a Group panel (BSY$PLX1)**

- If you specify R to rename or U to update a group, the Update SSIDs in a Group panel is displayed. On this panel, you can update the SSIDs in a group.

**Group**

The IMS Recovery Expert group name. This is a user defined group name that must be unique in an IMS Recovery Expert environment. Also, a group name cannot be the same as an IMS SSID. Before a valid backup can be created, all IMS systems that participate in a data sharing environment must be added to the group.

**SSID #**

The number of IMS systems associated with the group.

2. Press Enter after specifying A, D, U, or R in the Cmd field, or press PF3 to exit this panel.

**Defining DB2 Recovery Expert for z/OS CLIST information**

The default CLIST information used by IMS Recovery Expert to connect to Db2 Recovery Expert for z/OS is specified during customization, but you can specify CLIST connection information for a different version of Db2 Recovery Expert to connect with during your current session.

**Procedure**

1. Specify 4 on the Administration Menu panel (BSY$PLN0) and press Enter.
2. On the Db2 CLIST Information panel (BSY$PNL5), specify the following values:

   **CLIST library name**
   Specify the library name in which the CLIST member for Db2 Recovery Expert for z/OS to which you want to connect resides.

   **CLIST member name**
   Specify the member name of the Db2 Recovery Expert for z/OS CLIST.

3. Press Enter, or press PF3 to exit this panel.

**What to do next**

Return to the Administration Menu panel (BSY$PNL0) to define system recovery profiles or Combined SLB groups.

- For more information about System Recovery Profiles, see Chapter 13, "Recovering an IMS system using the IMS Recovery Expert disaster recovery feature," on page 275 and "(Optional) Using system recovery profiles to recover groups of databases" on page 277.
- For more information about the Combined System Level Backup feature, see Chapter 10, “Performing a Combined System Level Backup,” on page 237.

**(Optional) Configuring the PARMLIB member**

The PARMLIB member supplied with IMS Recovery Expert provides settings that control various aspects of the product execution. Most of the default settings in the BSY#PARM member are suitable for most installations. If you do require a parameter change, refer to the tables in this section for information on the parameters, their settings, and the potential ramifications of changing the defaults. The PARMLIB member can be found in the SBSYSAMP(BSY#PARM) data set.

**General Parameters**

The following table provides information about general parameters.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PARMLIB_VERSION</td>
<td>This value identifies the PARMLIB member version to IMS Recovery Expert. This value defaults to the current version and should not be changed.</td>
<td>Do not change this parameter.</td>
</tr>
<tr>
<td>GENERATED_JOB_REGION</td>
<td>The job card REGION, in megabytes. Default: 6</td>
<td></td>
</tr>
</tbody>
</table>
**Table 4. General parameters (continued)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROUTE_ALL_ON_CONSOLE_CMDS</td>
<td>Valid values are Y(es) or N(o). Y prefixes all console commands with \texttt{RO *ALL}. If set to N, the prefix is not added. Default: Y</td>
<td>Only change this to N if your z/OS system is not part of a sysplex.</td>
</tr>
<tr>
<td>DASD_ALLOCATION_UNIT</td>
<td>The allocation unit to be used for dynamic allocations. Default: SYSDA</td>
<td></td>
</tr>
<tr>
<td>TEMP_DSN_ALIAS</td>
<td>The data set high level alias to be used for creating temporary data sets. The default is the TSO user ID of the job submitter. You can also enter a literal for this parameter. Default: JOBUSER</td>
<td></td>
</tr>
<tr>
<td>ITKBSRVR</td>
<td>Name of the IMS Tools Knowledge Base server, or XCF group, name. If specified, all reports will be written to the ITKB server. Default: None</td>
<td></td>
</tr>
<tr>
<td>BYPASS_VARY</td>
<td>Valid values are Y(es) or N(o). Controls whether devices will be varied offline to relabel the volume serial with ICKDSF. If Y is specified as the value for BYPASS_VARY, the devices will not be varied offline to relabel. Default: N</td>
<td>After creating a System Level Backup where the target volumes are in an SMS storage group, the volume serials need to be relabeled. Specifying Y for BYPASS_VARY can reduce the VARY commands that need to be issued.</td>
</tr>
</tbody>
</table>
| FCTOPPRCP | If a target volume is a primary device in a PPRC relationship, the following options are available:  
  • N - Do not allow the PPRC primary device to become a FlashCopy target.  
  • Y - The target volume and its paired volume can go into a duplex pending state.  
  • P - It is preferable that the target volume and its paired volume do not go into a duplex-pending state.  
  • R - It is required that the target volume and its paired volume do not go into a duplex-pending state.  
 Default: N | |

**Backup profiles setup utility parameters**

The following table provides information about backup profile setup utility parameters.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABEND_ON_ERRORS</td>
<td>Valid values are Y(es) or N(o). Y indicates the utility will issue a z/OS abend code if errors are issued will be the value specified for USER_ABEND_RETURN_CODE.</td>
<td>Default: N</td>
</tr>
<tr>
<td>USER_ABEND_RETURN_CODE</td>
<td>Valid values are 01-99. This parameter allows you to provide a user abend code if the ABEND_ON_ERRORS parameter is set to Y. If the ABEND_ON_ERRORS parameter is set to N, the program error return code is provided.</td>
<td>Default: 08</td>
</tr>
<tr>
<td>RELEASE_HELD_VOLUMES</td>
<td>Valid values are Y(es) or N(o). When set to Y, any held volumes encountered during the profile setup process are released. If set to N, if the profile setup process encounters any held volumes, IMS Recovery Expert marks the volume(s) unusable and produces an error.</td>
<td>Do not set RELEASE_HELD_VOLUMES to N and PLACE_BKUP_VOLS_ON_HOLD to Y. This will cause IMS Recovery Expert to produce an error when it encounters volumes placed on hold by the profile setup process.</td>
</tr>
<tr>
<td>PLACE_BKUP_VOLS_ON_HOLD</td>
<td>Valid values are Y(es) or N(o). When set to Y, the profile setup process will place all future target volumes on hold.</td>
<td>Do not set RELEASE_HELD_VOLUMES to N and PLACE_BKUP_VOLS_ON_HOLD to Y. This will cause IMS Recovery Expert to produce an error when it encounters volumes placed on hold by the profile setup process.</td>
</tr>
<tr>
<td>CLEAN_OLD_CONSIST_WINDOWS</td>
<td>Valid values are Y(es) or N(o). Y will clear any non-active ECA consistency windows. N will produce an error and end the profile setup process.</td>
<td></td>
</tr>
<tr>
<td>CLEAN_OLD_SNAP_SESSIONS</td>
<td>Valid values are Y(es) or N(o). If set to Y, inactive SNAP sessions that reside on this volume that are from other source volumes are cleaned (removed) before the profile setup process. If set to N, inactive SNAP sessions are not removed and the profile setup process will end with an error.</td>
<td></td>
</tr>
<tr>
<td>SYNC_ALL_BCV_GENERATIONS</td>
<td>Valid values are Y(es) or N(o). If set to Y, IMS Recovery Expert establishes all generations of target BCVs to their source volumes on the very first setup run of a profile.</td>
<td>This only affects the first time the profile setup process is run on the profile.</td>
</tr>
</tbody>
</table>
Table 5. Parameters that affect the backup profile setup utility (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAKE_READY_NOTREADY_DEVICES</td>
<td>Valid values are Y(es) or N(o). If set to Y, profile setup makes notready devices ready. N causes the utility to produce an error if notready devices are found. Default: Y</td>
<td>Do not set MAKE READY_ NOTREADY_DEVICES to N and MAKE_BKUP_VOLS_ NOTREADY to Y. This will cause IMS Recovery Expert to produce an error when it encounters volumes made not ready by the profile setup process.</td>
</tr>
<tr>
<td>MAKE_BKUP_VOLS_NOTREADY</td>
<td>Valid values are Y(es) or N(o). If set to Y, backup volumes are made not ready during profile setup. Default: Y</td>
<td>Do not set MAKE READY_ NOTREADY_DEVICES to N and MAKE_BKUP_VOLS_ NOTREADY to Y. This will cause IMS Recovery Expert to produce an error when it encounters volumes made not ready by the profile setup process.</td>
</tr>
</tbody>
</table>

Backup utility parameters

The following table provides information about backup utility parameters.

Table 6. Parameters that affect the backup utility

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABEND_ON_ERRORS</td>
<td>Valid values are Y(es) or N(o). Y indicates the utility will issue a z/OS abend code if errors are encountered. The abend code issued will be the value specified for USER_ABEND_RETURN_CODE. Default: N</td>
<td></td>
</tr>
<tr>
<td>USER_ABEND_RETURN_CODE</td>
<td>Valid values are 01-99. This parameter allows you to provide a user abend code if the ABEND_ON_ERRORS parameter is set to Y. If the ABEND_ON_ERRORS parameter is set to N, the program error return code is provided. Default: 08</td>
<td></td>
</tr>
<tr>
<td>WAIT_FOR_VOLUME_SYNC</td>
<td>Valid values are P(prompt), Y(es) or N(o). This parameter controls what the utility will do if any target BCVs have not synchronized to their source volumes at the time of backup. When set to P, the utility issues a WTOR. When set to Y, the utility automatically waits for the BCVs to synchronize. When set to N, the utility issues an error return code if the previous generation of BCVs has not yet fully synchronized. Default: Y</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
<td>Notes</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>PLACE_BKUP_VOLS_ON_HOLD</td>
<td>Valid values are Y(es) or N(o). If set to Y, the backup utility places the backup volumes on hold.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: Y</td>
<td></td>
</tr>
<tr>
<td>RELEASE_HELD_VOLUMES</td>
<td>Valid values are Y(es) or N(o). If set to Y, the next generation of target volumes will be released if they are held. If set to N, the backup utility will end with an error if the next generation of target volumes is held.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: Y</td>
<td></td>
</tr>
<tr>
<td>CLEAN_OLD_CONSIST_WINDOWS</td>
<td>Valid values are Y(es) or N(o). Y will clear any non-active ECA consistency windows. N will produce an error and end the backup.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: N</td>
<td></td>
</tr>
<tr>
<td>CLEAN_OLD_SNAP_SESSIONS</td>
<td>Valid values are Y(es) or N(o). If set to Y, inactive SNAP sessions that reside on this volume that are from other source volumes are cleaned (removed) before the backup. If set to N, inactive SNAP sessions are not removed and the backup will end with an error.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: N</td>
<td></td>
</tr>
<tr>
<td>CONSIST_TIME_OUT_SECONDS</td>
<td>Valid values are 01-256. This parameter sets the maximum number of seconds to suspend I/O on standard volumes during backup.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: 256</td>
<td></td>
</tr>
<tr>
<td>BKUP_VALID_ON_CONSIST_FAIL</td>
<td>Valid values are Y(es) or N(o). If set to Y, the backup will still be registered if a consistency window cannot be obtained, or the panel is closed before the split or SNAP completes.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: N</td>
<td></td>
</tr>
<tr>
<td>WAIT_FOR_VOL_OFFLINE_SECONDS</td>
<td>Valid values are 01-99. The number of seconds to wait for a volume to go offline.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: 05</td>
<td></td>
</tr>
<tr>
<td>WAIT_FOR_VOL_OFFLINE_RETRIES</td>
<td>Valid values are 01-99. The number of retries while waiting for a volume to go offline.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: 99</td>
<td></td>
</tr>
<tr>
<td>MAKE_READY_NOTREADY_DEVICES</td>
<td>Valid values are Y(es) or N(o). If set to Y, not-ready devices are made ready. If set to N, the utility produces an error if not-ready devices are found.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: Y</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
<td>Notes</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>MAKE_BKUP_VOLS_NOTREADY</td>
<td>Valid values are Y(es) or N(o). If set to Y, backup volumes are made not-ready.</td>
<td>Default: Y</td>
</tr>
<tr>
<td>ALLOW_SHARED_TARGET_VOLUMES</td>
<td>Valid values are Y(es) or N(o). Allow SNAP or Flash target volumes to be shared among different backup profiles.</td>
<td>Default: N</td>
</tr>
<tr>
<td>RECALL_MIGRATED_WAIT</td>
<td>Valid values are 01-99. Maximum number of minutes to wait for migrated data sets to be recalled.</td>
<td>Default: 15</td>
</tr>
<tr>
<td>RECALL_MIGRATED_DATA</td>
<td>Valid values are E(rror), I(gnore), or R(ecall). Indicates what action to take when migrated data sets are encountered. Error says that the backup should stop with an error return code. Ignore says that backup should continue without the migrated data sets. Recall says that an attempt should be made to recall the data sets prior to making the backup. Default: E</td>
<td>Note: IMS Recovery Expert will only check for migrated IMS data sets. Additional user data sets that are requested to be included in the System Level Backup should not be migrated if they need to be included in the System Level Backup.</td>
</tr>
<tr>
<td>SHADOW_IMAGE</td>
<td>Valid values are Y(es) or N(o). For HDS devices, controls whether ShadowImage or FlashCopy emulation will be used to perform fast-replication.</td>
<td>Default: N</td>
</tr>
<tr>
<td>BYPASS_NON_RECOV</td>
<td>Valid values are Y(es) or N(o). Controls whether volumes that contain only non-recoverable database data sets will be included in the System Level Backup.</td>
<td>Default: N</td>
</tr>
<tr>
<td>NOTIFY_IC_TYPE</td>
<td>Valid values are IC, UIC, or SMSIC. This determines the type of DBRC NOTIFY to do for image copies if 'Issue NOTIFY.IC' is set to 'Y' in the backup profile.</td>
<td>Default: IC</td>
</tr>
</tbody>
</table>
SNAP backup parameters

The following table provides information about SNAP backup parameters.

Table 7. Parameters that affect the SNAP backup

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX_RETURN_CODE</td>
<td>Valid values are 4/8/12/integer Specifies the maximum return code of all EMC SNAP commands before processing stops</td>
<td>Default: / (EMC default)</td>
</tr>
<tr>
<td>SNAP_WAIT</td>
<td>Valid values are Y(es) or N(o) If Y, the backup utility waits for the SNAP operation to complete before ending the job. If N, the backup utility can end while the SNAP operation completes the Symmetrix caches updates to the source volume until the SNAP operation is complete.</td>
<td>Default: Y</td>
</tr>
<tr>
<td>SNAP_WAIT_HOURS</td>
<td>If SNAP_WAIT is Y, the number of hours to wait for the SNAP operation to complete before continuing.</td>
<td>Default: 00</td>
</tr>
<tr>
<td>SNAP_WAIT_MINUTES</td>
<td>If SNAP_WAIT is Y, the number of minutes to wait for the SNAP operation to complete before continuing.</td>
<td>Default: 02</td>
</tr>
<tr>
<td>SNAP_WAIT(SECONDS)</td>
<td>If SNAP_WAIT is Y, the number of seconds to wait for the SNAP operation to complete before continuing.</td>
<td>Default: 30</td>
</tr>
<tr>
<td>MAX_ADRDSSU</td>
<td>This is the maximum number of address spaces that can be spawned.</td>
<td>Default: / (EMC default)</td>
</tr>
<tr>
<td>MAX_TASKS1</td>
<td>The maximum number of individual requests that can be attached and used.</td>
<td>Default: / (EMC default)</td>
</tr>
<tr>
<td>MAX_TASKS2</td>
<td>The maximum number of individual activities that can be performed within a single request.</td>
<td>Default: / (EMC default)</td>
</tr>
<tr>
<td>DEBUG_MODE</td>
<td>Valid values are A(ll), Trace), D(ump), Error) or X(tra). Sets the amount of information written for debugging to the BSYSNAPO DD.</td>
<td>Default: / (EMC default)</td>
</tr>
</tbody>
</table>
Table 7. Parameters that affect the SNAP backup (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEBUG_EXTENTS</td>
<td>Value values are Y(es) or N(o). Specifies whether DEBUG information about extents is to be included.</td>
<td>Default: / (EMC default)</td>
</tr>
<tr>
<td>TOLERATE_ENQ_FAILURES</td>
<td>This parameter allows a volume to be SNAPPED when exclusive serialization cannot be obtained. This parameter should be set to Y(es).</td>
<td>Default: / (EMC default)</td>
</tr>
<tr>
<td>COPY_VOLUME_ID</td>
<td>This parameter controls whether the volume serial number of the source volume gets copied to the target volume.</td>
<td>Default: Y</td>
</tr>
<tr>
<td>PHASED_SNAP</td>
<td>If set to Y, this parameter enables phased SNAP or SNAP group processing. This will break the actual EMC SNAP VOLUME command into separate phases. The purpose of this parameter is to improve performance and lessen the impact of the SNAP VOLUME commands on the storage array.</td>
<td>Default: N</td>
</tr>
<tr>
<td>SNAP_GROUP_PDS</td>
<td>If PHASED_SNAP is Y, this parameter must contain the name of a partitioned data set. It is recommended to use an extended PDS (a PDSE). This data set will be used internally to store the phased SNAP commands it needs to issue.</td>
<td></td>
</tr>
<tr>
<td>WAIT_FOR_BACKGROUND_COPY</td>
<td>If set to Y, IMS Recovery Expert will wait for background SNAPs to complete before letting the job complete.</td>
<td>Default: N</td>
</tr>
</tbody>
</table>

**BCV split utility parameters**

The following table provides information about BCV split utility parameters.

Table 8. Parameters that affect the BCV split utility.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCV_WAIT_SECONDS</td>
<td>Valid values are 01-99. The number of seconds to wait between each check for BCV split completion.</td>
<td>Default: 06</td>
</tr>
<tr>
<td>WAIT_RETRIES</td>
<td>Valid values are 01-99. The number of times to check for BCV split completion.</td>
<td>Default: 99</td>
</tr>
</tbody>
</table>
## Restore utility parameters

The following table provides information about restore utility parameters.

### Table 9. Parameters that affect the restore utility

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABEND_ON_ERRORS</td>
<td>Valid values are Y(es) or N(o). Y indicates the utility will issue a z/OS abend code if errors are encountered. The abend code issued will be the value specified for USER_ABEND_RETURN_CODE.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: N</td>
<td></td>
</tr>
<tr>
<td>USER_ABEND_RETURN_CODE</td>
<td>Valid values are 01-99. This parameter allows you to provide a user abend code if the ABEND_ON_ERRORS parameter is set to Y. If the ABEND_ON_ERRORS parameter is set to N, the program error return code is provided.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: 08</td>
<td></td>
</tr>
<tr>
<td>WAIT_FOR_VOL_OFFLINE_SECONDS</td>
<td>Valid values are 01-99. The number of seconds to wait for a volume to go offline.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: 06</td>
<td></td>
</tr>
<tr>
<td>WAIT_FOR_VOL_OFFLINE_RETRIES</td>
<td>Valid values are 01-99. The number of retries while waiting for a volume to go offline.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: 99</td>
<td></td>
</tr>
<tr>
<td>WAIT_FOR_VOL_ONLINE_SECONDS</td>
<td>Valid values are 01-99. The number of seconds to wait for a volume to go online.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: 06</td>
<td></td>
</tr>
<tr>
<td>WAIT_FOR_VOL_ONLINE_RETRIES</td>
<td>Valid values are 01-99. The number of retries while waiting for a volume to go online.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: 99</td>
<td></td>
</tr>
<tr>
<td>CLEAN_OLD_SNAP_SESSIONS</td>
<td>Valid values are Y(es) or N(o). If set to Y, inactive SNAP sessions that reside on this volume that are from other source volumes are cleaned (removed) before the restore. If set to N, inactive SNAP sessions are not removed and the restore will end with an error.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: Y</td>
<td></td>
</tr>
<tr>
<td>FORCE_SPLIT</td>
<td>Valid values are Y(es) or N(o). For BCV profiles, the current BCV generation will be split before the restore. If this parameter is set to Y, the FORCE parameter will be added to the split call.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: N</td>
<td></td>
</tr>
</tbody>
</table>
Table 9. Parameters that affect the restore utility (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERFORM_CHECKSUM</td>
<td>Valid values are Y(es) or N(o). If Y, a checksum operation will be performed on a restored volume to ensure it has not been altered since backup.</td>
<td>Default: N</td>
</tr>
<tr>
<td>CLEAR_CF_STRUCTURES</td>
<td>Valid values are Y(es) or N(o). If Y, a command is issued to clear the coupling facility structure for data sharing systems.</td>
<td>Default: Y</td>
</tr>
</tbody>
</table>

IMS recovery process parameters

The following parameters in the BSY#PARM member provide default values for the recovery options. These parameters provide default values for all IMS systems.

However, you can create unique, default recovery options for each IMS subsystem or IMS group by using the BSY#SSID member. Rename the BSY#SSID member so that the SSID portion of the name matches the IMS subsystem ID or IMS group ID as defined to IMS Recovery Expert. You can then tailor the default values for each BSY#SSID parameter to the specific IMS subsystem ID or IMS group ID. Using the ISPF interface, each time you create recovery options, IMS Recovery Expert looks for a BSY#SSID member where the SSID matches the SSID being processed. If the SSID being processed is a group, IMS Recovery Expert first looks for a BSY#SSID member where the SSID is the group name. If not found, then it will look for a member where SSID is one of the individual IMS subsystem IDs. If either is found, the recovery options specified are used as defaults for the specific IMS subsystem or IMS group ID. If not found, then the values in BSY#PARM are used.

Table 10. Parameters that affect an IMS recovery process

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS_DELDEF_DATASET</td>
<td>Data set that contains members for IDCAMS delete/define commands for database data sets.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: none</td>
<td></td>
</tr>
<tr>
<td>IMS_GENJCL_DATASET1</td>
<td>First data set in concatenation when any GENJCL function needs to be performed for a recovery process.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: none</td>
<td></td>
</tr>
<tr>
<td>IMS_GENJCL_DATASET2</td>
<td>Second data set in concatenation when any GENJCL function needs to be performed for a recovery process.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: none</td>
<td></td>
</tr>
<tr>
<td>IMS_GENJCL_DATASET3</td>
<td>Third data set in concatenation when any GENJCL function needs to be performed for a recovery process.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Default: none</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
<td>Notes</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>-------</td>
</tr>
<tr>
<td>IMS_GENJCL_DATASET4</td>
<td>Fourth data set in concatenation when any GENJCL function needs to be performed for a recovery process.</td>
<td>Default: none</td>
</tr>
<tr>
<td>IMS_GENJCL_DATASET5</td>
<td>Fifth data set in concatenation when any GENJCL function needs to be performed for a recovery process.</td>
<td>Default: none</td>
</tr>
<tr>
<td>IMS_GENJCL_DFLT_MBR</td>
<td>Specifies the default member name which must be located in one of the IMS_GENJCL_DATASET(1-5) data sets. The member contains default values which are used by the GENJCL process. If a member is specified, it is passed in the DEFAULTS() parameter for all GENJCL calls when recovery JCL is created.</td>
<td>Default: none</td>
</tr>
<tr>
<td>IMS_ITKBSRVR</td>
<td>Specifies the ITKB server name.</td>
<td>Default: ITKBSRVP</td>
</tr>
<tr>
<td>GENJCL_USER_RECOV_MEM</td>
<td>GENJCL member to use for the recovery function.</td>
<td>Default: BSYDRF</td>
</tr>
<tr>
<td>GENJCL_USER_FPIX_MEM</td>
<td>GENJCL member to use if the fast path secondary index function needs to be invoked.</td>
<td>Default: BSYFPSI</td>
</tr>
<tr>
<td>GENJCL_USER_HBIX_MEM</td>
<td>GENJCL member to use if the HALDB PINDEX/ILDS rebuild function needs to be invoked.</td>
<td>Default: BSYPREC0</td>
</tr>
<tr>
<td>GENJCL_USER_FFIX_MEM</td>
<td>GENJCL member to use if the index rebuild function needs to be invoked for non-fast path.</td>
<td>Default: BSYIIB</td>
</tr>
<tr>
<td>GENJCL_USER_CA_MEM</td>
<td>GENJCL member to use if the User Change Accumulation function needs to be invoked during recovery.</td>
<td>Default: BSYHPCA</td>
</tr>
<tr>
<td>GENJCL_USER_IC_MEM</td>
<td>GENJCL member to use if the Image Copy function needs to be invoked after a recovery function.</td>
<td>Default: BSYHPIC</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
<td>Notes</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>-------</td>
</tr>
<tr>
<td>IMS_RECOVERY_UTIL</td>
<td>The only valid value is Y to indicate recovery processing will be performed.</td>
<td>Default: Y (IMS)</td>
</tr>
<tr>
<td>IMS_INDEX_UTIL</td>
<td>Valid values are Y (Yes) and N (No). Specify whether index rebuild processing should be driven when recovery is performed.</td>
<td>Default: Y</td>
</tr>
<tr>
<td>IMS_CA_UTIL</td>
<td>Valid values are Y (Yes) and N (No). Specify whether change accumulation processing should be driven prior to driving recovery.</td>
<td>Default: Y</td>
</tr>
<tr>
<td>IMS_IC_UTIL</td>
<td>Valid values are Y (Yes) and N (No). Specify whether an image copy should be taken after recovery is performed.</td>
<td>Default: Y</td>
</tr>
<tr>
<td>IMS_DRFX_BPECFG</td>
<td>Specifies the name of the IMS Recovery Expert configuration member.</td>
<td>Default: IROBPECG</td>
</tr>
<tr>
<td>IMS_DRFX_IMSRECFG</td>
<td>Specifies the name of the BPE configuration member.</td>
<td>Default: IROCFCFG01</td>
</tr>
<tr>
<td>USE_FFIX_FOR_HALDB_RBLD</td>
<td>Valid values are Y (Yes) or N (No). Indicates whether to use the FFIX index rebuild utility to rebuild HALDB PINDEX/ILDS.</td>
<td>Default: Y(Yes)</td>
</tr>
<tr>
<td>INDEX_RBLD_WHEN_RECOV</td>
<td>Valid values are Y (Yes) or N (No). Indicates whether you want to have indexes which are set to be recovered rebuilt instead of recovered.</td>
<td>Default: Y(Yes)</td>
</tr>
<tr>
<td>HALDB_RBLD_ON_RECOV_TO_CURRENT</td>
<td>Valid values are Y (Yes) or N (No). Indicates whether you want to have HALDB ILDS/PINDEX rebuilt when a HALDB is recovered to current.</td>
<td>Default: Y(Yes)</td>
</tr>
</tbody>
</table>
| RECOVJOB_JOBNAME_METHOD | Valid values are 1 and 2. Specify the method that is used to create the jobnames for spawned recovery jobs.  
  * Specify 1 to suffix the TSO userid with a single character A-Z or 0-9, with each new job using a different character.  
  * Specify 2 to suffix the TSO userid with the single character T. | |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
</table>
| INCLUDE_IX_IN_RECOV_LIST      | Valid values are Y(es) or N(o).  
• Y indicates that when IMS Recovery Expert executes the GENJCL calls to build JCL and control cards for performing recovery, indexes will be processed and included in the recovery list.  
• N indicates that indexes will not be processed and are not included in the recovery list. |                                                                                                                                                                                                       |
| DR_LASTPITCA_AGE              | Specifies whether timestamp age validation is performed during the disaster recovery preparation job when a system recovery profile indicates the type of recovery is LASTPITCA. This parameter accepts a 2 digit number from 00-99.  
• A value of 00 turns validation off.  
• A value of 01 to 99 specifies a number of hours. During LASTPITCA validation, the newest PITCA for all CA groups in the profile is used as the coordinated recovery time. A check is done to make sure that this timestamp is not older than the number of hours specified. If it is, a warning message is issued. This verification only generates warning conditions and will not terminate the disaster recovery preparation job. |                                                                                                                                                                                                       |
| DR_LASTPITCA_RANGE            | Specifies whether time difference validation is performed during the disaster recovery preparation job when a system recovery profile indicates the type of recovery is LASTPITCA. This parameter accepts a 2 digit number from 00-99.  
• A value of 00 turns this validation off.  
• A value of 01 to 99 specifies a number of hours. During LASTPITCA validation, the time difference between the oldest and newest PITCA for all CA groups in the profile is checked and if the range is greater than the number of hours specified, a warning message is issued. This verification only generates warning conditions and will not terminate the disaster recovery preparation job. |                                                                                                                                                                                                       |
### Table 10. Parameters that affect an IMS recovery process (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
</table>
| DR_LASTIC_AGE     | Specifies whether timestamp age validation is performed during the disaster recovery preparation job when a system recovery profile indicates the type of recovery is LASTIC. This parameter accepts a 2 digit number from 00-99.  
  • A value of 00 turns this validation off.  
  • A value of 01 to 99 specifies a number of hours. During LASTIC validation, the newest batch IC for all objects in the profile is checked to make sure that the timestamp is not older than the number of hours specified. If it is, a warning message is issued. This verification only generates warning conditions and will not terminate the disaster recovery preparation job. |       |
| DR_LASTIC_RANGE   | Specifies whether time difference validation is performed during the disaster recovery preparation job when a system recovery profile indicates the type of recovery is LASTIC. This parameter accepts a 2 digit number from 00-99.  
  • A value of 00 turns this validation off.  
  • A value of 01 to 99 specifies a number of hours. During LASTIC validation, the time difference between the oldest and newest batch IC for all objects in the profile is checked and if the range is greater than the number of hours specified, a warning message is issued. This verification only generates warning conditions and will not terminate the disaster recovery preparation job. |       |

### Offload utility parameters

The following table provides information about Offload utility parameters.

**Table 11. Parameters that affect the Offload utility**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
</table>
| ABEND_ON_ERRORS    | Valid values are Y(es) or N(o). Y indicates the utility will issue a z/OS abend code if errors are encountered. The abend code issued will be the value specified for USER_ABEND_RETURN_CODE.  
  Default: N                                                   |       |
| ACTION_ON_WARNING  | Valid values are W (WTOR), C (Continue), or A (Abort). This value specifies the action to take when warnings occur during application recovery.  
  Default: C                                                   |       |
### Table 11. Parameters that affect the Offload utility (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS_SLB_ONLY</td>
<td>Valid values are Y (Yes) or N (No). This value indicates whether or not you want to perform SLB only processing during application recovery.</td>
<td>Default: N</td>
</tr>
<tr>
<td>USER_ABEND_RETURN_CODE</td>
<td>Valid values are 01-99. This parameter allows you to provide a user abend code if the ABEND_ON_ERRORS parameter is set to Y. If the ABEND_ON_ERRORS parameter is set to N, the program error return code is provided.</td>
<td>Default: 08</td>
</tr>
<tr>
<td>CLIP_PREFIX</td>
<td>The prefix to use when clipping volume serials during offload processing.</td>
<td>IMS Recovery Expert might need to temporarily clip (or change the volser of) the target volume to bring the target online.</td>
</tr>
</tbody>
</table>

### Disaster recovery parameters

The following table provides information about Disaster Recovery parameters.

### Table 12. Parameters that affect Disaster Recovery

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR_HEALTH_CHECK</td>
<td>Valid values are Y(Yes) or N(No). Indicates whether to run HCHECK after the Disaster Recovery utility.</td>
<td></td>
</tr>
<tr>
<td>GEN_VOLSERS_FOR_STEPLIB_DSNS</td>
<td>Valid values are Y(Yes) or N(No). Indicates whether to include VOLSER=volser on STEPLIB for the Disaster Recovery restoration jobs that include the IMS Recovery Expert load libraries.</td>
<td>Specify Y if the IMS Recovery Expert load library will be uncataloged at the Disaster Recovery site at the time that the IMS Recovery Expert jobs are run.</td>
</tr>
<tr>
<td>DR_RECALL_MIGRATED_WAIT</td>
<td>Valid values are 01-99. Indicates the maximum number of minutes to wait for migrated data sets to be recalled.</td>
<td>Default: 15</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
<td>Notes</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| DR_RECALL_MIGRATED_DATA         | Valid values are E(rror), I(gnore), or R(ecall). Indicates which action to take when migrated database data sets are encountered.  
  - Error indicates that the DR preparation job should stop with an error return code.  
  - Ignore indicates that DR preparation should continue without the migrated data sets.  
  - Recall indicates that an attempt should be made to recall the data sets prior to continuing with the DR preparation job.  
  Default: E                                                                                               |             |
| DR_DLIBATCH_OPTION              | Valid values are I(gnore), E(rror), or C(coordinated). Indicates what action to take when the DR preparation job encounters DLI batch jobs with databases authorized for higher than READ access and the DR Site Recovery Point is not set to B for Backup.  
  - Ignore indicates that the DR preparation job should continue processing and report on active DLI batch jobs with databases authorized for higher than READ access.  
  - Error indicates that the DR preparation job should terminate with an error if there are any active DLI batch jobs with databases authorized for higher than READ access.  
  - Coordinated indicates that if there are active DLI batch jobs with databases authorized for higher than READ access that are also connected to the associated Db2 subsystem, then the recovery timestamp will be reset to match the start time of the earliest DLI batch job if needed.  
  **Note:** When you specify Coordinated, the DR preparation job must execute on the same z/OS LPAR as the associated Db2 subsystem.  
  Default: I                                                                                               |             |
| DR_HISTORY_RETENTION            | Specify a number from 000-999 in days to keep history information related to DR preparations jobs in the repository. A value of 0 means that no history is retained.  
  Default: 0                                                                                               |             |
Application options parameters

The following table provides information about Application Options parameters.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SET_QUIESCE_TIMEOUT</td>
<td>Set the timeout value that is passed to IMS when the UPD DB or UPD AREA commands are executed for quiesce. If all of the databases cannot be quiesced in the specified time, the command is rejected with errors. Default: 5 seconds.</td>
<td></td>
</tr>
<tr>
<td>RECOV_CHKPT_RESTART</td>
<td>Valid values are Y(Yes) or N(No). Indicates whether you want checkpoint restart processing active for local application recovery jobs. If you set this parameter to Y(Yes), then you must also allocate the checkpoint restart repository (SBSYSAMP member BSYCHKPT) and update your BSYV220 invocation CLIST to include RBRCHKPT() to point to this data set. Default: N(No).</td>
<td></td>
</tr>
</tbody>
</table>

Enabling IMS Recovery Expert in online and batch IMS environments

IMS Recovery Expert must be added to the IMS control regions for the IMS systems that will be defined to IMS Recovery Expert. IMS Recovery Expert uses standard IMS exits to provide the functionality to suspend I/O for the duration of the System Level Backup.

Configuring IMS Tools Generic exit

You must install and configure the IMS Tools Generic Partner Exit and the IMS Tools Generic Logger Exit interface, which is distributed as part of the IMS Tools Generic exits included in IBM IMS Tools Base for z/OS.

About this task

The IMS Tools Generic Partner Exit and IMS Tools Generic Logger Exit interface is a general-purpose interface that allows multiple exits to be defined and called. As part of the installation and configuration for the IMS Tools Generic Partner Exit, you might have already performed the following steps. However, if these steps have not yet been completed, you need to complete them now before continuing.

Procedure

1. Create a unique GPR\text{iii}0 member for each IMS system in which IMS Recovery Expert is needed where \text{iii} is the 4-character IMS subsystem identifier.
2. Create a unique GLX\text{iii}0 member for each IMS system in which IMS Recovery Expert is needed where \text{iii} is the 4-character IMS subsystem identifier.
3. APF-authorize the executable load libraries for IMS Tools Generic exits.
4. Update your IMS control region JCL to include in the STEPLIB concatenation the executable load libraries for IMS Tools Generic exits.

What to do next

You can use the SBSYSAMP(BSYGPR) and SBSYSAMP(BSYGLX) sample members to set up IMS Tools Generic Partner Exit and Generic Logger Exit configuration members for each IMS system. For detailed instructions on how to add a configure these members, see the IMS Tools Base for z/OS: IMS Common Services User’s Guide.

Important: If you use any other user-defined, vendor partner, or logger exit that does not support IMS Tools Generic exits, you must ensure that the libraries that contain the DFSPPUE0 or DFSFLGX0 exits are concatenated ahead of the SGLXLOAD. Also, ensure that those exits pass control to the next exit in the STEPLIB so that IMS Tools Generic exits get control.

Making the IMS Recovery Expert load library available

You must also make additional IMS Recovery Expert modules available to the IMS control region and DL/I batch jobs.

Choose one of the following options:

- The IMS Recovery Expert library can be added to the STEPLIB for the control region and all DL/I batch jobs.
- The following modules can be copied to the IMS RESLIB:
  - BSYIMSOF
  - BSYIMSD1
  - BSYIMSE1
  - BSYIMSF1

Defining IMS Recovery Expert to IMS Tools Knowledge Base

If you want reports from IMS Recovery Expert to be saved in the IMS Tools Knowledge Base (ITKB), you must define IMS Recovery Expert to the IMS Tools Knowledge Base.

IMS Tools Knowledge Base is a component of IMS Tools Base for z/OS (program number 5655-v93). To define IMS Recovery Expert to IMS Tools Knowledge Base, modify and run the SBSYSAMP member BSYITKB. This job defines IMS Recovery Expert and all of its associated reports to IMS Tools Knowledge Base.

Defining RECONID members to IMS Tools Knowledge Base

To save reports from IMS Recovery Expert in the IMS Tools Knowledge Base (ITKB), you must define the necessary RECONID members to the IMS Tools Knowledge Base.

RECONID members identify each unique RECON environment. You can find detailed information about RECONID members and how to define them in the information about RECON administration in the IMS Tools Knowledge Base User’s Guide. See the information about RECON administration for an explanation of the RECONID member definition process.

Add a RECONID member for each RECON environment for which you will run IMS Recovery Expert.
Setting up for recovery

IMS Recovery Expert interfaces with the tools which are a part of the IMS Recovery Solutions Pack as well as any other vendor or user utilities when recovering a database or group of databases (application recovery), when restoring an entire IMS environment (system restore), or in a disaster recovery situation (disaster recovery). Before creating the profiles necessary to perform any of these recoveries, there are several setup tasks that must be done.

The setup tasks include:
• Setting the defaults for the recovery utilities to be used
• Identifying GENJCL libraries and creating skeletal members
• Identifying or creating a PDS with IDCAMS control statements to delete and define database data sets
• Building the SLB dynamic API environment

Setting defaults for recovery utilities

You can define to IMS Recovery Expert the utilities to invoke for the various recovery steps that might run to recover a database or index.

The recovery utilities that might be invoked are:
• a database recovery utility
• an index rebuild utility for full function, fast path, and HALDB
• a change accumulation utility
• an image copy utility

IMS Recovery Expert makes use of the DBRC GENJCL feature for building the jobs required for driving these utilities. As a result, IMS Recovery Expert can support any of the IMS Recovery Solutions Pack, base IMS, or other vendor utilities for these functions. You can define the default DBRC skeleton members and other parameters in the BSY#PARMLIB member (refer to "(Optional) Configuring the PARMLIB member" on page 46).

The following parameters in BSY#PARMLIB identify which utilities to invoke:

**IMS_RECOVERY_UTIL**
This parameter must be set to Y to indicate that a database recovery utility will be invoked as part of database recovery when needed.

**IMS_INDEX_UTIL**
This parameter specifies whether an index rebuild utility will be invoked during application recovery as needed. This setting includes index rebuild for all types of databases. Valid values are:
• Y - indicates that an index rebuild utility should be used
• N - indicates that an index rebuild utility should not be used

**IMS_CA_UTIL**
This parameter specifies whether a change accumulation utility will be invoked prior to database recovery. Valid values are:
• Y - indicates that a change accumulation utility should be used
• N - indicates that a change accumulation utility should not be used

**IMS_IC_UTIL**
Typically, an image copy needs to be run after a recovery has been
performed. This parameter specifies whether an image copy utility will be invoked after database recovery has completed. Valid values are:

- **Y** - indicates that an image copy utility should be used
- **N** - indicates that an image copy utility should not be used

The values specified in the BSY#PARM member are the defaults that are used when creating a new application profile, system restore profile, or disaster recovery profile but each value may be overridden in any of the specific profiles.

### Identifying GENJCL libraries and skeletal members

IMS Recovery Expert invokes the DBRC GENJCL function to generate the JCL necessary to run the steps in a recovery process. The PDS data sets where your GENJCL members exist need to be specified to IMS Recovery Expert.

Up to 5 PDS libraries can be specified. The parameters in the BSY#PARM member that identify these libraries are:

- **IMS_GENJCL_DATASET1**
- **IMS_GENJCL_DATASET2**
- **IMS_GENJCL_DATASET3**
- **IMS_GENJCL_DATASET4**
- **IMS_GENJCL_DATASET5**

The GENJCL libraries specified in the BSY#PARM member are the default data sets to use when a new application, system restore, or disaster recovery profile is used. You can also override these values in any individual profile.

### Creating GENJCL skeletal members

The GENJCL members that are used by IMS Recovery Expert include special control cards which do not exist in the DBRC GENJCL language. This is done because IMS Recovery Expert might make multiple GENJCL calls when generating each utility, and the DBRC GENJCL language capabilities do not support all the necessary functionality. The types of calls that can be made for each utility are shown in "GENJCL calls by utility" on page 68. For each utility, each of these calls have a GENTYPE and GENPHAS which is specific to the function being performed and the symbols passed. To allow you to tailor your GENJCL skeletons to your utilities needs, you can indicate which of these calls you want to process and the JCL or control cards to generate for the call. This is done by enclosing the GENJCL statements within a **GENJCL_BEGIN/GENJCL_END** block. The format of these statements is:

```
GENJCL_BEGIN
  GENTYPE=type
  GENPHAS=phase
GENJCL_END
```

This indicates the beginning of a series of JCL or control cards that are to be processed for the GENJCL call when the GENTYPE and GENPHAS variables match the type and phase specified on the control card.

```
GENJCL_END
```

This indicates the end of the block for the prior GENJCL_BEGIN.

Refer to "GENJCL calls by utility" on page 68 to tailor your GENJCL skeletons to meet the needs of your utility. When IMS Recovery Expert makes a GENJCL call, it will only process the statements within the **GENJCL_BEGIN/GENJCL_END** block.
that matches the GENTYPE and GENPHAS. If a GENJCL_BEGIN/GENJCL_END block is not coded for a GENTYPE/GENPHAS call, then that GENJCL call is skipped.

IMS Recovery Expert also provides skeletal members that will list the variables and values passed on each call. These members can be useful for tailoring your own skeletal members for other vendor utilities. The members are:

<table>
<thead>
<tr>
<th>Function</th>
<th>Member</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recovery</td>
<td>BSYLISRV</td>
<td>Provides listing capabilities for each GENJCL call made when building the recovery jobs</td>
</tr>
<tr>
<td>Recovery</td>
<td>BSYIMSRV</td>
<td>Executes the base IMS Recovery utility</td>
</tr>
<tr>
<td>Recovery</td>
<td>BSYDRF</td>
<td>Executes the IBM IMS Database Recovery Facility utility</td>
</tr>
<tr>
<td>Image Copy</td>
<td>BSYLISIC</td>
<td>Provides listing capabilities for each GENJCL call made when building the image copy jobs</td>
</tr>
<tr>
<td>Image Copy</td>
<td>BSYIMSIC</td>
<td>Executes the base IMS Image Copy utility</td>
</tr>
<tr>
<td>Image Copy</td>
<td>BSYHPIC</td>
<td>Executes the IBM IMS High Performance Image Copy utility</td>
</tr>
<tr>
<td>FF Index Rebuild</td>
<td>BSYLISIX</td>
<td>Provides listing capabilities for each GENJCL call made when building the index rebuild jobs</td>
</tr>
<tr>
<td>FF Index Rebuild</td>
<td>BSYIIB</td>
<td>Executes the IBM IMS Index Builder utility</td>
</tr>
<tr>
<td>FP Index Rebuild</td>
<td>BSYLISFP</td>
<td>Provides listing capabilities for each GENJCL call made when building fast path secondary index rebuild jobs</td>
</tr>
<tr>
<td>FP Index Rebuild</td>
<td>BSYFPSI</td>
<td>Executes the IBM IMS Fast Path Secondary Index utility</td>
</tr>
<tr>
<td>HALDB Rebuild</td>
<td>BSYLISFP</td>
<td>Provides listing capabilities for each GENJCL call made when building HALDB PINDEX or ILDS jobs</td>
</tr>
<tr>
<td>HALDB Rebuild</td>
<td>BSYPREC0</td>
<td>Executes the IMS HALDB PINDEX/ILDS utility (DFSPREC0)</td>
</tr>
<tr>
<td>HALDB Rebuild</td>
<td>BSYIIB</td>
<td>Executes the IBM IMS Index Builder utility (See Note [1] on page 67 below)</td>
</tr>
<tr>
<td>Change Accumulation</td>
<td>BSYLISCA</td>
<td>Provides listing capabilities for each GENJCL call made when building change accumulation jobs</td>
</tr>
</tbody>
</table>
### Function | Member | Purpose
--- | --- | ---
Change Accumulation | BSYIMSCA | Executes the IMS Change Accumulation utility
Change Accumulation | BSYHPCA | Execute the IBM IMS High Performance Change Accumulation utility

#### Notes:
1. The BSYIIB member can be used to execute the IBM IMS Index Builder for rebuilding HALDB PINDEX/ILDS, but only when you specify **Use FF for HALDB** as the **Execute Index Rebuild** recovery option. BSYIIB will not function properly if you specify **HALDB GENJCL member name** as the **Execute Index Rebuild** recovery option.

For the IMS Recovery Solution Pack utilities, IMS Recovery Expert uses the GENJCL.USER command to process the skeletal members. All of the documented symbolic keywords in the DBRC reference guides are supported for the specific GENJCL.USER function that is invoked by IMS Recovery Expert.

For user utilities, IMS Recovery Expert performs the various GENJCL functions as described in the section titled **“GENJCL calls by utility”** on page 68.

### Defining GENJCL skeletal member names

You can also specify the default GENJCL skeletal member to invoke for each utility that might need to be run. The following parameters in the BSY#PARM member specify the default skeletal members:

**GENJCL_USER_RECOV_MEM**
Specifies the GENJCL member to be used for performing database recovery.

**GENJCL_USER_FFIX_MEM**
Specifies the GENJCL member to be used for performing full function index rebuild. This member is also used if the BSY#PARM or recovery options parameter "USE_FFIX_FOR_HALDB_RBLD" is set to Y.

**GENJCL_USER_FPIX_MEM**
Specifies the GENJCL member to be used for performing fast path secondary index rebuild.

**GENJCL_USER_HBIX_MEM**
Specifies the GENJCL member to be used for performing HALDB PINDEX and ILDS rebuild. This member is not used if the BSY#PARM or recovery options parameter "USE_FFIX_FOR_HALDB_RBLD" is set to Y.

**GENJCL_USER_CA_MEM**
Specifies the GENJCL member to be used for performing change accumulation.

**GENJCL_USER_IC_MEM**
Specifies the GENJCL member to be used for creating post recovery image copies.

For each of these utilities, you only need to specify a member for the utilities that were specified in **“Setting defaults for recovery utilities”** on page 64 or that might be overridden in a profile.
The GENJCL skeletal members specified in the BSY#PARM member are the default members to use when a new application, system restore, or disaster recovery profile is used. You can also override these values in any individual profile.

**GENJCL calls by utility**

When IMS Recovery Expert needs to create JCL to execute one of the defined utilities, it makes one or more GENJCL calls using the GENJCL skeleton member that you specified. All documented symbolic keywords in the DBRC reference guides are supported by each of these calls. In addition, IMS Recovery Expert passes the symbolic keywords listed in the tables below on the DBRC GENJCL USERKEYS keyword.

For each call, IMS Recovery Expert sets two special keywords that indicate the type and phase of the call. The call type is specified by the GENTYPE keyword and indicates the type of call that is being made. The call phase is specified by the GENPHAS keyword and indicates the phase of the call that is being made. The GENTYPE value varies by utility. The GENPHAS value is one of the following:

- **CTL** – indicates that this is a control type call; currently only passed on GENTYPE=START and GENTYPE=END
- **JCL** – indicates that this is a JCL type call; this is passed on the calls when JCL would be created by GENJCL
- **SYSIN** – indicates that this is a SYSIN or control card type call; this is passed on the calls when SYSIN or control card input would be created by GENJCL

For each utility shown below, each possible call and the passed symbolic keywords and values are listed and can be used to generate your own GENJCL skeletons. See “Creating GENJCL skeletal members” on page 65 for more details on how to build your own GENJCL skeletons.

**Recovery Utility**

The possible GENJCL calls made when processing the recovery utility and their order are shown below.

*Table 14. Recovery Utility: GENJCL calls*

<table>
<thead>
<tr>
<th>GENJCL Function</th>
<th>Called</th>
<th>Symbolic Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENJCL.USER</td>
<td>Once</td>
<td>GENTYPE</td>
<td>START</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>CTL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSID</td>
<td>ssid / grpname</td>
</tr>
<tr>
<td><strong>GENJCL Function</strong></td>
<td><strong>Called</strong></td>
<td><strong>Symbolic Keyword</strong></td>
<td><strong>Value</strong></td>
</tr>
<tr>
<td>---------------------</td>
<td>------------</td>
<td>----------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once</td>
<td>GENJCL.USER</td>
<td>PIT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.USER</td>
<td>JCL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.USER</td>
<td>yyyyddd</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.USER</td>
<td>yyyyddd</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.USER</td>
<td>hhmmsst</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.USER</td>
<td>‘CURRENT’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.USER</td>
<td>yyyydddhhmmssthiiju</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.USER</td>
<td>yyyydddhhmmsst</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.USER</td>
<td>PITR [NOCHECK]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.USER</td>
<td>TSR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.USER</td>
<td>CURRENT</td>
</tr>
<tr>
<td></td>
<td>Once per CAGRP</td>
<td>GENJCL.USER</td>
<td>CAGROUP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.USER</td>
<td>JCL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.USER</td>
<td>cagrpnm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.USER</td>
<td>1-99999</td>
</tr>
<tr>
<td></td>
<td>Once per RECOVGRP</td>
<td>GENJCL.USER</td>
<td>RCVGROUP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.USER</td>
<td>JCL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.USER</td>
<td>Rcvgrpnm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.USER</td>
<td>1-99999</td>
</tr>
<tr>
<td></td>
<td>Once per DBDS</td>
<td>GENJCL.RECOV</td>
<td>RECOV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.RECOV</td>
<td>JCL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.RECOV</td>
<td>ssid / grpname</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.RECOV</td>
<td>FF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.RECOV</td>
<td>FP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.RECOV</td>
<td>PP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.RECOV</td>
<td>HALDB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.RECOV</td>
<td>dbdname</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.RECOV</td>
<td>HALDB master</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.RECOV</td>
<td>dbdname</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.RECOV</td>
<td>dbname</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.RECOV</td>
<td>FF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.RECOV</td>
<td>FP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENJCL.RECOV</td>
<td>HALDB</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>GENJCL Function</th>
<th>Called</th>
<th>Symbolic Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENJCL.USER</td>
<td>Once</td>
<td>GENTYPE</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSID</td>
<td>ssid / grpname</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once per</td>
<td>GENTYPE</td>
<td>CAGROUP</td>
</tr>
<tr>
<td></td>
<td>CAGRP</td>
<td>GENPHAS</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td>(See Note 1</td>
<td>GRPNAME</td>
<td>cagrpnm</td>
</tr>
<tr>
<td></td>
<td>on page 71</td>
<td>GRPNO</td>
<td>1-99999</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once per</td>
<td>GENTYPE</td>
<td>RCVGROUP</td>
</tr>
<tr>
<td></td>
<td>RECOVGRP</td>
<td>GENPHAS</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td>(See Note 1</td>
<td>GRPNAME</td>
<td>Revgrpnm</td>
</tr>
<tr>
<td></td>
<td>on page 71</td>
<td>GRPNO</td>
<td>1-99999</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once per</td>
<td>GENTYPE</td>
<td>DATASET</td>
</tr>
<tr>
<td></td>
<td>DBDS</td>
<td>GENPHAS</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td>(See Note 2</td>
<td>DBNAME</td>
<td>dbdname</td>
</tr>
<tr>
<td></td>
<td>on page 71</td>
<td>MDBNAME</td>
<td>HALDB master dbdname</td>
</tr>
<tr>
<td></td>
<td>(See Note 4</td>
<td>DBDDN</td>
<td>ddbname</td>
</tr>
<tr>
<td></td>
<td>on page 71</td>
<td>DBTYPE</td>
<td>FF</td>
</tr>
<tr>
<td></td>
<td>(See Note 3</td>
<td>ICRCVD</td>
<td>FFY</td>
</tr>
<tr>
<td></td>
<td>on page 71</td>
<td></td>
<td>FPY</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>HDY</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once</td>
<td>GENTYPE</td>
<td>PIT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PITDAT7</td>
<td>yyyymmmdd</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PITDATE</td>
<td>yyydd</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PITTIME</td>
<td>hhmmsst</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RCVTIME</td>
<td>‘CURRENT’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RCVTYPE</td>
<td>yydddhhmmsssthjiju</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>yydddhhmmssst</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PITR [.NOCHECK]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TSR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CURRENT</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once</td>
<td>GENTYPE</td>
<td>END</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>CTL</td>
</tr>
</tbody>
</table>
Notes:

1. The CAGRP and RECOVGRP calls are made only when the CAGRP or RECOVGRP name were actually included in the application profile. However, if SLB image copies are used as input into recovery, this process is performed at the data set level so that the ICRCVD symbolic can be set, indicating that IMS Recovery Expert has already recovered the data set. Also, on restart, even if these groups were included in the application profile, it is possible that these calls are not made if some of the DBDSs in the group were previously image copied. In that case, the group calls are skipped so that the entire group is not reprocessed.

2. When a CAGRP or RECOVGRP was included in the application profile and a GENTYPE for CAGRP or RECOVGRP is done for all members in the group, the DATASET call is not made for those DBDSs that were processed as part of the group calls.

3. The ICRCVD symbolic is used to indicate whether IMS Recovery Expert already recovered the database from an image copy and, as a result, the recovery utility can skip that process. The values for this variable and their meaning are:
   - FFY – database is FF and image copy was restored
   - FFN – database is FF and image copy was not restored
   - FPY – database is FP and image copy was restored
   - FPN – database is FP and image copy was not restored
   - HDY – database is HALDB and image copy was restored
   - HDN – database is HALDB and image copy was not restored

4. If the setting in the Execute Recovery options for "Include indexes in recovery list" is set to N, then this call will not be made for any FF, FP, or HALDB primary or secondary indexes.

Full Function Index Build Utility

The possible GENJCL calls made when processing the Full Function Index Build utility and their order are shown below.

**Table 15. Full Function Index Build Utility: GENJCL calls**

<table>
<thead>
<tr>
<th>GENJCL Function</th>
<th>Called</th>
<th>Symbolic Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENJCL.USER</td>
<td>Once per each DB with associated indexes</td>
<td>GENTYPE</td>
<td>START</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>CTL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSID</td>
<td>ssid / grpname</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once per each DB with associated indexes</td>
<td>GENTYPE</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSID</td>
<td>ssid / grpname</td>
</tr>
<tr>
<td>GENJCL Function</td>
<td>Called</td>
<td>Symbolic Keyword</td>
<td>Value</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------</td>
<td>------------------</td>
<td>-------</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once for all FF secondary indices if IXSEL=ALL.</td>
<td>GENTYPE</td>
<td>FFSIX</td>
</tr>
<tr>
<td></td>
<td>Once for each FF secondary index if IXSEL=SELECTED</td>
<td>GENPHAS</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PRIMDBD</td>
<td>primary dbdname</td>
</tr>
<tr>
<td></td>
<td></td>
<td>INDXDBD</td>
<td>index dbdname or ‘ALL’ if IXSEL=ALL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IXTYPE</td>
<td>FFSIX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IXSEL</td>
<td>ALL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IXMORE</td>
<td>Y if more indexes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IXNUM</td>
<td>N on last (or only) index</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1-99999 (index counter within the DB)</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once for each FF primary index</td>
<td>GENTYPE</td>
<td>FFPIX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PRIMDBD</td>
<td>primary dbdname</td>
</tr>
<tr>
<td></td>
<td></td>
<td>INDXDBD</td>
<td>index dbdname</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IXTYPE</td>
<td>FFPIX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IXSEL</td>
<td>N/A (blanks)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IXMORE</td>
<td>Y if more indexes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IXNUM</td>
<td>N on last (or only) index</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1-99999 (index counter within the DB)</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once for all HALDB secondary indices if IXSEL=ALL.</td>
<td>GENTYPE</td>
<td>HBSIX</td>
</tr>
<tr>
<td></td>
<td>Once for each HALDB secondary index if IXSEL=SELECTED</td>
<td>GENPHAS</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PRIMDBD</td>
<td>primary dbdname</td>
</tr>
<tr>
<td></td>
<td></td>
<td>INDXDBD</td>
<td>index dbdname or ‘ALL’ if IXSEL=ALL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IXTYPE</td>
<td>HBSIX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IXSEL</td>
<td>ALL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IXMORE</td>
<td>Y if more indexes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IXNUM</td>
<td>N on last (or only) index</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1-99999 (index counter within the DB)</td>
</tr>
</tbody>
</table>
### Table 15. Full Function Index Build Utility: GENJCL calls (continued)

<table>
<thead>
<tr>
<th>GENJCL Function</th>
<th>Called</th>
<th>Symbolic Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENJCL.USER</td>
<td>Once for all HALDB ILDS partitions if IXSEL=ALL.</td>
<td>GENTYPE, GENPHAS, PRIMDBD, INDXDBD, IXTYPE, IXSEL</td>
<td>HBILDS, SYSIN, primary dbdname, index dbdname, HBILDS, ALL</td>
</tr>
<tr>
<td></td>
<td>Once for each HALDB ILDS partitions if IXSEL=SELECTED</td>
<td>IXMORE (See Note 1 below) IXNUM</td>
<td>Y if more indexes, N on last (or only) index, 1-99999 (index counter within the DB)</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once for each HALDB primary index if FF index rebuild is being used for HALDB</td>
<td>GENTYPE, GENPHAS, PRIMDBD, INDXDBD, IXTYPE, IXSEL</td>
<td>HBPIX, SYSIN, primary dbdname, index dbdname, HBPIX, N/A (blanks)</td>
</tr>
<tr>
<td></td>
<td>IXMORE (See Note 1 below) IXNUM</td>
<td>Y if more indexes, N on last (or only) index, 1-99999 (index counter within the DB)</td>
<td></td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once per each DB with associated indexes</td>
<td>GENTYPE, GENPHAS</td>
<td>END, CTL</td>
</tr>
</tbody>
</table>

**Notes:**

1. The IXMORE symbolic keyword is set to Y if there are more indexes within the specify GENTYPE and GENPHASE call. For example, if a FF database has multiple secondary indices and the IXSEL is selected, then there will be a GENTYPE=FFSIX, GENPHAS=SYSIN call for each secondary index. IXMORE will be set to Y to indicate that more calls will be made, or N to indicate the last call. This variable can be used when creating a series of indexes, which must be separated by a comma and closed with a parenthesis on the last occurrence.

**Fast Path Secondary Index Build Utility**

The possible GENJCL calls made when processing the Fast Path Index Build utility and their order are shown below. This series of calls is made for each DB that has secondary indices.
### Table 16. Fast Path Secondary Index Build Utility: GENJCL calls

<table>
<thead>
<tr>
<th>GENJCL Function</th>
<th>Called</th>
<th>Symbolic Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENJCL.USER</td>
<td>Once per each DB with associated indexes</td>
<td>GENTYPE</td>
<td>START</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>CTL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSID</td>
<td>ssid / grpname</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once per each DB with associated indexes</td>
<td>GENTYPE</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSID</td>
<td>ssid / grpname</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once for each FP secondary index</td>
<td>GENTYPE</td>
<td>FPSIX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PRIMDBD</td>
<td>primary dbdname</td>
</tr>
<tr>
<td></td>
<td></td>
<td>INDXDBD</td>
<td>index dbdname</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IXTYPE</td>
<td>FPSIX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IXMORE</td>
<td>Y if more indexes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IXNUM</td>
<td>N on last (or only) index</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1-99999 (index counter within the DB)</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once per each DB with associated indexes</td>
<td>GENTYPE</td>
<td>END</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>END</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CTL</td>
</tr>
</tbody>
</table>

### HALDB Primary Index / ILDS Build Utility

The possible GENJCL calls made when processing the HALDB Primary Index / ILDS utility and their order are shown below.

### Table 17. HALDB Primary Index / ILDS Build Utility: GENJCL calls

<table>
<thead>
<tr>
<th>GENJCL Function</th>
<th>Called</th>
<th>Symbolic Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENJCL.USER</td>
<td>Once for each HALDB partition</td>
<td>GENTYPE</td>
<td>START</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>CTL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSID</td>
<td>ssid / grpname</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once for each HALDB partition</td>
<td>GENTYPE</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSID</td>
<td>ssid / grpname</td>
</tr>
</tbody>
</table>
Table 17. HALDB Primary Index / ILDS Build Utility: GENJCL calls (continued)

<table>
<thead>
<tr>
<th>GENJCL Function</th>
<th>Called</th>
<th>Symbolic Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENJCL.USER</td>
<td>Once for each partition</td>
<td>GENTYPE</td>
<td>HALDB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>SYIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MDBNAME</td>
<td>HALDB master dbdname</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PART</td>
<td>partition name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BUILD</td>
<td>ILE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>INDEX</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>BOTH</td>
</tr>
</tbody>
</table>

GENJCL.USER

Once for each HALDB partition

<table>
<thead>
<tr>
<th>GENJCL Function</th>
<th>Called</th>
<th>Symbolic Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENJCL.USER</td>
<td>Once</td>
<td>GENTYPE</td>
<td>END</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>CTL</td>
</tr>
</tbody>
</table>

Change Accumulation Utility

The possible GENJCL calls made when processing the Change Accumulation utility and their order are shown below.

Table 18. Change Accumulation Utility: GENJCL calls

<table>
<thead>
<tr>
<th>GENJCL Function</th>
<th>Called</th>
<th>Symbolic Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENJCL.USER</td>
<td>Once</td>
<td>GENTYPE</td>
<td>START</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>CTL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSID</td>
<td>ssid / grpname</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once for each CAGRP</td>
<td>GENTYPE</td>
<td>SORT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>JCL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CAGRP</td>
<td>cagrpnm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CAGRPNO</td>
<td>1-99999</td>
</tr>
<tr>
<td>GENJCL.CA</td>
<td>Once for each CAGRP</td>
<td>GENTYPE</td>
<td>CA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>JCL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GRPNAME</td>
<td>cagrpnm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CAGRPNO</td>
<td>1-99999</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once</td>
<td>GENTYPE</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSID</td>
<td>ssid / grpname</td>
</tr>
</tbody>
</table>
Table 18. Change Accumulation Utility: GENJCL calls (continued)

<table>
<thead>
<tr>
<th>GENJCL Function</th>
<th>Called</th>
<th>Symbolic Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENJCL.USER</td>
<td>Once</td>
<td>GENTYPE</td>
<td>PIT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PITDATE</td>
<td>yyyyddd</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PITDATE</td>
<td>yyyddd</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PITTIME</td>
<td>hhmmsst</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CATIME</td>
<td>‘CURRENT’</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>yydddhhhmmssthjjju</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>yydddhhhmmsst</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once for each CAGRPG</td>
<td>GENTYPE</td>
<td>SORT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CAGRPG</td>
<td>cagrpnm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CAGRPN0</td>
<td>1-99999</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once for each CAGRPG</td>
<td>GENTYPE</td>
<td>GROUP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>SYSIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CAGRPG</td>
<td>cagrpnm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CAGRPN0</td>
<td>1-99999</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once</td>
<td>GENTYPE</td>
<td>END</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>CTL</td>
</tr>
</tbody>
</table>

Post Recovery Image Copy Utility

The possible GENJCL calls made when processing the Post Recovery Image Copy utility and their order are shown below.

Table 19. Post Recovery Image Copy Utility: GENJCL calls

<table>
<thead>
<tr>
<th>GENJCL Function</th>
<th>Called</th>
<th>Symbolic Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENJCL.USER</td>
<td>Once</td>
<td>GENTYPE</td>
<td>START</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GENPHAS</td>
<td>CTL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSID</td>
<td>ssid / grpname</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once for each CAGRPG</td>
<td>GENTYPE</td>
<td>CAGROUP</td>
</tr>
<tr>
<td></td>
<td>(See Note 1 on page 78 below)</td>
<td>GENPHAS</td>
<td>JCL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GRPNAME</td>
<td>cagrpnm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GRPNO</td>
<td>1-99999</td>
</tr>
</tbody>
</table>
Table 19. Post Recovery Image Copy Utility: GENJCL calls (continued)

<table>
<thead>
<tr>
<th>GENJCL Function</th>
<th>Called</th>
<th>Symbolic Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENJCL.USER</td>
<td>Once for each RECOVGRP</td>
<td>GENTYPE, GENPHAS, GRPNAME, GRPNO</td>
<td>RCVGROUP, JCL, rcvgrpnm, 1-99999</td>
</tr>
<tr>
<td>GENJCL.IC</td>
<td>Once per DBDS</td>
<td>GENTYPE, GENPHAS, ICNUM, DBTYPE, SSID</td>
<td>IC, JCL, 1-99999, FP, HALDB, ssid / grpname</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once</td>
<td>GENTYPE, GENPHAS, SSID</td>
<td>SYSIN, ssid / grpname</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once for each CAGRP</td>
<td>GENTYPE, GENPHAS, CAGRP, CAGRPNO</td>
<td>CAGROUP, SYSIN, cagrpnm, 1-99999</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once for each RECOVGRP</td>
<td>GENTYPE, GENPHAS, GRPNAME, GRPNO</td>
<td>RCVGROUP, SYSIN, rcvgrpnm, 1-99999</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once per DBDS</td>
<td>GENTYPE, GENPHAS, ICNUM, DBNAME, DBDDN, DBTYPE</td>
<td>DATASET, SYSIN, 1-99999, dbdname, ddname, FF, FP, HALDB</td>
</tr>
<tr>
<td>GENJCL.USER</td>
<td>Once</td>
<td>GENTYPE, GENPHAS</td>
<td>END, CTL</td>
</tr>
</tbody>
</table>

Notes:
1. The CAGRP and RECOVGRP calls are only made when the CAGRP or RECOVGRP name were actually included in the application profile. Also, on restart, even if these groups were included in the application profile, it is possible that these calls are not made if some of the DBDSs in the group were previously image copied. In that case, the group calls are skipped so that the entire group is not reprocessed.

Testing Skeleton Members

The following DD statements can be added to any IMS Recovery Expert generated recovery JCL to help test a skeletal member, or to view the symbolic keywords and values that are available to create skeletal JCL members.

BSYJCLO

If you add this DD statement to an IMS Recovery Expert generated recovery job (that is, an application recovery job, or a system recovery job used in DR or full system recovery), then IMS Recovery Expert will write the JCL that is generated using the skeletal JCL members during a recovery job. This DD must point to a file with LRECL=80, RECFM=F or FB.

JCLONLY DD DUMMY

If you add this DD statement to an IMS Recovery Expert generated recovery job, then when the recovery job is run, IMS Recovery Expert will only generate the JCL using the skeletal members. No recovery steps will be run. If a JCLONLY DD is specified in the JCL, a BSYJCLO DD must also be specified.

Specifying IDCAMS DELETE/DEFINE control statements

If any utility in the recovery process requires the database or index data sets to be deleted and then redefined before the utility runs, then a library with IDCAMS control statements to delete and define the data set must be specified to IMS Recovery Expert.

The library must contain a member for each data set that will be deleted and redefined. The member name for each data set must match the DD name or ADS name defined to IMS for the data set.

If you are using the IMS Database Recovery Facility as your recovery utility, it has the ability to delete/define the data set based on the existing data set attributes or to execute IDCAMS delete/define commands specified in the DDEFPDS DD statement. Refer to the IMS Database Recovery Facility User Guide for more information.

Building the SLB Dynamic API Environment

IMS Database Recovery Facility has the capability to use IMS Recovery Expert System Level Backups (SLB) as recovery assets.

When IMS Recovery Expert creates an SLB, it can keep track of all DBDSs that are backed up in the SLB. The SLB contains the equivalent of fast-replication image copies for each DBDS in the SLB.

A dynamic application programming interface (API) is provided that allows IMS Database Recovery Facility jobs to utilize these SLBs for image copies when those SLBs can meet the recovery criteria better than an image copy recorded in the
RECON data sets. By using IMS Recovery Expert SLBs as image copies, you can reduce the need for creating image copies.

When you drive recovery from the IMS Database Recovery Facility and use IMS Recovery Expert to create system level backups, you must install the dynamic API in order for SLBs to be used as valid recovery assets. If you drive recovery from the IMS Recovery Expert (which has the ability to drive the IMS Database Recovery Facility) you do not need to install the API.

Using SLBs in the recovery process

The use of IMS Recovery Expert SLBs by IMS Database Recovery Facility jobs is controlled by the USESLBIC() keyword.

- When USESLBIC(Y) is specified, IMS Database Recovery Facility jobs use the SLB API and SLBs can be used as sources for image copies.
- When USESLBIC(N) is specified, SLBs are not used.
- When USESLBIC(Y) is set, and a given database is not contained in the SLB used for processing the recovery list, IMS Database Recovery Facility attempts to use non-SLB image copies as sources for image copies.

These image copies must have time stamps greater-than or equal-to the time stamp of the SLB.

When IMS Database Recovery Facility jobs run with USESLBIC(Y) and determine that there is an SLB that best matches the recovery criteria, the SLB API issues a NOTIFY.IC command to create an image copy record in the RECON data sets for that SLB image copy.

The format of the SLB image copy record data set name is:

```
SLB.Ixxxx.Dxxxx.dbdname.ddname
```

The SLB image copy data set name is symbolic and no physical data set exists with that name. When an SLB image copy record exists in the RECON data sets, and an IMS Database Recovery Facility job is run with USESLBIC(N), and the job determines that this record should be used for recovery, then the job fails when attempting to allocate the symbolic data set. Therefore, once IMS Database Recovery Facility jobs execute with USESLBIC(Y), the jobs should continue to run with this setting.

When USESLBIC(Y) is specified, IMS Database Recovery Facility is able to use SLBs as recovery assets:

- SLBs are created by IMS Recovery Expert and written to fast-replication devices.
- SLBs can also be offloaded to other DASD or tape devices. Therefore SLBs can exist on fast-replication devices, offload data sets, or both.
- If the SLB exists on both, the SLB on the fast-replication device is used in recovery.

If there are offload data set(s), they are displayed on the VERIFY(ALLOC) and VERIFY.OPEN reports. This does not necessarily indicate that the offload data set(s) are used for recovery. It just indicates that they are available if needed. If the offload data set(s) are used, the recovery report indicates that fact.
When an SLB is used for recovery, the SLB API issues a NOTIFY.IC to register the image copy record in the RECON data sets. These image copy records are the symbolic records discussed earlier. IMS Recovery Expert can be used to delete the SLB from the fast replication devices.

As long as the SLB still exists on offload data sets, the SLB, and any symbolic image copy records associated with the SLB, are still usable. However, if the offload data sets are also deleted, the symbolic image copy records are no longer valid. If you want to ensure that these records are not used, you can delete them from the RECON data sets.

The VERIFY function can be used to determine the correlation between the SLB's fast-replication volume(s) and the offload data sets.

When USESLBIC(Y) is specified, and either databases are being recovered or their recovery assets are being verified, it is a best practice to examine the job log for FRD4312E and FRD4320I error messages.

These messages are displayed when there is an error in the application programming interface between IMS Database Recovery Facility and IMS Recovery Expert or when the database is not contained in the SLB.

**Setting up the environment to support SLB image copies**

The IMS Recovery Expert System Level Backup (SLB) API activation utility is used to activate, deactivate, or list the dynamic API environments that exist on an z/OS system.

This API allows IMS Database Recovery Facility and IMS Database Recovery Facility Extended Functions jobs to use any existing IMS Recovery Expert SLBs when performing functions that access image copies. The API identifies the IMS Recovery Expert environment and eliminates the need to change the job JCL.

The API requires information relating to the IMS Recovery Expert environment. This information includes the names of the IMS Recovery Expert repository data sets and the execution load libraries.

This information is provided in one of two ways:

- Modify the IMS Database Recovery Facility JCL to include DD statements for each of these data sets.
- Run the SLB API utility to dynamically build the API environment that allows IMS Database Recovery Facility jobs to access the required information without the need for JCL changes.

The SLB API activation utility should be enabled after each IPL on any z/OS system where IMS Database Recovery Facility and IMS Database Recovery Facility Extended Functions jobs can run. Once activated, the API remains active until the next IPL or until it is removed or deactivated through the API activation utility.

If the SLB API activation utility is executed multiple times to activate different environments, only the last environment activated is used. All previous environments remain defined but are inactive.

Changes are not allowed to the dynamic API environments if the utility detects that there are active users of the API interface.
The recommended method is to use the dynamic SLB API activation utility so that IMS Database Recovery Facility JCL does not have to be changed.

**Sample JCL**

The sample JCL for activating, deactivating, and listing the API environments can be found in SBSYSAMP(BSY#UTIL). Customize this job to your environment and set it up to run after each IPL on any LPAR where IMS Database Recovery Facility and IMS Database Recovery Facility Extended Functions jobs need to run.

The EMCLOAD and FDRLOAD DDs are required if either tool is used for data movement.

The BSYGROUP DD is required only if the combined SLB feature is active.

All other DDs should match the data sets specified in your IMS Recovery Solution Pack CLIST, which invokes the IMS Recovery Expert ISPF interface.

**Command reference for SLB API activation utility**

The following commands can be specified in the BSYIN DD control statement to enable IMS Recovery Expert SLB API activation utility functions.

**ACTIVATE**

The ACTIVATE command is used to either build a new dynamic API environment and make it active, or convert an existing environment to be the active environment.

If other environments exist when the ACTIVATE is performed, those environments remain intact but become inactive and are not used by the API. Only one dynamic API environment can be active at a time. Once the activation is completed successfully, the API can be called dynamically without specifying the load library and repository data sets in the JCL that uses the API.

If you want to use the API for an environment that is different from the active environment, you must specify the required DD statements in the IMS Database Recovery Facility or IMS Database Recovery Facility Extended Functions JCL.

ACTIVATE performs the following operations:

1. Ensure that all required DD statements are specified in the JCL.
   The utility terminates otherwise.
2. Check to see if there are any active users of the API.
   If there are active users, then no changes are allowed and the utility terminates.
   No changes are allowed (for example, ACTIVATE or DEACTIVATE) when there are active users of the API.
3. Check to see if the BSY#API interface module is loaded into LPA (Link Pack Area).
   If the module is not loaded, a copy is loaded into LPA and messages are displayed indicating it was loaded.
   Messages are also issued showing the maintenance level of the module and whether it was loaded or it already existed.
4. Check to see if there is a dynamic API environment that matches the DD statements allocated in the JCL.
If a matching environment exists, and it is not currently the active environment, then the environment is converted and designated as the active environment. If a matching environment does not exist, then a new dynamic API environment is created and is designated the active environment.

**DEACTIVATE**

The DEACTIVATE command is used to remove one or more dynamic API environments. The DEACTIVATE parameter can be specified using the following formats:

**DEACTIVATE**

This form of the command deactivates only the dynamic API environment that matches the DD statements allocated in the JCL.

**DEACTIVATE** performs the following operations:

1. Ensure that all required DD statements are specified in the JCL.
   The utility terminates otherwise.
2. Check to see if there are any active users of the BSY#API interface module loaded in LPA (Link Pack Area).
   If there are active users, then no changes are allowed and the utility terminates.
   No changes are allowed (for example, ACTIVATE or DEACTIVATE) when there are active users of the API.
3. Locate the dynamic API environment that matches the DD statements allocated in the JCL.
   If none is found, a message is issued and the utility terminates.
4. If a dynamic API environment is found that matches the DD statements allocated in the JCL, the environment control blocks are unchained from the list and the storage is freed.
   If the deactivated environment was the active environment, the next environment in the chain is made active.
   If the last environment is deactivated, then the BSY#API interface module is also deleted from LPA.

**Note:** The DEACTIVATE command appears as DEACTIVATE(RVTE) in the output.

**DEACTIVATE(ALL)**

This form of the command deactivates all dynamic API environments. If this form is used, the API can no longer be called unless the necessary data sets are allocated in the job that uses the API.

**DEACTIVATE(ALL)** performs the following operations:

1. Check to see if there are any active users of the API.
   If there are active users, then no changes are allowed and the utility terminates.
   No changes are allowed (for example, ACTIVATE or DEACTIVATE) when there are active users of the BSY#API module that is loaded into LPA (Link Pack Area).
2. Run the chain of all dynamic API environments and deletes each control block.
3. Remove the BSY#API module from LPA.
LIST

The LIST command is used to display information about the dynamic API environment on a z/OS system.

Messages are issued showing information related to the BSY#API interface module and each dynamic API environment that exists.

Example BSYIN control statements
The examples in this section show BSYIN control statements using commands to control the SLB API activation utility.

Example 1
The following example lists any defined dynamic API environments and additionally shows the active API environment:

```bash
//BSYIN DD *
LIST
```

Example 2
The following example uses the DD statements allocated in the JCL to build a new API environment, or convert an existing environment, and activate that environment.

```bash
//BSYIN DD *
ACTIVATE
```

Example 3
The following example performs the following operations:
- List all dynamic API environments that currently exist and additionally show the active API environment
- Deactivate only the active dynamic API environment that matches the DD statements allocated in the JCL
- List again to ensure that the deactivated environment has been removed
- Deactivate all other existing dynamic API environments
- List again to ensure that the deactivated environments have been removed
- Build and activate a new API environment that matches the DD statements allocated in the JCL
- List again to ensure that the new dynamic API environment is now designated as active

```bash
//BSYIN DD *
LIST
DEACTIVATE
LIST
DEACTIVATE(ALL)
LIST
ACTIVATE
LIST
```

Example BSYIN control statement output
The following output was produced from a BSYIN control statement using commands to control the SLB API activation utility:
Version 02.02.000
16:23:12 BSY0003I - Control Cards:
16:23:12 BSY0004I - LIST
16:23:12 BSY0004I - DEACTIVATE
16:23:12 BSY0004I - LIST
16:23:12 BSY0004I - DEACTIVATE(ALL)
16:23:12 BSY0004I - LIST
16:23:12 BSY0004I - ACTIVATE
16:23:12 BSY0004I - LIST
16:23:12 BSY0004I -
16:23:12 BSY0004I -
16:23:12 BSY0004I -
16:23:12 BSY0560I -
16:23:12 BSY0560I - Processing LIST....
16:23:12 BSY0561I - .... Querying LPA for BSY#API
16:23:12 BSY0561I - BSY#API located in LPA
16:23:12 BSY0561I - BSY#API ENTRYPT = 20E4D000
16:23:12 BSY0561I - BSY#API LOADPT = 20E4D000
16:23:12 BSY0561I - BSY#API MODLEN = 000038CB
16:23:12 BSY0561I - BSY#API TIMESTAMP = APARV2R2MO
16:23:12 BSY0561I - BSY#API VERSION = 03/17/2018
16:23:12 BSY0567I -
16:23:12 BSY0567I - Active BSY#API environment:
16:23:12 BSY0567I - Created by TSMXD on 2018-03-21 16:02:04.90467
16:23:12 BSY0567I - BSYLOAD = IRS.DEV21.LOAD
16:23:12 BSY0567I - EMLOAD = RSRT.EMC.LINKLIB.BETA760
16:23:12 BSY0567I - FORLOAD = RSRT.VENDOR.FDR.LOAD
16:23:12 BSY0567I - Db2PARMS = IRS.IRS21.CONTROL
16:23:12 BSY0567I - BSYBPROF = IRS.IRS21.PROFILE
16:23:12 BSY0567I - BSYBOFFL = IRS.IRS21.OFFOPTS
16:23:12 BSY0567I - BSYBMAP = IRS.IRS21.PROFILE.MAPS
16:23:12 BSY0567I - BSYBPCAT = IRS.IRS21.PROFILE.CATS
16:23:12 BSY0567I - BSYSBACK = IRS.IRS21.SYSBACK
16:23:12 BSY0567I - BSYSB08J = IRS.IRS21.SYSBACK.OBJS.IMS
16:23:12 BSY0567I - BSYSBVOL = IRS.IRS21.SYSBACK.VOLS
16:23:12 BSY0567I - BSYSBSSD = IRS.IRS21.SYSBACK.SSIDS
16:23:12 BSY0567I - BSYBREPT = IRS.IRS21.BREPORT
16:23:12 BSY0567I - BSYPOBS = IRS.IRS21.OBJECTS
16:23:12 BSY0567I - BSYARCH = IRS.IRS21.ARCHIVES.IMS
16:23:12 BSY0567I - BSY#PARM = IRS.DEV21.SAMPLE MEMBER = BSY#PARM
16:23:12 BSY0567I -
16:23:12 BSY0567I - Processing DEACTIVATE....
16:23:12 BSY0570I - Deleting active BSY#API environment
16:23:12 BSY0561I - .... Querying LPA for BSY#API
16:23:12 BSY0561I - BSY#API located in LPA
16:23:12 BSY0561I - BSY#API ENTRYPT = 20E4D000
16:23:12 BSY0561I - BSY#API LOADPT = 20E4D000
16:23:12 BSY0561I - BSY#API MODLEN = 000038CB
16:23:12 BSY0561I - BSY#API TIMESTAMP = APARV2R2MO
16:23:12 BSY0561I - BSY#API VERSION = 03/17/2018
16:23:12 BSY0561I - .... BSY#API being deleted from LPA
16:23:12 BSY0561I - BSY#API deleted from LPA
16:23:12 BSY0561I - .... Querying LPA for BSY#API
16:23:12 BSY0561I - BSY#API not located in LPA
16:23:12 BSY0561I -
16:23:12 BSY0561I - Processing LIST....
16:23:12 BSY0561I - .... Querying LPA for BSY#API
16:23:12 BSY0561I - BSY#API not located in LPA
16:23:12 BSY0561I -
16:23:12 BSY0561I - Processing DEACTIVATE(ALL)....
16:23:12 BSY0561I - .... Querying LPA for BSY#API
16:23:12 BSY0561I - BSY#API not located in LPA
16:23:12 BSY0561I -
16:23:12 BSY0561I - Processing LIST....
16:23:12 BSY0561I - .... Querying LPA for BSY#API
16:23:12 BSY0561I - BSY#API not located in LPA
16:23:12 BSY0561I -
16:23:12 BSY05601 -
16:23:12 BSY05601 - Processing ACTIVATE....
16:23:12 BSY05601 - .... Querying LPA for BSY#API
16:23:12 BSY05611 - BSY#API not Located in LPA
16:23:12 BSY05601 - .... BSY#API being added to LPA
16:23:12 BSY05611 - BSY#API added to LPA
16:23:12 BSY05681 - BSY#API TOKEN = 00000911000001BE
16:23:12 BSY05681 - BSY#API ENTRPT = A0E40000
16:23:12 BSY05681 - BSY#API LOADPT = 20E40000
16:23:12 BSY05681 - BSY#API MODLEN = 000038CB
16:23:12 BSY05601 - .... Querying LPA for BSY#API
16:23:12 BSY05611 - BSY#API located in LPA
16:23:12 BSY05681 - BSY#API ENTRPT = 20E40000
16:23:12 BSY05681 - BSY#API LOADPT = 20E40000
16:23:12 BSY05681 - BSY#API MODLEN = 000038CB
16:23:12 BSY05681 - BSY#API TIMESTAMP = APARV2R2MO
16:23:12 BSY05681 - BSY#API VERSION = 03/17/2018
16:23:12 BSY05601 - API environment added
16:23:12 BSY05671 -
16:23:12 BSY05671 - Active BSY#API environment:
16:23:12 BSY05671 - Created by TSMXD on 2018-03-21 16:23:12.36718
16:23:12 BSY05671 - BSYLOAD = IRS.DEV21.LOAD
16:23:12 BSY05671 - EMLOAD = IRS.DEV21.LINKLIB.BETA760
16:23:12 BSY05671 - FDLLOAD = IRS.DEV21.FDR.LOAD
16:23:12 BSY05671 - Db2PARMS= IRS.DEV21.CONTROL
16:23:12 BSY05671 - BSYBPMAP= IRS.DEV21.PROFILE
16:23:12 BSY05671 - BSYBOFF= IRS.DEV21.OFFOPTS
16:23:12 BSY05671 - BSYPMAP= IRS.DEV21.PROFILE.MAPS
16:23:12 BSY05671 - BSYPCAT= IRS.DEV21.PROFILE.CATS
16:23:12 BSY05671 - BSYSBACK= IRS.DEV21.SYSTEMBACK
16:23:12 BSY05671 - BSYSBObj= IRS.DEV21.SYSTEMBACK.OBJS.IMS
16:23:12 BSY05671 - BSYSBVOL= IRS.DEV21.SYSTEMBACK.VOLS
16:23:12 BSY05671 - BSYSBSDD= IRS.DEV21.SYSTEMBACK.SSIDS
16:23:12 BSY05671 - BSYBREPT= IRS.DEV21.BREPORT
16:23:12 BSY05671 - BSYPOBJS= IRS.DEV21.OBJECTS
16:23:12 BSY05671 - BSYSARCH= IRS.DEV21.ARCHIVES.IMS
16:23:12 BSY05671 - BSY#PARM= IRS.DEV21.SAMPLE MEMBER = BSY#PARM
16:23:12 BSY05601 -
16:23:12 BSY05601 - Processing LIST....
16:23:12 BSY05601 - .... Querying LPA for BSY#API
16:23:12 BSY05611 - BSY#API located in LPA
16:23:12 BSY05681 - BSY#API ENTRPT = 20E40000
16:23:12 BSY05681 - BSY#API LOADPT = 20E40000
16:23:12 BSY05681 - BSY#API MODLEN = 000038CB
16:23:12 BSY05681 - BSY#API TIMESTAMP = APARV2R2MO
16:23:12 BSY05681 - BSY#API VERSION = 03/17/2018
16:23:12 BSY05671 -
16:23:12 BSY05671 - Active BSY#API environment:
16:23:12 BSY05671 - Created by TSMXD on 2018-03-21 16:23:12.36718
16:23:12 BSY05671 - BSYLOAD = IRS.DEV21.LOAD
16:23:12 BSY05671 - EMLOAD = IRS.DEV21.LINKLIB.BETA760
16:23:12 BSY05671 - FDLLOAD = IRS.DEV21.FDR.LOAD
16:23:12 BSY05671 - Db2PARMS= IRS.DEV21.CONTROL
16:23:12 BSY05671 - BSYBPMAP= IRS.DEV21.PROFILE
16:23:12 BSY05671 - BSYBOFF= IRS.DEV21.OFFOPTS
16:23:12 BSY05671 - BSYPMAP= IRS.DEV21.PROFILE.MAPS
16:23:12 BSY05671 - BSYPCAT= IRS.DEV21.PROFILE.CATS
16:23:12 BSY05671 - BSYSBACK= IRS.DEV21.SYSTEMBACK
16:23:12 BSY05671 - BSYSBObj= IRS.DEV21.SYSTEMBACK.OBJS.IMS
16:23:12 BSY05671 - BSYSBVOL= IRS.DEV21.SYSTEMBACK.VOLS
16:23:12 BSY05671 - BSYSBSDD= IRS.DEV21.SYSTEMBACK.SSIDS
16:23:12 BSY05671 - BSYBREPT= IRS.DEV21.BREPORT
16:23:12 BSY05671 - BSYPOBJS= IRS.DEV21.OBJECTS
16:23:12 BSY05671 - BSYSARCH= IRS.DEV21.ARCHIVES.IMS
16:23:12 BSY05671 - BSY#PARM= IRS.DEV21.SAMPLE MEMBER = BSY#PARM
16:23:12 BSY05601 -
Analyzing IMS data set placement for System Level Backup validation

If a System Level Backup created by IMS Recovery Expert will be used to restore an entire IMS environment, there are strict guidelines on how IMS is configured on your local DASD. These utilities require the segregation of the active logs, RECONs, and IMS system data sets from the database data. They also require the MVS user catalogs where the data sets of an IMS system are to be backed up and restored with the IMS system.

About this task

The IMS Recovery Expert System Setup facility collects and displays information about the IMS system’s user catalogs, IMS system data sets, active logs, and related IMS database data sets. Before a System Level Backup can be created, IMS Recovery Expert validates that the data sets are separated by volume. This ensures that valid system restores can be done based on options specified in the backup profiles.

Note: It is highly recommended that you analyze data set placement before attempting the first System Level Backup.

Procedure

1. On the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN), specify 1 (System Operations) on the Option line and press Enter.

3. On the Enter IMS System or Group panel (BSY$SSIW), specify an IMS system or group and a backup method.
   a. To choose from a list of IMS systems, specify ? in the IMS System field and press Enter.

   ![Select a Subsystem ID panel](BSY$SYSL V2R2 Scroll === PAGE Option ===> Row 1 of 18 +

   **Figure 22. Select a Subsystem ID panel**

   b. On the Select a Subsystem ID panel, specify S in the Cmd field next to the subsystem you want to select, and press Enter. If the selected system has been analyzed previously, you will have the option to reanalyze the system.

   ![Data Found in Repository panel](BSY$SDAT

   **Figure 23. Data Found in Repository panel (BSY$SDAT)**

   c. In the Re-analyze System Info field, specify Y (Yes) or N (No) and press Enter.

   4. On the Enter IMS System or Group panel, finalize your selections and press Enter to access the System Setup Information panel.

The System Backup and System Restore utilities are the fastest and most effective backups available for IMS. In order for this utility to be effective, there are very strict guidelines on how IMS is configured on your local DASD. This utility requires the segregation of the Active logs and RECON datasets from the database data. It also requires that the MVS User catalogs where the data sets are catalogued to be backed up and restored with the IMS system. This utility will help you in getting your IMS system available for System Backup and System Restore Utilities.
Figure 24. Subsystem Analysis and Configuration panel (BSY$SSID)
Chapter 4. Using the IMS Recovery Expert ISPF Interface

This section provides an overview of the IMS Recovery Expert ISPF functionality, including general information on how to use the panels.

Header fields

Every IMS Recovery Expert ISPF panel has a set of header fields at the top of the panel.

These header fields are highlighted in the following sample panel:

```
BSY$BPRD V2R2  ----- System Backup Profile Display ----- 2018/06/30 14:05:14
Option ===>   Scroll ===> PAGE
```

Line Commands: B - Build  U - Update  C - Create  V - View  D - Delete
R - Rename  G - Group

These fields are described below:

**BSY$BPRD**

The shortened product name and panel ID.

**VnRn**

The product version and release.

**Panel title**

The title of the panel. In this figure, the panel title is System Backup Profile Display.

**Date and time**

Displays the current date and time.

**Option**

This line is used to specify an option or a command. The option line appears at the bottom of the panel if your ISPF session is configured for “Command line at the bottom”.

**Scroll**

The Scroll field contains the current scroll amount; you can change it by typing over the scroll amount.

<table>
<thead>
<tr>
<th>Cmd</th>
<th>Name</th>
<th>Creator</th>
<th>Group</th>
<th>Updt</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAT</td>
<td>PDBATA</td>
<td>EMC</td>
<td>U</td>
<td></td>
</tr>
<tr>
<td>BATTRY</td>
<td>PDBATA</td>
<td>EMC</td>
<td>U</td>
<td></td>
</tr>
<tr>
<td>BAT1234</td>
<td>PDBATA</td>
<td>EMC</td>
<td>U</td>
<td></td>
</tr>
<tr>
<td>CSLB GRP2</td>
<td>CSMEH</td>
<td>GRP2</td>
<td>U</td>
<td></td>
</tr>
<tr>
<td>CSLB STOGROUP/TRGPOOL</td>
<td>CSMEH</td>
<td>GRP1</td>
<td>U</td>
<td></td>
</tr>
<tr>
<td>EMC</td>
<td>PDBISC</td>
<td>EMC</td>
<td>U</td>
<td></td>
</tr>
<tr>
<td>EMC-FC</td>
<td>CSOSTR</td>
<td>EMC</td>
<td>U</td>
<td></td>
</tr>
<tr>
<td>EMC-L</td>
<td>CSOSTR</td>
<td>EMC</td>
<td>U</td>
<td></td>
</tr>
<tr>
<td>EMC-S</td>
<td>CSOSTR</td>
<td>EMC</td>
<td>U</td>
<td></td>
</tr>
<tr>
<td>EMC_TARGET_POOL</td>
<td>CSOSTR</td>
<td>EMC</td>
<td>U</td>
<td></td>
</tr>
</tbody>
</table>

*Figure 25. System Backup Profile Display panel (BSY$BPRD)*
Getting help

On any IMS Recovery Expert product panel, you can press PF1 to access help for the function you are using. Also, when a message is displayed at the bottom of the panel, you can press PF1 to access additional information about the message.

Column display functionality

IMS Recovery Expert CSETUP functionality enables you to manipulate the column display in the following ways:

- Rearrange report columns horizontally using the CFIX and CORDER options.
- Change the width of individual columns using the CSIZE option.
- Control the vertical ordering of columns using the CSORT option.
- Scroll horizontally between columns, in both left and right directions.
- Scroll horizontally within a single report column while other report columns remain stationary on the screen.
- Insert column numbers above each display column.
- Generate a ruler at the top of the report columns beneath the headings.
- Display an entire row-column data element.
- The customizations, or “views”, you configure using CFIX, CORDER, CSIZE, and CSORT can be saved across sessions.

Note the following regarding syntax presented in this section:

- Underlines indicate the minimum acceptable abbreviation for each keyword.
- Variables are shown in italicized lowercase type.
- Keyword options are separated by vertical lines ( | ).

Accessing the CSETUP primary option menu

The CSETUP primary option menu enables you to access the various CSETUP options and configure column display functions.

About this task

Using the CSETUP command allows you to access the CSETUP primary option menu.

Procedure

1. On any panel which shows a table display, specify CSETUP (or CSET) on the Option line and press Enter.
2. On the Setup Primary Option Menu panel, specify on the Command line the number corresponding to the option you want to access, and press Enter. The following options are available:

- **CFIX**: Option 1, CFIX, enables you to fix and unfix columns. For more information, see "Fixing a column."
- **CORDER**: Option 2, CORDER, enables you to reposition columns. For more information, see "Repositioning columns" on page 93.
- **CSIZE**: Option 3, CSIZE, enables you to change the displayed width of columns. For more information, see "Resizing columns" on page 94.
- **CSORT**: Option 4, CSORT, enables you to select one or more columns for sorting and thus modify the order of the rows displayed. For more information, see "Sorting" on page 96.
- **CRESET**: Option 5, CRESET, enables you to reset all customizations. For more information, see "Resetting CSET customizations" on page 99.
- **CREMOVE**: Option 6, CREMOVE, enables you to remove all customizations. For more information, see "Removing CSET customizations" on page 99.
- **PVIEW**: Option 7, PVIEW, enables you to toggle between permanent view and temporary view.

**Note**: You can also directly invoke each CSETUP option. Specify the corresponding command (for example, CFIX, CORDER, CSIZE, CSORT, CRESET, CREMOVE, or PVIEW) on the option line on any dynamic display.

3. Press Enter.

**Fixing a column**

The CFIX option enables you to fix and unfix columns.

**About this task**

A fixed column is always located at the far left side of the display. It does not shift horizontally (as unfixed columns do) when scrolling to the left or right. **INNER COLUMN SCROLLING** and **CEXPAND** commands can be used on a fixed column if the...
column is narrower than its maximum width. Certain columns might be permanently fixed in the report and cannot be unfixed. These columns have a fix status of P (permanently fixed).

A column cannot be fixed if it is larger than the available display area. There are also restrictions for fixing columns related to the size requirements of other columns. For more information, see “CSET restrictions” on page 101.

**Procedure**

1. Specify CFIX on the **Option** line on any panel, and press Enter.

```
BSYFIX  Define Fixed Columns  2018/11/11 11:54:05
Option ==> Scroll ==> PAGE
Commands: Enter: Process selections;
            Cmd: F Fix U Unfix

сен

Row 1 of 6

Column Function ==> 1 (1-Fix/Unfix, 2-Order, 3-Size, 4-Sort)
Permanent View ==> Y (Y-Perm, N-Temp)  Reset View ==> N (Y,N)

Device Width : 80  Old Fixed Width: 5  Old Unfixed Width: 75
New Fixed Width:  New Unfixed Width:

Cmd New Old Len Column_Name
P  P  P  5  CMD  9  SOURCE_VOLUMES
   8  SOURCE_DEVTYPE
   6  SOURCE_UNIT
  10  TARGET_VOLUMES
  42  MESSAGE_AREA

Figure 27. Define Fixed Columns panel (BSYFIX)
```

On the Define Fixed Columns panel, the following fields are displayed:

**Column Function**

Enables you to jump to any of the CSET functions by specifying the appropriate number. The number corresponding to the current option displays in this field.

**Permanent View**

Indicates whether the view you define is permanent or temporary. Valid values are:

Y View customizations are permanent.
N View customizations are temporary.

**Reset View**

Resets all customizations.

**Device Width**

Displays the current display device size (screen width).

**Old Fixed Width**

Displays the sum of the FIXED column widths before any changes in the current CFIX panel.

**Old Unfixed Width**

Displays the UNFIXED area before any changes in the current CFIX panel. Old Unfixed Width = Device Width - Old Fixed Width.
New Fixed Width
Displays the sum of the FIXED column widths that will result if the FIX/UNFIX changes are saved.

New Unfixed Width
Displays the UNFIXED area that will result if the FIX/UNFIX changes are saved. New Unfixed Width = Device Width - New Fixed Width.

Cmd Field where you specify line commands. Valid line commands are F (fix) and U (unfix).

New Displays the new CFIX view settings.

Old Displays the previous CFIX view settings.

Len Displays the length of the column.

Column Name Displays the name of the column.

2. Specify F in the Cmd field next to column(s) you want to fix.
3. Specify U in the Cmd field next to column(s) you want to unfix.
4. Press Enter. The changed values display in the New column next to the corresponding column(s).
5. Press PF3 to save changes and return to the display panel.

Repositioning columns
The CORDER option enables you to reposition report columns.

About this task
If any columns are fixed, they are grouped together as the leftmost report columns. The unfixed columns are grouped together to the right of any fixed columns. CORDER does not move a column out of its group. A fixed column cannot be relocated to the right of an unfixed column. Likewise, an unfixed column cannot be relocated to the left of a fixed column.

Procedure
1. Specify CORDER on the Option line on any display panel and press Enter.

Figure 28. Define Column Display Order panel (BSYORD)
On the Define Column Display Order panel, the following fields are displayed:
**Column Function**

Enables you to jump to any of the CSET functions by typing in the appropriate number. The number corresponding to the current option displays in this field.

**Permanent View**

Indicates whether the CSETUP customization you define is permanent or temporary. CSETUP customization refers to the change made in the CSETUP functions CFIX, CORDER, CSIZE, and CSORT. These customizations are called views. Valid values are: Y (CSETUP customization is permanent), or N (CSETUP customization is temporary).

**Reset View**

 Resets all customizations.

**Cmd**

In the Cmd field, you can specify the number for column position.

**Fix**

Displays fixed columns. Valid values are: F (indicates that the column is fixed) or F (indicates that the column is permanently fixed).

**New**

Displays the new CORDER view settings.

**Old**

Displays the previous CORDER view settings.

**Column_Name**

Displays the name of the column.

2. Specify a number next to a column to specify its order.
3. Press Enter. The new column order numbers display in the **New** column next to each column.
4. Press PF3 to return to the display panel.

**Resizing columns**

The **CSIZE** command enables you to change the displayed width of columns. This function is primarily intended for non-numeric data where there are large blank areas in all (or most) rows in a given column. Although the displayed width might change, the underlying data does not change.

**About this task**

If a column's size is less than the column maximum, some date might not be displayed. You can use the **INNER COLUMN SCROLLING** and **CEXPAND** commands to view data outside the display range of the resized column.

**Note:** If the minimum and maximum column widths are equal, the column cannot be resized.

**Procedure**

1. Specify **CSIZE** on the **Option** line on any display panel and press Enter.
On the Define Column Size panel, the following fields are displayed:

**Column Function**
Specify the appropriate number to jump to any of the CSET functions. The number corresponding to the current option displays in this field.

**Permanent View**
Specify whether the view you define is permanent or temporary. Valid values are: Y (view customizations are permanent) or N (view customizations are temporary).

**Reset View**
Resets all customizations.

**Device_Width**
Displays the current display device size (screen width).

**Old_Fixed_Width**
Displays the sum of the FIXED column widths.

**Old_Unfixed_Width**
Displays the UNFIXED area.

**New_Fixed_Width**
Displays the sum of the FIXED column widths.

**New_Unfixed_Width**
Displays the UNFIXED area.

**Cmd**
Specify the number for column position.

**New**
Displays the new CSIZE view settings.

**Old**
Displays the previous CSIZE view settings.

**Min**
Displays the minimum column length.

**Max**
Displays the maximum column length.

Note: If the minimum and maximum column widths are equal, the column cannot be resized.

---

**Figure 29. Define Column Size panel (BSYSIZ)**
Note: If the minimum and maximum column widths are equal, the column cannot be resized.

Fix: Displays fixed columns. Valid values are: F (indicates that the column is fixed) or P (indicates that the column is permanently fixed).

Column_Name
Displays the name of the column.

2. Specify the column size in the Cmd field next to the column you want to resize.

Note: The column size you specify must be between the Min and Max values that are displayed for that column.

3. Press Enter. The new view criteria is displayed in the New column.
4. Press PF3 to return to the display panel.

Sorting
CSORT functionality enables you to select one or more columns for sorting, and modify the order of the rows displayed on many of the IMS Recovery Expert product panels.

About this task
Columns are selected by sort priority and direction. Direction is either ascending (default) or descending. When more than one column is selected for sorting, the second column only differentiates when rows have matching data in the first column. Similarly, a third column only impacts the sort when data in the first two columns is identical.

A maximum of nine columns can be selected for sorting at a time. Internal requirements might require a smaller maximum. A message is issued if the maximum number of columns selected for sorting is exceeded.

Note: CSORT and SORT are synonymous.

Procedure
1. Specify CSORT (or SORT) on the Option line on any display panel and press Enter.
On the Define Sort Columns panel, the following fields are displayed:

**Column Function**
Enables you to jump to any of the CSET functions by specifying the appropriate number. The number corresponding to the current option is displayed in this field.

**Permanent View**
Indicate whether the view you define is permanent or temporary. Valid values are: Y (view customizations are permanent) or N (view customizations are temporary).

**Stop Sorting**
Indicates whether stop sorting is specified. Valid values are: Y (stop sorting) or N (continue sorting).

**Cmd**
Specify the sort order.

**Dir**
Specifies the lexicographic order for the column. Valid values are: A (Default; values are listed in ascending order, smallest to largest) or D (values are listed in descending order, largest to smallest).

**New**
Displays the new CSORT view settings.

**Old**
Displays the previous CSORT view settings.

**Column_Name**
Displays the name of the column.

2. Specify A or D in the **Cmd** field next to the columns on which you want to base your sort. Press Enter. The new sort preferences are displayed in the **New** column.

3. Press PF3 to return to the display panel.

**Fastpath SORT command**

The **SORT** command can be used as a primary (fastpath) command by specifying the appropriate SORT syntax on the **Option** line of any report panel and pressing Enter. The functionality supports both single and multi-column sorting and enables users to specify sort order (ascending or descending) for each column in the sort.
**Syntax for single-column sorting**

The syntax for single-column sorting is as follows:

```
SORT column_identifier dir
```

Where `column_identifier` is either the column name or the relative column number, and `dir` is the direction in which to sort the column data. Valid values for `dir` are:

- **Asc** (Default) Sorts data in ascending order.
- **Desc** Sorts data in descending order.

**Important:**
- There must be a space between the `column_identifier` and its `dir` (if used).
- The relative column number for a column is determined based on the column's placement when it is visible on the panel. Thus, relative column numbers are only available for columns currently visible on the panel. Relative column numbers are determined by counting the displayed columns from left to right, with the leftmost visible column being assigned the number 1 and each successive column (reading left to right) being assigned a relative column number that is incremented by 1.

**Note:** To quickly determine the column number, use the `CNUM` command to toggle the column numbers above each display column.
- You can sort on a column that is not displayed if you use the column name (instead of the relative column number) as the `column_identifier` in the SORT syntax.

**Multi-column sorting**

The syntax for multi-column sorting is as follows:

```
SORT column_identifier dir column_identifier dir
```

Where `column_identifier` is either the column name or the relative column number, and `dir` is an optional indication of the direction in which to sort the column data. Valid values for `dir` are:

- **Asc** (Default) Sorts data in ascending order.
- **Desc** Sorts data in descending order. Note that the values for `column_identifier` and `dir` must all be separated by spaces. The maximum number of columns that can be sorted at a time is 9.

**Usage examples**

This example is of a report display that has three columns, all of which display on the panel:
- Column 1: Name
- Column 2: Creator
- Column 3: Status

You can sort these columns in the following ways:

**SORT NAME**

Sorts display data in ascending order based on the value in the **Name** column (when no `dir` value is specified, the default sort order is ascending, thus **SORT NAME** and **SORT NAME A** are synonymous).
SORT NAME D
Sor ts display data in descending order based on the value in the Name column.

SORT NAME DESC
Sorts display data in descending order based on the value in the Name column.

SORT NAME A CREATOR D
Sorts display data first in ascending order based on the value in the Name column, and then sorts data in descending order based on the value in the Creator column.

SORT NAME ASC CREATOR DESC
Sorts display data first in ascending order based on the value in the Name column, and then sorts data in descending order based on the value in the Creator column.

SORT 1 A
Sorts display data in ascending order based on the value in the Name column.

SORT 1 A CREATOR D
Sorts display data first in ascending order based on the value in the Name column, and then sorts data in descending order based on the value in the Creator column.

SORT 3 2 1
Sorts the display data first in ascending order based on the value in the Status column, then in ascending order based on the value in the Creator column, and finally in ascending order based on the value in the Name column.

Resetting CSET customizations

The CRESET command enables you to reset all customizations.

The CRESET command can be issued as a primary command. After you issue the CRESET command, all fixed columns are unfixed (except for any permanently fixed columns), all selected sort columns are cleared and sorting is disabled, all column sizes are set to the initial values or maximum values if no suggested value previously existed, and original column locations are restored.

CRESET
Resets all customizations (unfixes fixed columns, clears selected sort columns, sorting disabled, column sizes set to initial values, original column locations restored).

Note: CRESET differs from CREMOVE; CREMOVE sets all column sizes to their maximum values and ignores any initial, suggested sizes.

Removing CSET customizations

The CREMOVE command enables you to remove all customizations.

The CREMOVE command can be issued as a primary command. After you issue the CREMOVE command, all fixed columns are unfixed (except for those that are permanently fixed), all selected sort columns are cleared and sorting is disabled, all column sizes are set to their maximum values, and original column locations are restored.
CREMOVE
Removes all customizations (unfixes fixed columns, clears selected sort
columns, sorting disabled, column sizes set to maximum values, original
column locations restored).

Note: CREMOVE differs from CRESET; CREMOVE sets all column sizes to their
maximum values and ignores any initial, suggested sizes.

Column scrolling
Column scrolling enables you to scroll horizontally between columns (both left and
right).

Use the following commands when viewing any dynamic display panel to scroll
horizontally between columns:

CRIGHT n
   Enables you to scroll the left side of the display panel n report columns to
   the right.

CLEFT n
   Enables you to scroll the left side of the display panel n report columns to
   the left.

Inner column scrolling
Inner column scrolling enables you to scroll horizontally within a single report
column while other report columns remain stationary. Inner column scrolling can
be useful for columns that have been shortened using the CSIZE command.

Use the following commands when viewing any dynamic display panel to scroll
horizontally within a single report column:

ICRIGHT
   Enables you to scroll to the right within one report column while the other
   report columns remain stationary.

ICLEFT
   Enables you to scroll to the left within one report column while the other
   report columns remain stationary.

Column numbering
Column numbering inserts a column number above each display column. The
inserted column numbers are relative to the leftmost display column.

Use the CNUM command to invoke column numbering. The CNUM command enables
you to toggle on/off the column numbers above each display column.

Note:
• The leftmost displayed column is always numbered 1 regardless of how far to
  the right you scroll.
• You can use column numbers when issuing the primary SORT command. For
  more information, see “Fastpath SORT command” on page 97.
• Column numbers are not removed with the CRESET or CREMOVE commands. To
  remove column numbers, reissue the CNUM command.
Ruler display

The COLS command enables you to generate a ruler at the top of the report columns beneath the headings. This ruler tracks the current position within the column.

The < > symbols indicate whether there is additional column data to the left or right of the displayed data. For example:

<-5----2----5->

In this example, positions 13 through 28 are displayed. There is data both to the left and right of the currently displayed area. The COLS command can be issued alone as a toggle switch, or with one parameter: (ON|OFF).

Using the COLS (ON|OFF) command enables you to generate a ruler at the top of the report columns to track the current position within the column.

Expanding columns

The CEXPAND command enables you to display an entire row-column data element.

The CEXPAND command can be useful when the CSIZE command has reduced a column to a width that is too narrow to display all data. Expanding columns using the CEXPAND command is an alternative to inner column scrolling.

To use the CEXPAND command, place the cursor on a row-column element and issue the CEXPAND command. The cursor position determines the row-column that expands. The CEXPAND command can be issued alone or with two parameters (row and column).

The CEXPAND (row column) command enables you to display an entire row-column data element where row is the number of the row and column is the number of the column (non-heading lines only) that you want to expand.

CSET restrictions

The following restrictions apply to the CSET command.

- Total fixed column sizes cannot exceed screen width.
- Total fixed column sizes must leave enough unfixed space for the minimum allowed size for all unfixed columns. If a column is not eligible for resizing, the column’s minimum size requirement is the same as its maximum size. Minimum and maximum sizes for all columns are shown in the CSIZE display.
- If a column has been re-sized, then its current width is treated as its smallest allowable size. When a column is re-sized its current size must fit on the screen completely. For example, on an 80-byte screen with no fixed columns, a 128-byte column can only be re-sized to 80 bytes or less (assuming no conflicting minimum size is associated with the column). If there were two 10-byte fixed columns, for a total fixed area size of 20 bytes, the 128-byte column would be limited to 60 bytes or its minimum allowed size, whichever was smaller.

Gathering maintenance level information with the DISPLAY MEPL command

The DISPLAY MEPL command allows you to access maintenance level information for all product load modules.
Procedure

1. On the IMS Recovery Expert Main Menu panel (BSY$MAIN), specify DISPLAY MEPL on the Option line, and press Enter.

```
Option =>
  Build job in Data set  PDBISC.RON.CNTL
    Member    #MEPL    Member name for generated JCL
  Job Cards:
  =>//PDBISCA JOB PDBISC,CLASS=A,NOTIFY=&SYSUID,MSGCLASS=X
  =>//*
  =>//*
  =>//*
```

Enter and/or modify the above Job Card information. When ready, press Enter to submit job. Send Job output to product support.

2. In the Build job in Data set field, specify a data set name. In the Member field, specify the member in which to save the JCL. In the Job Cards field, specify the job card information required to run the JCL.

3. Press Enter.

Results

When the MEPL job is run, a report is generated for each module in the product library that can be used to identify the maintenance level of the module.

The following report is an example of the generated report:

```
IMS Recovery Expert for z/OS
Run Date is 2018/07/23 at 16:25:12
SYSLIB1=BSY.WRK0220.LOADLIB
0369 members processed of 0369 found in 1 SYSLIB libraries

CSECT OFFSET DATA
---------------------------------------------------------------------------
Starting Load module BSY$ADMN CONCAT #(1)
BSY$ADMN 00000000 0 (BSY$ADMN 06/20/2018 09.09 (c) Copyright
BSYLNK1 000000E8
BSYNAME 00000FAB
BSYNNMUT 000010A8
ISPLINK 000011A8 {0 x4 ISPLINK 2018.212 {0 x4 {0 x4 {0
---------------------------------------------------------------------------
Starting Load module BSY$ADM1 CONCAT #(1)
BSY$ADM1 00000000 0 (BSY$ADM1 06/20/2018 09.09 (c) Copyright
BSYNMUT 00001378
BSYNAME 00001478
ISPLINK 00001578 {0 x4 ISPLINK 2018.212 {0 x4 {0 x4 {0
---------------------------------------------------------------------------
```
Chapter 5. Collecting and analyzing data with the System Setup facility

The IMS Recovery Expert System Setup facility collects and displays information about IMS system user catalogs, IMS system data sets, active logs, and related IMS database data sets.

Some System Level Backups require data set isolation. If this is the case in your environment, you must analyze the physical location of your data sets and the user catalogs for those data sets. You can use the System Setup facility to collect and display the information that you must ensure that your IMS system is configured correctly for data set isolation.

You can access the System Setup panel from the IMS Recovery Expert System Operations Menu by specifying option 1 - IMS System Analysis and Configuration.

Configuring an IMS system for data set isolation

You must configure an IMS system if data set isolation is required for that system.

When configuring the IMS system, you must ensure that the following guidelines are met for each IMS system that requires data set isolation:

- The IMS system has at least two separate MVS user catalogs: one for the IMS data and one for the IMS log and IMS system data sets.
- Those two MVS user catalogs are on separate volumes.
- There are separate aliases for IMS system database data sets, and for the log and system data sets.
- The MVS user catalogs for the IMS data, and for the log and system data sets each contain the appropriate aliases.
- The IMS data, and log and system data sets on the volumes associated with the IMS subsystem are properly separated, located on Symmetrix devices, and do not contain data or catalogs that might be inappropriately back-leveled upon restoration.
- The volumes containing IMS data do not contain other MVS data that might be inappropriately back-leveled upon restore.

Configuration summary for the system setup facility

This is the general procedure to configure an IMS system using the IMS Recovery Expert System Setup facility.

Procedure

2. Analyze the IMS System. For more information, see “Analyzing IMS systems” on page 104.
3. On the System Backup Setup for IMS System panel, check the message area for the results of the analysis. For more information, see “Reviewing system setup information” on page 105.

4. Separate the MVS user catalogs into two catalogs: one for logs and system data sets and one for IMS database data sets. You can define new catalogs or modify existing catalogs. For more information, see “Separating the MVS user catalogs” on page 108.

5. Add or move the aliases for the log and system data sets to the appropriate log and system data sets catalog. For more information, see “Separating the MVS user catalogs” on page 108 and “Managing aliases in the MVS user catalogs” on page 112.

6. Add or move the aliases for IMS database data sets to the appropriate MVS user catalog. For more information, see “Separating the MVS user catalogs” on page 108 and “Managing aliases in the MVS user catalogs” on page 112.

7. Rename or move the RECON data sets if needed (requires the IMS subsystem to be down).

   Note: If you rename the RECON data sets, you must change the IMS procedure to reflect the new IMS RECON names before restarting the subsystem.

8. Rename or move the active logs if necessary (requires the IMS subsystem to be shut down).

9. Reanalyze the system. For more information, see “Analyzing IMS systems.”

10. View the volumes in use by the IMS system. Resolve any major issues. For example:
    • Ensure that log and database data sets do not reside on the same volume.
    • Move other MVS user catalogs unrelated to the IMS system to another location.
    • Ensure that the volumes to be backed up are on Symmetrix devices.
    For more information, see “Optimizing volumes used by the IMS system” on page 113.

---

**Analyzing IMS systems**

The following section describes the process of analyzing and reanalyzing an IMS system.

**Selecting an IMS system for analysis**

To select an IMS system for analysis:

**Procedure**

1. On the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN), specify 1 (System Operations) on the Option line and press Enter.

2. On the System Operations Menu panel (BSY$SYMN), specify 1 (IMS System Analysis and Configuration) and press Enter.
3. On the Enter IMS System or Group panel, specify a subsystem ID in the IMS System field, and the backup method to perform on the IMS system in the Backup Method field. The SSID or group name must have been defined in the IMS Recovery Expert setup panels before you can proceed.

4. Press Enter to start the system analysis. If the subsystem has previously been analyzed, the Data Found in Repository panel is displayed.

**What to do next**

Reviewing system setup information

When the analysis is complete, the System Setup Information panel is displayed.
The following fields appear at the top of the panel, and describe the status of the system and the analysis data:

**System/Group**

The IMS system or group analyzed.
Active Yes indicates that the IMS system is currently active.

Datasharing Yes indicates that the system is a member of a data sharing group.

Date of Last Analysis The date that the last analysis was run.

Message
This message is related to the last analysis of the IMS system or group. The following messages are examples:

- System configuration is optimal.
- System configuration prevents system level backup. At least some of the data sets for the IMS system are not on a supported EMC Symmetrix device.
- System configuration allows any application level recovery or a full system restore (data and logs). IMS Recovery Expert can backup and restore the system, but log/system data sets and database data sets are mixed on the same devices. A partial system level restore, where the database data sets are restored then rolled forward, is not allowed.
- Other non-IMS data will be backed up and restored. The IMS log/system data sets and database data is properly segregated, but IMS Recovery Expert has detected other non-IMS data sets on one or more system volumes. You can view the other data sets by using the D line command on the affected volumes.

Note: If any non-IMS data sets detected are empty user catalogs, you should move the catalogs to a volume not being used by the IMS system. If you choose not to move the catalogs, you will have to manually deallocate them before performing a system restore.

The following sections appear on this panel:

Existing MVS User Catalogs used by this Subsystem
This section lists the MVS user catalog name for the data sets. The type of data sets (data/log/other) is displayed to the left. The location of the user catalog is displayed in the Volume field to the far right. Specify V next to a catalog to view all aliases assigned to the catalog. Specify D next to a catalog to view all the data sets assigned to the catalog.

IMS RECON Datasets
In this section, the RECON 1, RECON 2, and RECON 3 fields list the data set names for IMS RECON 1, 2, and 3 respectively. The location of the RECONS is displayed in the Volume field to the far right.

Active Log Datasets
This section lists the data set names for all active log data sets. The location of the active logs is displayed in the Volume field to the far right.

Alias used with associated MVS User Catalogs
This section lists the aliases defined for the MVS user catalogs. Specify D next to an alias to view data sets associated with the alias.

Additional User Datasets
This section lists the data sets that are included in the backup due to the include/exclude list associated with the subsystem definition. Use option 0.2.2 to view the included data sets.

User Excluded Datasets
This section lists the data sets that are excluded from the backup due to
the include/exclude list associated with the subsystem definition. Use option 0.2.2 to view the excluded data sets.

Volumes used by this Subsystem
This section lists the volumes used by the specified subsystem. Highlighted volumes might have issues that need to be addressed before IMS Recovery Expert can be used on this system. Specify 0 next to a volume to view data sets on the volume.

Valid primary commands
You can use the following primary command on this panel:

ANALYZE
This command gathers information about the IMS system as in the original analysis.

Separating the MVS user catalogs
You can view the status of the Existing MVS User Catalogs sections of the System Setup Information panel. This allows you to review the status of your MVS user catalog. You must ensure that the MVS user catalogs are separated into two catalogs: one for logs and system data sets, and one for IMS database data sets. You can define new catalogs or modify existing catalogs to accomplish this.

You can also use this section to view aliases and add new aliases to the user catalogs. You need to ensure that there are separate aliases for the IMS system's database data sets, and log and IMS system data sets, and that each MVS user catalog for the IMS data, and for the log and system data sets contains the appropriate aliases.

Viewing existing MVS user catalogs
All MVS catalogs currently in use by this IMS system are listed under the Existing MVS User Catalogs used by this IMS System heading.

<table>
<thead>
<tr>
<th>Existing MVS User Catalogs used by this subsystem</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Log Other ICF.RSPLEX01.IMS.A50B.CAT1</td>
<td>SIRXA6</td>
</tr>
<tr>
<td>Log Other ICF.RSPLEX01.IMS.A5SYS.CAT1</td>
<td>SIRXA3</td>
</tr>
<tr>
<td>Line Cmds: (D-Data set Display, V-ViewAliases)</td>
<td></td>
</tr>
</tbody>
</table>

Figure 34. Existing MVS User Catalogs used by this subsystem panel

The types of data sets (Data/Log/Other) aliased in the catalogs are shown to the left. The location of the user catalog is shown in the Volume field on the far right. If the existing MVS catalogs show that IMS database data sets (Data on the left) and IMS log/system data sets (Data or Log on the left) are cataloged in the same catalog, you must separate them by creating new catalogs or changing the existing catalogs. You must also ensure that the two catalogs are located on different volumes.

Viewing the aliases for a user catalog
View the aliases in a specific user catalog for both existing and new MVS user catalogs.
Procedure

1. To view the aliases for a user catalog, specify V next to a user catalog. Aliases are listed on the Usercat Alias List Display panel.

```
BSY$SSAL V2R2 Usercat Alias List Display  2018/11/11 16:33:48
Option ===> Scroll ===> PAGE
------------------------------------------------------------------------
Subsystem: EMC  Usercat: ICF.RSPLEX01.IMS.A50B.CAT1
The following aliases are in this usercat. If the "IMS" column is Yes, the alias is being used by this IMS for either Logs or Data. The count is the number of IMS data sets using the alias name.
Row 1 of 3
------------------------------------------------------------------------
<table>
<thead>
<tr>
<th>Cmd</th>
<th>Alias</th>
<th>IMS</th>
<th>Logs</th>
<th>Data</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IMSA5DB</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>00002351</td>
</tr>
<tr>
<td></td>
<td>IMSA5LOG</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>00009489</td>
</tr>
<tr>
<td></td>
<td>IMSA6LOG</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>00008282</td>
</tr>
</tbody>
</table>
------------------------------------------------------------------------
```

Figure 35. Usercat Alias List Display panel (BSY$SSAL)

2. Press Enter.

Displaying the data sets currently cataloged by the MVS catalog

To view a list of data sets that are cataloged in the user catalog:

Procedure

1. Specify D next to an existing or new MVS catalog.

Because IMS Recovery Expert does not save individual data set information in its repository, you might be required to reanalyze the subsystem if you have not performed a recent analysis. You are not required to perform the analysis, but IMS Recovery Expert will not be able to display information about tracks, volume, or data type for data sets.

```
Re-Analyze System?
BSY$SSRX
This command requires a current analysis to show which data sets are in use by this IMS. If you do not perform the analysis, all data sets will still be shown but will have a status of "N/A". Do you want to perform the analysis now? N
```

Figure 36. Re-Analyze System panel (BSY$SSRX): MVS Catalogs

2. Press Enter.

3. Optional: If analysis is needed, specify Y on the Re-Analyze System panel and press Enter. After analysis (or if you are not viewing a previously saved analysis), the Usercat Dataset List Display panel opens.
IMS data sets related to the selected IMS environment are shown in ISPF default color blue. Non-IMS data sets are highlighted in the ISPF default color turquoise. Your colors might be displayed differently if you have changed your ISPF default colors.

The user catalog for which you are viewing data sets is listed at the top of the panel. The following information is provided:

**System/Group**
- The IMS subsystem or group being analyzed.

**Usercat**
- The user catalog being analyzed.

**Dataset Name**
- The fully qualified name of the data set.

**Tracks**
- The number of tracks allocated for the data set.

**Volume**
- The volume on which the data set is located, or the data set type if the data set is not physically allocated on the volume.

**IMS**
- The value in this column is set to Yes if the data set is an IMS data set for the selected IMS environment.

**Sys**
- The value in this column is set to Yes if the data set is an IMS active or archive log data set or an IMS system data set for the selected IMS environment.

**Data**
- The value in this column is set to Yes if the data set is an IMS database data set for the selected IMS environment.

---

**Viewing the data sets allocated on a volume**

To view the data sets allocated on a volume:

**Procedure**

1. Specify D next to a volume on the System Setup Information panel.

---

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Because IMS Recovery Expert does not save individual data set information in its repository, this command might require you to reanalyze the system if you have not performed a recent analysis. You are not required to perform the analysis, but IMS Recovery Expert will not be able to display information about the data sets' tracks, volume, or data type.

Figure 38. Re-Analyze System panel (BSY$SSRX): Volume Data Sets

2. Press Enter.

3. Optional: If analysis is needed, specify Y on the Re-Analyze System panel and press Enter. After analysis (or if the data was sufficiently up to date), the Volume Dataset List Display panel is displayed.

Figure 39. Volume Data Set List Display panel (BSY$SSVD)

The following fields are displayed on this panel:

**System/Group**

The IMS subsystem or group being analyzed.

**Volume Serial**

The volume serial number being analyzed.

**Free Trks**

The number of tracks free on the volume.

**IMS Data Trks**

The number of tracks being used by IMS database data sets for the specified IMS environment.
IMS Log Trks
The number of tracks being used by IMS log and system data sets for the specified IMS environment.

The remainder of the panel lists the data sets on the volume. IMS data sets related to the selected IMS environment are shown in ISPF default color blue. Non IMS data sets are highlighted in the ISPF default color turquoise. Your colors might be displayed differently if you have changed your ISPF default colors.

Dataset Name
The data set name.

Tracks The number of tracks allocated by the data set on the displayed volume.

IMS The value in this column is set to Yes if the data set is an IMS data set for the selected IMS environment.

Logs The value in this column is set to Yes if the data set is an IMS active or archive log data set for the selected IMS environment.

Data The value in this column is set to Yes if the data set is an IMS database data set for the selected IMS environment.

Managing aliases in the MVS user catalogs
The alias used with associated MVS User Catalogs section shows the aliases currently defined in the existing MVS catalogs. You can view the data sets currently defined to an alias using this section.

Viewing the data sets for an alias
To view the data sets that are using a particular alias:

Procedure
1. Specify 0 next to an alias.

Because IMS Recovery Expert does not save individual data set information in its repository, this command might require you to reanalyze the system if you have not performed a recent analysis. You are not required to perform the analysis, however, IMS Recovery Expert will not be able to display information about tracks, volume, or data type for data sets.

2. Press Enter.

3. Optional: If analysis is needed, specify Y on the Re-Analyze System panel and press Enter. After analysis (or if you are not viewing a previously saved analysis), the Alias Dataset Display panel is displayed.
IMS data sets related to the selected subsystem are shown in ISPF default color blue. Non-IMS data sets are highlighted in the ISPF default color turquoise. Your colors might be displayed differently if you have changed your ISPF default colors.

At the top of the panel, the following information about the IMS environment and alias for which you are viewing data sets is displayed:

**Dataset Name**
The fully qualified name of the data set.

**Tracks**
The number of tracks allocated for the data set.

**Volume**
The volume on which the data set is located, or the data set type if the data set is not physically allocated on the volume.

**IMS**
The value in this column is set to Yes if the data set is an IMS data set for the selected IMS environment.

**Sys**
The value in this column is set to Yes if the data set is an IMS active or archive log data set or an IMS system data set for the selected IMS environment.

**Data**
The value in this column is set to Yes if the data set is an IMS database data set for the selected IMS environment.

---

**Optimizing volumes used by the IMS system**

The IMS Subsystem section lists all the volumes used by the specified IMS environment. You can use this section to address issues such as data sets other than IMS data sets residing on a volume.

The volumes are displayed in various ISPF default colors, depending on the status of the volume.

**Note:** Your colors might be different if you have changed your ISPF default colors.

**Dark blue**
Volume is optimal.
Light blue
    The volume contains data other than IMS data.
Pink
    Both log and database data reside on the volume.
Red
    The volume cannot be backed up by IMS Recovery Expert.
Chapter 6. Creating and maintaining System Level Backup profiles

System Level Backup profiles contain information that is passed to IMS Recovery Expert and incorporated into the backup job when it is built.

Using the IMS Recovery Expert ISPF interface, you can create a System Level Backup profile to specify the source volumes to be backed up for a system and their associated target units. In addition, you set other backup options such as the backup type and the number of generations to keep in the profile. Backup profiles are reusable and editable, and are created on a per system or group basis. After profile setup has run, you cannot change the system or group profile name or type of backup in a profile. You can change other settings and redefine the source and target volumes. You can easily rename and delete backup profiles using line commands.

Profile setup

Profile setup is a validation process performed by IMS Recovery Expert before a backup of a system can be taken. This process authenticates the volumes for the system, checks the locations of the user data, logs, and user catalogs, and performs other validations to ensure the backup can proceed and that the resulting backup will be usable.

A backup profile must successfully complete profile setup before a backup can be generated. When a backup profile has been set up, it does not need to be set up again unless changes are made to the source or target volume configuration, or unless IMS Recovery Expert detects certain errors while building a backup job. If this happens, the profile is flagged as “Setup Needed” on the Update Backup Profile panel. When building a backup job, if profile setup is needed, it is included as the first job step in the JCL. If you request, IMS Recovery Expert can build only the profile setup syntax in the JCL; in this case, no backup is taken.

Profile setup includes the following validations:

- Ensures all volumes in use by the IMS system are included in the backup.
- If the backup is a full backup, ensures all IMS log volumes are also included in the backup.
- Ensures that the user catalogs in use by the IMS system are included in the backup.
- Ensures the log data sets and user data sets are on separate volumes. This includes the user catalogs for log data sets and for database data sets. If log and database data are not separated, the backup can continue, but only a full restore will be allowed.
- Ensures that all source volumes are valid, online, and available for backup.
- Ensures all target volumes are valid and available for backup.
- For IBM FlashCopy backup profiles, verifies that the source and target volume are both FlashCopy capable, and reside within the same logical subsystem.
- Verifies that target units of a backup are not in use by any other backup profile; if so, a warning message is issued. Otherwise, the backup might destroy the data sets for another subsystem.
• Ensures that IMS control information does not reside on any volume that is being backed up.
• Checks that all source and target volumes are at a minimum microcode and patch level for backup.
• For EMC TimeFinder/Clone BCV backup profiles:
  – Verifies that the source volumes do not have established BCVs that are not part of the backup profile.
  – Verifies the target BCVs are not established to any volumes that are not listed as source volumes in the profile.
  – Establishes the first generation of BCVs to the source volumes and puts all other generations on hold. When those BCVs are synchronized with the source volumes, the profile is ready to be built.

After profile setup has been successfully completed, the IMS SSID and backup type are made read-only in the profile and cannot be changed.

Profile setup must be re-run under the following circumstances:
• If the number of backup generations changes
• If you add, change, or delete the source or target units
• If the backup type is changed from Full to Data or from Data to Full
• If you specify a one-generation BCV backup, when the backup job is executed, the BCVs are split. IMS Recovery Expert does not establish another generation because only one generation can exist. To use this profile to create another backup, you must rerun profile setup. This will reestablish the one and only generation and start the mirroring process so the BCVs can be split to create the next backup.
• If IMS Recovery Expert detects certain errors while running a backup, the profile will be flagged as Setup Needed. These errors include but are not limited to:
  – Errors that occur during the split phase of a BCV backup. If these errors are detected, the backup process will end.
  – Errors that occur while establishing the next generation of BCVs. If these errors are detected, the backup is still valid because the split processing completed successfully. However, profile setup is needed because the next generation has not been established and therefore is not mirroring the volumes.

Accessing the backup profile list

The Backup Profile and Display panel lists the System Level Backup profiles that have been created.

Procedure
1. Specify 1 (System Operations) on the IMS Recovery Expert main menu panel (BSY$MAIN) and press Enter.
2. On the System Operations Menu panel (BSY$SYMN), specify 2 (System Backup Profiles) and press Enter.
On the Enter Backup Profile Selection Criteria panel, you can limit the profiles that are listed on the next panel by specifying a profile name, profile creator name, or SSID. You can use the asterisk (*) wildcard character in one or all of the fields to view all profiles, all profiles for a creator, or all profiles for a SSID.

3. When you finish specifying information on the Enter System Backup Profile Selection Criteria panel, press Enter.

The first time you access the System Backup Profile Display panel, it appears as shown in the example above.

Use the RIGHT and LEFT scroll commands (PF10 and PF11) to see all the available columns. Use the UP and DOWN commands (PF7 and PF8) to scroll through the list when there are more profiles than can be displayed on one panel.

Cmd  In the Cmd field next to each System Level Backup profile, specify any of the following line commands:

- B  Build
- U  Update
- C  Create
- V  View
- D  Delete
- R  Rename
- G  Group

Profile Like  The profile name or mask you specified on the Enter Backup Profile
Selection Criteria panel is displayed here. You can change the name or mask to see different profiles on this panel.

**Creator Like**
The profile creator name or mask you specified on the Enter Backup Profile Selection Criteria panel is displayed here. You can change the name or mask to see different profiles on this panel.

**SSID Like**
The IMS subsystem ID, group name, or mask you specified on the Enter Backup Profile Selection Criteria panel is displayed here. You can change the name or mask to see different profiles on this panel.

**Row x of y**
Displays the current row and the total number of rows in the profile list. Adjacent to this field is a scroll indicator:

- `< >` Indicates to scroll left or right for data.
- `<` Indicates to scroll left for more data.
- `>` Indicates to scroll right for more data.
- `+` Indicates to scroll down for more data.
- `-` Indicates to scroll up for more data.

**Name**
The name of the profile.

**Creator**
The profile creator.

**SSID**
The IMS subsystem ID or Group Name for which the profile was created.

**Updt**
This column indicates how users other than the profile creator can use the profile.

- `U(update)` Allows other users to update the profile.
- `V(view)` Allows other users to view but not update the profile.
- `N(no access)` Prevents other users from viewing or updating the profile.

**Description**
The profile description, if included.

**Last Updated: Userid**
The user ID of the last user to update the profile.

**Last Updated: Timestamp**
The date and time that the profile was last updated.

**Created: Userid**
The user ID of the creator of the profile.

**Created: Timestamp**
The date and time that the profile was created.
Creating IBM FlashCopy and EMC TimeFinder/Clone backup profiles

IMS Recovery Expert makes IBM FlashCopy backups by using the FlashCopy function, a copy service available for IBM Enterprise Storage Systems (ESS) devices. IMS Recovery Expert makes EMC TimeFinder/Clone Volume Snap (SNAP) backups by running the EMC utility. IMS Recovery Expert can maintain up to 99 generations of FlashCopy or SNAP backups.

About this task

When using the FlashCopy and SNAP backup methods, IMS Recovery Expert will automatically vary all target units offline when the backup is taken. These target units will be exact copies of the source units with which they are paired. It is not necessary or recommended to vary the target volumes back online in preparation for the next backup.

Procedure

1. On the System Backup Profile Display panel (BSY$BPRD), specify C on the Cmd line and press Enter.

2. On the Enter New Backup Profile Options panel, specify information in the following fields:

   Creator
   This field is automatically filled with your user ID as the profile creator.

   Profile name
   Specify a name for the profile (up to 30 characters).

   Description
   (Optional) Specify a profile description.

   IMS SSID
   Specify the IMS system or group for the profile. To view a list of systems and groups to choose from, specify ? in this field and press Enter. The SSID Selection panel is displayed. This panel lists available systems and groups and indicates whether they are active or inactive. Select a system or group by specifying S next to the SSID or group name, and then press Enter.

   Backup Method
   Specify S for Snap or F for FlashCopy backup.
Source/Target Mapping

Specify how source volumes are determined and mapped to the target volumes. You can specify one of the following values in this field:

- Specify A to select **Auto discover/pool mapping**. If you specify this option, the source volumes are automatically discovered at run time and mapped to target volumes using a pool of target volumes (either units or SMS storage groups).

- Specify S to select **Stogroup discover/pool mapping**. If you specify this option, the source volumes are discovered using SMS storage groups that are specified for an IMS system. These source volumes are mapped to target volumes using a pool of target volumes (either units or SMS storage groups).

- Specify M to select **Manual** mapping. If you select this option, you can manually specify the source volumes and map them to target volumes.

Update Option

This option controls how other users can use your profile.

- Specify U to allow others to update the profile.
- Specify V to allow others to view but not update the profile.
- Specify N to prevent others from viewing or updating the profile.

3. Press Enter.

```
BSYSBPRU V2R2  Update Backup Profile  2018/07/03 10:23:15
Option ==> Scroll ==> PAGE

Commands: ? - Show all commands
Line Commands: I - Insert  D - Delete  X - Exclude  U - Undo from exclude

*****************************************************************************
Creator: PDMONA  Name: TEST1  SSID: IBA2
Share Option: U (Upd,View,No)  Description: TEST1
Backup Options
Backup Method ==> S (B/S/F/L)  Current Generation ==> 00
Backup Scope ==> D (Full/Data)  Setup Needed ==> Y
Backup Generations ==> 03 (01 - 99)  Issue Log Suspend ==> N (Yes/No)
Offload Options ==> N (Yes/No/Update)  Validate IMS Vols ==> N (Yes/No)
Source Stogroups ==> N (Yes/No/Update)  Enable DB Restore ==> N (Yes/No)
Target Pool ==> N (Yes/No/Update)  Issue NOTIFY.IC ==> N
*****************************************************************************
Volume Mappings
Row 1 of 1
Source Dev Src Target
Cmd Volumes Type Unit Units Message Area
I PRESS ENTER FOR NEW LINE
*****************************************************************************
```

**Figure 45. Update Backup Profile panel (BSYSBPRU)**

On the Update Backup Profile panel, the following fields will be read-only upon profile creation:

**Backup Method**

The backup method used for this profile:

- B  BCV backup
- S  SNAP backup
- F  FlashCopy backup
- L  DFSMSdss backup
Current generation
When you first create a profile, this field is set to 0. After the profile is built and submitted, this field contains the generation that is currently mirroring IMS.

Setup Needed
When you create a profile, this field is set to Y. The profile setup process must be run the first time a profile is built and the resulting job is submitted. After profile setup is performed, this field contains N when you update the profile. If you update a profile and change the volume configuration, number of generations, or backup scope, rerunning profile setup is required and this field is reset to Y.

4. Specify information in the following fields:

Backup Scope
Indicate if you want a full backup taken (both data and logs) or to backup data only. Note that if you specify data only and IMS Recovery Expert detects log data on the volumes during the backup, the backup proceeds without error only if all IMS log and data volumes have been included in the profile. In this case, the backup is flagged as a mixed data backup and you will only be able to restore both the data and the logs.

Backup Generations
Specify the number of generations of backups you want to keep. Valid values are 1 to 99.

Offload Options
Specify Y in this field if you want to retain more backups than the number specified in the Backup Generations field. If you specify this option, IMS Recovery Expert will offload older backups to another device (such as tape or other volumes). When you initially select this option, the Offload Options panel will be displayed. If you edit the profile at a later time and want to update the offload options, specify U in this field.

Source Stogroups
This field only appears if you specified S (Stogroup discover/pool mapping) on the Enter New Backup Profile Options panel when you created the profile. Specify Y in this field to access the Source Stogroup Selection panel, where you can specify each source SMS storage group associated with the IMS subsystem. Specify U in this field to access the Source Stogroup Selection panel, where you can edit the source SMS storage groups that have been associated with the IMS subsystem.

Target Pool
Specify U in this field if you want to define a pool of target volumes. The Target Pool Selection panel is displayed, allowing you to specify a range of units or a list of SMS storage groups to be used as targets for each source volume. The units or storage groups that are specified will be used at backup time to map each source volume to a target unit.

Issue Log Suspend
Specify whether you want IMS Recovery Expert to stop all logging activity on the system(s) while the backup is made. For Flash backups, log suspension is required if the source and target volumes do not support a storage-based consistency group function. For SNAP backups, specify Y to suspend logging activity; logging will resume after the backup has completed. If the Symmetrix arrays are equipped
with ECA (Enginuity Consistency Assist), you can specify \( N \) in this field to allow ECA to manage the log suspension. Note that if any of the Symmetrix devices do not support ECA, IMS Recovery Expert will automatically suspend the log.

**Validate IMS volumes**

If you specify \( Y \) in this field, every time the backup job is run IMS Recovery Expert will determine what volumes the system(s) is using and ensure the volumes are included in the backup. The profile setup process will always validate volumes, among other profile setup procedures.

**Enable DB Restore**

If you want to enable IMS Recovery Expert application or database level recovery from backups created by this profile, specify \( Y \) in this field. During backup, IMS Recovery Expert saves information about database data sets that allows databases to be individually restored later. Refer to [Recovering databases using application profiles](#) for more information about application or database level recovery.

**Issue NOTIFY.IC**

If you want to have a NOTIFY.IC done for each object when a backup is created, specify \( Y \) in this field. The NOTIFY.IC will be done for each recoverable object in the backup and allows DBRC to be notified that a backup of the object was created.

**Note:** Issue NOTIFY.IC is set to \( Y \) when a System Level Backup is created. IMS Recovery Expert will issue a NOTIFY.IC for each object in the System Level Backup with an invalid image copy data set name. If an image copy data set is needed, then the image copy data sets can be created by generating the build image copy JCL from System Level Backup. Refer to [Chapter 12, “Creating image copies from System Level Backups,” on page 267](#) for more information on generating the build image copy JCL.

5. Determine the source volumes for the specified IMS environment. You can do this in one of the following ways:

- If you specified \( S \) to select **Source/Target Mapping**, then you can specify the SMS source storage groups by specifying \( U \) in the **Source Stogroups** field. On the Source Stogroup Selection panel (BSY$STOG), you can specify all SMS storage groups that represent the source volumes to include in the backup.

- To build a list of all IMS source volumes for the SSID, specify **VOLUME** on the **Option** line. When you press Enter, IMS Recovery Expert determines the volumes that are being used by the specified IMS environment. When the scan is complete, the comprehensive list of volumes is displayed in the scrollable Volume Inclusions/Exclusions area.
Each volume listed was detected by IMS Recovery Expert to be in use by the specified IMS subsystem. Use the UP and DOWN commands (PF7 and PF8) to scroll through the list when there are more volumes than can be displayed on one panel. Review any messages that are displayed in the Message Area.

- To specify a range of IMS source volumes, specify SOURCE on the Option line and press Enter.

![Figure 46. Update Backup Profile panel (BSY$BPAU): VOLUME option](image)

On the Enter a Source Range panel, specify a beginning and ending range of source units. When you press Enter, IMS Recovery Expert scans the source volumes in the supplied range and determines if the volumes are being used by the specified IMS environment. A volume list is displayed on the Update Backup Profile display if the source scan is successful. If an error occurs, review the error message and any message in the Message Area. Use the UP and DOWN commands (PF7 and PF8) to scroll through the list when there are more volumes than can be displayed on one panel. Review any informational messages that are displayed in the Message Area.

- To manually input source volumes, specify I as a line command, and specify the source volume in the Source Volumes column. Press Enter.

To clear all source (and target) mappings from the profile, specify CLEAR on the Option line and press Enter.

6. Specify one or more target volume(s) for each source volume. You can specify target units for each source volume in one of the following ways:

- Next to each source volume, specify corresponding target unit(s) in the Target Units area. The target units must reside on the same Symmetrix array as the paired source volumes.
• Specify TARGET on the Option line.

![Figure 48. Enter a Target Range panel (BSY$BPRT)](image)

Specify a beginning and ending range of target units. The Enter by Generation field determines how the target unit fields are populated. If you specify N in the Enter by Generation field, IMS Recovery Expert assigns volumes sequentially as follows:

- Volume 1 - target unit 1
  - target unit 2
- Volume 2 - target unit 3
  - target unit 4

If you specify Y in the Enter by Generation field, IMS Recovery Expert assigns volumes as follows:

- Volume 1 - target unit 1
  - target unit 3
- Volume 2 - target unit 2
  - target unit 4

When you press Enter, the target units are mapped. If an error occurs, review the message in the Message Area. If no target is displayed in the Target Units field, no target unit in the specified range could be matched to a source volume. The target and source cannot be matched if the target and source are on different Symmetrix arrays.

7. You can modify the source/target volume mappings in any of the following ways:

• If you want to specify additional mappings (a source volume and its related target units), specify the I line command. To delete a mapping, specify the D line command. Press Enter.

• To exclude a volume, specify the E line command next to a volume. If you exclude a volume, IMS Recovery Expert will not include the volume in the backup. The resulting backup will be tagged as a partial backup, which cannot be used for a system restore. However, a partial backup can be used to restore individual databases if you have enabled the DB restore function. To undo an excluded volume, specify the U line command. Press Enter.

• To clear all target units from the mappings in the profile, specify the TGTCLR command on the Option line. To clear all source and target mappings from the profile, specify the CLEAR command on the Option line. Press Enter.

• To display more volume mappings, you can toggle the header fields on and off by specifying the HEADER command on the Option line.

• To save the information you specified without ending your edit session, specify SAVE on the Option line.

8. When you have completed volume mapping, press PF3 to save your profile and exit.
Creating an EMC BCV backup profile

When using BCV devices for backups, IMS Recovery Expert establishes a BCV device to each IMS source volume during profile setup. When a backup is requested, the BCV mirror is split from the IMS source volume. If multiple generations are being maintained, the next generation BCV mirror is then established. The split BCV device can be used as a point-in-time backup for restore operations. IMS Recovery Expert can maintain up to seven generations of backups using the BCV methodology.

About this task

When using the BCV backup methods, IMS Recovery Expert will automatically vary all target units offline when the backup is taken. These target units will be exact copies of the source units they are paired with. It is not necessary or recommended to vary the target volumes back online in preparation for the next backup.

Procedure

1. On the System Backup Profile Display panel (BSY$BPRD), specify C on the Cmd line and press Enter.

2. On the Enter New Backup Profile Options panel, specify information in the following fields:

   Creator
   
   This field is automatically completed with your user ID as the profile creator.

   Profile name
   
   Specify a name for the profile (up to 30 characters).

   Description
   
   (Optional) Specify a profile description.

   IMS SSID
   
   Specify the IMS subsystem ID or Group Name for the profile in this field. To view and select from a list of systems and groups, specify ? in this field and press Enter. The SSID Selection is displayed. This panel
lists the available systems and groups and indicates whether they are active or inactive. Select a system or group by specifying S next to its name, and then press Enter.

**Backup Method**
Specify B for BCV backup.

**Source/Target Mapping**
Specify how source volumes are determined and mapped to the target volumes. You can specify one of the following values in this field:

- Specify A to select **Auto discover/pool mapping.** If you specify this option, the source volumes are automatically discovered at run time and mapped to target volumes using a pool of target volumes (either units or SMS storage groups).

- Specify S to select **Stogroup discover/pool mapping.** If you specify this option, the source volumes are discovered using SMS storage groups that are specified for an IMS system. These source volumes are mapped to target volumes using a pool of target volumes (either units or SMS storage groups).

- Specify M to select **Manual** mapping. If you select this option, you can manually specify the source volumes and map them to target volumes.

**Update Option**
This option controls how other users can use your profile.

- Specify U to allow others to update the profile.
- Specify V to allow others to view but not update the profile.
- Specify N to prevent others from viewing or updating the profile.

3. Press Enter.

---

**Figure 50. Update Backup Profile panel (BSY$BPRU)**

On the Update Backup Profile panel, the following fields will be read-only upon profile creation:

**Backup Method**
The backup method used for this profile. This field contains B for BCV backup.
Current generation
When you first create a profile, this field will be set to 00 and will be read only. After the profile has been built and submitted, this field will contain the generation that is currently mirroring IMS.

Setup Needed
When you create a profile, this field will be set to Y and will be read only. The profile setup process must be run the first time a profile is built and the resulting job submitted. After profile setup has been performed, this field will contain N when you update the profile. If you update a profile and change the volume configuration, number of generations, or backup type, rerunning profile setup will be required and this field will be reset to Y.

4. Specify information in the following fields:

Backup Scope
Indicate if you want a full backup taken (data and logs) or to backup data only. Note that if you specify data only and IMS Recovery Expert detects IMS system log data on the volumes during the backup, the backup will proceed without error only if all IMS log and data volumes have been included in the profile. In this case, the backup will be flagged as a mixed data backup and you will only be able to restore both the data and the logs.

Backup Generations
Specify the number of generations of backups you want to keep. Valid values are 1 to 8. The number of backup generations that will be available for restoration will be one less than the value you specify here, because one generation is always established to and mirroring the IMS source volumes.

Note:
If you specify 1 generation, when the backup job is run, the BCVs are split. IMS Recovery Expert does not establish another generation because only one generation can exist. Instead, the backup profile is marked as Setup Needed. To use this profile to create another backup, you must run profile setup. This will reestablish the one and only generation, and start the mirroring process so the BCVs can be split to create the next backup.

Note that running profile setup again will destroy the backup represented by this one generation of BCVs, because the BCVs will begin mirroring the current set of IMS source volumes after they are reestablished.

Offload Options
Specify Y in this field if you want to retain more backups than the number specified in the Backup Generations field. If you specify this option, older backups will be offloaded to another device (such as tape or other volumes). When you initially select this option, the Offload Options panel will be displayed. If you edit the profile at a later time and want to update the offload options, specify U in this field.

Issue Log Suspend
Specify whether you want IMS Recovery Expert to stop all logging activity on the IMS system(s) while the backup is made. Specify Y to suspend logging activity; logging will resume after the backup has
completed. If the Symmetrix arrays are equipped with ECA (Enginuity
Consistency Assist), you can specify Y in this field to allow ECA to
manage the log suspension. Note that if any of the Symmetrix devices
do not support ECA, the log is automatically suspended.

**Validate IMS Vols**
If you specify Y in this field, every time the backup job is run, IMS
Recovery Expert will determine what volumes the system(s) is using
and ensure that the volumes are included in the backup. The profile
setup process will always validate volumes, among other profile setup
procedures.

**Enable DB Restore**
If you want to enable IMS Recovery Expert application level recovery
from backups created by this profile, specify Y in this field. During
backup, information is saved about database data sets that allows
databases to be individually restored later.

**Issue NOTIFY.IC**
If you want to have a NOTIFY.IC done for each object when a backup
is created, specify Y in this field. The NOTIFY.IC will be done for each
recoverable object in the backup and allows DBRC to be notified that a
backup of the object was created.

**Note:** Issue NOTIFY.IC is set to Y when a System Level Backup is
created. IMS Recovery Expert will issue a NOTIFY.IC for each object in
the System Level Backup with an invalid image copy data set name. If
an image copy data set is needed, then the image copy data sets can be
created by generating the build image copy JCL from System Level
Backup. Refer to Chapter 12, “Creating image copies from System Level
Backups,” on page 267 for more information on generating the build
image copy JCL.

5. Specify source and target volumes.

**Specifying source and target volumes for an EMC BCV backup profile**
You can select the source volumes to be included in the BCV backup profile in one
of several ways. You can select from a list, specify a range, or specify each
manually.

**Procedure**
1. On the Update Backup Profile panel, you can specify source volumes for the
specified IMS environment in several ways:
   - To build a list of all IMS source volumes for the SSID, specify VOLUME on the
     Option line. When you press Enter, IMS Recovery Expert determines the
     volumes that are being used by the specified IMS environment. When the
     scan is complete, the comprehensive list of volumes is displayed in the
     scrollable display area.
Each volume listed was detected by IMS Recovery Expert to be in use by the specified IMS environment. Use the UP and DOWN commands (PF7 and PF8) to scroll through the list when there are more volumes than can be displayed on one panel. Review any messages that are displayed in the Message Area.

To clear all source (and target) mappings from the profile, specify the CLEAR command on the Option line.

- To specify a range of source volumes to back up, specify SOURCE on the Option line and press Enter.

<table>
<thead>
<tr>
<th>Source Dev</th>
<th>Source Type</th>
<th>Units</th>
<th>Message Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>RI10C</td>
<td>3390-3</td>
<td>0B77</td>
<td></td>
</tr>
</tbody>
</table>

Figure 51. Update Backup Profile panel (BSY$BPRU)

On the Enter a Source Range panel, specify a beginning and ending range of source units. When you press Enter, IMS Recovery Expert retrieves a list of source volumes in the supplied range that are online and that are capable of fast-replication. This list might include volumes that do not contain data or logs for the specified SSID. If an error occurs, review the error message. Use the UP and DOWN commands (PF7 and PF8) to scroll through the list when there are more volumes than can be displayed on one panel. You should also review any informational messages that are displayed in the Message Area.

- You can manually input source volumes. Use the I line command and specify the source volume in the Source Volumes column.

To clear all source (and target) mappings from the profile, specify the CLEAR command on the Option line.

2. On the Update Backup Profile panel, you can specify one or more target volumes for each source volume in one of several ways. For BCV backup profiles, the target units selected must be offline.

- Next to each source volume, specify corresponding target unit(s) in the Target Units area. The target units must be the same device type and reside on the same Symmetrix arrays as the paired source volumes.
• You can specify AUTOTGT on the Option line. This command automatically populates the target BCVs that have a relationship with the source volume. If no relationship(s) exist, the Target Units field will remain blank.
• You can specify TARGET on the Option line.

![Figure 53. Enter a Target Range panel (BSY$BPRT)](image)

On the Enter a Target Range panel, specify a beginning and ending range of target units. The Enter by Generation field determines how the target unit fields are populated. If you specify N in the Enter by Generation field, IMS Recovery Expert assigns volumes sequentially as follows:

Volume 1 - target unit 1
  target unit 2
Volume 2 - target unit 3
  target unit 4

If you specify Y in the Enter by Generation field, IMS Recovery Expert assigns volumes as follows:

Volume 1 - target unit 1
  target unit 3
Volume 2 - target unit 2
  target unit 4

When you press Enter, the target units are mapped to the source volumes. If an error occurs, review the message in the Message Area. If no target is displayed in the Target Units field, no target unit in the specified range could be matched to a source volume. The target and source cannot be matched if the device types do not match or the target and source are on different Symmetrix arrays.

3. You can modify the source/target volume mappings by doing any of the following:

• If you want to specify additional mappings (a source volume and its related target units), specify I in the line command area. To delete a mapping, specify D in the line command area.

• To exclude a volume, specify X in the line command area next to a volume. If you exclude a volume, IMS Recovery Expert will not include the volume in the backup. The resulting backup will be tagged as a partial backup, which cannot be used for a system restore. However, a partial backup can be used to restore individual databases if you have enabled the database restore function. To undo an excluded volume, specify U in the line command area.

• To clear all target units from the mappings in the profile, specify TGTCLR on the Option line. To clear all source and target mappings from the profile, specify CLEAR on the Option line.

• To display more volume mappings, you can toggle the header fields on and off by specifying HEADER on the Option line.

• To save the information you specified without ending your edit session, specify SAVE on the Option line.

4. When you have completed volume mapping, press PF3 to save your profile and exit.
Creating an IBM DFSMSdss backup profile

IMS Recovery Expert can make backups using DFSMSdss. You might want to use DFSMSdss profiles if your site does not have fast-replication hardware, or if your site’s hardware does not support Snap or FlashCopy but supports other fast-replication through DFSMSdss.

About this task

This type of backup profile supports DFSMSdss traditional copies and IBM/STK SnapShot. IMS Recovery Expert can maintain up to 99 generations of DFSMSdss backups on disk.

For DFSMSdss backups, the target volumes must be online when profile setup is run and when the backup is taken. In addition, all target volumes must have their own unique volume serial.

Note: If fast-replication is not used, the backup process might be lengthy depending on the number of volumes copied.

Procedure

1. On the System Backup Profile Display panel (BSY$BPRD), specify C on the Cmd line and press Enter.

2. On the Enter New Backup Profile Options panel, specify information in the following fields:

   Creator
   This field is automatically populated with your user ID as the profile creator.

   Profile name
   Specify a name for the profile (up to 30 characters).

   Description
   (Optional) Specify a profile description.

   IMS SSID
   Specify the IMS system or group for the profile in this field. To view a list of systems and groups to choose from, specify ? in this field and press Enter. The SSID Selection panel is displayed. This panel lists
available systems and groups and indicates whether they are active or inactive. Select a system or group by specifying S next to the SSID or group name, and then press Enter.

**Backup Method**
Specify L to select DFSMSdss backup.

**Source/Target Mapping**
Specify how source volumes are determined and mapped to the target volumes. You can specify one of the following values in this field:

- Specify A to select **Auto discover/pool mapping**. If you specify this option, the source volumes are automatically discovered at run time and mapped to target volumes using a pool of target volumes (either units or SMS storage groups).
- Specify S to select **Stogroup discover/pool mapping**. If you specify this option, the source volumes are discovered using SMS storage groups that are specified for an IMS system. These source volumes are mapped to target volumes using a pool of target volumes (either units or SMS storage groups).
- Specify M to select **Manual** mapping. If you select this option, you can manually specify the source volumes and map them to target volumes.

**Update Option**
This option controls how other users can use your profile.

- Specify U to allow others to update the profile.
- Specify V to allow others to view but not update the profile.
- Specify N to prevent others from viewing or updating the profile.

3. Press Enter.

```plaintext
BSY$BPRU V2R2 --------- Update Backup Profile --------- 2018/07/03 11:01:17
Option ====> Scroll ====> PAGE

Commands: ? - Show all commands
Line Commands: I - Insert D - Delete X - Exclude U - Undo from exclude

-----------------------------------------------------------------------------------------
Creator: PDMONA Name: TEST123 SSID: IAAX
Share Option: U (Upd,View,No) Description: TEST123
-----------------------------------------------------------------------------------------
Backup Method => L (B/S/F/L) Current Generation=> 00
Backup Scope => D (Full/Data) Setup Needed => Y
Backup Generations=> 03 (01 - 99) Issue Log Suspend => N (Yes/No)
Offload Options => N (Yes/No/Update) Validate IMS Vols => N (Yes/No)
Enable DB Restore => N (Yes/No) Issue NOTIFY.IC => N (Yes/No)

------------- Volume Mappings -------------
Row 1 of 1

Cmd Volumes Type Unit Volumes Message Area
SOURCE Dev SRC Target

PRESS ENTER FOR NEW LINE

***************************************************************************************

Bottom of Data ***************************************************************************************
```

**Figure 55. Update Backup Profile panel (BSY$BPRU)**

On the Update Backup Profile panel, the following fields are read-only upon profile creation:

**Backup Method**
The backup method used for this profile. This field contains L for DFSMSdss backup.
Current generation
When you first create a profile, this field will be set to 0. After the profile has been built and submitted, this field will contain the generation that is currently mirroring IMS.

Setup Needed
When you create a profile, this field will be set to Y. The profile setup process must be run the first time a profile is built and the resulting job submitted. When profile setup has been performed, this field will contain N when you update the profile. If you update a profile and change the volume configuration, number of generations, or backup scope, you must run the profile setup again and this field will be reset to Y.

4. Specify information in the following fields:

Backup Scope
Specify if you want a full backup taken (both data and logs) or to back up data only. Note that if you specify data only and IMS Recovery Expert detects log data on the volumes during the backup, the backup will proceed without error only if all IMS log and data volumes have been included in the profile. In this case, the backup will be flagged as a mixed data backup and you will only be able to restore both the data and the logs.

Backup Generations
Specify the number of generations of backups you want to keep. Valid values are 1 to 99.

Offload Options
Specify Y in this field if you want to retain more backups than the number specified in the Backup Generations field. If you specify this option, IMS Recovery Expert will offload older backups to another device (such as tape or other volumes). When you initially select this option, the Offload Options panel will be displayed. If you edit the profile at a later time and you want to update the offload options, specify U in this field.

Issue Log Suspend
If all of the source and target volumes support a storage-based consistency function, then set this value to N. Set this value to Y if all of the source and target volumes do not support a storage-based consistency function. If all source and target volumes are FlashCopy capable, then IMS Recovery Expert stops all logging activity on the IMS system(s) while the backup is made when this value is set to Y. If any of the source or target volumes are not FlashCopy capable, then the backup can only be made if the IMS system(s) is not active.

Validate IMS volumes
If you specify Y in this field, each time the backup job is run, IMS Recovery Expert will determine what volumes the IMS environment is using and ensure the volumes are included in the backup. The profile setup process will always validate volumes, among other profile setup procedures.

Enable DB Restore
If you want to enable IMS Recovery Expert application or database-level recovery from backups created by this profile, specify Y.
in this field. During backup, IMS Recovery Expert saves information about database data sets that allows databases to be individually restored later.

**Issue NOTIFY.IC**

If you want to have a NOTIFY.IC done for each object when a backup is created, specify Y in this field. The NOTIFY.IC will be done for each recoverable object in the backup and allows DBRC to be notified that a backup of the object was created.

**Note:** Issue NOTIFY.IC is set to Y when a System Level Backup is created. IMS Recovery Expert will issue a NOTIFY.IC for each object in the System Level Backup with an invalid image copy data set name. If an image copy data set is needed, then the image copy data sets can be created by generating the build image copy JCL from System Level Backup. Refer to Chapter 12, “Creating image copies from System Level Backups,” on page 267 for more information on generating the build image copy JCL.

5. Select the source and target volumes for the specified IMS environment.

**Specifying source and target volumes for a DFSMSdss backup profile**

You can select the source volumes to be included in the DFSMSdss backup profile in one of several ways. You can select from a list, specify a range, or specify each manually.

**Procedure**

1. On the Update Backup Profile panel (BSY$BPRU), you can specify source volumes for the specified IMS environment in one of the following ways:
   - If you specified S to select **Source/Target Mapping**, then you can specify the SMS source storage groups by specifying U in the **Source Stogroups** field. On the Source Stogroup Selection panel (BSY$STOG), you can specify all SMS storage groups that represent the source volumes to include in the backup.
   - To build a list of all IMS source volumes for the SSID, specify **VOLUME** on the **Option** line. When you press Enter, IMS Recovery Expert determines the volumes that are being used by the specified IMS environment. When the scan is complete, the comprehensive list of volumes is displayed in the scrollable **Volume Mappings** area.
On the Update Backup Profile panel, each volume that is listed was detected by IMS Recovery Expert to be in use by the specified IMS subsystem. Use the \textit{UP} and \textit{DOWN} commands (PF7 and PF8) to scroll through the list when there are more volumes than can be displayed on one panel. Review any messages that are displayed in the Message Area.

- To specify a range of source volumes to back up, specify \texttt{SOURCE} on the Option line and press Enter.

On the Enter a Source Range panel, specify a beginning and ending range of source units. When you press Enter, IMS Recovery Expert scans the source volumes in the supplied range and determines if the volumes are being used by the specified IMS environment. If the source scan is successful, a volume list is displayed on the Update Backup Profile panel. If an error occurs, review the error message and any messages in the Message Area. Use the \textit{UP} and \textit{DOWN} commands (PF7 and PF8) to scroll through the list when there are more volumes than can be displayed on one panel. Review any informational messages that are displayed in the Message Area.

- To manually input source volumes, specify the \texttt{I} line command and specify the source volume in the \textit{Source Volumes} column. Press Enter.

To clear all source (and target) mappings from the profile, specify \texttt{CLEAR} on the Option line and press Enter.

2. On the Update Backup Profile panel, you can specify one or more target volume(s) for each source volume in one of the following ways.

- Next to each source volume, specify corresponding target unit(s) in the \textit{Target Units} area. The target units must reside on the same Symmetrix array as the paired source volumes.
You can specify TARGET on the Option line.

![Enter a Target Range panel (BSY$BPRT)](image)

On the Enter a Target Range panel, specify a beginning and ending range of target units. The Enter by Generation field determines how the target unit fields are populated. If you specify N in the Enter by Generation field, IMS Recovery Expert assigns volumes sequentially as follows:

- Volume 1 - target unit 1
- target unit 2
- Volume 2 - target unit 3
- target unit 4

If you specify Y in the Enter by Generation field, IMS Recovery Expert assigns volumes as follows:

- Volume 1 - target unit 1
- target unit 3
- Volume 2 - target unit 2
- target unit 4

When you press Enter, the target units are mapped. If an error occurs, review the message in the Message Area. If no target is displayed in the Target Units field, no target unit in the specified range could be matched to a source volume. The target and source cannot be matched if the target and source are on different Symmetrix arrays.

3. You can modify the source/target volume mappings in any of the following ways:

- If you want to specify additional mappings (a source volume and its related target units), specify I in the line command area. To delete a mapping, specify D in the line command area and press Enter.
- To exclude a volume, specify E in the line command area next to a volume and press Enter. If you exclude a volume, IMS Recovery Expert will not include the volume in the backup. The resulting backup will be tagged as a partial backup, which cannot be used for a system restore. However, a partial backup can be used to restore individual databases if you have enabled the DB restore function. To undo an excluded volume, specify U in the line command area and press Enter.
- To clear all target units from the mappings in the profile, specify TGTCLR on the Option line and press Enter. To clear all source and target mappings from the profile, specify CLEAR on the Option line and press Enter.
- To display more volume mappings, you can toggle the header fields on and off; specify HEADER on the Option line and press Enter.
- To save the information you specified without ending your edit session, specify SAVE on the Option line and press Enter.

4. When you have completed volume mapping, press PF3 to save your profile and exit.
Performing System Level Backups on Hitachi storage systems

IMS Recovery Expert can make backups of IMS subsystems on Hitachi storage systems in two ways.

Choose the backup method that is applicable to the storage subsystem:

- If the storage subsystem has the Hitachi ShadowImage In-System Replication software, and you want IMS Recovery Expert to use ShadowImage commands when backing up the system, set the PARMLIB parameter SHADOW-IMAGE to Y. Then, create and run FlashCopy backup profiles.

IMS Recovery Expert will detect when source and target volumes are on Hitachi hardware. If so, IMS Recovery Expert will perform native ShadowImage commands to copy the volumes instead of using FlashCopy commands.

**Note:** If you plan to restore individual objects from a System Level Backup made using ShadowImage commands, fast replication cannot be used to restore the objects.

- If the storage subsystem has the optional Hitachi ShadowImage Compatible Mirroring for IBM FlashCopy installed, when you create and submit FlashCopy backup profiles, IMS Recovery Expert will issue FlashCopy commands to create the System Level Backup.

About offload options

IMS Recovery Expert allows you to offload backups to tape (or another disk location if you choose). You can define various options for offloads depending on the backup method selected.

When you build a backup profile and set the **Perform Offload** field to Y, IMS Recovery Expert offloads the backup according to your specifications when you run the job. Specify how many generations of backups that you want to keep; IMS Recovery Expert deletes the oldest copy if required.

Setting offload options for IBM FlashCopy, EMC SNAP, EMC BCV, and DFSMSdss backups

When offloading backups to tape (or another disk location if you choose) for IBM FlashCopy, EMC BCV, EMC SNAP, and DFSMSdss backups including IBM/STK SnapShot, you can specify the backup destination, data set naming conventions, and other options to meet your site's needs.

About this task

Offload options are set in each backup profile.

Procedure

1. The first time you create a profile, on the Update Backup Profile panel, specify Y in the **Offload Options** field and press Enter.

   **Note:** When you later edit a profile, specify U in the **Offload Options** field and press Enter.
2. On the Offload Options panel, specify information in the following fields:

**Local Primary/Local Backup/Recovery Site Primary/Recovery Site Backup**
To specify the backup type, specify Y in the appropriate field. At least one of the backup copy types is required. Initially, after you select the backup type and press Enter, the Offload Options panel appears. You must set additional offload options for the selected backup type.
- If you select **Local Primary**, the backup will be kept on site.
- If you select **Local Backup**, an additional backup can be created for the local site, the recovery site, or both.
- If you select **Recovery Site Primary**, the backup will be shipped to a remote recovery site.
- If you select **Recovery Site Backup**, an additional backup can be created for the local site, the recovery site, or both.

**Offload Generations**
Specify how many offline backups to keep. Note that the number of offline generations retained is not related to the number of backup generations specified on the Update Backup Profile panel.

**Delete Aged Backup Files**
If you specify Y in this field, when the oldest generation of the backup is deleted, IMS Recovery Expert will physically delete the backup data sets for the rolled-off generation.

**Compress Data**
If you specify Y in this field, IMS Recovery Expert will instruct the data mover utility to compress the data when it is copied.

**Data Mover**
Specify which program IMS Recovery Expert will use to move the offline backup:
- D for DFSMSdss
- F for FDR
- I for FDRINSTANT

**Encrypt Data**
Specify Y to encrypt data when it is offloaded. Refer to "Encrypting"
data” on page 146 for information about using data encryption. After you have set encryption options the first time, specify U in this field to edit these options, or N if you do not want data encrypted during the offload.

**Number of tasks**
Specify the number of subtasks for IMS Recovery Expert to use when offloading the backups. All backup types (LP, LB, RP, RB) are done simultaneously, so if you specify 4 backups to offload, and specify 4 tasks, then 4 tape drives are required.

**Use Multiple Jobs**
Using multiple jobs reduces the time it takes to perform offload and restore processes. Specify Y if you want the offload and restore processes to use multiple jobs, U to update the options, or N to use a single job. For more information, see “Editing multijob options for offload.”

### What to do next

**Note:** If you specify offload options and then later decide to change the Offload Options field to N, the offload options are reset to their defaults.

**Editing multijob options for offload**
Using multiple jobs reduces the time it takes to perform offload and restore processes.

**About this task**
To edit multijob options for offload, on the Offload Options panel, specify Y (Yes) or U (Update) in the **Use Multiple Jobs** field and press Enter.

```
BSYSOFF6 V2R2 ----------- Multijob Options ----------- 2018/01/16 16:29:03
Option =>

-----------------------------------
Creator: TSMXDA          Name: IAA MITCH  SSID: IAA
Share Option: U (Upd,View,No) Description: OFFLOAD ENHANCEMENTS
-----------------------------------

Enter the options for performing Multijob offload and restore:

Multijob Prefix => TSMXDX (1-6 character job prefix)

Multijob LPAR list:
  LPAR Name | Max Jobs (1-99) | Max Tasks (1-99)
  RS22     | 02             | 02
  RS23     | 02             | 02

Figure 60. Multijob Options panel (BSYSOFF6)
```

On the Multijob Options panel (BSYSOFF6), specify or edit the options used for multijob processing in the following fields:

**Multijob Prefix**
This is a 1-6 character value that is used as a prefix for the multiple jobs that are created. As each multijob is initiated, the name of the job will begin with this prefix followed by a number from 01-99. If this value is not specified, then the prefix is taken from the first 6 characters of the Master jobname.

**Multijob LPAR List**
The LPAR list allows you to specify up to 4 entries to be used by the Master job for submitting multijobs. Each entry consists of an 8 character LPAR name, a 2 character max jobs value, and a 2 character max tasks value.

Consider the following information when specifying these entries:

• The same LPAR can be specified more than once in the LPAR List.
• When defining the LPAR List, be aware of the total number of tape drives that are required for processing if the maximum number of jobs is used. For each LPAR List entry, the maximum number of tape drives used is equal to the sum of the maximum number of jobs multiplied by the maximum number of tasks. In Figure 60 on page 139, this number is 8 (2x2+2x2).
• Before any multijobs are initiated, the Master job will determine from the LPAR List entries what the maximum number of jobs is that can be submitted. The Master job will break into groups the volumes for an offload or the recovery units for a recovery so that they can be processed without exceeding the maximum job limit.

LPAR Name
This is a 1-8 character LPAR name. It identifies the name of the LPAR on which the multijob is to be submitted. You can specify a single asterisk (*) to indicate that the LPAR that the jobs will be submitted to is the same LPAR on which the Master job is running.

Max Jobs
This is a 2 digit number from 01-99 and indicates the maximum number of jobs that can be submitted for this entry. The Master job will submit multijobs on the specified LPAR until this limit is reached. When this limit is reached, if more jobs are needed, the Master job will move to the next LPAR List entry. The default value is 4.

Max Tasks
This is a 2 digit number from 01-99 and specifies the maximum number of tasks that are to be created in each multijob for processing. When the multijob is submitted, it will create as many tasks as are needed, up to this limit, to perform offload or restore processing. The default value is 4.

Setting data set options
If you plan to allow IMS Recovery Expert to offload backups, you must set data set names and other specifications for the offloaded data sets.

Procedure
1. On the Offload Options panel, specify Y in the appropriate backup type field (Local Primary, Local Backup, Recovery Site Primary, or Recovery Site Backup) and press Enter.

Note: When you later edit a profile, specify U in the appropriate backup type field and press Enter.
On the Offload panel, the header fields Creator, Name, SSID, Share Option, and Description that identify the profile are read-only.

2. Specify information in the following fields:

**Update DSN specification**
Specify Y in this field to set or change the data set specifications.

**Unit Type**
Specify a valid UNIT where the data set(s) will be written.

**Catalog**
Specify Y to catalog the data sets. Specify N if you do not want to catalog the data sets.

**Data Class**
If your site uses SMS to manage data sets, specify the SMS data class.

**Storage Class**
If your site uses SMS to manage data sets, specify the SMS storage class.

**Management Class**
If your site uses SMS to manage data sets, specify the SMS management class.

**Tape specific parameters** (only needed if Unit Type is a Tape device):
- Stack Backups on Tape => Y (Yes/No)
- Tape Stack Limit => 005 (1 - 999)
- Expiration date *or* Retention period => 1234 (4 digit number)
- Maximum Tapes => 005 (1-256)

Figure 61. LP Offload panel (BSY$OFF2)

On the Offload panel, the header fields Creator, Name, SSID, Share Option, and Description that identify the profile are read-only.
Maximum Tapes
Specify the maximum number of volumes to use for each volume offload file.

Specifying data set naming conventions
You can use the IMS Recovery Expert Offload DSN Specification panels to construct data set names for the offloaded backups.

About this task
The data set names are resolved at run time using the conventions specified in the LP Offload DSN Specification panels. After you select a backup type on the Offload Options panel and press Enter, the Offload panel for the selected backup type appears.

Procedure
1. Specify Y in the Update DSN Specification field on this panel.

```
Option ===>
-----------------------------------------------------------------------------------------------
Creator:  CSTSUK  Name:  DF5MSDS5 BACKUP METHOD  SSID:  I9A2
Share Option:  U (Upd,View,No)  Description:  DF5MSDS5 BACKUP METHOD
-----------------------------------------------------------------------------------------------
Enter codes to create a dataset name specification:
Qualifier code  =>  Free form literal  =>  Show DSN  =>  N

Current dataset name qualifier string:

Valid dataset name specification codes are:
3. Subsystem ID  11. Hours (HH)  19. Primary/Backup (P/B)
5. Time (HHMMSS)  13. Seconds (SS)  21. Step Name
6. Date (YYYYDDD)  14. Timestamp  22. Profile Creator
7. Year (YYYY)  15. Random Number  23. Profile Name
8. Month (MM)  16. GDG (+1)..(+n)  24. Substring Qualifier
   17. Backup Type (#18.#19)  25. Use freeform literal

Figure 62. LP Offload DSN Specification panel (BSY$OFF3)
```

2. Press Enter.
3. On the Offload DSN Specification panel, specify information in the following fields:

Qualifier code
To include a qualifier, specify its number in the Qualifier code field and press Enter. The qualifier string is displayed in the Current data set name generation qualifier string field. You can also specify the data set name or string directly in the string field.

Free form literal
After selecting the Use Freeform literal qualifier, you can specify an eight-character literal in this field. If you want the literal to be in its own substring, ensure that the literal begins with a period.

Show DSN
To view the string as it would be completed, specify Y in this field and press Enter.
Current data set name qualifier string
   This field displays the qualifier string as it was input.

What to do next

Valid qualifiers for the data set names that you can use on the Offload DSN Specification panel are listed on the bottom half of the panel:

Volser  The volume serial of the source volume being offloaded.

Subsystem ID
   The IMS subsystem ID or Group name.

User ID
   The TSO user ID of the job builder.

Time (HHMMSS)
   The current time in the format shown.

Date (YYYYDDD)
   The current date in the format shown.

Year (YYYY)
   The year in the format shown.

Month (MM)
   The month in the format shown.

Day (DD)
   The day of the month in the format shown.

Julian Day (DDD)
   The Julian day.

Hours (HH)
   The current time in hours.

Minutes (MM)
   The current time in minutes.

Seconds (SS)
   The current time in seconds.

Timestamp
   The current timestamp in DyymmddThhmmss format.

Random Number
   A random number in Rnnnnnn format.

GDG (+1).(+n)
   If you are using GDG data sets, this variable appends (+n) to the GDG base. This must be the last qualifier code you specify for the data set name.

Backup Type (#18.#19)
   The backup type in x.y format, where x is L for local or R for recovery, and y is P for primary or B for backup.

Local/Recovery (L/R)
   The backup type; L for local and R for recovery.

Primary/Backup (P/B)
   The image copy backup type; P for primary and B for backup.

Job Name
   The job name.
Step Name
The job step name.

Profile Creator
The profile creator ID.

Profile Name
The first 8 characters of the profile name.

Substring Qualifier
Select this option to specify one of the qualifiers and customize the substring. When you press Enter, the substring parameters panel is displayed.

Use freeform literal
After selecting this qualifier, you can specify an eight-character literal in the Free Form literal field. If you want the literal to be in its own substring, ensure that the literal begins with a period. For example, if you specify 1 (Volser), 3 (Subsystem ID), and then 14 (Timestamp), the data set name appears as follows:

volser.ssid.0070104.T151509

where volser and ssid resolve to values appropriate to your site.

Using the substring function
Use the Substring Qualifier function to customize substring parameters.

On the Offload DSN Specification panel, choose the Substring Qualifier function.

```
<table>
<thead>
<tr>
<th>Substring Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSY$OSTR</td>
</tr>
<tr>
<td>Enter the Qualifier Code ==&gt; 3</td>
</tr>
<tr>
<td>Enter Starting Position ==&gt; 1</td>
</tr>
<tr>
<td>Enter Substring Length ==&gt; 3</td>
</tr>
</tbody>
</table>
```

Figure 63. Substring Parameters panel (BSY$OSTR)

On the Substring Parameters panel, you can specify almost any of the qualifier codes and specify the string's starting position and length. For example, qualifier code 3 generates a string of &SSID, a four-character subsystem name. However, if your site uses three-character SSIDs, you can specify option 24 to specify the SSID and customize the string length, as follows:

```
<table>
<thead>
<tr>
<th>Substring Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSY$OSTR</td>
</tr>
<tr>
<td>Enter the Qualifier Code ==&gt; 3</td>
</tr>
<tr>
<td>Enter Starting Position ==&gt; 1</td>
</tr>
<tr>
<td>Enter Substring Length ==&gt; 3</td>
</tr>
</tbody>
</table>
```

Figure 64. Substring Parameters panel (BSY$OSTR): Customization example

An example of the results is shown in the following panel:
Some substrings (such as time and date) require the addition of an alphanumeric character or symbol in the beginning of the string.

When you select these substrings from the Offload DSN Specification panel, the following panel is displayed.

![Offload DSN Specification panel (BSY$OFF3)](image1.png)

**Figure 65. LP Offload DSN Specification panel (BSY$OFF3): Using the substring function**

Using current symbolic string:

Some substrings (such as time and date) require the addition of an alphanumeric character or symbol in the beginning of the string.

When you select these substrings from the Offload DSN Specification panel, the following panel is displayed.

![Resulting DSN using current symbolic string panel (BSY$UPR1)](image2.png)

**Figure 66. Resulting DSN using current symbolic string panel (BSY$UPR1)**

The Resulting DSN using current symbolic string panel allows you to insert an alphanumeric character or symbol to make the data set node name valid. When finished, press Enter. The Offload DSN Specification panel reopens with the corrected substring.

Viewing a sample string:

To view the string as it will be completed, specify Y in the Show DSN field.

When you press Enter, the sample string is displayed:
Encrypting data

IMS Recovery Expert allows you to encrypt the data when the backup is of
floaded
tape or disk. You can specify data encryption for both DFSMSdss and FDR
of
loads, and customize the encryption to meet your site's needs.

Setting data encryption options for DFSMSdss offloads

Data encryption options are set in each backup profile. To set encryption options
for DFSMSdss offloads:

Procedure

1. On the Offload Options panel, specify D in the Data Mover field, and U in the
Encrypt Data field, and press Enter.

Resulting DSN using current symbolic string

Using the following sample data as input:

&JOBNAME = 'JOBNAME' &STEPNAME = 'STEPNAME' &UID = 'POMONA'
&SSID = 'SSID' &VOLSER = 'VOLSER' &VCATNAME = 'VCATNAME'
&LOCREM = 'L' &PRIBAC = 'P'
&BROFCTRT = 'CSTSUK' &PROFNAME = 'DFSMSSDSS'
The date/time fields are set to the current time.

The generated data set would be:

* SSI *

Figure 67. Resulting DSN using current symbolic string panel (BSY$ODSN)

On the DFSMSdss Encryption Options panel, the header fields that identify the
profile (Creator, Name, SSID, Share Option, and Description) are read-only.

2. Specify the following encryption options.

- **Keypasswd**: Specify Y to specify the type of encryption that uses an 8 to 32
  EBCDIC character key to perform encryption. The keypassword is
  programmatically generated.
- **ICount**: If you specify Y for Keypasswd, you must also indicate how many
times DFSMSdss should perform the hash algorithm for the generation of the
data key.

Figure 68. DFSMSdss Encryption Options panel (BSY$OFF4)
• **Type**: If you specify Y for **Keypasswd**, you must also indicate the type of encryption to perform. Specify C for CLRAES128 or D for CLRTDES.

• **RSA**: Specify Y to specify the type of encryption that uses the label of an existing RSA public key.

• **Type**: If you specify Y for **RSA**, you must also indicate the type of encryption to perform. Specify C for CLRAES128, D for CLRTDES, or E for ENCTDES.

• **Label**: If you specify Y for **RSA**, you must also specify the label of an existing RSA public key. The label can be up to 64 characters; the first character must be alphabetic or a national character (#,$,@). The remaining characters can be alphabetic, numeric, national, or a period.

**Note**: You can specify either **Keypasswd** or **RSA** encryption, but not both. Refer to the documentation for DFSMSdss for specific information about these encryption types and settings.

**What to do next**

**Note**: If you specify encryption options and then later decide to change the **Offload Options** field to N, all encryption options are reset to their defaults.

### Setting data encryption options for FDR offloads

Data encryption options are set in each backup profile. To set encryption options for FDR offloads:

**Procedure**

1. On the Offload Options panel, specify F or I in the **Data Mover** field, and U in the **Encrypt Data** field, and press Enter.

```
BSY$OFF5 V2R2 ----------- FDR Encryption Options ----------- 2018/12/16 13:37:51
Option ==> Scroll ==> PAGE

-------------------------------------------------------------------------------
Creator: TUSER Name: TEST1 SSID: IAA
Share Option: U (Upd,View,No) Description:  

Encryption Type ==> S (Substitute/Cipher/Aes/aes192(1)/aes256(2)/aseFast/Tdes)

*******************************************************************************

Figure 69. FDR Encryption Options panel (BSY$OFF5)
```

On the FDR Encryption Options panel, the header fields that identify the profile (**Creator**, **Name**, **SSID**, **Share Option**, and **Description**) are read-only.

2. In the **Encryption Type** field, specify the type of encryption to use. Refer to the documentation for your version of FDR for specific information about these encryption types. Valid options are:

• **S**: Substitute
• **C**: CIPHER
• **A**: AES
• **1**: AES192
• **2**: AES256
• **F**: AESFAST
• **T**: TDES
What to do next

Note: If you specify encryption options and then later decide to change the Offload Options field to N, all encryption options are reset to their defaults.

Specifying target pool

For backup profiles that are created when Target Mapping is set to A, you must define a pool of target volumes.

Procedure

1. On the Update Backup Profile panel, specify U in the Target Pool field.

   ![Target Pool Selection panel (BSY$POOL)](image)

   Figure 70. Target Pool Selection panel (BSY$POOL)

2. On the Target Pool Selection panel, specify a range of units or a list of SMS storage groups to use as targets for each source volume. The specified units or storage groups are used at backup time to map each source volume to a target unit.

3. In the Cmd column, specify the I line command to specify a Target Range or Stogroup, or specify D to delete a Target Range or Stogroup.

4. Specify one or more of the following fields

   Creator
   The profile creator.

   Name  The profile name.

   SSID  The subsystem for this profile.

   Share Option
   How users other than the profile creator can use the profile. This field is read only.

   Description
   The description as defined when the profile was created. This field is read only.

   Enter by
   The targets can be specified as either Unit or SMS stogroups. Specify U to specify targets by units, or S to specify targets by SMS stogroups.

5. Specify the target range using one or more of the Enter Target Ranges fields:
Start Unit
If specifying by units, this is the starting UCB address to use as a target. This field can only contain valid hexadecimal characters.

End Unit
If specifying by units, this is the ending UCB address to use as a target. The End Unit number must be greater than the Start Unit number. Ranges are not allowed to overlap. This field can only contain valid hexadecimal characters.

Note: IMS Recovery Expert attempts to use all devices in the specified range. If you do not want specific devices included in the target pool, you must specify multiple ranges that omit the volumes to exclude.

Stogroup
If specifying by stogroup, you can specify SMS stogroups in this field. Each SMS stogroup is checked to ensure that it exists; a message is displayed if it does not exist. If you press Enter after the message is displayed, the SMS stogroup is accepted, but you must ensure that the SMS stogroup is created before the backup runs.

Message Area messages
The messages that are displayed in the Message Area of the Update Backup Profile panel are listed in this table with actions you can take to resolve them. In some cases, no further action is required.

Table 20. Message Area messages and explanations

<table>
<thead>
<tr>
<th>Message</th>
<th>Explanation</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source Volume not online or not found</td>
<td>The listed source volume is either offline or not a valid volume.</td>
<td>Bring the volume online or check with your systems programmer to ensure that the specified volume is valid.</td>
</tr>
<tr>
<td>Source Volume cannot be a BCV Device</td>
<td>For a BCV backup, the source volumes cannot be BCV devices.</td>
<td>If the specified volume is not valid, specify a valid volume. If the source volume is a BCV device, you must move the data from the BCV device to a non-BCV device.</td>
</tr>
<tr>
<td>Source Volume is not on a Symmetrix</td>
<td>The listed source volume is not on a Symmetrix array.</td>
<td>The source volume must be on a Symmetrix. Move the source volume to a Symmetrix array.</td>
</tr>
<tr>
<td>Target Unit not found</td>
<td>The specified target unit does not exist.</td>
<td>If the specified target unit is not valid, specify a valid unit. Otherwise, check with your systems programmer to ensure that the specified target unit is valid. If you plan to add the target units to the Symmetrix before running the backup, you can disregard this message.</td>
</tr>
<tr>
<td>Target Unit specified is not a BCV Device</td>
<td>The specified target unit is not a BCV device. For a BCV backup, all specified target units must be BCV devices.</td>
<td>Select a target unit that is a BCV device.</td>
</tr>
</tbody>
</table>
Table 20. Message Area messages and explanations (continued)

<table>
<thead>
<tr>
<th>Message</th>
<th>Explanation</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target Unit is not on a Symmetrix</td>
<td>Each target unit must be on a Symmetrix.</td>
<td>Select a target unit that is located on a Symmetrix array.</td>
</tr>
<tr>
<td>Target BCV target_unit is established to source_volume</td>
<td>For BCV backups, this informational message lists the source volume to which the target unit is established.</td>
<td>None required.</td>
</tr>
<tr>
<td>Target Unit is paired to source_volume</td>
<td>For SNAP type backups, this message is displayed if the target is a BCV unit and is currently paired to a source volume.</td>
<td>None required.</td>
</tr>
<tr>
<td>Source volume has BCV unit_name established</td>
<td>For BCV backups, this informational message displays the target unit to which the source volume is established.</td>
<td>None required.</td>
</tr>
<tr>
<td>Source Volume is not Flash capable</td>
<td>The source volume does not reside in a storage subsystem that is FlashCopy capable.</td>
<td>If the specified source volume is not valid, specify a valid volume. Or, move the source volume to a FlashCopy capable storage system. Otherwise, check with your systems programmer to ensure that the specified source volume is FlashCopy capable.</td>
</tr>
<tr>
<td>Target Unit is not Flash capable</td>
<td>For FlashCopy backups, the target volume cannot use FlashCopy to copy the volume.</td>
<td>If the specified target unit is not valid, specify a valid unit. Otherwise, check with your systems programmer to ensure that the specified target unit is FlashCopy capable.</td>
</tr>
</tbody>
</table>

Managing profiles

Perform these tasks when managing your profiles.

Updating a profile

You can update your own backup profile or one created by another user if the Update option field on the Enter New Backup Profile Options panel was set to U (Update) when the profile was created.

About this task

You can update a backup profile at any time to add or delete source or target volumes, change the number of generations, and change other settings. However, after setup runs successfully on a profile, you cannot change the IMS SSID or Group name, or the backup method when you update the profile.
Procedure
1. Access the System Backup Profile Display panel.
2. Specify V on the Cmd line next to the profile you want to update, and press Enter.
3. On the Update Backup Profile panel, you can make changes to the profile.
4. Press PF3 to save your changes. To cancel and exit without making changes, specify CAN on the Option line and press Enter.

Viewing a profile
You can view your own backup profile or one created by another user if the Update option field on the Enter New Backup Profile Options panel was set to V (View) or U (Update) when the profile was created.

Procedure
1. Access the System Backup Profile Display panel.
2. Specify V on the Cmd line next to the profile you want to view.
3. Press Enter.

What to do next
On the View Backup Profile panel, you can view profile details but you cannot make any changes.

Renaming a profile
You can specify the R (Rename) line command to change the name, creator, or description of a backup profile.

About this task
You can rename profiles that you created, regardless of the value assigned to the Update option field on the Enter New Backup Profile Options panel. You can also rename a profile created by another user if the Update option field on the Enter New Backup Profile Options panel was set to U (Update) when the profile was created.

Procedure
1. Access the System Backup Profile Display panel.
2. Specify R on the Cmd line next to the profile you want to rename, and press Enter.

### Rename Backup Profile

<table>
<thead>
<tr>
<th>BSYS$PRFR</th>
<th>Existing Profile:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creator</td>
<td>PDMONA</td>
</tr>
<tr>
<td>Profile Name</td>
<td>PDMONA</td>
</tr>
<tr>
<td>Description</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>New Profile:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creator</td>
</tr>
<tr>
<td>Profile Name</td>
</tr>
<tr>
<td>Description</td>
</tr>
</tbody>
</table>

Figure 71. Rename Backup Profile panel (BSYS$PRFR)
3. On the Rename Backup Profile panel, specify the new profile name in the **Profile Name** field to rename the profile. You can also specify a new description in the **Profile Description** field. The profile creator cannot be modified.

4. Press Enter when you have finished. To cancel the rename, press PF3 on the Rename Backup Profile panel.

**Deleting a profile**

You can specify the D (Delete) line command to delete a backup profile.

**About this task**

You can delete profiles that you created, regardless of the value assigned to the **Update option** field on the Enter New Backup Profile Options panel. You can also delete a profile created by another user if the **Update option** field on the Enter New Backup Profile Options panel was set to U (Update) when the profile was created.

**Note:** If you delete a backup profile, you will also delete all backups associated with the profile.

**Procedure**

1. Access the System Backup Profile Display panel.
2. Specify D on the **Cmd** line next to the profile you want to delete, and press Enter.

```
Confirm Deletion of Profile
BSY$PRFD
************************************************************
****
**** Warning Deleting this Profile will also delete all
**** Backups associated with this profile.
****
************************************************************

Confirm delete of profile PDMONA.PDMONA
Delete N (Yes/No)
```

*Figure 72. Confirm Deletion of Profile panel (BSY$PRFD)*

3. On the Confirm Deletion of Profile panel, you can confirm profile deletion. To delete the profile, specify Y in the **Delete** field and press Enter. A message is displayed to confirm deletion. To cancel deletion, press PF3.

**Considerations when using copy blades**

The following table lists the advantages and disadvantages of using the various types of copy blades for your System Level Backup or offload method.
## System Level Backup method

<table>
<thead>
<tr>
<th>System Level Backup Method</th>
<th>Vendor</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>FlashCopy</td>
<td>IBM (EMC, HDS, or any vendor that supports FlashCopy emulation)</td>
<td>With FlashCopy emulation, IMS can be across several vendors DASD. Technology to drive FlashCopy in IMS Recovery Expert is very fast. (Very small amount of time to issue the FlashCopy commands) DFSMSdss can be used to drive fast-replication data set restore of IMS object data sets. Users can specify target ranges so there is no need to update a profile when IMS expands to new volumes. Does not require SMS.</td>
<td>Log suspend required. Older EMC FlashCopy emulation (pre 72 microcode) is somewhat slower. HDS FC emulation is quite slow also elongating the log suspend time. Not an incremental copy - all tracks are copied in the background on each backup. Fast database restore (through DFSMSdss) will use host based IO (slow copy) if the background copy is not complete. Volumes must be clipped and brought online to offload to tape.</td>
</tr>
<tr>
<td>TimeFinder Mirror (BCVs)</td>
<td>EMC</td>
<td>Uses EMC Consistency. No log suspend needed. Backup is completely done and usable at split time. Restores can be done right away. Snap data set can be used for almost instantaneous restore of IMS database data sets. Does not require SMS. Fast database restore can be performed through Snap data set without clipping and bringing the volumes online.</td>
<td>Two phase backup. Establish BCV (wait for sync), then split BCV to make backup. If you have N generations of backup disks, you only get N-1 backups on disk because one generation is always mirroring the source volumes. IMS must be completely on EMC DASD. When IMS expands to new volumes, profile must be updated to add new BCV target units. Volumes must be clipped and brought online to offload to tape.</td>
</tr>
<tr>
<td>System Level Backup Method</td>
<td>Vendor</td>
<td>Advantages</td>
<td>Disadvantages</td>
</tr>
<tr>
<td>----------------------------------------------------------------</td>
<td>--------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>TimeFinder Clone (Full volume snap to target volume)</td>
<td>EMC</td>
<td>Uses EMC Consistency. No log suspend needed. Can be performed in phases (phased snap) so performance implications to source volumes can be timed and mitigated. Snap is differential; only changed tracks are copied since the last backup. Snap data set can be used for almost instantaneous restore of IMS database data sets. Users can specify target ranges so there is no need to update a profile when IMS expands to new volumes. Does not require SMS. Fast database restore can be performed through Snap data set without clipping and bringing the volumes online.</td>
<td>Full system restore must wait until background copy is complete. Fast database restore (Snap data set) must wait until background copy is also complete. IMS system must be completely on EMC DASD.</td>
</tr>
<tr>
<td>TimeFinder Snap (Virtual Device Snap - VDEV) (V2.2)</td>
<td>EMC</td>
<td>Uses EMC Consistency. No log suspend. Space efficient snap. Does not need a full backup volume for each source IMS volume. Many backup points can be saved on fast-replication disk. Uses a “SAVE POOL” to store changes to source device after the backup is taken. Users can specify target ranges so there is no need to update a profile when IMS expands to new volumes. Does not require SMS.</td>
<td>Must monitor the save pool to ensure it does not fill up. Also, a true disk backup never exists; only the changed tracks are stored in the save pool. Cannot perform a Snap data set restore from this type of backup. IMS system must be completely on EMC DASD.</td>
</tr>
</tbody>
</table>
# Offload method

<table>
<thead>
<tr>
<th>Offload Method (Archive Method)</th>
<th>Vendor</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFSMSdss</td>
<td>IBM</td>
<td>Can be used for any backup method. Users have finer control over data set name used to hold the volume dump. All options to offload each profile are contained in one product (no need to go to HSM to configure dump classes).</td>
<td>All DFSMSdss tasks are run in one address space, limiting the number of simultaneous tape dumps you can run concurrently. If the backup disks are offline, they need to be clipped and brought online before they can be copied to tape.</td>
</tr>
<tr>
<td>Fast Dump and Restore (FDR)</td>
<td>Innovation</td>
<td>Can be used for any backup method. FDR generally considered faster than DFSMSdss. Users have finer control over data set name used to hold the volume dump. All options to offload each profile are contained in one product (no need to go to HSM to configure dump classes).</td>
<td>All FDR tasks are run in one address space, limiting the number of simultaneous tape dumps you can run concurrently. If the backup disks are offline, they must be clipped and brought online before they can be copied to tape.</td>
</tr>
<tr>
<td>FDR Instant</td>
<td>Innovation</td>
<td>Can be used for any backup method but real advantages come when using in conjunction with a backup method that leaves target units offline. FDR Instant eliminates the need to clip the target unit and bring it online. It can copy the volume while it is offline.</td>
<td></td>
</tr>
</tbody>
</table>

Chapter 6. Creating and maintaining System Level Backup profiles  155
Chapter 7. Creating a System Level Backup

This section provides information about building a backup job from a backup profile and then submitting the backup job to create a System Level Backup.

Building and submitting backup jobs

After you create a IMS Recovery Expert backup profile, you build a backup job. Based on the values that were specified in the backup profile, IMS Recovery Expert generates the JCL for the backup job.

About this task

When you build the JCL for the backup job, you can specify whether you will:

- Edit the JCL that is created
- Automatically run a System Level Backup after the JCL is created
- Offload the backup after it was taken
- Backup the IMS Recovery Expert repository

Note: After you create the backup job, you can put the job into a scheduler to create regular backups of your IMS system.

Procedure

1. Specify 1 (System Operations) on the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN) and press Enter.
2. On the System Operations Menu panel (BSY$SYMN), specify 2 (System Backup Profiles) and press Enter.
3. On the Enter System Backup Profile Selection Criteria panel (BSY$BPLK), specify criteria and press Enter. For more information about specifying this criteria, see “Accessing the backup profile list” on page 116.
4. On the System Backup Profile Display panel (BSY$BPRD), specify B on the Cmd line next to the profile for which you want to build the JCL, and press Enter.

Build Backup Job

```
BSY$BLDB
  Edit Generated Job  Y  (Yes/No)
  Setup Job          Y  (Yes/No)
  Perform Offload    N  (Yes/No)
  Backup Repository  N  (Yes/No)

Build job in Data set  PDMONA.BSY.JCLLIB
  Member               SAMPJCL2

Job Cards:
  ==> //BJOBCRD JOB PDMONA,CLASS=A,NOTIFY=&SYSUID
  ==> /*
  ==> /*
  ==> /*
```

Figure 73. Build Backup Job panel (BSY$BLDB)

5. On the Build Backup Job panel, specify information in the following fields:
Edit Generated Job
Specify Y to view the job in an ISPF edit session after generation. If you specify N, you will return to the System Backup Profile Display panel after the job is generated.

Setup Job
Specify Y if you want IMS Recovery Expert to build JCL for profile setup only; no backup will be taken. This option is useful if you know that volume mapping or another aspect of the backup profile has changed. Specify N to build the JCL to perform the backup. If IMS Recovery Expert detects that setup must be run on this profile, this field will be set to Y.

Perform Offload
Specify Y to offload the backup after it has been taken. If you have not specified offload options for the backup, this field is read only and set to N.

Backup Repository
Specify Y to back up the IMS Recovery Expert repository as part of the backup job. This process uses IDCAMS to copy IMS Recovery Expert VSAM control files to the GDGs configured during installation. The backup files can be used to restore the IMS Recovery Expert control information if it is lost or damaged.

Build job in Data set/Member
Specify the fully qualified data set name (without quotes) where you want to save the generated job. This data set must exist, and it can be sequential or a PDS. If the data set is a PDS, specify a member name. If the member does not exist, IMS Recovery Expert will create it.

Job Cards
Specify a valid job card for your site.

6. When you have completed the fields, press Enter. If you specified to edit the job, an ISPF panel containing the job is displayed. If you did not specify to edit the job, the System Backup Profile Display panel reopens.

7. Submit the built job.

Sample build JCL for the profile setup process
The following sample job shows the JCL for the profile setup process; it does not back up the IMS Recovery Expert repository.

```plaintext
//BJOBCRD JOB PDMONA,CLASS=A,NOTIFY=&SYSUID
//*
//*
//*
//*
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//* Profile: PDMONA.BSYPDM *
//* Job: 01 of 01 *
//* Desc: *
//* User: PDMONA *
//* Date: Friday December 12, 2018 *
//* Time: 13:40:52.93 *
//* *
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//* Step: BSYBACK *
```
Sample build JCL for a backup

The following figure shows a sample of the backup JCL; this includes backing up the IMS Recovery Expert repository.

```plaintext
//** //** Desc: This step will invoke the System Level Backup job. //** //** * //** //** BSYBACK EXEC PGM=BSY@MAIN,REGION=006M,COND=(4,LT) //** /* //** STEPLIB DD DISP=SHR,DSN=BSY.WRK0220.LOADLIB //** DD DISP=SHR,DSN=DEVRETE.EMC.SSCF580.LINKLIB //** DD DISP=SHR,DSN=RSRTE.VENDOR.FDR5467.LOAD //** Db2PARMS DD DISP=SHR,DSN=RSQA.BSY220.CONTROL //** BSYBPROF DD DISP=SHR,DSN=RSQA.BSY220.PROFILES //** BSYBFL DD DISP=SHR,DSN=RSQA.BSY220.OFFOPTS //** BSYBPMP DD DISP=SHR,DSN=RSQA.BSY220.PROFILE.MAPS //** BSYBPCAT DD DISP=SHR,DSN=RSQA.BSY220.PROFILE.CATS //** BSYBASE DD DISP=SHR,DSN=RSQA.BSY220.SYSBACK //** BSYBOBJ DD DISP=SHR,DSN=RSQA.BSY220.SYSBACK.OBJ //** BSYBSVOL DD DISP=SHR,DSN=RSQA.BSY220.SYSBACK.VOLS //** BSYBSBSS DD DISP=SHR,DSN=RSQA.BSY220.SYSBACK.SSID //** BSYBREPT DD DISP=SHR,DSN=RSQA.BSY220.BREPORT //** SYSOUT DD SYSOUT=* //** BSYOUT DD SYSOUT=* //** BSYREPT DD SYSOUT=* //** BSYNAPO DD SYSOUT=* //** BSY#PARM DD DSN=BSY.WRK0220.SAMPLIB(BSY#PARM),DISP=SHR //** BSYIN DD * 
BACKUP "PDMONAT" "BSYPDM" 
SETUP 
*/ //** *************** Bottom of Data ***************
```

Chapter 7. Creating a System Level Backup
//BSYBPROF DD DISP=SHR,DSN=RSQA.BSY220.PROFILES
//BSYBPROF DD DISP=SHR,DSN=RSQA.BSY220.OFFOPTS
//BSYBPROF DD DISP=SHR,DSN=RSQA.BSY220.PROFILE.MAPS
//BSYBPROF DD DISP=SHR,DSN=RSQA.BSY220.PROFILE.CATS
//BSYBPROF DD DISP=SHR,DSN=RSQA.BSY220.SYSBACK
//BSYBPROF DD DISP=SHR,DSN=RSQA.BSY220.SYSBACK.OBJS
//BSYBPROF DD DISP=SHR,DSN=RSQA.BSY220.SYSBACK.VOLS
//BSYBPROF DD DISP=SHR,DSN=RSQA.BSY220.SYSBACK.SSIDS
//BSYBREPT DD DISP=SHR,DSN=RSQA.BSY220.BREPORT
//SYSOUT DD SYSOUT**
//SYSOUT DD SYSOUT**
//SYSOUT DD SYSOUT**
//SYSIN DD SYSIN
//BSYIN DD *
   BACKUP "PDBISC"."IAA"
/*
/** **** ********* ************** ************ ************* ************
/** */ Step:   BSYREBU *
/** */ *
/** */ Desc: This step will backup the repository files to *
/** */ GDG data sets. *
/** */ *
/** **** ********* ************** ************ ************* ************
/** */ *
/** **** ********* ************** ************ ************* ************
/** */ *
/** */ Step:   BSYREBU *
/** */ *
/** */ Desc: This step will back up the repository files to *
/** */ GDG datasets. *
/** */ *
/** **** ********* ************** ************ ************* ************
/** */ *
/** */ EXEC PGM=BSY#RPBK,COND={4,LT} */
/** */ STEPLIB DD DISP=SHR,DSN=BSY.WRK0220.LOADLIB */
/** */ DD DISP=SHR,DSN=ARY.TST032X.LOADLIB */
/** */ DD DISP=SHR,DSN=ARY.TST032X.LOADLIB */
/** */ DD DISP=SHR,DSN=RSRTE.EMC.LINKLIB */
/** */ DD DISP=SHR,DSN=RSRTE.VENDOR.FDR.LOAD */
/** */ SYSPRINT DD SYSOUT** */
/** */ SYSOUT DD SYSOUT** */
/** */ KSDS1 DD DISP=SHR,DSN=ARY.TST032S.PROFILES */
/** */ KSDS2 DD DISP=SHR,DSN=ARY.TST032S.PROFILE.MAPS */
/** */ KSDS3 DD DISP=SHR,DSN=ARY.TST032S.PROFILE.CATS */
/** */ KSDS4 DD DISP=SHR,DSN=ARY.TST032S.SYSBACK */
/** */ KSDS5 DD DISP=SHR,DSN=ARY.TST032S.SYSBACK.VOLS */
/** */ KSDS6 DD DISP=SHR,DSN=ARY.TST032S.SYSBACK.SSIDS */
/** */ KSDS7 DD DISP=SHR,DSN=ARY.TST032S.BREPORT */
/** */ KSDS8 DD DISP=SHR,DSN=ARY.TST032S.OFFOPTS */
/** */ KSDS9 DD DISP=SHR,DSN=ARY.TST032S.OBJECTS */
/** */ KSDS5 DD DISP=SHR,DSN=ARY.TST032S.BACKUP(+1) */
/** */ KSDS1 ARY.TST032S.PROFILE.BACKUP(+1) */
/** */ KSDS2 ARY.TST032S.PROFMAP.BACKUP(+1) */
/** */ KSDS3 ARY.TST032S.PROFCAT.BACKUP(+1) */
/** */ KSDS4 ARY.TST032S.SYSBACK.BACKUP(+1) */
/** */ KSDS5 ARY.TST032S.SYSBACK.OBJS.BACKUP(+1) */
/** */ KSDS6 ARY.TST032S.SYSSSID.OBJS.BACKUP(+1) */
/** */ KSDS7 ARY.TST032S.BREPORT.BACKUP(+1) */
/** */ KSDS8 ARY.TST032S.OFFOPTS.BACKUP(+1) */
/** */ KSDS9 ARY.TST032S.OBJECTS.BACKUP(+1) */

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Adding keywords to a System Level Backup job

IMS Recovery Expert allows you to edit the System Level Backup job by adding one or more keywords. Each keyword adds unique functionality that otherwise would not be present in the generated JCL.

Procedure

1. To find the JCL where you can add keywords to the System Level Backup job:
   a. Specify 1 (System Operations) on the IMS Recovery Expert main menu panel (BSY$MAIN) and press Enter.
   b. On the System Operations Menu panel (BSY$SYMN), specify 2 (System Backup Profiles) and press Enter.
   c. On the Enter System Backup Profile Selection Criteria panel (BSY$BPLK), specify criteria and press Enter. For more information about specifying this criteria, see “Accessing the backup profile list” on page 116.
   d. On the System Backup Profile Display panel (BSY$BPRD), specify B on the Cmd line next to the profile for which you want to build the JCL, and press Enter.
   e. On the Build Backup Job panel (BSY$BLDB), specify Y in the Edit Generated Job field. Specify information in any other fields that are applicable. For more information about specifying options on this panel, see “Building and submitting backup jobs” on page 157.
   f. Press Enter. The JCL for the System Level Backup job displays in an ISPF edit session.

2. Add one or more of the following keywords to the JCL in the BSYIN DD * statement. Specify keywords at the end of the keyword cards generated by IMS Recovery Expert:

   **DEBUG**
   This keyword produces extra debugging information. Add this keyword only when directed to by Technical Support.

   **SETUP**
   This keyword is automatically added by IMS Recovery Expert when it is needed. This keyword is needed the first time a backup profile is run, or after a backup profile is edited. The presence of this keyword triggers a “setup” check to ensure that a backup profile is valid. A
backup is not taken when the SETUP card is present. You can add the SETUP keyword if you want additional checking to be performed.

**PROMPT**
This keyword is used for BCV type backups. Adding the keyword overrides the current setting in BSY#PARM. If the current generation of BCVs has not synchronized with the source volumes, a WTO prompt the operator and asks what to do.

**SNAP-TARGET-ONLINE**
This keyword is used only for SNAP type backups. Adding the keyword allows the target UCBs to be online during the backup. They also remain online with unique volume serial numbers after the backup.

**VALIDATE-IMS-VOLS**
This keyword overrides the Validate IMS Volumes setting in the backup profile. This causes IMS Recovery Expert to always validate that the IMS volumes are all backed up regardless of the setting in the profile.

**MAX-TASKS**
This keyword controls the number of tasks that are started when completing the backup processing for multi-tasked operations. You can specify a number from 1 to 8. The default is 4.

**BYPASS-VOL-CHECK**
This keyword allows IMS Recovery Expert to continue running the System Level Backup even after it finds that some IMS data is not included in the backup (and no IMS volumes are excluded). Use this keyword at your own risk.

**START-INCREMENTAL**
For Flash and DFSMSdss type backups, this keyword starts an incremental copy process of the System Level Backup. The next time a backup is taken and sent to this set of target volumes, only the changed tracks are copied.

**END-INCREMENTAL**
For Flash and DFSMSdss type backups, this keyword ends an incremental copy process of the System Level Backup. The next time a backup is taken and sent to this set of target volumes, the complete source volume is copied.

**INCLUDE-ARCHIVE-VOLS**
This keyword can be added if you want to ensure that the volumes IMS ARCHIVE LOG data sets (on disk) are copied in a System Level Backup. For an AUTOMAP type profile, volumes containing only archive log data sets on disk are not normally included in the System Level Backup. Adding this keyword ensures that they are included.

3. Either run the job, or press PF3 to return to the System Backup Profile Display panel.

---

**Sample build JCL for the offload process**

The following JCL is a sample of the build JCL for the offload process.

```plaintext
/* * * * * * * * * * * * * * * * * * * * * * * * * * */
/* */
/* Step: BSYJOFFL */
/* */
```
Reviewing output from an IBM FlashCopy backup

During an IBM FlashCopy backup, IMS Recovery Expert writes messages to the job’s DD statements. Access and review these DD statements to determine if the backup was successful.

**BSYOUT DD (BSYBACK step)**

This DD contains the backup profile information, control cards, and IMS Recovery Expert messages. The following figure shows a sample BSYOUT DD.

```
  // BSYOUT DD (BSYBACK step)

  // Desc:   This step will invoke the Offload job.
  //
  // BSYIN DD DISP=SHR,DSN=BSY.WRK0220.SAMPLIB(BSY#PARM),DISP=SHR
  // BSYOUT DD DISP=SHR,DSN=BSY.WRK0220.PROFILE
  // BSYOFFL DD DISP=SHR,DSN=RSQA.BSY220.PROFILE.CATS
  // BSYBACK DD DISP=SHR,DSN=BSY.WRK0220.BREPORT
  // BSY#PARM DD DSN=BSY.WRK0220.SAMPLIB(BSY#PARM),DISP=SHR
  // BSYIN DD *
  // OFFLOAD "PDBISC"."IAA"
  //
  // GENERATION LAST-BACKUP
  //
  //
```

Chapter 7. Creating a System Level Backup 163
BSY#REPT DD (BSYBACK step)

This DD contains a summary report that describes the details of the backup. This report includes the standard and FlashCopy volume information, and the data types found on the backup volumes. The following figure shows a sample BSY#REPT DD from an IBM FlashCopy backup.

1

IMS Recovery Expert for z/OS
Backup Summary Report

Utility Executed:........... Backup
Profile Name:............... PDBISC.IAA
IMS Subsystem:............... IAA
IMS Version:............... 00.0
Backup Type:............... FlashCopy
Backup Contains:........... Database Data and Log Data
Partial Backup:............... No
Nbr of Volumes:............... 0008
Backup Date:............... 01/12/2018
Backup Time:............... 12:11:07
Consistency Method:........... IMS Log Suspend
Supports Database Restore:.. Yes
I/O Suspend Time:............ 2018-01-12-12.11.07.906278
I/O Resume Time:............. 2018-01-12-12.11.08.249973
Backup Elapsed:............ 00.34 Seconds

The Source Volumes and Flash sections of this report list the target units that now contain the backup of the associated IMS standard volumes. The Data Types section of the report contains the following information:

| Data | Yes indicates that the volume contains database data. |
| DCat | Yes indicates that volume contains a user catalog that contains the z/OS catalog information for database data sets. |
| ALog | Yes indicates that the volume contains one or more active log data set(s). |
| ACat | Yes indicates that the volume contains a user catalog that contains z/OS catalog information for an active log data set. |
| RLog | Yes indicates that the volume contains one or more archive log data set(s). |
| RCat | Yes indicates that the volume contains a user catalog that contains z/OS catalog information for an archive log data set. |

If a volume contains a mix of database data or catalogs, and log data or catalogs, then IMS Recovery Expert issues a message stating that the database and log data are not separated, and a full system restore is required.
Reviewing output from an EMC BCV backup

During an EMC BCV backup, IMS Recovery Expert writes messages to several DD statements. Access and review these DD statements to determine if the backup was successful.

SYSWRITE DD

This DD contains the backup profile information, control cards, and IMS Recovery Expert messages. The following figure shows a sample SYSPRINT DD.

14:34:53 SY0001I - IMS Recovery Expert for z/OS Starting.
0003I - Control Cards:
0004I - BACKUP TWUSR."B81D BCV BACKUP"
0162I - Parmlib used for this execution
0013I - Backup profile TWUSR.B81D BCV BACKUP was read from the repository.
0039I - Volume map validation complete.
0075I - Performing IMS source volume validation... 0190W - Volume NSP105 is not included in this backup.
It contains only ARCHIVE log data.
0190W - Volume NSP105 is not included in this backup.
It contains only ARCHIVE log data.
0190W - Volume NSP106 is not included in this backup.
It contains only ARCHIVE log data.
0190W - Volume NSP107 is not included in this backup.
It contains only ARCHIVE log data.
0076I - IMS source volume validation complete. All IMS volumes are in this profile.
0137I - Varying volumes offline.
0082I - Performing BCV splits to create backup...
0084I - Backup of profile TWUSR.B81D BCV BACKUP has been created.
0080I - Backup with timestamp 2018/03/16-14:34:58
Generation 01 was in this profile.
0126I - Waiting 06 seconds for background splits to complete...
0085I - Performing BCV establish on next generation of BCVs.
0002I - IMS Recovery Expert for z/OS complete. RC=004.

BSY#REPT DD

This DD contains a summary report that describes the details of the backup. This report includes the standard volume and split device volume information and mappings, and the data types found on the backup volumes. The following figure shows a sample BSY#REPT DD for an EMC BCV backup.

IMS Recovery Expert for z/OS Summary Report
Utility Executed: Backup
Profile Name:............. TWUSR.B81D BCV BACKUP
IMS Subsystem:.......... B81D
IMS Version: .......... 0810
Backup Type:........... BCV
Backup Contains:........ Database Data and Log Data
Partial Backup:........ No
Nbr of Controllers:.... 01
Lowest Microcode Level: 5x71
Nbr of Volumes:......... 0002
Consistency Method:...... EMC Consistency Assist
I/O Suspend Time:....... 2018-03-16-14:34:59.184453
I/O Resume Time:....... 2018-03-16-14:34:59.803769
Backup Elapsed:........ 00.61 Seconds
IMS Recovery Expert for z/OS Volume Detail Report
<--------Standard--------<Split-><Estab-><--------Data Types-------->
Volser Ucb# Sym# Devtyp Ucb# Sym# Ucb# Sym# Data DCat ALog ACat RLog RCat
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The **Split** section of this report lists the BCV units that mirrored the standard volumes; these volumes now contain this backup. The **Estab** (Establish) section of the report lists the next generation BCV units that are now established to the IMS standard volumes.

The **Data Types** section of the report contains the following information:

- **Data**: Yes indicates that the volume contains database data.
- **DCat**: Yes indicates that the volume contains a user catalog that contains the z/OS catalog information for database data sets.
- ** ALOG**: Yes indicates that the volume contains one or more active log data sets.
- **ACat**: Yes indicates that the volume contains a user catalog that contains z/OS catalog information for an active log data set.
- **RLog**: Yes indicates that the volume contains one or more archive log data sets.
- **RCat**: Yes indicates that the volume contains a user catalog that contains z/OS catalog information for an archive log data set.

If a volume contains a mix of database data or catalogs, and log data or catalogs, then IMS Recovery Expert issues a message stating that the database and log data are not separated, and a full system restore is required.

---

**Reviewing output from an EMC SNAP backup**

During an EMC SNAP backup, IMS Recovery Expert writes messages to the job's SYSPRINT DD and other DD statements. Access and review these DD statements to determine if the backup was successful.

**SYSPRINT DD**

The SYSPRINT DD contains the backup profile information, control cards, and IMS Recovery Expert messages. The following figure shows a sample SYSPRINT DD.

```
00031 - Control Cards:
00041 - BACKUP TWUSR."B71D SNAP BACKUP"
01621 - Parmlib used for this execution
00131 - Backup profile TWUSR.B71D SNAP BACKUP was read from
        the repository.
00391 - Volume map validation complete.
00751 - Performing IMS source volume validation...
0102W - Source volume BSY301 contains both object data and active
         log usercat data.
0102W - Source volume BSY301 contains both object usercat data
         and active log usercat data.
0103W - All recoveries of this backup must include log recovery.
0190W - Volume NSP101 is not included in this backup.
         It contains only ARCHIVE log data.
0190W - Volume NSP102 is not included in this backup.
         It contains only ARCHIVE log data.
0190W - Volume NSP103 is not included in this backup.
         It contains only ARCHIVE log data.
0190W - Volume NSP104 is not included in this backup.
         It contains only ARCHIVE log data.
0190W - Volume NSP105 is not included in this backup.
         It contains only ARCHIVE log data.
0190W - Volume NSP106 is not included in this backup.
         It contains only ARCHIVE log data.
0190W - Volume NSP107 is not included in this backup.
         It contains only ARCHIVE log data.
```
0076I - IMS source volume validation complete.
   All IMS volumes are in this profile.
0137I - Varying volumes offline.
0083I - Performing Snap Volumes to create backup...
0201I - Parmlib Override on Snap Volume Global command -
   WAITforSessions - Value: Y
0201I - Parmlib Override on Snap Volume Global command -
   WAITforSessions_HOURS - Value: 00
0201I - Parmlib Override on Snap Volume Global command -
   WAITforSessions_MINUTES- Value: 02
0201I - Parmlib Override on Snap Volume Global command -
   WAITforSessions_SECONDS- Value: 30
0201I - Parmlib Override on Snap Volume Global command -
   TOLERATE_ENQ_FAILURES - Value: Y
0201I - Parmlib Override on Snap Volume Global command -
   COPY_VOLUME_ID - Value: Y
0201I - Parmlib Override on Snap Volume Global command -
   BUILD_VTOC_INDEX - Value: Y
0201I - Parmlib Override on Snap Volume Global command -
   Snap Differential - Value: Y
0198I - Backup via Snap Volume Std Vol BSY300 Dev 3004 to Dev 3040
BSY0198I - Backup via Snap Volume Std Vol BSY301 Dev 3005 to Dev 3041
0198I - Backup via Snap Volume Std Vol BSY302 Dev 3006 to Dev 3042
0198I - Backup via Snap Volume Std Vol BSY303 Dev 3007 to Dev 3043
BSY0198I - Backup via Snap Volume Std Vol BSY304 Dev 3008 to Dev 3044
0084I - Backup of profile TWUSR.B71D SNAP BACKUP has been created.
0080I - Backup with timestamp 2018/03/16-21:18:45,
   generation 01 was saved in the repository.
0002I - IMS Recovery Expert for z/OS complete. RC=004.

BSY#REPT DD

This DD contains a summary report that describes the details of the backup. This report includes the standard and SNAP volume information and the data types found on the backup volumes. The following figure shows a sample BSY#REPT DD from a SNAP backup.

IMS Recovery Expert for z/OS Summary Report
Utility Executed: Backup
Profile Name: TWUSR.B71D SNAP BACKUP
IMS Subsystem: B71D
IMS Version: 0010
Backup Type: Snap
Backup Contains: Database Data and Log Data (Mixed)
Partial Backup: No
Nbr of Controllers: 01
Lowest Microcode Level: 5x71
Nbr of Volumes: 0005
Consistency Method: EMC Consistent Snap

IMS Recovery Expert for z/OS
Volume Detail Report
<--------Standard--------> <-Snap--> <--------Data Types--------->
Volser Ucb# Sym# Devtyp Ucb# Sym# Data DCat ALog ACat RLog RCat
----------- ------- ------ -------- -------- -------- ---- ---- ---- ---- ----
BSY300 3004 0004 3390-3 3040 0040 No No Yes No No No
BSY301 3005 0005 3390-3 3041 0041 Yes Yes No Yes No Yes
BSY302 3006 0006 3390-3 3042 0042 Yes No No No No No
BSY303 3007 0007 3390-3 3043 0043 Yes No No No No No
BSY304 3008 0008 3390-3 3044 0044 Yes No No No No No

The Snap section of this report lists the target units that now contain the backup of the associated IMS standard volumes. The Data Types section of the report contains the following information:
Data  Yes indicates that the volume contains database data.
DCat  Yes indicates that volume contains a user catalog that contains the z/OS catalog information for database data sets.
 ALOG  Yes indicates that the volume contains one or more active log data set(s).
ACat  Yes indicates that the volume contains a user catalog that contains z/OS catalog information for an active log data set.
 RLog  Yes indicates that the volume contains one or more archive log data set(s).
RCat  Yes indicates that the volume contains a user catalog that contains z/OS catalog information for an archive log data set.

If a volume contains a mix of database data or catalogs, and log data or catalogs, then IMS Recovery Expert issues a message stating that the database and log data are not separated, and a full system restore is required.

**BSYSNAPO DD**

This DD contains messages generated by the EMC SNAP Volume and TimeFinder utilities. For information on these messages, refer to the EMC documentation. The following figure shows a sample BSYSNAPO DD.

BSYSNAP - EMC Snap Volume Messages:
21:18:45 *** TIMEFINDER MF SNAP V5.5.0 (018) ***
21:18:45 ESNP020I IBM SNAPSHOT SUPPORT DETECTED AND ENABLED
21:18:45 ESNP023I IBM FLASHCOPY SUPPORT DETECTED AND ENABLED
21:18:45 ESNP024I IBM FLASHCOPY V2 SUPPORT DETECTED AND ENABLED
21:18:45 ESNP010I BEGINNING COMMAND PARSE
21:18:45 ESNP011I PARSING STATEMENT #1
21:18:45 ESNP000I API GLOBAL REQUEST PROCESSED
21:18:45 ESNP011I PARSING STATEMENT #2
21:18:45 ESNP040I API SNAP VOLUME REQUEST PROCESSED
21:18:46 ESNP500I UNIT 3004 WAS REQUESTED, FOUND WITH VOLUME BSY300 MOUNTED
21:18:46 ESNP504I UNIT 3040 WAS REQUESTED, FOUND OFFLINE
21:18:46 ESNP011I PARSING STATEMENT #3
21:18:46 ESNP040I API SNAP VOLUME REQUEST PROCESSED
21:18:46 ESNP500I UNIT 3005 WAS REQUESTED, FOUND WITH VOLUME BSY301 MOUNTED
21:18:46 ESNP504I UNIT 3041 WAS REQUESTED, FOUND OFFLINE
21:18:46 ESNP011I PARSING STATEMENT #4
21:18:46 ESNP040I API SNAP VOLUME REQUEST PROCESSED
21:18:46 ESNP500I UNIT 3006 WAS REQUESTED, FOUND WITH VOLUME BSY302 MOUNTED
21:18:46 ESNP504I UNIT 3042 WAS REQUESTED, FOUND OFFLINE
21:18:46 ESNP011I PARSING STATEMENT #5
21:18:46 ESNP040I API SNAP VOLUME REQUEST PROCESSED
21:18:46 ESNP500I UNIT 3007 WAS REQUESTED, FOUND WITH VOLUME BSY303 MOUNTED
21:18:46 ESNP504I UNIT 3043 WAS REQUESTED, FOUND OFFLINE
21:18:46 ESNP011I PARSING STATEMENT #6
21:18:46 ESNP040I API SNAP VOLUME REQUEST PROCESSED
21:18:46 ESNP500I UNIT 3008 WAS REQUESTED, FOUND WITH VOLUME BSY304 MOUNTED
21:18:46 ESNP504I UNIT 3044 WAS REQUESTED, FOUND OFFLINE
21:18:46 ESNP011I PARSING STATEMENT #7
21:18:46 ESNPF20I API ACTIVATE REQUEST PROCESSED
21:18:46 ESNP011I PARSING STATEMENT #8
21:18:46 ESNP031I A MAXIMUM OF 11 SUBTASKS WILL BE SCHEDULED
21:18:46 ESNP040I PROCESSING REQUESTS
21:18:46 ESNP460I PROCESSING FOR STATEMENT #2 BEGINNING, COPY FROM VOLUME BSY300 TO VOLUME *3040*
21:18:46 ESNP460I PROCESSING FOR STATEMENT #2 SUSPENDED FOR PENDING ACTIVATE
21:18:46 ESNP460I PROCESSING FOR STATEMENT #3 BEGINNING, COPY FROM VOLUME BSY301 TO VOLUME *3041*
21:18:46 ESNP460I PROCESSING FOR STATEMENT #3 SUSPENDED FOR PENDING ACTIVATE
21:18:46 ESNP460I PROCESSING FOR STATEMENT #4 BEGINNING, COPY FROM VOLUME BSY302 TO VOLUME *3042*
Reviewing output from a DFSMSdss backup

During a DFSMSdss backup, IMS Recovery Expert writes messages to several of the job’s DD statements. Access and review these DD statements to determine if the backup was successful.

**BSYOUT DD**

This DD contains the backup profile information, control cards, and IMS Recovery Expert messages. The following figure shows a sample BSYOUT DD.

**Note:** Some lines that generally appear as single lines appear as two lines in this sample for display purposes.

Chapter 7. Creating a System Level Backup  169
15:12:44 BSY0013I - Backup profile PDBISC.IAA
  DFSMSDSS was read from the repository.
15:12:44 BSY0075I - Performing subsystem source volume validation...
15:13:03 BSY0076I - Subsystem source volume validation complete.
  All source volumes are in this profile.
15:13:03 BSY0039I - Volume map validation complete.
  was marked as no longer on disk.
15:13:06 BSYI407I - IMS Sub-System IAA3 is INACTIVE
15:13:06 BSYI407I - IMS Sub-System IAA4 is INACTIVE
15:13:06 BSYI407I - IMS Sub-System IAX3 is INACTIVE
15:13:06 BSY0004I - Performing disk copy process...
15:13:06 BSY0356I - Task 01 - Copying source volser SIRBE0
  to target volser SIRBE0.
15:13:06 BSY0356I - Task 02 - Copying source volser SIRBE1
  to target volser SIRBE1.
15:13:06 BSY0356I - Task 03 - Copying source volser SIRBE2
  to target volser SIRBE2.
15:13:06 BSY0356I - Task 04 - Copying source volser SIRBE3
  to target volser SIRBE3.
15:13:08 BSY0356I - Task 05 - Copying source volser SIRBE4
  to target volser SIRBE4.
15:13:08 BSY0356I - Task 06 - Copying source volser SIRBE5
  to target volser SIRBE5.
15:13:08 BSY0004I - Backup of profile PDBISC.IAA - DFSMSDSS has been created.
15:13:08 BSY0004I - Collecting data set information for object level recovery..
15:13:30 BSY0004I - Data set information collection complete.
15:13:31 BSY0004I - Backup with timestamp 2018/01/13-15:13:06,
  generation 01 was saved in the repository.

**BSY#REPT DD**

This DD contains a summary report that describes the details of the backup. This report includes the source and target volume information, and the data types found on the backup volumes. The following figure shows a sample BSY#REPT DD from an IMS backup.

```
IMS Recovery Expert for z/OS
Backup Summary Report

Utility Executed: Backup
Profile Name: PDBISC.IAA - DFSMSDSS
IMS Subsystem: IAA
IMS Version: 00.0
Backup Type: DFSMSdss Disk Copy
Backup Contains: Database Data and Log Data
Partial Backup: No
Nbr of Volumes: 0008
Backup Date: 01/13/2018
Backup Time: 15:13:06
Consistency Method: IMS Log Suspend
Supports Database Restore... Yes
I/O Suspend Time: 2018-01-13-15.13.06.662766
Backup Elapsed: 01.81 Seconds
```

**IMS Recovery Expert for z/OS**

Backup Volume Detail Report

```
<---IMS Volume--> <---Target--> <--------Data Types-------->
Volser Ucb# Devtyp Volser Ucb# Data DCat ALog ACat RLog RCat
```
The Source Volumes and Target sections of this report list the target units that now contain the backup of the associated DFSMSdss volumes. The Data Types section of the report contains the following information:

Data  Yes indicates that the volume contains database data.

DCat  Yes indicates that volume contains a user catalog that contains the z/OS catalog information for database data sets.

ALog  Yes indicates that the volume contains one or more active log data set(s).

ACat  Yes indicates that the volume contains a user catalog that contains z/OS catalog information for an active log data set.

RLog  Yes indicates that the volume contains one or more archive log data set(s).

RCat  Yes indicates that the volume contains a user catalog that contains z/OS catalog information for an archive log data set.

If a volume contains a mix of database data or catalogs, and log data or catalogs, then IMS Recovery Expert issues a message stating that the database and log data are not separated, and a full system restore is required.

Reviewing output from offloading a backup

When offloading a backup, IMS Recovery Expert writes messages to the offload job's DD statements. Access and review these DD statements to determine if the offload was successful.

BSYOUT DD (BSYOFFL step)

This DD contains the backup profile information, control cards, and IMS Recovery Expert messages. The following figure shows a sample BSYOUT DD.

Note: Some lines that generally appear as single lines appear as two lines in this sample for display purposes.

00031 - Control Cards:
00041 - OFFLOAD "PDBISC"."IAA"
00041 - GENERATION LAST-BACKUP
00041 -
01231 - Backup PDBISC.IAA
generation 001 was read from the repository.
00041 - Performing full volume offload,
02491 - Task 01 - Offload process starting for unit ABE0 (Source volser SIRB40).
02491 - Task 02 - Offload process starting for unit ABE1 (Source volser SIRB41).
02791 - Task 01 - Unit ABE0 with old volser SIRB40 was clipped to volser ZZRB40.
02791 - Task 02 - Unit ABE1 with old volser SIRB41 was clipped to volser ZZRB41.
02631 - Task 02 - Unit ABE1 offloaded to local primary data set SIRRTE.OFFLOAD.IAA.SIRB41
02541 - Task 02 - Offload process for unit ABE1 (Source volser SIRB41) complete.
02791 - Task 02 - Unit ABE1 with old volser ZZRB41 was clipped to volser SIRB41.
02491 - Task 02 - Offload process starting for unit ABE3 (Source volser SIRB43).
BSY#REPT DD (BSYOFFL step)

This DD contains a summary report that describes the details of the offload, original and target volume information and the offloaded file names. The following figure shows a sample BSY#REPT DD from an offload.

IMS Recovery Expert for z/OS
Volume Offload Summary Report

Utility Executed:...... Offload
Profile Name:......... PDBISC.IAA
Offload Date:......... 01/13/2018
Offload Time:........... 13:52:33
Data Mover:............ DFSMSdss
Compress:.............. Yes
Encrypted............... No
Encryption Method....... RSA CLRAES128
Generation:............... 0001
Nbr Of Volumes:.......... 0008

IMS Recovery Expert for z/OS
Volume Offload Detail Report

---IMS---

---Tape---
<table>
<thead>
<tr>
<th>Volser</th>
<th>Ucb#</th>
<th>Type</th>
<th>Offloaded to Filename</th>
<th>FileSeq</th>
<th>Volser</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIRB40</td>
<td>AB40</td>
<td>LP</td>
<td>SIRRTE.OFFLOAD.IAA.SIRB40</td>
<td>Disk</td>
<td></td>
</tr>
<tr>
<td>SIRB41</td>
<td>AB41</td>
<td>LP</td>
<td>SIRRTE.OFFLOAD.IAA.SIRB41</td>
<td>Disk</td>
<td></td>
</tr>
<tr>
<td>SIRB42</td>
<td>AB42</td>
<td>LP</td>
<td>SIRRTE.OFFLOAD.IAA.SIRB42</td>
<td>Disk</td>
<td></td>
</tr>
<tr>
<td>SIRB43</td>
<td>AB43</td>
<td>LP</td>
<td>SIRRTE.OFFLOAD.IAA.SIRB43</td>
<td>Disk</td>
<td></td>
</tr>
<tr>
<td>SIRB44</td>
<td>AB44</td>
<td>LP</td>
<td>SIRRTE.OFFLOAD.IAA.SIRB44</td>
<td>Disk</td>
<td></td>
</tr>
<tr>
<td>SIRB45</td>
<td>AB45</td>
<td>LP</td>
<td>SIRRTE.OFFLOAD.IAA.SIRB45</td>
<td>Disk</td>
<td></td>
</tr>
<tr>
<td>SIRB46</td>
<td>AB46</td>
<td>LP</td>
<td>SIRRTE.OFFLOAD.IAA.SIRB46</td>
<td>Disk</td>
<td></td>
</tr>
<tr>
<td>SIRB47</td>
<td>AB47</td>
<td>LP</td>
<td>SIRRTE.OFFLOAD.IAA.SIRB47</td>
<td>Disk</td>
<td></td>
</tr>
</tbody>
</table>

This report contains the following information:

**IMS Volser/Ucb#**

The IMS volume serial and UCB of the backup before offload.

**Type**

The backup type: LP is local primary; LB is local backup; RP is remote primary; RB is remote backup.

**Offloaded to Filename**

The data set name of the offloaded backup.

**FileSeq**

The data set’s file sequence number.

**Volser**

The data set volume serial number.
Chapter 8. Recovery using application operations

Using the IMS Recovery Expert ISPF interface, you can build jobs to recover individual databases or groups of databases to a specific point in time.

Specify 2 (Application Operations) on the IMS Recovery Expert main menu panel (BSY$MAIN) and press Enter to access the Application Operations Menu panel.

```
IMS RE V2R2 -------------- Application Operations Menu --------------
Option ==> 2018/04/17 09:11:40
User: TS**** - BSY

1. On-Demand Operations
2. Object Profiles
3. Utility Profiles
4. Job Profiles
5. Coordinated Application Profiles
```

Figure 74. Application Operations Menu

On-demand operations

On-demand operations allow you to build recovery jobs, create recovery points, perform quiet time analysis, and perform a health check dynamically, without needing a pre-defined profile to work from.

From the On-Demand Operations Menu, you may take the following actions:
- Build Recovery Job
- Build Create Recovery Point Job
- Build Quiet Time Analysis Job
- Build Health Check Job

When an option is selected from the menu, the user is led through the panels to dynamically create the input needed for the function. A list of objects is required for every function, but Recovery Options are required only when building recovery JCL.

Profiles

Profiles are reusable and editable, and are created on a per system or group basis. You can easily edit, rename, view, and delete profiles using line commands. The following profiles are available from the Application Operations Menu panel:
- Object profiles allow the user to create and maintain profiles that contain only the list of IMS objects (databases, indexes, DBRC groups) that the user wants to take action against, and to perform functions against those profiles.
- Utility Profiles allow the user to create and maintain profiles that specify only the Recovery Options to use for an action, and to perform functions against those profiles.
- Job Profiles allow the user to create and maintain profiles that contain both an Object and Utility Profile, and to perform functions against those pairings. This is useful in maintaining a object-option relationship over an extended period of time. Users may also specify only one component profile, and dynamically add the required information for the other.
- Coordinated application profiles allow the user to recover Db2 objects and IMS databases used in an application to the same consistent point in time. Besides recovery, coordinated application profiles also allow for creating a common quiesce point, and creating a report of common quiet times.

Coordinated application profiles will not be discussed in this chapter. For more information, see Chapter 9, “Recovering Db2 and IMS applications,” on page 217.

### Upgrading application profiles

To prevent customers from having to completely recreate existing profiles, existing Application Profiles are automatically upgraded into Object, Utility, and Job Profiles by specifying U from the list of Job Profiles.

Profiles which have not been upgraded will be highlighted in red, and a message will indicate profiles are in need of upgrading. Upgrading creates the following:
- An Object Profile with the objects from the source Application Profile, with an identical name and description to that of the source Application Profile
- A Utility Profile with the Recovery Options from the source Application Profile, with an identical and description to that of the source Application Profile
- A Job Profile comprised of the just-created Object and Utility Profiles

**Note:** A message will be displayed to confirm the Profile has been upgraded. Any action other than Delete, Update, or Create on an old-style Application Profile will issue a message indicating that the profile must be upgraded first.

### Creating object profiles

An object profile allows you to specify only the objects to be processed for an Application Operation.

**About this task**

Complete the following steps to create an object profile:

**Procedure**

1. Specify 2 on the Application Operations Menu panel (BSY$APMN) and press Enter.
On the Enter Profile Selection Criteria panel, you can limit the profiles that are listed. Specify a profile name, profile creator name, or SSID to do so. You can use the asterisk (*) as a wildcard character for any and all fields. Press Enter when finished. The Object Profile Display panel will be displayed.

2. Specify C on the Cmd line and press Enter.

3. On the Enter New Object Profile Data panel specify a Profile Name, Description, and IMS System.

4. Press Enter.

5. In the Add Objects panel, specify Y in the Add Databases, Add Indexes, or Add Groups field and press Enter.

6. To continue adding objects to object profiles, see one of the following topics:
   - “Adding databases”
   - “Adding indexes” on page 179
   - “Adding groups” on page 180

Adding databases

You can specify one or more databases to be recovered by adding them to an object profile.
About this task

Complete the following steps to add databases to an object profile:

Procedure

1. On the Add Objects panel, specify Y in the Add Databases field and press Enter.
2. On the Enter Databases Like to Display panel, specify the following information to filter the list from which you may select databases:

   | Database Like * | Wildcard N (Y or N) |
   | Exclue I (E or I) |

   | Process Dependent Indexes Y (Y or N) |
   | Process Logical Relations Y (Y or N) |

   Figure 78. Enter Databases Like to Display

   - Specify a filter in the Database Like field to filter search results.
   - Specify Y in the Wildcard field to automatically add all objects that meet your criteria into the profile. An object list will not be presented. When the profile is used, IMS Recovery Expert dynamically expands the added name.
   - Specify I to include databases you select in the subsequent panel, or specify E to exclude them.
   - Specify Y in the Process Dependent Indexes field to dynamically include indexes that are dependent on the selected databases.
   - Specify Y in the Process Logical Relations field to dynamically include databases that are logically related to the selected databases.

3. Press Enter.

4. On the Include Database Selection panel, enter S in the Cmd line next to databases you would like to include or exclude, depending on what was specified on the Enter Databases Like to Display panel, and press Enter.

   | Cmd DBNAME TYPE |
   | AUTODB FULL |
   | BACP0C FULL |
   | BAMP0C FULL |
   | BATP0C FULL |

   Figure 79. Include Database Selection panel

5. Press PF3 to return to the Update Object Profile Display panel. The selected databases will be listed in the order that they were added to the object profile.
Adding indexes

You can specify one or more indexes to be recovered by adding them to an object profile.

About this task

Complete the following steps to add indexes to an object profile:

Procedure

1. On the Add Objects panel, specify Y in the Add Indexes field and press Enter.
2. On the Enter Databases Like to Display panel, specify the following information to filter the list from which you may select databases:

   - Specify a filter in the Index Like field to filter search results.
   - Specify Y in the Wildcard field to automatically add all objects that meet your criteria into the profile. An object list will not be presented. When the profile is used, IMS Recovery Expert dynamically expands the added name.
   - Specify I to include databases you select in the subsequent panel, or specify E to exclude them.

3. Press Enter.
4. On the Include Database Selection panel, enter S in the Cmd line next to indexes you would like to include or exclude, depending on what was specified on the Enter Indexes Like to Display panel, and press Enter.

   - IMS RE V2R2 ---- Include Database Selection --- 2018/04/17 09:50:54
   - Commands: SEL mask - Select all groups matching the mask
   - Line Commands: S - Include or exclude database from profile
   - Database Like *

5. Press PF3 to return to the Update Object Profile Display panel. The selected indexes will be listed in the order that they were added to the object profile.
**Adding groups**

**About this task**

Complete the following steps to add DBRC groups to an object profile:

**Procedure**

1. On the Add Objects panel, specify Y in the **Add Groups** field and press Enter.
2. On the Enter Groups Like to Display panel, specify a filter in the **Group Like** field to filter search results, and press Enter.

![](Figure82.png)

**Figure 82. Enter Groups Like to Display**

3. On the Include Database Selection panel, enter $ in the **Cmd** line next to groups you would like to include and press Enter.

![](Figure83.png)

**Figure 83. Include Database Selection**

4. Press PF3 to return to the Update Object Profile Display panel. The selected groups will be listed in the order that they were added to the object profile.

---

**Creating utility profiles**

A utility profile allows you to specify only the recovery options used when a recovery operation is performed.

**About this task**

Complete the following steps to create a utility profile:

**Procedure**

1. Specify 3 on the Application Operations Menu panel (BSY$APMN) and press Enter.
On the Enter Profile Selection Criteria panel, you can limit the profiles that are listed. Specify a profile name, profile creator name, or SSID to do so. You can use the asterisk (*) as a wildcard character for any and all fields. Press Enter when finished. The Utility Profile Display panel will be displayed.

2. Specify C on the Cmd line and press Enter.

3. On the Enter New Recovery Options Profile Data panel specify a **Profile Name**, **Description**, and **IMS System**.

You may also control access to this profile using the **Share Option** field. Specify U to allow other users access to update the profile. Specify V to allow others to only view the profile. Specify N to deny any other users access to the profile.

4. Press Enter.

5. On the Recovery Options panel, specify the following information:
Recovery Resources
Specify which recovery resources to consider for recovery. Specify A for all resources (System Level Backups and image copies), S for System Level Backups only, or I for image copies only.

Specify Y in the Edit Options field to specify SLB-only parameters for recovery. For more information, see “Setting SLB parameters” on page 183.

Execute Recovery
The only valid value for this field is Y.

Specify Y in the Edit Options field to specify recovery utility options.

Execute Index Rebuild
Specify Y (Yes) or N (No) to indicate whether you want to perform index rebuild.

Specify Y in the Edit Options field to specify index rebuild options. For more information, see “Setting index rebuild options” on page 185.

Execute Change Accum
Specify Y (Yes) or N (No) to indicate whether you want to execute change accumulation prior to executing the recovery utility.

Specify Y in the Edit Options field to specify change accumulation options. For more information, see “Setting change accumulation options” on page 187.
Create Post Recovery IC

Specify Y (Yes) or N (No) to indicate whether you want to create image copies for recovered databases.

Specify Y in the Edit Options field to specify Post Recovery Image Copy options. For more information, see “Setting post recovery image copy options” on page 188.

Update Spawned Job Options

Specify Y (Yes) to specify Spawned Job options or N (No) to use the default method for generating the jobcard and/or jobname. For more information, see “Setting spawned job options” on page 188.

Action on Warnings

Specify how you want to process warnings that are issued during recovery. Specify C to continue, W to issue a WTO, or A to abort.

GENJCL defaults member

Specify a member to be used as the GENJCL defaults when GENJCL is executed. If specified, this member will be included on the GENJCL command using the DEFAULTS() keyword.

This member can be used to pass system-specific keywords and values to the GENJCL process when creating the JCL needed to perform recovery and other recovery-related processes.

Datasets for GENJCL

Specify up to 5 data sets for GENJCL skeletons. The data sets are concatenated in the specified order. The GENJCL members and GENJCL defaults member specified in the Recovery Options must exist in one of these data sets.

Note: When Recovery Options are created the values on the prior panels are pre-populated with the default values found in the BSY#PARM or BSY#SSID members as described in “IMS recovery process parameters” on page 55.

6. Press PF3 to proceed, or enter CAN in the Option line to cancel the action.

Setting SLB parameters

If you specify Y in the Edit Options field adjacent to the Recovery Resources field, you can customize SLB parameters for recovery.

About this task

Complete the following steps to edit SLB parameters for recovery:

Procedure

1. On the Recovery Options panel, specify Y in the Edit Options field next to Recovery Resources, and press Enter. This function is only enabled if you specify A or S in the Recovery Resources field.

2. On the SLB Recovery Options panel, you can specify the following information:
### SLB Processing Only

Specify **Y** (Yes) or **N** (No) to indicate whether or not you want to perform SLB-only processing during the recovery operation.

### From Offload

Specify **Y** (Yes) to indicate that any data sets that need to be restored from a System Level Backup should be done using an offload copy of the System Level Backup. Specify **N** (No) to have the data sets restored using the System Level Backup on disk.

### Parallel Tasks

Specify a number in the range 01-99 to indicate the maximum number of parallel tasks that can be used when restoring multiple data sets from an SLB or SLB offload.

### Number of Tape units

Specify a number in the range 01-99 to indicate the maximum number of tape drives that can be used when restoring multiple data sets from an SLB offload that is on tape.

3. Press Enter, or specify **END** on the **Option** line to return to the Recovery Options panel, or specify **CAN** to cancel.

### Setting recovery utility options

If you specify **Y** in the **Edit Options** field adjacent to the **Execute Recovery** field, you can customize recovery utility options.

### About this task

Complete the following steps to edit recovery utility options:

#### Procedure

1. On the Recovery Options panel, specify **Y** in the **Edit Options** field next to **Execute Recovery**, and press Enter.

2. On the Recovery Utility Options panel, you can specify the following information:
RECOV GENJCL member name
Define a skeletal member name to be used for the recovery utility.

Delete/Define PDS DSN
Define the data set name of a PDS that contains IDCAMS statements in order to delete and redefine the data sets being recovered prior to running the recovery utility. The PDS should contain a member matching the DD or ADS name associated with each data set.

Include indexes in recovery list
Specify Y if you want indexes to be included in the recovery list, or specify N if you do not want indexes to be included in the recovery list.

If Y is specified, then a GENJCL.USER GENTYPE=DATASET GENPHAS=SYSIN will be made for each index. If N is specified, then these calls are not made.

For example, if you are using the IMS Database Recovery Facility for recovery, it has the ability to perform an integrated index rebuild of associated indexes. To do this, the indexes are not included in the recovery list, and instead the associated IB() control statements need to be specified to drive an index rebuild.

Datasets for GENJCL
The data set concatenation for skeleton JCL search are displayed here.
This field is not updatable on this panel.

3. Press Enter, or specify END on the Option line to return to the Recovery Options panel, or specify CAN to cancel.

Setting index rebuild options
If you specify Y in the Execute Index Rebuild field, you can also specify Y in the Edit Options field to further customize Index Rebuild options.

About this task
Complete the following steps to edit index rebuild options:

Procedure
1. On the Recovery Options panel, specify Y in the Edit Options field next to Execute Index Rebuild, and press Enter.
2. On the Index Rebuild Utility Options panel, you can specify the following information:

<table>
<thead>
<tr>
<th>Option</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>FF GENJCL member name</td>
<td>BSYIIB</td>
</tr>
<tr>
<td>Use FF for HALDB</td>
<td>Y (Yes/No)</td>
</tr>
<tr>
<td>HALDB GENJCL member name</td>
<td>BSYPRECO</td>
</tr>
<tr>
<td>FP GENJCL member name</td>
<td>BSYFPSI</td>
</tr>
<tr>
<td>Rebuild even if recoverable</td>
<td>Y (Yes/No)</td>
</tr>
<tr>
<td>Rebuild HALDB on recover to current</td>
<td>Y (Yes/No)</td>
</tr>
<tr>
<td>Delete/Define PDS DSN</td>
<td>IMS.DELEDEF</td>
</tr>
<tr>
<td>Datasets for GENJCL</td>
<td>TSMXD.BSY.DEMO.JCLPDS</td>
</tr>
<tr>
<td></td>
<td>IMSQA.BSY220.DATA.JCLPDS</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 89. Index Rebuild Utility Options

**FF GENJCL member name**
Specify the skeleton member name to be used for the index rebuild utility when rebuilding indexes associated with full function and HALDB indexes. If the **Use FF for HALDB** option is set to Y, then this member is also used for HALDB ILDS and PINDEX processing.

**Use FF for HALDB**
Specify Y if you want to use the FF GENJCL skeleton member for processing HALDB ILDS and PINDEX; specify N if you do not want to do this.

**HALDB GENJCL member name**
Specify the skeleton member name to be used for processing HALDB ILDS or PINDEX. If the **Use FF for HALDB** option is set to Y, then you must leave this field blank.

**FP GENJCL member name**
Specify the skeleton member name to be used for Fast Path secondary indexes. If you do not want FP secondary indexes processed, leave this field blank.

**Rebuild even if recoverable**
Specify whether you always want indexes rebuilt after the recovery of the target database. Specify Y to always rebuilt indexes. Specify N to rebuild indexes only if they cannot be recovered.

**Rebuild HALDB on recover to current**
Specify whether you want the HALDB ILDS and PINDEX rebuilt even when the partition is being recovered to current. Usually, the ILDS and PINDEX do not need to be rebuilt in this situation. Specify Y to rebuild the HALDB ILDS and PINDEX on recovery to current. Specify N to rebuild the HALDB ILDS and PINDEX only when indicated.
Delete/Define PDS DSN
Specify the name of a PDS data set that contains IDCAMS statements.
These statements are used to delete and redefine the data sets being
recovered before running the recovery utility.

Leave this field blank if you do not want IMS Recovery Expert to build
the steps to delete and define indexes prior to a rebuild.

Datasets for GENJCL
Displays the concatenation of datasets for GENJCL member selection.

3. Press Enter, or specify END on the Option line to return to the Recovery Options
panel, or specify CAN to cancel.

Setting change accumulation options
If you specify Y in the Execute Change Accum field, you can also specify Y in the
Edit Options field to further customize change accumulation options.

About this task
Complete the following steps to edit index rebuild options:

Procedure
1. On the Recovery Options panel, specify Y in the Edit Options field next to
   Execute Change Accum, and press Enter.
2. On the Change Accumulation Utility Options panel, specify the following
   information:

   Figure 90. Change Accum Utility Options

   GENJCL member name
   Specify a skeleton member name to use for Change Accumulation JCL
generation.

   Run CA
   Specify whether or not you want to run change accumulation before
database recovery. Specify A to always run change accumulation. Specify
N if you want IMS Recovery Expert to run change accumulation only if it is required for recovery.

   Datasets for GENJCL
   Displays the concatenation of data sets for GENJCL member selection.
3. Press Enter, or specify END on the Option line to return to the Recovery Options
panel, or specify CAN to cancel.
Setting post recovery image copy options

If you specify Y in the Create Post Recovery IC field, you can also specify Y in the Edit Options field to edit image copy utility options.

About this task

Complete the following steps to edit image copy utility options:

Procedure

2. On the Image Copy Utility Options panel, specify the following information:

```
IMS RE V2R2 ------ Image Copy Utility Options ------- 2018/04/17 12:46:1
Option >>>
------------------------------------------------------------------------
Creator: TSS866 Name: FS.TEST SSID: IDA
Share Option: U (Upd,View,No) Description: TEST
------------------------------------------------------------------------
Enter the options for the image copy utility:
GENJCL member name => BSYHPIC
Datasets for GENJCL => TSMXD.BSY.DE\.JCLPDS
                        => IMSQA.BSY220.DATA.JCLPDS
                        => __________________________
                        => __________________________
                        => __________________________
```

Figure 91. Image Copy Utility Options

GENJCL member name

Specify a skeleton member name to use for the post recovery IC JCL generation.

Datasets for GENJCL

Displays the concatenation of data sets for GENJCL member selection.

3. Press Enter, or specify END on the Option line to return to the Recovery Options panel, or specify CAN to cancel.

Setting spawned job options

If you specify Y in the Update Spawned Job Options field, you will be taken to the Spawned Job Options panel.

By default, the names of created jobs are the associated TSO userid plus a 1 character alphanumeric suffix (A-Z or 0-9) that is incremented with each new job. The jobcard is dynamically created using internal control blocks within the IMS Recovery Expert job. Use the Spawned Job Options panel to override the default methods for jobname and jobcard generation.

On the Spawned Job Options panel, you can specify the following information:
Jobname Mask

Allows the user to control the jobname used for any jobs spawned during the recovery process. This field accepts the following data:

- **Literal:** Any string valid for a jobname from 1-8 characters in length.
- **&USER:** The TSO userid of the submitter. If specified, minimal validation is done on the mask.
- **&SSID:** The IMS subsystem or group id associated with the job. If specified, minimal validation is done on the mask.
- **&#:** Substitute a single characters (A-Z) in the jobname. Can only be used once in the mask.
- **&%:** Substitute a single character (0-9) in the jobname. Can only be used once in the mask.

**Note:**

- &# and &% are mutually exclusive
- All symbols must be terminated with a period (.)

Job Cards

Allows the user to specify the a jobcard used for any jobs spawned during the recovery process. If the first line, the jobname portion of the jobcard, is left blank then the jobname is created dynamically for each spawned job using either the default method or value from the **Jobname Mask** field, otherwise the jobname will take the value from this line.

**Note:** Limited validation is done on these fields, so for the most part the specified jobcard will be used as is.

Press PF3 when you’ve finished, or enter CAN on the **Option** line to cancel.

Creating job profiles

Job profiles combine the functionality of object profiles and utility profiles. Job profiles allow you to specify an Object Profile and Utility Profile. Job profiles are functionally identical to application profiles from v2.2 and prior.
About this task

Complete the following steps to create a job profile:

Procedure

1. Specify 4 on the Application Operations Menu panel (BSY$APMN) and press Enter.

   Enter Profile Selection Criteria
   Profile Like *__________________________
   Creator Like *________________________
   SSID  Like *__________________________

   Figure 93. Enter Profile Selection Criteria Panel

   On the Enter Profile Selection Criteria panel, you can limit the profiles that are listed. Specify a profile name, profile creator name, or SSID to do so. You can use the asterisk (*) as a wildcard character for any and all fields. Press Enter when finished. The Job Profile Display panel will be displayed.

2. Specify C on the Cmd line and press Enter.

   The Job Profile Display panel may be pre-populated by old application profiles. You must update these profiles by specifying U on the Cmd line to upgrade them before they are usable.

3. On the Enter New Application Profile Data panel specify a Profile Name, Description, and IMS System.

   Enter New Application Profile Data
   Creator ______________
   Profile Name _________________________
   Description _________________________
   IMS System _____ (? for system list)
   Share Option U (Update, View only, No access)

   Figure 94. Enter New Object Profile Data

   You may also control access to this profile using the Share Option field. Specify U to allow other users access to update the profile. Specify V to allow others to only view the profile. Specify N to deny any other users access to the profile.

4. Press Enter.

5. On the Object Profile Select panel, select an object profile by specifying $ in the Cmd line.

6. Press Enter.

7. On the Recovery Options Profile Select panel, select a recovery option (utility) profile by specifying $ in the Cmd line.

8. Press Enter. The following panel will be displayed:
Using profiles

Once your profile is created you can undertake a variety of actions with it, including:

- Building a Recovery Job
- Creating a Recovery Point
- Quiet Time Analysis
- Performing a Health Check

You can also complete several management actions on your profiles, including:
- Updating
- Viewing
- Deleting

Object Profiles and Utility profiles have a new line command W, which represents Where Used, that will show the user any Job Profiles that a Object or Utility Profile used for when entered on the Cmd line.

Using a profile to build a recovery job

Recovery jobs can be built from object profiles, utility profiles, and job profiles.

About this task

Complete the following steps to build a recovery job:

Procedure

1. Specify B in the Cmd line next to the object or job profile you want to build a recovery job for.
2. On the Build Job panel, specify the following information:
Recovery Point
Specify 1 to recover the objects to the current point in time. Specify 2 to recover the objects to a selected timestamp. Specify 3 to recover the objects to a selected point in time. Specify 4 for a list of quiet times to recover the application.

Recovery Timestamp
If you specified 2 or 3 in the Recovery Point field, specify a timestamp in the Recovery Timestamp field.

Time timestamp can be specified in a local timestamp format (ydddhhmmssthimiu or ydddhhmmsst) or in a UTC timestamp format (ydddhhmmssShhmm), where Shhmm is a numeric offset that, when added, gives local time. For S, specify a plus (+) or minus (-) sign. For hh, specify a numeric value between 00 and 14. For mm, specify a value from the set [00, 15, 30, 45] such that Shhmm is a value between -1100 and +1400.

Edit Generated Job
Specify Y to view the job in an ISPF edit session after generation. If you specify N, you will return to the previous panel after the job is generated.

Utility Options
(Available when building from Object Profile) Specify E to edit the utility options for recovery prior to building the JCL. Specify S to select a Utility Profile to set utility options with.

Objects Option
(Available when building from Utility Profile) Specify E to edit the objects to be recovered. Specify S to select an Object Profile to designate the objects for recovery.

Edit Recovery Options
(Available when building from Job Profile) Specify Y to edit or review recovery options before building the JCL. Upon pressing Enter, the Recovery Options panel is displayed.

Build Recovery JCL Only
Specify Y if you want the generated job to build the JCL required to perform database recovery, but not to submit the jobs.

Build job in Dataset member
Specify the fully qualified data set name (without quotes) where you
want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, specify a member name. If the member does not exist, IMS Recovery Expert will create it.

**Job Cards**
Specify a valid job card for your site.

3. Press Enter to continue, or PF3 to cancel.

4. Submit the JCL.

**Using RPID to specify a timestamp for recovery**
The RPID option allows you to retrieve all quiet times within a selected time range for an application. You can use these times for a point in time recovery.

**About this task**

Complete the following steps to use RPID to specify a timestamp for recovery:

**Procedure**

1. From the Build Job for Profile panel, specify 4 in the Recovery Point field, and press Enter. The following panel will be displayed:

   ![Figure 97. Specify Time Range for RPID](image)

   **Figure 97. Specify Time Range for RPID**

   2. In the Specify Time Range for RPID panel, specify a Start timestamp in the format `yydddhhmmsst` or `yydddhhmmsstShhmm`. Specifying an End timestamp is option. If you choose to specify one, it will follow the same format as the Start timestamp.

   3. Press PF3 to display the quiet times for your specified time range. Or, to cancel and return to the Build Job for Profile panel, specify CANCEL in the Option line and press Enter.

   4. Specify S in the Cmd line next to the desired quiet time to select it for recovery.

   5. Press PF3 to return to the Build Job for Profile panel.

**Recovery job example**

This topic provides an example of a recovery job.

When you build a recovery job, it creates a batch job that invokes IMS Recovery Expert under TSO. When the batch job is run, it determines which recovery processes are required, builds the JCL to run these processes, and then creates the jobs to run the recovery process.

If the JCL only option is not selected, the recovery jobs are submitted and monitored for successful completion.

After a job is built for a object profiles, utility profiles, job profile, or on-demand operation, it is not necessary to rebuild it again. If objects must be recovered in the future, then the same JCL can be used to run the recoveries. The IMS Recovery Expert recovery job extracts current recovery options and objects from the specified
profiles or dynamically-created on-demand operation. It also determines which
recovery assets are required to recover each object at that time.

The batch job names created by IMS Recovery Expert are generated by appending
a character (A-Z), then a number (0-9) if A-Z is used up, to the user ID associated
with the recovery job. The BSYERROR output lists the recovery steps included in
each job IMS Recovery Expert will create. The created jobs can change each time a
recovery job is run, depending on what recovery steps must be performed at that
time.

The following example of a recovery job shows the TSO step used to invoke the
IMS Recovery Expert recovery process:

```
//PDBISCO JOB PDBISC,'ORESTORE EMC',CLASS=A,NOTIFY=&SYSUID
/*
/*
/*
/*
/*
**** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
/* Profile: PDBISC.EMC IVPDB1
/*
/* Job: 01 of 01
/*
/* Desc: TESTING HIDAM RECOVERY
/*
/* User: PDBISC
/*
/* Date: Thursday February 05, 2018
/*
/* Time: 10:46:35.59
/*
/*
**** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
/*
/* Step: BSY@BULD
/*
/*
/* Desc: This job will generate the JCL for application profile PDBISC.EMC IVPDB1 in a batch mode.
/*
/*
/* Return Codes:
/*
/*
/* (00) - Application Recovery Jobs built successfully
/*
/* (12) - Problem occurred during the recovery build process
/*
**** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/* Create temp data set to bypass enqueue failure in ISPF
/*
**** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/PROFILE EXEC PGM=IEFBRI4
/TEMP DD DSN=&TEMP,DISP=(NEW,PASS,DELETE),
// UNIT=SYSALDA,SPACE=(TRK,(1,1,5)),
// DCB=ISP.SISPTENU
/*
**** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/* Run BSY Batch Build
/*
**** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/BSY@BULD EXEC PGM=IKJEFTIA,REGION=006M,COND=(4,LT)
/*
/* /STEPLIB DD DISP=SHR,DSN=BSY.WRK0220.LOADLIB
// DD DISP=SHR,DSN=DEVRETE.EMC.SSCF580.LINKLIB
// DD DISP=SHR,DSN=RSRTE.VENDOR.FDR5467.LOAD
// /Db2PARMS DD DISP=SHR,DSN=RSQA.BSY0220.CONTROL
// /BSY@PROF DD DISP=SHR,DSN=RSQA.BSY0220.PROFILES
// /BSY@OFFL DD DISP=SHR,DSN=RSQA.BSY0220.OFFOPTS
// /BSY@MAP DD DISP=SHR,DSN=RSQA.BSY0220.PROFILE.MAPS
// /BSY@CAT DD DISP=SHR,DSN=RSQA.BSY0220.PROFILE.CATS
// /BSY@BACK DD DISP=SHR,DSN=RSQA.BSY0220.SYSBACK
// /BSY@OBJ DD DISP=SHR,DSN=RSQA.BSY0220.SYSBACK.OBJS
// /BSY@VOL DD DISP=SHR,DSN=RSQA.BSY0220.SYSBACK.VOLS
```
//BSYSBSSD DD DISP=SHR, DSN=RSQA.BSY0220.SYSBACK.SSIDS
//BSYPOBJS DD DISP=SHR, DSN=RSQA.BSY0220.OBJECTS
//BSYBREPT DD DISP=SHR, DSN=RSQA.BSY0220.BREPORT
//BSYARCH DD DISP=SHR, DSN=RSQA.BSY0220.ARCHIVES
//BSYPOBJS DD DISP=SHR, DSN=RSQA.BSY0220.OBJECTS
//BSY#PARM DD DSN=BSY.WRK0220.SAMPLIB(BSY#PARM), DISP=SHR
//BSYRVRPT DD SYSOUT=* 
//ISPLLIB DD DISP=SHR, DSN=BSY.WRK0200.LOADLIB
//ISPPLIB DD DISP=SHR, DSN=BSY.WRK0220.ISPPLIB
//ISPTLIB DD DSN=&&TEMP, DISP=(OLD,DELETE,DELETE),
// Unit=SYSALLDA, SPACE=(TRK,(2,1,2)),
// DCB=(RECFM=FB, LRECL=80, BLKSIZE=800)
//BSYERROR DD SYSOUT=* 
//SYSTSPRT DD SYSOUT=* 
//SYSOUT DD SYSOUT=* 
//SYSTSIN DD *
PROFILE NOPREFIX
ISPSTART PGM(BSY@BULD)
//*
//BSY#DATA DD *
OBJECT_RECOVERY ( 
  IMS_SUBSYSTEM EMC  
  USER_INDICATOR BSY  
  PROFILE_NAME 'EMC IVPDB1'  
  PROFILE_CREATOR PDBISC  
  EXECUTION_LIB_1 BSY.WRK0220.LOADLIB  
  BPROF_DSN RSQA.BSY0220.PROFILES  
  BOFFL_DSN RSQA.BSY0220.OFFOPTS  
  BPMAP_DSN RSQA.BSY0220.PROFILE.MAPS  
  BPCAT_DSN RSQA.BSY0220.PROFILE.CATS  
  SBACK_DSN RSQA.BSY0220.SYSBACK  
  SBOBJ_DSN RSQA.BSY0220.SYSBACK.OBJS  
  SBVOL_DSN RSQA.BSY0220.SYSBACK.VOLS  
  SBSSD_DSN RSQA.BSY0220.SYSBACK.SSIDS  
  BREPT_DSN RSQA.BSY0220.BREPORT  
  POBJS_DSN RSQA.BSY0220.OBJECTS  
  ARCH_DSN RSQA.BSY0220.ARCHIVES  
  PARML_DSN BSY.WRK0220.SAMPLIB  
  PARML_MEMBER BSY#PARM  
  Db2CNTL_DSN RSQA.BSY0220.CONTROL  
  EMCLOAD1 DEVRT.EMC.SCCF580.LINKLIB  
  FDRLOAD1 RSRTE.VENDOR.FDRS467.LOAD  
  )
//*

/*
 DD statement considerations:

You can manually add the following DD statements to the recovery job that is generated by IMS Recovery Expert:

BSYJCLO

If you add this DD statement to the recovery job, IMS Recovery Expert will output any JCL that is generated to run the underlying recovery process. These processes include a recovery utility to restore image copies and apply logs, an index rebuild utility, a change accumulation utility, and a post-recovery image copy and point checker utility. If this DD statement is specified, it must point to a data set with LRECL=80, and RECFM=F or RECFM=FB.
If you add this DD statement to the recovery job, IMS Recovery Expert will only provide the recovery analysis report (BSYRVRPT), and generate the JCL for the underlying recovery utilities into BSYJCLO. No underlying recovery process will be run. If this DD statement is specified, BSYJCLO must also be specified.

Note: If you specify the BSYJCLO and JCLONLY DD statements indicating that you only want the JCL generated and do not want any recovery actions to be taken, then the job might fail, especially if the job is processing FP DEDBs because the DBs are not DBRd, nor are any DBRC commands executed to put the DBs in a recoverable state. In this situation, GENJCL commands might also fail.

Recovery output example:

IMS Recovery Expert produces several different reports when objects are restored.

These reports are output to the DD statements of each job. IMS Recovery Expert DD statements are prefaced with BSY. Other DD statements might be displayed in the job output. These non-BSY DD statements, such as SYS* or UT*, might be generated by IMS utilities IDCAMS or TSO. The following figures show examples of these reports:

BSYERROR DD statement

The BSYERROR DD statement of the job contains information about the profiles for which the recovery is being performed, control cards, and IMS Recovery Expert messages. The following figure shows an example of the BSYERROR DD statement:

15:08:21 BSY0004I - Control card stream processed by BSY
15:08:21 BSY0004I - OBJECT_RECOVERY
15:08:21 BSY0004I - ( 15:08:21 BSY0004I - IMS_SUBSYSTEM
15:08:21 BSY0004I - EMC
15:08:21 BSY0004I - USER_INDICATOR
15:08:21 BSY0004I - BSY
15:08:21 BSY0004I - PROFILE_NAME
15:08:21 BSY0004I - 'EMC IVPDB1'
15:08:21 BSY0004I - PROFILE_CREATOR
15:08:21 BSY0004I - PDBISC
15:08:21 BSY0004I - EXECUTION_LIB_1
15:08:21 BSY0004I - BSY.WRK0220.LOADLIB
15:08:21 BSY0004I - BPROF_DSN
15:08:21 BSY0004I - RSQA.BSY0220.PROFILES
15:08:21 BSY0004I - BOFFL_DSN
15:08:21 BSY0004I - RSQA.BSY0220.OFFOPTS
15:08:21 BSY0004I - BMAP_DSN
15:08:21 BSY0004I - RSQA.BSY0220.PROFILE.MAPS
15:08:21 BSY0004I - BPCAT_DSN
15:08:21 BSY0004I - RSQA.BSY0220.PROFILE.CATS
15:08:21 BSY0004I - SBACK_DSN
15:08:21 BSY0004I - RSQA.BSY0220.PROFILE.SYSBACK
15:08:21 BSY0004I - SBOBJ_DSN
15:08:21 BSY0004I - RSQA.BSY0220.SYSBACK.OBJS
15:08:21 BSY0004I - SBVOL_DSN 15:08:21 BSY0004I - RSQA.BSY0220.SYSBACK.VOLS
15:08:21 BSY0004I - SBSSD_DSN
15:08:21 BSY0004I - RSQA.BSY0220.SYSBACK.SSID
15:08:21 BSY0004I - BREPT_DSN
15:08:21 BSY0004I - RSQA.BSY0220.BREPORT
15:08:21 BSY00041 - POBJS_DSN
15:08:21 BSY00041 - RSQA.BSY0220.OBJECTS
15:08:21 BSY00041 - ARCH_DSN
15:08:21 BSY00041 - RSQA.BSY0220.ARCHIVES
15:08:21 BSY00041 - PARM_DSN
15:08:21 BSY00041 - BSY.WRK00220.SAMPLIB
15:08:21 BSY00041 - PARM_MEMBER
15:08:21 BSY00041 - BSY#PARM

15:08:21 BSY00041 - Db2CNTL_DSN
15:08:21 BSY00041 - RSQA.BSY0220.CONTROL
15:08:21 BSY00041 - EMCLOAD1
15:08:21 BSY00041 - DEVRT.BM.EMC.SSCF580.LINKLIB
15:08:21 BSY00041 - FDRLOAD1
15:08:21 BSY00041 - RSRTE.VENDOR.FDR5467.LOAD
15:08:21 BSY00041 - )
15:08:21 BSY00041 -

15:08:28 BSY00041 - BSY#OBJ - Generating recovery report into BSYRVRPT
15:08:28 BSY00041 - Recovery report created successfully
15:08:28 BSY00041 - BSY#GRCV - Generating Recovery Jobs
15:08:28 BSY00041 - Building JCL to perform IMS Recovery Expert commands
15:08:28 BSY00041 - No data sets will be restored from SLB
15:08:28 BSY00041 - Submitting job

15:08:34 BSY00041 - JOB PDBISCA (J0784325) Spawned to z/OS Image RS25 completed with a RC 0000
15:08:34 BSY00041 - Job PDBISCA completed successfully
15:08:34 BSY00041 - Building JCL to perform IMS recoveries
15:08:38 BSY00041 - Recovery job generation completed successfully
15:08:39 BSY00041 - Building JCL to perform Image Copies
15:08:43 BSY00041 - Image copy job generation completed successfully
15:08:43 BSY00041 - Building JCL to perform /STA commands
15:08:43 BSY00041 - Submitting job
15:08:50 BSY00041 - (BSY14211) - JOB PDBISCOB (J0784326) Spawned to z/OS Image RS25 completed with a RC 0000
15:08:50 BSY00041 - Job PDBISCOB completed successfully

**Note:** The BSYERROR output lists the jobs that were built by IMS Recovery Expert to perform steps in the recovery. The BSYERROR output list provides jobname, job number, the system where the job was created, and the resulting condition or abend code.

The created jobs will also have additional output related to the recovery tasks that are performed. In addition, these created jobs might also invoke recovery utilities such as DRF, that will also create auxiliary address spaces.

**BSYRVRPT DD statement**

The BSYRVRPT DD statement includes recovery options specified in the profile, information about the IMS environment where the recoveries will occur, and information about how each object will be recovered. The following figure is an example of the recovery report generated by IMS Recovery Expert:

```
IBM IMS Recovery Expert for z/OS Recovery Report

Execution Date/Time: 2018.135 08:52:09
z/OS System Name : RSI1 Userid: TSMXDA
Recovery Timestamp : Current

Application Recovery Information:
Profile Name :
Description :
Creator ID :
```
DBRC Information:
DBRC Release: V14.R1
DBRC RECON1 DSN: IMS.IER1.RECON1
DBRC RECON2 DSN: IMS.IER1.RECON2
DBRC RECON3 DSN: IMS.IER1.RECON3

Recovery Utility Information:
GENJCL JCLPDS Datasets: TSMXO.BSY.DEMO.JCLPDS
GENJCL JCLPDS Datasets: IMSQA.BSY220.DATA.DEFAULTS
GENJCL JCLPDS Datasets: IMSQA.BSY220.DATA.JCLPDS
GENJCL Defaults Member: IERQ

Recovery Resources Used: All
Execute Recovery: YES GENJCL Member: DEMDRF IncIX
Execute Rebuild - FF: NO GENJCL Member: N/A
Execute Rebuild - FP: NO GENJCL Member: N/A
Execute Rebuild - HALDB: NO GENJCL Member: N/A
Execute Change Accum: NO GENJCL Member: N/A
Create Post Recovery IC: NO GENJCL Member: N/A

Database Information:
Database Name: F1O1PM DSG: F1O1PM1 Type: DL/I
Dataset Name: IMSQA.IRP.IER1.F1O1PM.F1O1PM1
Recoverable: YES
Chg Accum Grp: F1O1MXD1
No Change Accumulation is needed
Recovery will be attempted using the DB Recovery Utility
I/C Type: STD I/C Start Time (UTC): 2018.115 185246534
I/C COPY 1 DSN: IMSQA.IRP.IER1.F1O1PM.F1O1PM1.IC1

Using a profile to create Recovery Point

You can build a job that will create a consistent recovery point for all databases in an object profile or job profile.

About this task

Complete the following steps to create a recovery point:

Procedure

1. Specify P in the Cmd line next to the object or job profile you want to create a recovery point for.
2. Specify the following information on the Build Create Recovery Point Job panel:
Build Create Recovery Point Job for BSY.DEMO

Edit Generated Job Y (Yes/No)

Build job in Dataset BSY.TST0220.SAMPLIB
Member BSY#IERQ

Job Cards:

```plaintext
=> OBJREST JOB T55866,CLASS=A,NOTIFY=&SYSUID
=> /*________________________________________
=> /*________________________________________
=> /*________________________________________
```

Press ENTER to process or PF3 to Cancel

Figure 98. Build Create Recovery Point Job for Profile

Edit Generated Job
Specify Y to view the job in an ISPF edit session after generation. If you specify N, you will return to the previous panel after the job is generated.

Build job in Dataset member
Specify the fully qualified data set name (without quotes) where you want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, specify a member name. If the member does not exist, IMS Recovery Expert will create it.

Job Cards
Specify a valid job card for your site.

3. Press Enter to continue, or PF3 to cancel.
4. Submit the JCL.

Using a profile for Quiet Time Analysis
Quiet time analysis can be run on a object profile or job profile.

About this task
Complete the following steps to build a quiet time analysis job:

Procedure
1. Specify Q in the Cmd line next to the object or job profile you want to run quiet time analysis on.
2. On the Quiet Time Analysis Parameters panel, specify the following information:
Log Range Type
Specify a time range within which the search for an object’s quiet time will occur.

Specify P (Preceding) to indicate that a specific time span preceding the current time will be used to specify where to begin and where to stop reading the log to find a quiet time. If you select this option, you must specify the time span details in Preceding Type and Preceding Value fields. By default, the time range is set to P by 1 hour using the local client time.

Specify T (Timestamp) to indicate that specific time values will be used to specify where to begin and where to stop reading the log to find a quiet time. If you select this option, you must specify the start and end time in the Beginning Timestamp and End Timestamp fields.

Preceding Type
Specify whether the preceding time is in hours (H) or in minutes (M).

Preceding Value
Specify the number of hours or minutes, as specified in the Preceding Type field. Valid values are 0-99.

Beginning Timestamp
Specify the beginning time for the range. Specify timestamp values in the following format: YYY - MM - DD - HH - MM - SS.

End Timestamp
Specify the end time for the range. Specify timestamp values in the following format: YYY - MM - DD - HH - MM - SS.

DBRC Only
Specify Y if you want times that the databases were not allocated. Specify N if you want the archive logs read to determine a time where no updates occurred for the databases.

Minimum Quiet Time
Specify a time value that represents the minimum duration of quiet time for an object to be included in the output. The default value is 00:00:05 (5 seconds).

3. When you are finished, press Enter.
4. On the Build Job panel, specify the following information:
**Edit Generated Job**
Specify Y to view the job in an ISPF edit session after generation. If you specify N, you will return to the previous panel after the job is generated.

**Build job in Dataset member**
Specify the fully qualified data set name (without quotes) where you want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, specify a member name. If the member does not exist, IMS Recovery Expert will create it.

**Job Cards**
Specify a valid job card for your site.

5. Press Enter to continue, or PF3 to cancel.
6. Submit the JCL.

**Using a profile to perform a health check**
You can run a Database Recovery Facility Extended Functions health check on an object profile or job profile.

**About this task**
Complete the following steps to build a health check job:

**Procedure**
1. Specify # in the **Cmd** line next to the object or job profile you want to run a health check on.
2. On the Build Health Check Job panel, specify the following information:
Build Health Check Job

Edit Generated Job  Y  (Yes/No)
Edit Health Check Options  N  (Yes/No)

Build job in Dataset  BSY.TST0220.SAMPLIB
Member  BSY#IERQ

Job Cards:
===> //IMGCOPY JOB T55866,CLASS=A,NOTIFY=&SYSUID
===> /*
===> /*
===> /*

Figure 101. Build Health Check Job

Edit Generated Job
Specify Y to view the job in an ISPF edit session after generation. If you specify N, you will return to the previous panel after the job is generated.

Edit Health Check Options
Specify Y to view and update the existing health check options that will be used for this job execution. If you specify N, the default or previously-used options will be used.

Build job in Dataset member
Specify the fully qualified data set name (without quotes) where you want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, specify a member name. If the member does not exist, IMS Recovery Expert will create it.

Job Cards
Specify a valid job card for your site.

3. Press Enter to continue, or PF3 to cancel.
4. Submit the JCL.

Managing a profile
Object, Utility, and Job profiles allow you to complete several common functions that may be performed from any perspective.

Updating a profile
You can update a profile at any time. Complete the following steps to update a profile:
1. Specify U on the Cmd line next to the profile you want to update, and press Enter.
2. Make changes to the profile.
3. Press PF3 to save your changes. To cancel and exit without saving changes, specify CAN on the Option line and press Enter.

Viewing a profile
You can view a profile created by you at any time, or a profile created by another user if the profile was created with the Share option set to View or Update. Complete the following steps to view a profile:

To view a profile, specify V on the Cmd line next to the profile you want to view, and press Enter.
When viewing an Object Profile, you may use the `EXPLODE` command to generate a list of all databases and indexes that meet the profile specifications and that are to be included when a job is built.

For more information, see "The EXPLODE command."

**Deleting a profile**

You can delete a profile created by you at any time, or a profile created by another user if the profile was created with the **Share** option set to **Update**.

**Note:** You cannot delete an Object Profile or Utility Profile which is referenced by a Job Profile without first deleting that Job Profile.

Complete the following steps to delete a profile:

1. Specify `D` in the **Cmd** line next to the profile you want to delete, and press Enter.
2. On the Confirm Deletion panel, specify `Y` in the delete field and press Enter, or press PF3 to cancel.

   If you specify `Y`, a message will be displayed to confirm deletion.

**The EXPLODE command**

You can use the `EXPLODE` command on the Update Object Profile Display panel to generate a list of all databases and indexes that meet the profile specifications and that are to be included when a job is built. The `EXPLODE` command offers an easy way to see the list of databases and indexes using wildcard characters, include/exclude logical relationships, and index processing specifications.

For example, if you use wildcard characters to include databases or indexes, the `EXPLODE` command lists all items that match the specified wildcard character. If databases or indexes were excluded in the profile, these objects are not displayed in the list. Also, if indexes or logically-related databases associated with a database or databases were to be processes, each index or logically-related database is listed. If any DBRC groups are included in the object profile, the `EXPLODE` command lists all indexes and databases that are part of the DBRC group.

**Note:** Indexes and databases that are defined in a DBRC group included in the profile cannot be excluded. To exclude these from recovery, you must remove them from the DBRC group.

When viewing the `EXPLODE` list, you can select one or more databases or indexes to include or exclude from the profile using `X` and `I` on the **Cmd** line, respectively.

**Note:** The `EXPLODE` command does not work for databases or indexes that were originally included or excluded from the object profile with `EXC` specified in the Include/Exclude column.

There are two methods to implement the `EXPLODE` command:

**EXPLODE as a line command**

When you specify `E` in the **Cmd** line next to a databases, index, or group, all items that meet the wildcard character index processing selections are listed on the Explode Profile Display panel.
On the Explode Profile Display panel, specify **I** or **X** in the **Cmd** line next to an object to include or exclude that object, respectively.

When you return to the Update Object Profile Display panel, any databases you included or excluded are listed individually with the value **INCL** or **EXCL** in the **Include/Exclude** column, respectively.

**EXPLODE as a primary option**

When you specify **EXPLODE** on the **Option** line, all items in the object profile are listed individually. When the list is displayed you can use the **I** or **X** line commands in the **Cmd** line next to an object to include or exclude that object, respectively.

**On-demand operations**

On-demand operations allow you to build recovery jobs, create recovery points, perform quiet time analysis, and perform a health check dynamically, without needing a pre-defined profile to work from.

Specify 1 on the Application Operations Menu panel to access on-demand operations.

<table>
<thead>
<tr>
<th>IMS RE V2R2</th>
<th>On-Demand Operations Menu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option ====&gt;</td>
<td></td>
</tr>
<tr>
<td>2018/04/17 13:21:45</td>
<td></td>
</tr>
<tr>
<td>User: T55866 - BSY</td>
<td></td>
</tr>
</tbody>
</table>

1. Build Recovery Job
2. Build Create Recovery Point Job
3. Build Quiet Time Analysis Job
4. Build Health Check Job

*Figure 102. On-demand operations menu*

From the On-Demand Operations Menu, you may take the following actions:
- Build Recovery Job
- Build Create Recovery Point Job
- Build Quiet Time Analysis Job
- Build Health Check Job

When an option is selected from the menu, the user is lead through the panels to dynamically create the input needed for the function. A list of objects is required for every function, but Recovery Options are required only when building recovery JCL.

For any of these functions, the first panel after selection prompts SSID selection. Specify the requested SSID and press Enter.
**Building a recovery job**

The On-demand Recovery job allows the user to dynamically create a recovery job without relying on pre-defined Object, Utility, or Job Profiles.

**About this task**

Complete the following steps to build an on-demand recovery job:

**Procedure**

1. Specify 1 from the On-Demand Operations Menu panel.
2. Specify an SSID on the Enter SSID for On-Demand Processing panel.
3. On the Build Job for On-Demand Recovery panel, specify the following information:

   - **Recovery Point**: Specify 1 to recover the objects to the current point in time. Specify 2 to recover the objects to a selected timestamp. Specify 3 to recover the objects to a selected point in time. Specify 4 for a list of quiet times to recover the application.
   - **Recovery Timestamp**: If you specified 2 or 3 in the Recovery Point field, specify a timestamp in the Recovery Timestamp field.
   - **Edit Generated Job**: Specify Y to view the job in an ISPF edit session after generation. If you specify N, you will return to the previous panel after the job is generated.
   - **Build Recovery JCL Only**: Specify Y if you want the generated job to build the JCL required to perform database recovery, but to not submit the jobs.

---

**Figure 103. Build Job for On-Demand Recovery**

**Recovery Point**

Specify 1 to recover the objects to the current point in time. Specify 2 to recover the objects to a selected timestamp. Specify 3 to recover the objects to a selected point in time. Specify 4 for a list of quiet times to recover the application.

**Recovery Timestamp**

If you specified 2 or 3 in the Recovery Point field, specify a timestamp in the Recovery Timestamp field.

Time timestamp can be specified in a local timestamp format (yydddhhmmssthhmniju or yydddhhmmsst) or in a UTC timestamp format (yydddhhmmsstShhmm), where Shhmm is a numeric offset that, when added, gives local time. For S, specify a plus (+) or minus (-) sign. For hh, specify a numeric value between 00 and 14. For mm, specify a value from the set [00, 15, 30, 45] such that Shhmm is a value between -1100 and +1400.

**Edit Generated Job**

Specify Y to view the job in an ISPF edit session after generation. If you specify N, you will return to the previous panel after the job is generated.

**Build Recovery JCL Only**

Specify Y if you want the generated job to build the JCL required to perform database recovery, but to not submit the jobs.
**Build job in Dataset member**

Specify the fully qualified data set name (without quotes) where you want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, specify a member name. If the member does not exist, IMS Recovery Expert will create it.

**Job Cards**

Specify a valid job card for your site.

4. Press Enter, or PF3 to cancel.

5. On the Add Objects panel, specify whether you want to Add Databases, Add Indexes, or Add Groups by specifying Y in all the fields that apply.

<table>
<thead>
<tr>
<th>Add Objects</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Add Databases</td>
<td>N (Yes/No)</td>
</tr>
<tr>
<td>Add Indexes</td>
<td>N (Yes/No)</td>
</tr>
<tr>
<td>Add Groups</td>
<td>N (Yes/No)</td>
</tr>
</tbody>
</table>

**Figure 104. Add Objects Panel**

6. In the Enter Databases/Indexes/Groups Like to Display panel, specify the following information:

- Specify a filter in the **Database Like** field to filter search results.
- Specify Y in the **Wildcard** field to automatically add all objects that meet your criteria into the profile. An object list will not be presented. When the profile is used, IMS Recovery Expert dynamically expands the added name.
- Specify I to include databases you select in the subsequent panel, or specify E to exclude them.
- Specify Y in the **Process Dependent Indexes** field to dynamically include indexes that are dependent on the selected databases.
- Specify Y in the **Process Logical Relations** field to dynamically include databases that are logically related to the selected databases.

**Note:** The options you are given will depend upon your selection on the Add Objects panel.

7. Press Enter.

8. If you specified to **Add Databases**, from the Include Database Selection panel, enter S in the **Cmd** line next to databases you would like to include or exclude, depending on what was specified on the Enter Databases Like to Display panel, and press Enter to confirm. Press PF3 when you’ve finished selecting databases.

9. If you specified to **Add Indexes**, from the Include Database Selection panel, enter S in the **Cmd** line next to the indexes you would like to include or exclude, depending on what was specified on the Enter Indexes Like to Display panel, and press Enter to confirm. Press PF3 when you’ve finished selecting indexes.

10. If you specified to **Add Groups**, from the Include Database Selection panel, enter S in the **Cmd** line next to the groups you would like to include to exclude, depending on what was specified in the Enter Groups Like to Display panel, and press Enter to confirm. Press PF3 when you’ve finished selecting groups.
11. Press Enter and then PF3 to return to the Update Object Profile Display panel. The selected databases will be listed in the order that they were added to the object profile. From this panel, users can **EXPLODE** the list of objects to include or exclude, or Add and delete objects.

12. Once finished, press PF3 to display the Recovery Options panel. Specify the following information on the Recovery Options panel:

- **Recovery Resources**: Specify which recovery resources to consider for recovery. Specify **A** for all resources (System Level Backups and image copies), **S** for System Level Backups only, or **I** for image copies only.
  
  Specify **Y** in the **Edit Options** field to specify SLB-only parameters for recovery. For more information, see "Setting SLB parameters" on page 183.

- **Execute Recovery**: The only valid value for this field is **Y**.

- **Execute Index Rebuild**: Specify **Y** (Yes) or **N** (No) to indicate whether you want to perform index rebuild.
  
  Specify **Y** in the **Edit Options** field to specify index rebuild options. For more information, see "Setting index rebuild options" on page 185.

- **Execute Change Accum**: Specify **Y** (Yes) or **N** (No) to indicate whether you want to execute change accumulation prior to executing the recovery utility.
  
  Specify **Y** in the **Edit Options** field to specify change accumulation options. For more information, see "Setting change accumulation options" on page 187.

---

**Figure 105. Recovery Options**

**Recovery Resources**

Specify which recovery resources to consider for recovery. Specify **A** for all resources (System Level Backups and image copies), **S** for System Level Backups only, or **I** for image copies only.

Specify **Y** in the **Edit Options** field to specify SLB-only parameters for recovery. For more information, see "Setting SLB parameters" on page 183.

**Execute Recovery**

The only valid value for this field is **Y**.

**Execute Index Rebuild**

Specify **Y** (Yes) or **N** (No) to indicate whether you want to perform index rebuild.

Specify **Y** in the **Edit Options** field to specify index rebuild options. For more information, see "Setting index rebuild options" on page 185.

**Execute Change Accum**

Specify **Y** (Yes) or **N** (No) to indicate whether you want to execute change accumulation prior to executing the recovery utility.

Specify **Y** in the **Edit Options** field to specify change accumulation options. For more information, see "Setting change accumulation options" on page 187.
Create Post Recovery IC
Specify Y (Yes) or N (No) to indicate whether you want to create image copies for recovered databases.
Specify Y in the Edit Options field to specify Post Recovery Image Copy options. For more information, see “Setting post recovery image copy options” on page 188.

Update Spawned Job Options
Specify Y (Yes) to specify Spawned Job options or N (No) to use the default method for generating the jobcard and/or jobname. For more information, see “Setting spawned job options” on page 188.

Action on Warnings
Specify how you want to process warnings that are issued during recovery. Specify C to continue, W to issue a WTO, or A to abort.

GENJCL defaults member
Specify a member to be used as the GENJCL defaults when GENJCL is executed. If specified, this member will be included in the DATASETS() keyword.

Datasets for GENJCL
Specify up to 5 data sets for GENJCL skeletons. The data sets are concatenated in the specified order.

13. Once finished, press PF3 to display the JCL that can be submitted to perform recovery. The created JCL has two new DD statements that are needed for On-Demand processing, since there is no Object or Utility Profile being used.
   • The BSY#OBJS DD statement includes a definition for each object being processed.
   • The BSY#RECO DD statement includes parameters which define the set of recovery options to be used.

DD statement considerations
The JCL that is created after building a recovery job has two new DD statements that are needed for on-demand operations since there is no Object, Utility, or Job profile associated with the function:

BSY#OBJS
(This DD statement is also created after building a Create Recovery Point job) This DD statement includes a definition for each object being processed. In doing so it identifies which objects are to be recovered.

The following is a sample BSY#OBJS DD statement:

```
000159 //BSY#OBJS DD *
000160 OBJECTS_DEF
000161 TYPE DB
000162 WILDCARD N
000163 INCLUDE_INDEX Y
000164 INCLUDE_LOGICAL Y
000165 INCLUDE_OR_EXCLUDE INC
000166 GROUP OR_DB_NAME D2V1PM
000167 )
000168 OBJECT_DEF
000169 TYPE DB
000170 WILDCARD N
000171 INCLUDE_INDEX Y
000172 INCLUDE_LOGICAL Y
000173 INCLUDE OR_EXCLUDE INC
000174 GROUP OR_DB_NAME D2V2PM
```
BSY#RECO
This DD statement includes parameters which define the set of recovery options to be used.
The following is a sample BSY#RECO DD statement:

```
//BSY#RECO DD *
RECOVERY_OPTIONS (  
RECOV_RESOURCES A  
SLB_OPTION N  
SLB_FROM_OFFLOAD N  
SLB_PARALLEL_TASKS 04  
SLB_NUM_TAPE_UNITS 02  
EXECUTE_RECOV Y  
RECOV_GENJCL_MBR DEMODRF  
RECOV_INCL_IX N  
EXECUTE_IX N  
IDCAMS_DELDEF_PDS ims.deldef  
IX_FF_GENJCL_MBR BSYIIB  
IX_HB_GENJCL_MBR BSYPRECO  
IX_FP_GENJCL_MBR BSYFPS1  
IX_USE_FF_FOR_HB Y  
IX_RBLD_IF_RECOV Y  
IX_RBLD_HB_RTC Y  
EXECUTE_CA N  
CA_GENJCL_MBR BSYHPCA
```

Creating a Recovery Point job

The On-demand Create Recovery Point job allows the user to dynamically create a
recovery point without relying on pre-defined Object, Utility, or Job Profiles.

About this task

Complete the following steps to create a Recovery Point job:

**Procedure**

1. Specify 2 from the On-Demand Operations Menu panel.
2. Specify an SSID on the Enter SSID for On-Demand Processing panel.
3. On the Add Objects panel, specify whether you want to **Add Databases**, **Add Indexes**, or **Add Groups** by specifying **Y** in all the fields that apply.

```
Add Objects
Add Databases  N (Yes/No)
Add Indexes  N (Yes/No)
Add Groups  N (Yes/No)
Press ENTER to process or PF3 to Cancel
```

*Figure 106. Add Objects Panel*

4. In the Enter Databases/Indexes/Groups Like to Display panel, specify the following information depending on what is available:
   - Specify a filter in the **Database Like** field to filter search results.
• Specify Y in the **Wildcard** field to automatically add all objects that meet your criteria into the profile. An object list will not be presented. When the profile is used, IMS Recovery Expert dynamically expands the added name.

• Specify I to include databases you select in the subsequent panel, or specify E to exclude them.

• Specify Y in the **Process Dependent Indexes** field to dynamically include indexes that are dependent on the selected databases.

• Specify Y in the **Process Logical Relations** field to dynamically include databases that are logically related to the selected databases.

**Note:** The options you are given will depend upon your selection on the Add Objects panel.

5. If you specified to **Add Databases**, from the Include Database Selection panel, enter S in the **Cmd** line next to databases you would like to include or exclude, depending on what was specified on the Enter Databases Like To Display panel, and press Enter to confirm. Press PF3 when you’ve finished selecting databases.

6. If you specified to **Add Indexes**, from the Include Database Selection panel, enter S in the **Cmd** line next to the indexes you would like to include or exclude, depending on what was specified on the Enter Indexes Like To Display panel, and press Enter to confirm. Press PF3 when you’ve finished selecting indexes.

7. If you specified to **Add Groups**, from the Include Database Selection panel, enter S in the **Cmd** line next to the groups you would like to include to exclude, depending on what was specified in the Enter Groups Like To Display panel, and press Enter to confirm. Press PF3 when you’ve finished selecting groups.

8. On the Object Profile panel, use **EXPLODE** to include or exclude objects as needed, or use the **Cmd** line to add or delete objects as needed. Press PF3 when you are satisfied with the list.

9. On the Build Create Recovery Point Job for $MLC$OND.$ON-DEMAND OBJECT LIST panel, specify the following information:

<table>
<thead>
<tr>
<th>Build Create Recovery Point Job for $MLC$OND.$ON-DEMAND OBJECT LIST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Edit Generated Job</strong></td>
</tr>
<tr>
<td><strong>Build job in Dataset</strong></td>
</tr>
<tr>
<td><strong>Member</strong></td>
</tr>
<tr>
<td><strong>Job Cards:</strong></td>
</tr>
<tr>
<td>=&gt; //OBJECE JOB TS5866,CLASS=A,N Transport=BSYSUID</td>
</tr>
<tr>
<td>=&gt; //*</td>
</tr>
<tr>
<td>=&gt; //**</td>
</tr>
</tbody>
</table>

Press ENTER to process or PF3 to Cancel

**Figure 107. Build Create Recovery Point Job for $MLC$OND.$ON-DEMAND OBJECT LIST**

**Edit Generated Job**

Specify Y to view the job in an ISPF edit session after generation. If you specify N, you will return to the previous panel after the job is generated.

**Build job in Dataset member**

Specify the fully qualified data set name (without quotes) where you
want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, specify a member name. If the member does not exist, IMS Recovery Expert will create it.

**Job Cards**

Specify a valid job card for your site.

10. Press Enter to generate the Create Recovery Point JCL, or PF3 to cancel.

**Results**

The generated JCL contains the new BSY#OBJS member. For more information, see “DD statement considerations” on page 208.

**Building a Quiet Time Analysis job**

The On-demand Quiet Time Analysis job allows the user to dynamically perform quiet time analysis without relying on pre-defined Object, Utility, or Job Profiles.

**About this task**

Complete the following steps to build a Quiet Time Analysis job:

**Procedure**

1. Specify 3 from the On-Demand Operations Menu panel.
2. Specify an SSID on the Enter SSID for On-Demand Processing panel.
3. On the Quiet Time Analysis Parameters, specify the following information:

```
IMS RE V2R2 ------ Quiet Time Analysis Parameters ------ 2018/04/17 13:12:02
Command ==> 
---------------------------------------------------------------
Creator: TEST Name: BSYDEMO SSID: IDA
---------------------------------------------------------------
Log Range Type ==> P (Preceding/Timestamp)
Preceding Options:
   Preceding Type ==> H (Hours/Minutes)
   Preceding Value ==> 01 (00-99)
Timestamp Options:
   Beginning Timestamp ==> - - - - : :
   End Timestamp ==> - - - - : :
DBRC Only ==> N (Yes/No)
Minimum Quiet Time ==> 00 : 00 : 05 (hh:mm:ss)
```

*Figure 108. Quiet Time Analysis Parameters*

**Log Range Type**

Specify a time range within which the search for an object’s quiet time will occur.

Specify P (Preceding) to indicate that a specific time span preceding the current time will be used to specify where to begin and where to stop reading the log to find a quiet time. If you select this option, you must specify the time span details in **Preceding Type** and **Preceding Value** fields. By default, the time range is set to P by 1 hour using the local client time.

Specify T (Timestamp) to indicate that specific time values will be used to specify where to begin and where to stop reading the log to
find a quiet time. If you select this option, you must specify the start and end time in the **Beginning Timestamp** and **End Timestamp** fields.

**Preceding Type**
Specify whether the preceding time is in hours (H) or in minutes (M).

**Preceding Value**
Specify the number of hours or minutes, as specified in the **Preceding Type** field. Valid values are 0-99.

**Beginning Timestamp**
Specify the beginning time for the range. Specify timestamp values in the following format: `YYYY - MM - DD - HH - MM - SS`.

**End Timestamp**
Specify the end time for the range. Specify timestamp values in the following format: `YYYY - MM - DD - HH - MM - SS`.

**DBRC Only**
Specify `Y` if you want times that the databases were not allocated. Specify `N` if you want the archive logs read to determine a time where no updates occurred for the databases.

**Minimum Quiet Time**
Specify a time value that represents the minimum duration of quiet time for an object to be included in the output. The default value is `00:00:05` (5 seconds).

4. Press Enter. On the resulting Add Objects panel, specify whether you want to **Add Databases**, **Add Indexes**, or **Add Groups** by specifying `Y` in all the fields that apply.

```plaintext
Add Objects
Add Databases   N  (Yes/No)
Add Indexes     N  (Yes/No)
Add Groups      N  (Yes/No)
Press ENTER to process or PF3 to Cancel
```

*Figure 109. Add Objects Panel*

5. In the Enter Databases/Indexes/Groups Like to Display panel, specify the following information depending on what is available:
   - Specify a filter in the **Database Like** field to filter search results.
   - Specify `Y` in the **Wildcard** field to automatically add all objects that meet your criteria into the profile. An object list will not be presented. When the profile is used, IMS Recovery Expert dynamically expands the added name.
   - Specify `I` to include databases you select in the subsequent panel, or specify `E` to exclude them.
   - Specify `Y` in the **Process Dependent Indexes** field to dynamically include indexes that are dependent on the selected databases.
   - Specify `Y` in the **Process Logical Relations** field to dynamically include databases that are logically related to the selected databases.

*Note:* The options you are given will depend upon your selection on the Add Objects panel.
6. If you specified to Add Databases, from the Include Database Selection panel, enter $ in the Cmd line next to databases you would like to include or exclude, depending on what was specified on the Enter Databases Like to Display panel, and press Enter to confirm. Press PF3 when you’ve finished selecting databases.

7. If you specified to Add Indexes, from the Include Database Selection panel, enter $ in the Cmd line next to the indexes you would like to include or exclude, depending on what was specified on the Enter Indexes Like to Display panel, and press Enter to confirm. Press PF3 when you’ve finished selecting indexes.

8. If you specified to Add Groups, from the Include Database Selection panel, enter $ in the Cmd line next to the groups you would like to include or exclude, depending on what was specified in the Enter Groups Like to Display panel, and press Enter to confirm. Press PF3 when you’ve finished selecting groups.

9. On the Object Profile panel, use EXPLODE to include or exclude objects as needed, or use the Cmd line to add or delete objects as needed. Press PF3 when you are satisfied with the list.

10. On the Build Job for $MLC$OND.$ON-DEMAND OBJECT LIST panel, specify the following information:

<table>
<thead>
<tr>
<th>Build Job for $MLC$OND.$ON-DEMAND OBJECT LIST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edit Generated Job</td>
</tr>
<tr>
<td>Build job in Dataset</td>
</tr>
<tr>
<td>Member</td>
</tr>
</tbody>
</table>

Job Cards:

```
=> //QUIETIME JOB TS5866,CLASS=A,NOTIFY=&SYSUID
=> //*
=> //
```

Press ENTER to process or PF3 to Cancel

Figure 110. Build Job for $MLC$OND.$ON-DEMAND OBJECT LIST

**Edit Generated Job**
Specify Y to view the job in an ISPF edit session after generation. If you specify N, you will return to the previous panel after the job is generated.

**Build job in Dataset member**
Specify the fully qualified data set name (without quotes) where you want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, specify a member name. If the member does not exist, IMS Recovery Expert will create it.

**Job Cards**
Specify a valid job card for your site.

11. Press Enter to generate the Quiet Time Analysis JCL, or PF3 to cancel.

**Building a Health Check job**
The On-demand Health Check job allows the user to dynamically perform a Database Recovery Facility Extended Functions health check without relying on pre-defined Object, Utility, or Job Profiles.
About this task

Complete the following steps to build a health check job:

Procedure

1. Specify 4 from the On-Demand Operations Menu panel.
2. Specify an SSID on the Enter SSID for On-Demand Processing panel.
3. On the Add Objects panel, specify whether you want to Add Databases, Add Indexes, or Add Groups by specifying Y in all the fields that apply.

4. In the Enter Databases/Indexes/Groups Like to Display panel, specify the following information depending on what is available:
   - Specify a filter in the Database Like field to filter search results.
   - Specify Y in the Wildcard field to automatically add all objects that meet your criteria into the profile. An object list will not be presented. When the profile is used, IMS Recovery Expert dynamically expands the added name.
   - Specify I to include databases you select in the subsequent panel, or specify E to exclude them.
   - Specify Y in the Process Dependent Indexes field to dynamically include indexes that are dependent on the selected databases.
   - Specify Y in the Process Logical Relations field to dynamically include databases that are logically related to the selected databases.

   **Note:** The options you are given will depend upon your selection on the Add Objects panel.

5. If you specified to Add Databases, from the Include Database Selection panel, enter S in the Cmd line next to databases you would like to include or exclude, depending on what was specified on the Enter Databases Like to Display panel, and press Enter to confirm. Press PF3 when you’ve finished selecting databases.

6. If you specified to Add Indexes, from the Include Database Selection panel, enter S in the Cmd line next to the indexes you would like to include or exclude, depending on what was specified on the Enter Indexes Like to Display panel, and press Enter to confirm. Press PF3 when you’ve finished selecting indexes.

7. If you specified to Add Groups, from the Include Database Selection panel, enter S in the Cmd line next to the groups you would like to include to exclude, depending on what was specified in the Enter Groups Like to Display panel, and press Enter to confirm. Press PF3 when you’ve finished selecting groups.

8. On the Object Profile panel, use `EXPLODE` to include or exclude objects as needed, or use the Cmd line to add or delete objects as needed. Press PF3 when you are satisfied with the list.
9. On the Build Health Check Job panel, specify the following information:

<table>
<thead>
<tr>
<th>Build Health Check Job</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edit Generated Job Y (Yes/No)</td>
</tr>
<tr>
<td>Edit Health Check Options N (Yes/No)</td>
</tr>
<tr>
<td>Build job in Dataset BSY.TST0220.SAMPLIB</td>
</tr>
<tr>
<td>Member BSY#IERQ</td>
</tr>
<tr>
<td>Job Cards:</td>
</tr>
<tr>
<td>=&gt; //IMGCOPY JOB T55866,CLASS=A,NOTIFY=&amp;SYSUID</td>
</tr>
<tr>
<td>=&gt; //*</td>
</tr>
<tr>
<td>=&gt; //*</td>
</tr>
</tbody>
</table>

**Figure 12. Build Health Check Job**

- **Edit Generated Job**
  Specify Y to view the job in an ISPF edit session after generation. If you specify N, you will return to the previous panel after the job is generated.

- **Edit Health Check Options**
  Specify Y to view and update the existing health check options that will be used for this job execution. If you specify N, the default or previously-used options will be used.

- **Build job in Dataset member**
  Specify the fully qualified data set name (without quotes) where you want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, specify a member name. If the member does not exist, IMS Recovery Expert will create it.

- **Job Cards**
  Specify a valid job card for your site.

10. Press Enter to build the Health Check JCL, or press PF3 to cancel.
Chapter 9. Recovering Db2 and IMS applications

The coordinated application recovery feature of IMS Recovery Expert and Db2 Recovery Expert helps you to recover Db2 objects and IMS databases used in an application to the same consistent point in time.

Consistent in this case means that there are no updates or transactions in process to any object or database in the application. Identifying times that all Db2 objects and IMS databases used by the application are in a consistent state is a challenging task in a high-availability environment.

Coordinated application recovery streamlines the process of recovering applications that use both Db2 objects and IMS databases. You can use coordinated application recovery to analyze the logs in both Db2 and IMS to find quiet times for the objects and databases in an application, provide the times when the objects and databases are consistent across both IMS and Db2, and build the job that recovers the application.

Coordinated application recovery involves the following tasks:

- Connecting IMS Recovery Expert and Db2 Recovery Expert.
- Using IMS Recovery Expert to create a job profile that can be used to recover the IMS databases that are used in the application.
- Using Db2 Recovery Expert to create an object profile that can be used to recover the Db2 objects that are used in the application.
- Using either IMS Recovery Expert or Db2 Recovery Expert to create a coordinated recovery profile that references the Db2 object profile and the IMS job profile.
- Associating the IMS job profile with the coordinated recovery profile.
- Associating the Db2 object profile with the coordinated recovery profile.
- Running a log analysis job to discover intersecting quiet times for the IMS applications and the Db2 objects.
- Building the coordinated recovery job.

Connecting IMS Recovery Expert and Db2 Recovery Expert

For each coordinated recovery profile that you build, you can specify that IMS Recovery Expert connect to a default or a specific instance of Db2 Recovery Expert.

About this task

IMS Recovery Expert links to Db2 Recovery Expert by using the CLIST information that is specified in the user settings option. A default value for the CLIST connection information to Db2 Recovery Expert is specified during installation. If you want IMS Recovery Expert to connect to a different instance of Db2 Recovery Expert, you must specify overriding CLIST information for the current session.

To specify Db2 Recovery Expert CLIST information:

Procedure

1. Specify 0 (Administration) on the IMS Recovery Expert main menu panel (BSY$MAIN) and press Enter.
2. On the Administration Menu panel (BSY$PNL0), specify 4 on the Option line and press Enter.

3. On the Db2 CLIST Information panel, in the CLIST library name field, specify the name of the library that contains the CLIST member for the specific version of Db2 Recovery Expert.

4. In the CLIST member name field, specify the CLIST member name for the specific version of Db2 Recovery Expert.

5. Press Enter. For the duration of the current session, IMS Recovery Expert uses the specified CLIST information to connect to Db2 Recovery Expert.

---

Managing the coordinated recovery process

From the Coordinated Recovery Profile Display panel, you can perform all the functions that apply to IMS and Db2 coordinated application recovery.

About this task

IMS Recovery Expert and Db2 Recovery Expert use a coordinated recovery profile to identify the IMS applications and Db2 objects that need to be recovered. You identify the IMS databases to recover by associating an IMS job profile to the coordinated recovery profile. You identify the Db2 objects to recover by associating a Db2 object profile to the coordinated recovery profile.

The coordinated recovery profile information is saved into a VSAM repository (CPROFILE) that is shared between both products regardless of whether they share the other repository data sets. Each coordinated recovery profile can access the CPROFILE data set to read and update coordinated recovery profile information. The data set is allocated in both IMS and Db2 CLISTs and in the Db2 agents during customization.

All coordinated recovery profiles that have been created are listed on the Coordinated Recovery Profile Display panel. From this panel, you can perform the following functions:
  • Update coordinated recovery profiles
  • Create coordinated recovery profiles
  • View existing coordinated recovery profiles
  • Delete coordinated recovery profiles
  • Rename coordinated recovery profiles
  • Produce a report of Db2 object and IMS application quiet times
  • Build a coordinated recovery job
  • Create a coordinated recovery point
Procedure

1. Specify 2 (Application Operations) on the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN) and press Enter.

2. Specify 2 (Coordinated Application Profiles) on the Application Operations Menu panel (BSY$APMN) and press Enter.

3. On the Enter Coordinated Recovery Profile Selection Criteria panel, identify the profiles to list on the Coordinated Recovery Profile Display panel. You can list all profiles by using wildcard characters in the Profile Like and Creator Like fields. Use the asterisk (*) wildcard character to return all profiles. You can use the asterisk (*) in one or both fields.

To limit the profiles that are listed, specify a profile name in the Profile Like field, a profile creator name in the Creator Like field, or both. When you are finished, press Enter.

When you access the Coordinated Recovery Profile Display panel for the first time, it is displayed as shown in the figure below:

![Figure 114. Enter Coordinated Recovery Profile Selection Criteria panel](image)

Figure 114. Enter Coordinated Recovery Profile Selection Criteria panel

Use the **UP** and **DOWN** commands (PF7 and PF8) to scroll through the list when there are more profiles than can be displayed on one panel. The following fields are displayed on the panel:

**Profile Like**

The coordinated recovery profile name or mask that you specified on the Enter Coordinated Recovery Profile Selection Criteria panel appears here. You can change the name or mask and then press Enter. The list of coordinated recovery profiles is updated based on the criteria that you specified.
Creator Like
The coordinated recovery profile creator name or mask that you specified on the Enter Coordinated Recovery Profile Selection Criteria panel appears here. You can change the name or mask and press Enter. The list of coordinated recovery profiles is updated based on the criteria that you specified.

Row x of y
Displays the current row and the total number of rows in the profile list.

Cmd
On the Cmd line next to each profile, you can use the following line commands:
• \texttt{U} to update a coordinated recovery profile
• \texttt{C} to create a coordinated recovery profile
• \texttt{V} to view a coordinated recovery profile
• \texttt{D} to delete a coordinated recovery profile
• \texttt{R} to rename a coordinated recovery profile
• \texttt{B} to build a coordinated recovery job
• \texttt{Q} to run a log analysis job to discover Db2 object and IMS application quiet times
• \texttt{P} to create a coordinated recovery point

Name
The name of the coordinated recovery profile.

Creator
The user ID of the person who created the coordinated recovery profile.

Updt
This column indicates how users other than the profile creator can use the profile.

U(Update)
Allows other users to update the profile.

V(iew)
Allows other users to view but not update the profile.

N(o access)
Prevents other users from viewing or updating the profile.

Description
An optional description that might have been specified when the coordinated recovery profile was created.

Last Upd Userid
The user ID of the person who last updated the coordinated recovery profile.

Last Updated Timestamp
The time that the coordinated recovery profile was last updated.

Created Userid
The user ID of the person who created the coordinated recovery profile.

Created Timestamp
The time that the coordinated recovery profile was created.

4. Specify one of the following commands on the Cmd line next to a profile:
• To create a coordinated recovery profile, specify \texttt{C} on the Cmd line next to a profile, and press Enter. If no profiles are listed, you can create a profile by pressing Enter. The Create Coordinated Recovery Profile panel opens. From
this panel, you name the coordinated recovery profile, associate a Db2 object profile, and associate an IMS job profile. For more information about creating profiles, see “Creating coordinated recovery profiles.”

- To update a coordinated recovery profile, specify U on the Cmd line next to the profile that you want to update, and press Enter. On the Update Object Profile panel, you can add a Db2 object profile or an IMS job profile if you have not done so already. You can also change the Db2 object profile or IMS job profile that have been associated with the coordinated recovery profile. For more information about updating profiles, see “Updating a coordinated recovery profile” on page 224.

- To view the details of a coordinated recovery profile, specify V on the Cmd line next to the profile that you want to view, and press Enter. On the View Coordinated Recovery Profile panel, you can use this line command to view one of your own profiles or one that was created by another user if the profile has a share option of View or Update. For more information about viewing profiles, see “Viewing a coordinated recovery profile” on page 225.

- To delete a coordinated recovery profile, specify D on the Cmd line next to the profile that you want to delete, and press Enter. You can use this line command to delete one of your own coordinated recovery profiles, or one created by another user if the profile has a share option of Update. For more information about deleting profiles, see “Deleting a coordinated recovery profile” on page 227.

- To rename a coordinated recovery profile, specify R on the Cmd line next to the profile that you want to rename, and press Enter. On the Rename Coordinated Recovery Profile panel, you can use this line command to change the name or the description in one of your own coordinated recovery profiles, or one created by another user if the profile has a share option of Update. For more information about renaming profiles, see “Renaming a coordinated recovery profile” on page 226.

- To produce a quiet time analysis for the coordinated recovery profile, specify Q on the Cmd line next to the profile, and press Enter. On the Log Analysis panel, you can specify options. For more information about log analysis, see “Performing quiet time analysis for a coordinated recovery profile” on page 227.

- To build the coordinated recovery jobs, specify B on the Cmd line next to the profile, and press Enter. On the Recovery Point Selection panel, you can specify options. For more information about building coordinated recovery jobs, see “Building the coordinated recovery jobs” on page 229.

- To create a coordinated recovery point and create JCL, specify P on the Cmd line next to the profile, and press Enter. On the Build Job panel that appears, specify information in the Edit Generated Job field. Specify Y to view the job in an ISPF edit session after generation. If you specify N, you will return to the Coordinated Recovery Profile Display panel after the job is generated.

### Creating coordinated recovery profiles

After you create a new IMS and Db2 coordinated recovery profile, you must then associate a Db2 object profile and an IMS job profile. This allows IMS Recovery Expert to recover the Db2 objects and IMS databases that are used within the application that you are recovering.

#### Procedure

1. Specify 2 (Application Operations) on the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN) and press Enter.
2. Specify 2 (Coordinated Application Profiles) on the Application Operations Menu panel (BSYSAPMN) and press Enter.

3. On the Enter Coordinated Recovery Profile Selection Criteria panel, specify your filter criteria and press Enter. For more information about the options on this panel, see "Managing the coordinated recovery process" on page 218.

4. On the Coordinated Recovery Profile Display panel, specify C on the Cmd line next to your selection and press Enter.

5. On the Enter New Coordinated Recovery Profile Options panel, specify a unique name in the Profile Name field.

6. In the Description field, specify a description of the profile.

7. In the Share Option field, specify the type of access that other users will have to this profile. Specify U to allow other users to update the profile. Specify V to allow other users to view but not update the profile. Specify N to deny other users access to the profile.

8. Press Enter. On the Add Profiles to Coordinated Profile panel, you can then associate the IMS job profile and the Db2 object profile with the coordinated recovery profile.

### Associating a Db2 object and an IMS job profile to the coordinated recovery profile

You must associate one Db2 object profile and one IMS job profile with the coordinated recovery profile.

### About this task

The Db2 object profile that you associate with the coordinated recovery profile contains the information required to recover the Db2 objects that are used by the application. The IMS job profile that you associate with the coordinated recovery profile contains the information required to recover the IMS databases that are used by the application.

You can associate only one Db2 object profile and one IMS job profile with any coordinated recovery profile. Each Db2 object profile or IMS job profile that is already associated with a coordinated recovery profile is not listed for selection in the respective product object or job profile selection panels.

### Procedure

1. Access the Add Profiles to Coordinated Profile panel.

The Add Profiles to Coordinated Profile panel opens automatically as the second step of creating a coordinated recovery profile. Otherwise, from the
Update Coordinated Recovery Profile panel, specify A on the **Cmd** line next to a coordinated recovery profile, and press Enter.

```
BSY$CRSP ------------- Add Profiles to Coordinated Profile -------------
Add Db2 Profile _ (Yes/No)
Add IMS Profile _ (Yes/No)
Press Enter to process or PF3 to cancel.
```

**Figure 117. Add Profiles to Coordinated Profile panel (BSY$CRSP)**

2. To associate a Db2 object profile with the coordinated recovery profile, specify Y in the **Add Db2 profile** field and press Enter. If you have already associated a Db2 object recovery profile to this coordinated recovery profile, then this field is not available.

   On the Enter Object Profile Selection Criteria panel:
   a. Specify the SSID location for the Db2 system where the objects reside.
   b. Use the **Name like** and **Creator Like** fields to filter the objects that are listed on the Object Selection panel. Press Enter.
   c. From the Object Profile Selection panel, select the Db2 object profile that you want to associate with the coordinated recovery profile. You can also create, delete, update, rename and view Db2 object profiles from this panel. Press Enter when you are finished.

   You can only add one type of profile at a time to the coordinated recovery profile. After you add a Db2 object profile, you will return to the Update Coordinated Recovery Profile panel.

   Refer to the *Db2 Recovery Expert for z/OS User’s Guide* for more information on how to perform these object profile functions.

3. On the Add Profiles to Coordinated Profile panel, to associate an IMS job profile with the coordinated recovery profile, specify Y on the **Add IMS profile** field. If you have already added an IMS object recovery profile to this coordinated recovery profile, this field is not available. Press Enter. On the Enter Applications Profile Like to Display panel:
   a. Use the **Profile Like**, **Creator Like** and the **SSID Like** fields to filter the objects that are listed on the Job Profile Selection panel. Press Enter.
   b. On the Job Profile Selection panel, select the IMS job profile to associate with the coordinated recovery profile. You can also create, delete, update, rename and view IMS job profiles from this panel. Press Enter when you are finished. You can only add one type of profile at a time to the coordinated recovery profile. After you add an IMS job profile, you will return to the Update Coordinated Recovery Profile panel.

   **For more information, see Chapter 8, “Recovery using application operations,” on page 175.**

4. Press F3 to return to the Coordinated Recovery Profile Display panel.
Updating a coordinated recovery profile

From the Update Coordinated Recovery Profile panel, you can associate an IMS job profile or a Db2 object profile to the coordinated recovery profile if one has not already been assigned. From this panel, you can also change the IMS job profile or the Db2 object profile that is selected, or disassociate either of the profiles from the coordinated recovery profile.

Procedure

1. Access the Update Coordinated Recovery Profile panel.

   The Update Coordinated Recovery Profile panel opens automatically after you add either a Db2 object profile or an IMS job profile. Otherwise, from the Coordinated Recovery Display panel, specify U on the Cmd line next to a coordinated recovery profile, and press Enter.

   The following fields are displayed for each profile:

   Creator
   Specifies the user ID of the person who created the coordinated recovery profile.

   Name
   Specifies the name of the coordinated recovery profile.

   Type
   Identifies whether the profile is an IMS job profile or a Db2 object profile.

   SSID
   The Db2 or IMS subsystem ID for which the IMS job or Db2 object profile was created.

   Profile Name
   Specifies the name of the IMS job profile or the Db2 object profile.

2. Optional: Modify the Share option for the coordinated recovery profile. The current value is displayed.

3. Specify A on the Cmd line to add either a Db2 object profile or an IMS job profile. Press Enter.
4. On the Add Profiles to Coordinated Profile panel, follow the process of adding a Db2 object profile or an IMS job profile. When all selections are made, you will return to the Update Object Profile panel.

5. Specify 0 on the Cmd line of the profile that you want to remove from the coordinated recovery profile. Press Enter. The Db2 object profile or an IMS job profile is disassociated from the coordinated recovery profile. The delete command only disassociates the Db2 object profile or an IMS job profile from the coordinated recovery profile; it does not delete the profile from the repository. The disassociated profile will still be available from either the Db2 object profile or IMS job profile display.

6. To change the Db2 object profile or IMS job profile, you must first delete the current profile from the coordinated recovery profile, then add the new profile.

7. Press F3 to return to the Coordinated Recovery Profile Display panel.

---

**Viewing a coordinated recovery profile**

From the View Coordinated Recovery Profile panel you can view the IMS job profile and the Db2 object profile that are included in the coordinated recovery profile. You can view profiles that you created, regardless of the share option. You can also view a profile created by another user if the profile has a share option of view or update.

**Procedure**

1. Specify 2 (Application Operations) on the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN) and press Enter.

2. Specify 2 (Coordinated Application Profiles) on the Application Operations Menu panel (BSY$APMN) and press Enter.

3. On the Enter Coordinated Recovery Profile Selection Criteria panel, specify your filter criteria and press Enter. For more information about the options on this panel, see “Managing the coordinated recovery process” on page 218.

4. On the Coordinated Recovery Profile Display panel, specify V on the Cmd line next to the coordinated recovery profile that you want to view, and press Enter.

---

**Figure 119. View Coordinated Recovery Profile panel**

On the View Coordinated Recovery Profile panel, the following fields are displayed for each object profile that is listed:

**Creator**

Specifies the user ID of the person who created the coordinated recovery profile.

**Name**

Specifies the name of the coordinated recovery profile.
Share Option
The current value of the share option is displayed. The value of $U$ specifies that all users can update the profile. A value of $V$ specifies that all users can view but not update the profile. A value of $N$ specifies that no user other than you as the creator can update or view the profile.

Description
Displays a description of the profile that was added when the profile was created.

Type
Identifies whether the profile is an IMS job profile or a Db2 object profile.

SSID
The Db2 or IMS subsystem ID for which the IMS job or Db2 object profile was created.

Profile Name
Specify the name of the IMS job profile or the Db2 object profile.

Profile Creator
Specify the user ID of the person who created the IMS job profile or the Db2 object profile.

LPAR
Identifies the LPAR that is associated with the IMS or Db2 subsystem.

5. Press F3 to return to the Coordinated Recovery Profile Display panel.

Renaming a coordinated recovery profile
You can rename coordinated recovery profiles created under your user ID, regardless of the share option. You can also rename a profile that was created by another user if the profile has a share option of update.

Procedure
1. Specify 2 (Application Operations) on the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN) and press Enter.
2. Specify 2 (Coordinated Application Profiles) on the Application Operations Menu panel (BSY$APMN) and press Enter.
3. On the Enter Coordinated Recovery Profile Selection Criteria panel, specify your filter criteria and press Enter. For more information about the options on this panel, see “Managing the coordinated recovery process” on page 218.
4. On the Coordinated Recovery Profile Display panel, specify $R$ on the Cmd line next to the coordinated recovery profile that you want to rename, and press Enter.

![Rename Coordinated Recovery Profile panel](Figure 120. Rename Coordinated Recovery Profile panel)
5. On the Rename Coordinated Recovery Profile panel, rename the profile by specifying the new profile name in the New Profile Profile Name field. You can also specify a new description in the New Profile Description field. The profile creator cannot be modified.

6. Press Enter. The profile is renamed and the Coordinated Recovery Profile Display panel is displayed.
   To cancel the rename, press PF3 on the Rename Coordinated Recovery Profile panel and return to the Coordinated Recovery Profile Display panel.

---

**Deleting a coordinated recovery profile**

You can delete coordinated recovery profiles created under your user ID, regardless of the share option. You can also delete a profile that was created by another user if the profile has a share option of update.

**Procedure**

1. Specify 2 (Application Operations) on the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN) and press Enter.
2. Specify 2 (Coordinated Application Profiles) on the Application Operations Menu panel (BSY$APMN) and press Enter.
3. On the Enter Coordinated Recovery Profile Selection Criteria panel, specify your filter criteria and press Enter. For more information about the options on this panel, see “Managing the coordinated recovery process” on page 218.
4. On the Coordinated Recovery Profile Display panel, specify D on the Cmd line next to the coordinated recovery profile that you want to delete, and press Enter.

   ![Figure 121. Confirm Deletion of Profile panel](image)

5. On the Confirm Deletion of Profile panel, confirm or cancel the deletion. Specify Y in the Delete field to delete the profile and press Enter. A message appears to confirm the deletion, and you will return to the Coordinated Recovery Profile Display panel. Specify N in the Delete field to cancel the deletion and press Enter or PF3. You will return to the Coordinated Recovery Profile Display panel.

---

**Performing quiet time analysis for a coordinated recovery profile**

From the Log Analysis panel, you can build and run a job that searches the IMS and Db2 logs for periods of time when both the IMS database and the Db2 objects have no activity. The Log Analysis job coordinates and displays the quiet times that you can use to recover the IMS database and the Db2 objects to a consistent point in time.

**Procedure**

1. Specify 2 (Application Operations) on the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN) and press Enter.
2. Specify 2 (Coordinated Application Profiles) on the Application Operations Menu panel (BSYSAPMN) and press Enter.

3. On the Enter Coordinated Recovery Profile Selection Criteria panel, specify your filter criteria and press Enter. For more information about the options on this panel, see "Managing the coordinated recovery process" on page 218.

4. On the Coordinated Recovery Profile Display panel, specify Q on the Cmd line next to the coordinated recovery profile for which you want to perform log analysis for Db2 object and IMS database quiet times. Press Enter.

5. On the Log Analysis panel, in the Log Range Type field, specify a time range within which IMS Recovery Expert and Db2 Recovery Expert will search the logs for the IMS database and Db2 objects quiet times. Specify P to indicate that a time span preceding the current time identifies the start and stop points in the log. Specify T to indicate that a time value identifies the start and stop points in the log. By default, the time range is set to Preceding by one hour based on the local client time.

6. In the Minimum Quiet Time field, specify the minimum duration for a quiet time to be included in the output or accept the default value, which is 00:02:00 (two minutes).

7. After specifying the time range for the analysis, press Enter. All the fields are validated and a Build Job panel opens. You can edit or run the log analysis job from the Build Job panel.

**Building the quiet time analysis job**

Use these steps to build a quiet time analysis job that will find quiet times for the objects in the Db2 object profile as well as for the databases that are in the IMS job profile.

**Procedure**

1. From the Coordinated Recovery Profile Display panel, specify Q next to the coordinated recovery profile that you want to perform a quiet time analysis. On the Log Analysis panel, specify the options to use for the quiet time analysis and press Enter.
2. On the Build Job panel, in the Edit Generated Job field, specify whether you want to view the generated job JCL in an ISPF editor before saving and running the job. Specify Y to view the job in an ISPF edit session. Specify N to bypass viewing the generated job JCL.

3. In the Build job in Dataset field, specify the fully qualified data set name (without quotation marks) where you want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, specify a member name in the Member field. If the member does not exist, IMS Recovery Expert creates it.

4. In the Job Cards field, specify a valid job card for your site.

5. When you have completed the fields, press Enter.
   - If you selected to view the job, an ISPF panel containing the job JCL opens. You can use the ISPF editor to make your required changes. When you finish editing, press Enter. The job is saved in the data set that you specified. Control returns to the Coordinated Recovery Profile Display panel.
   - If you selected not to view the job, it is placed directly in the data set that you specified, and control returns to the Coordinated Recovery Profile Display panel.

   When the job is saved in the specified data set, you can run the job by submitting it from an edit session or inserting the job into your scheduler.

---

**Building the coordinated recovery jobs**

After creating the coordinated recovery profile that includes a Db2 object profile and an IMS job profile and optionally running a log analysis to find quiet times, you must build a Db2 object recovery job and an IMS application recovery job that in conjunction will be used to perform the coordinated recovery.

To build the IMS and Db2 coordinated recovery jobs, you must complete the following steps:

- Select a common recovery point for both the Db2 objects and the IMS applications. See “Selecting the recovery point” on page 230.
- Generate the Db2 recovery plans. See “Generating the Db2 object recovery plans” on page 231.
- Select the Db2 recovery plan. See “Selecting the Db2 object recovery plan” on page 231.
- Build and run the Db2 recovery job. See “Submitting the recovery plan job” on page 233.
Build and run the IMS recovery job. See “Building the coordinated recovery job for IMS objects” on page 234.

Selecting the recovery point

The first step in building the coordinated recovery jobs is to select a consistent point in time for both the Db2 objects and the IMS databases that can be used as the recovery point.

Procedure

1. Specify 2 (Application Operations) on the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN) and press Enter.
2. Specify 2 (Coordinated Application Profiles) on the Application Operations Menu panel (BSY$APMN) and press Enter.
3. On the Enter Coordinated Recovery Profile Selection Criteria panel, specify your filter criteria and press Enter. For more information about the options on this panel, see “Managing the coordinated recovery process” on page 218.
4. On the Coordinated Recovery Profile Display panel, specify B on the Cmd line next to the coordinated recovery profile for which you want to build the recovery jobs.

```
BSY$V2R2 ------ Recovery Point Selection ------ 2018/01/13 12:56:12
Option ===> Line Commands:  S - Select Recovery Point

Creator: USERID NAME: CRPROF

-----------------------------------------------
| Cmd | Start timestamp | End Timestamp |
-----------------------------------------------
| _   | _               | _             |
| _   | Current         | _             |
| _   | User Timestamp  | _             |
| _   | 2018-09-21-03.12.57.000000 | 2018-09-21-03.13.37.000000 |
| _   | 2018-09-21-03.14.03.000000 | 2018-09-21-03.14.43.000000 |

Figure 124. Recovery Point Selection panel
```

5. On the Recovery Point Selection panel, select a recovery timestamp by specifying S next to one of the following recovery point types:

- Select Current to specify that recovery will be to the current point in time, or the time when the recovery jobs run. A confirmation panel opens. When a coordinated recovery to current is performed, the Db2 and IMS recovery jobs are generated, and the job step to start the Db2 and IMS databases after performing recovery is commented out. After completion of the Db2 and IMS recoveries, you will edit the JCL to remove the comments from the steps to start the Db2 and IMS databases, and resubmit the job to start the databases. Do not start the recovered databases until both recovery jobs complete successfully, to ensure that all of the Db2 objects and IMS databases are consistent. Specify Y in the Confirm field to indicate that you understand the message and you want to proceed with the build process. Specify N to return to the Select Recovery Point panel to choose another type of recovery point.

- Select User Timestamp to specify a timestamp for the recovery. Press Enter. The Select Recovery Timestamp panel opens. Specify the timestamp to which you want to recover. The format of the timestamp that you specify is YYYY-MM-DD HH:MM:SS:MMMMMM.

- Quiet Time range: If you ran a log analysis for the coordinated recovery profile and any quiet times were identified, these ranges are available for selection. Each quiet time range that was discovered is displayed as a start
timestamp YYYY-MM-DD-HH:MM:SS:MMMMMM and an end timestamp in the same format. If you did not run log analysis, no quiet time ranges are displayed.


**Generating the Db2 object recovery plans**

Db2 Recovery Expert generates one or more recovery plans that you can select from to recover the Db2 objects that have been included in the coordinated recovery profile.

**About this task**

Recovery jobs are generated differently for Db2 objects and IMS databases. Db2 Recovery Expert does all the analysis on the different recovery options from the user interface, and then generates the JCL for the plan that you select. IMS Recovery Expert determines the way to recover the databases at execution time based on the recovery options defined in the IMS job profile. For a coordinated recovery, you first generate the Db2 object recovery plans and select one to use to build the Db2 object recovery job. You then build the IMS application recovery job.

**Procedure**

1. The Generate Recovery Plans Panel opens automatically after you select a recovery point from the Select Recovery Point panel.

```
BSY$V2R2 ------ Generate Recovery Plans ------ 2018/01/13 12:56:12
Command ==>-------------------------------------------------------------------------
Creator: USERID NAME: TESTPROFSSID EA1A---------
Update Recovery Options ==> N (Yes/No)
The chosen coordinated recovery point is listed below. You can press
Enter to continue or enter "Y" for 'Update Recovery Options' to display
or change recovery options.
Recovery Point ==> 1 (1-Current, 2-Timestamp
Recovery Timestamp ==> ___ - ___ - ___ - ___ - ___ - ___ - ____
```

**Figure 125. Generate Recovery Plans panel**

2. To update the recovery options for the Db2 object profile, specify Y in the Update Recovery Options field and press Enter.

3. On the Recovery Options panel, edit the options that you want to change and press PF3 to return to the Generate Recovery Plans panel. See the Db2 Recovery Expert for z/OS User’s Guide for more information on recovery options.

4. When you are ready to generate the recovery plans, press Enter. All the fields are validated and the recovery plans are generated. On the Recovery Plans panel, select the recovery plan.

**Selecting the Db2 object recovery plan**

Recovery plans can be used to recover the Db2 objects or set of objects that are included in the coordinated recovery job. You can select the plan that is most advantageous for your recovery environment.
Procedure

1. When at least one recovery plan can be generated, the Recovery Plans panel opens.

On the Recovery Plans panel, the following fields are displayed:

- **Creator**: Displays the ID of the user who created the Db2 object profile.
- **Name**: Displays the name of the Db2 object profile.
- **SSID**: Displays the assigned ID for the Db2 subsystem where the objects and the object profile reside.
- **Plan Name**: Lists the recovery plans that can be used to recover the objects in the Db2 object profile. One of the plans listed is called the Recovered Objects plan. This plan lists the objects that can be recovered and each of the plans that can be used successfully to recover the object. Only the D command can be used with this plan.
- **Cost**: Displays the recovery plan cost. Each generated recovery plan has an associated cost. The plan with the lowest cost appears first in the list of recovery plan. You can see the detailed information that is used to calculate the cost of the plan by specifying P next to the recovery plan.

2. Specify P next to a recovery plan to view the properties of the recovery plan. From the Recovery Plan Properties panel you can see the detailed information that is used to calculate the cost of a recovery plan. The P command is not a valid command for the Recovered Objects plan.

3. Specify D next to a recovery plan to view the details of the recovery plan. On the Recovery Plan Details panel, you can see each of the objects that are included in the object profile. You can also access property information for each of the objects.

4. Specify V next to a recovery plan to validate the recovery plan. You can select the validate option to check that the conditions of the plan still apply. If an error is found, the Recovery Plan Validation Error panel opens and provides more information about the error. When a successful validation completes, a message is issued that acknowledges the successful validation, but cautions that although no validation errors were discovered, the recovery plan could have unforeseen errors that would impact a successful recovery. Such errors might include missing resources or lack of authorizations to access resources. The V command is not a valid command for the Recovered Objects plan.
5. Specify B next to a recovery plan to build the JCL that can be used to recover the objects in the Db2 object profile according to the properties and details of the recovery plan. The B command is not a valid command for the Recovered Objects plan. Press Enter.

Build job in Dataset TEST.ARY.CNTL
   Member Prefix RCVRJB

Job Cards:
>>> //ARYJOB JOB TEST,CLASS=A,NOTIFY=&SYSUID,MSGCLASS=X
>>> //*
>>> //

6. Specify the data set information. The data set name must be a PDS with a valid member name. Press Enter. When the data has been verified, the Generate Recovery Plan JCL job is run. The Recovery Plan Jobs panel opens.

Submitting the recovery plan job

The Recovery Plan Jobs panel displays the recovery plan job or jobs that you can use to recover the objects in the object profile.

About this task

If the recovery option Number of parallel jobs is greater than 1, then multiple jobs are returned. A Serial job, followed by a Parallel Job Group, followed by a second Serial job will be returned. You must submit and run the serial and parallel jobs in the order that they are listed.

Procedure

1. On the Recovery Plans panel, select a recovery plan and specify B to build the job.

2. On the Recovery Plans Jobs panel, the following fields are displayed:

   Plan Name
   The name of the recovery plans for one or more jobs that have been built.

   Creator
   The ID of the user who created the object profile.
Name  The name of the object profile.

SSID  The assigned ID for the Db2 subsystem where the objects and the object profile reside.

Recovery Plan jobs
The jobs that have been built for this plan.
3. To browse the recovery plan job JCL, specify B next to a recovery job. Using browse, you cannot edit or save the JCL.
4. To view and edit the recovery plan job JCL, specify V next to a recovery job. Using view you cannot save the JCL when you exit.
5. To edit the recovery plan job JCL and save your changes upon exit, specify E next to a recovery plan.
6. To run the recovery plan job JCL, specify $ next to the recovery job. The job is submitted and run. The results of the request are written to the specified data set. If there are serial and parallel jobs, it is important to submit the jobs in the order that they are listed.
7. The next step in coordinated recovery is to generate the IMS application recovery job. Press PF3 on each panel until the Build job for IMS.PROFILE panel opens.

Building the coordinated recovery job for IMS objects
Build the JCL for the recovery of the IMS databases.

Procedure
1. On the Recovery Plans Jobs panel, after you have built the coordinated recovery job for the Db2 objects, press PF3 to navigate back through several panels to the Build job for IMS.PROFILE panel.

```
BSY$V2R1  -------- Build Job for IMS.PROFILE -------- 2018/01/13  12:56:12
Recovery Point
Recovery Timestamp

Edit Generated Job  Y  (Yes/No)
Edit Recovery Options  N  (Yes/No)

Build Job in Dataset
Member

Job Cards
  ==> //OBJREST Job PDSUSC, CLASS=A, NOTIFY=BSYSUID
  ==> //
  ==> //
```

Figure 128. Build job for IMS.PROFILE panel

2. The type of recovery point that you selected is listed in the Recovery Point field. If you selected to specify a timestamp, it is listed in the Recovery Timestamp field. The Recovery Point and Recovery Timestamp values are the same as those specified for the recovery of the Db2 objects.
3. Specify Y in the Edit Generated Job to view the job in an ISPF edit session after generation. If you specify N, you cannot edit the JCL before it is stored in the data set.
4. To update the recovery options for the IMS job profile, specify Y in the Update Recovery Options field and press Enter. On the Recovery Options panel, edit
the options that you want to change and press PF3 to return to the Build IMS Coordinated Recovery Job panel. For more information about IMS recovery options, see Recovering databases using application profiles.

5. Specify a fully qualified data set name (without quotation marks) where you want to save the generated job in the Build job in Dataset field. This data set must exist and can be sequential or a PDS. If the data set is a PDS, specify a member name in the Build job in Member field. If the member does not exist, it will be created.

6. Specify a valid job card for your site in the Job Cards field.

7. When you are ready to generate the IMS recovery job, press Enter.

Results

All the fields are validated and the recovery job is built. The job is stored in the data set that you specified.
Chapter 10. Performing a Combined System Level Backup

The Combined System Level Backup (Combined SLB) is an optional feature of IMS Recovery Expert and Db2 Recovery Expert. With a single process, Combined SLB allows you to create a backup that includes one or more subsystems and is created at a consistent point in time for all subsystems in the backup.

Subsystems in the Combined SLB can consist of one or more IMS subsystem(s), one or more Db2 subsystem(s), or a combination of both. Data consistency for all volumes included in the Combined SLB is provided using storage-based consistency.

**Note:** Log suspend is not available for Combined SLB.

Combined SLB subsystems do not have to be in the same data sharing group. When the Combined SLB group contains only IMS subsystems, then only IMS Recovery Expert programs are run. When the Combined SLB group contains both IMS subsystems and Db2 subsystems, both IMS Recovery Expert and Db2 Recovery Expert programs are run.

### Planning for Combined SLB

A Combined SLB can contain multiple IMS subsystems, multiple Db2 subsystems, or a combination of both, so you can create a single backup that contains multiple, related subsystems. The subsystems included in a Combined SLB do not have to be in the same data sharing group.

Before configuring IMS Recovery Expert for Combined SLB, you must understand your environment and your intended use for creating a Combined SLB.

A Combined SLB can be used for the following purposes:

**Disaster Recovery**
- A Combined SLB can provide a coordinated and transactionally consistent point of recovery for multiple subsystems at the disaster recovery site without requiring additional recovery assets (such as archive logs).
- Since a Combined SLB can contain both IMS subsystems and Db2 subsystems, you can more quickly recover related IMS and Db2 systems from a single backup without creating multiple backups and performing coordinated recovery between IMS and Db2.
- When a Combined SLB is used for disaster recovery, the recovery is done to the backup only. No forward or log recovery is performed.

**Local Database Recovery**
- A Combined SLB can be used with existing application profiles to perform local database recovery.
- By using a Combined SLB as the basis of database recovery, multiple databases across related subsystems (IMS and Db2) can be more quickly recovered to a consistent point in time.
- When a database is recovered, a Combined SLB will be used if it best meets the recovery criteria.
Local Subsystem Restore

- A Combined SLB can be used to perform local subsystem restore.
- All subsystems in the Combined SLB are recovered; no individual subsystem recovery is allowed.
- When a Combined SLB is used for local recovery, the recovery is done to the backup only. No forward or log recovery is performed.

Combined SLB can operate within IMS Recovery Expert or Db2 Recovery Expert independently, or across both products. A Combined SLB group can contain IMS subsystems, Db2 subsystems, or a combination of both. However, the ability to create Combined SLB groups that contain both IMS and Db2 subsystems depends upon the mode of operation for which the feature is installed. Before you configure the Combined SLB option, you must first choose between local or shared mode:

Local Mode
Combined SLB operates within IMS Recovery Expert or Db2 Recovery Expert independently. You can create Combined SLB groups that contain subsystems that are related to the product you are using (IMS or Db2). In this mode, you can use Combined SLB to back up multiple subsystems that are related but not limited to the same data sharing group.

Shared Mode
Combined SLB operates across IMS Recovery Expert and Db2 Recovery Expert. A Combined SLB group can contain a combination of IMS and Db2 subsystems. The Combined SLB profiles and backups are available from either product regardless of the product that was used to create them. A Combined SLB group can contain a combination of IMS and Db2 subsystems, IMS subsystems only, or Db2 subsystems only. In shared mode, the repository data sets used by IMS Recovery Expert and Db2 Recovery Expert must be shared. This allows access to information from both products. If repositories are not shared, then shared mode is not available.

If you use both IMS Recovery Expert and Db2 Recovery Expert, then it is recommended that you configure the Combined SLB option for shared mode, even if you do not currently intend to create Combined SLB groups that contain both IMS and Db2 subsystems. By choosing shared mode, you ensure that your environment is configured appropriately if you choose to create Combined SLB groups that contain both IMS and Db2 subsystems in the future.

---

Configuring Combined SLB

After you configure IMS Recovery Expert, you can activate the Combined SLB option.

About this task

Before you activate the Combined SLB option, you must perform the configuration steps in Chapter 3, “Configuring IMS Recovery Expert,” on page 37.

Procedure

1. Update the BSYSYSGR member in the SBSYSAMP library, and submit the job. This job creates the VSAM control file used by IMS Recovery Expert, which contains the Combined SLB group information. You can find instructions in the member.
2. Edit your IMS Recovery Expert invocation CLIST, member BSYV220 in SBSYSAMP, and specify the repository data set name created by BSYSYSGR in the RBRGROUP() variable. This variable identifies (to the ISPF interface) the name of the VSAM data set to use for storing Combined SLB groups, and activates the Combined SLB feature.

What to do next

After you perform these steps, the Combined SLB feature is active for IMS Recovery Expert in local mode. To enable Combined SLB in shared mode, perform these additional steps:

1. Perform the steps in “Connecting IMS Recovery Expert and Db2 Recovery Expert” on page 217 to connect the two products. If you do not perform these steps, then the Combined SLB shared mode will not be activated.

2. Edit your Db2 Recovery Expert invocation CLIST, member ARVY320 in SAR SYSAM, and specify the same data set name in the RBRGROUP() variable as specified in BSYV220 above. The RBRGROUP repository must be shared between IMS Recovery Expert and Db2 Recovery Expert to activate shared mode.

3. The repository data set names used by IMS Recovery Expert and Db2 Recovery Expert must be shared. If you currently use both IMS Recovery Expert and Db2 Recovery Expert, and you are not using shared repositories, see “Creating shared repositories.” The following variables in the BSYV220 and ARVY320 CLISTs must specify the same data set names:

   - Db2CNTFL
   - RBRBPROF
   - RBRBPMAP
   - RBRBPCAT
   - RBRSBACK
   - RBRSBVOL
   - RBRSBSSD
   - RBRPOBJS
   - RBRBREPT
   - RBRBOFFL
   - RB RMOVER
   - RBRGROUP

The following variables and the related repositories are not shared:

   - RBRSBOBJ: This repository is used by both IMS Recovery Expert and Db2 Recovery Expert, but the structure of this repository is different; each product specifies its own unique repository data set.
   - RBRARCH: This repository is used by IMS Recovery Expert only.
   - RBRSSRBA: This repository is used by Db2 Recovery Expert only.
   - RBRBCPRF: This repository is used by both IMS Recovery Expert and Db2 Recovery Expert, but it is specified only in the Db2 Recovery Expert ARVY320 CLIST.

Creating shared repositories

If IMS Recovery Expert and Db2 Recovery Expert are currently installed, and you are not sharing the repository data sets, then you must convert your repositories and share them between the two products to activate the Combined SLB option.
About this task

If both products are installed and you are already using shared repositories, or if you are currently only using IMS Recovery Expert, then you do not need to perform these steps.

To create a new shared set of repositories with non-shared repositories from IMS Recovery Expert and Db2 Recovery Expert:

Procedure

1. Edit and submit the BSYREPS1 member in the SBSYSAMP library. Instructions for editing this member are contained in the member. This job will back up your existing IMS Recovery Expert and Db2 Recovery Expert repositories into flat files so that they can be used in the next step to create the common set of shared repositories.

2. Edit and submit the BSYREPS2 member in the SBSYSAMP library. Instructions for editing this member are contained in the member. This job will allocate a new set of shared repositories and then use IDCAMS to reproduce the individual IMS Recovery Expert and Db2 Recovery Expert repositories into the new shared set of repositories.

3. Edit your BSYV220 and ARYV320 product invocation CLISTs, and change the variable names listed below to the names of the newly created shared repository data sets created in step 1. The variables that reference the shared repositories are:
   - Db2CNTFL
   - RBRBPROF
   - RBRBPMAP
   - RBRBPCAT
   - RBRBSBACK
   - RBRSBVOL
   - RBRSBSSD
   - RBRPOBJ5
   - RBBREPT
   - RBBROFFL
   - RBRMOVER1
   - RBRGROUP

Creating Combined SLB groups

Before you can perform Combined SLB functions or create Combined SLB profiles, you must first create one or more Combined SLB groups.

About this task

A Combined SLB group contains one or more IMS subsystem(s), one or more Db2 subsystem(s), or a combination of both, that have already been defined to the product. For information on how to define subsystems to the product, see "Providing IMS system information" on page 40.

When defining Combined SLB groups, you must follow these rules:

- The Combined SLB group name cannot duplicate an existing SSID or data sharing group name.
• An SSID (individual subsystem or data sharing group) can only be included in one Combined SLB group. When an SSID is included in a Combined SLB group, it is marked as selected and cannot be included in any other Combined SLB group.

• When the selected SSID is part of a data sharing group, the SSID associated with the data sharing group is used (not the individual SSIDs). However, the individual SSIDs that are part of the data sharing group are marked as a part of the Combined SLB group, and cannot be included in any other Combined SLB group.

**Procedure**

1. Specify 0 (Administration) on the **Option** line of the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN) and press Enter.

```
BSY$P400 V2R2 Administration Menu 2014/06/30 13:53:39
Option =>
2018/06/30 13:53:39
User: PDMONA - BSY

1. Set System Backup Profile Defaults
2. Register IMS Systems
3. Define IMS Groups
4. Db2 Recovery Expert for z/OS Connection
5. Define System Recovery Profiles
6. Define Combined SLB Groups
```

*Figure 129. Administration Menu panel (BSY$P400): Combined SLB*

2. On the Administration Menu panel, specify 6 (Define Combined SLB Groups) on the **Option** line and press Enter.

```
BSY$CG00 V2R2 Combined SLB Group Display 2018/06/30 13:58:48
Option => Scroll => PAGE
Line Commands: C - Create  D - Delete  U - Update  V - View
CSLB Mode: Shared
Row 1 of 8 >

<table>
<thead>
<tr>
<th>Cmd</th>
<th>Group</th>
<th>Members Description</th>
<th>Userid</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EMCG</td>
<td>0001 EMC GROUP</td>
<td>TSMGM</td>
</tr>
<tr>
<td></td>
<td>GRP1</td>
<td>0001 DATA SHARING SUBSYSTEM1</td>
<td>TSMGM</td>
</tr>
<tr>
<td></td>
<td>GRP2</td>
<td>0002 MULTIPLE SUBSYSTEMS</td>
<td>CSMESH</td>
</tr>
<tr>
<td></td>
<td>GRP3</td>
<td>0001 SINGLE SUBSYSTEM</td>
<td>CSMESH</td>
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<tr>
<td></td>
<td>MIKE</td>
<td>0001 DESC</td>
<td>TSMGM</td>
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<td>MXD1</td>
<td>0001 TSMGM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TSLB</td>
<td>0001 TEST CSLB</td>
<td>CSTSUUK</td>
</tr>
<tr>
<td></td>
<td>123</td>
<td>0001 123</td>
<td>CSTSUUK</td>
</tr>
</tbody>
</table>
```

*Figure 130. Combined SLB Group Display panel (BSY$CG00)*
3. On the Combined SLB Group Display panel, specify \texttt{C} in the \texttt{Cmd} field to define a new group and press Enter.

```
BSY$CGAD V2R2 ------ Add Combined SLB Group ------- 2018/05/01 10:49:31
Option ====> Scroll ===> PAGE

Line Commands: A - Add  D - Delete

Group:  tslb
Description:  test cslb group

--------------------------------------------------------------- Row 1 of 1

Cmd  Member  Type
A  Press Enter to Add

*******************************************************************************
Bottom of Data *******************************************************************************
```

Figure 131. Add Combined SLB Group panel (BSY$CGAD)

4. On the Add Combined SLB Group panel, specify the name of the group and a description of the group. Press Enter to add SSIDs to this group.

```
BSY$CGSL V2R2 ------ Subsystem Selection ------- 2018/05/01 10:49:31
Option ====> Scroll ===> PAGE

Line Commands: S - Select Subsystem

--------------------------------------------------------------- Row 1 of 25 +

<table>
<thead>
<tr>
<th>Cmd</th>
<th>SSID</th>
<th>Type</th>
<th>CSLB Group</th>
<th>DShare Group</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>DBA7</td>
<td>Db2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DBB7</td>
<td>Db2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>DBS7</td>
<td>Db2</td>
<td>MX01</td>
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<tr>
<td></td>
<td>EA1B</td>
<td>Db2</td>
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<td>X</td>
<td>EB1C</td>
<td>Db2</td>
<td>MX01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>E0S1</td>
<td>Db2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E9A1</td>
<td>Db2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IAAX</td>
<td>IMS</td>
<td></td>
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<td>IMS</td>
<td>IAA</td>
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<td>IMS</td>
<td>IAA</td>
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<td>IMS</td>
<td>EMC</td>
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<td>IMS</td>
<td>EMC</td>
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<td>IMS</td>
<td>RS47</td>
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<tr>
<td></td>
<td>*CMD</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

```

Figure 132. Subsystem Selection panel (BSY$CGSL)

On the Subsystem Selection panel, all defined subsystems that are available for inclusion in the group are displayed. The following fields are displayed:

- **Cmd**: Specify S on the \texttt{Cmd} line next to a subsystem to select it for inclusion in the group. Subsystems that are already part of a Combined SLB group are marked with \texttt{X} and cannot be selected.
- **SSID**: The name of the defined subsystem.
- **Type**: The type of subsystem. Values are either IMS or Db2.
- **CSLB Group**: If the subsystem is already included in a Combined SLB group, this column indicates the Combined SLB group name.
- **DShare Group**: If the subsystem is part of a data sharing group, this column indicates the data sharing group name. If the subsystem is Db2, this column only
displays a value when one of the data sharing group members is active on the LPAR to which you are logged in.

5. To select subsystems to include in the group, specify $ on the Cmd line next to the subsystem(s) you want to include. You can page up and down the list to select multiple entries. When you have selected subsystems, press PF3 to process them.

---

Figure 133. Add Combined SLB Group panel (BSY$CGAD): Subsystems in Group

On the Add Combined SLB Group panel, the subsystems that you selected are included in the group. If any of the subsystems were part of a data sharing group, the data sharing group Member name is included, and the Type is IMSGRP.

You can create as many Combined SLB groups as you need for your environment. When you have one or more Combined SLB groups created, you are ready to use the Combined SLB option.

---

**Creating System Level Backup profiles for Combined SLB groups**

When you have one or more Combined SLB groups defined, you can create a System Level Backup Profile for the group.

**Procedure**

1. Specify 1 (System Operations) on the Option line of the IMS Recovery Expert for z/OS main menu panel (BSYSMAIN) and press Enter.
2. On the System Operations Menu panel, specify 2 (System Backup Profiles) on the Option line and press Enter.

```
Enter System Backup Profile Selection Criteria
BSY$BPLK
  Profile Like *
  Creator Like *
  SSID Like *
```

3. On the Enter System Backup Profile Selection Criteria panel, specify selection criteria and press Enter.

```
BSY$BPRD V2R2 ----- System Backup Profile Display ----- 2018/06/30 14:05:14
Option ===> Scroll ===> PAGE
Line Commands: B - Build U - Update C - Create V - View D - Delete
  R - Rename G - Group

---- Profile Like * SSID Like * CREATOR Line Like * ----
Row 1 of 61 +>

<table>
<thead>
<tr>
<th>SSID/</th>
<th>Name</th>
<th>Creator</th>
<th>Group</th>
<th>Updt</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAT</td>
<td>PDBATA</td>
<td>EMC</td>
<td>U</td>
<td></td>
</tr>
<tr>
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<td>PDBATA</td>
<td>EMC</td>
<td>U</td>
<td></td>
</tr>
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<td>U</td>
<td></td>
</tr>
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<td>CSLB GRP2</td>
<td>CSMESH</td>
<td>GRP2</td>
<td>U</td>
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<td>CSLB STOGROUP/TRGPOOL</td>
<td>CSMESH</td>
<td>GRP1</td>
<td>U</td>
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<td>U</td>
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<tr>
<td>EMC-FC</td>
<td>CSOSTR</td>
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<td>U</td>
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<td>U</td>
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<tr>
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<td>CSOSTR</td>
<td>EMC</td>
<td>U</td>
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<td>EMC_TARGET_POOL</td>
<td>CSOSTR</td>
<td>EMC</td>
<td>U</td>
<td></td>
</tr>
</tbody>
</table>
```

Figure 135. System Backup Profile Display panel (BSY$BPRD): Combined SLB

4. On the System Backup Profile Display panel, specify C in the Cmd field of any row to create a new Combined SLB Backup Profile. Press Enter.

```
Enter Backup Profile Type
BSY$BPTP
  Backup Profile Type c (S=System, C=Combined SLB)
```

Figure 136. Enter Backup Profile Type panel (BSY$BPTP): Combined SLB

5. On the Enter Backup Profile Type panel, specify C in the Backup Profile Type field. Press Enter.
6. On the Enter New Backup Profile Options panel, specify information in the Profile Name, Description, CSLB Group, Backup Method, Source/Target Mapping, and Update Option fields. Note that manual mapping is not available for Combined SLB.

   a. If you do not know the name of the Combined SLB group you want to use, specify ? in the CSLB Group field. Press Enter.

   b. On the Combined SLB Group Display panel, specify S on the Cmd line next to the Combined SLB group you want. Press Enter. The Enter New Backup Profile Options panel (BSY$CPC1) is displayed again.

   c. When you have specified all options on the Enter New Backup Profile Options panel, press Enter.
7. When you return to the Update Backup Profile panel, you can define the Combined SLB backup profile as you would any other backup profile. For more information about this process, see Chapter 6, “Creating and maintaining System Level Backup profiles,” on page 115. Note that the Issue Log Suspend field is set to N and cannot be changed. The log suspend process is not available for a Combined SLB backup profile due to the probability of elongated system ENQ times while attempting to quiesce all subsystems to a consistent point in time.

8. When viewing backup profiles, if you have a profile associated with a Combined SLB group and want to know what subsystems are in the group, specify G on the Cmd line next to the profile, and press Enter.

Results

On the BSY$CGXD panel, all subsystems (currently defined to the Combined SLB group) and their types are displayed.

When you have created the Combined SLB backup profile, it can be processed like any other backup profile. For more information about using this profile to create a System Level Backup (SLB), see Chapter 7, “Creating a System Level Backup,” on page 157.
Using System Restore and Offload with Combined SLB

When you have created a backup for a Combined SLB group, you can utilize the system restore and offload interface to manage the backup.

**Procedure**

1. Specify 1 (System Operations) on the **Option** line of the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN) and press Enter.

2. On the System Operations Menu panel (BSY$SYMN), specify 3 (System Level Backup Operations) on the **Option** line and press Enter.

On the System Level Backup Display panel, you can perform the same functions that are available for a regular system level backup. For more information about these options, see Chapter 6, “Creating and maintaining System Level Backup profiles,” on page 115.

3. On the System Level Backup Display panel, if you specify J (Object Report) or I (Image Copies) on the **Cmd** line next to a Combined SLB and press Enter, a list of subsystems in the backup is displayed.
4. On the Combined SLB SSID List panel, you can select one or more subsystems for processing and press Enter. The requested function is performed against those subsystems.

When you specify I (Image Copy), only IMS subsystems are available for selection. If the Combined SLB contains Db2 subsystems and you want to perform image copies for them, you must perform this from the Db2 Recovery Expert ISPF interface.

When you select a backup that is associated with a Combined SLB group, the only available option is to recover all subsystems in the backup to the time of the backup.

![Combined SLB Restore panel (BSY$RESC)](image)

**Figure 143. Combined SLB Restore panel (BSY$RESC)**

5. Press Enter. The Build Restore Job panel is displayed.

![Build Restore Job panel (BSY$BLDR): Combined SLB](image)

**Figure 144. Build Restore Job panel (BSY$BLDR): Combined SLB**

### Using job profiles with Combined SLB

To use existing or new job profiles with the Combined SLB feature, no changes are necessary. Actions related to job profiles are performed at the individual subsystem (that is, SSID). If a recovery is performed and a Combined SLB best meets the recovery criteria, it will be used to recover the database.

### Creating disaster recovery profiles for Combined SLB groups

When you have defined one or more Combined SLB groups, you can create a disaster recovery profile for the group.

**Procedure**

1. Specify 1 (System Operations) on the **Option** line of the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN) and press Enter.

2. On the System Operations Menu panel (BSY$SYMN), specify 4 (Disaster Recovery Profiles) on the **Option** line and press Enter.
3. On the Enter Disaster Recovery Profile Selection Criteria panel, specify disaster recovery profile selection criteria and press Enter.

4. On the Disaster Recovery Profile Display panel, specify C on the Cmd line of any row to create a new Combined SLB disaster recovery profile. Press Enter.

5. On the Enter DR Profile Type panel, specify C in the DR Profile Type field and press Enter.

---

Enter Disaster Recovery Profile Selection Criteria

**BSY$XDRK**

- Profile Like *
- Creator Like *
- SSID Like *

---

**Figure 145. Enter Disaster Recovery Profile Selection Criteria panel (BSY$XDRK): Combined SLB**

---

Enter DR Profile Type

**BSY$DRTP**

- DR Profile Type c (S=System, C=Combined SLB)

---

**Figure 147. Enter DR Profile Type panel (BSY$DRTP): Combined SLB**

---

Enter New Disaster Recovery Profile Data

**BSY$CDC1**

- Creator TSMXD
- Profile Name CSLB DR Profile
- Description CSLB DR Profile
- CSLB Group mxd1 (for group list)
- Update Option U (Update, View only, No access)

---

**Figure 148. Enter New Disaster Recovery Profile Data panel (BSY$CDC1): Combined SLB**
6. On the Enter New Disaster Recovery Profile Data panel, specify the information associated with this profile and press Enter.

![Image](BSY$CDRU V2R2 --- Update Disaster Recovery Profile --- 2018/05/01 11:45:17 Option ===>
-------------------------------------------------------------------
Creator: TSMXO  Name: CSLB DR PROFILE  User: TSMXO
Share Option: U (Upd,View,No)  Description: CSLB DR PROFILE
IMS System/Group: MXD1
-------------------------------------------------------------------

DR Profile Options:
- DR Site Recovery point  ==> B (Backup)
- SLB Used for DR  ==> R (Localsite/Recoverysite)
- Use Multijob for DR Restore  ==> N (Yes/No/Update)

**Figure 149. Update Disaster Recovery Profile panel (BSY$CDRU): Combined SLB**

On the Update Disaster Recovery Profile panel, when creating a disaster recovery profile for a Combined SLB group, the only recovery option is to recover all of the subsystems to the point of the backup. As a result, the profile only allows you to select whether you want to use the local or remote site backups for recovery, and whether you want to use the multijob option for performing the restore.

When a build is performed against a disaster recovery profile for a Combined SLB group, the #REPOJOB and xxx#JC1 jobs are the only jobs created. The #REPOJOB redefines and reloads the repository data sets. The xxx#JC1 job performs the restore of the Combined SLB. No other recovery processing is performed.

**Performing IMS system analysis and configuration**

The System Analysis and Configuration option is not affected by the Combined SLB option. System analysis and configuration operates on the individual subsystem (that is, SSID). A Combined SLB group cannot be used as the target for this function.

**Using coordinated application profiles with Combined SLB**

To use existing or new coordinated application profiles with the Combined SLB feature, no changes are required. Actions related to application profiles are performed at the individual subsystem (that is, SSID). If a recovery is performed and a Combined SLB best meets the recovery criteria, it will be used to recover the IMS databases and Db2 objects.
Chapter 11. Restoring an IMS system

This section explains how to restore an IMS system that has been backed up by IMS Recovery Expert.

Before you restore the system

IMS Recovery Expert maintains a list of valid system restore points from which you can choose in the event you need to restore a system.

When you restore a system, you will be restoring data and logs, or data only. The type of restore depends on the type of backup specified in the backup profile and whether IMS Recovery Expert detected mixed data during the backup. Mixed data occurs when IMS Recovery Expert detected that your IMS databases and the logs are located on the same volumes. If this happens, IMS Recovery Expert still makes the backup, but if you choose this backup as a recovery point, you must restore both the data and the logs. Note that any logging or transactions that were performed after that recovery point will be lost.

If the backup was a data only backup, you can restore the data only as long as IMS Recovery Expert did not detect mixed data.

If the backup was a data and log backup, you can restore both data and logs, or you can choose to restore data only as long as IMS Recovery Expert did not detect mixed data during the backup. If the logs were not mixed in with the data, you can restore the data to the restore point, and then apply logs to bring it up to current or (another later recovery point).

Viewing a list of backups

IMS Recovery Expert only lists valid backups. If a backup failed and cannot be used to restore the system, it will not be displayed on the System Level Backup Display panel.

Procedure

1. Specify 1 (System Operations) on the Option line of the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN) and press Enter.

2. On the System Operations Menu panel (BSY$SYMN), specify 3 (System Level Backup Operations) on the Option line and press Enter.
On the System Level Backup Display panel, all subsystem IDs are listed by default. There is a two-line detail for each backup that contains the following information:

**IMS Subsystem ID**

The subsystem IDs being displayed. By default, all subsystems are listed. You can limit the display by specifying a subsystem name or mask in this field. Use the **RIGHT** and **LEFT** scroll commands (PF10 and PF11) to see all the available columns. Use the **UP** and **DOWN** commands (PF7 and PF8) to scroll through the list when there are more backups than can be displayed on one panel.

**Date**
The backup date.

**Time**
The time the backup was taken in *hh:mm:ss* format.

**Data Only**
If the backup profile specified a data only backup, then the value in this field is Yes. If backup scope was specified as full, then the value in this field is No.

**Mixed Data**
If IMS Recovery Expert detected log data sets on the same volume(s) as the data, then the value in this field is Yes and IMS Recovery Expert must restore both the logs and the data.

**On Disk**
If this backup has not been offloaded from its original location, then the value in this field is Yes and the restore will use the backup on disk.

**On Offload**
If the backup has been offloaded using the IMS Recovery Expert offload process, then the value in this field is Yes; for more information, see Chapter 6, “Creating and maintaining System Level Backup profiles,” on page 115. If the value in the **On Disk** field is No, then the restore will use the offloaded backup.
Obj Rcvr
If database restore was enabled for the backup, then the value in this field is Yes.

Partial Backup
If the backup taken was a partial backup, then the value in this field is Yes, and not all volumes associated with the IMS environment were included in the backup. This backup cannot be used for a system restore; however, it can be used for application restoration if the database restore function was enabled for the backup.

Type
The type of backup: BCV, SNAP, FlashCopy, or DFSMSdss.

Nbr Vols
The number of volumes that were backed up.

Run by Userid
The TSO user ID of the person that ran the backup job.

Profile Name
The profile name used to create the backup.

Profile Creator
The TSO user ID of the profile creator.

Gen Nbr
The generation number for this backup.

Job Name
The backup job name.

Job Number
The backup job number.

3. On the Cmd line next to each backup, you can use the following commands:
   • S to select a backup for the system restore.
   • D to delete a backup from the list.
   • V to view a summary report produced when the backup was performed.
   • 0 to offload a backup.
   • J to produce a report showing all objects included in the System Level Backup.
   • F to free the disks holding the System Level Backup.
   • I to produce image copies of selected objects from the System Level Backup.
   • H to run a System Level Backup health check.
   • G to display Combined SLB group members in the backup.

Viewing the summary report from the backup
Specify V next to a restore point to view the summary report produced when the backup was performed.

This is the same report from the BSY#REPT DD described in the topics about reviewing output from the various backup types.

Offloading a backup
If offload options were set for the backup in the backup profile, you can offload a backup listed on the Restore System Display panel.
Procedure

1. To offload a backup, specify 0 next to the backup and press Enter.

```
Procedure
1. To offload a backup, specify 0 next to the backup and press Enter.

Build Offload Job
BSY$BLDO
Edit Generated Job Y (Yes/No)
Build job in Data set PDMONA.BSY.JCLLIB
Member Offload Job Member

Job Cards:
==> //OFFLJOB JOB PDMONA,CLASS=A,NOTIFY=&SYSUID
==> ///
==> ///
==> ///

Figure 151. Build Offload Job panel (BSY$BLDO): Offloading a Backup

2. On the Build Offload Job panel, specify information in the following fields:

   - **Edit Generated Job**: Specify Y to view the job in an ISPF edit session after generation. If you specify N, you will return to the System Level Backup Display panel after the job is generated.

   - **Build job in Data set/Member**: Specify the fully qualified data set name (without quotes) where you want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, specify a member name. If the member does not exist, IMS Recovery Expert will create it.

   - **Job Cards**: Specify a valid job card for your site.

3. Press Enter, or PF3 to cancel.

Performing an SLB health check

You can drive the Database Recovery Facility: Extended Functions health check feature against a System Level Backup.

Procedure

1. Specify H next to the backup for which you want to create health check JCL, and press Enter.

```
Procedure

1. Specifying H next to the backup for which you want to create health check JCL, and press Enter.

Build Health Check Report Job
BSY$BLDH
Edit Generated Job Y (Yes/No)
Edit Health Check Options N (Yes/No)
Build job in Dataset TSMXDA.BSY.CNTL
Member IBA2HCHK Health Check Report Job Member

Job Cards:
==> //TSMXDXX1 JOB TSMXDA,CLASS=A,NOTIFY=&SYSUID
==> ///
==> ///
==> ///

Figure 152. Build Health Check Report Job panel

2. On the Build Health Check Report Job panel, specify the following parameters:
Edit Generated Job
Specify Y to view the job in an ISPF edit session after generation. If you specify N, you will return to the System Level Backup Display panel after the job is generated.

Edit Health Check Options
Specify Y to view and update the existing health check options that will be used for this job execution. If you specify N then the default or previously used options will be used. For a description of the options and their values, see Chapter 14, “Running a Health Check,” on page 313.

Build job in Dataset Member
Specify the fully qualified data set name (without quotes) where you want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, specify a member name. If the member does not exist, IMS Recovery Expert creates it.

Job Cards
Specify a valid job card for your site.
3. When you are finished, press Enter to generate the health check JCL.
4. Submit the JCL to execute Health Check with the specified options for the selected system.

Deleting backups
Specify D next to a backup to delete it from the list. A confirmation panel is displayed; you must specify Y in the Delete field and press Enter to delete the backup.

Restoring a system: Data only
If both data and logs were backed up, you can choose to restore only the data. If the backup was configured for data only, you can only restore the data.

About this task
When restoring data only, IMS Recovery Expert generates three separate JCL members that must be executed in order.

To restore the system:

Procedure
1. Build the restore job from the desired backup. For more information, see “Building restore jobs - data only.”
2. Submit the first job. This job will stop IMS, if not already stopped, and perform a system data restore.
3. Submit the second job to perform recovery for all IMS databases and indexes.
4. Submit the last job to restart IMS if it was originally active.

Results
The IMS system is now restored to the selected point in time.

Building restore jobs - data only
You can build a data only restore job.
Procedure

1. From the System Level Backup Display panel, specify S in the Cmd line next to the backup that will be used for the restore.

<table>
<thead>
<tr>
<th>Restore Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSY$RESD</td>
</tr>
<tr>
<td>Restore Only Data</td>
</tr>
<tr>
<td>Select a Recovery Point</td>
</tr>
<tr>
<td>Recover to Timestamp</td>
</tr>
<tr>
<td>Update Recovery Options</td>
</tr>
</tbody>
</table>

   Select whether to Restore Data and Logs or Data only. If restoring Data and Logs you will not be able to select a Timestamp Recovery Point.

   **Figure 153. Restore Options panel (BSY$RESD)**

2. On the Restore Options panel, specify information in the following fields:

   **Restore Only Data**
   Specify Y in this field to restore only the data from the backup.

   **Select a Recovery Point**
   Specify Y in this field to select a recovery point based on a timestamp.

   **Recover to Timestamp**
   This field defaults to the recovery timestamp associated with the backup. If you are restoring data only, you can leave this field as is and the subsystem will recover to that point in time. You can also specify a timestamp greater than that of the backup; in that case, IMS Recovery Expert will apply logs to bring the subsystem up to that point in time. The timestamp can be specified in a local timestamp format (yydddhhmmssthmiju or yydddhhmmssst), or in a UTC timestamp format (yydddhhmmsstSnnnn) where Snnnn is a numeric offset in the form Shhmm, that, when added to UTC, gives local time. S indicates the sign and must be + or -. hh is a numeric value between 00 and 14. mm is one of the following values: 00, 15, 30, 45. Shhmm is a value between -1100 and +1400.

   **Update Recovery Options**
   Specify Y in this field to update recovery options.

3. When your recovery point has been established, press Enter.

   **Figure 154. Build Restore Job panel (BSY$BLDR)**

4. On the Build Restore Job panel, specify information in the following fields. Note that IMS Recovery Expert builds three members that contain JCL.
Edit Generated Job
Specify Y to view the job in an ISPF edit session after the job is generated, or specify N to return to the Restore System Display panel.

Edit Recovery Options
Specify Y to update recovery options for the Recover/Rebuild pending job.

Edit Multijob Options
When the offload was created, multijob options were saved with the backup profile. Specify Y to edit these options, or N to make no changes. For more information, see "Editing multijob options for restore."

Restore System Member
This job contains JCL to STOP the IMS system if it is active, and invoke the IMS Recovery Expert system restore utility to restore the data volumes.

Restore Objects Member
This job invokes the IMS Recovery Expert application recovery utilities to recover all IMS databases and indexes to the selected point in time.

Start IMS Member
This job restarts IMS if it was originally active.

Editing multijob options for restore
On the Multijob Options panel (BSYSMJOP), you can edit multijob processing options. If Multijob processing was not used for creating the offload, you can still use Multijob processing for restore processing.

Procedure
1. On the Build Restore Job panel, specify Y (Yes) in the Edit Multijob Options field and press Enter.

```
BSYSMJOP V2R2 -------- Multijob Options -------- 2018/01/16 1
Option   ====>

Enter the options for performing Multijob processing:
Use Multijobs ==> Y (Y/N)
Multijob Prefix ==> TSMXDX (1-6 character job prefix)

Multijob LPAR list:
<table>
<thead>
<tr>
<th>LPAR Name</th>
<th>Max Jobs (1-99)</th>
<th>Max Tasks (1-99)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS22</td>
<td>02</td>
<td>02</td>
</tr>
<tr>
<td>RS23</td>
<td>02</td>
<td>02</td>
</tr>
</tbody>
</table>

Figure 155. Multijob Options panel (BSYSMJOP)
```

2. Modify the following Multijob options to use for restore processing:

   **Use Multijobs**
   Specify Y if you want the restore processes to use multiple jobs, or N to use a single job.

   **Multijob Prefix**
   This is a 1-6 character value that is used as a prefix for the multiple jobs that are created. As each multijob is initiated, the name of the job will begin with this prefix followed by a number from 01-99. If this value is not specified, then the prefix is taken from the first 6 characters of the Master jobname.
**Multijob LPAR List**

The LPAR list allows you to specify up to four entries to be used by the Master job for submitting Multijobs. Each entry consists of an 8 character LPAR name, a 2 character max jobs value, and a 2 character max tasks value.

Consider the following information when specifying these entries:
- The same LPAR can be specified more than once in the LPAR List.
- When defining the LPAR List, be aware of the total number of tape drives that are required for processing if the maximum number of jobs is used. For each LPAR List entry, the maximum number of tape drives used is equal to the sum of the maximum number of jobs multiplied by the maximum number of tasks. In the Multijob Options panel example above, this number is 8 (2x2+2x2).
- Before any Multijobs are initiated, the Master job will determine from the LPAR List entries what the maximum number of jobs is that can be submitted. The Master job will break the recovery units for a recovery into groups so that they can be processed without exceeding the maximum job limit.

**LPAR Name**

This is a 1-8 character LPAR name. It identifies the name of the LPAR on which the Multijob is to be submitted. You can specify a single asterisk (*) to indicate that the LPAR that the jobs will be submitted to is the same LPAR on which the Master job is running.

**Max Jobs**

This is a 2 digit number from 01-99 and indicates the maximum number of jobs that can be submitted for this entry. The Master job will submit Multijobs on the specified LPAR until this limit is reached. When this limit is reached, if more jobs are needed, the Master job will move to the next LPAR List entry. The default value is 4.

**Max Tasks**

This is a 2 digit number from 01-99 and specifies the maximum number of tasks that are to be created in each Multijob for processing. When the Multijob is submitted, it will create as many tasks as are needed, up to this limit, to perform restore processing. The default value is 4.

3. Press PF3 to return to the Build Restore Job panel and build the restore JCL.

---

**Restoring a system: Data and logs**

You can restore data and logs if both data and logs were successfully backed up. If the backup specified data only, but IMS Recovery Expert detected mixed data when the backup job was run, you must restore both data and logs.

**About this task**

When restoring data and logs, IMS Recovery Expert generates only one JCL member.

**Procedure**

1. Build the restore job from the desired backup. For more information, see "Building restore jobs - data and logs" on page 259.
2. Submit the Restore System JCL. The job will stop IMS if not already stopped, invoke the IMS Recovery Expert system restore utility, and restart IMS if it was originally active.

Building restore jobs - data and logs

Use these steps to build a restore job for data and logs.

Procedure

1. From the System Level Backup Display panel, specify S in the Cmd line next to the backup that will be used for the restore.

   ![Image of Restore Options panel (BSY$RESD)]

   **Figure 156. Restore Options panel (BSY$RESD)**

2. On the Restore Options panel, specify information in the following fields:

   **Restore Only Data**
   
   To restore data and logs, specify N.

   **Select a Recovery Point**
   
   Leave this field set to N; you cannot select a recovery point when restoring data and logs.

   **Recover to Timestamp**
   
   This field defaults to the recovery timestamp associated with the backup. You cannot change this field.

   **Update Recovery Options**
   
   To update recovery options, specify Y.

3. When you finish specifying information on this panel, press Enter.

   ![Image of Build Restore Job panel (BSY$BLDR)]

   **Figure 157. Build Restore Job panel (BSY$BLDR)**

4. The Build Restore Job panel is displayed. One JCL member is generated when restoring data and logs. The following figure is a sample generated restore job:
****** ************************************************************** Top of Data **************************************************************
000001 //RJOBRCRD JOB TWUSR,CLASS=A,NOTIFY=&SYSUID
000002 /*
000003 /*
000004 /*
000005 /*
000006 /** /********** /********** /********** /********** /********** /********** /**********
000007 /*
000008 /* Profile: TWUSR.BCV BACKUP
000009 /* Job: 01 of 01
000010 /* Desc:
000011 /* User: TWUSR
000012 /* Date: Thursday July 05, 2018
000013 /* Time: 19:16:15.75
000014 /*
000015 /** /********** /********** /********** /********** /********** /********** /**********
000016 /*
000017 /*
000018 /*
000019 /* Step: IMSSTOP
000020 /*
000021 /* Desc: This step will STOP IMS subsystem B71D
000022 /*
000023 /** /********** /********** /********** /********** /********** /********** /**********
000024 /*
000025 //IMSSTOP EXEC PGM=BSYSIMS,COND=(4,LT),PARM=(B71D,STOP)
000026 //STEPLIB DD DISP= SHR, DSN= BSY.PRD0220.LOCALIB
000027 // DD DISP= SHR, DSN= BSY.B71D.SDNSXIT
000028 // DD DISP= SHR, DSN= BSY.V710.SDNSLOAD
000029 //IMSPARMS DD DISP= SHR, DSN= BSY.WRK0220.IMS.CONTROL
000030 //SYSPRINT DD SYSOUT=*
000031 /*
000032 /** /********** /********** /********** /********** /********** /********** /**********
000033 /*
000034 /* Step: BSYREST
000035 /*
000036 /* Desc: This step will invoke the System Restore job.
000037 /*
000038 /* When this job is complete. IMS can be restarted. If
000039 /* you did not restore the IMS logs, you will need to
000040 /* respond Yes to the WTOR:
000041 /* XXX CONDITIONAL RESTART RECORD INDICATES TRUNCATION
000042 /* AT RBA XXXXXXXX XXXX. REPLY Y OR N
000043 /*
000044 /** /********** /********** /********** /********** /********** /********** /**********
000045 /*
000046 //BSYREST EXEC PGM=BSYSMAIL,REGION=006M,COND=(4,LT)
000047 /*
000048 //STEPLIB DD DISP= SHR, DSN= BSY.PRD0220.LOCALIB
000049 // DD DISP= SHR, DSN= VENDOR.EMC.SFLS5602.LOCALIB
000050 // DD DISP= SHR, DSN= VENDOR.EMC.STFX540.LOCALIB
000051 // DD DISP= SHR, DSN= VENDOR.EMC.STFU540.LOCALIB
000052 // DD DISP= SHR, DSN= VENDOR.FDR5456.LOCALIB
000053 //IMSPARMS DD DISP= SHR, DSN= BSY.WRK0220.IMS.CONTROL
000054 //BSYBPROF DD DISP= SHR, DSN= BSY.WRK0220.BSY.PROFILES
000055 //BSYBOFFL DD DISP= SHR, DSN= BSY.WRK0220.BSY.OFFOPTS
000056 //BSYBPMAP DD DISP= SHR, DSN= BSY.WRK0220.BSY.PROFILE.MAPS
000057 //BSYBPACAT DD DISP= SHR, DSN= BSY.WRK0220.BSY.PROFILE.CATS
000058 //BSYSBACK DD DISP= SHR, DSN= BSY.WRK0220.BSY.SYSBACK
000059 //BSYBSOBJS DD DISP= SHR, DSN= BSY.WRK0220.BSY.SYSBACK.OBJS
000060 //BSYSBSSD DD DISP= SHR, DSN= BSY.WRK0220.BSY.SYSBACK.SSID
000061 //BSYBREPT DD DISP= SHR, DSN= BSY.WRK0220.BSY.BREPORT
000062 //BSYBREPT DD SYSOUT=*
000063 //SYSPRINT DD SYSOUT=*
Selecting a recovery timestamp

Choose your recovery point from a list of timestamps.

Procedure

1. On the Restore Options panel, specify Y in the Select a Recovery Point field and press Enter.

   Select Timestamp Information to display

   BSY$RBAO
   Display Archive Logs times: Y (Yes/No)
   Display Checkpoint times: Y (Yes/No)
   Display Valid Recovery Points Y (Yes/No)

   Figure 158. Select Timestamp Information to Display panel (BSY$RBAO)

2. From the Select Timestamp Information to Display panel, select from the following options the type of timestamp you want to use for a recovery point:

   Display Archive Logs times
   Specify Y in this field to display the timestamps at the end of the archive logs.

   Display Checkpoint times
   Specify Y in this field to display the timestamps of IMS system checkpoints.

   Display Valid Recovery Points
   Specify Y in this field to display the quiet timestamp ranges for this system from the time of the selected backup to the current time.

3. Press Enter.
4. On the Subsystem Timestamp Display panel, the following fields are displayed:

**Archive Log Records**
This section displays the timestamps recorded for the creation of log records.

**Log Timestamp**
This is the store clock time at which the log records at the end of the archive log were created.

**Check Point Records**
This section displays the timestamps recorded at start and end checkpoints.

**Log Timestamp**
This is the store clock time associated with the start or end of the checkpoint record.

**RPID Recovery Points**
This section displays the quiet time ranges for the selected subsystem.

**Start Timestamp**
The timestamp for the beginning of the range.

**End Timestamp**
The timestamp for the end of the range.

5. To select a recovery point, specify $ next to the record and press Enter.

6. When you have selected a timestamp, press PF3 to return to the Restore Options panel. The selected timestamp is inserted into the timestamp field.
Restarting a failed restore job

If a job fails while restoring an IMS system from tape, you might be able to restart the restore job using a RESTART parameter. This parameter allows IMS Recovery Expert to bypass restoring volumes from tape that were successfully restored in the previous job.

Before you begin

The RESTART parameter can only be used for jobs that are restoring IMS systems from tape. This parameter is not required; if you resubmit the restore job without adding RESTART, the restore job will start from the beginning and all volumes will be restored.

Procedure

1. In an edit session, open the restore job that failed.
2. In the RBRREST step, find the RBRIN DD. Add the RESTART parameter anywhere after the RESTORE command, as shown in the following example:

//RBRIN DD *
  RESTORE PDBOB."B81D - SNAP BACKUP"
  GENERATION 01
  DATE 03/31/2018
  TIME 15:13:14
  RESTART
/*
//*
3. Save the job and resubmit it. IMS Recovery Expert restore skips the tape restore for volumes that were previously successfully restored. Messages will be displayed in the restore report, listing the volumes that were bypassed.

Reviewing restore reports

IMS Recovery Expert produces several different reports when a system is restored. This section describes the reports; they are output to the DD statements of each job. Except where indicated, the DD statements are the same whether the restore is a data only restore or a full restore.

Restore job report

This topic provides sample restore job reports.

BSYOUT DD

The following summary report is displayed in the BSYOUT DD of the restore job. The following is a sample BSYOUT DD for a restore using FlashCopy backups:

12:15:38 BSY00011 - IMS Recovery Expert Starting. Version 02.02.001
0003I - Control Cards:
0004I - RESTORE "PDBISC","IAA"
0004I - GENERATION 02
0004I - DATE 03/10/2018
0004I - TIME 11:09:05
0004I -
0123I - Backup PDBISC.IAA generation 02 was read from the repository.
0013I - Backup profile PDBISC.IAA was read from the repository
0038I - Performing profile volume map validation...
0146I - Removing volser SIRB42 from this restore. It contains only log data.
0146I - Removing volser SIRB43 from this restore. It contains only log data.
0146I - Removing volser SIRB44 from this restore. It contains only log data.
0146I - Removing volser SIRB45 from this restore. It contains only log data.
0146I - Removing volser SIRB40 from this restore. It contains only log data.
0039I - Volume map validation complete.
0137I - Varying volumes offline.
0136I - Disconnecting user catalogs.
0217I - User catalog ICF.RSopleX01.IMS.A3DB.CAT1 disconnected.
0217I - User catalog ICF.RSopleX01.IMS.A3SYS.CAT1 disconnected.
0138I - Restoring volumes.
0242I - Restore via flash volume from backup unit ABEF to volser SIRB46 has completed.
0242I - Restore via flash volume from backup unit ABEF to volser SIRB47 has completed.
0242I - Restore via flash volume from backup unit ABE9 to volser SIRB41 has completed.
0137I - Varying volumes online.
0002I - IMS Recovery Expert complete. RC=000.
*****************************************************************************

BSY#REPT DD

The following summary report is displayed in the BSY#REPT DD of the restore job. This DD lists the volume details of the restore. The following is a sample BSY#REPT DD for a restore using FlashCopy backups:

\[
\text{Utility Executed:} \ldots \ldots \text{Restore} \\
\text{Profile Name:} \ldots \ldots \text{PDBISC.IAA} \\
\text{IMS Subsystem:} \ldots \ldots \text{IAA} \\
\text{IMS Version:} \ldots \ldots \\
\text{Restore Type:} \ldots \ldots \text{FlashCopy} \\
\text{Restored:} \ldots \ldots \text{Database Data Only} \\
\text{Nbr of Volumes:} \ldots \ldots 0003
\]

\[
\text{Utility Executed:} \ldots \ldots \text{Restore} \\
\text{Profile Name:} \ldots \ldots \text{PDBISC.IAA} \\
\text{ IMS Subsystem:} \ldots \ldots \text{IAA} \\
\text{ IMS Version:} \ldots \ldots \\
\text{ Restore Type:} \ldots \ldots \text{FlashCopy} \\
\text{ Restored:} \ldots \ldots \text{Database Data Only} \\
\text{ Nbr of Volumes:} \ldots \ldots 0003
\]

**BSY#REPT DD**

**SYSPRINT DD**

The following report is displayed in the SYSPRINT DD of the restore job. It is generated by the “STOP IMS” step and contains information about the status of all IMS systems defined in the group that is being restored.

12:15:38 BSYI918I - PROGRAM BSYIMSTP Control Statement echo:
12:15:38 BSYI407I - IMS Sub-System IAA3 is INACTIVE
12:15:38 BSYI407I - IMS Sub-System IAA4 is INACTIVE
12:15:38 BSYI408I - All requested IMS Sub-Systems are SHUTDOWN
12:15:38 BSYI919I - PROGRAM BSYIMSTP Completed with a Return Code of 0
*****************************************************************************

**BSYSNAPO**

The following report is displayed in the BSYSNAPO DD of the restore job for SNAP backups. This DD contains messages generated by the EMC SNAP VOLUME and TimeFinder utilities. For information on these messages, see the EMC documentation.

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EBR@SNPV – EMC Snap Volume Messages:
13:30:18 *** TIMEFINDER MF SNAP V5.5.0 (018) ***
13:30:18 ESNP0201 IBM SNAPSHOT SUPPORT DETECTED AND ENABLED
13:30:18 ESNP0231 IBM FLASHCOPY SUPPORT DETECTED AND ENABLED
13:30:18 ESNP0241 IBM FLASHCOPY V2 SUPPORT DETECTED AND ENABLED
13:30:18 ESNP0101 BEGINNING COMMAND PARSE
13:30:18 ESNP0111 PARSING STATEMENT #1
13:30:18 ESNP0001 API GLOBAL REQUEST PROCESSED
13:30:18 ESNP0111 PARSING STATEMENT #2
13:30:18 ESNP0401 API SNAP VOLUME REQUEST PROCESSED
13:30:18 ESNP5041 UNIT 3040 WAS REQUESTED, FOUND OFFLINE
13:30:18 ESNP5041 UNIT 3004 WAS REQUESTED, FOUND OFFLINE
...
13:30:18 ESNP0111 PARSING STATEMENT #7
13:30:18 ESNP0201 API ACTIVATE REQUEST PROCESSED
13:30:18 ESNP0111 PARSING STATEMENT #8
13:30:18 ESNP0311 A MAXIMUM OF 11 SUBTASKS WILL BE SCHEDULED
13:30:18 ESNP0401 PROCESSING REQUESTS
13:30:18 ESNP4601 PROCESSING FOR STATEMENT #2 BEGINNING, COPY FROM VOLUME *3040*
13:30:18 ESNP3111 PROCESSING FOR STATEMENT #2 SUSPENDED FOR PENDING ACTIVATE
...
13:30:33 ESNP1121 COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 50085 TRACK(S)
13:30:33 - FROM VOLUME *3040* (S/N 0001874-30562/0040) TO VOLUME
13:30:33 ESNP1121 COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 50085 TRACK(S)
13:30:33 - FROM VOLUME *3041* (S/N 0001874-30562/0041) TO VOLUME
13:30:33 ESNP1121 COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 50085 TRACK(S)
13:30:33 - FROM VOLUME *3042* (S/N 0001874-30562/0042) TO VOLUME
13:30:33 ESNP1121 COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 50085 TRACK(S)
13:30:33 - FROM VOLUME *3043* (S/N 0001874-30562/0043) TO VOLUME
13:30:33 ESNP1121 COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 50085 TRACK(S)
13:30:33 - FROM VOLUME *3044* (S/N 0001874-30562/0044) TO VOLUME
13:30:33 ESNP3011 PROCESSING FOR STATEMENT #2 RESUMED, COPY FROM VOLUME
13:30:33 ESNP3011 DEVICE IS ALREADY READY
13:30:33 ESNP3011 PROCESSING FOR STATEMENT #3 RESUMED, COPY FROM VOLUME
...
13:30:37 ESNP4001 PROCESSING COMPLETED, HIGHEST RETURN CODE ENCOUNTERED IS 0
13:30:37 RQST RC SOURCE TARGET
13:30:37 2 00 SNAP VOLUME EBR300 *3004*
13:30:37 3 00 SNAP VOLUME EBR300 *3005*
13:30:37 4 00 SNAP VOLUME EBR301 *3006*
13:30:37 5 00 SNAP VOLUME EBR301 *3007*
13:30:37 6 00 SNAP VOLUME EBR302 *3008*
13:30:37 7 00 ACTIVATE - CONSISTENT(YES)
13:30:37 ESNPL801 5 INTRA-REQUEST LEVEL SUBTASKS WERE ATTACHED
13:30:37 ESNPL811 2 INTER-REQUEST LEVEL SUBTASKS WERE ATTACHED
Chapter 12. Creating image copies from System Level Backups

You can use IMS Recovery Expert to make IMS image copies from System Level Backups if database restore was enabled when the backup job was built.

After the backup is complete, you can select an existing job profile, or create a new job profile, to specify which databases to create image copies for. The image copies that are created are registered in IMS Database Recovery Control (DBRC), which allows the image copies to be used by any IMS utility that can process IMS image copies.

A System Level Backup that is taken using any method can be used to create the image copies. In most cases, a backup offloaded to tape can also be used; however, if the profile used FDR or FDRInstant to offload the backup, then that offloaded backup cannot be used to make image copies.

The image copies are registered with a runtime that is the time of the System Level Backup. Image copies for database data sets that were allocated at the time of the backup are registered as a Concurrent Image Copies (CIC). Image copies cannot be created for databases with reusable image copies defined.

Selecting or creating the job profile

Specify or create a job profile when creating IMS image copies from a System Level Backup.

Procedure

1. On the Restore System Display panel, specify I (Image Copies) next to a backup and press Enter.

2. On the Enter Profile Like to Display panel, you can limit the profiles that are listed on the next panel by specifying a profile name, profile creator name, or SSID. You can use wildcard characters for one or all fields; an asterisk (*) is the only supported wildcard character.

   **Note:** You can change the SSID on this panel to see job profiles on different systems, but you can only use a job profile that was created for the system on which the backup was taken.

3. Press Enter.
4. On the Job Profile Selection panel, the fields that are displayed are described in [Working with application profiles](#). Use the RIGHT and LEFT scroll commands (PF10 and PF11) to see all the available columns. Use the UP and DOWN commands (PF7 and PF8) to scroll through the list when there are more profiles than can be displayed on one panel. On this panel, you can select an existing job profile, or create one as described in "Creating job profiles" on page 189.

5. On the Job Profile Selection panel, specify $ next to a job profile to select it and press Enter.

![Job Profile Selection panel](image)

**Figure 161. Job Profile Selection panel (BSY$IPRD)**

6. On the Build Image Copy Job panel, specify information in the following fields:

   **Edit Generated Job**
   Specify Y to view the job in an ISPF edit session after generation. If you specify N, you will return to the Restore System Display panel after the job is generated.

   **Edit Image Copy Options**
   Specify Y if you want to edit options for the image copy, including the data set name specifications, work volumes, and so on. Options must be set the first time you create a job for an image copy from a System Level Backup. Subsequent jobs use the previous settings if you do not specify to edit the options.

   **Build job in Dataset/Member**
   Specify the fully qualified data set name (without quotes) where you want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, specify a member name. If the member does not exist, IMS Recovery Expert will create it.

   **Job Cards**
   Specify a valid job card for your site.

![Build Image Copy Job panel](image)

**Figure 162. Build Image Copy Job panel (BSY$IOBD)**
Setting image copy options

Set image copy options such as backup type, data set naming specifications, and tape allocation parameters.

Procedure
1. On the Build Image Copy Job panel, specify Y in the **Edit Image Copy Options** field and press Enter.

2. On the Image Copy Option panel (BSY$IMGO), specify information in the following fields:

   - **Update IC1 Specification** => Y (Yes/No)
   - **Update IC2 Specification** => Y (Yes/No)
   - **Backup Type** => 1 (1=IC1/2=IC2)
   - **Unit Type** => SYSALLDA (CART/SYSA/ELDA/etc.)
   - **Data Class** => (8 character class)
   - **Storage Class** => TSO (8 character class)
   - **Management Class** => TSOMC (8 character class)
   - **Number of Tasks** => 02 (1 - 99)
   - **Maximum Tapes/Volumes** => 005 (1 - 256)
   - **Temporary work data set allocation parameters**
     - **Work HLQ** => TEMPDSN
     - **Work Volumes** =>
     - **Tape specific parameters (only used if Unit Type is a Tape device):**
       - **Stack Copies on Tape** => Y (Yes/No)
       - **Tape Stack Limit** => 005 (1 - 999)
       - **Expiration date *or*** => (YYYYDDD/YYDDD)
       - **Retention period** => (4 digit number)

---

**Figure 163. Image Copy Options panel (BSY$IMGO)**

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Number of Tasks
Specify the number of subtasks that IMS Recovery Expert will use when creating the image copies.

Maximum Tapes/Volumes
This is an optional field. To override the z/OS default tape or disk volume limitation for each image copy data, specify the maximum number of tape or disk devices to use. Valid values are 1 to 256. If this field is not specified, then no volume count is specified when the image copy data sets are allocated.

Work HLQ
If the work volume(s) specified are SMS-managed, specify a high level qualifier for the restored data sets.

Work Volumes
If the Work HLQ is not SMS managed, then specify the number of volumes to use for temporary storage during the creation of the image copies. You must specify at least one work volume, and you can specify up to 6. Work volumes must be DASD devices. If the WORK HLQ is SMS managed, then Work Volumes is not required.

3. Specify information in the following fields if the unit type is a tape device:
   Stack Copies on Tape
   Specify whether you want to stack image copies on a single tape when possible.
   Tape Stack Limit
   If stacking image copies, specify the number of image copies that you want IMS Recovery Expert to stack on one tape before dismounting the tape.
   Expiration date *or* Retention period
   Specify either the tape expiration date in YYYYDDD format, or the tape retention period in number of days.

4. When you have finished specifying image copy options, press PF3 (END) to return to the Build Image Copy Job panel.

Specifying data set naming conventions
Use IMS Recovery Expert's Image Copy DSN Specification panels to construct data set names for the image copies.

About this task
The Image Copy DSN Specification panel allows you to build data set names using variables that are resolved at run time.

If you do not specify a data set mask using this panel, the DSN defaults to the following mask:
&UID..&SSID..&DB..&DDN..ICOPY and &UID..&SSID..&DB..&DDN..ICOPY2

Procedure
1. On the Image Copy Options panel, specify Y in either the Update IC1 Specification or Update IC2 Specification field. Press Enter.
2. On the Image Copy DSN Specification panel, specify information in one or more of the following fields:

**Qualifier code**
To include a qualifier, specify its number in the Qualifier code field and press Enter. The qualifier string is displayed in the Current dataset name qualifier string field. You can also specify the data set name or string directly in the string field.

**Free form literal**
After selecting the Use Freeform literal qualifier, you can specify an eight-character literal in this field. If you want the literal to be in its own substring, make sure to begin the literal with a period.

**Show DSN**
To view the string as it would be completed, specify Y in this field and press Enter.

**Current dataset name qualifier string**
This field displays the qualifier string as it was input. Valid qualifiers for the data set names that you can use on the Offload DSN Specification panel are listed on the bottom half of the panel and are:

- **Database**
  The database name of the object for which an image copy is being created.

- **DDN**
  The DD name of the object for which an image copy is being created.

- **Volser**
  The volume serial of the data set.

- **Subsystem ID**
  The IMS subsystem ID or group.

- **User ID**
  The TSO user ID of the job builder.

- **Time (HHMMSS)**
  The current time in the format shown.

- **Date (YYYYDDD)**
  The current date in the format shown.
Year (YYYY)
The year in the format shown.

Month (MM)
The month in the format shown.

Day (DD)
The day of the month in the format shown.

Julian Day (DDD)
The Julian day.

Hours (HH)
The current time in hours.

Minutes (MM)
The current time in minutes.

Seconds (SS)
The current time in seconds.

Timestamp
The current timestamp, in format Dyymmdd.Thhmmss.

Random Number
A random number in format Rnnnnnn.

GDG (+1).(+n)
If you are using GDG data sets, this variable appends (+n) to the GDG base. This must be the last qualifier code you specify for the data set name.

IC1/IC2
The backup type.

Job Name
The job name.

Step Name
The job step name.

Profile Creator
The profile creator ID.

Profile Name
The profile name.

Substring Qualifier
Select this option to specify one of the qualifiers and customize the substring. When you press Enter, the Substring Parameters panel is displayed.

Use freeform literal
After selecting this qualifier, you can specify an eight-character literal in the Free Form literal field. If you want the literal to be in its own substring, ensure that you begin the literal with a period. For example, if you specify 1 (Volser), 3 (Subsystem ID), then 14 (Timestamp), the data set name is displayed as:

volser.ssid.0070104.T151509

where volser and ssid resolve to values appropriate to your site.
Using the substring function

Use the Substring Qualifier function to customize substring parameters.

Procedure

1. On the Image Copy DSN Specification panel, select the Substring Qualifier function by specifying 27 as the Qualifier Code. Press Enter.

```
Substring Parameters
BSY$OSTR
Enter the Qualifier Code ==> 27
Enter Starting Position ==> 1
Enter Substring Length ==> 3
```

Figure 165. Substring Parameters panel (BSY$OSTR): Substring Qualifier Function

2. On the Substring Parameters panel, specify one of the available qualifier codes and specify the string's starting position and length.

Note: Timestamp, GDG, and IC1/IC2 qualifier codes are not available.
For example, qualifier code 6 generates a string of "&SSID", a four-character system name. However, if your site uses three-character SSIDs, option 27 can be used to specify the SSID and customize the string length as follows:

```
Substring Parameters
BSY$OSTR
Enter the Qualifier Code ==> 6
Enter Starting Position ==> 1
Enter Substring Length ==> 3
```

Figure 166. Substring Parameters panel (BSY$OSTR): Three-character SSIDs

3. Press Enter. On the Image Copy DSN Specification panel, the value of &SSID(1,3). appears in the Current data set name qualifier string field.

Validating the DSN name with an alphanumeric character or symbol

Numeric substrings (such as time and date) require the addition of an alphanumeric character or symbol in the beginning of the string.

Procedure

1. From the Image Copy DSN Specification panel select one of the following numeric substrings:
   - 8. Time (HHMMSS)
   - 9. Date (YYYYDDD)
   - 10. Year (YYYY)
   - 11. Month (MM)
   - 12. Day (DD)
   - 14. Hours (HH)
   - 15. Minutes (MM)
   - 16. Seconds (SS)
   - 17. Timestamp
   - 18. Random Number
2. On the Resulting DSN using current symbolic string panel, specify an alphanumeric character or symbol to prefix the numeric substring to make the data set node name valid.

3. Press Enter. The Image Copy DSN Specification panel reopens with the updated substring.

**Viewing a sample string**

You can view the resulting data set name that is generated using the substring function.

**Procedure**

1. From the Image Copy DSN Specification panel, specify Y in the **Show DSN** field and press Enter.

2. Review the sample data set name and make changes if necessary.
Chapter 13. Recovering an IMS system using the IMS Recovery Expert disaster recovery feature

In case of a disaster that renders an IMS system unusable, you can restore the system at a remote site if you have implemented the disaster recovery feature of IMS Recovery Expert.

IMS Recovery Expert allows you to configure your disaster recovery strategy to restore from IMS image copies or System Level Backups.

IMS relies on the logs and the RECON data sets to track data changes. The log tracks the actual changes, while the RECON keeps information about the archive and active log data sets known to IMS. The log data sets and RECON are essential to recovery.

In preparation for a potential disaster, you can use IMS Recovery Expert to build jobs in the disaster recovery PDS to recover these critical data sets. In addition, you can use IMS Recovery Expert to perform System Level Backups and ensure that the backups are offloaded to tape. The tapes containing the System Level Backup, the disaster recovery PDS, and all data sets required for recovery should be shipped to the recovery site.

To ensure an accurate recovery, you need to build a disaster recovery profile and ensure that the jobs produced from the profile are executed on a regular basis.

IMS Recovery Expert makes it easy to build a disaster recovery (DR) profile because you do not have to know the names of the logs and RECON data sets.

Disaster recovery profiles can be renamed, viewed, and deleted in the same way as job profiles.

Preparing for disaster recovery at the local site

Preparing to recover your system at a remote site begins with creating a disaster recovery profile at the local site, building the profile, executing the job on a regular basis, and ensuring that the necessary files are sent to the remote site.

About this task

To prepare to recover your system at a remote site:

Procedure

1. Create a disaster recovery profile.

   A disaster recovery profile must be created for the system or group. Within the profile, you define what recovery assets (archive logs, image copies, change accumulation data sets) will be used at the remote site. When the profile is built and run, IMS Recovery Expert takes the necessary actions to ensure that these data sets are available at the remote site, and that the RECON data sets reflect the available assets.

2. Build a disaster recovery profile.
After a disaster recovery profile is created, you must build it to generate the
disaster recovery preparation job. When this job is run, it generates control
cards and JCL into the recovery PDS. These cards and jobs are needed for a
successful recovery at the remote site.

**Tip:** When building the application recovery jobs, store the generated jobs in
the same partitioned data set where you will store the remainder of the disaster
recovery jobs. This will consolidate all your recovery jobs in one place.

3. Run the disaster recovery preparation job.
The JCL that is created from building the profile should be run on a regular
basis. Run this job periodically, such as after a System Level Backup has been
created and offloaded to tape for remote site recovery. If the DR method chosen
includes System Level Backups, then this job locates the most recent System
Level Backup that was offloaded to tape for remote site recovery; it copies the
IMS Recovery Expert repository into the disaster recovery PDS; and it generates
the JCL that is needed to restore IMS from the offloaded System Level Backup
at the remote site.

Depending on user options, disaster recovery assets such as archive logs, image
copy data sets, and change accumulation data sets are copied to tape to be sent
out to the remote site. A backup of the production RECON data set is created
and conditioned to reflect the availability of the different recovery assets at the
remote site. A copy of the conditioned RECON is also stored in the disaster
recovery PDS.

4. Ensure that necessary data sets are sent to the remote site.
The necessary recovery data sets must be placed on tape and shipped to the
remote site. These data sets include:
- The disaster recovery PDS. The disaster recovery preparation job generates
  the control cards and JCL needed for disaster recovery into an output PDS.
- System Level Backups that have been taken and offloaded by IMS Recovery
  Expert.
- Other recovery assets to be used for database recoveries at the remote site.
  These might include data sets that were copied by IMS Recovery Expert
  (archive logs; image copy data sets; change accumulation data sets).

A list of tapes that should be taken to the remote site is generated by the batch
disaster recovery preparation job.

### Preparing for disaster recovery at the remote site

You must prepare the remote z/OS environment before IMS Recovery Expert can
restore your IMS environment.

**About this task**

Complete the following steps at the remote site prior to running the IMS Recovery
Expert recovery steps:

**Procedure**

1. Ensure that IMS Recovery Expert is installed.
The IMS Recovery Expert load library, Parmlib, and ISPF environment must be
available at the remote site. The IMS Recovery Expert repository data sets will
be reloaded with data from the local site as part of the IMS Recovery Expert
recovery steps.

2. Ensure that you meet GENJCL PDS requirements.
If the remote site recover-to point is not a System Level Backup point, then application recoveries must be performed as part of the remote site recovery. If the GENJCL skeletal members are different than those at the local site, then you must create them and configure IMS Recovery Expert at the remote site to use the proper GENJCL PDS data sets.

3. Ensure that you meet DELDEF PDS requirements.
If the remote site recover-to point is not a System Level Backup point, then application recoveries must be performed as part of the remote site recovery. If the recovery utility being used at the remote site requires the data sets to be deleted and redefined, then the proper DELDEF PDS members must be available at the remote site. If the DELDEF PDS members are different than those at the local site, then they must be created and IMS Recovery Expert must be configured to use the proper DELDEF PDS data sets at the remote site.

Tip: It is recommended that you add the GENJCL and the DELDEF PDS data sets as additionally included data sets for the System Level Backup.

4. Review the following list of requirements to ensure that your remote z/OS system is configured to run your IMS system:
   a. IMS SVCs have been installed.
   b. IMS resource cleanup routines, DFSAFMD0 and DFSMRCL0, have been defined to z/OS.
   c. PROCs to start your IMS address spaces have been created and are included in a JES concatenated PROCLIB.
   d. RACF, or security, rules have been defined to allow IMS access to the IMS data sets.
   e. Any SMS definitions that are ACS routines have been added to support the IMS data sets.
   f. The necessary IMS data sets have been defined as being APF authorized.
   g. The IMS region controller has been defined to the program properties table (SCHEDxx).
   h. The IRLM SSID has been added to the system name table (IEFSSNxx).
   i. If IMS is configured with any VTAM® or APPC definitions, ensure that the corresponding definitions are the same and are available.

5. Review the following list of requirements to ensure that your z/OS system has been recovered to a point at the remote site that will allow the IMS Recovery Expert-generated recovery steps to complete successfully:
   a. The master catalog has been recovered at the remote site.
   b. DASD devices at the remote site have been initialized with the same volume serials as the ones used at the local site and they are online. They must also be of equal or greater size than the devices at the local site.

(Optional) Using system recovery profiles to recover groups of databases

System recovery profiles are associated with an SSID or Data Sharing group, and can be used during disaster recovery processing to recover groups of databases in separate recovery jobs. Each job can use different recovery options and can be run in any order.
About this task

If system recovery profiles are not defined for an IMS environment, then the recovery processes required at the remote site will be performed in a single job.

The first time you specify this option for an SSID, the Default System Recovery Profile is automatically created for that SSID. The following rules apply to the Default System Recovery Profile:

- The contents of the Default System Recovery profile (that is, database entries) cannot be modified. New entries cannot be added and the existing entries cannot be modified. Only the recovery options can be updated.
- The Default System Recovery profile cannot be deleted if there are any user defined System Recovery Profiles for the SSID. All user defined System Recovery Profiles for the SSID must first be deleted and then the Default System Recovery Profile can be deleted.
- The Default System Recovery profile cannot be renamed.

You can create up to a maximum of 999 System Recovery Profiles for an SSID. The following rules apply to user defined System Recovery Profiles:

- The name of a user defined System Recovery Profile cannot begin with DEFAULT SYSTEM RECOVERY.
- No duplicate entries are allowed across the user defined System Recovery Profiles. An object can be specified in only one profile. These duplicates must be eliminated before System Recovery Profiles can be used.
- The name of a System Recovery Profile cannot duplicate the name used for a Job Profile.

Procedure

1. Specify 0 (Administration) on the Option line of the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN) and press Enter.
2. On the Administration Menu panel (BSY$PNL0), specify 5 (Define System Recovery Profiles) and press Enter.

![Enter SSID for System Recovery Profiles to Display panel (BSY$SRLK)](image)

3. On the Enter SSID for System Recovery Profiles to Display panel, specify a subsystem ID in the SSID field. The SSID must be fully qualified and must already exist in the control file. Press Enter.
The System Recovery Profile Display panel displays the System Recovery Profiles associated with the specified SSID. The first time you specify this option for an SSID, the Default System Recovery Profile is automatically created and displayed. The following fields are displayed for each System Recovery Profile:

**Name**  The profile name.

**Creator**

The profile creator.

**SSID**  The IMS subsystem for which the profile was created.

**Updt**  Displays how users other than the profile creator can use the profile. U allows others to update the profile. V allows others to view but not update the profile. N prevents others from viewing or updating the profile.

**Description**  The user specified description of the profile.

**Last Updated**

**Userid**  The user ID of the last user to update the profile.

**Timestamp**  The date and time associated with the last update.

**Created**

**Userid**  The user ID of the user that created the profile.

**Timestamp**  The date and time that the profile was created.

4. From the System Recovery Profile Display panel you can perform the following functions:

   - On the **Cmd** line next to a system recovery profile, specify C to create, D to delete, R to rename, U to update, or V to view a system recovery profile. Press Enter.
   - To generate a report that shows all databases for the SSID and which profile will be used for recovery, specify REPORT on the **Command** line. If duplicate entries are found, then a message is issued and duplicate entries are identified at the top of the list with a > in the DUP column.
   - To check for duplicate entries within the set of system recovery profiles for the specified SSID, specify CHECK on the **Command** line. If duplicate entries are found, then a message is issued and only duplicate entries are displayed.

Figure 170. System Recovery Profile Display panel (BSY$SRPD)
Creating system recovery profiles

System recovery profiles are associated with an SSID or Data Sharing group, and can be used during disaster recovery processing to recover groups of databases in separate recovery jobs.

Procedure

1. To create a system recovery profile, on the System Recovery Profile Display panel (BSYSRSPD), specify C on the Cmd line and press Enter.

```
Enter New System Recovery Profile Data
Creator PDMONA
Profile Name Test123
Description Test123
IMS SSID IAA
Update Option U (Update, View only, No access)
```

*Figure 171. Enter New System Recovery Profile Data panel*

2. On the Enter New System Recovery Profile Data panel, specify information in the following fields to define the profile.

**Creator**
This field displays your user ID as the profile creator.

**Profile Name**
Specify a name for the profile. This name can be up to 30 characters.

**Description**
(Optional) Specify a description of the profile.

**IMS SSID**
This field displays the IMS subsystem for which this profile is being created.

**Update**
Specify U to allow others to update this profile. Specify V to allow others to view but not update this profile. Specify N to prevent others from viewing or updating the profile.

3. Press Enter.

```
Add Objects to the Profile
Add Databases  N  (Yes/No)
Add Indexes    N  (Yes/No)
Add Groups     N  (Yes/No)
```

*Figure 172. Add Objects to the Profile panel*

4. On the Add Objects to the Profile panel, specify whether to add databases, indexes, or groups to the profile.

**Add Databases**
Specify Y in this field to add databases. Use this option to include databases and to include all indexes for a database.
Add Indexes
Specify Y in this field to add indexes. Use this option to include indexes selectively.

Add Groups
Specify Y in this field to add groups. Use this option to include all the objects that are defined in a DBRC group.

5. Press Enter.

Figure 173. Update System Recovery Profile panel (BSY$SRPU)

BSY$SRPU V2R2 ------ Update System Recovery Profile ----- 2018/03/05 13:22:11
Option ==> Scroll ===> PAGE

Line Commands: A - Add  E - Explode  D - Delete

Creator: PDMONA  Name: PDMONATEST123  User: PDMONA
Share Option: U (Upd,View,No)  Description: PDMONATEST1
IMS System/Group: IAA  Update Recovery Options: N (Yes/No)
-------------------------------------------------------------------------------
Row 1 of 1
Wild Process Process Include/Group/DB Area/
Cmd Type Card Indexes Logical Exclude Name Part DDN
A Press Enter to Add Objects
******************************************************************************

6. The Update System Recovery Profile panel lists the objects that are currently in the profile. On the Cmd line, specify A to add a new object to the profile, D to delete a selected object, or E to explode a selected object (note that the E command cannot be used on EXCluded objects).

You can also specify the EXPLODE primary command to view a list of all objects in the profile.

The Update System Recovery Profile panel displays the following fields:

Creator
The creator of the profile.

Name
The name of the profile.

User
The user of the profile.

Share Option
Indicates how users other than the profile creator can use the profile. U(update) allows other users to update the profile. V(view) allows other users to view but not update the profile. N(no access) prevents other users from viewing or updating the profile.

Description
A description of the profile, if defined.

IMS System/Group
The IMS subsystem/group ID for which the profile was created.

Update Recovery Options
Specify Y in this field to update recovery options for this profile.

Type
The object type (database, index, or group).

Wild Card
If the object(s) in this detail line were selected using wild cards, then this column is set to Y. Otherwise, this column is set to N.
Process Indexes
This field is set to Y if all associated indexes are included in the profile. This value is initially set when objects are added to the profile, but you can update this field.

Process Logicals
This field is set to Y if all logically related objects should be included in the profile. This value is initially set when objects are added to the profile, but you can update this field.

Include/Exclude
Indicates whether the objects are included (INC) or excluded (EXC).

Group/DB Name
For Group type, this field contains the group name. For Database or Index type, the DBD name.

Area/Part
For fast path DBD, this column contains the area name or mask. For HALDB, this column contains the partition name or mask.

DDN
For HALDB, this column contains the dataset DDN. The DDN will be displayed only for excluded DDNs.

Last Updated
Lists the timestamp and the user ID of the user who added the DBD(s) to the profile.

Setting system recovery options
You can set system recovery options in each system recovery profile. You can also update system recovery options when you build the recovery job.

Procedure
1. On the Update System Recovery Profile panel, specify Y in the Update Recovery Options field and press Enter.

Figure 174. System Recovery Options panel (BSY$SRP2)
2. From the System Recovery Options panel, specify information in one or more of the following fields:

**Execute Recovery**
The only valid value in this field is Y. You must specify a type of recovery utility for recovery.

**Edit Options**
To update the **Execute Recovery** parameters, specify Y in this field to access the Recovery Utility Parameter Update panel. Specify N if you do not want to update these parameters.

**Execute Index Rebuild**
Specify Y (Yes) or N (No) to indicate whether you want to perform index rebuild. To edit the options for driving Full Function, Fast Path, and HALDB indexes and ILDS, open the Index Rebuild Utility Parameter Update panel.

**Edit Options**
If you want to update the **Execute Index Rebuild** parameters, specify Y in this field to access the Index Rebuild Utility Parameter Update panel. Specify N if you do not want to update these parameters.

**Create Post Recovery IC**
Specify Y (Yes) or N (No) to indicate whether you want to create image copies for recovered databases.

**Edit Options**
If you want to update the **Create Post Recovery IC** utility parameters, specify Y in this field to access the Post Recovery IC Utility Parameter Update panel. Specify N if you do not want to update these parameters.

**Recovery Type**
Specify the type of recovery to perform at the disaster recovery site when the recovery job is executed. There are three possible types of recoveries that can be performed at the disaster recovery site:

**PITR**
This is the default recovery method performed at the disaster recovery site when recovering application objects. If using the IMS Database Recovery Facility (DRF) for recovery, the DRF command RCVTIME(timestamp,PITR) is generated and used to recover all objects in this profile. The timestamp specified is determined by the disaster recovery preparation job by inspecting the available archive logs and determining the most current timestamp that can be used for recovery.

**LASTPICA**
This option requires the use of DRF. The command RCVTYPE(LASTPITCA) is generated to recover all objects in the profile using the last point in time changed accumulation (PITCA) recovery point and the image copy prior to this PITCA. When this method is selected, all the objects included in the System Recovery Profile are change accumulation groups. If anything other than change accumulation groups are specified, an error message is issued and the Recovery Type is set to 1 for PITR. When the disaster recovery preparation job
executes, it performs additional validation to ensure objects with LASTPITCA are recoverable. The following verification is done:

- Verify that only change accumulation groups are included in the profile. If not, then an error message is issued and processing terminates.
- Verify that for each change accumulation group in the profile, a PITCA exists. If not, then an error message is issued and processing terminates.
- Find the last PITCA for each change accumulation group in the profile and ensure that the time between the oldest and newest is within the range of hours specified in the BSY#PARM parameter DR_LASTPITCA_RANGE. If not, a warning message is issued but processing continues.
- Find the newest PITCA for all of the change accumulation groups and ensure that it is not older than the hours specified in the BSY#PARM parameter DR_LASTPITCA_AGE. If it is, a warning message is issued but processing continues.
- Once all verification is completed, the stop time of the last (that is, newest PITCA) across all of the groups is saved and used as the coordinated recovery time.

If the DR profile indicates an external Db2 subsystem, then this coordinated recovery time is used to provide a Db2 RBA and LRSN that can be used to recover the associated Db2 objects.

For each System Recovery Profile that specifies LASTPITCA as the recovery type, a new member in the DR PDS is created with the name pattern of \textit{ssidTnnn} where \textit{ssid} is the SSID of the IMS system being processed and \textit{nnn} is a number from 000-998 matching the \textit{ssid#nnn} member in the DR PDS created to perform application recovery for the profile. This member contains detailed information for LASTPITCA processing as well as the coordinated recovery time and Db2 RBA/LRSN.

**LASTIC**

This option requires the use of DRF. The command RCVTYPE(LASTIC) is generated to recover all objects in the profile using the last batch image copy. No forward log processing is performed. When the disaster recovery preparation job executes, additional validation is performed to ensure objects with LASTIC are recoverable. The following verification is done:

- Verify that every object to be recovered has a batch image copy. If not, an error message is issued and the job terminates.
- Find the last batch IC for each object in the profile and ensure that the time between the oldest and newest is within the range of hours specified in the BSY#PARM parameter DR_LASTIC_RANGE. If not, a warning message is issued but processing continues.
• Find the last batch IC and ensure that it is not older than the hours specified in the BSY#PARM parameter DR_LASTIC_AGE. If it is, a warning message is issued but processing continues.

INITONLY
This option allows the user to set the System Recovery Profile so that the objects in the profile are initialized instead of recovered. This option is only valid for a DR System Recovery Profile. It is not valid for local recovery. Specifying INITONLY in the Recovery Type field will change certain labels in the Recovery Utility Options panel. Specifying INITONLY will also require the INIT GENJCL member name to be specified. If left unspecified, Recovery Type will reset to PITR and the message BSY956E will be issued. For more information, see "Setting recovery utility options."

When INITONLY is specified, the following processes are available for recovery:
• IDCAMS delete / define
• Index Rebuild
• Post Recovery Image Copy

Update Spawned Job Options
Specify Y (Yes) to specify Spawned Job Options, or N (No) to use the default method for generating the jobcard and/or jobname. For more information, see “Setting spawned job options” on page 188.

Action on Warnings
Specify how you want to process warnings that are issued during recovery. Specify A to abort, C to continue, or W to issue a WTOR.

GENJCL Defaults Member
Specify a member to be used as the GENJCL defaults when GENJCL is executed. If specified, this member will be included in the DEFAULTS() keyword.

Datasets for GENJCL
Specify up to 5 data sets for GENJCL skeletons. The data sets are concatenated in this order. These data sets are used by the recovery utility to restore an image copy, apply logs, or both; the index rebuild utility; the change accumulation utility; or a post-recovery image copy and pointer checker utility.

Setting recovery utility options
From the Recovery Utility Options panel you can update the IMS Recovery Expert recovery options that are used by the Recovery Utility.

Procedure
2. On the Recovery Utility Options panel, specify information in one or more of the following fields:

**GENJCL member name**
Specify a skeleton member name to use for recovery JCL generation.

*Note:* If you have selected INITONLY by specifying 4 in the Recovery Type field on the System Recovery Options panel, this field will be changed to RECOV GENJCL member name.

**INIT GENJCL member name**
This field will appear only if you have selected INITONLY by specifying 4 in the Recovery Type field on the System Recovery Options panel. Specifying information in this field is required if you have selected INITONLY. Error BSY957 will be displayed if it is left unspecified.

The default for the INIT GENJCL member name field can be specified in the BSY#PARM or BSY#SSID SAMPLIB members using:
```
GENJCL_USER_INITO_MEM DEMOINIT -\* Skeleton member name for *\n-\* initonly with USER utility*\n```

**Delete/Define PDS DSN**
Specify the name of a PDS data set that contains IDCAMS statements. These statements are used to delete and redefine the data sets being recovered before running the recovery utility.

**Include indexes in recovery list**
Specify whether you want indexes that are associated with the databases being recovered to be included in the recovery list for the recovery utility. If you specify Y, then a GENJCL.USER GENTYPE=DATASET GENPHAS=SYSIN will be made for each index. If you specify N, then these calls are not made. For example, if you are using the IMS Database Recovery Facility for recovery, it has the ability to perform integrated index rebuild of associated indexes. To do this, the indexes are not included in the recovery list but instead, the associated IB() control statements need to be specified to drive index rebuild.

**Datasets for GENJCL**
Displays the concatenation of data sets for GENJCL member selection.
Setting index rebuild utility options
From the Index Rebuild Utility Options panel you can update the recovery options that are used by the Index Rebuild utility.

Procedure

Procedure
2. On the Application Recovery Options panel, specify one or more of the index rebuild options:

   FF GENJCL member name
   Specify the skeleton member name to be used for the index rebuild utility when rebuilding indexes associated with full function and HALDB indexes. If the Use FF for HALDB option is set to Y, then this member is also used for HALDB ILDS and PINDEX processing.

   Use FF for HALDB
   Specify Y if you want to use the FF GENJCL skeleton member for processing HALDB ILDS and PINDEX; specify N if you do not want to do this.

   HALDB GENJCL member name
   Specify the skeleton member name to be used for processing HALDB ILDS or PINDEX. If the Use FF for HALDB option is set to Y, then you must leave this field blank.

   FP GENJCL member name
   Specify the skeleton member name to be used for processing Fast Path secondary indexes. If you do not want FP secondary indexes processed, leave this field blank.

   Rebuild even if recoverable
   Specify whether you always want indexes rebuilt after the recovery of the target database. Specify Y to always rebuild indexes. Specify N if you want indexes to be rebuilt only if they cannot be recovered.

   Rebuild HALDB on recover to current
   Specify whether you want the HALDB ILDS and PINDEX rebuilt even
when the partition is being recovered to current. Usually, the ILDS and PINDEX do not need to be rebuilt in this situation. Specify Y to rebuild the HALDB ILDS and PINDEX on recovery to current. Specify N to rebuild the HALDB ILDS and PINDEX only when indicated.

Delete/Define PDS DSN
Specify the name of a PDS data set that contains IDCAMS statements. These statements are used to delete and redefine the data sets being recovered before running the recovery utility.

Datasets for GENJCL
Displays the concatenation of data sets for GENJCL member selection.

Setting post recovery image copy options
From the Image Copy Utility Options panel you can update recovery options used by the Image Copy utility.

Procedure
1. On the System Recovery Options panel, specify Y in the Create Post Recovery IC Edit Options field.

2. From the Image Copy Utility Options panel, specify one or more of the following image copy options:

   GENJCL member name
   Specify a skeleton member name to use for the post recovery IC JCL generation.

   Datasets for GENJCL
   Displays the concatenation of data sets for GENJCL member selection.

Setting spawned job options
If you specify Y in the Update Spawned Job Options field, you will be taken to the Spawned Job Options panel.

By default, the names of created jobs are the associated TSO userid plus a 1 character alphanumeric suffix (A-Z or 0-9) that is incremented with each new job. The jobcard is dynamically created using internal control blocks within the IMS Recovery Expert job. Use the Spawned Job Options panel to override the default methods for jobname and jobcard generation.

On the Spawned Job Options panel, you can specify the following information:
Jobname Mask

Allows the user to control the jobname used for any jobs spawned during the recovery process. This field accepts the following data:

- **Literal**: Any string valid for a jobname from 1-8 characters in length.
- **&USER**: The TSO userid of the submitter. If specified, minimal validation is done on the mask.
- **&SSID**: The IMS subsystem or group id associated with the job. If specified, minimal validation is done on the mask.
- **&#**: Substitute a single characters (A-Z) in the jobname. Can only be used once in the mask.
- **&%**: Substitute a single character (0-9) in the jobname. Can only be used once in the mask.

**Note:**

- &# and &% are mutually exclusive
- All symbols must be terminated with a period (.)

Job Cards

Allows the user to specify the a jobcard used for any jobs spawned during the recovery process. If the first line, the jobname portion of the jobcard, is left blank then the jobname is created dynamically for each spawned job using either the default method or value from the **Jobname Mask** field, otherwise the jobname will take the value from this line.

**Note:** Limited validation is done on these fields, so for the most part the specified jobcard will be used as is.

Press PF3 when you’ve finished, or enter CAN on the **Option** line to cancel.

---

**DR preparation job history display**

If the DR_HISTORY_RETENTION parameter in the BSY#PARM member is set to a value greater than 0, then each time a DR preparation job executes, it will save history information in the reports repository associated with the execution. To view this information, specify H next to a disaster recovery profile and press Enter. If the
DR preparation job has been executed for DR Profile and the execution time is less than the retention value, the DR History Display panel will be displayed. This panel displays the following fields for each DR preparation job execution:

**PIT Timestamp**
- The recovery timestamp that was determined for use at the DR site based on available archived logs when the job executed.

**Execution Time**
- The execution time for this DR preparation job.

**RECON1 Dataset Name**
- The name of the conditioned RECON1 data set processed by the DR preparation job.

**DR PDS Name**
- The name of the DR PDS populated by the DR preparation job.

### Creating disaster recovery profiles

To use the IMS Recovery Expert disaster recovery feature, you must build a disaster recovery profile and ensure that the job produced from the profile is run on a regular basis.

#### About this task

The Archive Log options, Change Accumulation options, Image copy options, and Application Recovery options should only be customized if it is a Point-In-Time recovery. If you select to perform a recovery to backup, then these options will no longer be updatable since no recovery is needed after restoring the System Level Backup.

#### Procedure

1. Specify 1 (System Operations) on the **Option** line of the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN) and press Enter.

```
BSY$SYM V2R2                      System Operations Menu  -------------------
Option ====>

2018/09/06  13:49:43
User: POMONA - BSY

1. IMS System Analysis and Configuration
2. System Backup Profiles
3. System Level Backup Operations
4. Disaster Recovery Profiles
```

*Figure 179. System Operations Menu panel (BSY$SYM)*

2. On the System Operations Menu panel, specify 4 (Disaster Recovery Profiles) on the **Option** line, and press Enter.
3. On the Enter Disaster Recovery Profile Selection Criteria panel, specify a profile name, a creator name or mask, or a system ID name in the **Profile Like**, **Creator Like**, and **SSID Like** fields. You can also use wildcard characters such as an asterisk (*) in any or all of these fields. Press Enter.

![Figure 180. Enter Disaster Recovery Profile Selection Criteria panel (BSY$XDRK)](image)

4. To create a new profile, specify C on the **Cmd** line and press Enter.

![Figure 182. Enter New Disaster Recovery Profile Data panel (BSY$DPRC)](image)

5. On the Enter New Disaster Recovery Profile Data panel, specify information in the following fields.

**Creator**

This field displays your user ID as the profile creator.

**Profile Name**

Specify a name for the profile. This name can be up to 30 characters.
Description
(Optional) Specify descriptive information for the profile.

IMS SSID
Specify the IMS SSID or an IMS Recovery Expert group ID for the profile. If you specify an ID of an IMS SSID that is associated with an IMS Recovery Expert group, IMS Recovery Expert will automatically replace the IMS SSID with the group name. Specify ? for a list of all IMS systems registered in IMS Recovery Expert.

Update option
This option controls how other users can use this recovery profile.

• Specify U to allow other users to update the profile.
• Specify V to allow other users to view but not update the profile.
• Specify N to prevent other users from viewing or updating the profile.

6. When you have finished specifying information on the Enter New Disaster Recovery Profile Data panel, press Enter.

7. On the Update Disaster Recovery Profile panel, specify information for the following disaster recovery options:

DR Method
Specify the type of recovery to use at the disaster recovery site. Specify S to have IMS Recovery Expert generate JCL to restore an SLB as the starting point for remote site recovery. Specify I if you want IMS Recovery Expert to generate JCL to recover IMS databases using image copies and any change accums and archive logs, if specified. An image copy disaster recovery method will not use an SLB in recovery at the remote site.

DR Site Recovery Point
Specify your Recovery Point Objective at the disaster recovery site.
Specify B if you want IMS Recovery Expert to generate JCL to recover to the last System Level Backup. Specify P if you want IMS Recovery Expert to process and generate JCL for recovery to the end of existing archive logs. This option is set to P if an image copy disaster recovery method is specified.

**SLB Used for DR**
Specify which System Level Backups will be used as the base for disaster recovery. Specify L for local site backups or R for recovery site backups. This option is not applicable if an image copy disaster recovery method is specified.

**Process Archive Logs for DR**
Specify N if you do not want to process archive logs, specify Y if you want to process archive logs, or specify U to go to the archive log options panel. This option is set to Y if an External Subsystem is specified.

**Process Change Accums for DR**
Specify N if you do not want to process Change Accumulation data sets, specify Y if you want to process Change Accumulation data sets, or specify U to go to the Change Accumulation options panel.

**Process Image Copies for DR**
Specify N if you do not want to process Image Copy data sets, specify Y if you want to process Image Copy data sets, or specify U to go to the Image Copy options panel. This option is set to Y if an image copy disaster recovery method is specified.

**Customize RECON data set name**
Specify if you want to update the name mask for the disaster recovery site RECON data set names. Specify Y if you want to update RECON data set names, or N if you do not want to update them.

**Run Health Check**
Specify whether you want to execute the Health Check function against the conditioned RECON data sets after the DR preparation job has completed the conditioning. Specify Y if you want to execute Health Check, or N if you do not want to execute Health Check. Specify U to view and update the options to use when performing Health Check. For a description of the options and their values, see Chapter 14, ‘Running a Health Check,” on page 313.

**Update DR Recovery Options**
Specify if you want to update the options for application recovery at the disaster recovery site. Specify Y to go to the recovery options panel, or specify N to use the existing recovery options.

**Use System Recovery Profiles**
Specify Y if you want to use system recovery profiles at the disaster recovery site for performing database recovery. If you specify Y and no system recovery profiles exist other than the default System recovery profile, then this field will default to N and you will receive an error message. For more information about specifying system recovery profiles, see “(Optional) Using system recovery profiles to recover groups of databases” on page 277.

**Use Multijob for DR Restore**
Using multiple jobs reduces the time it takes to perform restore processes. Specify Y if you want restore processes to use multiple jobs, U
to update the options, or \texttt{N} to use a single job. If you specify \texttt{Y} or \texttt{U}, the Multijob Options panel will open and you can specify Multijob options to be used for the restore job at the disaster recovery site. For more information about specifying these options, see “Editing multijob options for restore” on page 257.

**Generate DBDS Delete/Define**
Specify whether you want the DR preparation job to create IDCAMS delete/define cards for each DBDS defined to IMS when it executes. If you specify \texttt{N}, then no cards are created. If you specify \texttt{Y}, then the cards are created based on the Specify Delete/Define Options panel (BSY$DPDD). To access the Specify Delete/Define Options panel, specify \texttt{U} for this option and press Enter. For more information about specifying these options, see “Specifying the IDCAMS Delete/Define Options” on page 303.

**Mark DBDS Recovery Needed**
The DR preparation job has the ability to mark each DBDS as recovery needed, and each AREA as unavailable in the conditioned RECON data sets to ensure that they cannot be accessed prior to recovery. If you want this process performed, specify \texttt{Y}. If you do not want this process performed, specify \texttt{N}. This option is only valid when the DR Method is set to \texttt{Image Copy}.

**Dump RECON to DR PDS**
Specify whether you want the DR preparation job to copy the conditioned RECON data set into the disaster recovery PDS. When the conditioned RECON is dumped, jobs are built to redefine and reload the RECON data sets from this member. Specify \texttt{Y} if you want the conditioned RECON dumped to the disaster recovery PDS. If you have another method for sending the RECON to the DR site, specify \texttt{N} to bypass this process.

**Save DR Prep Job in DR PDS**
Specify whether you want a copy of the DR in DR PDS preparation job to be saved in the DR PDS so that you can perform DR preparation and RECON conditioning at the DR site. This can be set to \texttt{Y} only when the options for processing archive logs, change accums, and image copies do not indicate that these resources are being copied.

**External Subsystem**
Specify a subsystem for coordinated disaster recovery. Both subsystems will be recovered to the most recent common timestamp available.

8. When you finish specifying the disaster recovery profile fields, press the PF3 key. The Update Disaster Recovery Profile panel closes. The Disaster Recovery Profile Display panel opens. A message is issued that your profile was created.

**Updating Archive Log options**
The Archive Log options are used if you are processing the archive logs during disaster recovery.

**Procedure**
1. On the Update Disaster Recovery Profile panel (BSY$DPRM), specify \texttt{U} in the Process Archive Logs for DR field options and press Enter.
2. On the Edit DR Archive Options panel, specify information for the following archive options:

**Archive Logs Used at DR Site**
Specify which archive logs are to be used at the DR site. Specify C to have IMS Recovery Expert copy your local archive logs and register them in the DR RECON data set. Specify Y if you want IMS Recovery Expert to use your copy of the primary archive logs. Specify 2 if you are using dual logging and you want IMS Recovery Expert to use your copy of the secondary archive logs at DR.

**Use RLDS datasets at DR Site**
Specify if you want IMS to use RLDS data sets for recovery at the DR site.

**Copy local archive logs**
If you specified to copy the local archive logs, then this field tells IMS Recovery Expert which logs to copy. Specify 1 to copy only the primary archive log. Specify 2 to copy only the secondary archive log. Specify B to copy both the primary and secondary archive logs. Specify C to create two copies from the primary log. IMS Recovery Expert will create recovery site primary and recovery site secondary logs from the local primary archive log.

**Number of archive copy tasks**
Specify how many tasks you want IMS Recovery Expert to assign to the archive log copy process. Specify a number between 1 and 32.

**Force an archive log switch**
This field allows you to force IMS Recovery Expert to issue a /SWI OLRDS command prior to determining what archive logs exist. The current active online log is archived when this field is set to Y. For a data sharing group, each member's online logs will be switched and archived.
Force checkpoint before archiving
Specify Y to force a system checkpoint before archiving the logs. This will cause the IMS restart point to be included on the last archive log to be included for disaster recovery.

Archive logs needed at DR site
Specify the number of days and/or hours of archive logs that are needed at disaster recovery. This value is computed from the time the job is built at the local site. The recommended value for this field is (the longest duration between image copies at your site)*2. For example, if weekly image copies are the longest duration, then specify 14 in this field (7*2).

Unit for copying archive logs
Specify the tape or DASD unit device to be used to allocate data sets to be created when copying archive logs.

Edit allocation parameters
Specify Y in this field to edit to the archive log copy allocation parameter panel.

Number of qualifiers to replace
Specify how many qualifiers of the existing archive log data set name you want to replace with the disaster recovery archive log prefix.

DR Archive Prefix 1 and 2
Specify the archive log prefix 1 and 2 that the copied archive logs will have at the disaster recovery site. You can include &SSID in the prefix to have IMS Recovery Expert replace it with the IMS system name.

Copy archives to DASD at DR site
Indicate if you want IMS Recovery Expert to generate JCL to copy the archive logs from tape to DASD at the remote site as part of the remote site recovery process. Specify N if you do not want IMS Recovery Expert to generate JCL to copy any of the archive logs to DASD. Specify Y if you want IMS Recovery Expert to generate JCL to copy the archive logs from tape to DASD at the disaster recovery site. Specify U to edit the Update User Options for copying the archive logs to DASD panel.

3. To configure more options, specify Y in the Edit allocation parameters field, or specify U in the Copy archives to DASD at the DR site field.
   a. If you specify Y in the Edit allocation parameters field and press Enter, the Local Archive copy allocation panel opens:
Specify information for the following local archive copy allocation options:

**SMS Data Class**
Specify what SMS data class to use for the allocation of the copied local archive logs.

**SMS Storage Class**
Specify what SMS storage class to use for the allocation of the copied local archive logs.

**SMS Management Class**
Specify what SMS management class to use for the allocation of the copied local archive logs.

**Expiration Date *or***
If you specified to use a tape unit for the copied archive logs, specify an expiration date for the data sets. You must specify either an Expiration date or a Retention Period.

**Retention Period**
If you specified to use a tape unit for the copied archive logs, specify a retention period for the data sets. You must specify either an Expiration date or a Retention Period.

b. If you specify U for Copy archives to DASD at DR site and press Enter, the DR copy to DASD allocation panel opens.

Specify information for the following options for copying archives to DASD at the disaster recovery site:

---

**Figure 185. Local Archive copy allocation panel (BSY$DPR4)**

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**Figure 186. DR copy to DASD allocation panel (BSY$DPR5)**

---

Chapter 13. Recovering an IMS system using the IMS Recovery Expert disaster recovery feature
Number of days/hours to copy
Specify how many days and hours of archive logs you want to copy from tape to DASD at the disaster recovery site.

Unit for Copying archives to DASD
Specify the unit to be used for copying archive logs from tape to DASD at the disaster recovery site.

SMS Data Class
Specify what SMS data class to use when allocating archives on DASD at the disaster recovery site.

SMS Storage Class
Specify what SMS storage class to use when allocating archives on DASD at the disaster recovery site.

SMS Management Class
Specify what SMS management class to use when allocating archives on DASD at the disaster recovery site.

Updating Change Accumulation options
The Change Accumulation options are used during disaster recovery when you are processing Change Accumulation data sets.

Procedure

2. On the Edit DR Change Accum Options panel, specify the following information:

   Change Accums Used at DR
   Specify which Change Accum data sets to use at the DR site. Specify C if you want IMS Recovery Expert to copy local CA data sets and register the copied data sets in the DR RECON. Specify N if you want IMS Recovery Expert to invalidate all registered CA data sets in the DR RECON. Specify Y if you do not want IMS Recovery Expert to change any registered CA data sets in the DR RECON.

   Number of Change Accum copy tasks
   Specify how many tasks you want IMS Recovery Expert to assign to the change accumulation copy process. Specify a number between 1 and 32.
Change Accums needed at DR site
Specify the number of days and/or hours of change accumulation data that are needed at disaster recovery.

Unit for Copying Change Accums
Specify the tape or DASD unit device to be used to allocate data sets to be created when copying change accumulation data sets.

Edit allocation parameters
Specify Y in this field to edit the change accumulation copy allocation parameter panel.

Number of qualifiers to replace
Specify how many qualifiers of the existing change accumulation data set name you want to replace with the DR Change Accum Prefix.

DR Change Accum Prefix
Specify the change accumulation data sets prefix that the copied change accumulation data sets will have at the disaster recovery site. You can include &SSID in the prefix to have IMS Recovery Expert replace it with the IMS system name.

3. If you specify Y for Edit allocation parameters, the Local CA copy allocation panel opens:

![Local CA copy allocation panel (BSY$DPR6)](image)

Figure 188. Local CA copy allocation panel (BSY$DPR6)

4. Specify information for the following Local CA copy allocation options:

**SMS Data Class**
Specify what SMS data class to use for the allocation of the copied local Change Accum data sets.

**SMS Storage Class**
Specify what SMS storage class to use for the allocation of the copied local Change Accum data sets.

**SMS Management Class**
Specify what SMS management class to use for the allocation of the copied local Change Accum data sets.

**Expiration Date**
If you specified to use a tape unit for the copied CA data sets, specify an expiration date for the data sets. You must specify either an Expiration date or a Retention Period.
Retention Period
If you specified to use a tape unit for the copied CA data sets, specify a retention period for the data sets. You must specify either an Expiration date or a Retention Period.

Updating Image Copy options
The Image Copy Options are used if you choose to process Image Copy data sets during disaster recovery processing.

Procedure

2. On the Edit DR Image Copy Options panel, specify information for the following Image Copy options:

   **Image Copies Used at DR**
   Specify which Image Copy data sets to use at the DR site. Specify C if you want IMS Recovery Expert to copy local IC data sets and register the copied data sets in the DR RECON. Specify Y if you want IMS Recovery Expert to leave all IC data sets in the DR RECON. Specify 2 if you want IMS Recovery Expert to leave all IC2 data sets and invalidate all IC1 data sets in the DR RECON. Specify N if you want IMS Recovery Expert to invalidate all registered IC data sets in the DR RECON.

   **Number of Image Copy copy tasks**
   Specify how many tasks you want IMS Recovery Expert to assign to the Image Copy-copy process. Specify a number between 1 and 32.

   **Image Copies needed at DR site**
   Specify the number of days and/or hours of image copy data sets that are needed at disaster recovery.

   **Unit for Copying Image Copies**
   Specify the tape or DASD unit device to be used to allocate data sets to be created when copying image copy data sets.

   **Edit allocation parameters**
   Specify Y to edit the Image Copy-copy allocation parameter panel.
Number of qualifiers to replace
Specify how many qualifiers of the existing Image Copy data sets name you want to replace with the DR Image Copy prefix.

DR Image Copy Prefix
Specify the Image Copy data sets prefix that the copied Image Copy data sets will have at the disaster recovery site. You can include &SSID in the prefix to have IMS Recovery Expert replace it with the IMS subsystem name.

a. If you specify Y in the Edit allocation parameters field, the Local IC copy allocation panel opens:

```
BSY$DPR7        Local IC copy allocation        2018/11/11 15:42:17.46
Option ==>---------------------------------------------------------------
Creator: PDMONA        Name: TEST2           User: PDMONA
Share Option: U (Upd,View,No)  Description: IMS System/Group: EMC
------------------------------------------------------------------------
Parameters for Local IC copy:
  SMS Data Class ==> 
  SMS Storage Class ==> 
  SMS Management Class ==> 

Tape specific parameters:
  Expiration Date *or*  ==> (YYYYDDD/YYDDD)
  Retention Period  ==> 0100 (4 digit number)
```

Figure 190. Local IC copy allocation panel (BSY$DPR7)

b. Specify the following Local IC copy allocation options:

**SMS Data Class**
Specify what SMS data class to use for the allocation of the copied local Image Copy data sets.

**SMS Storage Class**
Specify what SMS storage class to use for the allocation of the copied local Image Copy data sets.

**SMS Management Class**
Specify what SMS management class to use for the allocation of the copied local Image Copy data sets.

**Expiration Date**
If you specified to use a tape unit for the copied IC data sets, specify an expiration date for the data sets. You must specify either an Expiration date or a Retention Period.

**Retention Period**
If you specified to use a tape unit for the copied IC data sets, specify a retention period for the data sets. You must specify either an Expiration date or a Retention Period.

Updating DR Recovery options
Update DR Recovery options from the Update Disaster Recovery Profile panel.

If you choose to update the DR Recovery options, see the topic Setting application recovery options.
Note: The DR Application Profile settings are for utilities to be used at the remote site.

Customizing RECON data set names

You can update the name mask for the disaster recovery site RECON data set names.

Procedure

1. On the Update Disaster Recovery Profile panel (BSY$DPRM), specify Y in the Customized RECON data set name field. Press Enter.

2. On the Customize Conditioned RECON name panel, in the DR Prep create conditioned RECON data sets field, specify whether you want the DR preparation job to create the RECON data sets that will be conditioned or not. If you specify Y, then when the DR preparation job executes, it will make a copy of the production RECON data sets and use them for performing RECON conditioning. If you specify N, then you must create a copy of the RECON data sets for conditioning, and specify their names in the RECON Copy 1 and RECON Copy 2 fields.

   When the DR preparation job will copy the RECON data sets to be conditioned, you can use the variables below as part of the data set name. If you are making your own copy of the RECON data sets for conditioning, you must specify the fully qualified data set name.

   &RECON - The production RECON name
   &USER - The user associated with the DR preparation job
   &SSID - The subsystem name
   &DATE - Current date in format Dyyddd
   &TIME - Current time in format Thhmmss

   Figure 191. Customize Conditioned RECON name panel (BSY$DPRR)

3. In the RECON Copy 1 and RECON Copy 2 fields, customize the names of the two copies of the RECON data sets that are used for RECON conditioning. You can use the following symbols as part of the name mask:

   • &RECON: The production RECON name
   • &USER: The user associated with the DR preparation job
   • &SSID: The subsystem name
   • &DATE: The current date in format yyddd
Specifying the IDCAMS Delete/Define Options

The IDCAMS Delete/Define options are used when the DR preparation job creates IDCAMS delete/define cards for each DBDS defined to IMS.

Procedure

1. On the Update Disaster Recovery Profile panel (BSY$DPRM), specify U in the Generate DBDS Delete/Define field and press Enter.

   BSY$DPRM V2R2 --- Specify Delete/Define Options ---- 2018/06/15 13:53:33
   Option ==>  

   Creator: TSMXD     Name: IDA DR     User: TSMXDA  
   Share Option: U (Upd,View,No) Description: IMS System/Group: IDA

   DBDS Delete/Define Option ==> P (None/Global/PDS)
   SMS/VOLSER Option ==> 4 (1=Gen SMS and/or VOLSER)
   (2=Gen SMS only)
   (3=Gen SMS and VOL(*,*..))
   (4=Do not Gen SMS or VOL)

   If DBDS Delete/Define Option is PDS:
   PDS Name ==> TSMXD.BSY.IDA.DR.DELEDF.PDS
   Delete/Define PDS Option ==> 2 (1=Override in recovery options)
   (2=Pass to recovery JCL)
   (3=Create PDS only)

2. On the Specify Delete/Define Options panel (BSY$DPDD), specify the following options:

   DBDS Delete/Define Option
   Specify N to indicate that no IDCAMS delete/define cards should be created. Specify G to indicate that global IDCAMS delete/define cards should be created in the DR PDS in members ssidDBDL (delete cards) and ssidDBDF (define cards). Specify P to create a PDS that contains the delete/define cards where a member is created by DD name.

   SMS/VOLSER Option
   Specify the type of SMS and/or VOLSER information you want created for each define card. Specify 1 if you want to replicate the SMS/VOLSER information from the existing data set. Specify 2 if you want only the SMS information created; if this option is selected and the data set is not SMS managed, then the VOLSER information will be created. Specify 3 if you want the SMS information created, but instead of actual VOLSERs, a VOLSER(*,*...) parameter will be created. Specify 4 if you do not want SMS or VOLSER information created.

   PDS Name
   If the DBDS Delete/Define Option is set to P, then specify the data set name of the PDS that will be created to contain the delete/define cards. Specify the fully qualified data set name with no quotes. If this exists when the DR preparation job runs, it will be deleted and reallocated.

   Delete/Define PDS Option
   If the DBDS Delete/Define Option is set to P, then specify what you want done with the IDCAMS delete/define PDS when the recovery jobs are executed at the DR site. Specify 1 if you want this PDS to be
used in the recovery and index rebuild options as the IDCAMS delete/define PDS. If a data set is already specified, this data set will override the specification. Specify 2 if you want this data set to be passed to the JCL skeletons that are created at recovery time for the recovery and index rebuild jobs. Specify 3 if you only want the data set created.

3. When you are finished, press Enter.

Building disaster recovery jobs

After you define a disaster recovery profile, you must build from the profile a series of jobs that can be used to restore an IMS system at the remote site.

Procedure

1. On the Disaster Recovery Profile Display panel, specify B on the Cmd line next to the profile you want to build, and press Enter.

2. On the Build Job panel, specify information in the following fields:

   **Edit Generated Job**
   
   Specify Y if you want to edit the job after it has been generated. The job is displayed in an edit session after it has been generated. If you specify N, the Disaster Recovery Profile Display panel reopens after job generation.

   **Build job in Dataset**
   
   Specify the fully qualified data set name (without quotes) where you want to save the generated job. This data set must already exist.

   **Member**
   
   If the data set to hold the generated job is a PDS, then specify a member name for the job output. If the member does not exist, then IMS Recovery Expert will create it.

   **Job Cards**
   
   Specify a valid job card for your site.

3. When you are finished, press Enter.
On the Build Job panel, specify the recovery PDS data set name to hold the utility job that will be generated by the job. You must also specify a valid job card to be included in the disaster recovery jobs.

4. Press Enter to process the job.

**Contents of the disaster recovery PDS**

When the disaster recovery job that was created is built and submitted, the following members are generated and displayed in the specified disaster recovery PDS.

<table>
<thead>
<tr>
<th>Member name</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>ssid#DRC</td>
<td>If the DR profile indicated that the DR preparation job should be saved in the DR PDS, then this job contains a copy of the DR preparation job that was used to create the members of the DR PDS. If your DR environment is set up to use the archive logs, image copies, and change accumulation data sets with the same names as those in the RECON data sets, then you can ship a new copy of the RECONs to the DR site and re-execute this job to create a new DR PDS to a new recovery point.</td>
</tr>
</tbody>
</table>
| ssid#Snn    | A series of jobs is created depending on the options specified in the DR profile. Each job performs a specific function, but the member names might change depending on the options. Each member is documented internally to indicate what the job does. The processes that these jobs perform include:  
  - Restore the IMS Recovery Expert repository data sets.  
  - If coordinated IMS and Db2 recovery was requested, locate a common recovery point between IMS and Db2 and modify the IMS jobs to include the recover to timestamp.  
  - Perform system restore from a system level backup (if requested).  
  - Delete, define, and recatalog data sets needed for application recovery.  
  - Restore the conditioned RECON data sets.  
  - Perform application recovery (when system recovery profiles are not being used).  
  - Perform pre-recovery when system recovery profiles are being used. |
<table>
<thead>
<tr>
<th>Member name</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>ssid#nnn</td>
<td>If system recovery profiles are used for disaster recovery processing, one or more of these jobs will be created where nnn is a number from 000 through 998. One ssid#nnn job is created for each user defined system recovery profile. These jobs perform application recovery for the databases defined within the specified system recovery profile. Run these jobs after the ssid#JC3 pre-recovery job completes successfully. These jobs do not exist if system recovery profiles are not used.</td>
</tr>
<tr>
<td>ssid#999</td>
<td>If system recovery profiles are used for disaster recovery processing, this job is created to perform application recovery against any databases that require additional recovery and that were not recovered by one of the ssid#nnn jobs above. This job executes application recovery against the default system recovery profile. Run this job after the ssid#nnn job has completed successfully. This job does not exist if system recovery profiles are not used.</td>
</tr>
<tr>
<td>ssidALLC</td>
<td>IDCAMS control cards to allocate the IMS WADS, OLDS, RECONs.</td>
</tr>
<tr>
<td>ssidCPYL</td>
<td>Control cards for copying the archive logs from the tape to the recovery site.</td>
</tr>
<tr>
<td>ssidDBDL</td>
<td>IDCAMS control cards to delete all database data sets.</td>
</tr>
<tr>
<td>ssidDBDF</td>
<td>IDCAMS control cards to define all database data sets.</td>
</tr>
<tr>
<td>ssidDBRC</td>
<td>JCL to delete any subsystem records and close any open logs.</td>
</tr>
<tr>
<td>ssidCATL</td>
<td>IDCAMS control cards to catalog image copy data sets.</td>
</tr>
<tr>
<td>ssidDELC</td>
<td>IDCAMS control cards to delete the IMS WADS, OLDS, RECONs.</td>
</tr>
<tr>
<td>ssidGDG1,2,3</td>
<td>IDCAMS control cards to allocate GDG bases for archive logs, image copy data sets, and change accumulation data sets.</td>
</tr>
<tr>
<td>ssidRCAT</td>
<td>IDCAMS control cards to re-catalog archive log data sets on disk.</td>
</tr>
<tr>
<td>ssidRECN</td>
<td>A copy of the conditioned RECON data set in 80 byte records.</td>
</tr>
<tr>
<td>ssidTIME</td>
<td>Information needed for performing IMS recovery; and if coordinated IMS and Db2 recovery is being performed, it also contains information for Db2 recovery. This includes timestamps of System Level Backups and archives.</td>
</tr>
<tr>
<td>BSYREPOC</td>
<td>IDCAMS control cards to allocate the IMS Recovery Expert repository data sets.</td>
</tr>
<tr>
<td>BSYREPOD</td>
<td>A copy of the IMS Recovery Expert repository in 80 byte records.</td>
</tr>
</tbody>
</table>

**Running the disaster recovery preparation JCL**

After the disaster recovery preparation job is built, you must run it on a regular basis to ensure the availability of recovery assets that are needed for disaster recovery at the remote site.

**Procedure**

1. Delete old JCL and control cards associated with the system from the recovery PDS.
2. Complete the following processing steps:
a. Validate the existence of an offloaded System Level Backup. The DR profile indicates whether a local or remote copy is being used for DR.
b. Copy archive logs, image copy data sets, and change accumulation data sets for disaster recovery dependent on user options.
c. Create a copy of the RECON data set and condition it to reflect the availability of archive logs, image copies and change accumulation data sets at the remote site.
d. Save a copy of the conditioned RECON into the recovery PDS.
e. Save the IMS Recovery Expert repository data into the recovery PDS.
f. Create control cards needed for recovery.
g. Generate a list of tapes to be taken to the disaster recovery site.

The following outputs are generated as a result of this step:

- BSYOPTN: List of all the profile options.
- BSYREPT: Report of tapes that should be transferred to the remote site. These include the System Level Backup tapes, tapes of copies of recovery assets (archive logs, change accumulation data sets, image copy data sets) and the name and VOLSER of the recovery PDS.
- BSYERROR: Any error messages and progress messages that are produced.

3. Generate JCL that is needed for the recovery of the system at the disaster recovery site. The disaster recovery preparation job must complete with RC=0.

### Recovering your system at the remote site

Follow these steps at the remote site to recover your system.

#### Procedure

1. Restore the recovery PDS that was created by the disaster recovery preparation job at the local site.

   The following figure is an example of the JCL used to restore this file:

   ```plaintext
   //RESTORE JOB ...
   //COPY EXEC PGM=IEBCOPY
   //SYSPRINT DD SYSOUT=A
   //SYSUT1 DD DNAME=disaster.recovery.pds.backup,
   //      UNIT=tape,LABEL=(,SL),
   //      VOL=SER=xxxxxx,DISP=OLD
   //SYSUT2 DD DNAME=disaster.recovery.pds,
   //      UNIT=disk,Vol=SER=xxxxxx,
   //      DISP=(NEW,KEEP),SPACE=(CYL,(10,5,10))
   //SYSUT3 DD DSN=TEMP1,UNIT=disk,Vol=SER=xxxxxx,
   //      DISP=(NEW,DELETE),SPACE=(80,(15,1))
   //SYSSIN DD DUMMY
   /*
   
   Figure 194. Example: JCL to Restore Recovery PDS
   ```

2. Run the ssid#S01 job. This job deletes, redefines, and then reloads the repository data sets. If you are recovering multiple SSIDs that use the same repository data sets, you should only run this job once for all SSIDs. If you run this job multiple times, then active data from the DR site might be destroyed or duplicate records might be added.

3. Review and execute the ssid#S02 through ssid#Snn jobs to perform the steps required to restore the IMS system data sets (if requested) and IMS database data sets, and perform application recovery (if requested).

   These jobs will perform the following processes, as requested:
If recovery is being performed using a System Level Backup, the ssid#S02 job will restore the IMS system from the SLB. After this job is run, ensure that all user catalogs are connected and all aliases are defined for the IMS subsystem.

- Delete and redefine the OLDS, WADS, and RECON data sets.
- If the image copy DR method is being used, then delete and redefine all database data sets.
- Delete and redefine any GDG bases needed for archive logs, image copies, or change accumulation data sets.
- Recatalog any archive logs that are on tape.
- Rebuild the RECON data sets from the ssidRECN member of the DR PDS.
- Copy archive logs to DASD.

4. If System Recovery Profiles are not being used, the last ssid#Snn job will perform application recovery for all database data sets according to the recovery options that you specified in the DR profile. If System Recovery Profiles are being used, this job will perform application pre-recovery (such as running Change Accumulation if requested). After this job completes, run the ssid#nnn jobs as outlined below.

a. Run the ssid#nnn jobs. If system recovery profiles are used, run the ssid#nnn jobs (where nnn is a number from 000 through 998) to perform application recovery. These jobs execute the user defined system recovery profiles to perform recovery on the databases specified in the profile. These jobs will not exist if system recovery profiles are not being used.

b. Run the ssid#999 job. If system recovery profiles are used, run the ssid#999 job to perform application recovery against the default system recovery profile. This job will perform database recovery for all databases that require recovery and that were not included in the ssid#nnn jobs. This job will not exist if system recovery profiles are not being used.

5. When you have completed these steps, restart IMS.

Application recovery restart

About this task

IMS Recovery Expert provides the ability to rerun any of the application recovery jobs that failed, and only those recovery related functions that were not successful on a prior execution are rerun. No setup is required to activate this feature. If one of the application recovery jobs fails, then you can correct the problem if necessary and resubmit the same job. IMS Recovery Expert will use information that exists in the RECON data sets to determine if a recovery related action was already successful or not, to determine what processes to execute when the job is rerun.

Recovering both IMS and Db2 subsystems

You can use IMS Recovery Expert along with Db2 Recovery Expert to perform a remote site disaster recovery of both IMS and Db2 subsystems to a common point in time.

To use this feature, you will create a disaster recovery profile for an IMS system using IMS Recovery Expert and a disaster recovery profile for a Db2 system using Db2 Recovery Expert. The IMS profile will specify the Db2 system name that is to be recovered to a common point in time and the Db2 profile will specify the IMS system.
When disaster recovery processing is performed at the disaster recovery site, a common recovery point will be determined depending on the availability of a system level backup (SLB) and archives of both subsystems at the disaster recovery site. IMS Recovery Expert will modify the recovery JCL to use the common timestamp.

Notes:
1. When the disaster recovery profile specifies a Db2 external subsystem, the DR preparation job must execute on the same lpar as the Db2 subsystem so that IMS Recovery Expert can obtain information about active Db2 threads. The BSY#PARM parameter DR_DLIBATCH_OPTION can be set to have the DR preparation job report on and also, if desired, take action based on any DL/I batch jobs that are also attached to Db2.
2. When setting up for coordinated DR between IMS and Db2, if you are not sharing the repository data sets, you must ensure that your BSYV220 invocation CLIST specifies the data set name of the Db2 control information repository in the EXTCNTFL() variable. You can get this data set name from your ARYV320 Db2 CLIST in the Db2CNTFL() variable.

Creating IMS and Db2 disaster recovery profiles
You create the IMS and Db2 disaster recovery profiles the same way you create a non-combined IMS or Db2 disaster recovery profile using the Update Disaster Recovery Profile panel, with the exception of the value you must specify in the External Subsystem field.

Procedure
1. On the IMS Recovery Expert Update Disaster Recovery Profile panel (BSY$DPRM), specify the Db2 system that will be recovered with the IMS system in the External Subsystem field.

Figure 195. Update Disaster Recovery Profile panel (BSY$DPRM)
2. In the Db2 Recovery Expert Update Disaster Recovery Profile panel (ARY$DPRU), you (or the administrator that is creating the profile) must specify the IMS system that will be recovered with the Db2 system in the **External Subsystem** field.

**Recovering both IMS and Db2 subsystems at the local site**

After you have created IMS and Db2 disaster recovery profiles (see “Creating IMS and Db2 disaster recovery profiles” on page 309 to perform this step), you must provide a recovery PDS, which is a data set where all jobs and control cards generated by the preparation job will be placed. Both the IMS and the Db2 subsystem must use the same recovery PDS.

Follow steps 3 on page 276 and 4 on page 276 of “Preparing for disaster recovery at the local site” on page 275. IMS Recovery Expert will generate additional JCL and control cards to support an IMS and Db2 coordinated disaster recovery.

**Running the IMS and Db2 disaster recovery timestamp determination process in simulate mode**

At the local site, you can run the coordinated disaster recovery timestamp determination process in simulate mode to preview the recovery timestamp. This process of running the BSY#CDR program using the SIMULATE parameter allows you to review the timestamp, and does not result in any data set changes.

**Procedure**

1. Review the ssid#Snn jobs and locate the job that executes the BSY#CDR program; the documentation in the member indicates that its purpose is to locate the timestamp for coordinated recovery.
2. Update the COORDDR step to run in simulate mode as shown below:
   ```
   //COORDDR  EXEC  PGM=BSY#CDR,PARM='SIMULATE',REGION=006M
   ```
3. Remove all other steps from the JCL.
4. Submit the JCL. A successful execution in simulate mode will complete with the return code RC=4. After the job has completed, a report with the recovery timestamp selection is displayed in the generated output.

**Recovering both IMS and Db2 subsystems at the remote site**

You may run the IMS and Db2 combined recovery jobs at the remote site.

**Procedure**

1. Ensure that you have restored the recovery PDS.
2. Locate the Db2 and IMS jobs that execute the BSY#CDR or ARY#CDR program. Execute these jobs to determine the most current timestamp that can be used for recovery, and to update the jobs in the recovery PDS jobs with the correct timestamp.
   These jobs will run the coordinated disaster recovery timestamp determination process, and will then update the related recovery PDS jobs with that timestamp. The Db2 job might also have additional steps to reconstruct the BSDS data sets.
   These jobs compare the highest available archive timestamp of IMS and Db2. The lowest of these timestamps can be used for coordinated recovery. The Db2 job updates the Db2-ssidCRCR member with this timestamp. The IMS job updates all application recovery jobs.
If the Db2 subsystem is a non data-sharing subsystem, then RBAs are used instead of LRSN; if this happens, then Db2 will have to identify an earlier point in time that can be matched with an RBA.

After a recovery timestamp is determined, IMS Recovery Expert must ensure that the SLB that is used for recovery is earlier than this timestamp. If it is not, an older backup will be used, and IMS and Db2 SLB recovery jobs will be modified to reflect that.

3. Follow steps 4 on page 308 through 5 on page 308 of "Recovering your system at the remote site" on page 307 to perform the IMS system point in time recovery. Consult the Db2 Recovery Expert User’s Guide for the recovery steps for Db2.

Note: If IMS Recovery Expert and Db2 Recovery Expert are sharing the same product repository, then you must consider the following points:

- IMS and Db2 both have jobs that delete, redefine, and reload the repository data sets. You only have to run one of these jobs. Run the job that was generated later to ensure that the repositories contain data for both IMS and Db2.
- It is recommended that you take a SLB of your subsystems after full recovery.
Chapter 14. Running a Health Check

The Health Check is a function provided by the IMS Recovery Solution Pack Database Recovery Facility: Extended Functions (DRF/XF). It is used to identify databases that indicate problems in the RECON data sets that might make them unrecoverable.

Health Check can be run from three different locations within the IMS Recovery Expert ISPF interface:

• From the System Level Backup Display, by selecting a system level backup with the $H line command.
• During the Disaster Recovery preparation job, when the Disaster Recovery profile indicates that Health Check should be run.
• From the Application Profile, by selecting a profile with the $H line command.

For Health Check to run, the DRF/XF library must be specified in the BSYV220 CLIST using the IMSTOOL1, IMSTOOL2, or IMSTOOL3 variable. If this is not done, Health Check will not be available.

When executing Health Check from the System Level Backup or Application Profile display, the JCL build panel will include the Edit Health Check Options option. Specifying Y on this line will display the current Health Check options, which you can change. From the Disaster Recovery Profile, specify U for the Run Health Check option to get to this panel.

When the panels are displayed, you can individually select the options that you want to execute, as well as any time or range parameters that are required for those options. These setting are saved in your ISPF profile so that they are remembered. If you do not change these options, a default set of options is used.

Some of the Health Check options require a parameter to specify the timeframe for which to perform the health check. This parameter can be specified in one of three formats:

• DAYS – The number of days from the current time backward to check. The DAYS value can be any number from 1-999.
• HOURS – The number of hours from the current time backward to check. The HOURS value can be any number from 1-999.
• RANGE – A range of time during which to perform the check. The RANGE consists of four different parts:
  – timestamp – Any valid timestamp in the format accepted by DBRC.
  – direction – Whether to check back or forward in time from the specified timestamp.
  – amount – How far back or forward to check.
  – scale – The scale associated with the amount. This might be ‘SECS’ for seconds, ‘MINS’ for minutes, ‘HRS’ for hours, or ‘DAYS’ for days.

For options that require a timeframe, select the type you want to use, and then specify the required values. Only one timeframe type can be selected for a given option.
The Health Check options panels are shown below, followed by a description of the options.

![Health Check Report Options (BSY$HCOP): Example 1](image)

![Health Check Report Options (BSY$HCOP): Example 2](image)
The following Health Check options can be executed. For additional information, refer to the Database Recovery Facility: Extended Functions user guide.

**DBs for which no ICs exist**
This option checks for databases that either have no ICs available or no ICs available within the specified timeframe. If you do not select a timeframe, then the entire RECON is checked for the existence of an IC for the database. If a timeframe is selected, then only that timeframe is processed.

**DBs for which no batch ICs exist**
This option checks for databases that have no batch ICs within the specified timeframe. A timeframe specification is required.

**DBs for which no online ICS exist**
This option checks for databases that have no online ICs within the specified timeframe. A timeframe specification is required.
DBs for which ICs are needed
This option checks for DBs for which ICs are needed.

DBs for which ICs are recommended
This option checks for DBs for which ICs are recommended.

DBs not in a CA group
This option checks for DBs that are not in a change accumulation group.

CA groups with no valid CAs
This option checks for change accumulation groups with no valid CAs within the specified timeframe. A timeframe specification is required.

HALDBs with disabled partitions
This option checks for HALDBs that have disabled partitions.

HALDBs with non-init partitions
This option checks for HALDBs that have partitions that are not initialized.

DEDBs that have EEQEs
This option checks for DEDBs that have outstanding error queue elements (EEQEs).

DEDBs with no area data sets defined
This option checks for DEDBs that do not have any area data sets defined.

DEDBs with no area data sets avail
This option checks for DEDBs that do not have any area data sets marked as available.

DBs that have backout needed
This option checks for databases that have the BACKOUT NEEDED flag on.

DBs with PROHIBIT AUTH on
This option checks for databases that have the PROHIBIT AUTH flag on.

IC1 with no IC2
This option checks for databases that have an image copy 1, but no image copy 2 within the specified timeframe. A timeframe specification is required.

Minimum CAs not available for a DB
This option checks for change accumulation groups that do not have the minimum number of change accumulation records. The minimum number to use must be specified.

PRILOGs with no SECLOG
This option checks for any PRILOG records that do not have a corresponding SECLOG record.

PRISLDS with no SECSLDS
This option checks for any PRISLDS records that do not have a corresponding SECSLDS record.

Verify recovery assets are catalogued
This option checks to make sure that any recovery assets that might be needed to recover the database are catalogued.
Chapter 15. Messages

Use the information in these messages to help you diagnose and solve IMS Recovery Expert problems.

Message format

IMS Recovery Expert messages adhere to the following format:

\[ ABCnnnx \]

where:

<table>
<thead>
<tr>
<th>ABC</th>
<th>Indicates that the message was issued by IMS Recovery Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>nnn</td>
<td>Indicates the message identification number</td>
</tr>
<tr>
<td>x</td>
<td>Indicates the severity of the message:</td>
</tr>
<tr>
<td>I</td>
<td>Indicates that the message is informational only. No action is required.</td>
</tr>
<tr>
<td>S</td>
<td>Indicates that the message is a status message only. No action is required.</td>
</tr>
<tr>
<td>E</td>
<td>Indicates that an error occurred, which might or might not require operator intervention.</td>
</tr>
<tr>
<td>W</td>
<td>Indicates that the message is a warning to alert you to a possible error condition.</td>
</tr>
</tbody>
</table>

Each message also includes the following information:

Explanation:
The Explanation section explains what the message text means, why it occurred, and what its variables represent.

User response:
The User response section describes whether a response is necessary, what the appropriate response is, and how the response will affect the system or program.

Messages are displayed in ascending, numerical, and alphabetical order.

---

**BSY0018I**  
**command commands are not required**  
**Explanation:** It is not necessary to issue the command.  
**User response:** None required.

**BSY0019I**  
**PROCLIB DSN: data set name**  
**Explanation:** The data set name is the data set that was used to get information from the IMS PROCLIB.  
**User response:** None required.

---

**BSY0020I**  
**SSID: subsystem id**  
**Explanation:** The subsystem id is the IMS SSID or group name for the associated job step.  
**User response:** None required.

**BSY0100E**  
**OS LOAD failed for module type module name**  
**Explanation:** IMS Recovery Expert was unable to locate module name in the libraries specified for module type.  
**User response:** Verify that module name is a valid name of module type, and that the library where the module exists is specified in the job step.
BSY0101E  * function call failed for module module name

Explanation: Most often, this error means that previous errors occurred or that there is a logic error.
User response: Review previous messages for other errors that could have caused this error, and try to correct them. If there are no previous errors and you cannot correct the problem, contact IBM Software Support.

BSY0102E  * type Eyecatcher is invalid (x=value)

Explanation: An internal control block of type is not valid or has been overlaid with the indicated value.
User response: Contact IBM Software Support.

BSY0103E  Name/Token call type call failed in module (token name)

Explanation: In an attempt to make a z/OS name token service call type call in module module for the name/token pair token name, an error occurred. You will receive additional messages that will indicate the return and reason codes received.
User response: Review the return and reason codes for an indication of a system or environmental error. If you cannot correct the condition, contact IBM Software Support.

BSY0104E  CPOOL call type call failed

Explanation: IMS Recovery Expert received a return code when attempting to issue a call type CPOOL request. You will receive additional messages that will indicate the return code and reason code that was received.
User response: Review the return and reason codes for an indication of a system or environmental error. If you cannot correct the condition, contact IBM Software Support.

BSY0105E  The IMS Release of the IMS SSID requested is not supported

Explanation: The release of the IMS System that was specified is not a release that is supported by IMS Recovery Expert.
User response: Verify that the maintenance level of IMS Recovery Expert supports the release of the IMS System.

BSY0106E  Cannot continue; IMS Subsystem ssid is terminating

Explanation: IMS Recovery Expert was attempting to start an IMS subsystem, but IMS is terminating before completing the startup.
User response: Contact IBM Software Support.

BSY0107E  Dynamic Allocation (SVC99) request type call failed in program module name

Explanation: An attempt to perform dynamic allocation request type request failed in module module name.
User response: Review the additional messages you will receive that indicate the return code and reason code from SVC 99. If you are unable to correct the condition, contact IBM Software Support.

BSY0108E  BLDL (SVC 18) call for member type member name failed in program module name

Explanation: An attempt to issue a BLDL request to locate member member name in the library type member type from module module name failed.
User response: Review the additional messages you will receive that indicate the return code and reason code from SVC 18. If you are unable to correct the condition, contact IBM Software Support.

BSY0109E  member type member name is in an unknown format

Explanation: An attempt to use member name from the library type member type failed because the member was not in a recognizable format.
User response: Verify that the member name being processed is valid and that it is at a supported IMS release level. Also, verify that the correct libraries are allocated. If you are unable to correct the condition, contact IBM Software Support.

BSY0110E  DEVTYPE (SVC 24) call for DD name ddname failed in program module name

Explanation: An attempt to issue the DEVTYPE macro failed.
User response: Review the additional messages you will receive that indicate the return code and reason code from the DEVTYPE macro. If you are unable to correct the condition, contact IBM Software Support.

BSY0111E  DD required for program processing is missing

Explanation: A required DD statement was not supplied to the IMS Recovery Expert job step.
User response: Supply the necessary DD statement to the IMS Recovery Expert job step.
BSY0112E  Unauthorized data set found in region type region STEPLIB concatenation

Explanation: IMS Recovery Expert detected that one of the libraries in the IMS region type region for the specified IMS system is not APF authorized on the system IMS Recovery Expert is running.

User response: Authorize all of the libraries in the STEPLIB concatenation of the specified region on the system where IMS Recovery Expert is running.

BSY0113E  Started task name task name was not found in IMS PROCLIB DSN: data set name

Explanation: IMS Recovery Expert was unable to locate the started task member for task name in the IMS PROCLIB data set name.

User response: Verify that the correct started task name and IMS PROCLIB data set were specified when the IMS system was registered to IMS Recovery Expert during product setup.

BSY0114E  Module modulename not found in ddbname concatenation

Explanation: IMS Recovery Expert was unable to locate the specified module in the ddbname libraries.

User response: Verify that the correct data sets were specified in the JCL or configuration for IMS Recovery Expert.

BSY0115E  No STEPLIB data sets found in member membername in IMS PROCLIB DSN: data set name

Explanation: IMS Recovery Expert was unable to locate the STEPLIB DD in the PROC for the IMS control region.

User response: Verify that the correct started task name and IMS PROCLIB data set were specified when the IMS system was registered to IMS Recovery Expert during product setup. If correct, report the problem to IBM Software Support.

BSY0116E  Unable to open INCLUDE member membername in DSN: data set name

Explanation: While parsing IMS PROCs, IMS Recovery Expert was unable to open a member specified on an INCLUDE JCL statement.

User response: Verify that the correct started task name and IMS PROCLIB data set were specified when the IMS system was registered to IMS Recovery Expert during product setup. If correct, report the problem to IBM Software Support.

BSY0117E  Member membername was not found in either IMS PROCLIB or JES PROCLIB

Explanation: While parsing IMS PROCs IMS Recovery Expert was unable to locate a PROC or INCLUDE member in either the IMS PROCLIB DSN specified when the IMS subsystem was registered to IMS Recovery Expert or in any of the PROCLIBs in the JES concatenation.

User response: Verify that the correct started task name and IMS PROCLIB data set were specified when the IMS system was registered to IMS Recovery Expert during product setup. If correct, report the problem to IBM Software Support.

BSY0200E  DBRC-API functionservice failed

Explanation: An unexpected return code was returned to IMS Recovery Expert when the specified request was issued to the DBRC-API.

User response: Review the return code and reason code in the following messages in the IMS System Programming API Reference User’s Guide. If the problem cannot be corrected, contact IBM Software Support.

BSY0201E  Function request timed out in program modulename

Explanation: A function requested from modulename did not complete in a reasonable amount of time.

User response: Review any additional messages that might indicate connection problems or system performance degradation. If you cannot correct the problem, contact IBM Software Support.

BSY0300W  No OLDS records found for SSID/RSNAME ssid/rsename in RECON DATA SETS

Explanation: IMS Recovery Expert was unable to locate an OLDS defined in the RECON for the IMS system.

User response: Verify that the correct IMS system and RECON data sets are specified.

BSY0301E  IMSPLEX names for SSID ssid and SSID ssid in IMSPLEX do not match

Explanation: IMS Recovery Expert determined that two IMS systems defined in the same group do not belong to the same IMSPLEX.

User response: Verify that the IMS systems defined to an IMS group under product setup all belong to the same IMSPLEX.
| BSY0302E | RECON data sets for SSID ssid and SSID ssid in IMSPLEX do not match |
|-----------------------------|
| **Explanation:** IMS Recovery Expert determined that two IMS systems defined in the same group do not reference the same RECON data sets. |
| **User response:** Verify that the IMS systems defined to an IMS group under product setup all reference the same RECON data sets. |

| BSY0303I | IMS SSID/RSENAME ssid/rsename is not available for command processing |
|-----------------------------|
| **Explanation:** The specified system is not available. |
| **User response:** IMS Recovery Expert will continue with the request without issuing any commands. If the IMS system is online, then verify that IMS Recovery Expert has been installed into the IMS control region. |

| BSY0304E | call type call to ssid for IMSPLEX name imsplex name failed |
|-----------------------------|
| **Explanation:** An attempt to issue an IMS command using the CSL failed. |
| **User response:** Additional messages will provide the CSL return code and reason code, which will indicate why the request failed. If you cannot correct the CSL error, contact IBM Software Support. |

| BSY0305W | IMS CHECKPOINT command did not complete for IMS SSID/RSENAME |
|-----------------------------|
| **Explanation:** An attempt to have IMS perform a system checkpoint did not complete in an allowable amount of time. |
| **User response:** Check the IMS system to determine what might be preventing it from completing a checkpoint. If the checkpoint is required by IMS Recovery Expert to complete the requested function, you might have to retry the function at a less busy time. |

| BSY0306E | Unable to process the requested IMS command as none of the participating IMS subsystems are available |
|-----------------------------|
| **Explanation:** When attempting to process the requested IMS command, IMS Recovery Expert did not detect that any of the IMS systems are active. |
| **User response:** Start one of the participating IMS systems. Verify that IMS Recovery Expert has been installed in the IMS control region. |

| BSY0307E | The format of the RDDSN data set data set name has changed while processing |
|-----------------------------|
| **Explanation:** IMS Recovery Expert detected that the RDDSN data set was updated while it was reading the data set. |
| **User response:** Retry the request when the RDDSN is not being exported to, or when Dynamic Resource Definitions are being made to the IMS system. |

| BSY0308E | Module module name was not found in the data set concatenation for DD ddname when processing IMS SSID ssid |
|-----------------------------|
| **Explanation:** IMS Recovery Expert was unable to locate the requested member in the ddname specified. |
| **User response:** Provide the correct data set name for the DD and retry the request. |

| BSY0309W | Inconsistencies found between the ACBLIB DMB and DBRC definitions for database database |
|-----------------------------|
| **Explanation:** IMS Recovery Expert detected that the DMB member and the RECON definitions for the database are not the same. |
| **User response:** Correct either the definition in DBRC or the DMB. |

| BSY0310I | function initialization completed |
|-----------------------------|
| **Explanation:** The IMS Recovery Expert function has been initialized in the address space. |
| **User response:** None. |

| BSY0311I | function initialization failed, reason=reason |
|-----------------------------|
| **Explanation:** The IMS Recovery Expert function did not initialize successfully. |
| **User response:** If you cannot correct the problem, contact IBM Software Support. |

| BSY0312E | IMSPLEX names do not match |
|-----------------------------|
| **Explanation:** IMS Recovery Expert determined that two IMS systems defined in the same group do not belong to the same IMSPLEX. |
| **User response:** Verify that the IMS systems defined to an IMS group under product setup all belong to the same IMSPLEX. |
BSY0313E  QSAM call type call failed for DD
ddbname in PROGRAM module name

Explanation: The requested call to access the data set
associated with the ddname failed.

User response: View QSAM SYSLOG messages to
determine the reason for the failure.

BSY0314W  There are no group type groups defined
in the RECONS used by SSID ssid

Explanation: IMS Recovery Expert was unable to
locate the requested group in the RECONs for the
specified IMS system.

User response: Verify that the correct group type and
IMS System was specified.

BSY0315I  ssid suspended by jobname

Explanation: The jobname is running a function that
requires I/O to be suspended for the IMS system. This
message indicates that I/O has been successfully
suspended.

User response: None.

BSY0316I  ssid resumed

Explanation: This message indicates that I/O is no
longer suspended for the IMS system.

User response: None.

BSY0317E  request type request for ssid failed,
RC=return code

Explanation: A request to suspend I/O for an IMS
system failed.

User response: Contact IBM Software Support.

BSY0318E  SCI not available for issuing IMS
commands

Explanation: IMS Recovery Expert has detected that
the IMS System is active on another LPAR and an SCI
address space is not available on the LPAR IMS
Recovery Expert is running on.

User response: Either issue the request on the same
LPAR where the IMS system is running, or start an SCI
address space on the LPAR IMS Recovery Expert is
running on.

BSY0319E  database still has the following
subsystems authorized to it

Explanation: IMS Recovery Expert tried to DBR a
database but the DBR did not complete.

User response: Check the reason the DBR was unable
to complete on the IMS Systems listed. Retry the
request when the database is stopped.

BSY0320E  database still has the DBRC Recovery
Needed flag on

Explanation: IMS Recovery Expert tried to start a
database but the database still needs to be recovered.

User response: Recover the database and then retry
the request.

BSY0321I  JOINED|LEFT XCF GROUP groupname
AS MEMBER membername

Explanation: The job or STC successfully joined or left
the XCF group.

User response: None.

BSY0322E  xcfrequest FAILED, RC=return code
RSN=reason code

Explanation: A problem occurred when attempting an
XCF service. Processing terminated.

User response: Review the return and reason code for
the XCF service that failed in the MVS Programming
Sysplex Service Reference Guide. If the return and reason
code do not indicate an environmental error, report the
problem to IBM Software Support. Ensure that you
have the output from the job that encountered this
problem available.

BSY0323I  SUSPEND REQUEST RECEIVED
FROM jobname

Explanation: The IMS subsystem or DLI batch job
received a request to suspend update activity. The
request came from the jobname indicated.

User response: None.

BSY0324E  CSLOMCMD command command to
IMSPLEX imsplex name failed, route=ssid
routing list

Explanation: An attempt to issue the IMS command
using the CSLOMCMD service failed. The IMSPLEX
name and specific SSID(s) that the command was
issued against is also listed.

User response: Additional messages will provide the
return code and reason code related to the failure. If
you cannot correct the error, contact IBM Software
Support.

BSY0325E  OM not available for issuing IMS
commands

Explanation: IMS Recovery Expert has detected that
the IMS System is active and is attempting to issue an
IMS command using the CSLOMCMD service.
However, the OM address space is not currently active.
User response: Start the OM address space and retry the process.

BSY0326I XML output

Explanation: This message displays the XML output from a CSLOMCMD command that either failed or received an error or warning.

User response: These messages are for diagnostic purposes and might be needed for problem resolution by IBM Software Support.

BSY0327E ssid received an error response from CSLOMCMD command (alternatively: ssid received no response from CSLOMCMD command)

Explanation: The listed SSID received either an error response from the CSLMOCMD command listed, or received no response from the command.

User response: You will receive additional messages that will provide more information related to the failure. If you cannot correct the editor, contact IBM Software Support.

BSY0328I Issuing CSLOMCMD command to IMSPLEX imsplex name, route=ssid routing list

Explanation: This message indicates that a command is being issued using the CSLOMCMD interface against the specified IMSPLEX, and it will be routed to the listed systems.

User response: These messages are for diagnostic purposes and might be needed for problem resolution by IBM Software Support.

BSY0329I Command: command

Explanation: This informational message is paired with “BSY0328I” and displays the issued command.

User response: These messages are for diagnostic purposes and might be needed for problem resolution by IBM Software Support.

BSY0400W User requested termination for PROGRAM module name

Explanation: A user requested the specified program to terminate.

User response: Verify that the program termination was intentional.

BSY0401W PROGRAM program name is unable to complete the IMS SHUTDOWN request

Explanation: IMS Recovery Expert was unable to shut down the IMS system.

User response: The IMS system must be shut down manually.

BSY0402W IMS shutdown request from PROGRAM program name has timed-out

Explanation: The IMS system did not terminate in the specified time interval.

User response: The IMS system must be shut down manually.

BSY0403A Reply OK when shutdown is complete, or QUIT to terminate the request

Explanation: IMS Recovery Expert was unable to shut down the IMS system and is waiting for the IMS system to be manually shut down.

User response: Reply OK when the IMS System has completed shutdown, or reply QUIT to terminate the IMS Recovery Expert function.

BSY0404W The following IMS subsystems might still be ACTIVE

Explanation: IMS Recovery Expert was unable to determine if an IMS system is still active.

User response: Message “[BSY0403A]” will follow, requesting a reply on what action to take.

BSY0406I IMS subsystem ssid is ACTIVE on z/OS Image z/OS name

Explanation: The IMS system is active on the z/OS LPAR.

User response: None.

BSY0407I IMS subsystem ssid is INACTIVE

Explanation: The IMS system is not active.

User response: If the IMS System is active, verify that IMS Recovery Expert has been installed in the IMS control region for the IMS System.

BSY0408I All requested IMS subsystems are SHUTDOWN

Explanation: IMS Recovery Expert has completed shutdown of all requested IMS systems.

User response: None.
BSY0409E  Requested SSID/GROUP ssid/group not registered in the repository defined by the ddname DD statement
Explanation: The specified ssid or group was not found in the DBR repository.
User response: Correct the ssid or group specified, or register the IMS System or group to DBR.

BSY0410E  Validation failed during IMS subsystem registration for SSID ssid
Explanation: IMS Recovery Expert was unable to validate a component of the IMS system being registered.
User response: Verify that the correct IMS system information was provided when the IMS system was registered to IMS Recovery Expert during product setup.

BSY0411E  Supplied and found values for ssid do not match
Explanation: IMS Recovery Expert detected that some information provided during IMS system registration does not match actual IMS values.
User response: Verify that the correct IMS system information was provided when the IMS system was registered to IMS Recovery Expert during product setup.

BSY0412I  Supplied value: supplied value Found value: found value
Explanation: IMS Recovery Expert detected that some information provided during IMS system registration does not match actual IMS values.
User response: Verify that the correct IMS system information was provided when the IMS system was registered to IMS Recovery Expert during product setup.

BSY0413I  IMS subsystem ssid is an XRF ssid partner within RSENNAME ‘rsename’
Explanation: IMS Recovery Expert has detected that the specified IMS system is an XRF partner.
User response: None.

BSY0414I  PROGRAM program name starting to issue IMS command type commands
Explanation: The specified program is starting to issue the IMS commands.
User response: None.

BSY0415I  ims command
Explanation: The specified program is starting to issue the IMS commands.
User response: None.

BSY0416I  IMS SSID ssid found ACTIVE on z/OS Image z/OS name on DATE: date (UTC)
Explanation: IMS Recovery Expert has detected that the specified IMS system is active on the specified z/OS system.
User response: None.

BSY0417I  IMS SSID ssid found INACTIVE on DATE: date (UTC)
Explanation: The IMS system is not active.
User response: If the IMS System is active, verify that IMS Recovery Expert has been installed in the IMS control region for the IMS system.

BSY0418I  command type command issued for SSID ssid on z/OS IMAGE z/OS name
Explanation: IMS Recovery Expert has issued the command type command on the IMS system.
User response: None.

BSY0419I  command
Explanation: IMS Recovery Expert has issued the command command on the IMS system.
User response: None.

BSY0420I  JOB jobname (job number) spawned to ssid subsystems on z/OS Image z/OS name
Explanation: IMS Recovery Expert has submitted a job through the internal reader to run a command on a different LPAR.
User response: None.

BSY0421I  JOB jobname (job number) spawned to z/OS Image z/OS name completed with return/abend code
Explanation: A job IMS Recovery Expert submitted to run on another LPAR has completed.
User response: If the job ended with a non-zero return or abend code, review the spawned job output to determine the cause of the problem.
**BSY0422W**  
Starting of IMS SSID will be bypassed  
**Explanation:** IMS Recovery Expert was unable to start an IMS system.  
**User response:** Start the IMS system manually and retry the IMS Recovery Expert function.

**BSY0423I**  
IMS SSID ssid was not stopped by the LOGFILE creation job  
**Explanation:** IMS Recovery Expert is trying to start any IMS systems that it had previously stopped in a prior job step, but the prior job step did not stop the IMS system. Starting of the IMS system is bypassed.  
**User response:** Manually start the IMS system when needed.

**BSY0424I**  
IMS SSID ssid found ACTIVE on z/OS Image z/OS name  
**Explanation:** IMS Recovery Expert has detected that the specified IMS system is active on the specified z/OS system.  
**User response:** None.

**BSY0425I**  
All requested objects are now in a state needed state  
**Explanation:** IMS Recovery Expert has completed getting the objects into the requested state.  
**User response:** None.

**BSY0426E**  
The request to place objects in a 'state' needed state has failed  
**Explanation:** IMS Recovery Expert was unable to get the objects into the requested state.  
**User response:** Review additional error messages to indicate why the request was unsuccessful.

**BSY0427I**  
No participating IMS subsystems are executing  
**Explanation:** IMS Recovery Expert did not detect that the IMS system(s) was active so the command did not have to be processed.  
**User response:** None.

**BSY0428I**  
‘command type’ Commands complete for participating IMS subsystems  
**Explanation:** IMS Recovery Expert was successfully able to issue the command on the active IMS system(s).  
**User response:** None.

**BSY0429I**  
Batch Job 'jobname' for IMS SSID 'ssid' is active on z/OS Image 'zOS name'  
**Explanation:** IMS Recovery Expert detected that a DLI batch job is running for the IMS System.  
**User response:** None.

**BSY0430I**  
JOB 'jobname' ('job number') spawned to perform IMS Database Recoveries on z/OS Image 'zOS name'  
**Explanation:** IMS Recovery Expert has submitted a job through the internal reader to perform a recovery function.  
**User response:** None.

**BSY0431W**  
CAGROUP 'group name' not found in RECON for DB 'database' DDN 'ddname'  
**Explanation:** The DD for the database does not belong to a CA Group. If the DD was defined to a CA group the recovery time can be reduced when using a System Level Backup to restore the data set.  
**User response:** To help speed recovery times, the DD should be added to a CA group.

**BSY0432E**  
DDN='ddname' already allocated to DSN='data set name'  
**Explanation:** IMS Recovery Expert is attempting to dynamically allocate a data set with a required ddname but the DD is already allocated to another data set.  
**User response:** Check the JCL to make sure the correct ddname and data set name are specified.

**BSY0433E**  
Requested DSN='data set name'  
**Explanation:** IMS Recovery Expert is attempting to dynamically allocate a data set with a required ddname but the DD is already allocated to another data set.  
**User response:** Check the JCL to make sure the correct ddname and data set name are specified.

**BSY0470I**  
Disaster Recovery pre-recovery processing beginning  
**Explanation:** The Disaster Recovery job executing is the pre-recovery job (ssid#JC3) and is performing processes needed to prepare the environment for the database recovery jobs, which will be run after this job completes.  
**User response:** None required.
BSY0471I  Data set data set is migrated and will be restored
Explanation: The specified database data set is
migrated and will be restored according to the
DR_RECALL_MIGRATED_DATA option value in the
BSY#PARM options. If there are any errors encountered
while restoring this data set, additional messages will
be issued.
User response: None required.

BSY0472W  Data set data set is migrated and will be ignored
Explanation: The specified database data set is
migrated and will be ignored according to the
DR_RECALL_MIGRATED_DATA option value in the
BSY#PARM options. This database data set will not be
included in the IDCAMS delete/define statements.
User response: None required.

BSY0510E  No Usable Image Copy records exist for the object
Explanation: IMS Recovery Expert is unable to recover
the object because it did not find an image copy not in
error or System Level Backup that contained the object
data set.
User response: Verify that all resources, image copies,
and system level backups are specified in the
application profile. If so, then the object will have to be
either rebuilt with another utility like an index builder
or recovered in another way.

BSY0511E  A REORG occurred between the selected Image Copy and the recovery point
Explanation: IMS Recovery Expert is unable to recover
the object because it did not find an image copy not in
error or System Level Backup that contained the object
data set that was created after the reorg.
User response: Verify that all resources, image copies,
and system level backups are specified in the
application profile. If so, then the object will have to be
either rebuilt with another utility like an index builder
or recovered in another way.

BSY0512W  No Image Copies exist for object:
Explanation: IMS Recovery Expert is unable to recover
the object because it did not find an image copy not in
error or System Level Backup that contained the object
data set.
User response: Verify that all resources, image copies,
and system level backups are specified in the
application profile. If so, then the object will have to be
either rebuilt with another utility like an index builder
or recovered in another way.

BSY0513W  A Point-In-Time recovery (PITR) was requested for Database 'database'
Explanation: Warning message to indicate that the
database is being recovered to some other time than
current.
User response: Verify that the recovery time is the
desired recover to time.

BSY0514W  'database type' 'database' is not included in the Object group
Explanation: Warning message to indicate that a
related database is being recovered to some other time
than current and this database is not included in the
group of data bases to recover.
User response: Verify that this database does not need
to be recovered to the same point in time as the related
database.

BSY0515E  'utility type' Utility GENJCL Member
'member name' not found in JCLPDS data set(s)
Explanation: IMS Recovery Expert was unable to
locate the GENJCL skeleton member in the JCLPDS
data sets specified in the application profile.
User response: Check the Application Profile to make
sure the correct skeleton member and the correct
JCLPDS data sets are defined.

BSY0516W  HSAM/SHSAM Database is required to belong to a Change Accumulation group
Explanation: IMS requires that change accumulation is
run for HSAM and SHSAM databases if log updates
need to be applied in the recovery process.
User response: Define the database to a change
accumulation group and rerun the recovery job.

BSY0518W  A Timestamp Recovery (TSR) was specified for Database database DD
ddbname
Explanation: The database is being recovered to a
different time than current.
User response: Verify that the recovery time is the
desired recover-to time.

BSY0519W  The database was allocated at the time specified
Explanation: For a timestamp recovery (TSR), the
databases being recovered cannot have been in use or
allocated at the timestamp specified.
BSY0526E  Either a work volume or work HLQ must be specified with an input card.

Explanation: The IMS Recovery Expert utility needs to allocate a temporary work data set. You must specify either a work volume or an SMS managed high-level qualifier in the control cards that are passed to the utility.

User response: Correct the control cards by specifying either a work volume or an SMS managed work HLQ, and then rerun the job.

BSY0527E  WORK HLQ is non-SMS managed and work volumes were not specified with an input card.

Explanation: The IMS Recovery Expert utility needs to allocate a temporary work data set. You must specify either an SMS managed high-level qualifier or a work volume in the control cards that are passed to the utility.

User response: Correct the control cards by specifying either a work volume or an SMS managed work HLQ, and then rerun the job.

BSY0529I  Task task number BSY#YCPY - Esoteric is tape but copy files was allocated on DASD

Explanation: The esoteric unit specified for copying files was tape, but the copy files was allocated on DASD. This most likely happens when SMS ACS routines direct the data set high level qualifier to a specific SMS pool.

User response: If you need to copy files to be put on tape, contact your SMS systems support to change the rules or use a different data set high level qualifier.

BSY0540E  Required DD ‘ddname’ not specified in the JCL

Explanation: The required DD name specified was not specified in the JCL and the job cannot continue.

User response: The JCL to run the QUIESCE command is built by the ISPF interface, so the JCL might have been modified and a required DD was removed. Recreate the JCL and run the job again.

BSY0541I  ‘informational QUIESCE message’

Explanation: This message relays information associated with the QUIESCE command, and is strictly informational.

User response: None required.

BSY0542E  Error encountered during ‘module’ ‘function’ processing

Explanation: An error was encountered when the listed module attempted to perform the specified function.

User response: If the reason for the failure cannot be determined, contact IBM Software Support.

BSY0543E  No IMS subsystems were active

Explanation: None of the IMS subsystems required by this function were found to be active on any of the lpars in this SYSPLEX.

User response: Make sure at least one of the target IMS subsystems are active somewhere in the SYSPLEX and resubmit the job.

BSY0544I  IMS subsystem ‘ssid’ is ACTIVE on z/OS image ‘lpar’

Explanation: The listed IMS subsystem is currently active on the listed lpar.

User response: None required.

BSY0545I  IMS subsystem ‘ssid’ is INACTIVE

Explanation: The listed IMS subsystem is currently not active within the SYSPLEX.

User response: None required.

BSY0546I  No local IMS subsystem or SCI found for communications

Explanation: No IMS subsystems are active on the lpar on which the job is executing, nor can an SCI be found on the lpar to communicate with the IMS. The job must be executed on an lpar which has either the IMS active or has an SCI that is associated with the IMS.

User response: Resubmit the job on an lpar that has either the active IMS or an active SCI.

BSY0547E  ‘target-module’ function ‘function’ has failed, location ‘detecting-module’

Explanation: The target module encountered an error while attempting to perform the listed function. The module that detected the error is also listed.

User response: If the reason for the failure cannot be determined, contact IBM Software Support.
BSY0549E  QUIESCE failed for DB 'database',
          RC='rc'
Explanation:  An undetermined error occurred while executing the QUIESCE command against the specified database. The return code returned by the UPD DB command is shown.
User response:  If the reason for the failure cannot be determined, contact IBM Software Support

BSY0550E  QUIESCE failed for DB 'database',
          RC='rc', ERROR='error-text'
Explanation:  An error occurred while running the QUIESCE command against the specified database. The return code and error text returned by the UPD DB command are shown.
User response:  If the reason for the failure cannot be determined, contact IBM Software Support.

BSY0551E  'tablespace' cannot be quiesced because it is in 'state' status
Explanation:  The specified Db2 tablespace cannot be quiesced because it is currently in the status shown.
User response:  Correct the tablespace status and resubmit the job.

BSY0552E  'tablespace' cannot currently be quiesced with this process
Explanation:  The specified Db2 tablespace is a restricted or system tablespace and may not be quiesced using this process.
User response:  Remove the listed tablespace from the application profile and resubmit the job.

BSY0553E  'function' function is only available for IMS version 'vv' and later
Explanation:  The specified function is not available for the target IMS subsystem because the version is not supported. The supported version is shown in the message.
User response:  This function cannot be performed against this IMS subsystem.

BSY0554E  RECON MINVERS must be set at IMS version v0 or later
Explanation:  The specified function is not available for the target IMS subsystem because the MINVERS setting in the RECON data sets is not supported. The supported version is displayed in the message.
User response:  This function cannot be performed against this IMS subsystem.

BSY0560I  message text
Explanation:  This message is issued with varying message text during the execution of the dynamic API environment utility, BSY#UTIL. The message text indicates the progress of processing as well as other information pertinent to the utility execution.
User response:  None required.

BSY0561I  message text
Explanation:  This message is issued with varying message text by the dynamic API environment utility, BSY#UTIL to indicate the status of the API interface module, BSY#API. This message indicates whether the module already exists in LPA, or if it was loaded into LPA by this execution of the utility.
User response:  None required.

BSY0562E  Unable to locate the maintenance level for BSY#API
Explanation:  During the execution of the dynamic API environment utility program, BSY#UTIL, when the API interface module BSY#API cannot be loaded into LPA. The return and reason codes from the CSVDYLPA REQUEST=ADD are displayed.
User response:  Ensure that the current version of the BSY#API program is located in the //STEPLIB.

BSY0563E  Error loading BSY#API into LPA, RC=rc, RSN=rsn
Explanation:  This message is issued by the dynamic API environment utility program, BSY#UTIL, when the API interface module BSY#API cannot be loaded into LPA. The return and reason codes from the CSVDYLPA REQUEST=ADD are displayed.
User response:  Ensure that the current version of the BSY#API program is located in the //STEPLIB. If the problem persists, contact IBM Software Support.

BSY0564E  BSY#API not found in //STEPLIB.
Explanation:  This message is issued by the dynamic API environment utility program, BSY#UTIL, when the API interface module BSY#API cannot be found in the //STEPLIB or //JOBLIB.
User response:  Ensure that the current version of the BSY#API program is located in the //STEPLIB or //JOBLIB.

BSY0565E  Error deleting BSY#API from LPA, RC=rc, RSN=rsn
Explanation:  This message is issued by the dynamic API environment utility program, BSY#UTIL, when the API interface module BSY#API cannot be deleted from LPA. The return and reason codes from the CSVDYLPA
REQUEST=DELETE are displayed.

User response: Contact IBM Software Support.

BSY0566E  Required DD ddname not specified in the JCL

Explanation: This message is issued by the dynamic API environment utility program, BSY#UTIL. One or more required DD statements are missing from the JCL. This message displays the missing DD name.

User response: Specify the missing DD statement and resubmit the job.

BSY0567I  message text

Explanation: This message is issued with varying message text by the dynamic API environment utility program, BSY#UTIL, to display information about one or more dynamic API environments. The message text displays information about the environment such as whether it is active or inactive, as well as the DD names and data sets associated with the environment.

User response: None required.

BSY0568I  BSY#API ENTRYP = entry-point
          BSY#API LOADPNT = load-point BSY#API
          MODULEN = module-length BSY#API
          TIMESTAMP = timestamp BSY#API
          VERSION = version

Explanation: These messages are issued by the dynamic API environment utility program, BSY#UTIL, to display information about the API interface module BSY#API, which is loaded into LPA.

User response: None required.

BSY0569W  BSY#API environment not found for DEACTIVATE

Explanation: This message is issued by the dynamic API environment utility program, BSY#UTIL, when a DEACTIVATE was performed but no environment was located that matches the DD statements specified in the JCL. No environment is deactivated.

User response: Ensure that the DD statements specified in the JCL match the environment to be deactivated, and resubmit the job.

BSY0570I  Deleting active | inactive BSY#API environment

Explanation: This message is issued by the dynamic API environment utility program, BSY#UTIL, when a DEACTIVATE was performed. This message indicates whether the currently active or inactive environment is being deleted.

User response: None required.

BSY0571E  Unable to acquire SHR | EXC enqueue for BSY#UTIL execution; retry later.

Explanation: This message is issued by the dynamic API environment utility program, BSY#UTIL, when it cannot acquire the required enqueue needed to perform work. The job terminates.

User response: The most likely cause of this error is that multiple BSY#UTIL jobs are executing at the same time. Ensure that only one BSY#UTIL job is active at a time.

BSY0572E  There are active users of the API,
          ACTIVATE | DEACTIVATE not allowed at this time

Explanation: This message is issued by the dynamic API environment utility program, BSY#UTIL, when an ACTIVATE or DEACTIVATE is requested but it was determined that there are active users of the BSY#API API interface routine loaded into LPA. No changes can be made to the dynamic API environment while there are active users.

User response: Wait until all active API user jobs are complete and resubmit the job.

BSY0600E  Master 'type' job 'name' is not active

Explanation: A multijob offload or restore job (type) could not locate the active master job 'name'. The multijob will terminate. This could happen when the master job abends after it submits the multijobs.

User response: Correct the problem and resubmit the master job.

BSY0601E  SWAREQ failed for 'object' RC='return code'

Explanation: The system SWAREQ service failed for the specified object. The return code from the service is listed.

User response: If the reason for the failure cannot be determined, contact IBM Software Support.

BSY0602E  VSAM FUNCTION 'function' failed with RC='return code' RSN='reason'

Explanation: The VSAM function listed failed with the specified return and reason codes.

User response: If the reason for the failure cannot be determined, contact IBM Software Support.

BSY0604E  FUNCTION 'function' failed with RC='return code' RSN='reason'

Explanation: The system function listed failed with the specified return and reason codes.
<table>
<thead>
<tr>
<th>BSY0605I</th>
<th>Job 'jobname' submitted to z/OS image 'name'</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User response:</strong> If the reason for the failure cannot be determined, contact IBM Software Support.</td>
<td></td>
</tr>
<tr>
<td><strong>Explanation:</strong> The master has submitted the specified jobname to run on the listed LPAR.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY0606I</th>
<th>JOB 'jobname' submitted to z/OS image 'name' completed with 'status type' 'status'</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User response:</strong> If the status indicates that the job completed with a return code of zero, no response is needed. Otherwise look at the output from the job and correct the problem. If the reason cannot be determined, contact IBM Software Support.</td>
<td></td>
</tr>
<tr>
<td><strong>Explanation:</strong> The specified multijob which was submitted to run on the listed LPAR has completed. The status will indicate whether the job completed successfully or not.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY0607E</th>
<th>Error opening JCLOUT DD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User response:</strong> Make sure the JCLOUT DD is not specified in the JCL since it is dynamically allocated.</td>
<td></td>
</tr>
<tr>
<td><strong>Explanation:</strong> An error occurred trying to open the JCLOUT DD name. This DD is used to create the JCL for submitting the multijobs.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY0608E</th>
<th>Error building JOBCARD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User response:</strong> Review the joblog for other messages indicating the cause of the error and correct the problem.</td>
<td></td>
</tr>
<tr>
<td><strong>Explanation:</strong> An error occurred trying to build the jobcard for one of the multijobs.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY0609E</th>
<th>There are no volumes to offload</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User response:</strong> If you want to reprocess the offload, specify the RE-OFFLOAD keyword in the BSYIN input and resubmit the job.</td>
<td></td>
</tr>
<tr>
<td><strong>Explanation:</strong> An attempt to offload the backup determined that there are no volumes that have not already been offloaded.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY0610I</th>
<th>There are 'number of volumes' volumes to process; 'number of jobs' jobs will be spawned</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User response:</strong> This is an informational message indicating how many volumes will be processed and how many multijobs will be used to process them.</td>
<td></td>
</tr>
<tr>
<td><strong>Explanation:</strong> This is an informational message indicating how many volumes will be processed and how many multijobs will be used to process them.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY0612E</th>
<th>Vol 'unit' 'volser' was not successfully processed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User response:</strong> Review the messages and report to determine the exact cause of the error. Correct the problem and resubmit the job.</td>
<td></td>
</tr>
<tr>
<td><strong>Explanation:</strong> The listed unit address and volser was not successfully processed.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY0620E</th>
<th>Task 'task number' Error checking volume 'unit' 'volser'</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User response:</strong> Review the messages and report to determine the exact cause of the error. Correct the problem and resubmit the job.</td>
<td></td>
</tr>
<tr>
<td><strong>Explanation:</strong> The specified task encountered an error checking the listed unit address and volser for processing.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY0621E</th>
<th>Task 'task number' Unable to get next volume in the stack 'unit' 'volser'</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User response:</strong> Review the messages and report to determine the exact cause of the error. Correct the problem and resubmit the job.</td>
<td></td>
</tr>
<tr>
<td><strong>Explanation:</strong> The specified task encountered an error obtaining the listed unit address and volser for restore processing.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY0636I</th>
<th>Task 'task number' Processing VOL 'unit' 'volser'</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User response:</strong> No response is required. This message is for informational purposes only.</td>
<td></td>
</tr>
<tr>
<td><strong>Explanation:</strong> This message indicates that the specified task number is processing the listed unit address and volser.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY0640E</th>
<th>Profile profile_creator:profile_name is not a Combined SLB profile</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User response:</strong> When performing BACKUP for a Combined SLB group, ensure that you select a profile that is associated with a Combined SLB group.</td>
<td></td>
</tr>
<tr>
<td><strong>Explanation:</strong> During BACKUP processing for a Combined SLB group, the profile being processed was not associated with a Combined SLB group. Processing was terminated.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY0641E</th>
<th>parameter is not supported for CSLB profiles (currently only LOG SUSPEND)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User response:</strong> No response is required. This message is for informational purposes only.</td>
<td></td>
</tr>
<tr>
<td><strong>Explanation:</strong> While processing a Combined SLB profile, it was determined that one of the parameters in the profile is not allowed for Combined SLB processing.</td>
<td></td>
</tr>
</tbody>
</table>
The parameter is displayed in the message. Processing was terminated.

**User response:** Edit the Combined SLB profile and ensure that the listed parameter is set appropriately.

### BSY0642E  module is an invalid CSLB offset table

**Explanation:** While processing a Combined SLB profile, it was determined that one of the load modules which contains offset values is not valid. Processing was terminated.

**User response:** Ensure that the module listed was correctly installed.

### BSY0643E  Error encountered during module phase processing

**Explanation:** While processing a Combined SLB profile, an error occurred in the listed module during the listed phase. Processing was terminated.

**User response:** Review the job log for other messages that identify the error. Correct the error and resubmit the job.

### BSY0644W  Parameter mismatch Section: section, Parameter: parameter

**Explanation:** While performing BACKUP processing for a Combined SLB group, it was determined that the parameter listed was inconsistently set between IMS Recovery Expert and Db2 Recovery Expert. Processing continues.

**User response:** Review the listed parameter and the values displayed in ["BSY0645W"] for each product. Determine what you must do to make the parameter consistent.

### BSY0645W  BSY value: value1, ARY value: value2

**Explanation:** This message appears after message ["BSY0644W"] and displays the mismatched parameter values for IMS Recovery Expert (BSY) and Db2 Recovery Expert (ARY).

**User response:** Review the listed parameter and the values displayed for each product. Determine what you must do to make the parameter consistent.

### BSY0646E  Error processing Combined SLB group group, error

**Explanation:** While processing a Combined SLB profile, an error was detected in the group. The group and the error are listed in the message. Processing was terminated.

**User response:** Review the listed error. Correct the problem and resubmit the job.

### BSY0647E  SSID ssid was not found in the Combined SLB backup

**Explanation:** While performing image copy processing against a Combined SLB, it was determined that the listed SSID is not part of the backup. Processing was terminated.

**User response:** Select a backup that contains the SSID for which image copy processing is being performed, and resubmit the job.

### BSY0648E  Combined SLB repository record validation failed

**Explanation:** While attempting to create a Combined SLB, validation failed for the repository records that are created by the process.

**User response:** Contact IBM Software Support and provide them with the information displayed in this message.

### BSY0650I  CSLB backup not allowed due to prior error

**Explanation:** While performing BACKUP processing for a Combined SLB group, an error occurred that prevents the backup from completing. Processing was terminated.

**User response:** Review the job log for other messages that identify the error. Correct the error and resubmit the job.

### BSY0821I  NEWEST | OLDEST PITCA found for CA group cagroup

**Explanation:** This message is issued in combination with BSY0822I and lists the NEWEST or OLDEST point in time change accumulation (PITCA) for the specified change accumulation (CA) group. BSY0822I will show the actual data set name and the timestamp associated with it.

**User response:** None.

### BSY0822I  PITCADSN=pcitcadsn, TIME=timestamp

**Explanation:** This message is issued after BSY0821I and shows the point in time change accumulation (PITCA) data set name `pcitcadsn` associated with the group in the BSY0821I message, as well as the end time of the PITCA `timestamp`.

**User response:** None.

### BSY0823I  NEWEST | OLDEST LASTIC found for DBD dbname DDN ddbname

**Explanation:** This message is issued in combination with BSY0824I and lists the NEWEST or OLDEST last image copy associated with the listed database `dbname`
and DD name *ddname*. BSY0824I will show the actual data set name and the timestamp associated with it.

**User response:** None.

BSY0824I  ICDSN=*icdsn*, TIME=*timestamp*

**Explanation:** This message is issued after BSY0823I and shows the image copy data set name *icdsn* associated with the database and DD listed in the BSY0823I message, as well as the run time of the IC *timestamp*.

**User response:** None.

BSY0835I  Current time: *current-timestamp*  Adjusted time: *adjusted-timestamp*

**Explanation:** This message is issued any time there are warnings for LASTPITCA or LASTIC processing, and will show the current time *current-timestamp* and adjusted time *adjusted-timestamp* based on the LASTPITCA_AGE or LASTIC_AGE parameters in BSY#PARM.

**User response:** None.

BSY0900E  Entry number 'number' not found in Table: 'table name'

**Explanation:** A module was trying to issue a message but the message number is not defined in the message table.

**User response:** Contact IBM Software Support.

BSY0901E  Program 'program name' requires APF-Authorization

**Explanation:** The running program requires APF authorization to perform the requested function.

**User response:** APF authorize all libraries in the STEPLIB.

BSY0902E  MVS Service 'service name' call from 'module name' failed

**Explanation:** IMS Recovery Expert received an expected return code from issuing a request for an MVS service. Additional messages will be issued to document the return and reason code returned.

**User response:** If return codes for the MVS service are documented, view them to see if the problem can be corrected. Otherwise, contact IBM Software Support.

BSY0903E  Program 'module name' was unable to find 'member type' 'member name' in data set 'data set name'

**Explanation:** IMS Recovery Expert was unable to locate the member in the data set.

**User response:** Verify the member name is correct and that the libraries specified for the member type are valid.

BSY0910E  ABEND occurred in program 'module name'

**Explanation:** IMS Recovery Expert detected that an abend occurred in one of its modules.

**User response:** Contact IBM Software Support.

BSY0911E  Problem determining ACTIVE RDS data set for RSENNAME 'rsename'

**Explanation:** IMS Recovery Expert detected that it was processing an XRF-capable IMS system but it was unable to locate the RSENNAME.

**User response:** Verify that the correct IMS System Information was provided when the IMS system was registered to IMS Recovery Expert. If the problem cannot be resolved, contact IBM Software Support.

BSY0912W  Invalid response to message 'message number'

**Explanation:** An invalid reply was issued to a WTOR.

**User response:** Issue a valid response to the WTOR.

BSY0913I  Response to message 'message number'= 'reply'

**Explanation:** A valid response was received from a WTOR.

**User response:** None.

BSY0914I  Invalid keyword('keyword') supplied to PROGRAM 'program name'

**Explanation:** A IMS Recovery Expert job step encountered an invalid keyword.

**User response:** If this was a IMS Recovery Expert generated JCL, contact IBM Software Support. Otherwise, correct the control statement and rerun the job.

BSY0915E  Keyword 'keyword' supplied an invalid parameter

**Explanation:** A IMS Recovery Expert job step encountered an invalid parameter.

**User response:** If this was a IMS Recovery Expert generated JCL, contact IBM Software Support. Otherwise, correct the parameter and rerun the job.
No usable data supplied as input to DD 'ddname'.

**Explanation:** The job step did not find any control statements in the input DD. IMS Recovery Expert will attempt to continue with default options.

**User response:** If control statement input is required, provide the control statements in the specified DD.

Invalid data passed to PROGRAM 'program name' via the "PARM" execution parameter.

**Explanation:** The job step detected that the PARM value on the EXEC statement was invalid.

**User response:** If this was a IMS Recovery Expert generated JCL, contact IBM Software Support. Otherwise, correct the parameter and rerun the job.

**BSY0918I** PROGRAM 'program name' Control Statement echo:

**Explanation:** The program will list the control statements that were supplied to it.

**User response:** None.

PROGRAM 'program name' completed with a Return Code of 'return code'.

**Explanation:** The program is terminating and the highest encountered return code is displayed.

**User response:** If the return code is not 0, review any previous error or warning messages.

**BSY0920E** VSAM 'call type' call failed

**Explanation:** IMS Recovery Expert received an error return code when trying to issue the VSAM call.

**User response:** Review SYSLOG messages for VSAM error messages. If the problem cannot be corrected, contact IBM Software Support.

IMS 'command type' Command Process on SSID: 'ssid'.

**Explanation:** IMS Recovery Expert issued and received a response for the IMS command.

**User response:** None.

**BSY0921I** DBR Command will not be processed for 'database' on IMS SSID 'ssid' REASON: 'reason'.

**Explanation:** IMS Recovery Expert will not issue the DBR command for the database because it is in a state that the DBR cannot complete.

**User response:** Correct the reason listed or remove the database from the application profile being processed.

Processing 'database type' for 'database name'.

**Explanation:** IMS Recovery Expert is beginning to process the requested command for the database listed.

**User response:** None.

IMS 'command type' command failed on SSID: 'ssid'.

**Explanation:** A command that IMS Recovery Expert issued to the IMS system failed.

**User response:** Review additional SYSLOG and IMS messages that may have been issued. If the problem cannot be corrected, contact IBM Software Support.

CHANGE.DBDS RECOV command will not be issued for 'database' as a DBR request failed.

**Explanation:** Since IMS Recovery Expert could not DBR the database, it will not set the Recovery Needed flag on in DBRC.

**User response:** Review why the database could not be DBR'd and then rerun the recovery process.

No active subsystems when DBR request was issued, STA request bypassed.

**Explanation:** The job step to restart any databases that were DBR'd by a prior job step in the recovery process detected that no IMS systems were active when the DBR job step ran. The attempt to start the databases in the application profile is bypassed.

**User response:** None.

No databases processed by the DBR request, STA request bypassed.

**Explanation:** The job step to restart any databases that were DBR'd by a prior job step in the recovery process detected that no databases were processed when the DBR job step ran. The attempt to start the databases in the application profile is bypassed.

**User response:** None.

No archive logs found for time range requested.

**Explanation:** A quiet time analysis was requested but no archive logs for the specified time range were found in DBRC.

**User response:** Correct the specified time range and rerun the job.
BSY0929I  Processing log dsn: archive log data set name
Explanation: This is an informational message. The data set name for the archive log is being processed.
User response: None.

BSY0930I  Processing completed for log dsn: archive log data set name
Explanation: This is an informational message. Processing has completed for the archive log data set name.
User response: None.

BSY0931W  Unable to archive log for ims-ssid
Explanation: An attempt to archive a required active log did not complete successfully.
User response: Review the IMS archive log utility output to determine the reason that the active log was not successfully archived.

BSY0932W  Logs not read until end of time range
Explanation: The quiet time log analysis utility did not find archive logs for the entire time range in DBRC. Also, the IMS system is down so a /SWI OLDS command could not be issued to archive active logs.
User response: Quiet time reporting did not include the entire specified time range. If the entire time range is required, then you can manually submit a job to archive any active logs for the IMS.

BSY0933E  No IMSPLEX name found
Explanation: The requested operation requires the use of the CSL address spaces.
User response: CSL address spaces are required to be enabled for the requested function. If enabled, report the problem to IBM Software Support.

BSY0934I  Connecting to IMSPLEX=plexname.
Explanation: This is an informational message. An attempt to connect to an IMSPLEX is being initiated.
User response: None.

BSY0935I  Disconnected from IMSPLEX=plexname.
Explanation: IMS Recovery Expert has disconnected from the IMSPLEX.
User response: None.

BSY0999I  Internal Logic Error: 'module name'
(Code: 'return code')
Explanation: An unexpected error occurred.
User response: Contact IBM Software Support.

BSYA900E  Invalid Column Function value. Valid values: 1, 2, 3, 4.
Explanation: An invalid character was entered in the Column Function field.
User response: Specify a valid character (1, 2, 3, or 4).

BSYA901E  Invalid Permanent View value. Valid values: Y, N.
Explanation: An invalid value was entered in the Permanent View field.
User response: Correct the value or cancel. Valid values are Y and N.

BSYA902E  Invalid Reset View value. Valid values are Y, N.
Explanation: An invalid character was entered in the Reset View field. Valid values are Y and N.
User response: Specify a valid value or cancel.

BSYA903E  Invalid Stop Sorting value. Valid values: Y, N.
Explanation: An invalid character was entered in the Stop Sorting field. Valid values are Y and N.
User response: Specify a valid value or cancel.

BSYA904E  Invalid FORM parameter.
Explanation: Invalid parameter to the FORM command. The FORM command has no parameters.
User response: Clear the invalid parameters and re-issue the command. Or, clear the entire command.

BSYA906E  Invalid parameter for NROW. Must be numeric.
Explanation: The parameter you specified was not numeric and is therefore invalid.
User response: Specify a numeric value corresponding to the number of rows to advance. The default value for NROW is 1.

BSYA907E  Invalid parameter for PROW. Must be numeric.
Explanation: The parameter you specified was not numeric and is therefore invalid.

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User response: Specify a numeric value corresponding to the number of rows to scroll back. The default value for PROW is 1.

Invalid parameter for NROW. Too many digits.
Explanation: An invalid parameter for the NROW keyword was specified. More than eight digits were specified. Parsing stops at eight digits.
User response: A parameter of NROW must be between 1 and the number of rows in the current report display. If no parameter is specified, 1 is assumed.

Invalid parameter for PROW. Too many digits.
Explanation: Invalid parameter to PROW specified. More than eight digits were specified. Parsing stops at eight digits.
User response: A parameter of PROW must be between 1 and the number of rows in the current report display. If no parameter is specified, 1 is assumed.

CSETUP command not supported from FORM function.
Explanation: The NROW (next row) and PROW (previous row) commands are used to move the FORM display window to another row. The UP, DOWN, LEFT, and RIGHT commands move the FORM display window within the current row. Row, as mentioned above, refers to the row from the original report display, not any reformatted FORM display row. By default, NROW advances the FORM display to the next row. If NROW n is issued, the FORM display will advance n rows. Similarly, PROW moves the FORM display window to the immediately prior row. PROW n moves the current FORM display window to the nth prior row.
User response: None required.

Invalid CNUM parm. Valid parms are ON, OFF, or blank.
Explanation: CNUM was issued with an invalid parameter. Issuing CNUM with no parameter acts as an ON/OFF toggle. ON and OFF are the only parameters accepted. ON turns the CNUM display on. OFF turns the CNUM display off.
User response: Use a valid CNUM parameter (ON, OFF, or blank).

Report width for print too large.
Explanation: The report width specified is too large. The maximum report width currently supported is 32,760.
User response: Reduce the report width.

Invalid ICR command. Use RIGHT command.
Explanation: ICR is only valid with columns that are not their maximum size. You can see the column's current and maximum sizes by issuing CSIZE.
User response: RIGHT and LEFT commands can be used to see all parts of this column.

Invalid ICL command. Use LEFT command.
Explanation: ICL is only allowed with columns that are not their maximum size. You can see the column's current and maximum sizes by issuing CSIZE.
User response: RIGHT and LEFT commands can be used to see all parts of this column.

Format mix data element not updated.
Explanation: Format MIX data cannot be updated when only part of the data is displayed.
User response: None required.

FORM command not supported from FORM function.
Explanation: FORM was issued from within a FORM display. This is not supported.
User response: None required.

FORM PF keys set; NROW = next row
PROW = previous row.

Invalid CNUM parm. Valid parms are ON, OFF, or blank.
Explanation: CNUM was issued with an invalid parameter. Issuing CNUM with no parameter acts as an ON/OFF toggle. ON and OFF are the only parameters accepted. ON turns the CNUM display on. OFF turns the CNUM display off.
User response: Use a valid CNUM parameter (ON, OFF, or blank).

Report width for print too large.
Explanation: The report width specified is too large. The maximum report width currently supported is 32,760.
User response: Reduce the report width.

FORM command not supported from CSET function.
Explanation: FORM was issued from within a CSET function. This is not supported. CSET functions include CFIX, CORDER, CSIZE, CSORT and CSETUP (CSET).
User response: None required.
BSY9201  Chars string found number times.
Explanation: The FIND command located the specified character string. The number of times the string was found is listed in the message.
User response: None required.

BSY9211  Chars string not found on any lines.
Explanation: The FIND command could not locate the specified character string.
User response: None required.

BSY9221  Search for CHARS string was successful.
Explanation: The FIND command located the specified character string.
User response: None required.

BSY923E  Parameter not recognized: Check for misspelled keywords or embedded blanks in search string.
Explanation: An invalid parameter was entered for the FIND command.
User response: Check the parameter spelling and syntax.

BSY924E  Inconsistent parameters: parameter 1 and parameter 2 cannot both be specified for FIND command.
Explanation: Too many parameters were specified for the FIND command.
User response: Check the command syntax and retry.

BSY926E  Parm too long: Maximum parameter length is 80.
Explanation: The parameter entered in the FIND command is too long. Maximum length is 80 characters.
User response: Shorten the parameters to less than or equal to 80 characters and retry.

BSY927E  Invalid COLS parm. Valid parms are ON, OFF, or blank.
Explanation: An invalid parameters was entered with the COLS command.
User response: Enter a valid value as indicated in the message text.

BSY930I  No columns eligible for resizing.
Explanation: The displayed report does not contain any columns that can be re-sized.
User response: None required.

BSY931I  No columns eligible for sorting.
Explanation: The displayed report does not contain any columns that can be sorted.
User response: None required.

BSY932E  TBMOD failed. RC=return code.
Explanation: An unexpected return code of (hex) return code occurred doing TBMOD.
User response: See the ISPF Services Guide under TBMOD. Review ISPTLIB allocation. Review ISPTLIB data set characteristics. Review security controlled access to ISPTLIB data sets.

BSY933E  Invalid column name: missing quote.
Explanation: SORT or CSORT was issued with a parameter that had an initial quotation character, but not a second closing quotation character.
User response: Either clear the command line and select the desired sort column(s) from the displayed selection list or correct the command on the command line.

BSY934E  More than 9 columns specified.
Explanation: SORT or CSORT was issued with too many columns specified as sort columns. A maximum of 9 sort columns can be specified.
User response: Either clear the command line and select the desired sort column(s) from the displayed selection list or correct the command on the command line.

BSY935E  Invalid column name.
Explanation: SORT or CSORT was issued with a column parameter that does not match any column name. A list of the correct column names is seen in the SORT selection panel.
User response: Either clear the command line and select the desired sort column(s) from the displayed selection list or correct the command on the command line.
<table>
<thead>
<tr>
<th>BSYA967E</th>
<th>Data set not found. Data set <code>datasetname</code> was not found in the MVS catalog. Please enter a valid data set that is cataloged.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The specified data set name does not exist or is not catalogued.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Specify the name of an existing, cataloged data set.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYA968E</th>
<th>Invalid data set/member/alias. The data set, member name, or alias entered does not meet the MVS data set naming standards.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The information specified for a data set, member name, or alias is not valid.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Specify a valid data set and member name.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYA969E</th>
<th>A name of a valid partitioned data set and member name are required.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>Either the specified data set name is not a valid name, or the data set name or member name were not specified.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Specify a valid data set and member name.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYA970E</th>
<th>A problem was encountered in allocating the files necessary for ISPF file tailoring. Please try again.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>While allocating the files necessary for ISPF file tailoring, an error occurred.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Retry the request to build the MEPL job. If the problem persists, contact IBM Software Support.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYA971I</th>
<th>Display MEPL Job <code>jobname</code> successfully submitted.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>This is an informational message indicating that a job to create the MEPL report was submitted to the internal reader.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>None.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYA972E</th>
<th>Command is not supported on this screen. Please enter a valid command or clear the primary command line.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The command that was specified on the command line of this panel is not valid.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Specify a valid command or clear the command line.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYA973E</th>
<th>Allocation error. An error was encountered when allocating the ISPFILE DD. Attempting to continue.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>An attempt to allocate the ISPFILE DD in order to customize skeleton JCL failed.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Determine if the ISPFILE is allocated in the TSO address space for another use, and FREE the DD if it is not needed. If this does not resolve the problem, contact IBM Software Support.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYA974E</th>
<th>Display MEPL internal error - at least one DSN required.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>When a call was made to the product module that generates the job to produce the MEPL report, an error occurred.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Contact IBM Software Support.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYA975E</th>
<th>Display MEPL internal error - Invalid eyecatcher length</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>When a call was made to the product module that generates the job to produce the MEPL report, an error occurred.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Contact IBM Software Support.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYC000E</th>
<th>Combined SLB Group name must be specified</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>You must specify the name of the Combined SLB group to perform this operation.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Specify the name of a valid Combined SLB group.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYC001E</th>
<th>A description for the Combined SLB Group must be specified</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>You must specify a valid description for the Combined SLB group definition.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Specify a valid description.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYC002I</th>
<th>Add new Combined SLB Group operation canceled</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The operation to add a new Combined SLB group was canceled at your request.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>None required.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYC003I</th>
<th>Combined SLB Group <code>group</code> added</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The listed Combined SLB group was successfully added.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>You can now define backup and DR profiles for this group.</td>
</tr>
</tbody>
</table>
BSYC004E Combined SLB Group group already exists

Explanation: The listed Combined SLB group is already defined.

User response: Choose a different name for the Combined SLB group, and continue.

BSYC005E Subsystem ssid is already part of a Combined SLB Group

Explanation: The listed subsystem ssid is already a part of a Combined SLB group and cannot be included in another group. You can only include a subsystem in one Combined SLB group.

User response: Choose a different SSID to include in this group. If the SSID must be added to this group, it must first be removed from the other group.

BSYC006E Error adding Combine SLB Group group, RC=rc, RSN=rsn

Explanation: An internal error occurred while attempting to add the listed group to the repository.

User response: Contact IBM Software Support and provide them with the information displayed in this message.

BSYC007E A Combined SLB Group must contain at least 1 member

Explanation: A Combined SLB group must contain at least 1 member. You cannot add a group that has no member(s), and you cannot delete all members from a group.

User response: If you are adding a new Combined SLB group, include at least one SSID in the group. If you are deleting all SSIDs from a group, then delete the group instead of deleting the members.

BSYC008I Combined SLB Group group deleted

Explanation: The listed Combined SLB group was successfully deleted.

User response: None required.

BSYC009E Error deleting Combine SLB Group group, RC=rc, RSN=rsn

Explanation: An internal error occurred while attempting to delete the listed group from the repository.

User response: Contact IBM Software Support and provide them with the information displayed in this message.

BSYC010I Combined SLB Group &CSLBGRPN successfully updated

Explanation: The listed Combined SLB group was successfully updated.

User response: None required.

BSYC011E Error updating Combined SLB Group group, RC=rc, RSN=rsn

Explanation: An internal error occurred while attempting to update the listed group in the repository.

User response: Contact IBM Software Support and provide them with the information displayed in this message.

BSYC012E Error adding member SSID to Combined SLB Group group, RC=rc, RSN=rsn

Explanation: An internal error occurred while attempting to add the listed member to the Combined SLB group in the repository.

User response: Contact IBM Software Support and provide them with the information displayed in this message.

BSYC013E Error deleting member SSID from Combined SLB Group group, RC=rc, RSN=rsn

Explanation: An internal error occurred while attempting to delete the listed member from the Combined SLB group in the repository.

User response: Contact IBM Software Support and provide them with the information displayed in this message.

BSYC014E Error reading SYSGROUP repository, RC=rc, RSN=rsn

Explanation: An internal error occurred while attempting to read the SYSGROUP repository.

User response: Contact IBM Software Support and provide them with the information displayed in this message.

BSYC015E There are no Combined SLB Groups currently defined in the SYSGROUP repository

Explanation: While attempting to add a profile for a Combined SLB group, it was detected that there are currently no Combined SLB groups defined.

User response: Define a Combined SLB group before creating backup or DR profiles for the Combined SLB group.
BSYC016E  Unable to read the Combined SLB Group from the SYSGROUP repository

Explanation: An error occurred while attempting to read a Combined SLB group from the SYSGROUP repository.

User response: Ensure that a valid SYSGROUP repository is defined and specified in the invocation CLIST.

---

BSYC017E  Combined SLB group delete canceled, profiles exist for the group

Explanation: While attempting to delete a Combined SLB group, it was determined that there are profiles that still reference this group. A list of these profiles was displayed, and a confirmation to delete them was canceled.

User response: None required.

---

BSYC018E  View mode - updates not allowed because there are backups for this Combined SLB group

Explanation: While attempting to update a Combined SLB group, it was determined that there are backups associated with the group. You cannot add or remove SSIDs in a Combined SLB group when there are backups for the group. As a result, you are placed in the group in view mode.

User response: To update the Combined SLB group, you must first delete any backups for the group.

---

BSYC019E  Specify a Combined SLB Group name or ? to display the currently defined groups

Explanation: To add a new profile for a Combined SLB group, you must either specify an existing group name or specify ? to view a list of groups from which to choose.

User response: Specify a valid Combined SLB group name or ? to view a list of groups.

---

BSYC020E  Group display allowed for Combined SLB profiles only

Explanation: The group display option is valid only for profiles that are associated with a Combined SLB group.

User response: Choose a profile that is associated with a Combined SLB group for the group display option.

---

BSYC021E  There are no Combined SLB Groups defined to the product

Explanation: There are currently no Combined SLB groups defined in the SYSGROUP repository.

User response: Define one or more Combined SLB groups before attempting to create Combined SLB profiles.

---

BSYC023E  Group is an invalid Combined SLB Group name

Explanation: The listed group name is not a valid Combined SLB group name.

User response: Specify a valid Combined SLB group name and retry the operation.

---

BSYC024E  Only one Combined SLB Group can be selected

Explanation: You can only select a single Combined SLB group for the operation you are attempting to perform.

User response: Choose one Combined SLB group and continue.

---

BSYC025E  Invalid profile type selected

Explanation: The profile type that you selected is not valid.

User response: Specify one of the listed values to select a valid profile type.

---

BSYC026E  Only one SSID can be selected

Explanation: For the operation being performed, only one SSID can be selected.

User response: Select a single SSID. If you want to perform the operation against multiple SSIDs, you must run the process multiple times.

---

BSYC027E  The excluded volume could not be discovered

Explanation: The excluded volume could not be discovered. This backup profile is for a Combined SLB group that contains Db2 SSIDs. The volume being excluded was not associated with any IMS SSID in the CSLB group and could be associated with a Db2 SSID. If this volume is associated with one of the Db2 SSIDs in the group and contains a catalog, then BACKUP will fail.

User response: Ensure that the volume being excluded does not contain any catalogs.
BSYC028E  Invalid value - the Source/Target Mapping field should be A for Auto Mapping or S for Stogroup Discovery
Explanation: In the Source/Target mapping field, you must specify A for Auto Mapping or S for Stogroup Discovery. No other values are allowed.
User response: Specify A for Auto Mapping or S for Stogroup Discovery in the Source/Target mapping field.

BSYC030E  Invalid Combined SLB group name. An SSID or data sharing group with this name already exists.
Explanation: The Combined SLB group name duplicates an existing SSID or data sharing group. Subsystem names, data sharing group names, and Combined SLB group names must be unique.
User response: Change the name to a unique name.

BSYC031E  Invalid subsystem name. A Combined SLB group with this name already exists.
Explanation: The subsystem name duplicates an existing Combined SLB group name. Subsystem names, data sharing group names, and Combined SLB group names must be unique.
User response: Change the name to a unique name.

BSYC032E  Invalid IMSPLEX name. A Combined SLB group with this name already exists.
Explanation: The IMSPLEX name duplicates an existing Combined SLB group name. Subsystem names, data sharing group names, and Combined SLB group names must be unique.
User response: Change the name to a unique name.

BSYC201E  You must select the SSID to be processed for a Combined SLB backup.
Explanation: You must select at least one SSID to be processed for the operation you are attempting to perform.
User response: Select one or more SSIDs to be processed.

BSYC202E  There are no candidate SSIDs in the backup for processing
Explanation: For the operation being performed, it was determined that there are no SSIDs that are candidates for this process.
User response: None required.

BSYC211E  SLB Used at DR must be L for Local Site, or R for Remote Site.
Explanation: The value specified for the SLB to be used for disaster recovery was not valid.
User response: Specify L to use the local site backups, or R to use the remote site backups.

BSYI520E  Image copy data set must be created for DB=ddname DDN=ddname.
Explanation: A recovery job determined that a data set in an SLB for the specified database and DDN was to be used. When the SLB was created, ISSUE NOTIFY.IC was set to Y, and NOTIFY.IC_TYPE in BSY#PARM was set to IC. As a result, an image copy was registered to DBRC with a pseudo data set name for the specified database DDN.
User response: Do one of the following. Manually delete the IC from DBRC and rerun the recovery job. IMS Recovery Expert will still use the SLB for recovery and issue a NOTIFY.UIC. Or, create an image copy data set from the SLB using the I – Image Copy command from the System Restore and Offload option.
If the IMS Database Recovery Facility is used to recover the DBDS, you can use the SLB API and the USESLBIC(Y) parameter to have the Image Copy created from the SLB at recovery time.

BSYI521W  Recovery is being performed using SLB for DB=database DDN=ddname
Explanation: The specified database and ddname is being recovered using an SLB. However, a warning or an error was encountered (BSYI521W indicates a warning and BSYI521E indicates an error). This message will be followed by an additional message that indicates the specific condition.
User response: Review the associated message and take the action necessary to complete the recovery of the data set.

BSYI522W  SLB is older than the oldest IC recorded in DBRC
Explanation: This message is preceded by message BSYI521W or BSYI521E, which identified the database and ddname that encountered this condition. The data set is being recovered using an SLB, but the oldest image copy recorded in DBRC for this data set is marked later than the SLB time. This could indicate that older allocation or image copy records have rolled off of DBRC, so it cannot be determined if logs need to be applied after the data set is restored from the SLB. If the data set was allocated at the time the SLB was created, BSYI522E is issued and this recovery is terminated because recovery is unable to determine which logs to use for recovery. If the data set is not allocated, then BSYI522W is issued and the recovery job...
BSYI523E • BSYR007E

uses the ‘Action on Warnings’ setting to determine how to proceed.

User response: If BSYI522E is issued, then this data set cannot be recovered using the system level backup. If BSYI522W is issued, then the ‘Action on Warnings’ can be set to Cont to have IMS Recovery Expert restore the data set from the SLB. Be aware that IMS Recovery Expert cannot determine if logs will need to be applied to fully recover the data set.

BSYI523E Unable to recover index for DB=dbname DDN=ddname, index rebuild utility not defined

Explanation: The index associated with the database dbname and DD ddname cannot be rebuilt because no GENJCL skeleton is specified in the recovery options for that type of database.

User response: Update the recovery options and specify GENJCL skeleton for rebuilding the index.

BSY998E Error in command XML response: error

Explanation: Running the command produced an error, and the returned XML could not be fully diagnosed. The specific type of error is shown by error.

User response: Review the error condition and correct the problem, and then resubmit the job.

BSYM640E Allocation Error - The ISPFILE DD is already allocated and cannot be deallocated - Process not completed.

Explanation: The ISPFILE DD allocation failed. The DD is already allocated and cannot be deallocated for this TSO session. The process did not complete successfully.

User response: Free the ISPFILE DD. You must exit the product and re-enter, then rebuild the job.

BSYM641E Allocation Error - An error was encountered allocating the ISPWRK1 or ISPWRK2 DD - Process not completed.

Explanation: The ISPWRK1 or ISPWRK2 DD allocation failed. The process did not complete successfully.

User response: Verify TSO session parameters are set correctly for your site prior to allocation of these DD statements.

BSYR001E Invalid value entered - Please enter a valid value from the list displayed.

Explanation: You entered an invalid selection in the Option line.

User response: Correct the invalid value and retry.

BSYR002E AUTOTGT is only valid for BCV type profiles.

Explanation: You used the AUTOTGT primary command, but the backup is a SNAP type backup. The AUTOTGT command searches for any BCVs that have a current relationship with the source volumes listed in the profile. If a BCV is found that is currently established to a source volume, it will be placed in the first open target UCB slot. The AUTOTGT command is only available for BCV type profiles.

User response: Clear the invalid command from the Option line.

BSYR003I Log Suspend is required for Flash type profiles

Explanation: Log Suspend must be set to Y for Flash type backup profiles.

User response: None required.

BSYR004E Invalid Subsystem ID (SSID) entered. The SSID must be defined in the "Setup" section of the product before it can be used.

Explanation: The subsystem listed in the message has not been configured using the product setup panel.

User response: On the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN), specify 0 (User Settings) and press Enter. On the Backup Profile Defaults panel, you can set up the subsystem. On the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN), specify 0 (Administration) and press Enter. On the Administration Menu panel (BSY$PNL0), specify 1 (Set System Backup Profile Defaults) and press Enter. On the System Backup Profile Defaults, you can set up the subsystem. Refer to the configuration documentation for information about the setup parameters.

BSYR005E Invalid Command Entered. The command is not supported on this screen. Enter a "?" to get a list of the valid commands.

Explanation: An invalid command was entered in the Option line.

User response: Clear the invalid command from the command line. Enter ? and press Enter to get a list of valid primary commands.

BSYR007E Invalid value entered - Please enter a valid value.

Explanation: An invalid value was entered.

User response: Enter Y or N and press Enter.
BSYR008E  Invalid Command Entered. The command is not supported on this screen.

Explanation: An invalid command was entered in the Option line.
User response: Check the command syntax and resubmit.

BSYR009E  Bootstrap #01 cannot be equal to bootstrap #02.

Explanation: The IMS Bootstrap data set names must be unique.
User response: Enter a unique name for one of the bootstrap data sets.

BSYR010  Rocket Licensed Materials - Property of Rocket Software (c) Copyright Rocket Software, Inc. 2006 All Rights Reserved. Trademark of Rocket Software, Inc.

Explanation: This message is displayed upon starting the IMS Recovery Expert ISPF screens.
User response: None required.

BSYR011E  Cannot offload from a backup that is not on disk.

Explanation: You cannot generate offload JCL for this backup because it is no longer on DASD volumes.
User response: The backup must be on DASD volumes in order to be offloaded.

BSYR012E  Invalid value. Must be H for HSM or R for BSY

Explanation: An invalid value was entered when specifying offload options.
User response: Enter "H" to use IBM’s HSM product to offload the backup to tape. In order to use HSM, you must have created the proper HSM dump classes and configured them properly. Enter "R" to have IMS Recovery Expert manage the offload process.

BSYR014E  Invalid value. Backup method should be (B)cv, (S)nap, (F)lash or (D)b2.

Explanation: An invalid value was entered for the Backup method.
User response: Enter B for BCV, S for Snap, F for Flash or D for IMS.

BSYR015E  Invalid value. Must be H for HSM or A for IMS Recovery Expert.

Explanation: User response: Invalid value entered. Enter H to use IBM’s HSM product to offload the backup to tape. In order to use HSM, you must have created the proper HSM dump classes and configured them properly. Enter A to have IMS Recovery Expert manage the offload process.

BSYR016E  Only one IMS type profile can be created for each IMS SSID. Profile profile_creator/profile_name already exists for this IMS SSID. Please cancel from this profile edit session.

Explanation: Only one profile that specifies a backup method of "IMS" can be created per IMS subsystem.
User response: Edit and/or use the profile name specified in the message.

BSYR018E  Any volume that contains a data user catalog or active log user catalog cannot be excluded.

Explanation: The Exclude line command was entered next to a volume that contains a data user catalog or active log user catalog. This volume cannot be excluded from a System Level Backup.
User response: Clear the line command from the selected volume.

BSYR019W  This volume has already been excluded.

Explanation: Since this volume has already been excluded, the exclude command cannot be performed.
User response: None required.

BSYR020E  No source volumes were found in the entered range.

Explanation: The entered UCB range was scanned and no valid online disk volume serials were found.
User response: Enter another range or contact your DASD administrator.

BSYR021I  There were no System Level Backup history records found in the IMS Recovery Expert repository. The system restore function cannot be run without creating a System Level Backup first.

Explanation: You specified R on the Option line of the IMS Recovery Expert for z/OS main menu panel, but no backup history records were found.
User response: None required.
<table>
<thead>
<tr>
<th>BSYR022E</th>
<th>No offload options were specified for this backup profile. Update the Backup Profile and add Offload Options before trying again.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>No offload options were specified for this backup profile. Offload options must be set before attempting an offload.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Update the Backup Profile and add Offload Options before attempting to offload again.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYR023E</th>
<th>Invalid Entry - The Recover RBA/LRSN field is not a valid hexadecimal string. Please enter a valid RBA / LRSN to recover to.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>An invalid value was entered in the Recover to RBA/LRSN field.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Enter a valid value as listed in the message text, or enter Y in the Select Timestamp Recovery Point field to locate an appropriate RBA or LRSN.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYR024E</th>
<th>Invalid Entry - Enter a &quot;Y&quot; if you would like to enter a date/time and have it converted to an LRSN for you.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>An invalid value was entered in the Select Timestamp Recovery Point field.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Enter Y in the Select Timestamp Recovery Point field to locate an appropriate RBA or LRSN. Enter N to use the listed RBA / LRSN as the recovery point.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYR025W</th>
<th>This volume has not been excluded so the undo will not be performed.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The U(ndo) line command was entered next to a volume, but since this volume has not been excluded, the undo command will not be performed.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>None required.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYR026E</th>
<th>Invalid Entry - Only one recovery point can be selected from the list for the Restore System Utility. Please select only one line or select none and enter a recovery point RBA/LRSN.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>Two or more recovery points were selected for restoration.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Select one recovery point, or enter the RECOVER subsystem command to specify an RBA/LRSN.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYR027E</th>
<th>Invalid Value - Enter &quot;S&quot; to choose this recovery point.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>An invalid line command was entered next to the recovery point.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Enter S to choose the recovery point for restoration, or enter another valid line command from the list on the screen.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYR028E</th>
<th>Invalid Value - Please enter a &quot;Y&quot; if you would like to edit the generated JCL after the job has been built.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>An invalid value was entered in the Edit Generated Job field.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Enter Y to edit the generated JCL after the job is built. Enter N to return to the Backup Profile Display without editing the job after it is built.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYR029E</th>
<th>A fully qualified data set name is required to save the generated JCL.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The data set name is missing from the Build job in Data set field.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Enter a fully qualified data set name in the Build job in Data set field to hold the generated JCL.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYR030E</th>
<th>Invalid Data set/Member/Alias - The Data set, Member name, or Alias entered does not meet the MVS data set naming standards.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The data set name, member name, or alias entered is not valid for z/OS data set names. The first character must be capitalized alphabetic (A-Z,@,$,#) and the remaining characters must be capitalized alphanumeric (A-Z,0-9,@,$,#).</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Correct the data set name, member name, or alias.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYR031I</th>
<th>No Profiles were found that match your selection criteria. Press enter to create a new profile or change the selection criteria.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>No profiles match your selection criteria.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Press Enter to create a new profile, or change your selection criteria to get a different list.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSYR032E</th>
<th>Error opening VSAM repository data set. DSN=data set name RETCODE= return code.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>An error occurred upon opening the IMS Recovery Expert VSAM repository data set. The data set and return code are listed in the message. Possible cause of this message is the data set was not found.</td>
</tr>
</tbody>
</table>
**BSYR033E**  
**Error writing to VSAM repository data set.** DSN = data set name RETCODE = return code

**Explanation:** An error occurred upon attempting to write to the IMS Recovery Expert VSAM repository data set. The data set and return code are listed in the message.

**User response:** A WTO is issued for this message listing the file that is in error. Check to ensure the data set exists and is accessible.

---

**BSYR034E**  
**Error reading from VSAM repository data set.** DSN = data set name RETCODE = return code

**Explanation:** An error occurred upon attempting to read the IMS Recovery Expert VSAM repository data set. The data set and return code are listed in the message. Possible cause is the data set was not found.

**User response:** A WTO is issued for this message listing the file that is in error. Check to ensure the data set exists and is accessible.

---

**BSYR035E**  
**Profile profile creator.profile name was not found**

**Explanation:** The specified profile is not found in the IMS Recovery Expert VSAM repository.

**User response:** A WTO is issued for this message listing the file that is in error. Check to ensure the repository exists and is accessible.

---

**BSYR036E**  
**The Entered Value Must be Numeric.**

**Explanation:** An invalid value was entered in a numeric field.

**User response:** Enter a valid numeric value.

---

**BSYR037E**  
**You are not authorized to enter any line commands for this profile. The Creator of the profile is restricting all activity.**

**Explanation:** The creator of the selected profile specified that no other user is to view, update, or export the selected profile.

**User response:** Choose a different profile to work with.

---

**BSYR038E**  
**You are not authorized to update or delete this profile. Enter a "V" if you would like to View this profile.**

**Explanation:** The creator of the selected profile specified that no other user is to update or delete the selected profile.

**User response:** Enter V to view the profile, or choose a different profile to work with.

---

**BSYR039E**  
**Invalid Line Command Entered.**

**Explanation:** An invalid value was entered in the line command area.

**User response:** Enter one of the valid line commands listed at the bottom of the screen.

---

**BSYR040E**  
**Invalid profile creator or name specified. They cannot contain an "*".**

**Explanation:** An error occurred upon attempting to save a profile. The profile name or creator cannot contain an asterisk.

**User response:** Remove the asterisk from the profile name or creator and continue.

---

**BSYR041E**  
**A problem was encountered in allocating the files necessary for ISPF file tailoring. Please try again**

**Explanation:** An error occurred when dynamically allocating the ISPF work files ISPFILE, ISPWRK1, or ISPWRK2.

**User response:** Retry the operation. Contact IBM Software Support if the problem persists.

---

**BSYR042E**  
**Invalid Data set DSORG - The job can only be built into a sequential file or a PDS/PDSE. VSAM and other data types are not supported for job generation.**

**Explanation:** The data set organization of the file you entered is not supported for job generation. The data set must be a sequential or a partitioned data set.

**User response:** Specify a data set of the proper type.

---

**BSYR043E**  
**Data set not found - Data set data set name was not found in the MVS catalog. Please enter a valid data set that is cataloged.**

**Explanation:** The data set name entered in the Build job in Data set field does not exist.

**User response:** Enter an existing cataloged data set name in the Build job in Data set field.
<table>
<thead>
<tr>
<th>Error Code</th>
<th>Message</th>
<th>User Response</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSYR044E</td>
<td>The data set could not be allocated or opened.</td>
<td>Verify that the data set exists and is</td>
<td>The dynamic allocation of the specified data set failed.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> The dynamic allocation of the specified data set failed.</td>
<td>available for allocation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>User response:</strong> Verify that the data set exists and is available for allocation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSYR045E</td>
<td>Field Required - The data set entered is a partitioned data set and the member name is required.</td>
<td>Enter a valid member name for PDS access.</td>
<td>A required field was not specified. The data set entered is a PDS (partitioned data set) and a</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> A required field was not specified. The data set entered is a PDS (partitioned data set) and a member in this PDS must be referenced.</td>
<td></td>
<td>member in this PDS must be referenced.</td>
</tr>
<tr>
<td></td>
<td><strong>User response:</strong> Enter a valid member name for PDS access.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSYR046E</td>
<td>Data set must be a partitioned data set because multiple members will be generated.</td>
<td>Enter an existing cataloged PDS data set</td>
<td>The data set entered is a sequential data set. Because multiple members will be generated, you</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> The data set entered is a sequential data set. Because multiple members will be generated, you must specify a PDS in this field.</td>
<td>name in the <strong>Build job in Data set</strong> field.</td>
<td>must specify a PDS in this field.</td>
</tr>
<tr>
<td></td>
<td><strong>User response:</strong> Enter an existing cataloged PDS data set name in the <strong>Build job in Data set</strong> field.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSYR047E</td>
<td>The member name entered for the Restore job cannot be the same as the Restore System Utility member. Please enter a different member for one of the jobs.</td>
<td>Enter three unique member names to hold the output from the restore system job build.</td>
<td>When building a restore job, a duplicate member name was entered for one of the member names. This is not allowed.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> When building a restore job, a duplicate member name was entered for one of the member names. This is not allowed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>User response:</strong> Enter three unique member names to hold the output from the restore system job build.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSYR048E</td>
<td>A member name is not allowed on a non-partitioned data set.</td>
<td>Remove the member name or use a PDS.</td>
<td>A member name was included for the specified data set, but the data set is sequential, not a PDS.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> A member name was included for the specified data set, but the data set is sequential, not a PDS.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>User response:</strong> Remove the member name or use a PDS.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSYR049E</td>
<td>The specified data set could not be opened for I/O.</td>
<td>Verify that the VSAM data set is</td>
<td>A VSAM open error occurred while attempting to open the IMS Recovery Expert VSAM repository.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> A VSAM open error occurred while attempting to open the IMS Recovery Expert VSAM repository.</td>
<td>accessible.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>User response:</strong> Verify that the VSAM data set is accessible.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSYR050E</td>
<td>Profile profile creator.profile name already exists in the repository. Please enter a unique profile name or creator and press enter.</td>
<td>Enter a unique profile name or creator and press Enter.</td>
<td>When creating a new profile, a profile name was used that duplicates another profile name created by the same user ID.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> When creating a new profile, a profile name was used that duplicates another profile name created by the same user ID.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>User response:</strong> Enter a unique profile name or creator and press Enter.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSYR051E</td>
<td>Invalid Value - Please enter a &quot;Y&quot; if you would like to delete profile profile creator.profile name or an &quot;N&quot; if you do not want to delete it.</td>
<td>Enter a valid value as described in the message text.</td>
<td>An invalid value was entered in the Delete confirmation field.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> An invalid value was entered in the Delete confirmation field.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>User response:</strong> Enter a valid value as described in the message text.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSYR052I</td>
<td>Profile profile creator.profile name has been successfully deleted.</td>
<td>None required.</td>
<td>The profile named in the message text was successfully deleted.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> The profile named in the message text was successfully deleted.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>User response:</strong> None required.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSYR053I</td>
<td>Object does not exist.</td>
<td>None required.</td>
<td>The profile does not exist. It may have already been deleted.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> The profile does not exist. It may have already been deleted.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>User response:</strong> None required.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSYR054E</td>
<td>Invalid Value - Please enter the Unit Device (SYSDA, DISK, etc.) that you want used when generating a job.</td>
<td>Specify a valid unit device that IMS Recovery Expert can use when generating utility JCL.</td>
<td>A value was not entered for the work file unit devices.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> A value was not entered for the work file unit devices.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>User response:</strong> Specify a valid unit device that IMS Recovery Expert can use when generating utility JCL.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSYR055E</td>
<td>The entered device type is not recognized by OS/390 as a valid device type.</td>
<td>Enter a valid device type or CART for tape devices.</td>
<td>An invalid device type was entered in the Work File Unit Type field.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> An invalid device type was entered in the Work File Unit Type field.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>User response:</strong> Enter a valid device type or CART for tape devices.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The VOLSER qualifier should always be part of the data set name to ensure that each data set name is unique.

**Explanation:** When specifying data set names for offloaded backups, the VOLSER qualifier was not selected. The VOLSER qualifier should always be part of the data set name to ensure that each data set name is unique.

**User response:** Add the VOLSER qualifier to the data set name.

Invalid Value - Please Enter a "N" if you want to Restore both Data and Logs or a "Y" if you want to restore only the data.

**Explanation:** An invalid value was entered in the Restore Only field.

**User response:** Enter a valid value as described in the message text.

If restoring both Data and Logs you cannot select a timestamp recovery point.

**Explanation:** You cannot select a timestamp recovery point if you have specified to restore both data and logs.

**User response:** IMS Recovery Expert changes the Select Timestamp Recovery Point field to N and makes the field read only. To select a timestamp recovery point, change the Restore Only Data field to Y.

A timestamp recovery point cannot be selected for a non data sharing IMS subsystem.

**Explanation:** You cannot select a timestamp recovery point when the subsystem you are restoring is not a data sharing subsystem.

**User response:** None required; IMS Recovery Expert changes the Select Timestamp Recovery Point field to N.

Invalid Value - A valid IMS Subsystem ID must be specified.

**Explanation:** The IMS Subsystem field is blank. You must specify a subsystem.

**User response:** Enter a valid IMS subsystem ID.

Invalid Value - Please Enter a "F" if you would like to perform a Full Backup (Data and Logs) or a "D" if you want to perform a Data only backup.

**Explanation:** An invalid value was entered in the Backup Type field.

**User response:** Enter a valid value as described in the message text.

Invalid Value - The number of backup generations must be numeric.

**Explanation:** A non-numeric value was entered in the Backup Generations field.

**User response:** Enter a numeric value in the specified range for the backup type.

Invalid Value - Backup Method should be "B" for BCV volumes, "S" for SNAP volumes, "F" for Flash Volumes or "D" for IMS SLB.

**Explanation:** An invalid value was entered in the Backup Method field.

**User response:** Enter a valid value as described in the message text.

Invalid Value - Please Enter a "Y" if you would like to perform a Log Suspend or a "N" if you do not want to perform a Log Suspend.

**Explanation:** An invalid value was entered in the Issue Log Suspend field.

**User response:** Enter a valid value as described in the message text.

Invalid Value - Please Enter a "Y" if you would like to perform validations or a "N" if you do not want to perform validations.

**Explanation:** An invalid value was entered in the Validate IMS Volumes field.

**User response:** Enter a valid value as described in the message text.

Invalid Value - Please Enter a "Y" if you would like to add offload options, a "N" if you do not want to add offload options or "U" to update offload options.

**Explanation:** An invalid value was entered.

**User response:** Enter "Y" if you want to have the DASD backups offloaded to tape. Enter "N" if you do not want to offload the backups to tape. Enter "U" to update previous offload options.
BSYR067E  Invalid Value - The number of backup generations for a BCV target must be numeric and must be between 1 and 8.

Explanation: An invalid value was entered in the Backup Generations field.

User response: Enter a valid value as described in the message text.

BSYR068E  Invalid Value - Enter a "U" to allow other users to Update your profile, a "V" to allow other users to just View your profile or "N" to disallow other users from viewing or updating your profile.

Explanation: An invalid value was entered in the Share Option field.

User response: Enter a valid value as described in the message text.

BSYR069I  Profile profile creator.profile name saved

Explanation: The profile named in the message was successfully saved.

User response: None required.

BSYR070E  An error occurred trying to allocate a repository data set data set name.

Explanation: An error occurred when allocating the IMS Recovery Expert VSAM repository data set.

User response: Check the system log for additional error information.

BSYR071E  At least one Volume Mapping must be entered.

Explanation: No volume mappings have been created for the profile. At least one volume mapping is required for successful running of the backup job.

User response: Enter a volume mapping, or type CAN in the option line to exit the profile.

BSYR072E  The Source Volume must not be blank.

Explanation: The value in the Source Volume field was removed, but the target volumes are still in place.

User response: If you intended to remove the source volume and its mapping, use the D line command in the Cmd area. Otherwise, enter a source volume.

BSYR073E  Invalid Value - Please Enter a "Y" if you would like to enable Database Restore or a "N" if you do not want to enable Database Restore.

Explanation: An invalid value was entered in the Enable DB Restore field.

User response: Enter Y for Yes or N for No.

BSYR074E  The Source Volume must start with an alphabetic or a national character.

Explanation: An invalid value was entered as the first character of the Source Volumes field. The first character must be alphabetic or a national character, and the remaining characters must be alphabetic or numeric.

User response: Change the first character of the source volume.

BSYR075E  The Source Volume must only contain alphanumeric characters.

Explanation: An invalid character was entered in the Source Volumes field.

User response: The first character must be alphabetic and the remaining characters must be alphanumeric. Change the invalid value to an alphanumeric character.

BSYR076E  The Target Unit must only contain valid hexadecimal characters.

Explanation: A non-hexadecimal value was entered in the Target Unit field.

User response: Re-enter the Target Unit field using valid hexadecimal characters.

BSYR077E  The Profile Creator is a required field. Please enter a valid profile creator.

Explanation: When creating a new profile, the Profile Creator field was left blank.

User response: Enter a profile creator in the Profile Creator field.

BSYR078E  The Profile Name is a required field. Please enter a unique profile name.

Explanation: When creating a new profile, the Profile Name field was left blank.

User response: Enter a unique profile name in the Profile Name field.
BSYR079E  Invalid Value - Enter a "U" to allow other users to Update your profile, a "V" to allow other users to just View your profile or "N" to disallow other users from viewing or updating your profile.

Explanation: When creating a new profile, an invalid value was entered the Update Option field.

User response: Correct the value as described in the message text.

BSYR080E  Invalid Value - The number of backup generations for a SNAP or Flash target must be numeric and must be between 1 and 99.

Explanation: An invalid value was entered for the number of backup generations for a SNAP or Flash target. The value must be numeric and must be between 1 and 99.

User response: Enter a valid value as described in the message text.

BSYR082E  The new Source Volume entered is a duplicate of an existing Source Volume.

Explanation: A source volume was added to the volume mapping, but the source volume is already listed in the volume mapping.

User response: Remove the duplicate value or use the D line command to delete the volume mapping.

BSYR083E  The unit of the new Source Volume entered is a duplicate of an existing Target Unit.

Explanation: A source volume is also specified as a target unit. The same device cannot be specified as both a source volume and target unit.

User response: Change either the source volume or the target unit.

BSYR084E  The new Target Unit entered is a duplicate of an existing Source Volume.

Explanation: A target unit was added to the volume mapping, but the target unit is also listed as a source volume in the mapping. The same device cannot be specified as both a source volume and target unit.

User response: Change either the source volume or the target unit.

BSYR085E  The new Target Unit entered is a duplicate of an existing Target unit.

Explanation: A target unit was added to the volume mapping, but the unit is already listed in the volume mapping as a target unit.

User response: Enter a valid value as listed in the message text.

BSYR086E  The Source Volume's device type is not the same as the Target Unit's device type.

Explanation: The source and target volume must be of the same volume type (such as both 3390 mod 9s).

User response: Choose a target unit of the same volume type as the source unit.

BSYR087E  The beginning target value must be less than the end target value.

Explanation: The value entered in the Beginning Target Range field is less than the value in the Ending Target Range field. This is not valid.

User response: Correct the range and retry.

BSYR088E  The Source Volume and the Target Unit are not on the same storage array.

Explanation: The source volume and its specified target unit are not located on the same storage array. The source volume and target unit must be on the same array.

User response: Select a different target unit that is on the same array.

BSYR089E  Invalid value - the Target Mapping field should be A for Auto Mapping or M for Manual Mapping.

Explanation: Invalid value - the Target Mapping field should be A for Auto Mapping or M for Manual Mapping.

User response: Enter a valid value as described in the message text.

BSYR090E  Invalid Device Number (CUU) entered.

Explanation: An invalid device number (CUU) was entered.

User response: Check with your systems programmer for a valid list of device numbers.

BSYR091E  Number of BCV devices must be numeric and between 1 and 9999 inclusive.

Explanation: An invalid value was entered for the number of BCV devices. The number of BCV devices entered must be numeric and between 1 and 9999.

User response: Enter a valid value as listed in the message text.
BSYR092E  The Enter By Generation field must be "Y" or "N".
Explanation:  An invalid value was entered in the Enter by Generation field.
User response:  Correct the value and press Enter.

BSYR093E  The Setup Job field must be "Y" or "N".
Explanation:  An invalid value was entered in the Setup Job field.
User response:  Enter Y to build JCL to run profile setup only. Enter N to build JCL for backing up the systems.

BSYR094E  The Backup Repository field must be "Y" or "N".
Explanation:  An invalid value was entered in the Backup Repository field.
User response:  Enter Y to include job steps to backup the IMS Recovery Expert VSAM repository as the last step of the job. Enter N to omit these steps.

BSYR095E  Invalid value. Enter "Y" or "N".
Explanation:  An invalid value was entered.
User response:  Enter Y for Yes or N for No.

BSYR096E  Profile profile_creator.profile_name is currently being used by another user or process.
Explanation:  The profile listed in the message is being used by another user or another process.
User response:  Try again later.

BSYR097E  The Start MVS Device Number must be less than or equal to the Stop MVS Device Number.
Explanation:  An invalid value was entered for the start MVS device number must be less than or equal to the stop MVS device number.
User response:  Enter a valid value as listed in the message text.

BSYR098E  Flash Query error, Return Code: return_code, Reason Code reason_code
Explanation:  An error occurred doing a Flash Query.
User response:  Refer to the Flash Query manual for a description and resolution to the error.

BSYR099E  An error occurred trying to allocate the BSY Parmlib - Check the PARMLDNS and PARMLMBR in the startup CLIST and try again.
Explanation:  The PARMLIB data set could not be allocated. There may be an error in the PARMLIB's data set name or member in the startup CLIST.
User response:  Ensure the PARMLDNS and PARMLMBR parameters are correctly specified in the CLIST. Ensure the PARMLIB data set exists and is available.

BSYR101E  The CUU selection field must only contain valid hexadecimal characters.
Explanation:  An invalid value was entered for the CUU selection field.
User response:  Enter a valid hexadecimal value.

BSYR102E  The SYM# selection field must only contain valid hexadecimal characters.
Explanation:  An invalid value was entered for the CUU selection field.
User response:  Enter a valid hexadecimal value.

BSYR103E  The BCV Only selection field can only be "Y" or "N".
Explanation:  An invalid value was entered.
User response:  Enter a valid value as listed in the message text.

BSYR104E  The VOLSER selection field must start with an alphabetic character or a national character.
Explanation:  An invalid value was entered for the VOLSER selection field.
User response:  Enter a valid value as described in the message text.

BSYR105E  The VOLSER selection field must only contain alphanumeric characters.
Explanation:  An invalid value was entered for the VOLSER selection field.
User response:  Enter a valid value as described in the message text.

BSYR106E  This is a partial System Level Backup, it cannot be used for recovery.
Explanation:  This is a partial System Level Backup. It cannot be used for a system level IMS recovery. It can
BSYR107E  The source unit must only contain valid hexadecimal characters.

**Explanation:** An invalid value was entered for the source unit.

**User response:** Enter a valid source unit.

---

BSYR108E  The beginning source unit must be less than the end source unit.

**Explanation:** An invalid value was entered for the source and/or the end unit. The beginning source unit must be less than the ending source unit.

**User response:** Correct the invalid beginning or ending source unit.

---

BSYR109E  Allocation Error - The ISPFILE DD is already allocated and cannot be deallocated - Process not completed.

**Explanation:** The ISPFILE DD allocation failed. The process did not complete successfully.

**User response:** Verify TSO session parameters are set correctly for your site prior to allocation of these DD statements.

---

BSYR110E  Allocation Error - An error was encountered allocating the ISPWRK1 or ISPWRK2 DD - Process not completed.

**Explanation:** The ISPWRK1 or ISPWRK2 DD allocation failed. The process did not complete successfully.

**User response:** Verify TSO session parameters are set correctly for your site prior to allocation of these DD statements.

---

BSYR111E  Allocation Error - An error was encountered allocating the ISPWRK1 or ISPWRK2 DD - Process not completed.

**Explanation:** The ISPWRK1 or ISPWRK2 DD allocation failed. The process did not complete successfully.

**User response:** Verify TSO session parameters are set correctly for your site prior to allocation of these DD statements.

---

BSYR112I  Debug Mode is now activated.

**Explanation:** DEBUG mode is currently on. To turn off DEBUG mode, specify 0EBUG on the Option line of the IMS Recovery Expert for z/OS main menu panel and press Enter.

**User response:** None required.

---

BSYR113I  Debug Mode is now Deactivated.

**Explanation:** DEBUG mode is currently off. To turn DEBUG mode on, specify 0EBUG on the Option line of the IMS Recovery Expert for z/OS main menu panel and press Enter.

**User response:** None required.

---

BSYR114I  XDC Mode is now Activated.

**Explanation:** XDC mode is currently ON.

**User response:** None required.

---

BSYR115I  XDC Mode is now Deactivated.

**Explanation:** XDC mode is currently OFF.

**User response:** None required.

---

BSYR116E  Field Required - The data set entered is a partitioned data set and the member name is required.

**Explanation:** A required field was not entered. The data set entered is a PDS (partitioned data set) and a member in this PDS must be referenced.

**User response:** Enter a valid member name for PDS access.

---

BSYR117E  Allocation Error - The ISPFILE DD is already allocated and cannot be deallocated - Process not completed.

**Explanation:** The ISPFILE DD allocation failed. The DD is already allocated and cannot be deallocated for this TSO session. The process did not complete successfully.

**User response:**
V to view the aliases assigned to the catalog.

BSYR123E Invalid command - Please enter an "V" to view all the aliases assigned to this catalog, or "D" to view all the data sets assigned to the catalog.

Explanation: An invalid line command was entered.
User response: Enter A to view the aliases assigned to the listed catalog. Enter D to view the data sets assigned to the listed catalog.

BSYR124E Invalid command - Please enter an "R" to rename all the BSDS or Active log data sets in the list or "M" to move all the data sets.

Explanation: An invalid line command was entered.
User response: Enter R to rename all of the BSDS or active log data sets listed. This will be done by specifying a new high-level qualifier. Enter M to move all of the BSDS or active log data sets listed.

BSYR125E Invalid command - Please enter an "R" to rename the data set or "M" to move the data set to another volume.

Explanation: An invalid line command was entered.
User response: Enter R to rename this data set or M to move it to a different MVS volume.

BSYR127E Invalid command - Please enter "D" to display all data sets using this alias, "M" to mergecat this alias into another catalog, or "R" to rename all IMS object data sets using this alias.

Explanation: An invalid line command was entered.
User response: Enter D to display all the data sets using the alias. Enter M to perform a MERGECAT to move this alias from one MVS usercat into another. Enter R to rename all the IMS database data sets using this alias.

BSYR128E Invalid command - Please enter "D" to display all data sets on this volume, or "M" to move data sets from this volume to another.

Explanation: An invalid line command was entered.
User response: Enter the D line command to display all the MVS data sets on this volume, or M to move data sets from this volume to another.

BSYR129E Invalid Entry - An MVS User Catalog has already been created for this entry.

Explanation: The C command is not valid on this line because the MVS user catalog specified already exists and cannot be created.
User response: None required.

BSYR130E Invalid Entry - This option is not allowed until the MVS User Catalog has been created. Create the usercat before attempting to view the aliases or data sets.

Explanation: The entered command requires that you first specify the MVS user catalogs to be used for both logs and data for this IMS subsystem.
User response: None required.

BSYR131I Catalog Not Found - Press Enter to create this MVS user catalog.

Explanation: The entered MVS catalog was not found.
User response: Press enter to be taken to a screen that will help you create a MVS user catalog with this name.

BSYR132I Subsystem Information was updated in the System Level Backup and Restore subsystem setup repository.

Explanation: The analysis and subsystem setup information was saved in the product repository for future use. You may leave IMS Recovery Expert and reenter this subsystem SSID when you return to continue working on the setup of this subsystem.
User response: None required.

BSYR133E Option not allowed - The command you entered is not allowed until the new MVS User Catalogs to be used by this subsystem have been entered above and created. Please enter the required catalog information above before entering this command.

Explanation: The entered command requires that you first specify the MVS user catalogs to be used for both logs and data for this IMS subsystem.
User response: None required.

BSYR134E IMS Subsystem ssid is currently inactive. IMS must be active for a subsystem analysis. Please start IMS and try again.

Explanation: The IMS subsystem must be active to perform a subsystem analysis or re-analysis.
BSYR135E  Option not allowed - Data set Renaming or moving is not allowed while IMS is active. Please shut all IMS Subsystems down that will have data sets renamed or moved.

Explanation: The IMS subsystem must down to perform BSDS or active log renaming or moving.

User response: Start the IMS subsystem and try again.

BSYR136E  Option not allowed - The MVS User catalog used for the IMS active logs and boot straps is not allowed to the same catalog used for the IMS Data.

Explanation: The specified MVS user catalogs must not be the same data set name. The active logs and BSDS data sets should use one MVS catalog, and all other IMS data sets should use another.

User response: None required.

BSYR137E  Invalid command - Please enter an "V" to view all the volumes assigned to this copy pool.

Explanation: An invalid command was entered. The only valid command is V to view all the volumes assigned to this copy pool.

User response: Enter V to view all the volumes assigned to this copy pool.

BSYR140E  A User Catalog name must be specified.

Explanation: The user catalog name must be specified in order to create a new MVS user catalog.

User response: None required.

BSYR141E  The User Catalog specified already exists.

Explanation: The specified user catalog name already exists.

User response: Specify a new data set name.

BSYR142E  A Volume or SMSCLASS must be specified.

Explanation: Either the User Catalog Volume or SMS Storage Class field must be specified to create a MVS user catalog.

User response: Specify one of the required fields.

BSYR143E  The Volume must start with an alphabetic character.

Explanation: The specified volume is not valid. It must start with an alphabetic character.

User response: Correct the invalid volume.

BSYR144E  The Volume must only contain alphanumeric characters.

Explanation: The specified volume is not valid. It must contain only alphanumeric characters.

User response: Correct the invalid volume.

BSYR145E  The Volume name supplied is not a valid volume at your MVS installation.

Explanation: The volume name supplied is not a valid volume at your MVS installation.

User response: Check with your systems programmer for a valid list.

BSYR146E  The data parameter for tracks or cylinders must be specified.

Explanation: A parameter is missing.

User response: Specify either C for cylinders or T for tracks.

BSYR147E  The data parameter for tracks and cylinders must be T or C.

Explanation: An invalid value was specified.

User response: Specify either C for cylinders or T for tracks.

BSYR148E  The data parameter for primary quantity must be specified.

Explanation: A parameter is missing.

User response: The primary quantity must be specified and it must be numeric.

BSYR149E  The data parameter for primary quantity must be numeric.

Explanation: An invalid value was specified.

User response: The primary quantity must be specified and it must be numeric.

BSYR150E  The data parameter for secondary quantity must be specified.

Explanation: A parameter is missing.

User response: The secondary quantity must be specified and it must be numeric.
BSYR151E • BSYR163E

BSYR151E  The data parameter for secondary quantity must be numeric.
Explanation:  An invalid value was specified.
User response:  The secondary quantity must be specified and it must be numeric.

BSYR152E  The data parameter for buffers must be specified.
Explanation:  A parameter is missing.
User response:  The buffers value must be specified and it must be numeric.

BSYR153E  The data parameter for buffers must be numeric.
Explanation:  An invalid value was specified.
User response:  The buffers value must be specified and it must be numeric.

BSYR154E  The index parameter for tracks or cylinders must be specified.
Explanation:  A parameter is missing.
User response:  You must specify either C for cylinders or T for tracks.

BSYR155E  The index parameter for tracks or cylinders must be T or C.
Explanation:  An invalid value was specified.
User response:  You must specify either C for cylinders or T for tracks.

BSYR156E  The index parameter for primary quantity must be specified.
Explanation:  A parameter is missing.
User response:  The primary quantity must be specified and it must be numeric.

BSYR157E  The index parameter for primary quantity must be numeric.
Explanation:  An invalid value was specified.
User response:  The primary quantity must be specified and it must be numeric.

BSYR158E  The index parameter for secondary quantity must be specified.
Explanation:  A parameter is missing.
User response:  The secondary quantity must be specified and it must be numeric.

BSYR159E  The index parameter for secondary quantity must be numeric.
Explanation:  An invalid value was specified.
User response:  The secondary quantity must be specified and it must be numeric.

BSYR160E  The RBA/LRSN selected must be greater than or equal to the RBA/LRSN of the Backup selected.
Explanation:  The Recover To RBA/LRSN specified is at a point prior to the RBA/LRSN of the selected backup. This is not allowed.
User response:  Specify a recovery point RBA/LRSN equal to or greater than the listed RBA/LRSN, or choose an earlier backup.

BSYR161E  This profile's data has been corrupted. It must be re-created.
Explanation:  The profile you selected has been corrupted and is not usable.
User response:  Delete the profile and re-create it with a different name.

BSYR162E  Subsystem ssid needs to be defined in the "SETUP" area of the product
Explanation:  The subsystem listed in the message has not been configured using the product setup panel.
User response:  On the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN), specify 0 (User Settings) and press Enter. On the Backup Profile Defaults panel, you can set up the subsystem. On the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN), specify 0 (Administration) and press Enter. On the Administration Menu panel (BSY$PNL0), specify 1 (Set System Backup Profile Defaults) and press Enter. On the System Backup Profile Defaults, you can set up the subsystem. Refer to the configuration documentation for information about the setup parameters.

BSYR163E  Invalid Value - Please enter a "Y" if you want to backup the repository data sets during a backup, or "N" if you do not want to backup the repository data sets during a backup.
Explanation:  An invalid value was entered in the Backup Repository field.
User response:  Enter a valid value as described in the message text.
Your selection of targets do not match any of the unmapped source volumes.

**Explanation:** The target range of volumes entered are not the same type as the source volumes, or the target range entered is not on the same Symmetrix array as the source volumes.

**User response:** Enter a target range of the same volume type and/or on the same Symmetrix array.

An IMS subsystem ID must be specified with the Restore Command.

**Explanation:** When entering the RESTORE primary command, an IMS subsystem ID was not specified.

**User response:** Add the subsystem ID after the RESTORE command.

The IMS subsystem entered is not found in any recovery point.

**Explanation:** The RESTORE primary command was entered, but the specified IMS subsystem does not have any IMS Recovery Expert recovery points. A valid IMS Recovery Expert backup has not yet been performed.

**User response:** A valid IMS Recovery Expert backup must be performed before recovery is possible. If you believe this message is in error, contact IBM Software Support.

A recovery point has been selected.

**Explanation:** The RESTORE primary command was entered and IMS Recovery Expert selected a valid recovery point.

**User response:** None required.

No recovery point that matches the selection criteria was found.

**Explanation:** The RECOVER ssid primary command was entered, but a recovery point was not found.

**User response:** Enter an RBA/LRSN greater than or equal to the recovery point listed on the display for the subsystem.

The index parameter for buffers must be specified.

**Explanation:** A parameter is missing.

**User response:** The buffers value must be specified and it must be numeric.

The index parameter for buffers must be numeric.

**Explanation:** An invalid value was entered.

**User response:** The buffers value must be specified and it must be numeric.

The SMS Storage Class name specified is invalid, it must only contain alphanumeric characters.

**Explanation:** The SMS Storage Class specified is invalid. It must only contain alphanumeric characters. These include A-Z and 0-9.

**User response:** Correct the invalid value.

At least one ALIAS needs to be specified.

**Explanation:** At least one alias name needs to be specified. The alias name is a high-level that will be tracked in this user catalog data set.

**User response:** Specify an alias name.

The Alias name specified is invalid, it must only contain alphanumeric characters.

**Explanation:** The alias name specified is invalid. It must only contain alphanumeric characters. These include A-Z and 0-9.

**User response:** Correct the invalid value.

The Action field should be E - Edit, O - Online Submission or B - Batch Submission.

**Explanation:** An invalid value was entered in the Action Field.

**User response:** Enter E to edit the shown information. Enter O to run the shown information online. Enter B to run the shown information in batch.

The specified alias already exists in your MVS installation.

**Explanation:** The entered alias name already exists in your MVS installation.

**User response:** If you want to have this alias tracked by this user catalog, you must perform a MERGECAT to move the alias from another user catalog to this one.
BSYR177E • BSYR191E

**BSYR177E**  Error allocating SYSIN data set.

**Explanation:** The entered alias name already exists in your MVS installation.

**User response:** If you want to have this alias tracked by this user catalog, you must perform a MERGECA to move the alias from another user catalog to this one.

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**BSYR178E**  Open failed for SYSIN data set

**Explanation:** An error occurred opening the SYSIN data set.

**User response:** Check the system log for any further information.

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**BSYR179E**  Allocate failed for TEMPFILE

**Explanation:** An error occurred allocating the TEMPFILE data set.

**User response:** Check the system log for any further information.

---

**BSYR180E**  Open failed for TEMPFILE

**Explanation:** An OPEN failed on the temporary ISPF file tailoring data set.

**User response:** Retry the operation. Contact IBM Software Support if the problem persists.

---

**BSYR181E**  Error allocating SYSPRINT data set

**Explanation:** An error occurred trying to allocate the SYSPRINT data set.

**User response:** Retry the operation. Contact IBM Software Support if the problem persists.

---

**BSYR182E**  Open failed for SYSPRINT.

**Explanation:** An error occurred trying to open the SYSPRINT data set.

**User response:** Retry the operation. Contact IBM Software Support if the problem persists.

---

**BSYR184E**  An error occurred during file tailoring.

**Explanation:** An error occurred during file tailoring.

**User response:** Retry the operation. Contact IBM Software Support if the problem persists.

---

**BSYR185E**  Invalid Value - The number of offline generations must be numeric.

**Explanation:** The number of offline generations must be numeric.

**User response:** Specify offline generations as a numeric value.

---

**BSYR186I**  System restore will be performed from the offloaded backup.

**Explanation:** This backup is no longer on DASD and therefore the system restore will be performed from the backup that has been offloaded to tape.

**User response:** None required.

---

**BSYR187E**  The new data set name data_set_name already exists.

**Explanation:** The alias entered will rename the data set to a data set name that already exists in your MVS installation.

**User response:** Either choose another alias, or delete or rename the data set that already exists with this name.

---

**BSYR188E**  A new User Catalog must be entered and must already exist before adding an alias.

**Explanation:** The MVS user catalog must be specified and created before you can add an alias to it.

**User response:** Create or specify the new MVS user catalog, then add the alias.

---

**BSYR189E**  An error occurred trying to retrieve the Active and Archive Log data sets

**Explanation:** An error occurred trying to retrieve the active and archive log data sets.

**User response:**

---

**BSYR190E**  Invalid Value - Enter a "Y" to display the subsystem Log RBAs captured by the IMS Recovery Expert RBA Capture utility or "N" to bypass RBA display.

**Explanation:** An invalid value has been entered for Display Timestamp / RBA Captured Data.

**User response:** Enter Y to display the subsystem log RBAs captured by the RBA capture utility or N to bypass the RBA display.

---

**BSYR191E**  Option not allowed - The IMS Recovery Expert RBA repository file has not been allocated or the utility has not been run to capture log RBA data

**Explanation:** The IMS Recovery Expert RBA repository file has not been allocated or the utility has not been run to capture log RBA data.

**User response:** Create the RBA repository file and run the RBA capture utility. Refer to the user documentation about configuring the RBA capture utility for more information.
### BSYR192E
Invalid Value - Enter a "Y" to display the Archive Log RBA information with their respective timestamps.

**Explanation:** An invalid value has been entered for Display Archive Logs times / RBAs.

**User response:** Enter Y to display the Archive Log RBA information with their respective timestamps.

### BSYR193E
Invalid Value - Enter a "Y" to display the Checkpoint RBA information with their respective timestamps.

**Explanation:** An invalid value has been entered for Display Checkpoint times / RBAs.

**User response:** Enter Y to display the Checkpoint RBA information with their respective timestamps.

### BSYR194E
Invalid Value - Enter a "Y" to enter a recovery timestamp and have the IMS LRSN generated for you or "N" to bypass timestamp to LRSN Utility.

**Explanation:** An invalid value has been entered for Timestamp to IMS LRSN Utility field.

**User response:** Enter Y to enter a recovery timestamp and have the IMS LRSN generated for you or N to bypass the timestamp to LRSN utility.

### BSYR195E
Invalid Selection - You can enter the display timestamp screen or the Timestamp to LRSN utility, but not both. Please deselect one of the options.

**Explanation:** You cannot use both utilities.

**User response:** Deselect one of the options.

### BSYR196W
There are no RBA capture times found in the repository for this IMS subsystem.

**Explanation:** No RBA capture times were found for the selected SSID.

**User response:** Change the RBA value and retry the operation.

### BSYR197E
There were no RBA capture records for this IMS Subsystem found in the repository for the time ranges requested.

**Explanation:** There were no RBA capture records for the selected IMS subsystem in the repository for the time ranges requested.

**User response:** Change the time range and retry the operation.

### BSYR198I
The RBA capture records display list was truncated because the capture times were greater than the backup times of another backup made after this one.

**Explanation:** The RBA capture records list was truncated because the capture times were greater than the capture times of a backup taken after this one.

**User response:** None required.

### BSYR199E
Invalid return code attempting to read the DSNZPARMs to acquire bootstrap and checkpoint information. Check setup for this subsystem to ensure the information entered for this subsystem is correct.

**Explanation:** An invalid return code was received attempting to read the DSNZPARMs to acquire boot strap and checkpoint information.

**User response:** Check setup for this subsystem to ensure the information entered for this subsystem is correct.

### BSYR200E
Invalid characters in new alias. It must be alphanumeric.

**Explanation:** TheAlias entered is not a valid MVS alias.

**User response:** It must start with an alphabetic character and contain only letters and numbers.

### BSYR201E
New alias must not have embedded blanks.

**Explanation:** The alias entered must not contain any embedded blanks.

**User response:** Edit the alias and remove the blank(s).

### BSYR202E
The only & variable supported is &SSID.

**Explanation:** The only replaceable variable supported is &SSID. This variable will be replaced by the subsystem identifier to create the new alias name.

**User response:** Change the variable to the supported type.

### BSYR203E
&SSID cannot be specified twice.

**Explanation:** The variable can only be specified once.

**User response:** Remove one occurrence of the variable.
BSYR204E  Alias alias is not in the specified Usercat user_catalog. If you want to use this alias, you need to add it to the usercat first.

Explanation: The specified alias must exist in the specified MVS user catalog first.

User response: You can add the alias to the usercat by using the A command next to the usercat in the New MVS User Catalogs section of the System Setup Information screen.

BSYR205E  The old and new alias cannot be equal. Please specify a new alias that is different from the old alias.

Explanation: The old and new aliases cannot be equal.

User response: Enter a different new alias.

BSYR206E  The alias cannot be renamed if it contains LOG data. You can rename log files in the Boot Strap and Active Log Data set sections.

Explanation: The alias listed cannot be renamed because it contains IMS log or boot strap data set data.

User response: You can rename IMS log/BSDS data sets from their respective sections on the Subsystem Setup Information panel.

BSYR207E  Invalid Value - The value for Encryption Type must be "S" for Substitution, "C" for Cipher, "A" for AES, "I" for AES192, "2" for AES256, "F" for AES Fast or "T" for TDES.

Explanation: An invalid value was entered for the type of FDR encryption to use.

User response: Enter a valid value as described in the message text.

BSYR208E  If RSA encryption is selected, an RSA Label must be entered.

Explanation: If RSA encryption is selected, an RSA Label must be entered. An RSA label can be defined in the Integrated Cryptographic Service Facility (ICSF).

User response: Enter a valid value for the label. An RSA label can be from 1 to 64 characters in length and must be specified as follows: the first character must be alphabetic or a national character and the remaining characters must be alphabetic, numeric, a national character or a period.

BSYR209E  The first character of the Label must be alphabetic or a national character.

Explanation: An invalid value was entered for the first character of the RSA Label.

User response: Enter a valid value for the label. An RSA label can be from 1 to 64 characters in length and must be specified as follows: the first character must be alphabetic or a national character and the remaining characters must be alphabetic, numeric, a national character or a period.

BSYR210E  A new MVS user catalog for data needs to be specified.

Explanation: The new MVS user catalog for IMS database data must be specified before you can perform this action.

User response: Create the new MVS user catalog for IMS database data.

BSYR211E  A new MVS user catalog for logs needs to be specified.

Explanation: The new MVS user catalog for IMS logs and BSDS data must be specified before you can perform this action.

User response: Create the new MVS user catalog for IMS log/BSDS data.

BSYR212E  This alias contains both data and logs, the logs must be renamed using a different alias before a mergecat can be performed.

Explanation: The selected alias contains both IMS log and database data.

User response: The log and/or boot strap data sets using this alias must be renamed before the mergecat can be performed.

BSYR213E  Cannot mergecat alias information into the same user catalog.

Explanation: The current user catalog for this alias is the same user catalog specified in the New section above. The mergecat function moves all data sets using an alias from one MVS user catalog to another. The target MVS user catalog is specified in the New MVS User catalog section above.

User response: Enter the correct MVS target user catalog in the New MVS User catalog section.
BSYR214E The Action field should be E - Edit, or B - Batch Submission.

Explanation: An invalid value was entered in the Action field.
User response: The valid values for Action include: "E" - Edit the control cards before running, "B" - Generate JCL to run the job in Batch.

BSYR215E The new volume specified is not a valid device.

Explanation: The new volume specified is not valid or might be offline.
User response: Enter a valid volume name or vary the volume online.

BSYR216E All characters after the first character must be alphabetic, numeric, a national character or a period.

Explanation: An invalid value was entered for the RSA Label.
User response: Enter a valid value for the label. An RSA label can be from 1 to 64 characters in length and must be specified as follows: the first character must be alphabetic or a national character and the remaining characters must be alphabetic, numeric, a national character, or a period.

BSYR217E This command requires a current analysis to show which data sets are in use by IMS.

Explanation: The command entered requires a current analysis to be performed.
User response: Enter the REANALYZE command from the System Setup Information screen to perform the analysis.

BSYR218E Entering a target volume requires a current analysis to determine which data sets are in use by IMS.

Explanation: The command entered requires a current analysis to be performed.
User response: Enter the REANALYZE command from the System Setup Information screen to perform the analysis.

BSYR219W No data sets were selected to be moved.

Explanation: There were no data sets that satisfied the selection criteria. No data sets will be moved.
User response: None required.

BSYR220E The Volume must start with an alphabetic character.

Explanation: The volume entered must start with an alphabetic character from A through Z.
User response: Correct the invalid volume name.

BSYR221E The Volume must only contain alphanumeric characters.

Explanation: The volume entered must contain only alphanumeric characters, A through Z and 1 through 9.
User response: Correct the invalid volume name.

BSYR222E The IMS Object Data field must be "Y" or "N".

Explanation: An invalid value was entered in the IMS Object Data field. Valid values are "Y" and "N". Specifying "Y" will move all object data sets (database and index) for the IMS subsystem being analyzed to the target volume(s).
User response: Correct the invalid value.

BSYR223E The Other Data field must be "Y" or "N".

Explanation: An invalid value was entered in the Other Data field. Valid values are "Y" and "N". Specifying "Y" will move all non-IMS data sets not related to the IMS subsystem being analyzed to the target volume(s). You cannot move VSAM data sets for other IMS subsystems or MVS user catalogs via this interface.
User response: Correct the invalid value.

BSYR224E The new volume entered must not be the same as the old volume.

Explanation: The entered volume is the same name as the source volume.
User response: Enter a different target volume name.

BSYR225E Invalid Value - Please enter a "1" to see a display of IMS RBA data, "2" to send a modify command to current utility, "3" to build a job to clean up the RBA captured repository, "4" to build the RBA capture utility JCL/proc or "5" to exit IMS RBA

Explanation: An invalid selection was entered.
User response: Enter a valid selection as listed in the message text.
Option not available - An RBA Capture Repository file has not been added to the startup clist. If a repository file has been created, add it to the IMS Recovery Expert startup clist and try this option again.

Explanation: The selection entered requires that you create the RBA capture utility repository.

User response: Refer to the installation chapter of the user guide for more information about the RBA capture utility.

Option not available - There is no RBA Capture Utility currently running on this MVS LPAR.

Explanation: The RBA capture utility must be running before entering this selection.

User response: Refer to the installation chapter of the user guide for more information about the RBA capture utility.

A volume of "-NONE-" or "MIGRAT" cannot be moved.

Explanation: A volume of "-NONE-" indicates IMS data sets that could not be located. The can be viewed via the "D" command, but cannot be viewed. A volume of "MIGRAT" indicates IMS data sets that have been migrated by DFSMSHSM and cannot be moved.

User response: Clear the invalid line command.

Recovery Resources must be "A" for all resources, "S" for SLB, or "I" for image copies.

Explanation: An invalid value was entered in the Recover Resources field.

System action:

User response: Enter A for all resources (System Level Backups and image copies), S for System Level Backups only, or I for image copies only.

Valid line commands for New MVS User Catalogs are: C-Create User Catalog, A-Add Alias to User Catalog, D-Display Data sets in User Catalog, U-Update User Catalog Name, V-View Aliases associated with the User Catalog.

Explanation: This message is displayed when a ? is entered in the line command area to get help on valid line commands. The following line commands are valid in this line command area: Enter C to create a new MVS user catalog. Enter A to add an alias to the listed catalog. Enter D to view the aliases for the listed catalog. Enter U to change the name of the entered user catalog. Enter V to view the aliases assigned to the catalog.

User response: None required.

Valid line commands for Existing MVS User Catalogs are: D-Display Data sets in User Catalog, V-View Aliases associated with the User Catalog.

Explanation: This message is displayed when a ? is entered in the line command area to get help on valid line commands. The following line commands are valid in this line command area: Enter A to view the aliases assigned to the listed catalog. Enter D to view the data sets assigned to the listed catalog.

User response: None required.

Valid line commands for All BSDS or Active Log Data sets are: R-Rename all the Data sets, M-Move all the Data sets.

Explanation: This message is displayed when a ? is entered in the line command area to get help on valid line commands. The following line commands are valid in this line command area: Enter R to rename all of the BSDS or Active Log data sets listed. Enter M to move all of the BSDS or Active Log data sets listed.

User response: None required.

Valid line commands for individual BSDS or Active Log Data sets are: R-Rename the Data set, M-Move the Data set.

Explanation: This message is displayed when a ? is entered in the line command area to get help on valid line commands. The following line commands are valid in this line command area: Enter R to rename this data set. Enter M to move it to a different MVS volume.

User response: None required.

Valid line commands for Aliases are: D-Display Data sets associated with Alias, M-Mergecat Data sets from one User Catalog to another, R-Rename the Alias.

Explanation: This message is displayed when a ? is entered in the line command area to get help on valid line commands. The following line commands are valid in this line command area: Enter D to display all the data sets using the alias. Enter M to perform a MERGECAT to move this alias from one MVS usercat into another. Enter R to rename all the IMS database data sets using this alias.

User response: None required.
Valid line commands for Volumes are:
D-Display Data sets on the Volume,
M-Move all data sets on the volume

Explanation: This message is displayed when a ? is entered in the line command area to get help on valid line commands. The following line commands are valid in this line command area: Enter the D line command to display all the MVS data sets on this volume, or M to move data sets from this volume to another.

User response: None required.

If you select a recovery point of Last Copy, Last Incremental or Last Full Copy you cannot specify a Recovery Resource of SLB.

Explanation: If you select a recovery point of last copy, last incremental or last full copy, you cannot specify a System Level Backup as a recovery resource.

User response: Either change the recovery point or change the recovery resource.

You are not authorized to use application Profile profile_creator.profile_name; - build process aborted.

Explanation: The Update option for the indicated profile is either View or No, and your user ID does not match the creator ID of the profile. Your user ID must match the creator ID of the profile with an update option of View or No. The job cannot be built

User response: Examine the profile in question. If you are not authorized to use the profile, select a different profile to use.

The application profile profile_creator.profile_name has been deleted.

Explanation: The application profile included in the job has been deleted. The job cannot be built.

User response: Recreate the application profile.

Build of application profile profile_creator.profile_name has resulted in no selected objects.

Explanation: The build of application profile profile_creator.profile_name produced no selected objects.

User response: Check the profile to make sure an object is selected or the object mask(s) specified are correct.

Invalid Value - Please Enter a "Y" if you want to take a Local Primary Offload or "N" if you do not want to perform offload.

Explanation: An invalid value was entered.

User response: Enter a "Y" if you want to take a local primary (LP) offload or "N" if you do not want to perform offload.

Invalid Value - Please Enter a "Y" if you want to take a Local Backup Offload or "N" if you do not want to perform offload.

Explanation: An invalid value was entered.

User response: Enter a valid value as listed in the message text.

Invalid Value - Please Enter a "Y" if you want to take a Recovery Primary Offload or "N" if you do not want to perform offload.

Explanation: An invalid value was entered.

User response: Enter a valid value as described in the message text.

Invalid Value - Please Enter a "Y" if you want to take a Recovery Primary Offload or "N" if you do not want to perform offload.

Explanation: An invalid value was entered.

User response: Enter a valid value as described in the message text.

Invalid Value - Please enter a "Y" if you want to encrypt the offload data, "U" to update the encryption options or "N" if you do not want to perform encryption.

Explanation: An invalid value was entered.

User response: Enter a valid value as described in the message text.

Invalid Value - Please enter a "Y" if you want to use KEYPASSWORD for encryption, or else enter "N".

Explanation: An invalid value was entered.

User response: Enter a valid value as described in the message text.
BSYR256E  Invalid Value - The value for ICOUNT must be numeric and must be between 1 and 10000.

Explanation: An invalid value was entered.
User response: Enter a valid value as described in the message text.

BSYR257E  Invalid Value - The value for KEYPASSWORD type must be "C" for CLRAES128 or "D" for CLRTDES.

Explanation: An invalid value was entered.
User response: Enter a valid value as described in the message text.

BSYR258E  Invalid Value - Please enter a "Y" if you want to use RSA for encryption else enter "N".

Explanation: An invalid value was entered.
User response: Enter a valid value as described in the message text.

BSYR259E  Invalid Value - The value for RSA type must be "C" for CLRAES128, "D" for CLRTDES or "E" for ENCTDES.

Explanation: An invalid value was entered.
User response: Enter a valid value as described in the message text.

BSYR260E  Either KEYPASSWORD or RSA encryption should be selected, but not both.

Explanation: Y was specified in both the Keypasswd and the RSA field. This combination is not allowed.
User response: Enter Y in either the Keypasswd or RSA field.

BSYR261E  One encryption method, either KEYPASSWD or RSA, should be selected.

Explanation: N was specified in both the Keypasswd and the RSA field.
User response: Enter Y in either the Keypasswd or RSA field, or type CAN in the Option line to exit.

BSYR262E  A Local Backup offload can not be selected unless a Local Primary offload is selected.

Explanation: A local backup offload was specified, but a local primary offload must be selected first.
User response: Enter Y in the Local Primary field.

BSYR263E  A Recovery Backup offload can not be selected unless a Recovery Primary offload is selected.

Explanation: A recovery backup offload was specified, but a recovery primary offload must be selected first.
User response: Enter Y in the Recovery Primary field, then enter Y in the Recovery Backup field.

BSYR264E  An offload unit and an offload symbolic data set name must be entered when selecting this type of offload.

Explanation: An offload unit and an offload symbolic data set name must be entered when selecting this type of offload.
User response: Enter valid values as described in the message text.

BSYR265E  Invalid Value - Please Enter a "Y" if you want to update the data set create specification otherwise enter "N".

Explanation: An invalid value was entered in the Update DSN Specification field.
User response: Enter a valid value as listed in the message text.

BSYR266E  The unit type must be specified.

Explanation: In order to update the data set name specification, you must specify the unit type.
User response: Enter a valid unit type in the Unit Type field.

BSYR267E  Invalid Value - Please Enter a "Y" if you want the data set to be Cataloged otherwise enter "N".

Explanation: An invalid value was entered in the Catalog field.
User response: Enter a valid value as listed in the message text.

BSYR268E  The entered device type is not recognized by OS/390 as a valid device type.

Explanation: An invalid value was entered in the Unit Type field.
User response: Enter a valid device type.
When using Disk type devices, expiration date and retention period are not valid.

Explanation: A disk device was specified for the unit type, but values were also entered in the Expiration date and/or Retention period fields. This is not a valid combination.

User response: Remove the values from the Expiration date or Retention period fields, or change the unit type to a tape device.

If a Tape device is selected, either retention period or expiration date can be specified.

Explanation: You selected a tape device without specifying retention period or expiration date.

User response: Select either a retention period or expiration date.

The retention period and expiration date fields cannot be entered at the same time.

Explanation: You entered both a retention period or expiration date. Only one of those is permitted.

User response: Select either a retention period or expiration date.

The entered value for Retention Period must be numeric.

Explanation: A non-numeric value was entered for Retention Period.

User response: Enter a numeric retention period.

The entered value for Expiration Date must be numeric.

Explanation: A non-numeric value was entered for Expiration Date.

User response: Enter a numeric expiration date period.

The day in the expiration date must be in the range of 1 to 366.

Explanation: An invalid value was entered in the Expiration date field. The day portion of the value is incorrect.

User response: Enter a valid value as described in the message text.

The year in the expiration date must be in a range of 1999 and higher.

Explanation: An invalid value was entered in the Expiration date field. The year portion of the value is incorrect.

User response: Enter a valid value as described in the message text.

Invalid Value - Please Enter a "Y" if you want to display the data set otherwise enter "N".

Explanation: An invalid value was entered in the Show DSN field.

User response: To display the data set name as generated using the current qualifiers, enter Y in the Show DSN field and press Enter.

The specified qualifier code is not a supported value.

Explanation: An invalid value was entered in the Qualifier code field.

User response: Enter one of the valid qualifier code numbers listed at the bottom of the panel.

The GDG limit must be numeric.

Explanation: The GDG limit must be numeric.

User response: Enter a numeric value between 1 and 255 as the GDG limit.

The GDG limit value must be either blank or a number in the range of 1-255.

Explanation: An invalid value was entered in the GDG Limit field.

User response: Enter a numeric value between 1 and 255 as the GDG limit.

The symbolic data set name generation field is full

Explanation: The symbolic input area is out of space. The maximum number of characters allowed is 159.

User response: Reduce the number or type of symbolics in the generated data set name.

Truncation has occurred in building the data set qualifier.

Explanation: The data set name for the image copy is too long as constructed.

User response: Shorten the data set name by using less or shorter qualifiers.
<table>
<thead>
<tr>
<th>Message ID</th>
<th>Description</th>
<th>Explanation</th>
<th>User Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSYR282E</td>
<td>Invalid starting position entered. Enter a numeric value for the starting position in the symbolic to substring.</td>
<td>An invalid value was entered in the Enter Starting Position field.</td>
<td>Enter a valid numeric as specified in the message text.</td>
</tr>
<tr>
<td>BSYR283E</td>
<td>Invalid substring length entered. Enter a numeric value greater than 1 to substring the symbolic.</td>
<td>An invalid value was entered in the Enter Substring Length field.</td>
<td>Enter a valid numeric as specified in the message text.</td>
</tr>
<tr>
<td>BSYR284E</td>
<td>Invalid ending period detected.</td>
<td>The data set name as resolved contains a period as the last character, which is invalid.</td>
<td>Correct the data set name.</td>
</tr>
<tr>
<td>BSYR285E</td>
<td>Invalid data set node detected - first character not alphabetic or national.</td>
<td>The first character of the entered substring resolved to an invalid character. Data set nodes must begin with alphabetic or national characters.</td>
<td>Change the starting character to a valid character.</td>
</tr>
<tr>
<td>BSYR286E</td>
<td>Data set truncation may occur.</td>
<td>When resolved, the data set name may be too long. The maximum number of characters allowed for data set names is 44.</td>
<td>Shorten the data set name so it resolves to less than 44 characters.</td>
</tr>
<tr>
<td>BSYR287E</td>
<td>Invalid data set node detected length greater than 8 characters.</td>
<td>The substring entered caused a data set node to be greater than eight characters.</td>
<td>Shorten the substring to less than eight characters.</td>
</tr>
<tr>
<td>BSYR288E</td>
<td>Invalid data set node detected - 2 consecutive periods.</td>
<td>The qualifier string contains two consecutive periods as resolved. Data set names cannot contain two consecutive periods.</td>
<td>Change the qualifier string so that two periods are not displayed consecutively.</td>
</tr>
<tr>
<td>BSYR289E</td>
<td>Invalid characters detected in data set node.</td>
<td>The first character must be alphabetic or national and the remaining seven characters must be alphabetic, numeric, national, or a hyphen.</td>
<td>Correct the data set name.</td>
</tr>
<tr>
<td>BSYR290E</td>
<td>Invalid starting position entered. Enter a numeric value for the starting position in the symbolic to substring.</td>
<td>An invalid starting position was entered.</td>
<td>Enter a numeric value for the starting position in the symbolic to substring.</td>
</tr>
<tr>
<td>BSYR291E</td>
<td>Invalid substring length entered. Enter a numeric value greater than 1 to substring the symbolic.</td>
<td>An invalid value was entered for the substring length.</td>
<td>Enter a numeric value greater than 1 to substring the symbolic.</td>
</tr>
<tr>
<td>BSYR292E</td>
<td>Invalid substring starting position entered. Enter a starting position that is within the range of generated symbolic.</td>
<td>An invalid value was entered for the substring starting position.</td>
<td>Enter a starting position that is within the range of the generated symbolic.</td>
</tr>
<tr>
<td>BSYR293E</td>
<td>Invalid substring length. Length exceeds end of data. Enter a length where the starting position plus length are less than or equal to the maximum length of data.</td>
<td>An invalid value was entered in the Enter Substring Length field.</td>
<td>Enter a length where the starting position plus length are less than or equal to the maximum length of data.</td>
</tr>
<tr>
<td>BSYR294E</td>
<td>Recovery point must be a value from 1 through 6</td>
<td>An invalid value was entered in the Recovery Point field.</td>
<td>Enter a valid recovery point as listed in the message text.</td>
</tr>
</tbody>
</table>
BSYR295E  Site must be "Z", "L", or "R"
Explanation: An invalid value was entered for the Site field.
User response: Enter L for local site, R for recovery site, or Z to use the site specified in the ZPARM member for this IMS subsystem.

BSYR296E  Reuse must be "Y" or "N"
Explanation: An invalid value was entered for the Reuse field.
User response: Enter Y to specify that the IBM RECOVER utility is to logically reset and reuse IMS-managed data sets without deleting and redefining them. If you enter N, IMS-managed data sets are deleted and redefined.

BSYR297E  Edit Rebuild Indexes Options must be "Y" or "N"
Explanation: An invalid value was entered in the Edit Rebuild IX Options field.
User response: Enter Y in this field to set options for REBUILD INDEX.

BSYR298E  Value must be between 01 and 99
Explanation: An invalid value was entered.
User response: Enter a numeric between 01 and 99.

BSYR299E  Reuse must be "Y" or "N"
Explanation: An invalid value was entered in the Reuse existing data sets field.
User response: Enter Y in this field to specify that IMS-managed data sets will be logically reset and reused without deleting and redefining them. Enter N to specify that IMS-managed data sets will be deleted and redefined to reset them.

BSYR300W  Line commands were cleared for a cursor sensitive screen command.
Explanation: Line commands were cleared for a cursor sensitive screen command.
User response: None required.

BSYR310W  Profile Name is a required field. Please enter a unique name.
Explanation: When creating a new profile, the Profile Name field was left blank.
User response: Enter a unique profile name in the Profile Name field.

BSYR311E  An invalid line command was entered.
Explanation: An invalid line command was entered.
User response: Enter a valid line command.

BSYR312E  You are not authorized to enter any line commands for this profile. The creator of the profile is restricting all activity.
Explanation: The creator of the selected profile specified that no other user is to view or update the selected profile.
User response: Choose a different profile to work with.

BSYR313E  You are not authorized to update or delete this profile. Enter a "V" if you would like to view this profile.
Explanation: A profile was selected that has restricted access. The creator of the selected profile specified that no other user is to update or delete the selected profile.
User response: Enter V if you would like to view the profile.

BSYR314E  If RSA encryption is not selected the RSA label should not be specified.
Explanation: Keypassword was selected for the encryption type, but a value was entered in the Label field for RSA.
User response: Enter Y in the RSA field to specify RSA, or remove the value from the Label field.

BSYR315E  The Profile Creator is a required field. Please enter a valid creator.
Explanation: When creating a new profile, the Profile Creator field was left blank.
User response: Enter a profile creator in the Profile Creator field.

BSYR316E  The Profile Name is a required field. Please enter a unique name.
Explanation: When creating a new profile, the Profile Name field was left blank.
User response: Enter a unique profile name in the Profile Name field.

BSYR317E  Invalid Value - Enter a "U" to allow other users to update your profile, a "V" to allow other users to just view your profile or "N" to disallow other users from viewing or updating your profile.
Explanation: When creating a new profile, an invalid value was entered in the Update Option field.
User response: Correct the value as described in the message text.
BSYR318E Invalid Value - Enter a value of "Y" to enter a new Target Pool selection, enter a "U" to update the Target Pool selection, a value of "N" indicates that a Target Pool selection does not exist.

Explanation: An invalid value was entered for the Target Pool field. If a target pool already exists, this value will be set to Y.

User response: Correct the value as described in the message text.

BSYR319I Profile "profile_creator.profile_name" saved.

Explanation: The profile named in the message was successfully saved.

User response: None required.

BSYR320E Invalid Value - The only valid values are "Y" or "N".

Explanation: An invalid value was entered in the Process RI field.

User response: Enter a valid value as described in the message text.

BSYR321E Invalid Value - The only valid values are "Y" or "N".

Explanation: An invalid value was entered in the Process Indexes field.

User response: Enter a valid value as described in the message text.

BSYR322E Invalid Value - Please enter a "Y" if you would like to delete profile "profile_creator.profile_name" or an "N" if you do not want to delete it.

Explanation: An invalid value was entered in the Delete field.

User response: Enter a valid value as described in the message text.

BSYR323I Profile "profile_creator.profile_name" has been successfully deleted.

Explanation: The profile named in the message text was successfully deleted.

User response: None required.

BSYR324E Required Field - Please enter a Profile Creator.

Explanation: When renaming a profile, the new profile creator was not specified.

User response: Enter the new profile creator in the Creator field.

BSYR325E Required Field - Please enter a Profile Name.

Explanation: When renaming a profile, the new profile name was not specified.

User response: Enter the new profile name in the Profile Name field.

BSYR326E Duplicate Profile - Please change the Profile Creator or Profile Name to make it unique.

Explanation: The combination of profile name and profile creator entered is identical to another profile.

User response: Enter a different profile creator or name to make the profile unique.

BSYR327I Profile was successfully renamed.

Explanation: The profile was successfully renamed.

User response: None required.

BSYR328E Only (A)ll or (P)art are valid explode options.

Explanation: An invalid value was entered in the Explode field.

User response: Only (A)ll or (P)art are valid explode options.

BSYR329E Invalid value - Enter "Y" to add databases or "N" to not add databases.

Explanation: An invalid value was added in the Add Databases field.

User response: Enter a valid value as described in the message text.

BSYR330E Invalid value - Enter "Y" to add indexes or "N" to not add indexes.

Explanation: An invalid value was added in the Add Indexes field.

User response: Enter a valid value as described in the message text.
BSYR331E  Invalid line command entered.
Explanation: An invalid line command was entered.
User response: Enter A to add objects to the profile, D to delete objects from the profile, or E to explode a list of all objects in a detail line.

BSYR332E  Invalid Value - The only valid values are "Y", "N" or "B".
Explanation: An invalid value was entered.
User response: Enter a valid value listed in the message text.

BSYR333E  Application profile contains no objects to view.
Explanation: This application profile is empty; there is nothing to view.
User response: Press PF3 to exit the profile.

BSYR334E  Requested object not found.
Explanation: The selected object was not found in this IMS subsystem.
User response: Check to see if it has since been dropped.

BSYR335E  An excluded object cannot be exploded.
Explanation: This object has been explicitly excluded from the profile. The Explode operation cannot be performed upon it.
User response: To continue, clear the line command from the excluded object.

BSYR336W  There are no databases that meet the wildcard selection criteria. Press Enter to accept the wildcard anyway or change the selection criteria.
Explanation: There are currently no databases or indexes in this IMS system that meet the specified wildcard that you have entered. This might be acceptable if you know there will be objects that match it in the future.
User response: Press Enter to accept the wildcard as is, or change your selection criteria.

BSYR337E  Requested object not found.
Explanation: The requested object was not found.
User response: Change the selection criteria and retry the process.

BSYR338I  Object queue has been modified.
Explanation: The selected objects have been added to the queue of objects to be restored.
User response: None required.

BSYR339E  Invalid line command entered.
Explanation: Invalid line command has been entered.
User response: Check the list of valid line commands.

BSYR340W  Object already exists.
Explanation: The selected object already has been included in this application profile.
User response: Select a different object.

BSYR341E  Cannot specify both Process RI and Process Clones, change one of the values to "N".
Explanation: A Y was entered in both the Process RI and Process Clones field; this is an invalid combination. RI is not allowed on clone objects.
User response: Change one or both values to N.

BSYR342E  No objects meet wildcard criteria.
Explanation: You entered the Explode line command next to an object detail line that contains wildcard selection criteria. However, no databases exist on the IMS system that meet the wildcard criteria. The object or objects may have been dropped.
User response: Press Enter to continue.

BSYR343E  Object already excluded.
Explanation: The specified object has already been excluded in a previous exclude selection.
User response: To continue, clear the line command from the excluded object.

BSYR345E  Invalid line command entered.
Explanation: An invalid line command has been detected.
User response: Enter one of the listed values.

BSYR346E  An encryption type of key must be specified when selecting offloads to be encrypted.
Explanation: ‘Encrypt Data’ = Y was specified for the Offload options and an attempt to save the backup profile was made prior to specifying encryption values.
User response: Either change ‘Encrypt Data’ to N or
specify the encryption options by pressing Enter on the Offload options panel.

**BSYR360E**  
An APF authorization failure occurred.

**Explanation:** IMS Recovery Expert requires that all the load libraries in the start up CLIST for ISPLLIB LIBDEF be APF authorized. Certain product functions will not work without this requirement. If a data set name is listed in this message help, it is the first one in the ISPLLIB LIBDEF concatenation detected as not being APF authorized.

**User response:** Refer to the installation instructions for more information. If additional assistance is needed, contact IBM Software Support.

**BSYR369E** Invalid value. Delete Aged Backup should be Yes or No.

**Explanation:** An invalid value was entered in the Delete Aged Backup field.

**User response:** Enter Y to have the product automatically delete any offload files when it is removed from the IMS Recovery Expert repository. For example, if you specify two offload generations and the third backup is offloaded, the first (or oldest) offloaded backup would be removed from the IMS Recovery Expert repository. If this option is Y, then IMS Recovery Expert will also delete the offload files from the MVS catalog.

**BSYR370E** Invalid value - Enter "D" to select DFSMSdss as the offload vendor, enter a "F" to select FDR as the offload vendor or "I" to use FDRInstant.

**Explanation:** An invalid value was entered in the Data Mover field.

**User response:** Enter D to use DFSMSdss to perform the offload of volumes. Enter F to use FDR to perform the offload of volumes. Enter I to use FDRInstant to perform the offload of volumes. You must have a license for FDR to use it as the data mover.

**BSYR371E** Invalid value - Enter a "Y" to stack tapes otherwise enter "N"

**Explanation:** An invalid value was entered in the Stack Backups on Tape field.

**User response:** Enter Y to direct IMS Recovery Expert to stack multiple volume backups (or offloads) onto one tape. Most tape cartridges will hold multiple volume backups. You can specify how many volume backups to stack on each tape under the options for each backup type (local primary, local backup, remote primary, and remote backup).

**BSYR372E** The RBA/LRSN entered must be greater than or equal to the RBA/LRSN of the Backup selected.

**Explanation:** The value in the Roll Forward to RBA/LRSN field is at a point prior to the RBA/LRSN of the selected backup. This is not allowed.

**User response:** Specify a roll forward RBA/LRSN equal to or greater than the listed RBA/LRSN.

**BSYR373E** Invalid value - The tape stack limit must be numeric.

**Explanation:** An invalid value was entered in the Tape Stack Limit field. The tape stack limit controls how many volume offloads will be stacked onto one tape before the next tape mount is requested.

**User response:** Calculate approximately how many volume backups will fit onto one tape. There are performance concerns also. When performing data set restore from offloaded backups that have been stacked to tape, there will be a time delay while the tape is forwarded to the correct location to perform the restore.

**BSYR374E** Invalid value - the Perform Offload field must be "Y" or "N".

**Explanation:** An invalid value was entered in the Perform Offload field.

**User response:** Enter Y if you want to make this type of backup. You may want to make multiple backups for use at a disaster recovery site. If each backup is going to disk, make sure you have enough tape units to satisfy the request. If you take all four backup types, and have specified Max Tasks of 1, then you will need FOUR tape units.

**BSYR375E** No mapping information found for this IMS subsystem.

**Explanation:** No volume information was found for this IMS environment.

**User response:** Enter the VOLUME command or make sure the IMS environment has been properly configured for the IMS system backup utility within SMS and HSM.

**BSYR376E** Invalid Value - Enter an "O" to generate the job online or "B" to build the job in Batch.

**Explanation:** An invalid value was entered.

**User response:** Enter O to build the JCL online. Enter B to generate JCL that will build the recovery job in batch.
BSYR377E  The member name selected for the generated job cannot be the same as the member name used for the generation job (which was specified in the data set shown at the text at the beginning of this window)

Explanation: The same member name was used for the output of the job to build the JCL as for the built JCL.

User response: You must enter different member names for location of the JCL to perform the batch job generation and the location where the batch job will place its generated JCL.

BSYR378E  Invalid value - Update Recovery Options should be "Y" or "N".

Explanation: An invalid value was entered in the Update Recovery Options field.

User response: Enter Y to update recovery options.

BSYR379E  Invalid value - Compress Data should be Yes or No.

Explanation: An invalid value was entered in the Compress Data field.

User response: Enter Y to have DFSMSdss or FDR compress the volume backup while it is being copied to tape. If you have hardware tape compression, you should set this value to N.

BSYR380E  Gather index statistics must be "Y" or "N".

Explanation: An invalid value was entered in the Gather Index Statistics field.

User response: Enter Y to have the index rebuild utility collect inline object statistics (RUNSTATS values).

BSYR381E  Report messages must be "Y" or "N".

Explanation: An invalid value was entered in the Report Messages field.

User response: Enter Y to have the index rebuild utility generate a report on the collected statistics values.

BSYR382E  Update catalog tables must be "A", "P", "S" or "N".

Explanation: An invalid value was entered in the Update catalog tables field.

User response: Enter these values to have the REBUILD INDEX utility record the following values in the Statistics tables: A - All values; P - Access path values; S - Space-related values; N - Update none of the above (Only valid when Report = Y)

BSYR383E  Update history tables must be "A", "P", "S" or "N".

Explanation: An invalid value was entered in the Update history tables field.

User response: Enter these values to have the REBUILD INDEX utility collect distinct counts for each index key.

BSYR384E  Collect all distinct values must be "Y" or "N".

Explanation: An invalid value was entered in the Collect all distinct values field.

User response: Enter Y to have the REBUILD INDEX utility collect distinct counts for each index key.

BSYR385E  Invalid value - Edit Recovery Options should be "Y" or "N".

Explanation: An invalid value was entered in the Edit Recovery Options field.

User response: Enter Y to update the recovery options for this application profile.

Note: All recovery options changed here will be saved into the application profile.

BSYR386E  At least one DUMP Class needs to be specified.

Explanation: No dump classes were specified for an HSM ofload.

User response: You must specify at least one HSM dump class in order to perform an ofload. The HSM dump class is a construct that can be created in the HSM setup panel.

BSYR387E  This volume is offline. You cannot move data sets from it while it is offline.

Explanation: The specified volume is offline. Data sets cannot be moved from offline volumes.

User response: Bring the volume online before attempting to move the listed data sets to different volumes.

BSYR389E  Invalid Value - The only valid value for a Disaster Recovery Profile is "B" to build the job in Batch.

Explanation: An invalid value was entered in the Build Online or Batch field.
BSYR390E • BSYR402E

User response: Enter B to build the job in batch.

BSYR390E The entered value must be numeric.
Explanation: A non-numeric value was entered in a numeric field.
User response: Enter a numeric value.

BSYR391E This field cannot be left blank.
Explanation: A value must be specified for this field.
User response: Enter a valid value.

BSYR392E The maximum value for the drain wait is 1800 seconds.
Explanation: An invalid value was entered in the Drain Wait field.
User response: Enter a valid value that is less than or equal to the maximum of 1800 seconds.

BSYR393E The maximum value for the number of retries is 255.
Explanation: An invalid value was entered in the Retry field.
User response: Enter a valid value that is less than or equal to the maximum of 255.

BSYR394E The maximum value for the retry delay is 1800 seconds.
Explanation: An invalid value was entered in the Retry Delay field.
User response: Enter a valid value that is the range of 1 to 1800 seconds.

BSYR395E The valid values for MaxRO are "DEFER" or a number.
Explanation: An invalid value was entered for the Maxro field.
User response: Enter a valid value as specified in the message text.

BSYR396E Sharelevel has valid values of "R"eference, and "C"hange.
Explanation: An invalid value was entered in the Sharelevel field.
User response: Enter a valid value as specified in the message text.

BSYR397E The valid values for Long Log are "C"ontinue, "T"erm, and "D"rain.
Explanation: An invalid value was entered for the Longlog field.
User response: Enter a valid value as specified in the message text.

BSYR398E Online Rebuild Index must be "Y" or "N".
Explanation: An invalid value was entered in the Online Rebuild Index field.
User response: Enter Y to specify an online REBUILD INDEX. This option is valid for IMS V9 and later.

BSYR399E Edit Online Rebuild Index Options must be "Y" or "N".
Explanation: An invalid value was entered in the Edit Online Rebuild Index Options field.
User response: Enter Y to edit options for an online REBUILD INDEX utility. This option is only valid for IMS V9 and later.

BSYR400E Invalid Value - Enter a "C" if you would like System Level Backup to copy your archive logs, "I" if you will be using Local Archive Log 1, or "2" if you will be using Local Archive Log 2 logs at the DR.
Explanation: An invalid value was entered in the Archive Logs used at DR field.
User response: Enter a valid value as listed in the message text.

BSYR401E Invalid Value - Enter a "I" if you want to copy only Archive Log 1, "2" if you want to copy only Archive Log 2, "B" if you want to copy both Archive Log 1 and 2, or "C" to create both Archive Log 1 and 2 from Local Archive Log 1.
Explanation: An invalid value was entered in the Copy Localsite Logs field.
User response: Enter a valid value as listed in the message text.

BSYR402E Invalid Value - Enter a valid nbr of days of Archive Logs you will need at the DR site. Valid values are 0 thru 999.
Explanation: An invalid value was entered in the Archive Logs needed at DR (days) field.
User response: Enter a valid value as listed in the message text.
BSYR403E  Invalid Value - Enter a valid nbr of hours back of Archive Logs you will need at the DR site. This field can be added to the nbr of days needed. Valid Values are 0 thru 999.

Explanation: An invalid value was entered in the Archive Logs needed at DR (hours) field.

User response: Enter a valid value as listed in the message text.

BSYR404E  Please Enter Required Field - A new Archive Log 1 prefix is required for copying Local Logs for the DR site.

Explanation: No archive log prefix was entered in the DR Archive Log Prefix 1 field. This field is required.

User response: Enter the archive log prefix that the new archive logs will have at the recovery site.

BSYR405E  Please Enter Required Field - A new Archive Log 2 prefix is required for copying Local Logs for the DR site.

Explanation: No archive log prefix was entered in the DR Archive Log Prefix 2 field. This field is required.

User response: Enter the archive log prefix that the new archive logs will have at the recovery site.

BSYR406E  Please Enter Required Field - A valid unit is required for copying Local Logs for the DR site.

Explanation: No unit device was entered in the Unit for copying Archive Logs field. This field is required.

User response: Enter a valid unit device to be used to copy the archive logs.

BSYR407E  Invalid Unit - Unit entered must be a tape or disk device that will be used for copying local logs for the DR site.

Explanation: An invalid unit device was entered in the Unit for copying Archive Logs field.

User response: Enter a valid unit device to be used to copy the archive logs.

BSYR408E  Invalid Value - Please enter the nbr of days back that you would like your image copies cataloged at the DR site.

Explanation: An invalid value was entered in the Catalog x days of Image Copies at DR field.

User response: Enter a valid numeric that specifies how many days of image copies back from current are to be cataloged at the recovery site.

BSYR409E  Invalid Value - Please enter an "L" if you will be using Local site backups at the DR or "R" if you will be using Recovery site backups at the DR.

Explanation: An invalid value was entered in the Image Copies (or SLB) used at DR field.

User response: Enter a valid value as described in the message text.

BSYR410E  In order to process Disaster Recovery via the archive log method, we need to know the archive logs that will be needed at the DR site. You must enter either nbr of days or nbr of hours or both days and hours of logs you need available for disaster recovery.

Explanation: An invalid value was entered in the Archive Logs needed at DR field.

User response: Enter a valid value as described in the message text.

BSYR411E  This IMS subsystem is a member of a Datasharing group. A symbol of &SSID is required in the Archive Log Prefix in order for the new logs symbolic to be unique across subsystems.

Explanation: If the subsystem is a member of a data sharing group, you must have &SSID somewhere in the archive log prefix.

User response: Enter &SSID in the archive log prefix.

BSYR412E  Invalid Value - Please Enter a "Y" if you would like to force a check point before issuing the archive log command - It is recommended that you check point if the current active logs contain the information from the last image copy of the IMS catalog and directory. Enter an "N" to bypass this step.

Explanation: An invalid value was entered in the Force a checkpoint befor Archiving field.

User response: Enter a valid value as described in the message text.

BSYR413W  Setting the force check point without issuing the archive log command has no meaning. This option will be ignored at run time.

Explanation: A Y was entered in the Force a checkpoint before Archiving field, but the Force the Active Log to Archive field was set to N. This combination is not allowed; the checkpoint cannot be generated without an archive log process.
User response: If you want to force a checkpoint, make sure the Force the Active log to Archive field is set to Y.

BSYR414E Invalid Value - Please Enter a "Y" if you would like to archive the current active logs on each subsystem, or an "N" to bypass archiving of the active logs.

Explanation: An invalid value was entered in the Force the Active log to Archive field.

User response: Enter a valid value as described in the message text.

BSYR415E The entered value must be numeric.

Explanation: An invalid value was entered in a numeric field.

User response: Enter a valid numeric value.

BSYR416E Invalid Value - Please Enter a "Y" if you would like this DR profile to only process the capturing of new archive logs. Enter an "N" if you would like all phases of the DR process built.

Explanation: An invalid value was entered in the Only run Archive Log Update Process field.

User response: Enter a valid value as described in the message text.

BSYR417E Invalid Value - Please enter an "S" if you would like to process only this IMS subsystem, an "A" to process all subsystems in the datasharing group or "L" to process only subsystems in the datasharing group that are currently running on this MVS LPAR.

Explanation: An invalid value was entered in the Process Datasharing Subsystems field.

User response: Enter a valid value as described in the message text.

BSYR418E Invalid Value - Please Enter an "S" if you are using copies made from a System Level Backup utility or "I" if you will be using native IMS image copies to recover your data at the DR site.

Explanation: An invalid value was entered in the Recovery Method field.

User response: Enter an "S" if you have backups made with IMS Recovery Expert that have offloaded dumps or "I" if the environment will be recovered with native IMS image copies.

BSYR419I Profile profile_creator.profile_name has been successfully updated.

Explanation: The profile listed in the message has been successfully updated in the repository with the changes you made.

User response: None required.

BSYR420E Updating Profile profile_creator.profile_name has encountered an unrecoverable error. Check the system log for additional information and correct the problem.

Explanation: An unexpected error was encountered updating your profile in the VSAM repository data set.

User response: Check the system log for additional MVS messages related to this error. Correct the error and try the update again.

BSYR421E A DASD device is only allowed if Copy Archive Logs to DASD option is set to 0 days/hours.

Explanation: A DASD device is entered in the Unit for Copying Archive Logs field, and a value greater than 0 has been specified for the number of days in the Copy Archive Logs to DASD field. This combination is not valid; the Copy Archive Logs field specifies the number of days to be copied from tape at the recovery site.

User response: Either change the Copy Archive Logs to DASD field to 0, or enter a tape device in the Unit for Copying Archive Logs field.

BSYR422W There are no registered systems defined to the product.

Explanation: A list of subsystems that were defined in setup was requested, however there are no registered systems defined to the product.

User response: Subsystems must be defined in setup to use System Backup and Restore Services. Refer to the user documentation for information on subsystem setup.

BSYR423E Invalid value - Edit Recovery Options should be "Y" or "N"

Explanation: An invalid value was entered in the Edit Recovery Options field.

User response: Enter Y in this field to update the recovery options to be used for the Recover Pending and Rebuild Pending job.
Backup Scope has changed, the volume mappings may also need to be changed to reflect the Backup Scope change.

**Explanation:** The backup scope has been changed; therefore, the volume mappings may also need to be changed.

**User response:** You can change the volume mappings in several ways. If the scope changed from Full to Data only, the log volumes may need to be removed. One method of removing volumes is to clear out all the mappings using the CLEAR primary command, and then enter the VOLUME primary command to bring in only data volumes. If the scope changed from Data Only to Full, you may need to add the log volumes. One method is to enter the VOLUME primary command, which will add the log volumes.

**Explanation:** An invalid value was entered in the Build Online or Batch field.

**User response:** Enter a valid value as described in the message text.

**Explanation:** A target pool must be specified.

**User response:** Enter a Y in the Update Target Pool field; then enter either ranges of target units or stogrups.

**Explanation:** Your region size must be greater than 1000K.

**User response:** Increase your region size and try again.

**Explanation:** You selected an object profile that has a different SSID then the System Level Backup you selected. The object profile must have the same SSID as the backup selected.

**User response:** Select a different object profile that has the same SSID as the System Level Backup.

**Explanation:** An invalid value was entered in the Edit Image Copy Options field.

**User response:** Enter Y in this field to update the image copy options to be used when creating image copies from the selected System Level Backup.
<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSYR440E</td>
<td>Invalid value - The maximum tapes value must be numeric.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>The maximum tapes value must be numeric.</td>
</tr>
<tr>
<td>User response:</td>
<td>Enter a numeric value.</td>
</tr>
<tr>
<td>BSYR441E</td>
<td>Invalid value - The maximum tapes value must be between 1 and 256.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>The maximum tapes value must be between 1 and 256.</td>
</tr>
<tr>
<td>User response:</td>
<td>Enter a valid value as listed in the message text.</td>
</tr>
<tr>
<td>BSYR442E</td>
<td>Invalid Entry - The Date entered is invalid.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>An invalid date was entered.</td>
</tr>
<tr>
<td>User response:</td>
<td>Enter a valid date in the form of CCYYMMDD.</td>
</tr>
<tr>
<td>BSYR443E</td>
<td>Invalid entry - Enter Cancel or End to return to System Restore.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>The specified primary command is not valid.</td>
</tr>
<tr>
<td>User response:</td>
<td>Correct and retry the operation.</td>
</tr>
<tr>
<td>BSYR444E</td>
<td>Invalid value - The tape stack limit must be between 1 and 999.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>The tape stack limit must be between 1 and 999.</td>
</tr>
<tr>
<td>User response:</td>
<td>Enter a valid value as listed in the message text.</td>
</tr>
<tr>
<td>BSYR445E</td>
<td>Invalid Value - Enter a &quot;G&quot; if the time you are entering is machine time (GMT) or enter an &quot;L&quot; if you are entering a Local Time.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>An invalid value was entered in the Timestamp is in GMT or Local Time field.</td>
</tr>
<tr>
<td>User response:</td>
<td>Enter a valid value as listed in the message text.</td>
</tr>
<tr>
<td>BSYR446E</td>
<td>Invalid Value - The number of offload generations must be numeric and must be between 1 and 99.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>An invalid value was entered for the number of offload generations.</td>
</tr>
<tr>
<td>User response:</td>
<td>Enter a valid value.</td>
</tr>
<tr>
<td>BSYR447E</td>
<td>Invalid Value - The number of tasks must be numeric and must be between 1 and 99.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>An invalid value was entered for the number of tasks. The number of tasks controls how many tasks IMS Recovery Expert will run simultaneously to offload the backup to tape. It will control how quickly the offload operation completes.</td>
</tr>
<tr>
<td>User response:</td>
<td>Enter a valid value for the number of tasks.</td>
</tr>
<tr>
<td>Note:</td>
<td>You must have enough tape units to satisfy the mount requests that will result. For example, if you specify 4 tasks, and are making both Local Primary and Remote Primary copies, you must have EIGHT tape units available. If you specify 2 tasks and are making Local Primary and Remote Primary copies, you must have FOUR tape units available.</td>
</tr>
<tr>
<td>BSYR448E</td>
<td>an IMS backup method is not valid for an IMS Version 7 subsystem. The backup method has been changed to Flash.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>an IMS backup method is not valid for an IMS Version 7 subsystem. The backup method has been changed to Flash.</td>
</tr>
<tr>
<td>User response:</td>
<td>None required.</td>
</tr>
<tr>
<td>BSYR449E</td>
<td>&quot;From Offload&quot; is only valid when recovering an object from a System Level Backup.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>An I was entered in the Recovery Resources field to select image copies as a recovery resource, and Y was entered in the From Offload field.</td>
</tr>
<tr>
<td>User response:</td>
<td>Change the Recovery Resources field to A(ll) or S(LB), or change the From Offload field to N.</td>
</tr>
<tr>
<td>BSYR450E</td>
<td>Image copies can not be created from an offloaded backup created using FDR.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>Image copies cannot be created from an offloaded backup when the backup was created using FDR.</td>
</tr>
<tr>
<td>User response:</td>
<td>Select a different backup from which to make image copies.</td>
</tr>
<tr>
<td>BSYR451E</td>
<td>The Backup Type should be LP for Local Primary, LB for Local Backup, RP for Remote Primary or RB for Remote Backup.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>An invalid backup type was entered in the Backup Type field.</td>
</tr>
<tr>
<td>User response:</td>
<td>Enter a valid value as described in the message text.</td>
</tr>
</tbody>
</table>
BSYR452E  Invalid Value - Please Enter a "Y" if you want the image copies to be registered in SYSCOPY otherwise enter "N".

Explanation: An invalid value was entered in the Register in SYSCOPY field.

User response: If you want the image copies created by IMS Recovery Expert to be registered in SYSCOPY, enter Y.

BSYR453E  A work volume must be specified.

Explanation: No value was entered in the Work Volume field.

User response: A work volume must be specified. Enter the volume serial number of a volume that can be used as a work volume.

BSYR454E  Image copies cannot be created from a System Level Backup that did not have Object Collection set to Yes.

Explanation: An 'I' was entered next to a System Level Backup that did not have object restore enabled when the backup was taken. No image copies can be created from this System Level Backup.

User response: Select a different backup with object restore enabled.

BSYR455E  JCL generation failed.

Explanation: Object restore job generation failed.

User response: There are several possible reasons that the object restore job might fail. There may be no objects found in object profile. Verify that the job profile contains objects. The object profile is not found in the repository. Verify that the object profile is listed on the Object Profile Display. If it is listed, contact IBM Software Support. The user is not authorized to use the object profile. You must ensure that the share option for the object profile allows access. An error occurred connecting to IMS. In this case you must ensure that the IMS subsystem is up, the plan is bound, and that you have authority to run the plan.

BSYR456E  The work volume is invalid or not online.

Explanation: The work volume that was entered is either invalid or not online.

User response: Ensure that the correct work volume is entered and that the volume is online.

BSYR457E  If the work volume(s) are SMS-managed an SMS storage class must also be specified.

Explanation: The work volume(s) entered are SMS-managed work volumes.

User response: Enter the SMS storage class for the work volume(s) in the Work Storage Class field(s).

BSYR458E  Only one Object Profile can be selected.

Explanation: An S was entered next to more than one object profile. Only object profile can be selected at a time.

User response: Enter S next to the profile you want to use to make image copies, and deselect the other profiles.

BSYR459E  A storage class must not be specified if the work volume(s) are not SMS-managed.

Explanation: A non SMS-managed work volume(s) were entered in the Work Volume field(s).

User response: Remove SMS storage classes from the Work Storage Class field(s).

BSYR460E  A duplicate volume was entered.

Explanation: The same volume serial was entered more than once in the Work Volume fields.

User response: Ensure that each work volume is only specified once in the Work Storage Class fields.

BSYR461E  The specified work volume(s) cannot be a mixture of SMS-managed and non-SMS-managed.

Explanation: A mixture of SMS-managed and non-SMS managed volumes was entered in the Work Volume fields.

User response: Ensure that the work volumes are either all SMS-managed or all non-SMS managed.

BSYR462E  The requested backup was in use by another process. Please try again later.

Explanation: The backup was not available for rename or delete processing.

User response: Retry the process again later.

BSYR464E  The first character of the IMS subsystem id must be alphabetic or a national character.

Explanation: The backup was not available for rename or delete processing. An invalid value was entered for
the IMS subsystem ID. A IMS subsystem ID can be
from 1 to 4 characters in length and must be specified
as follows: the first character must be must be an
alphabetic or a national character and the remaining
characters must be alphabetic, numeric or a national
character.

**User response:** Correct the invalid value.

---

**BSYR465E** All characters after the first character
must be alphabetic, numeric or a
national character.

**Explanation:** An invalid value was entered for the
IMS subsystem ID. A IMS subsystem ID can be from 1
to 4 characters in length and must be specified as
follows: the first character must be must be an
alphabetic or a national character and the remaining
characters must be alphabetic, numeric or a national
character.

**User response:** Correct the invalid value.

---

**BSYR466E** From Offload must be "Y" or "N".

**Explanation:** An invalid value was entered for the From Offload field.

**User response:** Enter Y to indicate that any data sets
that need to be restored from a System Level Backup
should be done using an offload copy of the System
Level Backup. Enter N to have the data sets restored
using the System Level Backup on disk.

---

**BSYR467E** Update catalog tables None is not valid
with Report messages No.

**Explanation:** Update catalog tables = None is not valid when Report messages is set to No.

**User response:** You can change the Update catalog
tables option to another value, such as All, Path, or
Space, or you can change the Report messages option
to Yes.

---

**BSYR469E** The Recover to RBA/LRSN must be
equal to the RBA/LRSN of the Backup
which is backup_RBA.

**Explanation:** The Recover to RBA/LRSN must be
equal to the RBA/LRSN of the backup RBA, which is
listed in the messages.

**User response:** Change the Recover to RBA/LRSN.

---

**BSYR470E** The GDG symbolic can only be used
once in a data set mask.

**Explanation:** The GDG symbolic can only be used
once in a data set mask. The second GDG symbolic is
removed from the mask.

**User response:** Enter a different symbolic.
BSYR480E Invalid value. The Update Image Copy Options should be either Y or N.

Explanation: The value entered in the Update Image Copy Options field is invalid. You must specify either a Y to update the image copy options or a N which indicates that you will not update the image copy options.

User response: Enter a valid value.

BSYR481E Invalid value. Valid values for the Local Primary Image Copy field are Y or N.

Explanation: The value entered in the Local Primary Image Copy field is invalid. You must specify either a Y to take a local primary image copy or a N if you do not want to take an image copy.

User response: Enter a valid value.

BSYR482E Invalid value. Valid values for the Local Backup Image Copy field are Y or N.

Explanation: The value entered in the Local Backup Image Copy field is invalid. You must specify either a Y to take a local backup image copy or a N if you do not want to take an image copy.

User response: Enter a valid value.

BSYR483E Invalid value. Valid values for the Recovery Primary Image Copy field are Y or N.

Explanation: The value entered in the Recovery Primary Image Copy field is invalid. You must specify either a Y to take a recovery primary image copy or a N if you do not want to take an image copy.

User response: Enter a valid value.

BSYR484E Invalid value. Valid values for the Recovery Backup Image Copy field are Y or N.

Explanation: The value entered in the Recovery Backup Image Copy field is invalid. You must specify either a Y to take a recovery backup image copy or a N if you do not want to take an image copy.

User response: Enter a valid value.

BSYR485E A Local Backup Image Copy cannot be selected unless a Local Primary Image Copy is selected.

Explanation: You cannot create a local backup image copy without also creating a local primary image copy.

User response: In addition to the Y specified in the Local Backup Image Copy field, specify a Y in the Local Primary Image Copy field.

BSYR486E A Recovery Backup Image Copy cannot be selected unless a Recovery Primary Image Copy is selected.

Explanation: You cannot create a recovery backup image copy without also creating a recovery primary image copy.

User response: In addition to the Y specified in the Recovery Backup Image Copy field, specify a Y in the Recovery Primary Image Copy field.

BSYR487E Invalid unit and symbolic data set name specified for the image copy.

Explanation: The unit and symbolic data set name specified for the image copy are invalid.

User response: Specify a valid unit and symbolic data set name for the image copy.

BSYR488E Invalid value has been specified for the fast replication method.

Explanation: You have specified an invalid fast replication method. Valid fast replication methods can be either an S for EMC Snap fast replication or a D for DFSMSdss fast replication.

User response: Specify a valid fast replication method. You can specify an S for EMC Snap fast replication or a D for DFSMSdss fast replication.

BSYR489E Invalid value has been specified for the fast replication update option.

Explanation: You have specified an invalid fast replication update option. You can specify a Y to update using fast replication or N if you do not want to do a fast replication update.

User response: Specify a valid fast replication update value.

BSYR490E Invalid value has been specified for the Sharelevel field.

Explanation: You have specified an invalid valid for the sharelevel. You can specify a R for sharelevel reference or C for sharelevel change.

User response: Specify a valid sharelevel value.

BSYR491E Invalid value has been specified for the Scope field.

Explanation: You have specified an invalid valid for the scope. You can specify an A for all or a P for pending.

User response: Specify a valid value for scope.
BSYR492E  •  BSYR504E

BSYR492E  Invalid value has been specified for the
Register VSAM Copy field.
Explanation:  You have specified an invalid valid for
the Register VSAM Copy field. You can specify a Y to
register a VSAM copy or an N to not register the
VSAM copy.
User response:  Specify a valid value.

BSYR493E  Invalid value has been specified for the
Stack tapes field.
Explanation:  You have specified an invalid valid for
the Stack tapes field. You can specify a Y to stack tapes
or an N to not stack the tapes.
User response:  Specify a valid value.

BSYR494E  Invalid value has been specified for the
stack limit.
Explanation:  You have specified a value that is not
numeric for the stack limit.
User response:  Specify a valid numeric value.

BSYR495E  Invalid value has been specified for the
Number of tasks field.
Explanation:  You have specified an invalid valid for
the Number of tasks field. The value that you specify
must be numeric and must be between 1 and 99.
User response:  Specify a valid value.

BSYR496E  Invalid value - All parts in one copy
should be Y or N.
Explanation:  You have specified an invalid valid for
the All parts in one copy field. You can specify a value
of Y to include all parts in one copy or an N to indicate
separate copies.
User response:  Specify a valid value.

BSYR497E  Invalid value has been specified for the
Edit Image Copy Options field.
Explanation:  You have specified an invalid valid for
the Edit Image Copy Options field. You can specify a value
of Y to edit the image copy options or an N to not edit the image copy options.
User response:  Specify a valid value.

BSYR498E  At least one image copy type must be
selected.
Explanation:  You must select at least one image copy
type. The types that are available are Local Primary
Image Copy or Remote Primary Image Copy.
User response:  Select at least one image copy type.

BSYR499E  An invalid value has been specified for
the number of VSAM generations.
Explanation:  You value specified for the Number of
VSAM generations field is invalid. The value specified
must be numeric and be between the numeric values of
1 and 9999.
User response:  Specify a valid value for the number of VSAM generations.

BSYR500E  An invalid value has been specified for
the Use SLBs for recovery field.
Explanation:  You value specified for the Use SLBs for
recovery field is invalid. The value specified must be a
Y to specify that a system level backup will be used for
recovery or an N to specify that a system level backup
is not available for use as a backup.
User response:  Specify a valid value.

BSYR501E  An invalid value has been specified for
the Use ICs for recovery field.
Explanation:  You value specified for the Use ICs for
recovery field is invalid. The value specified must be a
Y to specify that an image copy will be used for
recovery or an N to specify that an image copy is not
available for use as a backup.
User response:  Specify a valid value.

BSYR502E  An invalid value has been specified for
the Use VSAM ICs for recovery field.
Explanation:  You value specified for the Use VSAM
ICs for recovery field is invalid. The value specified
must be a Y to specify that a VSAM image copy will be
used for recovery or an N to specify that a VSAM
image copy is not available for use as a backup.
User response:  Specify a valid value.

BSYR503E  At least one of the types of recovery
resources must be selected.
Explanation:  You must select at least one of the types
of recovery resources. The recovery resource fields from
which you can select are the Use SLBs for recovery, the
Use ICs for recovery field, and the Use VSAM ICs for
recovery fields. You may select all three if they are
available to use for recovery.
User response:  Select one or more of the types of
recovery resources.

BSYR504E  At least one object could not be
recovered.
Explanation:  At least one object could not be
recovered.
BSYR507E  Source stogroups must be specified.
Explanation:  When creating this type of automap profile, at least one source storage group must be specified.
User response:  Update the profile and add at least one source storage group.

BSYR508E  Stogroup mapping is not valid for IMS type targets, BCV type targets, or phased SNAP type targets.
Explanation:  The Source/Target mapping option Stogroup discover/auto mapping is not valid when creating IMS, BCV, or phased SNAP backup profiles.
User response:  Change the value of the Source/Target mapping field to M when creating IMS, BCV, or phased SNAP backup profiles.

BSYR600E  Invalid Value - Enter "Y" if you want to use Multiple jobs for performing offload and restore, or "N" if you want to use a single job.
Explanation:  An invalid value was specified for the Use Multiple Jobs option.
User response:  You must specify Y (Yes) to use Multiple Jobs during the OFFLOAD process, or N (No) if you do not want to use Multiple Jobs.

BSYR601E  Invalid Value – The number of jobs must be numeric
Explanation:  The value specified for maximum number of jobs to be submitted on this LPAR for Multijob Processing is not valid.
User response:  You must specify a number between 01 and 99.

BSYR602E  Invalid Value – The number of jobs must be between 1 and 99
Explanation:  The value specified for maximum number of jobs to be submitted on this LPAR for Multijob Processing is not valid.
User response:  You must specify a number between 01 and 99.

BSYR603E  Invalid Value – The number of tasks must be numeric
Explanation:  The value specified for maximum number of tasks to be used per job on this LPAR for Multijob Processing is not valid.

BSYR604E  Invalid Value – The number of tasks must be between 1 and 99.
Explanation:  The value specified for maximum number of tasks to be used per job on this LPAR for Multijob Processing is not valid.
User response:  You must specify a number between 01 and 99.

BSYR605E  Invalid Value – Update Multijob Options value must be “Y” or “N”
Explanation:  The value specified for the Update Multijob option is not valid.
User response:  You must specify Y (Yes) to update the Multijob options or N (No) if you do not want to update them.

BSYR606E  You must specify both RECON Copy 1 and RECON Copy 2
Explanation:  No value was specified for the RECON Copy 1 field or the RECON Copy 2 field, or both.
User response:  You must specify valid data set names for both RECON Copy 1 and RECON Copy 2.

BSYR607E  Invalid Value – The value for the Use Multijob for DR Restore option must be “Y”, “N”, or “U”
Explanation:  The value specified for the Use Multijob for DR Restore option is not valid.
User response:  You must specify Y (Yes) to use Multiple Jobs for performing the DR Restore, N (No) if you do not want to use Multiple Jobs, or U (Update) to update the options.

BSYR608E  The first character of the Multijob Prefix must be an alphabetic or national character.
Explanation:  The value specified for the Multijob Prefix must be a valid z/OS job name and must begin with either an alphabetic character or a national symbol (#, @, or $).
User response:  Specify a valid z/OS job name.

BSYR610E  Invalid Value – Specify Y if you want to have DBs for which no ICs exist reported on, or N if you do not.
Explanation:  The specified value is not valid.
User response:  Specify either Y or N.
BSYR61E  Invalid value - The number of days must be numeric.
Explanation: The specified value is not valid.
User response: Specify a numeric value.

BSYR62E  Invalid value - The number of days must be between 1 and 999.
Explanation: The specified value is not valid.
User response: Specify a value between 1 and 999.

BSYR63E  Invalid Value – Specify Y to include DBs for which ICs are required in the report. Otherwise, specify N.
Explanation: The specified value is not valid.
User response: Specify either Y or N.

BSYR64E  Invalid Value – Specify Y to include DBs for which ICs are recommended in the report. Otherwise, specify N.
Explanation: The specified value is not valid.
User response: Specify either Y or N.

BSYR65E  Invalid Value – Specify Y to include DBs that do not have the minimum number of batch image copies in the report. Otherwise, specify N.
Explanation: The specified value is not valid.
User response: Specify either Y or N.

BSYR66E  Invalid Value – Specify Y to include DBs that do not have the minimum number of online image copies in the report. Otherwise, specify N.
Explanation: The specified value is not valid.
User response: Specify either Y or N.

BSYR67E  Invalid Value – Specify Y to include DBs that are not in a CA group in the report. Otherwise, specify N.
Explanation: The specified value is not valid.
User response: Specify either Y or N.

BSYR68E  Invalid Value – Specify Y to include CA groups that do not have any valid change accumulations in the report. Otherwise, specify N.
Explanation: The specified value is not valid.
User response: Specify either Y or N.
BSYR626E  Invalid Value - Specify Y to include in the report data sets that have an IC1 but no IC2. Otherwise, specify N.

Explanation: The specified value is not valid.
User response: Specify either Y or N.

BSYR627E  Invalid Value - Specify Y to include in the report PRILOGs that have no SECLOGs. Otherwise, specify N.

Explanation: The specified value is not valid.
User response: Specify either Y or N.

BSYR628E  Invalid Value - Specify Y to include in the report PRISLDSs that have no SECSLDSs. Otherwise, specify N.

Explanation: The specified value is not valid.
User response: Specify either Y or N.

BSYR629E  Invalid Value - Specify Y to verify that any assets needed to recover the databases are cataloged. Otherwise, specify N.

Explanation: The specified value is not valid.
User response: Specify either Y or N.

BSYR630E  Invalid Value - Specify Y to include in the report DBs that do not have a minimum number of CA data sets. Otherwise, specify N.

Explanation: The specified value is not valid.
User response: Specify either Y or N.

BSYR631E  Invalid value - The number specified must be numeric.

Explanation: The specified value is not valid.
User response: Specify a numeric value.

BSYR632E  Invalid value - The number specified must be between 1 and 999.

Explanation: The specified value is not valid.
User response: Specify a numeric value between 1 and 999.

BSYR700E  The specified data set could not be found in the MVS catalog.

Explanation: The specified data set could not be found in the MVS catalog.
User response: None required.

BSYR701E  An unexpected return code from VSAM was encountered while doing an add operation to the control file. RC1=return_code RC2=return_code_2.

Explanation: A VSAM error occurred while attempting to perform an add operation to the specified IMS control data set.
User response: The RC1 and RC2 (VSAM return codes) are provided for investigation. Refer to the z/OS DFSMS Macro Instructions for Data Sets documentation for more information.

BSYR702E  An IMS subsystem ID has to be entered for processing.

Explanation: There was no valid value entered for IMS subsystem ID.
User response: Enter a valid subsystem ID and continue.

BSYR704E  The specified data set could not be opened for I/O.

Explanation: A VSAM open error occurred while attempting to open the data set specified for the IMS control data set.
User response: Verify that the VSAM data set is accessible and continue.

BSYR705E  An unexpected return code from VSAM was encountered while doing a read of the control file. RC=return_code.

Explanation: A VSAM READ error occurred while attempting to access the data set specified for the IMS control data set.
User response: The return code (VSAM return code) is provided for investigation. Refer to the z/OS DFSMS Macro Instructions for Data Sets documentation for more information.

BSYR706I  The control file record for IMS subsystem ssid has been successfully updated.

Explanation: The control file named in the field IMS control data set has been successfully updated to include the specified changes and definitions for the specified IMS subsystem.
User response: None required.
BSYR707E  An unexpected return code from VSAM
was encountered while doing an update
operation of the control file.
RC1=return_code_1  RC2=return_code_2

Explanation: A VSAM update error occurred while
attempting to update the data set specified for the IMS
control data set.
User response: The RC1 and RC2 (VSAM return
codes) are provided for investigation. Refer to the z/OS
DFSMs Macro Instructions for Data Sets documentation
for more information.

BSYR708I  The control file record for IMS
subsystem ssid has been successfully
added.

Explanation: The control file named in the field IMS
control data set has been successfully updated to
include the new record, based on the specified
definitions for the specified IMS subsystem.
User response: None required.

BSYR709E  Invalid value. Valid options are 1 and 2.

Explanation: The specified panel option is not valid.
User response: Valid options are 1 and 2.

BSYR711E  Duplicate mask data set. Enter a unique
data set mask.

Explanation: The specified mask data set name
already exists in the include/exclude list.
User response: Specify a different, unique data set mask.

BSYR712E  Abend during MVS catalog lookup
process, ABEND=abendcode-reasoncode

Explanation: An ABEND occurred while processing
the MVS catalog entry for the specified data set. The
data set cannot be added at this time.
User response: Look up the abend code and reason
code, correct the problem, and retry the process.

BSYR720E  File tailoring open returned a file
tailoring already in progress condition.

Explanation: An attempt to perform file tailoring for
utility customization failed. There was file tailoring
session already in progress. File tailoring sessions
cannot be performed concurrently.
User response: None required.

BSYR721E  File tailoring open returned the output
file already in use condition -- ENQ
failed.

Explanation: An attempt to open the IMS control data
set failed with an ENQ error. The data set is already
open for output.
User response: Verify that you are the only user
attempting to access this file.

BSYR722E  File tailoring open returned the skeletal
file or output file not allocated
condition.

Explanation: An attempt to perform file tailoring
failed because either the tailoring skeleton file or
output file is not allocated.
User response: Verify that all required files are
allocated prior to performing file tailoring.

BSYR723E  File tailoring open returned a severe
error condition.

Explanation: An attempt to perform file tailoring
failed because a severe error condition was encountered
on open.
User response: Verify that all required files are
allocated and accessible prior to performing file
tailoring.

BSYR724E  File tailoring open returned an
unknown code -- severe error.

Explanation: An attempt to perform file tailoring
failed because a severe error condition was encountered
on open.
User response: Verify that all required files are
allocated and accessible prior to performing file
tailoring.

BSYR725E  File tailoring close returned a file not
open condition -- severe error.

Explanation: An attempt to perform file tailoring
failed because a file-not-open condition was encountered on close.
User response: Verify that all required files are
allocated and accessible, and that there are no other
tailoring sessions running concurrently with your
session.

BSYR726E  File tailoring close returned an output
file in use condition.

Explanation: An attempt to perform file tailoring
failed because an output-file-in-use condition was
encountered on close.
BSYR727E File tailoring close returned a skeletal file or output file not allocated condition

Explanation: An attempt to close file tailoring failed because either a tailoring skeleton file or output file was not allocated.

User response: Verify that all required files are allocated and accessible, and that there are no other tailoring sessions running concurrently with your session.

BSYR728E File tailoring close returned a severe error.

Explanation: An attempt to perform file tailoring failed because a severe error condition was encountered on close.

User response: Verify that all required files are allocated and accessible prior to performing file tailoring.

BSYR729E File tailoring close returned an unknown code -- severe error.

Explanation: An attempt to perform file tailoring failed because a severe error condition was encountered on close.

User response: Verify that all required files are allocated and accessible prior to performing file tailoring.

BSYR730E File tailoring close returned an output member exists in the output library and NOREPL was specified.

Explanation: An attempt to perform file tailoring failed because the close process could not replace the pre-existing tailored member in the output file.

User response: Change the output member name to a new name or ensure that the output library allows for member replacement.

BSYR731E File tailoring include returned a skeleton does not exist condition.

Explanation: An attempt to perform file tailoring failed because the tailoring process could not locate a required tailoring skeleton.

User response: Ensure that all required files are allocated to perform file tailoring.

BSYR732E File tailoring include returned a skeleton in use -- ENQ failed condition.

Explanation: An attempt to access a tailoring skeleton failed with an ENQ error (member in use).

User response: Verify that all required tailoring files are allocated, and that there are no other tailoring sessions running concurrently.

BSYR733E File tailoring include returned a data truncation or skeleton library or output file not allocated condition.

Explanation: An attempt to perform file tailoring failed because either the tailoring skeleton file or output file is not allocated.

User response: Verify that all required files are allocated prior to performing file tailoring.

BSYR734E File tailoring include returned a severe error condition.

Explanation: An attempt to perform file tailoring failed because a severe error condition was encountered on an include operation.

User response: Verify that all required files are allocated and accessible prior to performing file tailoring.

BSYR735E File tailoring include returned an unknown condition -- severe error.

Explanation: An attempt to perform file tailoring failed because a severe error condition was encountered on an include operation.

User response: Verify that all required files are allocated and accessible prior to performing file tailoring.

BSYR736E No matching data sets were found in the MVS catalog.

Explanation: No matching data sets were found in the MVS catalog.

User response: Ensure that the specified data set mask is valid.

BSYR737I Profile saved for system ssid.

Explanation: The profile was saved for the system SSID.

User response: None required.
BSYR739E  Error reading the MVS catalog for the specified data set.
Explanation: An error occurred while processing the MVS catalog entry for the specified data set. The data set cannot be added at this time.
User response: Use the ISPF data set list utility option 3.4 to obtain further details about the error, and correct the problem.

BSYR753W  IBM IMS Recovery Expert for z/OS is not currently set up to use Coordinated Application Profiles. PFI for more information.
Explanation: IMS Recovery Expert is not set up to use Coordinated Application Profiles.
User response: In User Settings, under IMS Recovery Expert for z/OS connection, verify that the required CLIST information for IMS Recovery Expert is specified. You can also specify information in the CLIST with the CLISTLIB and CLISTNAME parameters.

BSYR754E  Coordinated Application Profiles VSAM data set not found in CLIST.
Explanation: The Coordinated Application Profiles VSAM data set was not found in CLIST.
User response: Verify that the CLIST parameter BSYBCPRF specifies the VSAM data set that is used to save Coordinated Application Profile information.

BSYR768E  Unable to retrieve CPROFILE data set name
Explanation: The attempt to retrieve the name of the Coordinated Application Profiles VSAM data set failed due to a prior error.
User response: Verify that the CLIST parameter BSYBCPRF specifies the VSAM data set used to save Coordinated Application Profile information, and ensure that the data set name is valid. This error can also occur if the execution load library is not APF authorized.

BSYR802E  Invalid Value - Specify Y if you want to edit allocation parameters, or N if you do not want to update allocation parameters.
Explanation: The value you specified in the Edit Allocation Parameters field is not valid.
User response: Specify Y or N in this field.

BSYR803E  Please Enter Required Field - A valid unit is required for copying Image Copies for the DR site
Explanation: No unit device was specified in the Unit for copying Image Copies field. This field is required.
User response: Specify a valid unit device to use to copy the Image Copies.

BSYR804E  Could not find any registered subsystems. Register IMS subsystems before defining the BSY group.
Explanation: There are no registered IMS subsystems.
User response: Register your IMS subsystems before creating a BSY group.

BSYR805E  SSID not added. SSID already associated with this BSY group.
Explanation: A SSID is already associated with this BSY group.
User response: Specify a different SSID to associate with this group.

BSYR806E  SSID not added. SSID already associated with a different BSY group.
Explanation: The selected IMS system was not added because it is already associated with a different group.
User response: Choose a different system and continue.

BSYR807E  Group not added. Selected group name already defined.
Explanation: The selected IMS system was not added because it is already associated with this group.
User response: Specify a different group name.

BSYR808I  The control file record has been successfully updated.
Explanation: The Control File Record has been successfully updated.
User response: None required.
<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Explanation</th>
<th>User Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSYR809E</td>
<td>Error encountered while writing the control file record. Look for SYSLOG messages.</td>
<td>An error occurred while writing the control file record.</td>
<td>Inspect the system log for any informational messages related to the problem. Fix the problem and then try again.</td>
</tr>
<tr>
<td>BSYR810E</td>
<td>Invalid Value - Specify Y if you want to copy archives to DASD at DR site, N if you do not want to copy archives to DASD at the DR site, or U to update the copy options.</td>
<td>The value that you specified in the Copy Archives to DASD at DR site field was not valid.</td>
<td>Specify Y, N, or U in this field.</td>
</tr>
<tr>
<td>BSYR811E</td>
<td>Invalid Unit - Specified unit must be a Disk unit that will be used for copying archives to DASD at the DR site</td>
<td>The value that you specified in the Unit for Copying Archives to DASD field was not valid.</td>
<td>Specify a valid disk unit type.</td>
</tr>
<tr>
<td>BSYR812E</td>
<td>Invalid Value - Specify S if you want to process only this IMS system, or A to process all systems in the BSY group.</td>
<td>The value that you specified in the Process Datasharing Subsystems field was not valid.</td>
<td>Specify S or A in this field.</td>
</tr>
<tr>
<td>BSYR813E</td>
<td>Invalid Value - Specify a valid number of tasks for archive log copy. Valid values are 1 - 32.</td>
<td>The value that you specified in the Number of Copy Tasks field was not valid.</td>
<td>Specify a valid number between 1-32.</td>
</tr>
<tr>
<td>BSYR814E</td>
<td>Invalid Value - Specify C if you want DR Prep to copy your IC, Y if all ICS will be available at DR site, 2 if you want to use IC2 at DR site, or N if you want DR Prep to invalidate all registered ICS for DR.</td>
<td>The value you specified in the Image Copied Used at DR field was not valid.</td>
<td>Specify a valid value: C, Y, 2, or N.</td>
</tr>
<tr>
<td>BSYR815E</td>
<td>To process Disaster Recovery via the archive log method, you must specify the IC that will be needed at the DR site. You must specify either number of days or number of hours, or both days and hours of the IC that you need available for disaster recovery.</td>
<td>You specified 0 for days and hours in the Image Copies Needed at DR field. This value is not valid.</td>
<td>Specify either the number of days or the number of hours, or both days and hours in this field.</td>
</tr>
<tr>
<td>BSYR816E</td>
<td>Invalid Value - Specify B if you want to prepare JCL to perform DR recovery to the offloaded Backup, or P if you want to generate JCL to perform recovery to a later Point in Time.</td>
<td>The value you specified in the DR Site Recovery Point field is not valid.</td>
<td>Specify a valid value: B or P.</td>
</tr>
<tr>
<td>BSYR817E</td>
<td>Invalid Value - Specify Y if you want to process <em>type</em>, N if you do not want to process <em>type</em>, or U to update <em>type</em> options.</td>
<td>The value you specified in the Process <em>type</em> for DR field is not valid. The <em>type</em> value can be either Archive Logs, Change Accums, or Image Copies.</td>
<td>Specify a valid value: Archive Logs, Change Accums, or Image Copies.</td>
</tr>
<tr>
<td>BSYR818E</td>
<td>Invalid Value - Specify Y if you will be sending your CAs to the DR site, specify C if you want DR Prep to copy your CA, or N if you want DR Prep to invalidate all registered CAs for DR.</td>
<td>The value you specified in the Change Accums Used at DR field is not valid.</td>
<td>Specify a valid value: Y, C, or N.</td>
</tr>
<tr>
<td>BSYR819E</td>
<td>Recovery point must be a value from 1 through 4.</td>
<td>The value you specified in the Recovery Point field was not valid.</td>
<td>Specify a valid number between 1 - 4.</td>
</tr>
<tr>
<td>Condition</td>
<td>Error Message</td>
<td>Explanation</td>
<td>User Response</td>
</tr>
<tr>
<td>-----------</td>
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</tr>
<tr>
<td>BSYR820E</td>
<td>Recovery Utility must be I for IMS, D for DRF, or U for User.</td>
<td>The value you specified in the Recovery utility field is not valid.</td>
<td>Specify a valid value: I, D, or U.</td>
</tr>
<tr>
<td>BSYR821E</td>
<td>Invalid Value for Edit Options, valid values are Y to edit Recovery Utility options, or N.</td>
<td>The value you specified in the Edit Options field is not valid.</td>
<td>Specify a valid value: Y or N.</td>
</tr>
<tr>
<td>BSYR822E</td>
<td>Invalid Value. Specify a member name.</td>
<td>No value was specified in the GENJCL member name field.</td>
<td>Specify a valid member name in this field.</td>
</tr>
<tr>
<td>BSYR823E</td>
<td>Invalid Value, a minimum of 12 numeric characters in the format yydddhhmmssst must be specified.</td>
<td>The value that you specified in the Timestamp field is not valid.</td>
<td>Specify a valid value in yydddhhmmssst format.</td>
</tr>
<tr>
<td>BSYR824E</td>
<td>Invalid timestamp day value. ddd must be between 001 and 365, or between 001 and 366 for a leap year.</td>
<td>The value that you specified in the Timestamp field is not valid.</td>
<td>Specify a valid value between 001 and 366.</td>
</tr>
<tr>
<td>BSYR825E</td>
<td>Invalid timestamp hours value. hh must be between 00 and 23.</td>
<td>The value that you specified in the Timestamp field is not valid.</td>
<td>Specify a valid value between 00 and 23.</td>
</tr>
<tr>
<td>BSYR826E</td>
<td>Invalid timestamp minutes value. mm must be between 00 and 59.</td>
<td>The value that you specified in the Timestamp field is not valid.</td>
<td>Specify a valid value between 00 and 59.</td>
</tr>
<tr>
<td>BSYR827E</td>
<td>Invalid timestamp seconds value. ss must be between 00 and 59.</td>
<td>The value that you specified in the Timestamp field is not valid.</td>
<td>Specify a valid value between 00 and 59.</td>
</tr>
<tr>
<td>BSYR828E</td>
<td>Invalid UTC timestamp. All characters after the sign must be numeric.</td>
<td>The value that you specified in the Timestamp field is not valid.</td>
<td>Specify a valid numeric value.</td>
</tr>
<tr>
<td>BSYR829E</td>
<td>Invalid Local timestamp precision value.</td>
<td>The value that you specified in the Timestamp field is not valid.</td>
<td>Specify a valid value.</td>
</tr>
<tr>
<td>BSYR830E</td>
<td>Invalid value. Specify Y to rebuild indexes after recovery, or N if you do not want to rebuild indexes after recovery.</td>
<td>The value that you specified in the Always Rebuild Indexes field is not valid.</td>
<td>Specify a valid value: Y or N.</td>
</tr>
<tr>
<td>BSYR831E</td>
<td>Invalid value. Choose Y to rebuild HALDB PINDEX/ILDS after recovery to current, or N if you do not to rebuild PINDEX/ILDS after recovery to current.</td>
<td>The value that you specified in the Rebuild PINDEX/ILDS field is not valid.</td>
<td>Specify a valid value: Y or N.</td>
</tr>
<tr>
<td>BSYR832E</td>
<td>Index Rebuild Utility must be I for IIB, U for User, or N for None.</td>
<td>The value that you specified in the Index Rebuild Utility field is not valid.</td>
<td>Specify a valid value: I, U, or N.</td>
</tr>
<tr>
<td>BSYR833E</td>
<td>HALDB PINDEX/ILDS Rebuild Utility must be I for IMS, U for User, or N for None.</td>
<td>The value that you specified in the HALDB PINDEX/ILDS field is not valid.</td>
<td>Specify a valid value: I, U, or N.</td>
</tr>
</tbody>
</table>
BSYR834E  Change Accum Utility must be I for IMS, H for HPCA, U for User, or N for None.

Explanation: The value that you specified in the Change Accum Utility field is not valid.
User response: Specify a valid value: I, H, U, or N.

BSYR835E  Invalid Value - The only valid value for an Object Recovery Profile is B to build the job in Batch.

Explanation: The value that you specified in the Build Online or Batch field is not valid.
User response: Specify a valid value: B.

BSYR836E  Error while reading from repository.

Explanation: An error occurred while reading the repository.
User response: Inspect the system log for any informational messages related to the problem. Fix the problem and then try again.

BSYR837E  Profiles found for this group. Group cannot be renamed.

Explanation: The BSY group cannot be renamed. Backup profiles exist for this group.
User response: To rename the group, you must delete all the profiles that are associated with it.

BSYR838I  System removed from BSY group. Restoring to an existing backup will still restore the removed SSID. A full System Level Backup is recommended.

Explanation: The IMS subsystem was removed from the BSY group and is not associated with any groups. Any system restores from existing backups will still restore the removed subsystem.
User response: It is highly recommended that you run a new system backup.

BSYR839E  Invalid Value - Specify Y if you want to delete profiles, or N if you do not want to delete them.

Explanation: The value that you specified in the Confirm Delete field is not valid.
User response: Specify a valid value: Y or N.

BSYR840E  Error encountered while deleting backups for subsystem. System not added to the BSY group.

Explanation: An error encountered while deleting backups for the IMS subsystem. The system was not added to the BSY group.
User response: Inspect the system log for any informational messages related to the problem. Fix the problem and then try again.

BSYR841I  New system added to group. Any recovery from existing backups will not recover the newly added systems. Run System Level Backup.

Explanation: A new IMS subsystem was added to the BSY group, but any recovery from existing backups still will not recover the newly added subsystem.
User response: It is highly recommended that you run a full system backup for the BSY group.

BSYR842I  Profile cleanup canceled.

Explanation: Profile cleanup was canceled by the user.
User response: None required.

BSYR843E  Error encountered while deleting backups for BSY group. Group not deleted.

Explanation: An error was encountered while deleting backups or profiles for the BSY group.
User response: Inspect the system log for any informational messages related to the problem. Fix the problem and then try again.

BSYR844E  Post Recovery IC Utility must be I for IMS, H for HPIC, U for User, or N for None.

Explanation: The value that you specified in the Post Recovery IC field is not valid.
User response: Specify a valid value: I, H, U, or N.

BSYR845E  Invalid subsystem name. A BSY group with this name already exists.

Explanation: The subsystem name that you specified is not valid because a BSY group with that name already exists.
User response: Specify a different group name.
BSYR846E  Error encountered while retrieving information for the IMS subsystem.

Explanation: An error occurred while trying to retrieve information about the IMS subsystem from the Control File.

User response: Inspect the system log for any informational messages related to the problem. Fix the problem and then try again.

BSYR847E  Invalid Group name, an IMS subsystem with this name is already registered in BSY.

Explanation: The group name that you specified is not valid because an IMS subsystem with that name is already registered in BSY.

User response: Specify a different group name.

BSYR848I  The specified IMS system is associated with a group. The profile is created with the group name.

Explanation: You specified an IMS subsystem that is part of a BSY group. The SSID was substituted with the group name.

User response: None required.

BSYR849E  Invalid SSID entered. The SSID must be a registered IMS SSID or a registered BSY group name.

Explanation: The SSID you specified is not valid. The SSID must be registered in the SETUP section of BSY, or can be a BSY group name.

User response: Register the SSID, or specify a different SSID.

BSYR850E  Invalid value. Options cannot be updated when utility selection is set to None.

Explanation: Utility options cannot be updated when you specify None in the utility selection.

User response: Change the utility selection.

BSYR851E  Invalid value. Specify a data set name.

Explanation: The value that you specified in the Delete/Define PDS DSN field is not valid.

User response: Specify a data set name.

BSYR852E  No line commands available for IMS RECON and Active Log data sets.

Explanation: There are no supported line commands for IMS RECON and Active Log data sets.

User response: None required.

BSYR853E  Invalid command. Valid command is D to display all data sets on this volume.

Explanation: The command you specified is not valid.

User response: Specify D to display all data sets on this volume.

BSYR854E  Invalid UTC timestamp. Hours value after the - sign, hh must be between 00 and 11. Or, Invalid UTC timestamp. Hours value after the + sign, hh must be between 00 and 14.

Explanation: Invalid UTC timestamp. The format of a UTC timestamp is yydddHHMMSSsthhmm. After the - sign, the hh value must be between 00 and 11. After the + sign, the hh value must be between 00 and 14.

User response: Specify a valid value for hh.

BSYR855E  Invalid UTC timestamp minutes value after the sign. mm must be 00, 15, 30, or 45.

Explanation: Invalid UTC timestamp. The format of a UTC timestamp is yydddHHMMSSsthhmm. For the mm after the sign, you must specify a value of 00, 15, 30, or 45.

User response: For the mm after the sign, specify a value of 00, 15, 30, or 45.

BSYR856E  Invalid value. Specify C to continue, W to issue a WTOR, or A to abort.

Explanation: The value you specified in the Action on Warnings field is not valid.

User response: Specify a valid value: C, W, or A.

BSYR857I  The control file record for IMS subsystem *ssid* has been successfully added.

Explanation: The Control File Record has been successfully updated.

User response: None required.
BSYR858E Creation of profile failed.

Explanation: The Creation of a profile failed. Look for JOBLOG messages.

User response: Inspect the system log for any informational messages related to the problem. Fix the problem and then try again.

BSYR859E Invalid Value. Specify Y to update Object recovery options, or N if you do not want to update Object recovery options.

Explanation: The value you specified in the Update Recovery options field is not valid.

User response: Specify a valid value: Y or N.

BSYR860E Invalid value. Specify A to always run CA, or N to run CA only if needed for recovery.

Explanation: The value you specified in the Run CA field is not valid.

User response: Specify a valid value: A or N.

BSYR861E Invalid Value. Specify Y to display the Archive Log Timestamp information.

Explanation: The value you specified for Display Archive Logs times is not valid.

User response: Specify Y to display the Archive Log Timestamp information.

BSYR862E Invalid Value. Specify Y to display the Checkpoint Timestamp information.

Explanation: The value you specified for Display Checkpoint times is not valid.

User response: Specify Y to display the Checkpoint Timestamp information.

BSYR863E Invalid timestamp. Value must be lower than current time.

Explanation: The timestamp that you specified is not valid. The timestamp cannot be later than the current timestamp.

User response: Specify a timestamp that is earlier than the current time.

BSYR864E No log record timestamps found for this IMS subsystem for the requested time ranges.

Explanation: No archive log records were found for this IMS subsystem for the requested time range.

User response: Specify a different time range.

BSYR865I No checkpoint timestamps found for this IMS subsystem for the requested time ranges.

Explanation: No checkpoints were found for this IMS subsystem for the requested time range.

User response: Specify a different time range.

BSYR866I No log records found for this IMS subsystem for the requested time ranges.

Explanation: No log records were found for this IMS subsystem for the requested time ranges.

User response: Specify a different time range.

BSYR867E Invalid value. Specify Y to use VSAM load mode, or N if you do not want to use VSAM load mode.

Explanation: The value that you specified in the Use VSAM Load Mode field is not valid.

User response: Specify a valid value: Y or N.

BSYR868E Invalid value. Specify C to continue if an error is encountered, or S to stop.

Explanation: The value that you specified in the Action on Error field is not valid.

User response: Specify a valid value: C or S.

BSYR869E Invalid value. Specify P for DISP(PDS), O for DISP(OLD), or N for DISP(NEW).

Explanation: The value that you specified in the Database Dataset Characteristics Error field is not valid.

User response: Specify a valid value: P, O, or N.

BSYR870E Invalid character. DBSL.xxx field must be alphanumeric with no spaces.

Explanation: The value that you specified in the DBSL.xxx field is not valid.

User response: Specify an alphanumeric value.

BSYR871E From Offload must be Y or N.

Explanation: The value that you specified in the From Offload field is not valid.

User response: Specify Y to indicate that any data sets that need to be restored from a System Level Backup should be done using an offload copy of the System Level Backup. Specify N to have the data sets restored using the System Level Backup on disk.
BSY cannot be executed in split screen.
Explanation: BSY is already active. It cannot be invoked again in a split screen.
User response: None required.

Recovery information saved for subsystem.
Explanation: Recovery information was saved for the IMS subsystem.
User response: None required.

Updating recovery information for the IMS subsystem encountered an unrecoverable error.
Explanation: An unexpected error was encountered while updating your profile in the VSAM repository data set.
User response: Inspect the system log for any informational messages related to the problem. Fix the problem and then try again.

The IDCAMS DELDEF data set must be a PDS.
Explanation: The IDCAMS DELDEF data set must be a partitioned data set and contain all delete/define statements for the restored objects.
User response: Specify a valid PDS.

ACLIB member could not be found for one or more DBD. Indexes/Logicals might not be included.
Explanation: The ACBLIB member for one or more DBDs was not found. Indexes or Logical relationships for these databases could not be resolved and will not be included for recovery.
User response: Ensure that the ACBLIB member is in the IMS ACBLIB data set.

ACLIB member could not be found for the DBD. Indexes/Logicals might not be included.
Explanation: The ACBLIB member for the DBD was not found. Indexes or Logical relationships for this database could not be resolved and will not be included for recovery.
User response: Ensure that the ACBLIB member is in the IMS ACBLIB data set.

Invalid value. Specify Y to add groups, or N to not add groups.
Explanation: The value that you specified in the Add Group field is not valid.
User response: Specify Y to add a DBRC group, or N if you do not want to add a group.

Objects that are member of a DBRC group cannot be excluded.
Explanation: An object that is a member of an included DBRC group was excluded from recovery.
User response: Group objects cannot be excluded. To exclude a group object, the object must be removed from the group.

Invalid value. A value must be specified for DBDLSxxx if DBSL DISP is selected.
Explanation: The value that you specified for DBDLSxxx is not valid. If a DBSP DISP is selected, then you must specify a value for DBDLSxxx.
User response: Specify a valid value for DBDLSxxx.

Invalid command. Specify D to display all data sets using this alias.
Explanation: The line command that you specified was not valid. D is the only valid command. This command will display all data sets using this alias.
User response: Specify D to display all data sets using this alias.

No line commands available for user included/excluded data sets.
Explanation: The line command that you specified is not valid. There are no line commands that are supported for this type.
User response: None required.

SLB Used at DR must be L for Local Site, or R for Remote Site.
Explanation: The value that you specified for the SLB Used for DR field is not valid. Valid values are L for Local Site Backups, or R for Recovery Site Backups.
User response: Specify a valid value: L or R.

Invalid value. Backup method must be (B)cv, (S)nap, (F)lash, or dfsmsdss(L).
Explanation: The value that you specified for Backup Method is not valid. Valid values are (B)cv, (S)nap, (F)lash, or dfsmsdss(L).
User response: Specify a valid value: B, S, F, or L.
BSYR885E Invalid Value. Backup Method must be B for BCV volumes, S for SNAP volumes, F for Flash Volumes, or L for DFSMSdss Disk copy.

Explanation: The value that you specified in the Backup Method field is not valid.
User response: Specify a valid value: B, S, F, or L.

BSYR886E Invalid value. Backup method must be (B)cv, (S)nap, (F)lash , or dfsmsdss(L)

Explanation: The value that you specified in the Backup Method field is not valid.
User response: Specify a valid value: B, S, F, or L.

BSYR887E Invalid value. Specify Y to add databases, or N to not add databases.

Explanation: The value that you specified to add databases is not valid.
User response: Specify Y to add databases, or N to not add databases.

BSYR888E Auto mapping and Stogroup discover are not valid for BCV type targets or phased SNAP type targets.

Explanation: Auto mapping and Stogroup discover are not valid for BCV type targets or phased SNAP type targets.
User response: Specify a different discovery method.

BSYR889E Invalid Value. Specify Y to process RLDs data sets for DR, or N if you do not want to process RLDs data sets for DR.

Explanation: The value that you specified in the Use RLDS data sets at DR Site field is not valid.
User response: Specify a valid value: Y or N.

BSYR890E Invalid Value. Specify Y to customize conditioned RECON data set names, or N if you do not want to update conditioned RECON data set names.

Explanation: The value that you specified in the Customize RECON data set name field is not valid.
User response: Specify a valid value: Y or N.

BSYR891W No groups found in DBRC.

Explanation: No groups are defined in DBRC.
User response: You cannot specify DBRC groups.

BSYR892E No Objects Meet Wildcard Criteria, or DBRC group not found or empty.

Explanation: When performing the explode operation, no objects were found in the IMS subsystem that matched the specified object mask, a DBRC group was not found in DBRC, or a specified DBRC group was empty.
User response: Specify a valid value.

BSYR893E Excluded objects cannot be exploded.

Explanation: All the items in the application profile are for excluded objects, and cannot be exploded.
User response: None required.

BSYR894E Invalid Value. Specify Y if you want to run Health Check, N if you do not want to run Health Check, or U to edit Health Check Report options.

Explanation: The specified value in the Run Health Check field is not valid.
User response: Specify a valid value: Y, N, or U.

BSYR895E Invalid Value. Specify Y to verify recovery, or N if you do not want to verify recovery.

Explanation: The value that you specified in the Verify before Recovery field is not valid.
User response: Specify a valid value: Y or N.

BSYR896E Recovery Utility must be D for DRF, or U for User.

Explanation: The value that you specified in the Recovery utility field is not valid.
User response: Specify a valid value: D or U.

BSYR897E Change Accum Utility must be H for HPCA, U for User, or N for None.

Explanation: The value that you specified in the Change Accum Utility field is not valid.
User response: Specify a valid value: H, U, or N.

BSYR898E Post Recovery IC Utility must be H for HPCA, U for User, or N for None.

Explanation: The value that you specified in the Post Recovery IC field is not valid.
User response: Specify a valid value: H, U, or N.
BSYR899E  Invalid value. Specify L for type(list) verify, A for type(alloc) verify, or O for type(open) verify.
Explanation: The value that you specified in the Verification Level field is not valid.
User response: Specify a valid value: L, A, or 0.

BSYR900E  Invalid Value. Specify Y to invoke Pointer Checker, or N to not invoke it.
Explanation: The value that you specified in the Invoke Pointer Checker field is not valid.
User response: Specify a valid value: Y or N.

BSYR901E  Invalid entry. Only one recovery range can be selected for the Application Recovery utility. Select only one line, or select none and specify a recovery timestamp.
Explanation: Only one recovery range can be selected for the Application Recovery utility.
User response: Select only one line, or select none and specify a recovery timestamp.

BSYR902E  Invalid Value. Specify Y to display the Valid Recovery Point information.
Explanation: The value that you specified in the Display Valid Recovery Points field is not valid.
User response: Specify Y to display the Valid Recovery Points information.

BSYR903I  No Valid Recovery Points found for this IMS subsystem for the time ranges requested.
Explanation: No valid recovery points were found for this IMS subsystem for the requested time range.
User response: Specify a different time range.

BSYR904E  Invalid value. Specify Y to use the Index Rebuild utility, or N to use the standard IMS utility.
Explanation: The value that you specified in the Use Index Utility field is not valid.
User response: Specify a valid value: Y or N.

BSYR908E  Invalid value. Specify Y for CHECK, or N for NOCHECK.
Explanation: The value that you specified in the CHECK field is not valid.
User response: Specify a valid value: Y or N. This field can also be left blank.

BSYR909E  Invalid value. PIT recovery is only allowed for Recovery Utility DRF.
Explanation: PIT recovery is only allowed with the DRF recovery utility.
User response: Choose a different recovery point.

BSYR910E  Invalid Value – Archive Logs must be processed when External Subsystem is selected.
Explanation: Coordinated disaster recovery with an external subsystem requires remote site recovery to include archive logs.
User response: Specify either Y or U for Archive Logs.

BSYR912E  Invalid Value - Enter a "Y" to enable issuing NOTIFY.ICS or "N" if you do not want to enable using NOTIFY.ICS.
Explanation: An invalid value was entered for 'Issue NOTIFY.IC'.
User response: Specify either "Y" or "N" for the 'Issue NOTIFY.IC' option.

BSYR928E  Recovery Resources cannot be set to "I" if SLB Processing Only is set to "Y".
Explanation: Recovery Resources cannot be set to "I" - Image Copy only, if SLB Processing only is set to "Y".
User response: Either change SLB Processing Only to "N" or include SLBs in the Recovery Resources.

BSYR929E  End timestamp must be later than Start timestamp.
Explanation: If the End Timestamp is specified, it cannot be a time that precedes the Start Timestamp.
User response: Correct either the Start or End Timestamp, and press PF3 for a list of quiet times.

BSYR931E  Invalid Value - Specify "B" if you want to prepare JCL to perform DR recovery using an SLB, or "T" if you want to generate JCL to perform recovery using image copies.
Explanation: The value specified for DR Method is not valid.
User response: Specify B if SLBs will be sent offsite and are to be included in the remote site recovery. Or, specify I if IMS database recovery should be done with
image copies, and any available change accums and
archive logs.

BSYR932E  Invalid Value – Image Copies must be processed when Image Copy DR Method is specified.
Explanation: An image copy DR method requires remote site recovery to include image copies.
User response: Specify either Y or U for Image Copies Processed at DR so that disaster recovery preparation and remote site recovery will include image copies. If you do not want to use the Image Copy DR Method, change the DR method to B.

BSYR933E  The Health Check function is not available.
Explanation: If the IBM IMS Recovery Solution Pack is not available, then the Health Check function is not available.
User response: The library where the IBM Recovery Solution Pack is installed must be specified in the IMSTOOLx variables in the BSYV220 CLIST. Update the CLIST and then restart IMS Recovery Expert.

BSYR934E  INIT Health Check build JCL failed.
Explanation: An error occurred while initializing the function to create the JCL required to create the Health Check Report.
User response: The library where the IBM Recovery Solution Pack is installed must be specified in the IMSTOOLx variables in the BSYV220 CLIST. Update the CLIST and then restart IMS Recovery Expert.

BSYR935E  Error occurred building Health Check Report JCL.
Explanation: An error occurred while creating the JCL required to create the Health Check Report.
User response: The library where the IBM Recovery Solution Pack is installed must be specified in the IMSTOOLx variables in the BSYV220 CLIST. If this is configured correctly, review any additional WTBs that were issued that indicate a problem.

BSYR936E  Error occurred creating Health Check Report JCL.
Explanation: An error occurred while creating the JCL required to create the Health Check Report.
User response: The library where the IBM Recovery Solution Pack is installed must be specified in the IMSTOOLx variables in the BSYV220 CLIST. If this is configured correctly, review any additional WTBs that were issued that indicate a problem.

BSYR937E  Invalid value - Edit Health Check Options should be Y or N.
Explanation: The specified value is not valid.
User response: Specify Y if you want to edit the Health Check Report options. Otherwise, specify N.

BSYR939E  Invalid UTC timestamp - range is from -1100 through +1400.
Explanation: The specified timezone offset portion of the UTC timestamp is not valid. You must specify an offset between -1100 and +1400.
User response: Specify a valid timestamp and retry the operation.

BSYS530I  Repository backup starting
Explanation: The repository backup utility has started processing.
User response: None required.

BSYS531I  Repository backup has ended. Return code = mmmmmmm
Explanation: The repository backup utility has ended. The return code is displayed.
User response: None required.

BSYS532E  Unable to locate REPRO INFILE DD ddname
Explanation: The repository backup utility could not locate the specified DD name for processing.
User response: Ensure that the specified ddname is allocated in the JCL.

BSY901E  The default load library could not be located
Explanation: The data set name entered for the load library was not found.
User response: Enter a valid load library data set name and continue.

BSY902E  an IMS subsystem ID has to be entered for processing
Explanation: There was no valid value entered for IMS subsystem ID.
User response: Enter a valid IMS subsystem name.
<table>
<thead>
<tr>
<th>Code</th>
<th>Message</th>
<th>Explanation</th>
<th>User response</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSY904E</td>
<td>The specified data set could not be opened for I/O</td>
<td>A VSAM open error occurred while attempting to open the data set specified for the IMS control data set.</td>
<td>Verify that the VSAM data set is accessible.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> A VSAM open error occurred while attempting to open the data set specified for the IMS control data set.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSY905E</td>
<td>An unexpected return code from VSAM was encountered while doing a read of the control file. RC=return code</td>
<td>A VSAM read error occurred while attempting to access the data set specified for the IMS control data set. The VSAM return code is provided for diagnostic purposes.</td>
<td>Use the return code to resolve the VSAM read error before continuing.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> A VSAM read error occurred while attempting to access the data set specified for the IMS control data set. The VSAM return code is provided for diagnostic purposes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSY906I</td>
<td>The control file record for IMS subsystem ssid has been successfully updated</td>
<td>The control file named in the IMS control data set field has been successfully updated to include the specified changes and definitions for the listed IMS subsystem.</td>
<td>None required.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> The control file named in the IMS control data set field has been successfully updated to include the specified changes and definitions for the listed IMS subsystem.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSY907E</td>
<td>An unexpected return code from VSAM was encountered while doing an update operation of the control file. RC1=return code 1 RC2=return code 2</td>
<td>A VSAM update error occurred while attempting to update the data set specified for the IMS control data set. The RC1 and RC2 (VSAM return codes) are provided for diagnostic purposes.</td>
<td>Use the return codes to resolve the VSAM errors before continuing.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> A VSAM update error occurred while attempting to update the data set specified for the IMS control data set. The RC1 and RC2 (VSAM return codes) are provided for diagnostic purposes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSY908I</td>
<td>The control file record for IMS subsystem ssid has been successfully added</td>
<td>The control file named in the IMS control data set field has been successfully updated to include the new record, based on the specified definitions for the listed IMS subsystem.</td>
<td>None required.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> The control file named in the IMS control data set field has been successfully updated to include the new record, based on the specified definitions for the listed IMS subsystem.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSY909E</td>
<td>Invalid value. Valid options are 1 and 2.</td>
<td>The value you specified is not valid. Valid values are 1 and 2.</td>
<td>Enter a valid value.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> The value you specified is not valid. Valid values are 1 and 2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSY910E</td>
<td>An unexpected return code from VSAM was encountered while doing an add operation to the control file. RC1=return code 1 RC2=return code 2</td>
<td>A VSAM error occurred while attempting to perform an add operation to the specified IMS control data set. The RC1 and RC2 (VSAM return codes) are provided for diagnostic purposes.</td>
<td>Use the return codes to resolve the VSAM errors before continuing.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> A VSAM error occurred while attempting to perform an add operation to the specified IMS control data set. The RC1 and RC2 (VSAM return codes) are provided for diagnostic purposes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSY911E</td>
<td>The FIND command requires specification of a target string.</td>
<td>No parameters were specified with the F(ind) command. No match can be made unless you specify a string to find.</td>
<td>Enter a FIND parameter.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> No parameters were specified with the F(ind) command. No match can be made unless you specify a string to find.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSY912I</td>
<td>The requested find string was not found.</td>
<td>No matches were found for the string you specified with the FIND command.</td>
<td>None required.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> No matches were found for the string you specified with the FIND command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSY913I</td>
<td>The control file record has been successfully updated.</td>
<td>The control file was updated successfully.</td>
<td>None required.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> The control file was updated successfully.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSY914E</td>
<td>An unknown column was specified using the SORT command.</td>
<td>The column you specified with the SORT command is not known.</td>
<td>Verify that you correctly typed the name of the column or select another column.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> The column you specified with the SORT command is not known.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSY915E</td>
<td>SORT is not supported for the specified column.</td>
<td>The column you attempted to SORT is not supported as a column on which to sort.</td>
<td>Refer to the sort columns listed on the Define Sort Columns panel for a list of valid columns on which the sort can be based and redefine the sort.</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong> The column you attempted to SORT is not supported as a column on which to sort.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSY916E</td>
<td>Sort column not entered. Column name or number must be specified.</td>
<td>A column was not specified with the SORT. A column name or number must be specified for the SORT command.</td>
<td></td>
</tr>
</tbody>
</table>

User response: Ensure that if the column name is used, that all spaces in the name are replaced with an underscore.

BSY917E Incomplete string: Put an ending quote at the end of the string.
Explanation: The ending quote was omitted from the string.
User response: Put an ending quote at the end of the string.

BSY918I Bottom of Data reached: CHARS string not found. Press PF5 to continue from top.
Explanation: The indicated character string was not found.
User response: To continue searching for the character string from the top of the dialog, press PF5.

BSY919I Top of data reached: CHARS string not found. Press PF5 to continue from bottom.
Explanation: The indicated character string was not found.
User response: To continue searching for the character string from the bottom of the dialog, press PF5.

BSY920E File tailoring open returned a file tailoring already in progress condition.
Explanation: An attempt to perform file tailoring for utility customization failed. There was a file tailoring session already in progress. File tailoring sessions cannot be performed concurrently.
User response: None required.

BSY921E File tailoring open returned the output file already in use condition -- ENQ failed.
Explanation: An attempt to open the IMS control data set failed with an ENQ error. The data set is already open for output.
User response: Verify that you are the only user attempting to access this file.

BSY922E File tailoring open returned the skeletal file or output file not allocated condition.
Explanation: An attempt to perform file tailoring failed because either the tailoring skeleton file or output file is not allocated.
User response: Verify that all required files are allocated prior to performing file tailoring.

BSY923E File tailoring open returned a severe error condition.
Explanation: An attempt to perform file tailoring failed because a severe error condition was encountered on open.
User response: Verify that all required files are allocated and accessible prior to performing file tailoring.

BSY924E File tailoring open returned an unknown code -- severe error.
Explanation: An attempt to perform file tailoring failed because a severe error condition was encountered on open.
User response: Verify that all required files are allocated and accessible prior to performing file tailoring.

BSY925E File tailoring close returned a file not open condition -- severe error.
Explanation: An attempt to perform file tailoring failed because a file-not open condition was encountered on close.
User response: Verify that all required files are allocated and accessible and that there are no other tailoring sessions running concurrently with your session.

BSY926E File tailoring close returned an output file in use condition.
Explanation: An attempt to perform file tailoring failed because an output file in use condition was encountered on close.
User response: Verify that all required files are allocated and accessible and that there are no other tailoring sessions running concurrently with your session.

BSY927E File tailoring close returned a skeletal file or output file not allocated condition.
Explanation: An attempt to close file tailoring failed because either a tailoring skeleton file or output file was not allocated.
User response: Verify that all required files are allocated and accessible and that there are no other tailoring sessions running concurrently with your session.
BSY928E  File tailoring close returned a severe error.
Explanation: An attempt to perform file tailoring failed because a severe error condition was encountered on close.
User response: Verify that all required files are allocated and accessible prior to performing file tailoring.

BSY929E  File tailoring close returned an unknown code -- severe error.
Explanation: An attempt to perform file tailoring failed because a severe error condition was encountered on close.
User response: Verify that all required files are allocated and accessible prior to performing file tailoring.

BSY930E  File tailoring close returned a output member exists in the output library and NOREPL was specified.
Explanation: An attempt to perform file tailoring failed because the close process could not replace the pre-existing tailored member in the output file.
User response: Change the output member name to a new name or ensure that the output library allows for member replacement.

BSY931E  File tailoring include returned a skeleton does not exist condition.
Explanation: An attempt to perform file tailoring failed because the tailoring process could not locate a required tailoring skeleton.
User response: Assure that all required files are allocated to perform file tailoring.

BSY932E  File tailoring include returned a skeleton in use -- ENQ failed condition.
Explanation: An attempt to access a tailoring skeleton failed with an ENQ error (member-in-use).
User response: Verify that all required tailoring files are allocated and that there are no other tailoring sessions running concurrently.

BSY933E  File tailoring include returned a data truncation or skeleton library or output file not allocated condition.
Explanation: An attempt to perform file tailoring failed because either the tailoring skeleton file or output file is not allocated.
User response: Verify that all required files are allocated prior to performing file tailoring.

BSY934E  File tailoring include returned a severe error condition.
Explanation: An attempt to perform file tailoring failed because a severe error condition was encountered on an include operation.
User response: Verify that all required files are allocated and accessible prior to performing file tailoring.

BSY935E  File tailoring include returned an unknown condition -- severe error.
Explanation: An attempt to perform file tailoring failed because a severe error condition was encountered on an include operation.
User response: Verify that all required files are allocated and accessible prior to performing file tailoring.

BSY936E  Allocation Error - The ISPFILE DD is already allocated and cannot be deallocated - Process not completed.
Explanation: The ISPFILE DD allocation failed. The DD is already allocated and cannot be deallocated for this TSO session. The process did not complete successfully.
User response: None required.

BSY937E  Allocation Error - An error was encountered allocating the ISPWRK1 or ISPWRK2 DD - Process not complete.
Explanation: The ISPWRK1 or ISPWRK2 DD allocation failed.
User response: Verify TSO session parameters are set correctly for your site prior to allocation of these DD statements. The process did not complete successfully.

BSY938E  Field Required - The data set entered is a partitioned data set and the member name is required.
Explanation: A required field was not specified. The data set entered is a PDS (partitioned data set) and a member in this PDS must be referenced.
User response: Enter a valid member name for PDS access.

BSY940E  The specified data set could not be found in the MVS catalog.
Explanation: The specified data set could not be found in the z/OS (MVS) catalog.
User response: Ensure that the data set name is correct.

BSY941 The RFIND key works only after a FIND character string is entered.

Explanation: A repeat FIND (RFIND) was issued before a FIND command was issued. You must issue FIND before RFIND will work.

User response: Issue FIND prior to attempting to issue RFIND.

BSY942E Invalid Sort number. Enter a valid digit.

Explanation: An invalid character was entered in the Srt column. Valid characters are the digits 1, 2, 3,... up to 9, or the number of sortable columns, whichever is less.

User response: Specify a valid sort number.

BSY943E Same Sort number entered twice.

Explanation: The same sort number was entered for more than one column. The screen is positioned to the second instance. Sort sequence numbers must be unique.

User response: Specify a valid sort number.

BSY944E Sort sequence skips a number.

Explanation: The selected sorting sequence skips a number. This is not allowed. The screen is positioned to a selection whose number is lacking an immediate predecessor. The sort sequence is completely rebuilt from the Cmd (and Dir) information. Any previously existing sort sequence is entirely replaced. It is not added to or extended by the new entries.

User response: Specify a valid sort sequence that does not skip a number.

BSY945E Invalid Dir entered. Must be A or D (ascending/descending).

Explanation: The selected sorting direction is invalid. Only A (ascending) or D (descending) can be specified. A blank indicates ascending (default).

User response: Specify a valid sorting direction.

BSY946E Dir not valid without Ord.

Explanation: A sorting direction was selected for a column that was not selected to be sorted. Sorting direction is only a valid choice for selected columns.

User response: Select a sorting direction and order.

BSY947E Max Sort Columns exceeded. Sorting first 10 columns.

Explanation: More columns were selected for sorting than are supported. Nine columns can be selected. Under certain circumstances the limit is less than nine, due to internal constraints. For example, sorting a date field can be implemented by three sorts of partial column fields. In that case, the column would count as three toward the maximum of nine, not one.

User response: Specify the appropriate allowable maximum number of sort columns.

BSY948E Fix Columns cannot exceed screen size.

Explanation: More columns were selected to be fixed than will fit on the screen.

User response: Remove the (F) selection character from one or more columns.

BSY950E Invalid selection character. "F" and "U" are valid.

Explanation: An invalid Cmd character was entered. Valid characters are F (fix) and U (unfix). Fix causes the column to move to the fixed area on the left side of the screen. Fixed columns do not scroll horizontally when LEFT or RIGHT scrolling commands are issued. Unfix moves the column out of the fixed area, and allows it to scroll horizontally when LEFT and RIGHT scroll commands are issued.

User response: Either remove the invalid character or enter a valid one.

BSY951E Invalid entry. Must be numeric.

Explanation: An invalid Cmd value was entered. Cmd values must be numeric. If the column is fixed, the number must be in the fixed range. If the column is not fixed, the number must be in the unfixed range.

User response: Either remove the invalid number or enter a valid one.

BSY952E Invalid entry for fixed column.

Explanation: An invalid Cmd value was entered for a fixed column. Valid selections for fixed column are up to the number of fixed columns.

User response: Either remove the invalid number or enter a valid one.

BSY953E Invalid entry for unfixed column.

Explanation: An invalid Cmd value was entered for an unfixed column. The number must be less than the number of columns, and greater than the number of fixed columns.
<table>
<thead>
<tr>
<th>Error Code</th>
<th>Message</th>
<th>Explanation</th>
<th>User Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSY954E</td>
<td>Invalid value entered for column size: non-numeric data.</td>
<td>An invalid Cmd value was entered. This must be a number between the values in the MIN and MAX fields.</td>
<td>Either remove the invalid number or enter a valid one.</td>
</tr>
<tr>
<td>BSY955E</td>
<td>Invalid value entered for column size: out of range.</td>
<td>An invalid Cmd value was entered. This must be a number between the values in the MIN and MAX fields. MIN is the smallest acceptable value. MAX is the largest acceptable value.</td>
<td>Either remove the invalid number or enter a valid one.</td>
</tr>
<tr>
<td>BSY956E</td>
<td>Total fixed column sizes cannot exceed screen size.</td>
<td>The Cmd values entered would result in the sum of the fixed column sizes to exceed the screen size. This is not allowed. The fixed columns are those with an or in the Fix column. Fixed columns are always displayed, and so must fit on the screen.</td>
<td>Either change the fixed column sizes so that the total is less than the screen size or cancel to return to the previous panel.</td>
</tr>
<tr>
<td>BSY957E</td>
<td>New configuration makes column size invalid.</td>
<td>The requested column sizes make at least one unfixed column undisplayable. The cursor is positioned on the value where the problem was detected. The unfixed area on the screen would be too small to show the column where the cursor is placed.</td>
<td>Do one of the following: - Make the column where the cursor is smaller so that it can fit in the available unfixed area - Set it to its maximum size (width) - Make the fixed area smaller - Cancel to return to the previous panel</td>
</tr>
<tr>
<td>BSY958E</td>
<td>Column does not fit in unfixed area in new configuration.</td>
<td>The requested column sizes would make the unfixed column where the cursor is positioned undisplayable. The unfixed area on the screen would be too small to show this column.</td>
<td>Shrink the fixed area by either: - Make the column where the cursor is smaller so that it can fit in the available unfixed area - Set it to its maximum size (width) - Make the fixed area smaller - Cancel to return to the previous panel</td>
</tr>
<tr>
<td>BSY959E</td>
<td>New configuration makes this column size invalid.</td>
<td>Fixing the requested columns would shrink the available area for unfixed columns unacceptably. One or more unfixed columns would not fit in the remaining unfixed area of the screen. The cursor is placed on a row that represents one such column. Therefore, the requested configuration is not allowed.</td>
<td>To change column sizes, cancel out of the CFIX function and invoke the CSIZE function. Either cancel out of CFIX with no change or blank out one or more FIX selections until an allowable fixed size is reached.</td>
</tr>
<tr>
<td>BSY960E</td>
<td>Invalid fixed selections. Would not leave enough space for this column.</td>
<td>Fixing the columns requested would make at least one unfixed column undisplayable. The cursor is positioned on the row that represents one such unfixed column, whose minimum displayable size would not fit in the available screen area.</td>
<td>Shrink the requested fixed area by either: - Requesting fewer fixed columns - Unfixing one or more fixed columns - Cancel out of CFIX and invoke CSIZE in order to shrink one or more fixed columns enough so that all unfixed columns have the space they require</td>
</tr>
<tr>
<td>BSY962E</td>
<td>Duplicate Cmd values entered.</td>
<td>Duplicate Cmd numbers were entered. The cursor points to the second instance of a Cmd value.</td>
<td>Either change this value, clear it, or exit the CORDER function.</td>
</tr>
<tr>
<td>BSY963E</td>
<td>Cursor not on data element.</td>
<td>CEXPAND was issued and the cursor was not located on a valid (expandable) area. CEXPAND requires the cursor to be positioned on a data element (non-heading area) in the dynamic area of the display. Or CEXPAND can be issued specifying the row and column of the data element to expand.</td>
<td>Ensure the cursor is located on a valid (expandable) area prior to issuing the CEXPAND command.</td>
</tr>
</tbody>
</table>
BSY964E  Invalid scroll amount for CRIGHT. Must be numeric.

**Explanation:** Invalid (non-numeric) parameter to CRIGHT specified. CRIGHT accepts one numeric parameter: the number of columns to scroll right. If no parameter is entered a value of 1 is assumed.

**User response:** Specify a numeric parameter to the CRIGHT command.

BSY965E  Invalid scroll amount for CLEFT. Must be numeric.

**Explanation:** Invalid (non-numeric) parameter to CLEFT specified. CLEFT accepts one numeric parameter: the number of columns to scroll left. If no parameter is entered, a value of 1 is assumed.

**User response:** Specify a numeric parameter to the CLEFT command.

BSY966E  Invalid parameter to ICRIGHT; Must be numeric.

**Explanation:** A parameter to ICRIGHT is not numeric. ICRIGHT (inner column scroll right) accepts either zero, one, or two numeric parameters. ICRIGHT can be abbreviated as ICR.

**User response:** Specify a valid, numeric parameter for ICRIGHT.

BSY967E  Parameter to ICRIGHT too long. Invalid.

**Explanation:** A parameter to ICRIGHT is too long. ICRIGHT does not process more than eight digits in a parameter which is more than double any reasonable value.

**User response:** Specify a valid parameter for ICRIGHT.

BSY968E  Parameter to ICRIGHT is zero. Invalid.

**Explanation:** A parameter to ICRIGHT has the value zero. This is not supported.

**User response:** Specify non-zero parameters to ICRIGHT.

BSY969E  ICRIGHT: unspecified column.

**Explanation:** ICRIGHT was invoked with no parameters and the cursor is not positioned in the dynamic panel area.

**User response:** Either put the cursor in the column that should be scrolled or specify the column by number. Column numbers can refer to visible columns (in the current display window) only. Numbering starts at 1, on the left side.

BSY971E  ICRIGHT: Column number specified is too big.

**Explanation:** A column number parameter to ICRIGHT must be between 1 and the number of columns currently on the display screen.

**User response:** To refer to a column by number, you must first position the display window so that the desired column is visible.

BSY972E  Invalid parameter to ICLEFT; Must be numeric.

**Explanation:** A parameter to ICLEFT is not numeric. ICLEFT (inner column scroll left) accepts either zero, one, or two numeric parameters. ICLEFT can be abbreviated as ICL.

**User response:** Specify a valid parameter for ICLEFT.

BSY973E  Parameter to ICLEFT too long. Invalid.

**Explanation:** A parameter to ICLEFT is too long. ICLEFT does not process more than eight digits in a parameter which is more than double any reasonable value.

**User response:** Specify a parameter less than or equal to eight digits for ICLEFT.

BSY974E  Parameter to ICLEFT is zero. Invalid.

**Explanation:** A parameter to ICLEFT has the value zero. This is not supported.

**User response:** Specify a non-zero number for ICLEFT.

BSY975E  ICLEFT: unspecified column.

**Explanation:** ICLEFT was invoked with no parameters and the cursor is not positioned in the dynamic panel area.

**User response:** Either put the cursor in the column that should be scrolled or specify the column by number. Column numbers can refer to visible columns (in the current display window) only. Numbering starts at 1, on the left side.

BSY976E  Column selected not sortable. Sort selection list presented.

**Explanation:** You cannot preform a SORT on the column you selected. Valid sort columns are displayed in the sort selection list.

**User response:** Sort on one of the valid columns displayed in the selection list.
BSY977E  ICLEFT: Column number specified is too big.

Explanation: A column number parameter to ICLEFT must be between 1 and the number of columns currently on the display screen.

User response: To refer to a column by number, you must first position the display window so that the desired column is visible.

BSY978E  Invalid column number specified for SORT (not numeric).

Explanation: Invalid column number parameter to CSORT specified (non-numeric).

User response: Specify a column number parameter to CSORT that is between 1 and the number of columns currently on the display screen. This can be followed by a direction value A or D (ascending/descending).

BSY979E  Invalid Column number specified. Too many digits.

Explanation: Invalid parameter to CSORT specified. More than eight digits were specified. Parsing stops at eight digits.

User response: Specify a column number parameter between 1 and the number of columns currently on the display screen. This can be followed by a direction value A or D (ascending/descending).

BSY980E  Invalid Column number specified: zero.

Explanation: Invalid parameter to CSORT was specified (zero)

User response: Specify a column number parameter to CSORT that is between 1 and the number of columns currently on the display screen. This can be followed by a direction value A or D (ascending/descending).

BSY981E  Invalid Column number specified: out of range.

Explanation: Invalid parameter to CSORT was specified (zero).

User response: Specify a column number parameter to CSORT that is between 1 and the number of columns currently on the display screen. This can be followed by a direction value A or D (ascending/descending).

BSY982E  Invalid View. View adjusted.

Explanation: The current view was adjusted but not deleted. The saved view did not match the report requirements. This could be caused by the report changing or the view file getting corrupted. The saved view did not match the report requirements. This could be caused by the report changing or the view file getting corrupted.

User response: The adjusted view will be used. You can issue CSET to modify the view.

BSY983E  Invalid View. View deleted.

Explanation: Invalid data was found in a view for this report. The view was deleted and contents ignored. This could be caused by the report changing or the view file getting corrupted.

User response: You can issue CSET to create a view that will match the current report.

BSY984E  Unexpected return code from TBSTATS: return code

Explanation: An unexpected failure issuing TBSTATS was received.

User response: Refer to the ISPF Services Guide for (hex) return code descriptions. Also, review the ISPTLIB and ISPTABL allocations. For information about ISPTLIB and ISPBABL, see ISPF manuals.

BSY985E  View Library not allocated.

Explanation: A view input library has not been allocated. In order for a user to save and use report customizations that are created via the CSET command, ISPTABL and ISPTLIB must be allocated.

User response: Refer to ISPF manuals for information on ISPTLIB and ISPTABL.

BSY986E  TBCREATE failed. RC=return code

Explanation: TBCREATE was issued to create a view. It failed with a (hex) return code as indicated in the message.

User response: Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes, refer to the ISPF Services Guide.

BSY987E  TBOPEN failed. RC=return code

Explanation: TBOPEN was issued to open a view. It failed with a (hex) return code as indicated in the message.

User response: Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes, refer to the ISPF Services Guide.

BSY988E  TBGET failed. RC=return code

Explanation: A TBGET produced a return code (as indicated in the message).

User response: Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes,
refer to the ISPF Services Guide.

**BSY989E**  
**TBMOD failed. RC=return code**  
**Explanation:** A TBMOD produced an error and return code (as indicated in the message).  
**User response:** Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes, refer to the ISPF Services Guide.

**BSY990E**  
**TBCLOSE failed. RC=return code**  
**Explanation:** TBCLOSE failed with a (hex) return code as indicated in the message.  
**User response:** Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes, refer to the ISPF Services Guide.

**BSY991E**  
**TBDELETE failed. RC=return code**  
**Explanation:** TBDELETE failed with a (hex) return code as indicated in the message.  
**User response:** Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes, refer to the ISPF Services Guide.

**BSY992E**  
**Invalid selection.**  
**Explanation:** A command that is not supported on this panel was selected.  
**User response:** Issue a valid command for the panel.

**BSY993E**  
**Permanent view not supported.**  
**Explanation:** IMS Recovery Expert has detected something that prevents views from being saved. The permanent view flag cannot be set to Y. The most likely cause of this is that either ISPTLIB or ISPTABL (or both) have not been properly allocated.  
**User response:** Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes, refer to the ISPF Services Guide.

**BSY994E**  
**Invalid row number.**  
**Explanation:** CEXPAND was issued with an invalid parameter of zero. CEXPAND can be issued with no parameters and the cursor on a data field, or with two parameters. The two parameters are the row number, followed by the column number of the data element to be expanded. The row number is counted down from the top, starting with the first scrollable row (heading not counted). The column number is counted from left to right, starting with the left column in the current display window.  
**User response:** Specify a valid parameter count for use with CEXPAND.

**BSY995E**  
**Invalid column number.**  
**Explanation:** CEXPAND was issued with an invalid parameter of zero. CEXPAND can be issued with no parameters and the cursor on a data field, or with two parameters. The two parameters are the row number, followed by the column number of the data element to be expanded. The row number is counted down from the top, starting with the first scrollable row (heading not counted). The column number is counted from left to right, starting with the left column in the current display window.  
**User response:** Specify a valid parameter count for use with CEXPAND.

**BSY996E**  
**Invalid digits.**  
**Explanation:** CEXPAND was issued with an invalid parameter of zero. CEXPAND can be issued with no parameters and the cursor on a data field, or with two parameters. The two parameters are the row number, followed by the column number of the data element to be expanded. The row number is counted down from the top, starting with the first scrollable row (heading not counted). The column number is counted from left to right, starting with the left column in the current display window.  
**User response:** Specify a valid parameter count for use with CEXPAND.

**BSY997E**  
**Too many digits.**  
**Explanation:** CEXPAND was issued with an invalid parameter of zero. CEXPAND can be issued with no parameters and the cursor on a data field, or with two parameters. The two parameters are the row number, followed by the column number of the data element to be expanded. The row number is counted down from the top, starting with the first scrollable row (heading not counted). The column number is counted from left to right, starting with the left column in the current display window.  
**User response:** Specify a valid parameter count for use with CEXPAND.

**BSY998E**  
**Zero parameter invalid.**  
**Explanation:** CEXPAND was issued with an invalid parameter of zero. CEXPAND can be issued with no parameters and the cursor on a data field, or with two parameters. The two parameters are the row number, followed by the column number of the data element to be expanded. The row number is counted down from the top, starting with the first scrollable row (heading
not counted). The column number is counted from left to right, starting with the left column in the current display window.

**User response:** Specify a non-zero parameter.

---

**BSY999E**  
Invalid parameter count: must be either two or zero parms.

**Explanation:** CEXPAND was issued with an invalid number of parameters. CEXPAND can be issued with no parameters and the cursor on a data field, or with two parameters. The two parameters are the row number, followed by the column number of the data element to be expanded. The row number is counted down from the top, starting with the first scrollable row (heading not counted). The column number is counted from left to right, starting with the left column in the current display window.

**User response:** Specify a valid parameter count for use with CEXPAND.

---

**BSY001I**  
IMS Recovery Expert Starting.

**Explanation:** The IMS Recovery Expert job has been started.

**User response:** None required.

---

**BSY002I**  
IMS Recovery Expert System Backup and Restore Services complete.  
RC=return code.

**Explanation:** The IMS Recovery Expert job has completed. The highest return code is listed in the message.

**User response:** The response depends on the return code:  
RC = 0 -- Successful completion RC = 4 -- Successful with warnings. The warning messages will end in "W" and can be reviewed in the SYSPRINT DD.  
RC > 4 -- Error. The error messages will end in "E" and can be reviewed in the SYSPRINT DD.

---

**BSY003I**  
Control Cards:

**Explanation:** This message is a header message used to indicate that the successive messages list the control cards.

**User response:** None required.

---

**BSY004I**  
control card

**Explanation:** This message follows BSY003I and contains the control card for the backup or restore job.

**User response:** None required.

---

**BSY005E**  
The first control card must be "BACKUP" or "RESTORE"

**Explanation:** An error occurred when validating the control card. The first control card must be the BACKUP or RESTORE control card.

**User response:** Ensure that the first control card on the SYSIN DD begins with either BACKUP or RESTORE.

---

**BSY007E**  
Error opening SYSIN DD.

**Explanation:** An attempt to open the data set defined for the SYSIN DD failed. A WTO is also issued with this message.

**User response:** The JCL must specify a SYSIN DD.  
Check the JCL for the presence of the SYSIN DD.  
Rebuild the job if necessary.

---

**BSY008E**  
Invalid profile creator creator name specified. Profile creator must be 8 bytes or less.

**Explanation:** The profile creator name is more than 8 characters.

**User response:** Correct the profile creator name and retry.

---

**BSY009E**  
Invalid profile name profile name specified. Profile name must be 30 bytes or less.

**Explanation:** The profile name is more than 30 characters.

**User response:** Correct the profile name and retry.

---

**BSY010E**  
Invalid profile name specified. It must be in the format "CREATOR. NAME".

**Explanation:** The profile name and/or creator name specified is invalid. The profile must be in the format profile creator/profile name.

**User response:** Correct the profile name.

---

**BSY011E**  
Invalid token token name specified.

**Explanation:** One of the options on the backup control cards is invalid. The option is listed in the message.

**User response:** Correct the invalid option and resubmit.

---

**BSY012E**  
Unmatched quotes found in input.

**Explanation:** A control card is missing a quote from a required set of quotes.

**User response:** Correct the control cards to add a matching quote and resubmit.
BSY013I  Backup profile profile creator.profile name was read from the repository.

Explanation: The backup profile listed in the message was successfully read.

User response: None required.

BSY014E  Backup profile profile creator.profile name was not found in the repository.

Explanation: The backup profile listed in the message probably has been renamed or deleted.

User response: Check for the presence of the profile. Rename or recreate the backup profile if necessary.

BSY015E  Fatal error fetching backup profile profile creator.profile name from the repository.

Explanation: An internal error occurred when attempting to retrieve the backup profile from the IMS Recovery Expert repository.

User response: Contact IBM Software Support.

BSY016E  Call attach error connecting to IMS SSID ssid. Check installation and authorization.

Explanation: IMS Recovery Expert cannot connect to the specified subsystem. The call attach facility has failed.

User response: Confirm that the IMS subsystem is active and that authorizations are properly granted.

BSY017E  IMS SSID ssid was not found in the Backup/Recovery control file.

Explanation: The subsystem ID listed in the message was not found in the IMS Recovery Expert control file.

User response: Ensure that the subsystem was defined. On the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN), specify 0 (User Settings) and press Enter. On the Backup Profile Defaults panel, you can set up the subsystem. On the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN), specify 0 (Administration) and press Enter. On the Administration Menu panel (BSY$PNL0), specify 1 (Set System Backup Profile Defaults) and press Enter. On the System Backup Profile Defaults, you can set up the subsystem. Refer to the configuration documentation for information about the setup parameters.

BSY018E  IMS SSID ssid will not be backed up in this execution.

Explanation: There was an error with the listed subsystem ID. IMS Recovery Expert cannot backup the subsystem.

User response: Check the SYSPRINT DD for error messages explaining why the SSID could not be backed up.

BSY019E  You are not authorized to run backup profile profile creator.profile name.

Explanation: The user ID under which the backup job is being built does not have sufficient RACF authority.

User response: Check with your systems administrator to ensure the proper authorizations. Refer to the installation documentation for information about configuring RACF authority for IMS Recovery Expert.

BSY021E  The following volumes are being used by Subsystem ssid but are not being backed up:

Explanation: IMS Recovery Expert validation processing found volumes that are in use by the specified subsystem that were not included in the backup profile. The backup will not be taken.

User response: Update the profile and use the VOLUME command to find all volumes associated with the subsystem.

BSY022E  Profile profile creator.profile name is currently being used by another user or process.

Explanation: The profile is being used by someone else. IMS Recovery Expert must have exclusive use of the profile during the backup and restore processes.

User response: Clear the contention on the backup profile and resubmit the job.

BSY023E  Subsystem ssid is currently being backed up or recovered by another process.

Explanation: Another backup of this subsystem is running. Only one IMS Recovery Expert backup can be running at a time.

User response: You can resubmit the job when the other backup has completed.

BSY024E  Failed to initialize BSY Command processor.

Explanation: An internal error occurred when attempting to start the IMS Recovery Expert command processor.

User response: Contact IBM Software Support.
BSY025E  The job steplib is not APF authorized.
Explanation: The IMS Recovery Expert step libraries are not APF authorized. APF authorization for the step libraries is required.
User response: APF authorize the step libraries. Refer to the installation documentation for more information.

BSY026E  Error loading module module name.
Explanation: An internal error occurred when attempting to load the listed module.
User response: Contact IBM Software Support.

BSY029E  Last command = command name Error = error message.
Explanation: An error occurred in the IMS Recovery Expert command processor. The errant command and any associated message are listed in the message.
User response: Contact IBM Software Support.

BSY030E  Source volser volume serial is not a valid online MVS volume.
Explanation: The source volume listed in the message is now offline. IMS Recovery Expert requires the source volume to be online to perform the backup.
User response: Contact your systems programmer for help bringing the volume online.

BSY031E  Source volser volume serial is not on an EMC Symmetrix array.
Explanation: The listed source volume is not on an EMC Symmetrix array. The source volume cannot be backed up or restored.
User response: Move the data on the volume to a EMC Symmetrix array and update the profile.

BSY032E  Target unit target unit is not a valid MVS UCB unit.
Explanation: The target unit specified is not valid on this z/OS system.
User response: Contact your systems programmer to determine the resolution.

BSY033E  Target unit target unit is not on an EMC Symmetrix array.
Explanation: The listed target unit does not reside on an EMC Symmetrix.
User response: Move the target unit to a Symmetrix or change the profile to specify a target unit located on the Symmetrix.

BSY034E  Source volser volume serial is not on the same EMC Symmetrix array as target unit target unit.
Explanation: The source volume and its specified target unit are not located on the same Symmetrix array. The source volume and target unit must be on the same array.
User response: Edit the backup profile and select a different target unit that is on the same array.

BSY035E  Source volser volume serial is not on the same device type as target unit target unit.
Explanation: The listed source volume is not the same device type as its associated target unit. The source volume and target unit must be of the same device type.
User response: Update the profile and specify a target unit of the same device type.

BSY036E  Target unit target unit is not an EMC BCV device.
Explanation: The backup profile specified a BCV type backup, but the target unit is not a BCV device.
User response: Edit the backup profile and select a different target unit that is a BCV device.

BSY037E  The profile contains blank target units.
Explanation: The backup profile contains source volumes that do not have target volumes mapped to them.
User response: Update the backup profile and specify a target volume for each source volume.

BSY038I  Performing profile setup...
Explanation: This informational message states that profile setup is under way.
User response: None required.

BSY039I  Volume map validation complete.
Explanation: This informational message states that the volume validation has completed.
User response: None required.

BSY041W  BCV Establish Bypassed due to previous error.
Explanation: No more establishes will be performed due to the previous error.
User response: None required.
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSY047W</td>
<td>MVS UCB Scan Bypassed due to previous error.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>No more UCB scans of source or target units will be performed due to the previous error.</td>
</tr>
<tr>
<td>User response:</td>
<td>None required.</td>
</tr>
<tr>
<td>BSY048E</td>
<td>MVS UCB Scan failed for Source volume source volume.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>An internal error occurred.</td>
</tr>
<tr>
<td>User response:</td>
<td>Contact IBM Software Support.</td>
</tr>
<tr>
<td>BSY052E</td>
<td>MVS UCB Scan failed for BCV Unit unit name.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>An internal error occurred.</td>
</tr>
<tr>
<td>User response:</td>
<td>Contact IBM Software Support.</td>
</tr>
<tr>
<td>BSY054E</td>
<td>MVS UCB Scan failed for Snap Unit unit name.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>An internal error occurred.</td>
</tr>
<tr>
<td>User response:</td>
<td>Contact IBM Software Support.</td>
</tr>
<tr>
<td>BSY057I</td>
<td>MVS UCBSCAN will continue because Continue on Errors Flag has been set.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>A UCB scan failed for a unit, but IMS Recovery Expert has determined the information through another means.</td>
</tr>
<tr>
<td>User response:</td>
<td>None required.</td>
</tr>
<tr>
<td>BSY061E</td>
<td>EMC FC01 Call failed on unit device name with return codes.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>An internal error occurred.</td>
</tr>
<tr>
<td>User response:</td>
<td>Contact IBM Software Support.</td>
</tr>
<tr>
<td>BSY065W</td>
<td>BCV Re-Establish Bypassed due to previous error.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>No more BCV re-establishes will be performed due to the previous error.</td>
</tr>
<tr>
<td>User response:</td>
<td>None required.</td>
</tr>
<tr>
<td>BSY072W</td>
<td>Target Unit target unit is also being used in backup profile profile creator. profile name.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>The listed target unit is also being used as a target unit in the listed profile name. At backup time, if this target unit has been used by the other profile, the backup will fail.</td>
</tr>
<tr>
<td>User response:</td>
<td>Select a different target unit.</td>
</tr>
<tr>
<td>BSY073E</td>
<td>Error occurred executing IMS command on subsystem ssid.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>An error occurred while running the listed IMS command on the subsystem. The command and the IMS error associated with running it will be displayed.</td>
</tr>
<tr>
<td>User response:</td>
<td>Check that the user who submitted the job has the proper IMS authority to issue the listed command.</td>
</tr>
<tr>
<td>BSY074I</td>
<td>Target target unit is still synchronizing to source volume source volume.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>The listed target unit has been established to the listed source volume, but the target volume is still in the process of synchronizing. A backup cannot be taken until this process is completed.</td>
</tr>
<tr>
<td>User response:</td>
<td>None required.</td>
</tr>
<tr>
<td>BSY075I</td>
<td>Performing IMS source volume validation...</td>
</tr>
<tr>
<td>Explanation:</td>
<td>IMS Recovery Expert is in the process of ensuring all the volumes in the IMS system are included in the backup profile.</td>
</tr>
<tr>
<td>User response:</td>
<td>None required.</td>
</tr>
<tr>
<td>BSY076I</td>
<td>IMS source volume validation complete. All IMS volumes are in this profile.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>IMS Recovery Expert validated all volumes in the IMS system and all have been included in the backup profile.</td>
</tr>
<tr>
<td>User response:</td>
<td>None required.</td>
</tr>
<tr>
<td>BSY078E</td>
<td>Profile setup is needed. Place &quot;SETUP&quot; control card after the profile name.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>The profile requires profile setup before a backup can be taken.</td>
</tr>
<tr>
<td>User response:</td>
<td>Add the SETUP card to the job as follows and resubmit the job: //SYSIN DD * BACKUP profile creator.'profile name' SETUP</td>
</tr>
<tr>
<td>BSY079I</td>
<td>Profile setup is complete. Remove the &quot;SETUP&quot; control card to run the backup.</td>
</tr>
<tr>
<td>Explanation:</td>
<td>The profile has been successfully set up.</td>
</tr>
<tr>
<td>User response:</td>
<td>Remove the SETUP control card and run the backup.</td>
</tr>
</tbody>
</table>
BSY080I Backup with timestamp timestamp, generation generation number was saved in the repository.

Explanation: The information from the backup listed in the message has been successfully saved in the IMS Recovery Expert repository.

User response: None required.

BSY081I Backup with timestamp timestamp, generation generation number was removed from the repository.

Explanation: The listed backup has been removed from the IMS Recovery Expert repository.

User response: None required.

BSY082I Performing BCV splits to create backup...

Explanation: IMS Recovery Expert is splitting the BCVs required to create the backup.

User response: None required.

BSY083I Performing Snap Volumes to create backup...

Explanation: IMS Recovery Expert is snapping the volumes to create the backup.

User response: None required.

BSY084I Backup of profile profile creator:profile name has been created.

Explanation: The backup based on the information in the listed profile has been successfully created.

User response: None required.

BSY085I Performing BCV establish on next generation of BCVs.

Explanation: The backup has been successfully created.

User response: None required.

BSY089E An Error has occurred obtaining ZPARM information from IMS Subsystem ssid.

Explanation: An error occurred when attempting to obtain the DSNZPARMS load module for the listed SSID.

User response: Check that the SETUP information was entered correctly for the SSID you are attempting to backup.

BSY090E Error splitting BCV BCV device name from Standard unit standard unit.

Explanation: An error occurred when splitting the BCV device from the standard unit. This message is displayed with BSY0141E, which provides the reason for the failure.

User response: Refer to the EMC TimeFinder OS/390® and z/OS Product Set Message and Code Guide to resolve the error.

BSY092E Error calling SymDevice on Standard volser standard unit.

Explanation: An error occurred when attempting to access the listed Symmetrix device.

User response: Refer to the EMC TimeFinder OS/390® and z/OS Product Set Message and Code Guide to resolve the error.

BSY093E Standard Volser volser (Unit unit name) has an active file level snap session.

Explanation: The SNAP session must complete or be stopped before completing the operation.

User response: Refer to the configuration instructions for information about how to configure IMS Recovery Expert to automatically clean old SNAP sessions.

BSY094I Volser volser is still online/offline.

Explanation: This informational message is displayed while IMS Recovery Expert is checking the volume status. The volume listed in the message is either online or offline. IMS Recovery Expert will continue to check the volume status until the required status is set.

User response: None required.

BSY095I Waiting seconds seconds for volumes to go online/offline...

Explanation: This informational message is displayed while IMS Recovery Expert is checking the volume status. IMS Recovery Expert is waiting the specified amount of time for the volume to go online or offline. The amount of seconds (listed in the message) that IMS Recovery Expert will wait is set in the IMS Recovery Expert PARMLIB.

User response: None required.

BSY096E Volumes are pending online/offline. Make sure they are not in use on any MVS system.

Explanation: IMS Recovery Expert has been waiting for a volume to go online or offline. The amount of wait time has exceeded the wait time specified in the IMS Recovery Expert PARMLIB.
**User response:** If IMS Recovery Expert is waiting for the volume to go offline, it may be in use by some other z/OS or VM system; check with your systems programmer. You might need to configure IMS Recovery Expert to route the offline/online commands to all members of the sysplex. This is controlled by the ROUTE_ALL_ON_CONSOLE_CMDS parameter in the PARMLIB member. Refer to documentation for configuring the PARMLIB member for information about the parameter.

**BSY097W** At least one SYM device in this backup does not support "Consistency" commands.

**Explanation:** One or more of the devices in the backup is not at the required code level to support Enginuity Consistency Assist (ECA). To use ECA, certain microcode levels are required; refer to software and hardware requirements.

**User response:** None required; IMS Recovery Expert will manage log suspends without using ECA.

**BSY098E** Repository data set data set name cannot reside on source volume volser.

**Explanation:** During validation checking, IMS Recovery Expert determined that its repository is located on one of the volumes that is being backed up. This is not allowed. The backup will not be taken.

**User response:** Move the repository data sets to a volume that is not being backed up, and retry the backup.

**BSY099E** Call to fetch active and archive logs has failed. RC=return code.

**Explanation:** An error occurred while reading the RECON for the IMS system being backed up.

**User response:** Ensure that the information entered for the IMS system is correct in the IMS Recovery Expert setup section of the ISPF interface.


**Explanation:** An internal error occurred.

**User response:** Contact IMS Recovery Expert.

**BSY102W** Source volume volume contains both object|object usercat data and active log|active log usercat data.

**Explanation:** IMS Recovery Expert detected log data sets on the same volume as database data sets. The backup will continue but the backup will be marked as "Mixed Data", and any restores done from this backup must include data and logs. The message lists the type of mixed data found on the volume.

**User response:** None required.

**BSY103W** All recoveries of this backup must include log recovery.

**Explanation:** IMS Recovery Expert detected log data sets on the same volume as database data sets. The backup will continue but the backup will be marked as "Mixed Data", and any restores done from this backup must include data and logs.

**User response:** None required.

**BSY104E** Source volser is currently established to BCV unit target unit which is not in this profile.

**Explanation:** This listed source volume is established to the listed target unit. However, the target unit is not included in the backup profile. IMS Recovery Expert cannot establish another BCV to this source unit until the currently established BCV has been split. Since the currently established BCV is not specified in this profile, it cannot be split. The backup will not be taken.

**User response:** Use EMC TimeFinder utilities to split this BCV from the source volume if you still want to backup the source volume.

**BSY105E** Target BCV target unit is not currently paired to Volser source unit.

**Explanation:** The target unit listed in the message is not paired to the source unit that is in the profile. The backup will not be taken.

**User response:** Run the setup process on this profile to correct the error.

**BSY106E** Target BCV target_unit is currently established to Unit source_unit which is not in this profile.

**Explanation:** The BCV target unit specified is currently established to a source volume that is not included in this profile.

**User response:** Use the EMC TimeFinder utilities to split this BCV from its currently established standard unit.

**BSY107E** Source volser source volume is a BCV.

**Explanation:** The source volume listed in the message is a BCV. For a BCV backup profile, the source volume cannot reside on a BCV volume.

**User response:** Either use a SNAP backup profile or copy the data to a non-BCV volume and update the profile.
<table>
<thead>
<tr>
<th>BSY108E</th>
<th>Error saving profile profile creator:profile name.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>An internal error occurred when attempting to save the backup profile.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Contact IMS Recovery Expert.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY109E</th>
<th>Target BCV target unit is expected to be split from source volume source volume and is not.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>IMS Recovery Expert expected to find a different BCV established to the specified source volume. The current generation is out of sync.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Run profile setup on the profile.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY110E</th>
<th>Target BCV target unit is expected to be established to source volume source volume and is not.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>IMS Recovery Expert expected the listed target BCV to be established to the source unit.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Run profile setup on the profile.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY111E</th>
<th>Target BCV target unit is still synchronizing to source volume source volume. Backup not available.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The specified BCV generation has not fully synchronized with the listed source volume. The backup will not be taken.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>You might want to configure IMS Recovery Expert to retry the synchronization or to issue a WTO. This is controlled by the WAIT_FOR_VOLUME_SYNC parameter in the PARMLIB member. Refer to configuration instructions for the PARMLIB member for information about the parameter.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY112E</th>
<th>SSID ssid was not found on this MVS LPAR.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The IMS subsystem ID listed in the message is not found.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Contact IBM Software Support.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY113E</th>
<th>Unknown error determining datasharing status of SSID ssid.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>An internal error occurred.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Contact IBM Software Support.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY116E</th>
<th>Abnormal termination has been detected. Resuming log activity on SSID ssid.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>An internal error occurred while the IMS logs were suspended. Logging will be resumed.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Contact IBM Software Support.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY117E</th>
<th>Error saving backup information in the repository data sets.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>An internal error occurred.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Contact IBM Software Support.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY118E</th>
<th>Message text.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>This message is used to display various message text associated with errors.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Review the message text and other related messages to determine the problem.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY119E</th>
<th>BCV hold</th>
<th>release</th>
<th>establish</th>
<th>re-establish failed on unit target unit. Additional information.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The BCV process failed on the listed target unit. Additional information is provided in the message text as to the cause of the error.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Note the error message contents and contact IBM Software Support.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY120E</th>
<th>Invalid generation specified. It must be numeric between 1 and 99 inclusive.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>An invalid generation number was found in the control card for the restore.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Correct the control card and resubmit.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY121E</th>
<th>Backup profile creator:profile name generation generation was not found in the repository.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The profile and/or its backups were not found in the repository. Either the profile name was typed wrong or the backups have been deleted.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Ensure the profile creator and name are correct. Contact IBM Software Support if necessary.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY122E</th>
<th>Fatal error fetching backup profile creator:profile name generation generation from the repository.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>An internal error occurred.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Contact IBM Software Support.</td>
</tr>
</tbody>
</table>
### BSY123I - Backup profile creator.[profile name] generation generation was read from the repository.

**Explanation:** The backup information for the listed generation was successfully read.

**User response:** None required.


**Explanation:** This message is used in conjunction with other messages to report return code, reason code, and register contents for debugging purposes.

**User response:** None required.

### BSY125E - Source volume [source volume] contains log data. This profile specifies "Data Only".

**Explanation:** IMS Recovery Expert detected that the specified source volume contains log data, but the backup profile specified data only.

**User response:** Either separate the log and database data or change the profile to a full backup to include all data and log volumes.

### BSY126I - Waiting [seconds] seconds for background splits to complete...

**Explanation:** The BCV volumes are still in the process of being split. IMS Recovery Expert will wait the number of seconds specified in the PARMLIB for the split to complete.

**User response:** None required.

### BSY128I - Requesting wait status from operator...

**Explanation:** The target BCV is still synchronizing to the source volume. The WAIT_FOR_VOLUME_SYNC parameter in the IMS Recovery Expert PARMLIB is set to prompt with a WTOR if any BCVs are not fully synchronized to their standard volumes. IMS Recovery Expert is issuing a WTOR to ask if it should continue waiting or quit.

**User response:** Reply to the WTOR.

### BSY129E - Reply was to "NOT WAIT". Backup will terminate.

**Explanation:** The target BCV was synchronizing to the source volume. IMS Recovery Expert issued a WTOR to ask if it should continue waiting or quit. The reply was N to not wait. The backup will be terminated.

**User response:** None required.

### BSY130I - Reply was to "WAIT". Waiting 30 seconds for BCVs to synchronize.

**Explanation:** The target BCV was synchronizing to the source volume. IMS Recovery Expert issued a WTOR to ask if it should continue waiting or quit. The reply was Y to wait. IMS Recovery Expert will wait 30 seconds and re-issue the WTOR if necessary.

**User response:** None required.

### BSY131E - IMS version must be at least version V910 to run.

**Explanation:** IMS Recovery Expert detected that the IMS subsystem is at a version prior to IMS V9. You can only use IMS Recovery Expert on subsystems that are IMS V9 or later.

**User response:** None required.

### BSY132E - User is not authorized to run a System Level Backup Utility | Restore System Utility for IMS SSID [ssid].

**Explanation:** The TSO user ID attempting to run an IMS Recovery Expert system backup or system restore does not have sufficient authority to do so.

**User response:** Refer to the installation instructions for information about how to set up RACF authority for a TSO user ID.

### BSY133I - BCV | Snap unit device name is still online.

**Explanation:** The listed volume is still online. IMS Recovery Expert will continue attempting to take the volume offline.

**User response:** None required.

### BSY134I - Splitting current generation of BCVs.

**Explanation:** IMS Recovery Expert is in the process of splitting the current generation of BCVs.

**User response:** None required.

### BSY135I - Profile [profile name] has been marked as "Setup Needed".

**Explanation:** This message is displayed after a BCV restore is complete. The setup process must be re-run in order to re-establish a generation of BCVs.

**User response:** Run profile setup on the profile.
BSY136I  Disconnecting user catalogs.
Explanation: In preparation for a restore, IMS Recovery Expert is disconnecting the user catalogs.
User response: None required.

BSY137I  Varying volumes online|offline.
Explanation: IMS Recovery Expert is in the process of varying volumes online or offline.
User response: None required.

BSY138I  Restoring volumes.
Explanation: IMS Recovery Expert is in the process of varying volumes online or offline.
User response: None required.

BSY140E  SYM of volume volume serial is lower than 5x67. It must be at least 5x67.
Explanation: The device listed in the message is not at the appropriate microcode level. IMS Recovery Expert requires all devices to be at microcode 5x67 or higher. Refer to software and hardware requirements for specifics.
User response: Contact EMC to update your Symmetrix devices to the latest microcode version.

BSY141E  EMC ECA_Qry|ECA_SET|BCV_InSplit failed. Error message text.
Explanation: An EMC command failed. Additional information is provided in the message text as to the cause of the error.
User response: Note the error message contents and contact IMS Recovery Expert.

BSY142E  EMC ECA_Clr failed on unit volume serial. Error message text.
Explanation: An EMC command failed on the listed unit. Additional information is provided in the message text as to the cause of the error.
User response: Note the error message contents and contact IMS Recovery Expert.

BSY143E  Open|Closed ECA window already exists on volser volume serial.
Explanation: One of the source volumes has an existing hold on the I/O (ECA window).
User response: If the window is closed, you can set CLEAN_OLD_CONSIST_WINDOWS to Y in the IMS Recovery Expert PARMLIB member and resubmit the job.

BSY144E  Target Unit target unit is a volume in an existing backup for profile profile creator:profile name.
Explanation: The target unit listed in the message is listed in another profile as a backup volume. Therefore, this unit cannot be used as a target unit.
User response: Update the profile and select a different target unit.

BSY145E  IMS Subsystem ssid is still online. The Subsystem must be taken offline before running this job.
Explanation: IMS Recovery Expert has detected that the IMS subsystem you are attempting to restore is online. The subsystem must be offline before running the restore.
User response: Issue the /CHE command to take the subsystem offline.

BSY146I  Removing volser volume serial from this restore. It contains only log data.
Explanation: The volume being restored contains only log data, but you specified to restore data only. This volume will not be restored.
User response: None required.

BSY148I  Sym Device volume serial does not support "Consistency" functionality.
Explanation: The device listed in the message is not at the proper microcode level to support ECA. Refer to the software and hardware requirements section for software requirements for ECA support.
User response: None required.

BSY149E  EMC ECA_Clr failed on SYM Device volume serial. Error message text.
Explanation: An EMC command failed. Additional information is provided in the message text as to the cause of the error.
User response: Note the error message contents and contact IBM Software Support.

BSY151E  Snap target target unit is an established BCV.
Explanation: The target unit associated with the SNAP source volume is an established BCV.
User response: Choose a different target unit of the same device type.
BSY152I  Suspending | Resuming log activity to subsystem ssid.
Explanation: IMS Recovery Expert is issuing either the SET LOG SUSPEND or SET LOG RESUME command to manage log activity.
User response: None required.

BSY153I  Enque of user cat user catalog failed.
Will retry in 2 seconds...
Explanation: IMS Recovery Expert requires exclusive use of the listed user catalog while performing the restore. It will wait again and retry in 2 seconds.
User response: None required.

BSY154E  Enque of user cat user catalog failed.
Explanation: IMS Recovery Expert requires exclusive use of the listed user catalog while performing the backup. Another z/OS system might be accessing this catalog.
User response: You might need to set ROUTE_ALL_ON_CONSOLE_CMDS to Y in the IMS Recovery Expert PARMLIB member. This setting will disconnect the catalog from the master catalog on all z/OS systems in the sysplex.

BSY155E  BCV target unit is still restoring to standard unit volume serial.
Explanation: IMS Recovery Expert needs to wait for the restore to complete before continuing with the next process.
User response: None required.

BSY156E  Backup contains volumes with both log and object data. You must specify RESTORE-LOGS.
Explanation: The control card is missing the RESTORE-LOGS keyword.
User response: Add the RESTORE-LOGS keyword to the control cards for this restore.

BSY157I  Release of unit device name bypassed. Unit is not held.
Explanation: Because the unit is not being held, the BCV or standard volume listed in the message does not need to be released.
User response: None required.

BSY158I  Hold of unit device name bypassed. Unit is already held.
Explanation: The BCV or standard volume listed in the message is already being held.
User response: None required.

BSY159E  Target unit device name has an active SNAP session. Wait till complete.
Explanation: The listed target unit has either a current active SNAP session or too many old completed SNAP sessions to start a new one.
User response: You might need to set CLEAN_OLD_SNAP_SESSIONS to Y in the IMS Recovery Expert PARMLIB member to remove the old SNAP sessions.

BSY160E  Source volser volume serial has an active SNAP session. Wait till complete.
Explanation: The listed source volume has either a current active SNAP session or too many old completed SNAP sessions to start a new one.
User response: You might need to set CLEAN_OLD_SNAP_SESSIONS to Y in the IBM Software Support PARMLIB member to remove the old SNAP sessions.

BSY161E  EMC PathGroups call failed for unit device name.
Explanation: An internal error occurred.
User response: Contact IBM Software Support.

BSY162I  Parmlib used for this execution.
Explanation: This informational message states that the IMS Recovery Expert PARMLIB member will be utilized in setting default values for the job.
User response: None required.

BSY163I  Closed ECA Window is being cleared from Volser volume serial.
Explanation: An Enginuity Consistency Assist (ECA) window was found on this volume but was not active (no I/O is being held). The ECA window was cleared.
User response: None required.

BSY165E  ECA Window has timed out. Backup is not consistent.
Explanation: The backup operation could not complete in the specified time to hold the I/O on the volumes. The IMS Recovery Expert PARMLIB member setting of CONSIST_TIME_OUT_SECONDS controls...
how long the I/O can be held before this error occurs.

**User response:** Try making the value for CONSIST_TIME_OUT SECONDS higher.

---

**BSY168E** Background splits wait limit exceeded.

**Explanation:** The number of times IMS Recovery Expert has checked to see if a background split has completed has exceeded the WAIT RETRIES wait limit specified in the PARMLIB member.

**User response:** Increase either the BCV_WAIT SECONDS or WAIT RETRIES in the BCV_SPLIT_PARAMETERS section of the IMS Recovery Expert PARMLIB member.

---

**BSY169I** BCV unit unit name is not ready. Waiting 2 seconds to retry BCV. Establish | Re-establish.

**Explanation:** IMS Recovery Expert is attempting to establish or re-establish the unit listed in the message, but the device is not ready. IMS Recovery Expert will retry until the BCV is established or the number of retries exceeds the wait limit.

**User response:** None required.

---

**BSY170I** Standard unit volume serial is not ready. Waiting 2 seconds to retry BCV restore.

**Explanation:** IMS Recovery Expert is restoring a BCV, but the standard device is not ready. IMS Recovery Expert will retry until the BCV is established or the number of retries exceeds the wait limit.

**User response:** None required.

---

**BSY171E** Restore failed on unit volume serial. Error message text.

**Explanation:** The restore command failed. Additional information is provided in the message text as to the cause of the error.

**User response:** Note the error message text and contact IBM Software Support.

---

**BSY172E** Error obtaining last checkpoint RBA for subsystem ssid.

**Explanation:** IMS Recovery Expert could not find the last checkpoint RBA for the listed subsystem.

**User response:** Contact IBM Software Support.

---

**BSY173E** Allocate failed for data set name.

**Explanation:** Dynamic allocation of the specified file has failed. IMS Recovery Expert needs to allocate the specified file to complete the operation. This message will be followed by additional messages stating the reason the file could not be allocated.

**User response:** Use the issued message to determine why the allocate failed and the appropriate remedy.

---

**BSY174E** Open failed for DSN data set name.

**Explanation:** The specified data set could not be opened. A z/OS error message on the open failure will also be issued.

**User response:** Use the z/OS error message to determine the error and the appropriate Response.

---

**BSY175E** Get/Put failed for DSN data set name. RC = return code. Reason reason code.

**Explanation:** An error occurred attempting to read or update the header page of DSNDB01 database during restore.

**User response:** Contact IBM Software Support.

---

**BSY176I** HPGRBLP has been updated with RBA/LRSN rba/lrsn.

**Explanation:** This message informs you the RBA that was placed in the HPGRBLP area of database DSNDB01. This RBA tells the IBM RESTORE SYSTEM utility where to start the log restore process.

**User response:** None required.

---

**BSY177I** TimeFinder version 05.05 or higher is required for "Consistency" functions.

**Explanation:** The listed version of EMC TimeFinder software is required to hold the I/O on the source volumes during backup. Log suspend will be issued instead.

**User response:** If you do not want to have IMS logging suspended during a backup, upgrade to the required level of EMC TimeFinder software.

---

**BSY178I** TimeFinder snap version 05.03 or higher is required for "Consistency" functions.

**Explanation:** The listed version of EMC TimeFinder software is required to hold the I/O on the source volumes during backup. Log suspend will be issued instead.

**User response:** If you do not want to have IMS logging suspended during a backup, upgrade to the required level of EMC TimeFinder software.

---

**BSY180I** Ready of unit volume serial bypassed. Unit is currently in a ready state.

**Explanation:** IMS Recovery Expert was preparing to place the BCV device in a ready state, but has detected that the unit is currently in the ready state.
User response: None required.

BSY181I  Not Ready of unit volume serial bypassed. Unit is currently in a not ready state.

Explanation: IMS Recovery Expert was preparing to place the BCV device in a not ready state, but has detected that the unit is currently in the not ready state.

User response: None required.

BSY183E  Ready/Not Ready failed on unit device name. error message text.

Explanation: An error occurred during a call to the EMC API.

User response: Contact IBM Software Support.

BSY184I  Microcode does not support Protected Restore. Snap restore will be performed.

Explanation: All EMC Symmetrix arrays involved in the restore must be at microcode level 5x70 or higher to support a protected BCV restore. This type of restore preserves the backup on the BCV. A SNAP restore will be performed instead. IMS Recovery Expert will issue SNAP commands to copy the BCV devices back to their respective source volumes to complete the restore.

User response: None required.

BSY185E  Bad return code from EMC Snap API. RC = return code

Explanation: IMS Recovery Expert invoked the EMC SNAP API but the SNAP API issued a return code of 8. There may be several reasons for this return code.

User response: The EMC SNAP messages are written to the BSYNAPO DD. Examine the messages to determine the error. Contact IBM Software Support if necessary.

BSY186W  Error saving backup report to repository.

Explanation: After completing the backup, IMS Recovery Expert attempted to save a backup report to its repository. The backup is still valid.

User response: Examine the z/OS error messages issued to determine the reason the backup report could not be saved.

BSY187W  Profile profile creator,profile name has been marked "Setup Needed".

Explanation: IMS Recovery Expert determined that listed profile is not in the expected state. Possible causes may be that BCVs are not established to the expected standard volumes, or there was an error during a backup and the BCV profile needs to undergo profile setup.

User response: Add the SETUP control card to the backup job and resubmit the job.

BSY188I  Parmlib not Specified in JCL, default values will be used.

Explanation: No PARMLIB library was specified in the PARMEDIS variable of the startup CLIST. IMS Recovery Expert will use the default values for the variables that are listed in the PARMLIB member.

User response: None required.

BSY189E  Parmlib parsing produced errors. Utility cannot continue with Parmlib Errors.

Explanation: An error occurred when processing the IMS Recovery Expert PARMLIB member. The backup or restore cannot proceed. A possible reason for this error is an invalid keyword was encountered.

User response: Check the job output for the error encountered.

BSY190W  Volume volume serial is not included in this backup. It contains only ARCHIVE log data.

Explanation: The listed volume contains archive logs for this IMS SSID, but is not included in the backup. This condition is acceptable if you do not want to backup the archive logs of this IMS system.

User response: If you want to backup the archive logs, add the listed volume to the backup profile and resubmit the job.

BSY191E  Target unit target unit is on hold.

Parmlib option
RELEASE_HELD_VOLUMES is N.

Explanation: During volume validation, IMS Recovery Expert determined that the target unit listed in the message is being held. Due to the setting in the PARMLIB member, the volume will not be released for use and the job has been terminated.

User response: Either release the hold on this volume or change the setting of RELEASE_HELD_VOLUMES to Y in the IMS Recovery Expert PARMLIB member and resubmit the job.

BSY192E  Target unit target unit is "Not Ready".

Parmlib option
MAKE_READY_NOTREADY_DEVICES is N.

Explanation: During volume validation, IMS Recovery Expert determined that the target unit listed in the message is in a not ready state. Due to the setting in
the PARMLIB member, the volume will not be made ready for use and the job has been terminated.

**User response:** Either release the hold on this volume or change the setting of MAKE_READY_NOTREADY_DEVICES to Y in the IMS Recovery Expert PARMLIB member and resubmit the job.

<table>
<thead>
<tr>
<th>BSY193E</th>
<th>Target BCV target unit is still synchronizing to source volume volume serial. Use &quot;FORCE-SPLIT&quot; option.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The listed unit is still synchronizing from the last submitted restore job.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Either wait for the synchronization to complete, or change the setting of FORCE_SPLIT to Y in the IMS Recovery Expert PARMLIB member and resubmit the job. This will force the split of the BCV pair established by the previous restore job.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY194I</th>
<th>Background splits are complete.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>This message is displayed when a BCV split has completed.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>None required.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY195I</th>
<th>Establishing current generation of BCVs...</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>This message is displayed at the beginning of the process of establishing a current generation of BCVs.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>None required.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY196W</th>
<th>32K Database database.database does not have a CISIZE of 32K. Consistency is not guaranteed.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>IMS Recovery Expert requires that IMS V8 data sets defined with a page size of 32 KB must have their control interval size defined as 32 KB as well. The database listed in the message does not have a CI size of 32k and therefore may become inconsistent during restore.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>To guarantee consistency of the listed databases, you must alter their CI size to 32K and run the IBM REORG utility on them. See 'IMS 32 KB database requirements' on page 5 for further information.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY197W</th>
<th>Make sure DSNZPARM DSVCI is &quot;NO&quot; and reorganize the above list of databases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>This message is used with BSY0196W to provide further information about the issue.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Refer to the IMS 32KB database requirements for further information.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY198I</th>
<th>Backup via Snap Volume Std Vol volume serial Dev standard device to Dev SNAP device.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>This informational message indicates that the standard device listed has been backed up to the SNAP device.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>None required.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY199I</th>
<th>Restore via Snap Volume Dev standard device to Standard Dev standard device Vol volume serial.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>This informational message indicates that the SNAP device listed has been restored to the standard device.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>None required.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY200E</th>
<th>message text</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>This message is used to display various message text associated with errors.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Review the message text and other related messages to determine the problem.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY201I</th>
<th>Parmlib Override on command_name command - parameter_name Value: parameter_value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The designated PARMLIB value was specified in the PARMLIB member and has been used to override the default value when calling EMC Snap.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>None required.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY202I</th>
<th>BSDS update process starting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The BSDS for the specifying IMS SSID is being updated with the new Active log data set names that have been renamed.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>None required.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY203I</th>
<th>------SSID ssid - BSDS bsd Opened------</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The BSDS named for the SSID specified has been opened for update.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>None required.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY204I</th>
<th>------SSID ssid - BSDS bsd Closed------</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The BSDS named for the SSID specified has been closed.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>None required.</td>
</tr>
</tbody>
</table>
BSY219E  Bad date specified. Date must be in format MM/DD/YYYY
Explanation: An invalid date has been specified.
User response: Change the control cards to specify the date in the format MM/DD/YYYY.

BSY220E  Bad time specified. Time must be in format HH:MM:SS
Explanation: An invalid time has been specified.
User response: Change the control cards to specify the time in the format HH:MM:SS.

BSY221I  IMS Alias Rename Process starting...
Explanation: The process to rename the IMS alias has started.
User response: None required.

BSY222I  IMS Alias Rename Process complete.
RC = return_code
Explanation: The process to rename the IMS alias has completed with the specified return code.
User response: None required.

BSY223I  Rename of data set data_set_name complete.
Explanation: The specified data set has been successfully renamed.
User response: None required.

BSY224I  Rename of data set data_set_name failed.
Messages follow:
Explanation: The process to rename the specified data set has failed. This message will be followed by addition diagnostic information indicating why the data set rename has failed.
User response: The additional information specified should identify why the process has failed. The user ID used to submit the job might not have the MVS authorities needed to perform the rename.

BSY225I  Database database.database partition has been stopped | started
Explanation: The specified database has been either stopped or started. The database needs to be stopped before it can be restored. It will be started automatically after a successful restore process.
User response: None required.

BSY226I  Indexspace index_creator.index_name partition partition has been stopped | started
Explanation: The specified index space has been either stopped or started. The index space needs to be stopped before it can be restored. It will be started automatically after a successful restore process.
User response: None required.

BSY227I  New data set name is data_set_name
Explanation: The new name of the renamed IMS data set name is specified in this message.
User response: None required.

BSY228I  Processing database | index database_name.database_name | index_creator.indexspace_name partition number partition ...
Explanation: The process to restore the specified IMS object is starting.
User response: None required.

BSY229I  database | index database_name.database_name | index_creator.indexspace_name partition partition has been successfully renamed.
Explanation: The specified IMS object has been successfully renamed.
User response: None required.

BSY230I  Rename of database | index database_name.database_name | index_creator.indexspace_name partition partition has failed
Explanation: The rename process of the specified IMS object has failed. Messages indicating the reason for the failure will precede this message.
User response: None required.

BSY231I  Stogroup stogroup_name has been updated to new vcat vcat_name
Explanation: The specified storage group has been updated with the VCAT specified.
User response: None required.

BSY232I  Data set data_set_name could not be located. Rename will be bypassed
Explanation: The data set specified could not be located to be renamed. This could be normal if the IMS object was created with the DEFER option.
User response: None required.
Data set *data_set_name* is migrated and will be bypassed

**Explanation:** The specified data set was migrated and will not be renamed.

**User response:** Recall the data set and rerun the process.

---

Volser *volume_serial* was removed from Stogroup *stogroup_name*

**Explanation:** The specified volume serial was removed from the storage group.

**User response:** None required.

---

Volser *volume_serial* was added to Stogroup *stogroup_name*

**Explanation:** The specified volume serial was added to the storage group.

**User response:** None required.

---

Data set *data_set_name* was not found

**Explanation:** The specified data set was not found in the MVS catalog. It will not be processed.

**User response:** This could be normal if the object was created with the DEFER option.

---

Volser *volume_serial* contains IMS data but was not found or is not online

**Explanation:** The specified VOLSER contains a data set for the analyzed IMS but is not online to the MVS system.

**User response:** Have a systems operator vary the specified VOLSER online.

---

Source volser *volume_serial* is not FlashCopy capable

**Explanation:** The specified volser is not capable of FlashCopy operations.

**User response:** Make sure the specified volser is a unit that resides in an array that is capable of running FlashCopy commands.

---

Target unit *target_unit* is not FlashCopy capable

**Explanation:** The specified target unit is not capable of FlashCopy operations.

**User response:** Make sure the specified target unit resides in an array that is capable of running FlashCopy commands.

---

Performing FlashCopy to create backup...

**Explanation:** The FlashCopy process to create a System Level Backup is commencing.

**User response:** None required.

---

Backup via flash volume from source volser *volume_serial* to unit *target_unit* has completed

**Explanation:** The specified source volser is being flashed (copied) to the specified target unit.

**User response:** None required.

---

Restore via flash volume from backup unit *target_unit* to volser *volume_serial* has completed

**Explanation:** The specified volser is being restored from a FlashCopy backup.

**User response:** None required.

---

FlashCopy of source volser *volume_serial* to target unit *target_unit* failed. RC = *return_code* RS = *reason_code*

**Explanation:** The specified FlashCopy operation failed. This message will be followed by additional diagnostic information.

**User response:** The source and target volumes of a FlashCopy operation must be equal in size.

---

Checksum for unit *target_unit* restored to volser *volume_serial* failed. Volume has changed since backup

**Explanation:** The checksum operation for the specified backup unit has failed. This indicates the backup unit has been possibly changed outside of the product.

**User response:** If you still want to perform the system restore, change the PERFORM_CHECKSUM PARMLIB value to N.

---

FCQUERY call failed for unit *target_unit* RC = *return_code* RS = *reason_code*

**Explanation:** The command to query the FlashCopy relationships for the specified unit has failed.

**User response:** Make sure the TSO ID used to submit the job has the appropriate MVS authorities to perform the query command.
| BSY248E | Task task_name - Error invoking program. Please check file DD_name for problem determination |
| BSY249I | Task task_name - Offload process starting for unit target_unit (Source volser volume_serial) |
| BSY250E | Online|Offline request failed for unit target_unit. RC = return_code RS = reason_code. |
| BSY251E | Online|Offline request failed for unit target_unit. RC = return_code RS = reason_code. |
| BSY252E | Task task - Offload process for unit target_unit (Source volser volume_serial) is complete |
| BSY253E | Check sum type: type - Old = old_value - New = new_value |
| BSY254E | Task task - message data_set_name hex_value |
| BSY255E | Task task - message_text |
| BSY256E | Task task - Process abended. PSW =program_status_word - Return Code = return_code - Reason Code = reason_code |
| BSY257E | Task task - Process abended. PSW =program_status_word - Return Code = return_code - Reason Code = reason_code |
| BSY258I | SSID ssid checkpointed at RBA/LRSN rba|lrsn |
| BSY259I | Waiting for checkpoint to complete on SSID ssid |
| BSY260E | Task task - Invalid DSN generated for backup_type DSN = data_set_name - Check DSN Mask |
| BSY261E | Task task - Unit unit_name offloaded to device data set data_set_name |

**Explanation:**

- BSY248E: An error has occurred invoking either DFSMSdss or FDR to perform a volume backup or a data set restore. A file check is required for problem determination.

- BSY249I: The process to offload the specified unit has started. No user response is required.

- BSY250E: Offline or Online request failed for the specified unit. Make sure the specified unit is not in use by any other MVS process.

- BSY251E: Offline or Online request failed for the specified unit. Make sure the specified unit is not in use by any other MVS process.

- BSY252E: The volume offload process for the specified volume is complete. No user response is required.

- BSY253E: This message is produced if a check sum fails at system restore time. The backup disk has been modified since the backup was performed. Determine if the change made to the backup disk is acceptable. If the backup is valid, the check sum function can be turned off using the PARMLIB entry PERFORM_CHECKSUM.

- BSY254E: This message is used to display various message text associated with errors. Review the message text and other related messages to determine the problem.
BSY264I Unit unit_name was offloaded by a previous offload job. Use RE-OFFLOAD card to offload again

Explanation: The specified backup unit was already offloaded by a previous offload job.

User response: If you want to replace that previous offload with a new offload backup, rerun the job with the RE-OFFLOAD keyword.

BSY265E Generation generation has not been offloaded. Offload it or run with the BYPASS-OFFLOAD keyword

Explanation: This backup process will replace a System Level Backup on disk that has not been offloaded to tape yet.

User response: Since you have specified offload options in the System Level Backup profile, it is assumed each System Level Backup should be offloaded to tape before it is replaced. You can offload the backup by going to the system restore screen and selecting to offload it from there, or you can specify the BYPASS-OFFLOAD keyword if you do not want to offload the backup.

BSY266E No Databases found for this Pattern. Type TS|IX Database database_name, Database table_space_name Creator creator_name

Explanation: The wildcard mask specified in an application profile did not result in any matches during the JCL build process.

User response: None required.

BSY267E Database excluded because it is a TEMP or WORK database. Type TS|IX Database database_name, Spacename Partition partition

Explanation: The specified database has been excluded from the application restore JCL because it is a temporary work space.

User response: None required.

BSY272E Task - Volser volume_serial was restored from file_name file seq nbr file_sequence_number

Explanation: The specified volume serial was restored from an offloaded backup.

User response: None required.

BSY275I message_text

Explanation: This message is used to display informational text generated during processing.

User response: None required.

BSY277I Task - Unit unit_name was initialized with volser volume_serial

Explanation: The specified unit was initialized with the specified volume serial.

User response: None required.

BSY279I Task - Unit unit_name with old volser volume_serial was clipped to volser volume_serial

Explanation: The specified unit was clipped to a new volume serial name.

User response: None required.

BSY280E An error has occurred obtaining SMS information for copy_pool|storage_group copy_pool_name|storage_group_name%Z.

Explanation: An error has occurred trying to obtain SMS information for the specified object.

User response: Either the object no longer exists or its SMS definition is invalid. Check with your systems programmer.

BSY281E Requested storage needed for SMS call is not available

Explanation: The MVS storage requested was not available.

User response: Increase the region size on the job and rerun.

BSY282E Storage used for SMS call could not be released

Explanation: The MVS storage used for SMS calls could not be released.

User response: Contact IBM Software Support.
BSY283I  HSM backup with token token_name

Explanation: The message indicates a HSM backup (by its token) and states if it is on DASD or tape.
User response: None required.

BSY284I  Performing HSM DUMP of copypool copy_pool

Explanation: The specified SMS copy pool is being offloaded (dumped) to tape.
User response: None required.

BSY285E  HSM Command failed. RC = return_code

Explanation: The specified HSM command has failed.
User response: Check the system or DFSMSHSM job log for more information.

BSY286E  Source volser volume_serial is in an active FlashCopy relationship

Explanation: The specified source volume serial is in a current FlashCopy relationship. This message is issued on a restore when a backup of the source unit has not completed.
User response: Re-submit the job when the FlashCopy session is complete.

BSY287E  Target unit target_name is in an active FlashCopy relationship

Explanation: The specified target unit is in a current FlashCopy relationship. This message is issued when the previous backup to this unit has not completed.
User response: Resubmit the job when the FlashCopy session is complete.

BSY288E  Data set for object did not exist at the time of System Level Backup

Explanation: The data set for the specified object did not exist at the time of the System Level Backup. The object could be defined DEFER YES.
User response: None required.

BSY291E  object was successfully restored.

Explanation: The specified object was successfully restored from the System Level Backup.
User response: None required.

BSY292E  No backups for profile profile_creator.profile_name were found in repository

Explanation: No System Level Backups for the specified profile were found.
User response: It is possible they were deleted or replaced by a more recent backup since the JCL was generated. Generate the application recovery JCL again.

BSY293E  object no longer exists or was dropped and re-created since the backup

Explanation: The specified object no longer exists in this IMS subsystem or it was dropped and re-created since the backup.
User response: A dropped object (or a re-created object) cannot be restored.

BSY294E  Module module_name returning with RC= return_code

Explanation: The specified module has completed with the specified return code.
User response: A previous error message gives more detail on the specific error that occurred.

BSY296E  No suitable target could be found for source volser: source_volser.

Explanation: A target cannot be found for the listed source volume.
User response: Update the backup profile and ensure the source volume is mapped to a valid target volume.

BSY298E  No objects were found in Profile profile_creator.profile_name IMS subsystem ssid

Explanation: The object profile was empty or resulted in no objects being resolved from the wildcard characters.
User response: Add objects to the application profile.

BSY299E  There are no Objects to process due to prior errors, the Build Process was terminated

Explanation: The JCL build process has been terminated because no objects can be successfully restored.
User response: None required.
**BSY303E**  File tailoring open|close|include error, RC=return_code  
**Explanation:** A file tailoring error has occurred.  
**User response:** Make sure there is enough space on the target data set to hold the JCL being generated.

| BSY304I | Build JCL will be written to data_set_name  
**Explanation:** Object recovery JCL will be written to the specified data set.  
**User response:** None required.  
| --- | --- |

| BSY305I | Build JCL member member_name successfully written  
**Explanation:** The application recovery JCL was successfully written to the specified member.  
**User response:** None required.  
| --- | --- |

| BSY306E | No recovery information was found in SYSCOPY for object:  
**Explanation:** No recovery information was found in SYSCOPY for the specified object and no System Level Backup was found that is capable of restoring the object.  
**User response:** No recovery resources exist for the object. It is recommended you backup the system on which this object resides, or take an image copy of this object.  
| --- | --- |

| BSY307E | Required full image copy ic_data_set could not be found for object:  
**Explanation:** The specified image copy was not found in the MVS catalog for the specified object. The object will not be recoverable using this image copy.  
**User response:** Recovery to the specified point may not be possible. Either choose a different recovery point or catalog the missing image copy.  
| --- | --- |

| BSY308E | A valid starting point could not be found for the RECOVER utility for object:  
**Explanation:** Recovery of IMS objects requires finding an appropriate copy or appropriate log records to recover the object. A starting point might be a System Level Backup, and image copy, or log records used to recreate the object. If a "non-logged" event is found at a certain point in time before a starting point is found, the object cannot be restored to the point in time requested.  
**User response:** Either backup the object or choose a different restore point.  
| --- | --- |

| BSY309E | Recovery point could not be found for object:  
**Explanation:** The recovery point is the stopping point of a recovery. If you chose to restore the object to the latest image copy, and none was found, this error could occur.  
**User response:** Chose a different recovery point.  
| --- | --- |

| BSY311E | An Alter has been done on the object:  
**Explanation:** A DDL ALTER has been performed against the specified object. It cannot be restored.  
**User response:** It is recommended that you take another System Level Backup or an image copy of this object.  
| --- | --- |

| BSY312W | This index has been rebuilt which prohibits recovery. Index will be rebuilt for object:  
**Explanation:** The specified index has been rebuilt since its last copy. It will be rebuilt again since it cannot be restored from the previous System Level Backup or image copy.  
**User response:** None required.  
| --- | --- |

| BSY313E | Space is not recoverable to desired point. A LOG NO prohibits recovery for object:  
**Explanation:** The specified object cannot be recovered because a LOG NO utility has been run since the last System Level Backup or image copy.  
**User response:** It is recommended that you take another System Level Backup or an image copy of this object.  
| --- | --- |

| BSY315E | Space is not recoverable to desired point. A LOAD REPLACE with LOG NO prohibits recovery for object:  
**Explanation:** The specified object cannot be recovered because a LOAD REPLACE utility with LOG NO has been run since the last system backup or image copy.  
**User response:** It is recommended that you take another System Level Backup or an image copy of this object.  
| --- | --- |

| BSY316E | Space is not recoverable to desired point. A REORG with LOG NO prohibits recovery for object:  
**Explanation:** The specified object cannot be recovered because a REORG utility with LOG NO has been run since the last System Level Backup or image copy.  
**User response:** It is recommended that you take another System Level Backup or an image copy of this object.  
| --- | --- |
another System Level Backup or an image copy of this object.

**BSY317E**  
**Space is not recoverable to desired point. A LOAD RESUME with LOG NO prohibits recovery for object:**

**Explanation:** The specified object cannot be recovered because a LOAD RESUME utility with LOG NO has been run since the last system backup or image copy.

**User response:** It is recommended that you take another System Level Backup or an image copy of this object.

**BSY319W**  
**The following Index has been excluded due to the exclusion of the associated database:**

**Explanation:** The specified index will not be recovered in the JCL stream because its associated database could not be recovered.

**User response:** None required.

**BSY320I**  
**Database|Indexspace has been stopped|started**

**Explanation:** The specified IMS object has been either stopped or started.

**User response:** None required.

**BSY321E**  
**Database|Indexspace was not restored**

**Explanation:** The specified IMS object was not restored. A previous error will detail why this object could not be restored.

**User response:** None required.

**BSY322I**  
**Data set data_set_name was restored via method**

**Explanation:** The specified data set was restored via DFDSS, FDR, or SNAP data set.

**User response:** None required.

**BSY323E**  
**Data set data_set_name failed restore_type restore**

**Explanation:** The specified data set failed restore using the specified method.

**User response:** A previous error message will indicate the reason for the failure.

**BSY326E**  
**Error cataloging data set data_set_name**

**Explanation:** The specified data set has been restored to the specified volumes, but the MVS catalog operation has failed.

**User response:** Review the IDCAMS catalog output shown to determine the cause of the error.

**BSY327E**  
**Task task - Generated DSN data_set_name already exists**

**Explanation:** The data set mask specified in the offload options has been resolved to a data set name that already exists.

**User response:** Change the data set mask in the offload options so each generated data set name will be unique. A suggestion is to add the timestamp variable.

**BSY329E**  
**Task task - No space for data set data_set_name Needs number_of_tracks tracks**

**Explanation:** No space could be found on a source volume to restore the specified data set. The amount of space needed is shown.

**User response:** Either add volumes to the target storage group, compress the volumes to free up space, or delete some unneeded data sets from the volume.

**BSY330I**  
**Volume: volume Tracks: number_of_tracks**

**Explanation:** The specified data set has been restored to this volume. The amount of space the data set is on this volume is also displayed.

**User response:** None required.

**BSY331I**  
**Copy Pending status has been reset for the selected object types**

**Explanation:** COPY PENDING status has been reset for the listed objects.

**User response:** None required.

**BSY332I**  
**Resetting copy pending status for TABLESPACE | INDEXSPACE | INDEX object_name**

**Explanation:** COPY PENDING will be reset for the listed object.

**User response:** None required.

**BSY333E**  
**function failed for member member_name RC = return_code**

**Explanation:** VDEFINE or VDELETE has failed for the ISPF member listed in the message.
User response: The necessary ISPF libraries are missing from the agent JCL.

BSY335I Data set data_set_name has been renamed
to data_set_name
Explanation: The specified data set has been renamed.
User response: None required.

BSY336E Backup backup_name timestamp timestamp has not been offloaded
Explanation: The specified backup has not yet been offloaded.
User response: The target units of this backup cannot be reused until it has been offloaded.

BSY337E Offload it or run with the BYPASS-OFFLOAD keyword
Explanation: This is a continuation of message BSY336E.
User response: You can also choose to specify the BYPASS-OFFLOAD keyword and rerun the job.

BSY338W Backup backup_name timestamp timestamp will be replaced by this backup
Explanation: The target units for the specified backup will be replaced by this backup. The specified backup will be removed from the repository.
User response: None required.

BSY339I Backup backup_name timestamp timestamp was marked as no longer on disk
Explanation: The specified backup has been offloaded to disk and will be replaced by this backup. It will be marked as no longer on disk in the repository.
User response: None required.

BSY340E message_text
Explanation: This message is used to display various message text associated with errors.
User response: Review the message text and other related messages to determine the problem.

BSY341E Error fetching System Level Backup information. Check the agent JCL
Explanation: The System Level Backup could not be fetched from the repository.
User response: Check the agent JCL to make sure all the required data sets have been specified. These libraries are:

```
//BSYBPROF DD DISP=SHR,DSN=datalevel.PROFILES
//BSYBACK DD DISP=SHR,DSN=datalevel.SYSBACK
//BSYBOBJ DD DISP=SHR,DSN=datalevel.SYSBACK.OBJS
//BSYBVOL DD DISP=SHR,DSN=datalevel.SYSBACK.VOLS
//BSYBSSD DD DISP=SHR,DSN=datalevel.SYSBACK.SSIDS
```

Where datalevel is the high level used to create these data sets during install.

BSY342E BSY System Backup and Restore control record not found
Explanation: The control record for the IMS Recovery Expert system backup and restore utility was not found.
User response: Refer to the installation section on how to create this record.

BSY343E FCWithdraw failed on target unit unit_name RC = return_code RS = reason_code
Explanation: The FCWithdraw operation failed on the specified target unit.
User response: Make sure the TSO ID that submitted the job has the authority necessary to run the FCWithdraw command.

BSY344W Data set collection has ended with warning conditions:
Explanation: The process to collect information about where data sets resided at the time of the System Level Backup has completed with warning conditions. These will be listed after this message.
User response: None required.

BSY345W Error creating catalog entry for data_set_name. FDRInstant will not be used
Explanation: An error has occurred creating a data set required by FDRInstant. FDRInstant will not be used. FDR will be used to perform the volume offload.
User response: Make sure the appropriate steps have been taken at your shop to create data sets that start with FDR.USE.*

BSY346I Source Volser: volume_serial Target Unit: target_unit Remaining Tracks: number_of_tracks
Explanation: This is an informational message showing the total number of tracks that need to be copied inside the array from source to target volumes.
User response: None required.
BSY348I  These IMS data sets reside on this volume:

Explanation: The specified IMS data sets reside on a volume that has not been included in the System Level Backup.

User response: You must include the specified volume in the system backup profile.

BSY349I  Data set: data_set_name

Explanation: This is a continuation of BSY348I and will list a data set.

User response: None required.

BSY350I  Remaining tracks to be copied: number_of_tracks

Explanation: This is an informational message showing the total number of tracks that need to be copied inside the array from source to target volumes

User response: None required.

BSY351E  An error has occurred obtaining IMS location for subsystem ssid. Make sure the correct BSDS files are specified

Explanation: The IMS location is needed to construct the HSM copy pool names for the IMS subsystem.

User response: The BSDS names for the IMS SSID are most likely incorrect. Enter the Setup section of the product and check the BSDS names there.

BSY352E  The following object objectname was selected but no longer exists.

Explanation: The object no longer exists. It will not be processed.

User response: The object might have existed when the object profile was created but it now no longer exists. The object should be removed from the profile.

BSY353E  Unable to stop table_space\index_space

Explanation: The product was unable to stop the specified IMS object.

User response: Make sure the IMS object is not being used by any IMS process.

BSY354I  Waiting for table_space\index_space to stop...

Explanation: The product is waiting for the specified object to enter the STOPPED state.

User response: None required.

BSY355W  Build of object profile has resulted in no selected objects.

Explanation: The build of the object profile produced no selected objects.

User response: Check the profile to make sure an object is selected or the object mask(s) specified are correct.

BSY356I  The following object objectname was selected but no longer exists.

Explanation: The DFSMSdss copy from the source volume to the target volume is being performed by the specified subtask.

User response: None required.

BSY358E  Source volume volser contains user catalog data. This volume cannot be excluded.

Explanation: The source volume that you selected for exclusion contains user catalog data that needs to be included in the backup. The volume must be included in the backup.

User response: Edit the backup profile and ensure the volume is not excluded.

BSY359E  SNAP group operation failed.

Explanation: The listed SNAP operation failed. The error messages from the SNAP operation will follow this message.

User response: Examine the error messages from the SNAP. Make sure that the user who submitted the job has the proper authority to issue the SNAP command.

BSY360W  The following migrated data sets were found, backup will continue.

Explanation: This message is used with message BSY361I and describes HSM migrated data sets that were encountered during the backup.

User response: None required; depending on the settings in the P ARMLIB member, IMS Recovery Expert might either recall the data sets or not recall the data sets and mark the backup as partial.

BSY361I  message_text.

Explanation: This message is used with message BSY360W and lists HSM migrated data sets that were encountered during the backup.

User response: None required.
BSY362W Backup marked as partial, and can only be used for object restore.

Explanation: The settings in the PARMLIB member dictate that migrated data sets will not be recalled. However, object restore was enabled; therefore the backup will be saved and marked as partial.

User response: None required.

BSY363W Backup cannot be used for system restore. Deleting backup.

Explanation: The settings in the PARMLIB member dictate that migrated data sets will not be recalled. In addition, object restore was not enabled for this profile. Since the backup cannot be used for system restore or object restore, the backup is stopped and deleted.

User response: None required.

BSY364I Recalling migrated data sets.

Explanation: IMS data sets that have been migrated by DFSMSShsm are being recalled.

User response: None required.

BSY365I Waiting for recalled data sets.

Explanation: The backup is waiting for data sets to be recalled.

User response: None required.

BSY366I Waiting number of minutes for recalled data sets.

Explanation: The backup is waiting the specified number of minutes for data sets to be recalled.

User response: None required.

BSY367W Invalid SMS return code for volume volser, rc=return_code.

Explanation: An error occurred when attempting to determine the SMS storage group for a volume.

User response: Make sure the volume serial is online, is included in an SMS storage group, and is properly configured in SMS.

BSY368I Volser volume_serial was restored in a previous restore job. It will be bypassed.

Explanation: This message may be displayed when a restore job is re-run using the RESTART parameter. The volume listed in the message was successfully restored during the previous run and will not be restored again.

User response: None required.

BSY369E Volser volume_serial was restored in a previous restore job. It will be bypassed.

Explanation: This message may be displayed when a restore job is re-run using the RESTART parameter. The volume listed in the message was successfully restored during the previous run and will not be restored again.

User response: None required.

BSY370I Performing target volume validation...

Explanation: This informational message indicates that target volume validation is in progress.

User response: None required.

BSY371I Target volume validation complete.

Explanation: This informational message indicates that target volume validation is complete.

User response: None required.

BSY372E All source volumes could not be matched to an appropriate target volume.

Explanation: One or more of the source volumes could not be matched to a target volume. The backup is stopped.

User response: Ensure that there are enough targets specified for the desired number of backup generations. The target units/volumes must match the size of the source volumes. Also, make sure the specified target units are not in use for a System Level Backup of another subsystem. This will make them ineligible for pairing with volumes in this profile.

BSY373E No target volumes were found, check the target pool volumes entered for this profile.

Explanation: The target volumes were not specified in the profile, or the storage groups specified did not contain any valid volumes.

User response: Ensure that valid ranges of target units or storage groups are specified in the backup profile.

BSY374I Task task_name - Restoring source volser source_volser from backup volser backup_volser.

Explanation: This informational message lists the source volume being restored and the backup volume being used to restore it.

User response: None required.
<table>
<thead>
<tr>
<th>BSY375E</th>
<th>ShadowImage action mode of source volser source_voller to target unit target_unit failed.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The specified Shadow Image operation has failed.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Ensure the user ID has the proper authorization to run the command. Also, make sure the specified volumes reside on a storage array that is capable of running ShadowImage commands and is properly licensed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY376E</th>
<th>Return Code = return_code - Reason Code = reason_code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>This message displays the return and reason codes affiliated with a prior message.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Examine the return and reason codes. Determine and correct the source of the problem.</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>BSY377E</th>
<th>ShadowImage delete of pair source volser and target volser failed. RC = return_code. RS = reason_code.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The specified ShadowImage operation has failed.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Ensure the user ID has the proper authorization to run the command. Also, make sure the specified volumes reside on a storage array that is capable of running ShadowImage commands and is properly licensed.</td>
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<tr>
<th>BSY378E</th>
<th>Invalid Subsystem ID subsystem_ID entered. The SSID must be defined in the Setup section of the product.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The subsystem listed in the message has not been configured using the product setup panel.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>On the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN), specify 0 (User Settings) and press Enter. On the Backup Profile Defaults panel, you can set up the subsystem. On the IMS Recovery Expert for z/OS main menu panel (BSY$MAIN), specify 0 (Administration) and press Enter. On the Administration Menu panel (BSY$PNL0), specify 1 (Set System Backup Profile Defaults) and press Enter. On the System Backup Profile Defaults, you can set up the subsystem. Refer to the configuration documentation for information about the setup parameters.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY384E</th>
<th>An invalid RBA/LRSN was specified, it must be 12 characters in length and contain valid hexadecimal characters.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>An invalid RBA or LRSN was specified.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Correct the starting or ending RBA or LRSN.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY386E</th>
<th>An invalid Image Copy Check option was specified, the valid options are &quot;Y&quot; or &quot;N&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The image copy check option is invalid.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Enter Y or N for the IC-CHECK parameter in the control cards.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY399E</th>
<th>This profile is in incremental status already.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The backup profile contains the START-INCREMENTAL keyword, but the backup profile has previously been submitted and an incremental relationship established.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Remove the START-INCREMENTAL keyword from the backup profile.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY400E</th>
<th>This profile not in incremental status.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The backup profile contains the END-INCREMENTAL keyword, but the backup profile has not previously been submitted with a START-INCREMENTAL keyword. No incremental relationship has been established.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Remove the END-INCREMENTAL keyword from the backup profile.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY401E</th>
<th>The current backup generation is not in incremental status.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>For a System Level Backup that has enough target volumes for multiple generations, only one generation can be in incremental status. This message is produced when END-INCREMENTAL was specified when the next backup generation is not for a generation that is in incremental status.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>You can only enter the END-INCREMENTAL card when the backup generation you are about to replace is in incremental status.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSY402E</th>
<th>There are not enough target volumes specified based on the number of source volumes and generations.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>There are not enough target volumes specified in the profile to backup all source volumes for the specified number of generations.</td>
</tr>
<tr>
<td>Message ID</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>BSY403E</td>
<td>An input card cannot extend beyond two input cards.</td>
</tr>
<tr>
<td>BSY404I</td>
<td>message_text.</td>
</tr>
<tr>
<td>BSY406E</td>
<td>The work volume work_volser cannot be the same volume that the object resides on.</td>
</tr>
<tr>
<td>BSY407E</td>
<td>A work volume must be specified with an input card.</td>
</tr>
<tr>
<td>BSY408E</td>
<td>Task subtask_name - Image copy of object object_name has failed</td>
</tr>
<tr>
<td>BSY409I</td>
<td>Task task_name - Image copy created for object_name.</td>
</tr>
<tr>
<td>BSY410I</td>
<td>Task subtask_name - Type: image_copy_type DSN: data_set_name.</td>
</tr>
<tr>
<td>BSY411I</td>
<td>Task task_name- Unit: unit Fileseq: file_sequence_num Cataloged: Yes/No.</td>
</tr>
<tr>
<td>BSY412I</td>
<td>Task subtask_name- Volser(s): vols_sers.</td>
</tr>
<tr>
<td>BSY413I</td>
<td>Task subtask_name- Start_RBA: starting_rba Pit_RBA: ending_rba.</td>
</tr>
<tr>
<td>BSY415E</td>
<td>Image copies cannot be created from an offloaded backup created using FDR.</td>
</tr>
<tr>
<td>BSY423E</td>
<td>The following object was selected but does not exist in the Backup:</td>
</tr>
</tbody>
</table>
BSY424E - The following object was dropped and recreated after the Backup:

Explanation: The object was dropped after the System Level Backup was taken and then recreated; therefore, the object cannot be recovered using the SLB selected.

User response: None required.

BSY426E - message text RC=return code, RS=reason code.

Explanation: This message is used to provide additional error message explanation. It contains the message text, return code and reason code.

User response: None required.

BSY427E - An error occurred obtaining SMS Copypool information.

Explanation: When configuring an IMS subsystem to work with the BACKUP SYSTEM utility, an error occurred attempting to obtain information about the SMS copypools.

User response: Contact IBM Software Support.

BSY429E - Backup unit nnnn is no longer valid.

Explanation: The specified space efficient backup volume is no longer valid. The reason is stated in the message.

User response: One of the several instances caused this message to be issued. 1. The space efficient pool filled up. 2. After a system backup is taken on a SE volume, when IMS updates a track, the original version of that track is written to the pool of disk space that is associated with the SE volumes. If this pool of disk space becomes filled, the System Level Backup on the space efficient volumes will become invalidated. To free up space in the pool, users can either delete the System Level Backup or take another backup using the same set of space efficient volumes. Each time the volumes are used, the space used to hold the original version of changed tracks from the previous backup will be freed. 3. Some other process cleared the relationship between this volume and the source volume. The SE volumes may need to be re-initialized before being reused by System Level Backup and Restore Services.

User response: None required.

BSY432E - inputcardvariable is invalid in combination with LAST-BACKUP card.

Explanation: You cannot specify TIME, DATE, or GENERATION if LAST-BACKUP follows the IMAGE-COPY card. You also cannot specify TIME or DATE if LAST-BACKUP follows the GENERATION card.

User response: Remove the invalid TIME, DATE, or GENERATION parameters from the control cards.

BSY433E - The LAST-BACKUP card must follow IMAGE-COPY or GENERATION card.

Explanation: The LAST-BACKUP card must follow either the IMAGE-COPY card or the GENERATION card.

User response: Correct the order of the control cards.

BSY434I - Task taskname - Registered in datasetname Total Tracks: numberoftracks

Explanation: This message provides information about the image copy data set produced.

User response: None required.

BSY435I - Task taskname - DSN: datasetname to DSN: datasetname

Explanation: This message will provide information about the image copy data set produced.

User response: None required.

BSY441W - Image copy datasetname not found. Searching for prior recovery asset for object: objectname.

Explanation: While generating recovery JCL for the specified object, the specified image copy data set was not found in the ICF catalog. A recovery for the specified object might still be possible using a prior recovery asset.

User response: Check to see if the image copy data set was specified correctly and saved in the ICF catalog.
**BSY445E**  JCL generation failed.

**Explanation:** Object restore job generation failed.

**User response:** Possible reasons and responses are: 1. No objects found in object profile: Verify that the job profile contains objects. 2. The object profile not found in repository: Verify that the object profile is listed on the Object Profile Display. If it is listed, contact IBM Software Support. 3. User is not authorized to use the object profile. Ensure that the share option for the object profile allows access. 4. An error occurred connecting to IMS. Ensure that the IMS subsystem is up, the plan is bound, and that you have authority to issue the plan.

<table>
<thead>
<tr>
<th>Message Code</th>
<th>Message Description</th>
<th>Explanation</th>
<th>User Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSY443E</td>
<td>Fast replication failed for data set datasetname.</td>
<td>Fast replication (either SNAP or Flash) has failed for the specified data set.</td>
<td>The output for other specific message that indicate the reason for the failure.</td>
</tr>
<tr>
<td>BSY444E</td>
<td>No image copy options have been set for this object profile.</td>
<td>The object profile did not contain any valid options to produce image copies.</td>
<td>Update the object profile and specify the image copy options that you want to be used.</td>
</tr>
<tr>
<td>BSY445I</td>
<td>The objectname was image copied from this System Level Backup on a previous job.</td>
<td>This message indicates that restart processing is occurring and the specified object name already has an image copy created for it. As a result the object will be bypassed and not copied in the current job.</td>
<td>None required.</td>
</tr>
<tr>
<td>BSY448E</td>
<td>Object was in a restricted state at the time of the system backup. It will not be included recovery.</td>
<td>The object was in a restricted state at the time of the System Level Backup. It will not be included in the recovery and it will be listed in the Restricted Objects Report. An object is considered in a restricted state if its status is CHKP, GRECP, LPL, RBDP, RECP, UTUT, or WEPR.</td>
<td>Change the status of the object to a non-restricted state.</td>
</tr>
<tr>
<td>BSY451I</td>
<td>Volume volname was found in storage group but has been excluded in the profile.</td>
<td>The specified volume was found in a source storage group but it will not be copied because it has been specifically entered as a volume to be excluded from the System Level Backup.</td>
<td>If you do not want this volume excluded, update the backup profile and remove the volume from the list of excluded volumes.</td>
</tr>
<tr>
<td>BSY452I</td>
<td>IMS volume validation is turned off. Volumes discovered on the last SETUP run will be backed up.</td>
<td>This System Level Backup profile has validated IMS Volumes set to &quot;N&quot;. This means that IMS volumes discovered when the profile was first setup will be backed up.</td>
<td>You can either add the SETUP control card or update the profile and change Validate IMS Volumes to Y if you want System Level Backup and Restore Services to discover the IMS volumes.</td>
</tr>
<tr>
<td>BSY9902E</td>
<td>Device mnnn (volser) is inaccessible.</td>
<td>An internal error occurred. The device listed in the message is not accessible.</td>
<td>Contact IBM Software Support.</td>
</tr>
<tr>
<td>BSY9918E</td>
<td>At least one USRCAT statement is REQUIRED.</td>
<td>An internal error occurred. At least one USRCAT statement is required.</td>
<td>Contact IBM Software Support.</td>
</tr>
<tr>
<td>BSY9920E</td>
<td>Device mnnn (volser) is inaccessible.</td>
<td>An internal error occurred. The device listed in the message is not accessible.</td>
<td>Contact IBM Software Support.</td>
</tr>
<tr>
<td>BSY9926E</td>
<td>USRCAT BCS Component contains Structural Errors.</td>
<td>An internal error occurred. The user catalog BCS component contains structural errors.</td>
<td>Contact IBM Software Support.</td>
</tr>
<tr>
<td>BSY9934E</td>
<td>Volume Metadata Errors on VOL(volser) UNIT(unit).</td>
<td>An internal error occurred. The volume and unit listed in the message encountered errors.</td>
<td>Contact IBM Software Support.</td>
</tr>
</tbody>
</table>
Chapter 16. How to look up message explanations

You can use several methods to search for messages and codes.

**Searching an information center**

In the search box that is located in the top left toolbar of any Eclipse help system, such as the IBM Information Management Software for z/OS Solutions Information Center, enter the number of the message that you want to locate. For example, you can enter DFS1065A in the search field.

Use the following tips to improve your message searches:

- You can search for information on codes by entering the code; for example, enter -327.
- Enter the complete or partial message number. You can use the asterisk wildcard character (*) to represent multiple characters, and you can use the question mark wildcard character (?) to represent a single character.

The information center contains the latest message information for all of the Information Management products that are included in the information center.

**Searching for messages on the web**

You can use any of the popular search engines that are available on the web to search for message explanations. When you type the specific message number or code into the search engine, you are presented with links to the message information in IBM information centers.
Chapter 17. Gathering diagnostic information

Before you report a problem with IMS Recovery Expert to IBM Software Support, you need to gather the appropriate diagnostic information.

Provide the following information for all IMS Recovery Expert problems:
• A clear description of the problem and the steps that are required to re-create the problem
• All messages that were issued as a result of the problem
• Product release number and the number of the last program temporary fix (PTF) that was installed
• The version of Db2/IMS that you are using and the type and version of the operating system that you are using
Appendix A. Recovery job statistics report

The recovery job statistics report is a stand-alone batch job that can process system management facility (SMF) records and produce a report showing the elapsed time, CPU time, and I/O counts for an IMS Database Recovery Facility (DRF) recovery.

This report includes not only the DRF master job but also all associated address spaces that are spawned by DRF or any of the auxiliary utilities driven by DRF. This report lists each individual address space (jobs and started tasks) that is involved in the recovery, and also provides: 1) overall totals, and 2) totals by address space type.

Setting up and running the report job

The JCL to produce this report can be found in SBSYSAMP(BSY#RSRP). The job includes comments on how to provide the input and other job customization. After a successful DRF recovery has been completed, you can run this job to produce the report.

The first time this report is run, you must specify a valid SMF data set for the //SMFIN DD statement that contains the SMF records encompassing the DRF recovery job and associated tasks.

You must also specify input parameter EXTRACT-SMF Y to tell the utility to read the records from the //SMFIN DD.

If you code the //SMFDATA DD on this run and specify a permanent data set to be created (for example, DISP=(NEW,CATLG)), then the SMF records that are needed are written to the SMFDATA data set and saved for subsequent runs. This action allows you to:

- Comment out the //SMFIN DD,
- Code the //SMFDATA DD to the data set created in the prior run (for example, DISP=SHR), and
- Set EXTRACT-SMF N on subsequent runs.

This adjustment saves time because the job now reads only those records needed from the SMFDATA data set, and avoids the re-reading of all records in the SMFIN data set.

Parameter reference for job statistics report

The following parameters are used by the report.

EXTRACT-SMF

This parameter indicates whether you want the job to extract the SMF records from either a live SMF data set or an offloaded data set, and then place the needed records in the data sets specified by the SMFDATA DD.

If EXTRACT-SMF=Y, then SMFDATA can specify either a temporary or permanent data set.

If SMFDATA specifies a temporary data set, any re-run of this job must specify EXTRACT-SMF=Y and must specify the SMFIN DD.
If you specify `EXTRACT-SMF=Y` and specify a new, permanent data set for SMF DATA, the records needed by this job are saved in the SMF DATA data set. Subsequent job runs can specify `EXTRACT-SMF=N` and the permanent data set for SMF DATA, and avoid re-reading the original SMF data.

**START-TIMESTAMP**
This parameter specifies the starting range that the utility uses to locate the start of the DRF master recovery job, and must be specified.

This parameter limits the records used in the report and can prevent accumulating incorrect jobs when the same DRF job name is used by multiple runs.

Set this parameter to a date/time that is just prior to the DRF master job start time.

Timestamp format:
`YYYY-MM-DD-HH.MM.SS.HHHHHH`

**END-TIMESTAMP**
This parameter specifies the ending range that the utility uses to locate the end of the DRF master recovery job, and must be specified.

This parameter limits the records used in the report and can prevent accumulating incorrect jobs when the same DRF job name is used by multiple runs.

Set this parameter to a date/time that is just after the DRF master job end time.

Timestamp format:
`YYYY-MM-DD-HH.MM.SS.HHHHHH`

**DRF-JOBNAME**
This parameter specifies the fully qualified job name of the DRF master job, and is required.

The following parameters are optional but should have the same value specified by the DRF Master job. Otherwise all associated recovery jobs will not be reported and accumulated.

**ASPREF**
This parameter specifies the ASPREF() value, which is used as the prefix for the Recovery Sort Subordinate (RSS) address spaces.

**FSPREF**
This parameter specifies the FSPREF() value, which is used as the prefix for the Fast Path Secondary Index address spaces.

**PRPREF**
This parameter specifies the PRPREF() value, which is used as the prefix for the IMS DFSPREC0 utility HALDB index rebuild address spaces.

**IBPREF**
This parameter specifies the IBPREF() value, which is used as the prefix for the IMS Index Builder index rebuild address spaces.

**PCPREF**
This parameter specifies the PCPREF() value, which is used as the prefix for the IMS High Performance Pointer Checker (full function) address spaces.
IBSORT
This parameter specifies the name of the sort started task used by the IMS
Index Builder when rebuilding indexes.
This value is specified either in the IMS Index Builder IIURPRMS module,
or if not specified, IIUSORTS is used by IMS Index builder.
IBAPI This parameter specifies the name of the API started task used by the IMS
Index Builder when rebuilding indexes.
This value is specified either in the IMS Index Builder IIURPRMS module,
or if not specified, IIUAPIFC is used by IMS Index builder.

Sample report output
Control Cards:
DRF-JOBNAME
ASPREF
FSPREF
PRPREF
IBPREF
PCPREF
IBSORT
FPSORT
EXTRACT-SMF
START-TIMESTAMP
END-TIMESTAMP
DEBUG

TSMXDMXD
RMXD
FMXD
XMXD
BMXD
PMXD
IIUSORTS
IIUAPIFC
N
2018-07-10-16.48.00.000000
2018-07-10-17.00.00.000000

Earliest SMF job found
Latest SMF job found
JOB
NAME
TSMXDMXD
RMXD0001
RMXD0002
RMXD0003
RMXD0004
IIUAPIFC
IIUAPIFC
IIUAPIFC
IIUAPIFC
IIUAPIFC
IIUAPIFC
IIUAPIFC
IIUAPIFC
IIUAPIFC
IIUAPIFC
IIUAPIFC
IIUAPIFC
IIUAPIFC
IIUAPIFC
IIUAPIFC
IIUAPIFC
FMXD0001
FMXD0002
BMXD0001
BMXD0001
BMXD0001
BMXD0002
BMXD0002
BMXD0002
BMXD0003
BMXD0003
BMXD0003
BMXD0003
BMXD0004
BMXD0004
BMXD0004
IIUSORTS
IIUSORTS
IIUSORTS
IIUSORTS
IIUSORTS
IIUSORTS
PMXD8228
TOTAL-->
JOB
TYPE
ASPREF
FSPREF
PRPREF
IBPREF
PCPREF
IBSORT
FPSORT

JES
ID
J0718228
S0718230
S0718231
S0718232
S0718233
S0718240
S0718241
S0718242
S0718246
S0718244
S0718248
S0718243
S0718247
S0718255
S0718256
S0718260
S0718259
S0718262
S0718263
S0718269
S0718270
S0718234
S0718235
S0718236
S0718251
S0718266
S0718237
S0718253
S0718267
S0718238
S0718252
S0718258
S0718268
S0718239
S0718254
S0718265
S0718245
S0718249
S0718257
S0718261
S0718264
S0718271
S0718229

Day: 2018.191
Day: 2018.191
START
DATE
2018.191
2018.191
2018.191
2018.191
2018.191
2018.191
2018.191
2018.191
2018.191
2018.191
2018.191
2018.191
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2018.191
2018.191
2018.191

CPU TIME
(SECS)
2.43
0.89
0.00
5.63
0.15
0.98
0.87

Time: 16:42:14
Time: 16:53:58

START
TIME
16:48:17
16:48:30
16:48:30
16:48:30
16:48:30
16:48:45
16:48:45
16:48:45
16:48:46
16:48:45
16:48:46
16:48:45
16:48:46
16:49:20
16:49:20
16:49:27
16:49:27
16:49:36
16:49:36
16:50:15
16:50:15
16:48:34
16:48:34
16:48:34
16:49:13
16:50:09
16:48:34
16:49:19
16:50:12
16:48:34
16:49:13
16:49:25
16:50:12
16:48:34
16:49:19
16:49:59
16:48:45
16:48:46
16:49:20
16:49:27
16:49:36
16:50:15
16:48:26

END
DATE
2018.191
2018.191
2018.191
2018.191
2018.191
2018.191
2018.191
2018.191
2018.191
2018.191
2018.191
2018.191
2018.191
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2018.191
2018.191

END
TIME
16:50:39
16:48:33
16:48:33
16:48:32
16:48:33
16:48:59
16:49:00
16:49:03
16:49:04
16:49:08
16:49:08
16:49:10
16:49:10
16:50:04
16:50:04
16:50:04
16:50:04
16:50:05
16:50:05
16:50:29
16:50:29
16:49:14
16:49:14
16:49:13
16:50:09
16:50:32
16:49:19
16:50:11
16:50:22
16:49:13
16:49:25
16:50:12
16:50:12
16:49:19
16:49:59
16:50:19
16:49:13
16:49:13
16:50:04
16:50:05
16:50:05
16:50:29
16:48:29

ELAPSED
TIME
00:02:21.32
00:00:03.34
00:00:02.53
00:00:02.42
00:00:02.54
00:00:14.45
00:00:15.37
00:00:17.08
00:00:16.50
00:00:22.57
00:00:20.42
00:00:24.45
00:00:22.12
00:00:43.09
00:00:43.10
00:00:37.40
00:00:37.43
00:00:29.25
00:00:29.24
00:00:12.34
00:00:12.35
00:00:38.35
00:00:38.32
00:00:37.36
00:00:55.57
00:00:23.45
00:00:43.03
00:00:52.11
00:00:09.24
00:00:37.44
00:00:11.53
00:00:47.20
00:00:00.02
00:00:43.42
00:00:39.02
00:00:19.39
00:00:27.23
00:00:25.03
00:00:44.23
00:00:37.08
00:00:29.37
00:00:13.50
00:00:02.52

CPU TIME
(SECS)
1.89
0.69
0.59
0.57
0.58
0.07
0.07
0.07
0.07
0.07
0.06
0.06
0.07
0.04
0.05
0.04
0.05
0.04
0.03
0.04
0.04
0.48
0.41
0.38
0.61
0.66
0.44
0.62
0.28
0.37
0.27
0.68
0.02
0.46
0.36
0.48
0.16
0.16
0.17
0.16
0.16
0.17
0.15
12.84

TOTAL
EXCP
20908
4205
3568
3930
4077
370
370
370
370
371
371
371
372
182
185
182
185
183
182
182
182
9037
8746
5043
7576
7601
6544
7564
5047
5154
4512
7620
65
6787
5269
6489
645
645
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646
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2225
140266

JOB
TYPE
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FSPREF
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IBSORT
IBSORT
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IBSORT
IBSORT
IBSORT
PCPREF
<--TOTAL

TOTAL
EXCP
15780
17783
0
75271
2225
3871
4428

Appendix A. Recovery job statistics report

435


Appendix B. The ACB repository

The ACB Repository is a VSAM KSDS that contains ACBs as loaded and/or updated from the active ACB library (ACBLIB).

Implementation of the ACB Repository improves the performance of IMS Recovery Expert functions that access the ACB libraries of large systems. For example, the creation of application profiles might require the reading of a significant portion of the active ACB library. Use of the ACB Repository will substantially reduce response times.

The ACB Repository is utilized by running the BSYACBRU utility for a given SSID, which compares the ACB repository to the active ACBLIB. When an ACB member in the repository has a different date+time value from that of its ACBLIB counterpart, the utility will replace the repository member with the ACBLIB member. If a member exists in the ACBLIB but not in the ACB Repository, the utility will add it to the ACB Repository.

Note: If the supplied SSID is a single-system IMS ID that is part of an IMS Recovery Expert Control File's IMS Group Name, then the IMS Group Name is used.

Each unique KSDS key contains the ACB name, type (DBD or PSB), SSID or Group IMS ID, and sequence number of each ACB's records. An ACB's record contains a date+time value representing when the ACB was last changed in the ACBLIB. This information is used by BSYACBRU for comparison to the ACB Repository.

Note: At this time IMS Recovery Expert does not require PSBs for functions related to the ACB Repository. As such, the ACB Repository will only contain DBDs.

Using the ACB repository

About this task

For more information on the utilities discussed in this topic, refer to the sample library (SAMPLIB) members BSY#ACBI and BSY#ACBU.

Procedure

1. Using the BSYACBRI utility, define the repository with IDCAMS.
   The SHAREOPTIONS (3 3), RECORDSIZE (4096 4096), and KEYS (26 0) settings in DEFINE CLUSTER control statement may not be changed.
2. Using the BSYACBRU utility, load the ACB repository from the active ACBLIB.
   The active ACBLIB is specified by the SSID parameter in the JCL. This causes the active ACBLIB to be dynamically discovered. In order to load the repository from a specific ACBLIB, dynamic discovery may be overridden using the ACBLIB parameter and ACBLIB DD statement.
3. In the BSYV220 CLIST, define the variable RBRACBRE to point to the ACB Repository loaded by the BSYACBRU utility.
   To stop using the ACB Repository, define the variable as BSYACBRE().
Results

The TSO UserID or batch JOB log will report the following message if the ACB Repository is successfully used for the IMS Recovery Expert function:

BSY1999I ACB Repository is being used for IMSID P5AI BSY#RACB

If the performance of the IMS Recovery Expert function is not improved as it should be, it may be the case that the function has continued without the use of the ACB Repository. This may occur due to a failed ENQ (see [the following topic](#)). Check the JOB log for an indication of whether this has occurred, as seen in the following messages:

BSY1999I ACB Repository shared ENQ failed for IMSID IDA2 BSY#AREP
BSY1999I ACB Repository is not being used for function BSY#RACB

If it is found that an ACB member from ACBLIB is missing from the ACB Repository, the following messages are issued in the JOB log the first time the missing member is encountered. The IMS Recovery Expert function will read relevant members from the ACBLIB instead of the ACB Repository, however for performance improvement it is recommended that the BSYACBRU utility be run to add the member to the ACB repository.

BSY1999I ACB Repository is being used for IMSID P5AI BSY#RACB
BSY1999I IMS ACB Repository member DBDAEG1 missing BSY#RACB
BSY1999I ACB Repository Utility would need to be run BSY#RACB

If it is found that an ACB member in the ACB Repository has a different `date+time` value from its ACBLIB counterpart, the following messages are issued in the JOB log the first time the discrepancy is encountered. The IMS Recovery Expert function will read relevant members from the ACBLIB instead of the ACB Repository, however for performance improvement it is recommended that the BSYACBRU utility be run to update the member in the ACB repository.

BSY1999I ACB Repository is being used for IMSID IEA BSY#RACB
BSY1999I ACB Repository does not match ACBLIB Directory BSY#RACB
BSY1999I ACB Repository Utility would need to be run BSY#RACB

The BSYACBRU utility

The ACB repository is utilized by running the BSYACBRU utility for a given SSID, which compares the ACB repository to the active ACBLIB. When an ACB member in the repository has a different `date+time` value from that of its ACBLIB counterpart, the utility will replace the repository member with the ACBLIB member. If a member exists in the ACBLIB but not in the ACB repository, the utility will add it to the ACB repository.

The BSYACBRU utility report

The BSYACBRU utility requires exclusive access to the Repository resource, which is administered by a z/OS ENQ command. The resource is qualified by SSID or IMS Group ID, but not by DSN. This means that two different utility jobs can share use of the Repository if they are running for different SSIDs. Conversely, two different utility jobs running for different ACB Repositories but for the same SSID or IMS Group ID will result in failure of the second utility job.

The BSYACBRU Utility Report can be found in BSYACBRP. Messages may also be found on the JOB log.
The following messages indicate that none of the members in the active ACBLIB existed in the ACB Repository. All ACBs were added to the Repository. In this case, the messages also reports that the utility has determined SSID IDA2 to be part of IMS GROUP IDA, and has changed to reflect such:

IMS RE ACB Repository Update Utility Running for SSID = IDA2
---------------------------------------------------------------------
IMS RE ACB Repository Update Utility Using IMS Group = IDA
---------------------------------------------------------------------
IMS ACBLIB ACB Members Checked = 00000000
IMS RE ACB Repository ACBs Updated = 00000000
IMS RE ACB Repository ACBs Added = 00000252
IMS RE ACB Repository Utility RC = 00000000

The following messages indicate that all ACBs in the ACB Repository matched those in the ACBLIB:

IMS RE ACB Repository Update Utility Running for SSID = IDA2
---------------------------------------------------------------------
IMS ACBLIB ACBs Checked = 00000252
IMS RE ACB Repository ACBs Updated = 00000000
IMS RE ACB Repository ACBs Added = 00000000
IMS RE ACB Repository Utility RC = 00000000

The following messages indicate that some of the ACBs in the ACB Repository did not match those in the ACBLIB and were therefore updated:

IMS RE ACB Repository Update Utility Running For IMSID/SSID = IDA2
---------------------------------------------------------------------
IMS ACBLIB ACB Members Checked = 00000250
IMS RE ACB Repository ACBs Updated = 00000005
IMS RE ACB Repository ACBs Added = 00000000
IMS RE ACB Repository Utility RC = 00000000

The following messages indicate that the active ACBLIB has concatenated data sets. All ACBLIBs are listed in order of concatenation:

IMS RE ACB Repository Update Utility Running for SSID = IER
---------------------------------------------------------------------
IMS ACBLIB Dynamically Discovered = IMSTL.MODEL.ACBLIBA
IMS ACBLIB Concatenated = IMS.IER8.ACBLIBA
IMS ACBLIB ACB Members Checked = 00000000
IMS RE ACB Repository ACBs Updated = 00000000
IMS RE ACB Repository ACBs Added = 00043763
IMS RE ACB Repository Utility RC = 00000000

Utility report error messages

The BSYACBRU Utility Report will also report errors that might occur when running the utility.

The following messages indicate an error in the API for the BSYACBIF Fast Cache Facility:

BSYACBIF FUNC=INIT ERROR RC=0000000C
IMS ACBLIB ACB Members Checked = 00000000
IMS RE ACB Repository ACBs Updated = 00000000
IMS RE ACB Repository ACBs Added = 00000000
IMS RE ACB Repository Utility RC = 00000012

The following messages indicate that the ACB Repository was in use by another process:

The following messages indicate that the ACB Repository was in use by another process:
IMS RE ACB Repository Update Utility Running For IMSID/SSID = IDA2

--------------------------------------------------------------------------------
IMS RE ACB Repository exclusive ENQ error RC=00000004
IMS RE ACB Repository exclusive ENQ error RC=4 or RC=14 means Repository in use.
IMS ACBLIB ACB Members Checked = 00000000
IMS RE ACB Repository ACBs Updated = 00000000
IMS RE ACB Repository ACBs Added = 00000000
IMS RE ACB Repository Utility RC = 00000012

The following message indicates that the specified SSID was not found in the IMS Recovery Expert Control File:
IMS RE ACB Repository Update Utility Running for SSID = IEAX

--------------------------------------------------------------------------------
IMS ACBLIB Discovery failed RC = 00000008
IMS ACBLIB ACB Members Checked = 00000000
IMS RE ACB Repository ACBs Updated = 00000000
IMS RE ACB Repository ACBs Added = 00000000
IMS RE ACB Repository Utility RC = 00000012

Note:

If the SSID is not found, the BSYPRINT SYSOUT data set will report the following error messages to further indicate this problem:
BSYI409E - Requested SSID/GROUP (IEAX) not registered in the BSYREPOS repository
BSYI919I - PROGRAM BSYACBRA completed with a Return Code of 8
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