IBM IMS Program Restart Facility for z/OS
Version 2 Release 2

User's Guide and Reference

IBM
About this information

IBM® IMS™ Program Restart Facility for z/OS® (also referred to as IMS Program Restart Facility) helps you recover from and restart abended IMS batch jobs that use the IMS Extended Restart facility.

These topics provide instructions for installing, configuring, and using IMS Program Restart Facility.

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

- Install and operate IMS Program Restart Facility
- Customize your IMS Program Restart Facility environment
- Diagnose and recover from IMS Program Restart Facility problems
- Use IMS Program Restart Facility with other IMS products

To use these topics, you should have a working knowledge of:

- The z/OS operating system
- ISPF
- SMP/E
- IMS

Always refer to the IMS Tools Product Documentation web page for complete product documentation resources:

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

The IMS Tools Product Documentation web page includes:

- Links to [IBM Knowledge Center](http://www-01.ibm.com/support/docview.wss?uid=swg27020942) 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 Program Restart Facility overview

IBM IMS Program Restart Facility for z/OS (also referred to as IMS Program Restart Facility) helps you correctly restart abended IMS batch jobs that use the IMS Extended Restart facility.

Topics:
- "What's new in IMS Program Restart Facility" on page 3
- "What does IMS Program Restart Facility do?" on page 4
- "IMS Program Restart Facility features" on page 6
- "IMS Program Restart Facility components" on page 11
- "Service updates and support information" on page 13
- "Product documentation and updates" on page 14
- "Accessibility features" on page 16

IMS Program Restart Facility puts the checkpoint records that are required to restart jobs into DASD files called checkpoint tracking data sets (CTDS). When you restart a job that has abended, IMS Program Restart Facility automatically supplies the most recent restart checkpoint ID. The CTDS contains copies of the IMS log records that are required for an extended restart.

IMS Program Restart Facility V2.2 includes the same functionality of and replaces all previous versions of both IBM IMS Program Restart Facility for OS/390® V2.1 and earlier, and IBM IMS Batch Backout Manager for z/OS V1.1.

Recommendation: If you have an existing version of IBM IMS Program Restart Facility for OS/390 or IBM IMS Batch Backout Manager for z/OS installed, uninstall them after Program Restart Facility Version 2.2 is implemented.

IMS Program Restart Facility V2.2 can also perform IMS batch backout processing when DLI or DBB IMS batch jobs fail. This feature is the main feature of Batch Backout Manager, which was merged with IMS Program Restart Facility for IMS Program Restart Facility Version 2.2. When a DLI or DBB batch job abends, IMS Program Restart Facility closes the log of the DLI or DBB batch job and invokes the IMS batch backout utility. This time-critical process is required to free any IRLM locks that might be held by an IMS batch job. If a system failure occurs, IMS Program Restart Facility uses a batch backout data set (BBDS), a small DASD file that tracks DLI and DBB batch jobs, to determine the status of the job, and performs and the required IMS log close and batch backout when the job is resubmitted.

IMS Program Restart Facility runs on any currently supported IMS version. To learn about system requirements, see the Program Directory for IBM IMS Program Restart Facility for z/OS.

You can use IMS Program Restart Facility to restart jobs that abended on a different version of IMS. For example, if an IMS job is canceled to allow IMS to be upgraded from Version 11.1 to Version 12.1, you can use IMS Program Restart Facility to restart the job instead of backing out the job and starting it over from the beginning.
To use IMS Program Restart Facility, you restart abended jobs as you normally do. You do not have to do the following tasks:

- Specify a checkpoint ID to IMS Extended Restart. IMS Program Restart Facility automatically supplies the most recent restart checkpoint ID for the job that is being restarted.
- Override the JCL to provide the correct log data set names.
- Change your application code.
What's new in IMS Program Restart Facility

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.

**SC19-3985-04 - June 2018**

- Changes related to APAR PI66859
  - A paragraph about module IRT#IGNR has been removed from "11-Migration guidelines" on page 34.
  - A paragraph has been revised in "Differences between IMS Program Restart Facility V2.1 and V2.2 options" on page 50.
  - "Converting options to IMS Program Restart Facility V2.2 format" on page 122 has been updated.
- Several messages have been updated or added
- Changes related to APAR PI74893: Message IRT174 has both an informational version (IRT174I) and an error version (IRT174E)
- Changes related to APAR PI73935: Several updates for IMS Version 15 support

**SC19-3985-03 - September 2016**

- Maintenance roll-up
- Packaged for inclusion in IBM IMS System Management for z/OS

**SC19-3985-02 - October 2015**

- Numerous additions and corrections related to APARs PI46448 and PI46450
- Addition of bypass logging options topic
- Reorganization and title changes for some topics

**SC19-3985-01 - July 2014**

- To support APAR PI14105, messages IRT097I and IRT098I were added, and message IRT250E was updated
What does IMS Program Restart Facility do?

IMS Program Restart Facility helps you restart abended jobs, prevent certain kinds of abends, reduce the processing load that is related to taking checkpoint IDs, and manage BMPs. It also assists with managing the backout and restart of IMS DLI and DBB batch jobs.

IMS Program Restart Facility helps you restart a job at the correct checkpoint and prevent data corruption. IMS Program Restart Facility prevents data corruption by automatically providing the correct checkpoint IDs to IMS Extended Restart.

Without IMS Program Restart Facility, data corruption can result from restarts that are performed without specifying a checkpoint ID or that are performed by specifying an incorrect checkpoint ID. This corruption can require a costly and time-consuming database recovery.

If the corruption is not detected immediately, you can experience more delays and longer periods of database unavailability. Therefore, IMS Program Restart Facility can increase both the efficiency and reliability of your system.

Several other uses of IMS Program Restart Facility are described in the following list. These uses might require JCL and application programming changes if you decide to remove IMS Program Restart Facility from your system.

- IMS Program Restart Facility can reduce the processing load that is incurred by applications that take checkpoints too frequently.
  This processing load is reduced by using bypass checkpoint processing, which is a feature of IMS Program Restart Facility.
  Bypass checkpoint processing prevents a job step from taking checkpoints more frequently than the minimum time interval that you specify for the job. This reduction in processing can result in faster run times for you, possibly reducing the batch window.

- For DLI and DBB IMS batch jobs, IMS Program Restart Facility automates the log close and batch backout processes that are required when such jobs abend.
  This automated process is done either when an abend occurs or, in the case that it is not possible to start the process when the abend occurs, when the job is resubmitted.
  This automated process removes the need to manually create and run IMS log close utility jobs and IMS batch backout jobs and significantly reduces manual intervention when a DLI or DBB IMS batch job abends, improving recovery time and reducing the need for manual intervention.

- Applications that terminate with a non-zero return code and are considered abended can be flagged as abended and restarted automatically.

- For DLI and DBB type IMS batch jobs, IMS Program Restart Facility provides capabilities to standardize and automate IMS batch log data set naming conventions.
  The product can deallocate existing log data sets in the JCL of a job, and reallocate new log data sets with data set names and DCB attributes that you specify.

- After changing your IMS version, you can restart jobs that abended on your previous version.
  Normally such jobs need to be backed out under the old IMS version and then started over from the beginning under the new IMS version. IMS Program
Restart Facility enables you to restart an abended job under a different IMS version without manual intervention. Some restrictions apply to this capability. For more information, see “Restarting a job on a different version of IMS” on page 89.

- If you migrate to data sharing, you can specify values for the DBRC, IRLM, and IRLMNM parameters.
  You can specify parameters both globally and for individual jobs without changing JCL or running system definitions.
- You can use IMS Program Restart Facility to specify values for most IMS BMP and DLI batch job parameters, both globally and for individual jobs, without changing any JCL.
  This feature allows you to update execution-time parameters by using IMS Program Restart Facility options instead of having to change job JCL.
  For example, if all jobs must have the LOCKMAX parameter updated, one change to the global LOCKMAX option updates every IMS batch job with the new value. No JCL changes are necessary.
- You can use IMS Program Restart Facility to specify a list of candidate IMSIDs, as part of an IMSGROUP, that BMPs can sign on to.
  With this feature, you can prevent U0688 abends without changing the OPT= specification and without waiting for an operator reply to message DFS690A.
- You can use MVS™ commands with IMS Program Restart Facility to stop, hold, or restart a BMP job without having to cancel and resubmit the job.
  You can take a database offline even when a BMP that is using the database is running.
- IMS Program Restart Facility can work with IMS Online Reorganization Facility for z/OS to automatically pause BMPs that use databases that are being reorganized by an online reorganization.
  IMS Online Reorganization Facility for z/OS automatically restarts a paused BMP when the online reorganization is complete.
**IMS Program Restart Facility features**

In general, you can implement IMS Program Restart Facility for IMS BMP and DLI batch jobs without changing those jobs. IMS Program Restart Facility software is copied into the IMS RESLIB or another load library that is already included in the STEPLIB of every IMS batch job, so making job STEPLIB changes is unnecessary.

You enable IMS Program Restart Facility features by activating the relevant options for the jobs that IMS Program Restart Facility will manage. Depending on how you set the IMS Program Restart Facility options, you can:

- Disable IMS Program Restart Facility for all jobs and then selectively enable IMS Program Restart Facility for selected jobs.
- Enable IMS Program Restart Facility for all jobs and select the jobs to exclude from IMS Program Restart Facility management.

You can also disable IMS Program Restart Facility for a job by adding a `//IRT$IGNR DD DUMMY` statement to the JCL of the IMS job step. The DD name that is specified in this statement can be changed in your installation by using the exclusion DD name table.

IMS Program Restart Facility job options can be specified in the IMS Program Restart Facility options data set (the IRTOPT data set). You can also override options by entering a `//IRT$CNTL DD *` statement in the JCL of the IMS job step. In a development environment, application programmers and testers can use the DD statement method to override default options to meet the requirements of restarting or testing job execution. Using this methodology allows a central coordinator to control overall IMS Program Restart Facility options, even in a development environment, but also allows a developer to easily override IMS Program Restart Facility options as necessary.

**Automatic job restart**

Automatic job restart is the central feature of the product IMS Program Restart Facility. This feature provides automatic assistance when an IMS batch job is resubmitted after an abend or job failure. IMS Program Restart Facility automatically determines the proper checkpoint for restarting the BMP or DLI batch job, dynamically allocates the required log data sets to enable restart to occur, and passes the restart checkpoint ID to IMS. IMS then performs a restart from the checkpoint ID provided by IMS Program Restart Facility.

IMS Program Restart Facility requires that your IMS batch job already have checkpoint and restart logic coded in your application program. IMS Program Restart Facility automates the manual process of allocating the appropriate IMS logs and specifying the proper checkpoint ID required to restart the job.

IMS Program Restart Facility enhances restart processing by saving restart checkpoint data in small DASD data sets called checkpoint tracking data sets (CTDSs). Saving the restart checkpoint data allows job restart to occur without the need to mount old IMS logs, or manually code IMS log data set names and volume serial numbers in the JCL of a restarted job.

Checkpoint tracking data sets contain all the data necessary to restart a job, so you can restart a BMP on either the same IMS system it was connected to when the abend occurred, or on a different IMS system in the IMSplex. IMS Program Restart Facility IMS group definitions can enable IMS Program Restart Facility to
automatically select an active IMS system from the IMSplex, changing the IMS system that the BMP connects to automatically.

IMS Program Restart Facility also enables a BMP or DLI batch job to be restarted under a different IMS version that it abended under. Because the IMS base product does not support restarting a batch job under a different release of IMS, this IMS Program Restart Facility capability enables an easier migration path when upgrading to a new version of IMS. You can abend any BMPs or batch jobs that are running, upgrade IMS to a new version, and then restart the batch job without any complications because of the change in IMS release. You can also abend IMS batch jobs, switch from a new version of IMS to an old version, and then restart the batch jobs. This capability, however, is only available for IMS Version 10 and later.

**Abend retry tables**

You can use abend retry tables to define which abend codes represent transitory errors, and have the IMS batch job automatically recover from the abend and automatically restart. You do not need to resubmit the job.

For example, suppose that a job abends because of a U0775 abend. This abend occurs for an IMS BMP when the PI pool space is exhausted. Normally, the BMP would abend, the job would terminate, and manual intervention would be required to set up the job for restart and resubmit the job.

For this example, you can specify that IMS Program Restart Facility should detect and automatically retry U0775 abends. In this case, IMS Program Restart Facility would intercept the U0775 abend and retry the abend. IMS Program Restart Facility will automatically reattach to IMS, perform a restart of the BMP, and the BMP will continue processing. This process would occur with no intervention from any production job control personnel.

There are other abends that can be automatically retried, such as database record deadlock conditions. You can specify any system or user abend code that you want IMS Program Restart Facility to automatically retry.

**IMS groups**

You can define IMS groups to IMS Program Restart Facility. IMS groups allow IMS Program Restart Facility to automatically select an active IMS system under which a BMP runs.

For example, suppose that IMS1 is coded as the IMSID in a BMP job. However, you have three IMS systems that share the databases that are used by IMS1. If IMS1 is not available on the system that JES selects to run the job, IMS Program Restart Facility uses IMS group definitions to select any of the three IMS systems where the job could successfully run.

IMS groups reduce the amount of manual intervention that is required to change the IMSID parameter that is coded in the JCL of the job. IMS group selection can be used when a job is initially submitted, or when a job has abended and is being restarted.

An IMS group should include only IMS systems that are at the same IMS release level because the IMS RESLIB in the JCL of the job must match the release of IMS that is associated with the IMS ID used by the BMP. If IMS Program Restart
Facility chooses an IMS ID at a different release level than the IMS RESLIB data set in the JCL of the BMP, an abend occurs during IMS initialization.

**Bypass checkpoint processing**

IMS checkpoints are the basis of recovery for IMS batch jobs. Application programs must initiate IMS checkpoint calls at unit of work boundaries so that proper backout can occur. Unfortunately, IMS checkpoints can be resource-intensive operations, possibly requiring significant machine resources and processing time. If application programs do not implement easy ways to control how often checkpoints are taken, altering how often checkpoints are taken can require application program coding changes.

IMS Program Restart Facility provides the capability to skip checkpoint calls that are issued too frequently, reducing system overhead and improving job elapsed time and system performance. You enable bypass checkpoint processing by enabling the BYPCHKP option and setting a bypass checkpoint interval in the BCDINTVL option. The bypass checkpoint interval specifies a minimum time interval that the IMS Program Restart Facility allows between checkpoints. If an application program makes a checkpoint call twenty times per second, and you specify a bypass checkpoint interval of one second, IMS Program Restart Facility causes nineteen of the checkpoints to be bypassed.

**MVS operator commands**

Similar to the IMS /STOP REGION command for BMPs, IMS Program Restart Facility commands can be used to stop DLI and DBB type batch jobs, as well as BMP jobs, at the next checkpoint call.

You can also pause a BMP or DLI batch job. This can be useful if you must create a sync point for a database recovery or the IMS Program Restart Facility HOLD command causes the job to abort, although the job does not end. When the HOLD command is issued, IMS Program Restart Facility waits for an XRST command, IMS Program Restart Facility reattaches to IMS and allows the job to restart and continue processing. This process occurs without any user intervention other than the issuing of the HOLD and XRST commands.

**Program testing options**

Application programmers can use IMS Program Restart Facility to test restart logic. IMS Program Restart Facility provides the capability to force an abend after a specified checkpoint number is taken. After the abend occurs, application programmers can use the next execution of the job to test the restart processing logic of the program.

Application programmers can use the CHKPCNT, CHKPCMP, and FABXRST options to control when an abend occurs, the abend code that is issued, and whether a restarted program abends again.

Enable these testing options by adding the following code to the JCL of a job:

```
/IRT$CNTL DD *
CHKPCMP=3619
CHKPCNT=12
FABXRST=NO
/*
```
In this example, the statements will cause the program to abend with a U3619 abend code after the 12th checkpoint call completes. After the program restarts, it will complete without abending.

**IMS PROC overrides**

IMS Program Restart Facility can automatically override IMS PROC parameters that are used to pass options to IMS. For example, you can set parameters such as DBRC, IRLM, and IRLMNM on a job or global level, and the values that are entered in the IMS Program Restart Facility options will automatically override the values that are set in the JCL of the job. This feature can be useful if DBRC or IRLM is being implemented for the first time in your environment.

You can use IMS Program Restart Facility to override 16 different IMS PROC values without changing the JCL of any job.

**Automated batch backout**

When a DLI or DBB type batch job abends, timely batch backout is critical to releasing locks that are held on any database records that were updated since the last checkpoint. IMS Program Restart Facility enhances IMS DLI and DBB batch processing by intercepting any abends, and automatically closing the abended IMS log and performing an IMS batch backout. This capability not only improves database availability, but reduces the manual intervention that is required to code JCL to perform the batch backout and run the backout.

If a system fails while a DLI or DBB batch job is running, IMS Program Restart Facility initiates batch backout processing when the job is resubmitted.

**IMS batch log data sets**

IMS Program Restart Facility provides the capability to automatically change the IMS log data sets that are coded in the JCL of the job by altering the IEFRDER and IEFRDER2 DD statements.

IMS Program Restart Facility can automatically deallocate the logs that are specified in the JCL of a job, and specify different data set names, space allocations, retention periods, or SMS management classes, among other options. You can enforce data set naming conventions, convert to new SMS storage or management classes, or change the unit name that is allocated to the IMS logs. You can make these changes by updating IMS Program Restart Facility options, which can be done globally or for selected jobs, and without updating any application JCL.

**IMS Program Restart Facility message output**

A new feature in IMS Program Restart Facility V2.2 allows you to set the SHOWOPTS option to PRINT. When this value is set, IMS Program Restart Facility dynamically allocates DD name IRTPRINT (if the DD is not already present in the JCL of the job) to the SYSOUT class that is specified in the SYSOUT option.

When SHOWOPTS=PRINT is specified, IMS Program Restart Facility writes more option information and status messages to the SYSOUT file. When SHOWOPTS is set to other values, IMS Program Restart Facility writes selected messages to the JESLOG of the job. All error messages are always written to the JESLOG of the job, but the IRTPRINT output provides more option and status information when SHOWOPTS=PRINT is enabled.
**Recommendation:** Specify SHOWOPTS=PRINT. The extra option information and status messages can be helpful if a IMS Program Restart Facility processing error occurs.
IMS Program Restart Facility components

The components of IMS Program Restart Facility provide checkpoint IDs to IMS Extended Restart and store the parameters that you set for jobs.

IMS Program Restart Facility has the following main components:

- IMS Extended Restart processing
- Checkpoint ID tracking data sets
- Automated IMS batch backout
- IMS Program Restart Facility options

IMS Extended Restart processing

If an abended batch job must be restarted, IMS Program Restart Facility interacts with IMS Extended Restart by doing these actions:

1. Dynamically allocates the original checkpoint ID tracking data sets (CTDSs) that were created by the abended job
2. Retrieves the latest committed checkpoint ID that was provided on the last extended checkpoint call
3. Provides the checkpoint ID to IMS Extended Restart

Checkpoint ID tracking data sets

IMS Program Restart Facility dynamically allocates a pair of CTDSs. The CTDSs store every checkpoint ID that is provided by an application that issues a checkpoint call.

If a job ends normally, the CTDSs are deleted automatically. When a job is restarted, IMS Program Restart Facility searches the catalog for the CTDSs. If the CTDSs exist, it automatically provides the last committed checkpoint ID to IMS Extended Restart.

The CTDSs contain copies of the IMS log records that IMS Extended Restart requires for a checkpoint restart. The CTDSs are standard DSORG=PS, RECFM=VB data sets and can be accessed directly without any special utilities.

Automated IMS batch backout

When an IMS batch DLI application abend occurs, you must take the following actions:

- Close the current batch system log data set (SLDS)
- Perform a batch backout

Until these steps are completed, databases remain unavailable and, for data sharing environments, IRLM locks remain. These locks prevent other applications from accessing the data. Usually, closing the current batch SLDS and running a batch backout are manual processes. When these processes are performed manually, databases remain unavailable while you respond to the initial abend by preparing the JCL and submitting the log close and batch backout jobs.

IMS Program Restart Facility provides for the automation of the batch backout process after specific application abends, and dynamically handles log close and allocation. Specifically, IMS Program Restart Facility initiates the following functions whenever an IMS batch DLI application abends:
• Dynamically allocates an interim batch SLDS for the log close
• Closes the interim batch SLDS
• Dynamically allocates the new batch SLDS that is required for batch backout
• Performs the batch backout

**IMS Program Restart Facility options**

You configure global options that apply to all IMS jobs in your environment, and then supply overrides to the global options that apply to specific jobs. In addition, you can override global and job options by updating the JCL of a job to add a `//IRTCNTL DD` statement that contains IMS Program Restart Facility input statements.

Global and job options are saved in the IRTOPT data set in an internal (load module) format. You specify global and job options by using the IMS Program Restart Facility ISPF dialog, which provides a menu-driven interface where you can review current specifications for all options before making changes, and access field-level help for each option parameter.
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:

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

Always refer to the IMS Tools Product Documentation web page for complete product documentation resources:

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

The IMS Tools Product Documentation web page includes:

- Links to 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

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

http://www.redbooks.ibm.com

The IBM Information Management System website shows how IT organizations can maximize their investment in IMS databases while staying ahead of today’s top data management challenges:

https://www.ibm.com/software/data/ims/

Receiving documentation updates automatically

To automatically receive emails that notify you when new technote documents are released, when existing product documentation is updated, and when new product documentation is available, you can register with the IBM My Notifications service. You can customize the service so that you receive information about only those IBM products that you specify.

To register with the My Notifications service:

1. Go to http://www.ibm.com/support/mysupport
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.
How to send your comments

Your feedback is important in helping to provide the most accurate and high-quality information. If you have any comments about this book or any other IBM product documentation, use one of the following options:

- Use the IBM Knowledge Center Contact Us link.
- 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. Configuring IMS Program Restart Facility

After you install IMS Program Restart Facility by following the directions in the Program Directory for IBM IMS Program Restart Facility for z/OS, you must configure the product for your environment.

The customization process involves a few extra steps if you have IMS Program Restart Facility for OS/390 V2.1 or IMS Batch Backout Manager for z/OS installed. Usually, the customization process involves the following steps:

- Remove any prior version of IMS Program Restart Facility and IMS Batch Backout Manager.
- Convert from the old inclusion options to the new format IRTOPT data set.

In the case that a prior version of IMS Program Restart Facility or IMS Batch Backout Manager are currently installed, you can use the IRTINCL conversion utility to generate a new IMS Program Restart Facility IRTOPT options data set from IMS Program Restart Facility and IMS Batch Backout Manager inclusion options.

Topics:

- “Guidelines for creating environments in IMS Program Restart Facility” on page 18
- “Configuration summary and checklist” on page 20
- “1-Detecting conflicting BMP pausing features” on page 21
- “2-Removing the pausing BMP feature for IMS Online Reorganization Facility” on page 22
- “3-Removing the pausing BMP feature for IMS Recovery Solution Pack” on page 23
- “4-Removing outdated usermods” on page 24
- “5-Allocating the required IMS Program Restart Facility data sets” on page 25
- “6-Defining the options data set name to IMS Program Restart Facility” on page 26
- “7-Activating the audit log feature (optional)” on page 27
- “8-Guidelines for securing IMS Program Restart Facility data sets” on page 28
- “9-Securing checkpoint ID tracking and batch backout data sets” on page 29
- “10-Making the ISPF application available to users” on page 33
- “11-Migration guidelines” on page 34
- “12-Guidelines for customizing IMS Program Restart Facility options” on page 35
- “13-Verifying the installation” on page 36
- “14-Guidelines for customizing modules and exits (optional)” on page 41
- “15-Enabling IMS Program Restart Facility” on page 42
- “16-Copying load modules (optional)” on page 44
- “17-Installing the bypass logging usermod (optional)” on page 46
Guidelines for creating environments in IMS Program Restart Facility

This topic discusses creating system environments, using the options data set, and data set naming conventions.

IMS Program Restart Facility environments

The IMS Program Restart Facility options data set determines the number of independent IMS Program Restart Facility environments that you create. You might want to create separate IMS Program Restart Facility environments for your system programmer test environment, development environment, and production environment.

Depending on your configuration, you might want multiple IMS Program Restart Facility environments for development or production. The number of environments you create depends on your environment and how you administer changes to IMS Program Restart Facility options.

The IMS Program Restart Facility options data set contains global options, which apply to every IMS job that runs, and job-specific overrides to the global options. For example, you can have bypass checkpoint processing turned off in the global options, but have a job-specific override to enable that option for specific jobs only. In this case, you would specify BYPCHKP=NO in the global options, and create one or more JOB option entries that specify BYPCHKP=YES for specific job names or PSB names.

Given the number of application-specific options, many customers have a database administrator or the development staff maintain the IMS Program Restart Facility options.

There are some limitations for creating multiple IMS Program Restart Facility environments. Each IMS Program Restart Facility environment is driven by the IMS Program Restart Facility options data set. The options data set name is specified in load module IRT#OPT, which you will copy to the IMS RESLIB or to some program product load library that is included in every IMS batch job that has EXEC PGM=DFSRRC00 in its JCL.

If you choose to copy load module IRT#OPT to your IMS RESLIB, you can only create one IMS Program Restart Facility environment per IMS RESLIB. You can easily share IMS Program Restart Facility environments between multiple IMS RESLIBs with no performance impact.

Updating IMS Program Restart Facility environments

For ease of use, you can maintain the IMS Program Restart Facility options library in a staging library, and copy the options library from the staging library to the production library as scheduled through your change management process. The options data set contains standard load modules, so you can use standard utilities such as TSO XMIT and IEBCOPY to copy the modules from one library to another.

IMS Program Restart Facility data sets

The IMS Program Restart Facility options library contains several load modules that contain the options modules that are used by each IMS job. This library is also referred to as the IRTOPT data set, which is the recommended low-level qualifier. For example, you might name the following IRTOPT data sets:
You can optionally create an IMS Program Restart Facility audit log data set that tracks which options were updated, when they were updated, and who made the update. The name of the audit log data set is specified in the IMS Program Restart Facility global options.

If the data set name is left blank in the global options, audit tracking is not enabled. If used, the audit log data set must be unique for each IRTOPT data set. Following the previous data set name example, you might choose to name audit logs:

- IMS.IRT220.IRTAUDIT
- IMS.DEV1.IRTAUDIT
- IMS.PROD.IRTAUDIT

Another data set that is created during the customization process is the user library (IRTUSRL). The IRTUSRL data set is created to help you create modules and user exits during the customization process.

For example, the IRT#OPT module that specifies the data set name of the options data set is placed in this library during the customization process. When IMS Program Restart Facility is migrated to a live environment, the members of this library are copied to the same place as the IMS Program Restart Facility software (SIRTLOAD) (probably either the IMS RESLIB or a program product library that is used by every IMS job). You can create a version of this library for each environment so that you can create multiple versions of the IRT#OPT module and other exit routines.

You can create additional IMS Program Restart Facility data sets during IMS job execution. The data set names of these data sets, the CTDS and BBDS data sets, are specified in the IMS Program Restart Facility global options. For more information about these data set names, see Chapter 3, “Product options reference,” on page 49.
Configuration summary and checklist

This topic contains a summary of the steps required to configure IMS Program Restart Facility.

1. “1-Detecting conflicting BMP pausing features” on page 21
2. “2-Removing the pausing BMP feature for IMS Online Reorganization Facility” on page 22
3. “3-Removing the pausing BMP feature for IMS Recovery Solution Pack” on page 23
4. “4-Removing outdated usermods” on page 24
5. “5-Allocating the required IMS Program Restart Facility data sets” on page 25
6. “6-Defining the options data set name to IMS Program Restart Facility” on page 26
7. “7-Activating the audit log feature (optional)” on page 27
8. “8-Guidelines for securing IMS Program Restart Facility data sets” on page 28
9. “9-Securing checkpoint ID tracking and batch backout data sets” on page 29
10. “10-Making the ISPF application available to users” on page 33
11. “11-Migration guidelines” on page 34
12. “12-Guidelines for customizing IMS Program Restart Facility options” on page 35
13. “13-Verifying the installation” on page 36
14. “14-Guidelines for customizing modules and exits (optional)” on page 41
15. “15-Enabling IMS Program Restart Facility” on page 42
16. “16-Copying load modules (optional)” on page 44
17. “17-Installing the bypass logging usermod (optional)” on page 46
1-Detecting conflicting BMP pausing features

Other IMS Tools products contain BMP pausing features that conflict with IMS Program Restart Facility, so you must remove them before you enable IMS Program Restart Facility. You can detect conflicting BMP pausing features that are installed in your environment before you follow the tasks to remove them.

About this task

In addition to IMS Program Restart Facility, two other IMS Tools products provide features for pausing BMPs: IMS Online Reorganization Facility for z/OS and IMS Recovery Solution Pack for z/OS.

The BMP pausing features that are provided by these products conflict with IMS Program Restart Facility. If these features are installed in your environment, you must remove them before you enable IMS Program Restart Facility and then use only IMS Program Restart Facility to pause your BMPs.

These steps provide multiple methods to detect conflicting BMP pausing features that might be installed in your environment. After you determine whether you have the IMS Online Reorganization Facility or IMS Recovery Solution Pack BMP pausing features installed, you can remove them.

Procedure

1. In your IMS RESLIB, browse the DFSRRC00 member for module names with the following product-specific references:
   - **HRF...** If module names with this prefix are present, the IMS Online Reorganization Facility BMP pausing feature is installed.
   - **IRO...** If module names with this prefix are present, the IMS Recovery Solution Pack BMP pausing feature is installed.

2. Browse your BMP JCL for the EXEC statement `PGM=IRORRC00`.
   - If this statement is present, the IMS Recovery Solution Pack BMP pausing feature is installed.

3. Browse your BMP JCL to determine if you have any of the following load libraries in your STEPLIB concatenation above the IMS RESLIB:
   - **SHRFLOAD**
     - If this load library is present, the IMS Online Reorganization Facility BMP pausing feature is installed.
   - **SFRXLOAD**
     - If this load library is present, the IMS Recovery Solution Pack BMP pausing feature is installed.
2-Removing the pausing BMP feature for IMS Online Reorganization Facility

IMS Online Reorganization Facility contains a BMP pausing feature that conflicts with IMS Program Restart Facility. If this feature is installed, you must remove it before activating IMS Program Restart Facility.

**About this task**

Remove the IMS Online Reorganization Facility BMP pausing feature by doing one of the following steps, depending on how the BMP pausing feature was installed. To learn about the methods for installing the BMP pausing feature in IMS Online Reorganization Facility, see the *IMS Online Reorganization Facility User’s Guide*.

**Procedure**

- If the BMP pausing feature was installed by applying the SMP/E USERMOD SHRFSAMP(HRFSP1), which applies the USERMOD for DFSRRC00 into IMS RESLIB, restore this usermod.
  
  After you successfully restore DFSRRC00 with the IMS version from your ADFSLOAD, all modules with HRF... references will be removed from the DFSRRC00 load module.

- If the BMP pausing feature was installed by using SHRFSAMP(HRFSP9), which involves linking DFSRRC99 into your IMS RESLIB and then modifying the BMP JCL so that the EXEC statements point to the DFSRRC99 module and so that the STEPLIB concatenations include the IMS Online Reorganization Facility load library, do these steps:
  1. Remove the DFSRRC99 module from your IMS RESLIB.
  2. In the modified BMP JCL, change DFSRRC99 to DFSRRC00 on the EXEC statements.
  3. In the modified BMP JCL, remove the IMS Online Reorganization Facility load library from the STEPLIB concatenation.

- If the BMP pausing feature was installed by using SHRFSAMP(HRFBMP) to link DFSRRC99 into your IMS RESLIB, do these steps:
  1. Remove the DFSRRC99 and DFSRRC00 modules from your IMS RESLIB.
  2. Replace the DFSRRC00 module in your IMS RESLIB with the version from your ADFSLOAD.

- If the BMP pausing feature was installed by modifying the BMP JCL so that the EXEC statements point to the HRFRRRC00 module and so that the STEPLIB concatenations include the IMS Online Reorganization Facility load library, do these steps:
  1. In the modified BMP JCL, change HRFRRRC00 to DFSRRC00 on the EXEC statement.
  2. In the modified BMP JCL, remove the IMS Online Reorganization Facility load library from the STEPLIB concatenation.
3-Removing the pausing BMP feature for IMS Recovery Solution Pack

IMS Recovery Solution Pack for z/OS contains a BMP pausing feature that conflicts with IMS Program Restart Facility. If this feature is installed, you must remove it before activating IMS Program Restart Facility.

About this task

IMS Recovery Solution Pack provides the BMP pauser interface. Remove the BMP pauser interface by doing one of the following steps, depending on how the BMP pauser interface was installed. You can learn about the methods for installing the BMP pauser interface in the IMS Recovery Solution Pack documentation.

Procedure

- If the BMP pauser interface was installed by using member SFRXSAMP(IROBMP1) to relink the IMS region controller module (DFSRRC00), do these steps:
  1. Delete the existing DFSRRC00 member.
  2. Rename DFSRRC99 to DFSRRC00.
- If the BMP pauser interface was installed by using member SFRXSAMP(IROBMP2) and by modifying the EXEC statements in the BMP JCL to point to module IRORRC00, do these steps:
  1. In the modified BMP JCL, change the PGM=IRORRC00 EXEC statements to PGM=DFSRRC00.
  2. In the modified BMP JCL, remove the data set in your STEPLIB concatenation that points to the load library that was used as the SYSLMOD in the IROBMP2 install job.
4-Removing outdated usermods

You must remove traces of old product installations to configure IMS Program Restart Facility correctly. This topic discusses the removal of outdated usermods for IMS Program Restart Facility and IMS Batch Backout Manager.

**Procedure**

To remove outdated IMS Program Restart Facility and IMS Batch Backout Manager usermods:

1. Remove outdated IMS Program Restart Facility usermods.
   
   If you have IMS Program Restart Facility for OS/390 V2.1 installed, you must remove any of the following usermods that you applied to your IMS target zone to allow the new version of usermods to be installed.
   
   You can use the SMP command RESTORE to remove a usermod. IMS Program Restart Facility usermods that must be removed include a 3-digit IMS release identifier. These usermods apply to the IMS target zone, not the IMS Program Restart Facility target zone.
   
   The usermods that must be removed are:
   
   - MRTxxxA
   - MRTxxxB
   - MRTxxxC
   
   The xxx in the previous usermod names is the release identifier.
   
   The release identifier is one of the following numbers:
   
   - 121 for IMS V12.1
   - 131 for IMS V13.1
   - 141 for IMS V14.1
   
   For example, for an IMS V14.1 environment, you would restore any of the following usermods that you applied in your IMS V14.1 target zone: MRT141A, MRT141B, or MRT141C.

2. Remove outdated IMS Batch Backout Manager usermods.
   
   If you previously used IMS Batch Backout Manager for z/OS, you must restore any of the following usermods you installed in your IMS target zone:
   
   - MBBxxxA
   - MBBxxxR
   
   The xxx in the previous usermod names is the release identifier, the same as the release identifier in the previous list. For example, for an IMS V14.1 environment, you would restore any of the following usermods that you applied in your IMS V14.1 target zone: MBB141A or MBB141R.

3. Remove outdated IMS Program Restart Facility and IMSBatch Backout Manager modules from RESLIB.
   
   In addition, remove any IRT or BCM modules in your IMS RESLIB that were placed there for IMS Program Restart Facility for OS/390 V2.1 (IRT modules) or IMS Batch Backout Manager for z/OS (BCM modules).
Allocate the options data set and the user library for IMS Program Restart Facility.

**About this task**

The sample job contains the required JCL that can be used to perform this task.

**Tip:** You can update the allocation information for these data sets. For example, you can specify a VOLSER or you can specify SMS storage or management classes.

**Procedure**

To allocate the required IMS Program Restart Facility data sets:

1. Edit member IRTALREQ in the SIRTSAMP data set.
   
   You must update the following two SET statements after the JOB statement with the appropriate data set names for your environment:

   ```
   SET IRTOPT=IMS.IRT220.IRTOPT  <-- IRTOPT DSNAME
   SET IRTUSRL=IMS.IRT220.IRTUSRL  <-- LIBRARY UPDATED
   ```
   
   - The first statement defines the data set name to be used for the IRTOPT data set.
   - The second statement defines the data set name for the user library.

2. Run the job to create these two data sets.
6-Defining the options data set name to IMS Program Restart Facility

IMS Program Restart Facility must know the options data set name that you allocated in the prior step. This step creates a load library member that contains the options data set name.

Procedure

To define the options data set name to IMS Program Restart Facility:

1. Edit member IRT#OPT in the SIRTSAMP data set. You must update the two SET statements after the job statement with the appropriate data set names for your environment.

   The following statements in the JCL that must be updated:

   ```plaintext
   SET IRTOPT=IMS.IRT220.IRTOPT   <--- IRTOPT DNAME
   SET IRTUSRL=IMS.IRT220.IRTUSRL  <--- LIBRARY UPDATED
   ```

   • The first statement defines the data set name to be used for the IRTOPT data set.
   • The second statement defines the data set name for the user library.

   These data sets are the same data sets that were created in the prior procedure, “5-Allocating the required IMS Program Restart Facility data sets” on page 25.

2. Run the IRT#OPT job to create the IRT#OPT dynamic allocation module.
7-Activating the audit log feature (optional)

You can track when options are updated by activating the IMS Program Restart Facility audit log feature. The log tracks which option was changed, who changed the option, and when.

About this task

This feature is optional, and must be activated by entering the audit log data set name in the IMS Program Restart Facility global options.

Procedure

To activate the audit log feature:
1. Edit the job in member IRTALOG of the SIRTSAMP data set.
   Update the data set name that is specified just below the job card.
   The following statement must be updated:
   SET IRTAUDIT=IMS.IRT220.IRTAUDIT
2. Submit the IRTALOG job, which allocates the IMS Program Restart Facility audit log data set.
3. Use the IMS Program Restart Facility ISPF dialog to update the global options.
   Enter the data set name that you specified on JCL statement in the audit log data set name field, and save the options.
   All updates after the options are saved are tracked in the audit log.
8-Guidelines for securing IMS Program Restart Facility data sets

You should secure all data sets created as part of the installation and customization of the product. The following guidelines can help you to define security profiles for the various IMS Program Restart Facility data sets.

Various users and tasks require access to some of the IMS Program Restart Facility data sets:

**SMP/E data sets**

The installer of these data sets must have ALTER access to these data sets. The SIRLOAD data set should be copied to the IMS RESLIB (or some other data set that is included in the STEPLIB of every IMS batch job), so that no other jobs require access to this data set.

READ access to the SIRTSAMP data set might be useful for some other users, so that they can access some of the sample jobs.

**IRTOPT**

The IRTOPT data set is read by every IMS batch job that runs. This data set should have a universal READ access. The ability to update IMS Program Restart Facility global and job options is controlled by which users have UPDATE access to this data set.

You should provide update access to the IRTOPT data set to any users who will update the IMS Program Restart Facility options.

**IRTUSRL**

The IRTUSRL data set is used only during the installation verification procedure (IVP), and as a staging library that is copied into the same library where SIRLOAD is copied.

Only the users who install IMS Program Restart Facility and run the IVP require access to this data set, unless you also want to have other users update some of the user exits and modules, such as the checkpoint ID table, that might exist in this data set.

**IRTAUDIT**

Update access to the IRTAUDIT data set must be given to all users with update access to the IRTOPT data set.

Related tasks:

“9-Securing checkpoint ID tracking and batch backout data sets” on page 29
9-Securing checkpoint ID tracking and batch backout data sets

Within your security product, you must grant access to and create profiles for any data sets that are related to checkpoint tracking and batch backout data sets.

Before you begin

If you already have IMS Program Restart Facility installed, you already have security profiles that cover the checkpoint tracking data sets, so you should complete security profiles for batch backout data sets only.

If you already have IMS Batch Backout Manager for z/OS installed, you already have security profiles in place for the batch backout data sets, so you should complete security profiles for checkpoint tracking data sets only.

If you never installed IMS Program Restart Facility for OS/390 or IMS Batch Backout Manager for z/OS, you should create security profiles for checkpoint tracking and batch backout data sets. Securing the checkpoint ID and backout tracking data sets is easier if you use a dedicated, new high-level qualifier for all data sets.

For example, you could create a new high-level qualifier of IMSXRST, and specify CTDSHLQ=IMSXRST and BBDSHLQ=IMSXRST. Then, you could create a generic profile of ‘IMSXRST.*’, which would cover the CTA, CTB, CTX, LOG, and BKO data set types.

You could also give these data sets a universal access of ALTER, which would allow any user ID to create and delete the data sets.

Ensure that you followed the naming conventions for checkpoint ID tracking data sets before you create profiles for them. For more information, see “Checkpoint tracking data set naming conventions” on page 30.

Procedure

To secure checkpoint ID tracking and batch backout tracking data sets:

Create generic profiles for all CTDS and BBDS data sets.

For information about access requirements for these data sets, see “Authorization requirements for IMS Program Restart Facility data sets” on page 32.

Tip: A generic profile is useful when you are getting started with IMS Program Restart Facility. Later, you might be able to refine security to the job name level.
Checkpoint tracking data set naming conventions

Checkpoint tracking data sets (CTDSs), batch backout data sets (BBDSs) and a few related data sets are created and deleted by each IMS batch job that runs. The data set names that are allocated by IMS jobs depend on the parameters that you specify in the IMS Program Restart Facility options.

Checkpoint tracking data sets (and a few related data sets) have a naming convention that is based on the CTDSHLQ and CTDSNAM options in the IMS Program Restart Facility global options. In general, the CTDS data set names that are created use the following format:

- `CTDSHLQ.jobname.imsgroup.psbnname.pgmname.CTA`
- `CTDSHLQ.jobname.imsgroup.psbnname.pgmname.CTB`
- `CTDSHLQ.jobname.imsgroup.psbnname.pgmname.CTX`
- `CTDSHLQ.jobname.imsgroup.psbnname.pgmname.LOG`

The variables in these data set names have the following definitions:

**CTDSHLQ**
- The high-level qualifier value that is specified for the CTDSHLQ option in the IMS Program Restart Facility global options. The maximum length for the CTDSHLQ is 8 characters unless you specify CTDSNAM=NOPGM or NOPSB, which is not recommended.

**jobname**
- The name of the IMS batch job.

**imsgroup**
- The IMSID that is specified in the JCL of the IMS batch job. If no IMSID is specified, the default JCL that is specified by the default IMSID value in the IMS RESLIB is used. If there is an override by an IMS group specification, that value is used. If the IMSID is a member of an IMSGROUP, IMS Program Restart Facility uses the 4-character IMSGROUP name instead of the IMSID.

**psbnname**
- The PSB name that is specified in the JCL of the IMS batch job.

**pgmname**
- The application program name that is specified in the JCL of the IMS batch job (typically in the MBR= JCL symbolic parameter). If this parameter is not specified in the JCL of the job, the PSB name is used as the program name.

The CTDSNAM global option can be specified as BOTH, NOPGM, or NOPSB. The previous example data set names assume that CTDSNAM=BOTH. If CTDSNAM=NOPGM or CTDSNAM=NOPSB is specified, the `psbnname` or `pgmname` qualifier in the data set name is removed.

**Recommendation**: Specify CTDSNAM=BOTH when defining the global options. CTDSNAM=BOTH allows a more specific data set naming convention. IMS Program Restart Facility looks for these data set names during batch job initialization to determine whether a restart is required. The more specific the data set name, the less chance that an incorrect job step is restarted by IMS Program Restart Facility.

To assist in this goal, when you specify a CTDSHLQ value of less than 9 characters in length, CTDSNAM=BOTH is forced, resulting in the inclusion of both the PSB and the program name in the CTDS data set name. Refer to the global options references for CTDSNAM and CTDSHLQ in "Global options reference" on page 55.
The previous data set names are used by IMS Program Restart Facility during job execution:

- The CTA and CTB data sets are used alternately to hold the most recent checkpoint information and data.
- The LOG data set is used when a restart is required, and is used to hold the checkpoint information and data that is used by IMS during restart.
- The CTX data set is used when a user enters the IMS Program Restart Facility ISPF dialog and selects option 1 (Job Administration) to update restart checkpoint information (FORCE or LAST commands) or uses the EDIT line command to specify any other IMS Program Restart Facility option overrides.

One other data set, the batch backout data set, can be used by IMS Program Restart Facility. The batch backout data set (BBDS) is used to track backout status for an IMS DLI or DBB batch job. This data set name has a slightly different format, to maintain compatibility with IMS Batch Backout Manager for z/OS. The data set name that is used for the batch backout data set is formatted as follows:

BBDSHLQ.jobname.imsid.psbname.BKO

The variables in these data set names have the following definitions:

**BBDSHLQ**
- The value that is specified for the BBDSHLQ option in the IMS Program Restart Facility global options. If IMS Batch Backout Manager Version 1.2 or earlier is not installed, specify the same value for this option as was specified for the CTDSHLQ option.

**jobname**
- The name of the IMS batch job.

**imsid**
- The IMSID that is specified in the JCL of the IMS batch job or the default IMSID value in the IMS RESLIB.

**psbname**
- The PSB name that is specified in the JCL of the IMS batch job.
Authorization requirements for IMS Program Restart Facility data sets

There are specific access requirements for the various data sets in IMS Program Restart Facility.

The access requirements for IMS Program Restart Facility data sets depend on the type of data set.

**CTA and CTB data sets**

These data sets are allocated, updated, and deleted by each IMS batch job. All IMS batch jobs require ALTER access to these data sets.

**CTX**

The CTX data set is allocated by a IMS Program Restart Facility ISPF user when they update job restart options by using the Job Administration menu.

The data set is deleted by the associated IMS batch job after restart processing is successful, so all IMS batch jobs and TSO users with job administration responsibility require ALTER access to this data set.

**LOG**

The LOG data set is allocated and deleted by any IMS batch job that undergoes restart processing, so all IMS batch jobs require ALTER access to this data set.

**BKO**

The low-level qualifier for the BBDS data set is .BKO.

Every DLI and DBB batch job requires ALTER access to this data set unless Batch Backout functionality has been disabled for the job.
To use the IMS Program Restart Facility ISPF application, you can either have users type in a command to execute the REXX EXEC provided in the SIRTEXEC library, or you can provide an option on some existing ISPF menu that allows users to initiate the ISPF application without having to type in the EXEC command.

**Procedure**

To start the ISPF application:

Issue the EXEC `prf-hlq.SIRTEXEC(IRTXISPF)` command, where `prf-hlq` is the high-level qualifier that is used for the IMS Program Restart Facility SMP target libraries (specifically, the SIRTEXEC, SIRTMENU, SIRTPENU, and SIRLOAD libraries).

You can also add the EXEC command to an existing ISPF menu to create an easier way for users to initiate a IMS Program Restart Facility ISPF session.
11-Migration guidelines

This topic provides guidelines for migrating from a prior release of IMS Program Restart Facility or IMS Batch Backout Manager.

When you migrate to IMS Program Restart Facility V2.2, you must remove prior versions of both IMS Program Restart Facility and IMS Batch Backout Manager. In addition, you can complete conversion tasks to upgrade your existing options information to the new IMS Program Restart Facility V2.2 options format.

The IRTINCL conversion utility reads your current inclusion options data sets for IMS Program Restart Facility for OS/390 V2.1, IMS Batch Backout Manager for z/OS, or both products, and creates global and job options entries in the new IRTOPT data set. This utility removes the need for you to manually convert your options from the previous inclusion options format to the new IRTOPT format by using the IMS Program Restart Facility ISPF dialog.

There is a sample job in the SIRTSAMP data set in member IRTINCL that can be used to convert your old inclusion options data sets to IRTOPT data.

For more information about the IRTINCL utility, see “Converting options to IMS Program Restart Facility V2.2 format” on page 122.
12-Guidelines for customizing IMS Program Restart Facility options

You must customize your IMS Program Restart Facility options before you run the installation verification procedures or use IMS Program Restart Facility.

If you are a current user of either IMS Program Restart Facility for OS/390 V2.1 or IMS Batch Backout Manager for z/OS, you can use the IRTINCL conversion utility to convert your inclusion options to the new IRTOPT format options. Several new options are introduced in this release of IMS Program Restart Facility, which you can review and update as appropriate.

For details about using the conversion utility to populate the IRTOPT data set with your existing options, see “Converting options to IMS Program Restart Facility V2.2 format” on page 122.

If you are a new user of IMS Program Restart Facility, you can use the ISPF dialog to create and maintain your options. Default values are supplied for all the options when you create a new options module. You must review all the options and update them as necessary. At a minimum, you should review all the global options, as these must be valid for your environment before the IVP jobs can run properly.

**Important**: The CTDSHLQ, CTDSNAM, and BBDSHLQ parameters cannot be changed after you begin running jobs. Changing these values when jobs are running might cause data corruption and lengthy recovery outages.

Chapter 3, “Product options reference,” on page 49 describes the IMS Program Restart Facility options environment and how to specify default options and how to override options for specific jobs. You can review how options can be overridden when you set your default values for some of the options.

Determining appropriate values for all the global options makes customizing IMS Program Restart Facility easier, as there might be fewer job override entries required to customize options for specific jobs.
13-Verifying the installation

Run the installation verification program (IVP) to verify that IMS Program Restart Facility functions properly with your configuration.

About this task

Sample JCL to set up the IVP is in the SIRTSAMP data set. The IVP uses the DI21PART database that is distributed with IMS as part of the sample application. To learn how to allocate and initialize this database, see IMS Installation.

Procedure

1. Add a PSB to your IMS SYSGEN by completing the following steps. The sample BMP job requires that an IMS BMP PSB be added to your IMS SYSGEN.
   a. Follow your local procedures to add the following statement to your IMS SYSGEN source:
      ```
      APPLCTN PSB=IRTIVPS1,PGM=IRTIVPS1
      ```
   b. Run an IMS SYSGEN.

2. Do a PSBGEN by completing these steps with SIRTSAMP library member IRTIVPSB:
   a. Customize the sample job by updating the data set names for the IMS MACLIB and PSBLIB.
      Update these data set names to a valid IMS MACLIB data set name, and to the PSBLIB data set you want to use to hold the PSB for the IVP jobs. These data set names are specified in the following JCL statements in the beginning of the job:
      ```
      SET DFSMAC=IMS.SDFSMAC
      SET PSBLIB=IMS.PSBLIB
      ```
   b. Submit job IRTIVPSB to generate the PSB.

3. Do a DBDGEN by completing these steps with SIRTSAMP library member IRTIVDBD:
   a. Customize the sample job by updating the data set names for the IMS MACLIB and DBDLIB. Update these data set names to a valid IMS MACLIB data set name, and to the DBDLIB data set you want to use to hold the DBD for the IVP jobs. These data set names are specified in the following JCL statements in the beginning of the job:
      ```
      SET DFSMAC=IMS.SDFSMAC
      SET DBDLIB=IMS.DBDLIB
      ```
   b. Submit job IRTIVDBD to generate the DBD.

4. Do an ACBGEN by completing these steps with SIRTSAMP library member IRTIVACB:
   a. Customize the sample job by updating the data set names for the IMS RESLIB, PSBLIB, DBDLIB, and ACBLIB. Update these data set names to reflect your environment. These data set names are specified in the following JCL statements in the beginning of the job:
      ```
      SET DFSRESL=IMS.SDFSRESL
      SET PSBLIB=IMS.PSBLIB
      SET DBDLIB=IMS.DBDLIB
      SET ACBLIB=IMS.ACBLIB
      ```
   b. Run the IRTIVACB job to generate the ACBLIB members.

5. Implement the new ACBLIB in the online system.
Use your local procedures to implement the updated ACBLIB members in your IMS control region. You can use IMS online change to do this while IMS is up and running.

6. Allocate the data sets that are required for the IVP.
   a. Customize the IRTIVINI sample job in the SIRTSAMP library member. The only update should be the job card.
   b. Run the job to allocate the required data sets. The JCL in the job assumes that the TSO high-level qualifier matches the user ID of the person who submits the IVP jobs. This job must be run for each TSO user that submits IVP jobs.

7. Run the IVP DL/I batch job.
   Sample JCL to run an IMS DL/I batch job is included in member IRTIVDLI of the SIRTSAMP library.
   Since IRTIVDLI is a DL/I batch job that uses the sample PART database (DI21PART), this database cannot be online unless you run IRLM for data sharing. You can issue the /DBR command on the DI21PART database to make the database available to this IVP job.
   a. Customize the IRTIVDLI sample job by specifying several data set names. These data set names are in the beginning of the job in the following JCL SET statements:

   ```
   SET IRTUSRL=IMS.IRTUSRL
   SET IRTLOAD=IMS.SIRTLOAD
   SET MDALIB=IMS.MDALIB
   SET PSBLIB=IMS.PSBLIB
   SET DBDLIB=IMS.DBDLIB
   SET DFSRESL=IMS.SDFSRESL
   ```

   The data set name variables have the following definitions:

   **IRTUSRL**
   The data set name of the IRTUSRL library that is allocated in the IMS Program Restart Facility installation process.

   **IRTLOAD**
   The data set name of the SIRTLOAD data set.

   **MDALIB**
   The data set name that contains the dynamic allocation modules for the DI21PART database.

   **PSBLIB**
   The PSBLIB where the PSB that was generated during the IVP installation process was created.

   **DBDLIB**
   The DBDLIB where the DBD that was generated during the IVP installation process was created.

   **DFSRESL**
   The IMS RESLIB data set name.

   Optionally, you can also use the following keyword parameters in the //1IVPSYSIN DD statement to update the behavior of the sample job:

   **SETRC**
   Sets the return code issued by the application. Specify the value as a 1 - 4 digit number between 0 and 4095.
**GBCNT=**
Sets the number of times that the sample program should read through the DI21PART database. Specify the value as a 1 - 4 digit number between 1 and 9999.

**ABENDCNT=**
Sets the number of checkpoints taken before the application program abends with a U3619 abend code. Specify this value as a 1 - 4 digit number. Specifying a value of 0 means that no abend will occur.

**Important: Changing the value that is specified for the ABENDCNT parameter after an abend does not affect the job restart. The job completes its processing of the DI21PART database without any further U3619 abends, unless you specify FABXRST=YES as an IMS Program Restart Facility option.**

b. Submit the IRTIVDLI sample job twice.
   On the first execution of the job, the job completes three checkpoints and abend with a U3619 abend code.
   On the second execution of the job, the job successfully restarts from the third checkpoint (look for the DFS0540I XRST IN PROGRESS message) and completes processing the DI21PART database. The job completes with a 0 condition code.

8. Run the IVP BMP batch job.
   The sample JCL to run an IMS BMP batch job is included in the SIRTSAMP data set in member IRTIVBMP.
   The IRTIVBMP job uses the sample PART database. Since this is a BMP batch job, the DI21PART database must be available to the online IMS system that this BMP uses. Ensure that the database is started before you run this job.

   a. Customize the IRTIVBMP sample job. You must specify several variables in the beginning of the job in the following JCL SET statements:

   ```
   SET HLQ=&SYSUID
   SET IRTUSRL=IMS.IRTUSRL
   SET IRTLOAD=IMS.SIRTLOAD
   SET PSBLIB=IMS.PSBLIB
   SET DBDLIB=IMS.DBDLIB
   SET DFSRESL=IMS.SDFSRESL
   SET AGN=IVP
   ```

   The data set name variables have the following definitions:

   **HLQ**
   The HLQ used for the GSAM database, which you can leave as &SYSUID if you ran job IRTIVINI.

   **IRTUSRL**
   The data set name of the IRTUSRL library that is allocated in the IMS Program Restart Facility installation process.

   **IRTLOAD**
   The data set name of the SIRTLOAD data set.

   **PSBLIB**
   The PSBLIB where the PSB generated in the IVP installation process was created.

   **DBDLIB**
   The DBDLIB where the DBD generated in the IVP installation process was created.
DFSRESL
The IMS RESLIB data set name.

AGN
A security AGN name, if one is required for your installation. If a security AGN name is not required, give it no value (SET AGN=).

Optionally, you can also use the following keyword parameters in the //IVPSYSIN DD statement to update the behavior of the sample job:

SETRC=
Sets the return code issued by the application. Specify the value as a 1 - 4 digit number between 0 and 4095.

GBCNT=
Sets the number of times that the sample program should read through the DI21PART database. Specify the value as a 1 - 4 digit number between 1 and 9999.

ABENDCNT=
Sets the number of checkpoints taken before the application program abends with a U3619 abend code. Specify this value as a 1 - 4 digit number. Specifying a value of 0 means that no abend will occur.

Important: Changing the value that is specified for the ABENDCNT parameter after an abend does not affect the job restart. The job completes its processing of the DI21PART database without any further U3619 abends, unless you specify FABXRST=YES as an IMS Program Restart Facility option.

b. Submit the IRTIVVMP sample job twice.
On the first execution of the job, the job completes three checkpoints and abend with a U3619 abend code.
On the second execution of the job, the job successfully restarts from the third checkpoint (look for the DFS0540I XRST IN PROGRESS message) and completes processing the DI21PART database. The job completes with a 0 condition code.

9. Run the IVP DL/I batch backout job.
The sample JCL to run an IVP DL/I batch backout job is included in the SIRTSAMP data set in member IRTIVBBO.
If you expect to use the automated batch backout feature of IMS Program Restart Facility, you can run this job to validate that feature.
Since the IVP DL/I batch backout job is a DL/I batch job that uses the sample PART database (DI21PART), this database cannot be online unless you run IRLM for data sharing. You can issue the /DBR command on the DI21PART database to make the database available to this IVP job.

a. Customize the IVP DL/I batch backout job.
Several data set names must be customized to run the IVP DLI sample job. These data set names are in the beginning of the job in the following JCL SET statements:

// SET IRTUSRL=IMS.IRTUSRL
// SET IRTLOAD=IMS.SIRTLOAD
// SET MDALIB=IMS.MDALIB
// SET PSBLIB=IMS.PSBLIB
// SET DBDLIB=IMS.DBDLIB
// SET DFSRESL=IMS.SDFSRESL
The descriptions of these parameters are the same as those parameters that are documented in the previous steps.

b. Run the IVP DL/I batch backout job.

When you run this job, it abends with a U3619 abend. Following the abend, IMS Program Restart Facility closes the log and runs a batch backout. IMS Program Restart Facility issues the following message in the SYSLOG of the job at the end of the first IMS task:

```
DFS036A BATCH BACKOUT IS REQUIRED FOR jobname
```

Next, IMS Program Restart Facility reviews the status of the task, and determines that a backout is required. It closes the log and issues a batch backout by attaching another IMS task to run the IMS batch backout utility (DFSBBO00). When the backout completes, the following message appears in the SYSLOG for the job:

```
DFS395I BACKOUT COMPLETE FOR PSB IRTIVPS1
```
14-Guidelines for customizing modules and exits (optional)

There are a few modules and user exits that you can use to customize how IMS Program Restart Facility works. This topic provides guidelines for customizing IMS Program Restart Facility modules and exits. All of these features are optional.

Checkpoint ID table

You can use the checkpoint ID table to define IDs that can be specified in the CHKPTID value of the batch job, and have IMS Program Restart Facility options overridden based on values you specify in the checkpoint ID table.

For more details on the checkpoint ID table and how to use it, see “Overriding IMS Extended Restart processing” on page 117.

Initialization user exit

You can use the IMS Program Restart Facility initialization user exit, IRTUXIN0, to determine whether IMS Program Restart Facility should stay active when a job is running. This exit can determine from the execution environment whether IMS Program Restart Facility should be active.

For more details on the IMS Program Restart Facility initialization exit and how to use it, see “Determining IMS Program Restart Facility activation during job runs” on page 118.

Checkpoint ID verification exit

You can use the IMS Program Restart Facility checkpoint ID verification exit, IRTUX001, to verify that a valid checkpoint ID is supplied for the restart procedure.

For more details on the IMS Program Restart Facility checkpoint ID verification exit and how to use it, see “Verifying that a valid checkpoint ID is supplied for restart” on page 120.
Before IMS Program Restart Facility can operate, you must install a usermod into your IMS target zone. The IVP jobs bypass this requirement by using EXEC PGM=IRTRRC00 instead of PGM=DFSRRC00.

Before you begin

If you have IMS Online Reorganization Facility for z/OS or IMS Recovery Solution Pack for z/OS installed, remove the features for pausing BMPs that are provided by those products. Also, if you have old usermods for IMS Program Restart Facility for OS/390 V2.1 or IMS Batch Backout Manager for z/OS installed, these usermods must be removed. See steps [1] to [4 on page 43] of this customization procedure for details.

About this task

To enable IMS Program Restart Facility, you must receive and apply an SMP/E usermod to your IMS target zone.

The name of the usermod varies, depending on which release of IMS you are applying the usermod to. The usermod that must be applied is IRTxxxA. The xxx in the usermod name is an IMS release identifier. You can use the following table to determine the identifier for your release of IMS:

<table>
<thead>
<tr>
<th>IMS release</th>
<th>Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS 12</td>
<td>121</td>
</tr>
<tr>
<td>IMS 13</td>
<td>131</td>
</tr>
<tr>
<td>IMS 14</td>
<td>141</td>
</tr>
<tr>
<td>IMS 15</td>
<td>151</td>
</tr>
</tbody>
</table>

There are sample jobs to receive and apply the usermod.

Important:
- Apply the sample usermod only to the appropriate IMS version-specific target zones, not the target zone for IMS Program Restart Facility.
- If you apply any maintenance to DFSRRC00, you must reapply the usermod after the maintenance is applied.
- Do not accept any of the usermods into your IMS distribution zone. You will not be able to restore these usermods if IMS or IMS Program Restart Facility maintenance is required for module DFSRRC00.

Procedure

To enable IMS Program Restart Facility:

1. Determine the usermod name that you must apply to IMS.
   - See the previous table to determine the appropriate xxx value in usermod name IRTxxxA.

2. Edit the sample RECEIVE JCL that can be found in the SIRTSAMP library member IRTSMPER.
   - The following DD statements must be updated:
The SMPCSI DD must be updated to reflect your IMS SMP/E Global CSI data set name. The SMPPTFIN DD must be updated to reflect the data set name of the SIRTDATA data set name, and the member name must be updated to the usermod name that you determined in step 1 (for example, IRT121A for IMS V12.1).

3. Run sample job IRTSMPER and receive the usermod.

4. Edit the sample APPLY JCL in the SIRTSAMP library member IRTSMPEA.
   You must update the SMPCSI DD to refer to your IMS SMP/E Global CSI data set name.
   In addition, the usermod name in the APPLY statement must be updated to the usermod name that you determined and received in the previous steps of this procedure.

5. Run sample job IRTSMPEA to apply the usermod.

Related tasks:
   “2-Removing the pausing BMP feature for IMS Online Reorganization Facility” on page 22
   “3-Removing the pausing BMP feature for IMS Recovery Solution Pack” on page 23
16-Copying load modules (optional)

Once IMS Program Restart Facility is enabled, any job that runs PGM=DFSRRRC00 must have the IMS Program Restart Facility load modules available in the STEPLIB of the job. If IMS Program Restart Facility modules are not in the STEPLIB of the job, IMS Program Restart Facility abends with a S806-04 code because module IRTUPX00 was not found.

About this task

This task is optional. If you prefer to modify the JCL for your batch jobs, you do not need to do this task to configure IMS Program Restart Facility.

If you have a program library that is used in every IMS job, you can copy the SIRTLOAD and IRTUSRL libraries to that library.

If you do not have a common licensed program library, you can copy the SIRTLOAD and IRTUSRL libraries to the IMS RESLIB.

If you prefer to use SMP/E to copy the load modules from SIRTLOAD to SDFSRESL, you can use a sample usermod to install the modules in SIRTLOAD to the SDFSRESL library. You must copy modules from the IRTUSRL library into the RESLIB. The contents of the IRTUSRL library can vary depending on whether you use a checkpoint ID table or user exits, so no sample usermod is supplied to populate these modules in SDFSRESL.

Important:
- Only apply the sample usermods to the appropriate IMS version-specific target zones, not the target zone for IMS Program Restart Facility.
- If any maintenance is applied to the IMS Program Restart Facility target zone, you must reapply the usermod into your IMS target zone.
- Do not accept any of the usermods into your IMS DLIB zone.
  You will not be able to restore these usermods after maintenance is applied to IMS or IMS Program Restart Facility.

Restriction: If IMS Program Restart Facility was installed into the same SMP/E target zone as your IMS software, you cannot use the usermod to copy IMS Program Restart Facility load modules into your IMS RESLIB.

Procedure

To use SMP/E to install IMS Program Restart Facility modules into SDFSRESL:

1. Determine the usermod name that you must apply to IMS.
   Refer to the following table to determine the $xxx$ value in usermod IRT$xxx$B.
   Note that IRT$xxx$B is the $B$ usermod, not the $A$ usermod that was applied in a previous procedure.
   You can use the following table to determine the identifier for your release of IMS:

<table>
<thead>
<tr>
<th>IMS release</th>
<th>Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS 12</td>
<td>121</td>
</tr>
<tr>
<td>IMS 13</td>
<td>131</td>
</tr>
</tbody>
</table>

Table 2. IMS release identifiers
Table 2. IMS release identifiers (continued)

<table>
<thead>
<tr>
<th>IMS release</th>
<th>Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS 14</td>
<td>141</td>
</tr>
<tr>
<td>IMS 15</td>
<td>151</td>
</tr>
</tbody>
</table>

2. Edit the sample RECEIVE JCL that can be found in the SIRTSAMP library member IRTSMPER.
   The following DD statements must be updated:
   
   SMPCSI DD DISP=SHR, DSN=IMS.SMPE.GLOBAL.CSI
   SMPPTFIN DD DISP=SHR, DSN=IRT220.SIRTDATA(IRT###B)

   The SMPCSI DD must be updated to reflect your IMS SMP/E Global CSI data set name, the SMPPTFIN DD must be updated to reflect the data set name of the SIRTDATA data set name, and the member name must be updated to the usermod name that you determined in the first step of this procedure (for example, IRT121B for IMS V12.1).

3. Run sample job IRTSMPER and receive the usermod.

4. Edit the sample APPLY JCL in the SIRTSAMP library member IRTSMPEA.
   You must update the SMPCSI DD to refer to your IMS SMP/E Global CSI data set name.
   In addition, the usermod name in the APPLY statement must be updated to the usermod name that you determined in the previous steps of the procedure.

5. Run sample job IRTSMPEA to apply the usermod.

6. Copy the IRT###OPT member and any other customized modules from IRTUSRL to SDFSRESL.
17-Installing the bypass logging usermod (optional)

If you intend to use bypass logging for any IMS batch jobs of type DLI or DBB, you must install the bypass logging usermod to the IMS target zone.

Before you begin

This task is optional. You should install this usermod only if you intend to use bypass logging.

About this task

Bypass logging is a feature that requires planning and verification before being used. Bypass logging allows you to run a DLI or DBB batch job (that does not use IRLM) to update databases without the overhead of creating an IMS log. IMS logging can be a significant portion of the processing time that is required by such a job, but if there is no log created by a batch job, the databases that are updated by the job cannot be recovered by using the log.

To use bypass logging, you must image copy any databases that are updated by a bypass logging job, both before the job runs and after the job completes successfully. If the job abends, you must restore the database to the image copy taken before the job execution, as batch backout is not possible without a log.

The overhead of two image copies of each database that is updated by a batch job will, in many cases, exceed any benefit to be gained by bypassing logging during the execution of the batch job.

Important:

- Only apply the usermod to the appropriate IMS target zone, not the target zone for IMS Program Restart Facility.
- When you apply any IMS maintenance, you must restore the bypass logging usermod before you apply IMS maintenance, and then reapply the usermod after IMS maintenance is applied.
- Do not accept any of the usermods into your IMS DLIB zone.

Procedure

To apply the bypass logging usermod:

1. Determine the usermod name that you must apply to IMS.
   Use the following table to determine the xxx value in usermod name IRTxxxC.
   Note that this is the C usermod, not the A or B usermods that were applied in previous procedures.
   You can use the following table to determine the identifier for your release of IMS:

<table>
<thead>
<tr>
<th>IMS release</th>
<th>Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS 12</td>
<td>121</td>
</tr>
<tr>
<td>IMS 13</td>
<td>131</td>
</tr>
<tr>
<td>IMS 14</td>
<td>141</td>
</tr>
<tr>
<td>IMS 15</td>
<td>151</td>
</tr>
</tbody>
</table>

   Table 3. IMS release identifiers
2. Edit the sample RECEIVE JCL that can be found in the SIRTSAMP library member IRTSMPER.
   The following DD statements must be updated.
   
   SMPCSI DD DISP=SHR, DSN=IMS.SMPE.GLOBAL.CSI
   SMPPTFIN DD DISP=SHR, DSN=IRT220.SIRTDATA(IRT###C)

   The SMPCSI DD must be updated to reflect your IMS SMP/E Global CSI data set name, the SMPPTFIN DD must be updated to reflect the data set name of the SIRTDATA data set name, and the member name must be updated to the usermod name you determined in the first step of this procedure (for example, IRT121B for IMS 12.1). Remember to change the suffix of the usermod member to C.

3. Run sample job IRTSMPER and receive the usermod.

4. Edit the sample APPLY JCL that can be found in the SIRTSAMP library member IRTSMPEA.
   You must update the SMPCSI DD to refer to your IMS SMP/E Global CSI data set name.
   In addition, the usermod name in the APPLY statement must be updated to the usermod name that you determined in the first step of the procedure.

5. Run sample job IRTSMPEA and receive the usermod.
Chapter 3. Product options reference

IMS Program Restart Facility has many product options to help you control the behavior of your IMS batch jobs. There are also several methods you can use to specify options for a specific job.

Topics:

- “Differences between IMS Program Restart Facility V2.1 and V2.2 options” on page 50
- “Introduction to specifying product options” on page 52
- “Global options reference” on page 55
- “General options reference” on page 59
- “Bypass checkpoint options reference” on page 64
- “Application return code and testing options reference” on page 67
- “IMS PROC override options reference” on page 69
- “IMS batch backout options reference” on page 72
- “IMS DLI and DBB batch log options reference” on page 75
- “Symbolic parameters for log data set names” on page 79
- “IMS groups” on page 81
- “Abend retry tables” on page 82
- “Exclusion DD name table” on page 83
Differences between IMS Program Restart Facility V2.1 and V2.2 options

All IMS Program Restart Facility V2.2 options are now entered in the IMS Program Restart Facility ISPF dialog. The new ISPF dialog provides verification of your option entries, online help for each option, and an optional Audit Log that can be used to track changes to options.

The following options are new or changed in V2.2:

- In IMS Program Restart Facility V2.1, IMS Program Restart Facility was not activated unless a JOB level option (a JOB, PGM, PSB, or IJS statement) matched the job that was being run.

  This is no longer true in IMS Program Restart Facility V2.2. The EXCLUDE option controls whether a job has IMS Program Restart Facility V2.2 active. If the global options specify EXCLUDE=NO, by default, all jobs activate IMS Program Restart Facility unless the global options value is overridden by a specification of EXCLUDE=YES

- Abend retry options have changed in IMS Program Restart Facility V2.2. You can now define multiple abend retry tables and specify the following options:

  **ABRETRY**
  
  Specifies whether abend retry is active for a specific job.

  **ABTABLE**
  
  Specifies the name of the abend retry table that is used for a job. This option allows you to control which abend retry options are used for any job.

  The ABRCC statement in IMS Program Restart Facility V2.1 is no longer available. Instead of using ABRCC statements, you set abend retry tables by using the IMS Program Restart Facility ISPF dialog. The new ABTABLE option defines the abend retry options that will be used for a job.

  - IMSGROUP definitions have changed, in that they can be specified only in the IMS Program Restart Facility ISPF dialog.

    You can no longer specify IMSGROUP definitions in job options or in IRT$CNTL DD or CTX data set input to a job.

    - Some IMS Program Restart Facility V2.2 options can no longer be specified as JOB option overrides or in \IRT$CNTL DD statement overrides.

      These options include the batch backout data set high-level qualifier and allocation options, checkpoint tracking data set high-level qualifier and allocation options, and the TEMPUNIT option.

  The following options are changed in V2.2:

  - The SHOWOPTS option now has a PRINT option, which dynamically allocates a SYSOUT file to the job, and writes more extensive IMS Program Restart Facility messages to this output file.

    The SHOWOPTS=PRINT specification is recommended so that you can review a full set of the IMS Program Restart Facility options in use for a job, as well as the expanded informational messages that are issued by IMS Program Restart Facility.

    - A new APARM option in V2.2 of IMS Program Restart Facility replaces the APARM32 option in V2.1 and uses a different format for specifying values.

      Values specified for the APARM32 parameter in V2.1 should now be placed in the APARM parameter for V2.2.
The new APARM specification now requires that you enclose the parameter string in single quotes. This allows IMS Program Restart Facility to pass the correct length parameter string to the application program.

When converting from V2.1 to V2.2 of IMS Program Restart Facility, the IRTINCL utility takes the V2.1 options file and generates a V2.2 IRTOPT data set. Error messages will identify where any formatting differences occur and manual correction will be necessary.

There are also a number of new options in IMS Program Restart Facility V2.2, or which were added recently to IMS Program Restart Facility V2.1. These options include:

- AUDITLOG, a global option.
- General options, including ABTABLE, CHKPINT, DEBUG, IRT#CPID, and SYSOUT.
- FABXRST, an application testing option.
- IMS PROC override options, including AGN, CPUTIME, GSGNAME, OPT, PARDLI, PREINIT, PRLD, SSM, STIMER, and TMINAME.

The following IMS Program Restart Facility V2.1 options have been replaced or are no longer used:

- The ABRCC option has been replaced by the abend retry tables and the ABTABLE option.
- The IMSGROUP option has been replaced by the IMSGROUP table.
- The REATTACH option is no longer used and is ignored.

In IMS Program Restart Facility V2.1, the Checkpoint ID Table module IRT#CPID values take precedence only over values in the Inclusion Options data set. For example, if AUTOXRST=YES is specified in the IRT$CNTL DD, and AUTOXRST=NO is specified in the IRT#CPID module, AUTOXRST=YES is used.

However, in IMS Program Restart Facility V2.2, a Checkpoint ID Table module takes precedence over all options specified elsewhere. For example, it takes precedence over options specified in the IRT$CNTL DD of the job.
Introduction to specifying product options

IMS Program Restart Facility options are normally specified through the IMS Program Restart Facility ISPF dialog in the global options or job override options. However, they can also be entered in either the IRT$CNTL DD or the CTX data set using the format of *option=value*

Global options are the default options that are used for all IMS jobs. You must enter a value for all options, although some options allow you to specify a blank value.

Job override options provide the capability to specify overrides for an IMS job step. When defining a job options entry, you must define the selection criteria for the options you will specify. Selection criteria consists of the following job characteristics:

- IMSID
- JOBNAME
- PROCSTEP
- STEPNAME
- PROGRAM
- PSBNAME

You can specify all or some of these values to define which IMS job steps use the overrides that are defined in the job entry. For example, you could define a job options entry by only specifying a value for the PSBNAME characteristic: `PSBNAME=DFSSAM01`. With this job options entry, the options that are specified in the entry would apply to any job that runs an IMS job step that uses PSB=DFSSAM01.

You can define many job options entries for your environment. The job option entries are in order of which job options have priority. When IMS Program Restart Facility reads the job options entries at each IMS batch job initialization, it reviews them in the order they are saved to check whether the specifications match the characteristics of the IMS batch job. When a match to the current job is found, IMS Program Restart Facility only uses the job options entry that was a match. All job option entries after the first match are ignored.
**IRT$CNTL DD statement**

In addition to the global and job option values that are used for a specific job, each job can have a IRT$CNTL DD statement that overrides the global and job option entries. The IRT$CNTL DD statement can use a DD * type of SYSIN stream, or it can refer to a data set that contains option specifications.

In addition to the IRT$CNTL, IMS Program Restart Facility allows for the use of a BCM$CNTL DD statement for downward compatibility with IMS Batch Backout Manager for z/OS. The BCM$CNTL DD statement is read before the IRT$CNTL DD, so that options specified in IRT$CNTL override any duplicate options that are specified in the BCM$CNTL DD.

For example, to test a job by forcing an abend after 12 checkpoints, add the following statements to the job stream:

```plaintext
IRT$CNTL DD *
CHKPCNT=12
CHKPCMP=4000
```

These options, which you specify in a DD statement instead of a job options entry, cause the job to abend after 12 checkpoints with a U4000 abend code. You can specify any of the available product options using this syntax, except those that are designated as global only type options.
Editing the CTX data set with the ISPF dialog

You can also use the IMS Program Restart Facility ISPF dialog to enter option overrides for a job that is pending restart. The Job Administration option of the dialog allows you to not only specify options such as LAST, FORCE, and NOXRST, but you can also use the ISPF Edit panel to enter any other option values you want to specify for the job.

To specify options in the CTX data set, you use the same syntax as used for the options in the IRT$CNTL DD statement that is documented in “IRTS$CNTL DD statement” on page 53. You can specify any of the available product options by using the ISPF Edit panel, except those options that are designated as “global only” type options.

The option overrides for a job that is pending restart are stored in the CTX data set. After the successful restart of the job, the CTX data set is deleted, so the options are only used for a single execution of the job.
Global options reference

This section contains a reference for the IMS Program Restart Facility global options.

**Important:** Global only options cannot be overridden by entering them in job override options, an IRT$CNTL DD statement, or in the CTX data set. They can be specified only in the global options in the IMS Program Restart Facility ISPF dialog.

**AUDITLOG**

The fully qualified data set name of the optional IMS Program Restart Facility audit log data set. Do not enclose the name in quotation marks. If you do not use the IMS Program Restart Facility audit log feature, you can leave this value blank.

For instructions on how to create an audit log data set, refer to "7-Activating the audit log feature (optional)" on page 27.

No default value.

**BBDSDACL**

The SMS data class that is used when allocating the BBDS. This option is optional. BBDS data sets are created only for DLI or DBB IMS batch jobs, unless Batch Backout functionality has been disabled for the job.

No default value.

**BBDSHLQ**

A 1- to 22-character data set prefix that is used when allocating the BBDS data set. BBDS data sets are created only for DLI or DBB IMS batch jobs, unless Batch Backout functionality has been disabled for the job.

The BBDSHLQ value is used to generate a data set name for the BBDS in the following format:

```
BBDSHLQ.jobname.imsid.psbname.BKO
```

If you are enabling automatic batch backout processing for the first time, use the same value for BBDSHLQ that you use for CTDSHLQ so that all IMS Program Restart Facility data sets have the same high-level qualifier and are easier to identify.

Default value is IMS.BACKOUT.

**BBDSMGCL**

The SMS management class that is used when allocating the BBDS. This option is optional. BBDS data sets are created only for DLI or DBB IMS batch jobs, unless Batch Backout functionality has been disabled for the job.

No default value.

**BBDSSTCL**

The SMS storage class that is used when allocating the BBDS. This option is optional. BBDS data sets are created only for DLI or DBB IMS batch jobs, unless Batch Backout functionality has been disabled for the job.

No default value.

**BBDSUNIT**
The UNIT name that is used when allocating the BBDS data set. This option is optional. The BBDS data set must reside on DASD. Default value is SYSDA.

**BBDSVOL**

The volume serial of the DASD unit that is used when allocating the BBDS data set. This option is optional. The BBDS data set must reside on DASD. No default value.

**CTSDACL**

The SMS data class that is used when allocating the CTDS data sets. This option is optional. No default value.

**CTDSHLQ**

Specify a 1- to 8-character high-level qualifier (HLQ) for the CTDS data sets. The CTDSHLQ option, along with the CTDSNAM option, determine the data set names for CTDS data sets.

When the CTDSNAM option is set to NOPSB or NOPGM, the CTDSHLQ qualifier can be 1 to 17 characters in length. However, specifying a CTDSHLQ value greater than 8 characters is not recommended because it increases the chances that different jobs might attempt to share the same CTDS files. If multiple jobs attempt to use the same CTDS files, one or both jobs could restart incorrectly and require complex recovery.

To help avoid this situation, when you specify a CTDSHLQ value of less than 9 characters, CTDSNAM=BOTH is forced, resulting in the inclusion of both the PSB and the program name in the CTDS data set name.

For the data set names that are generated for the CTDS data sets, refer to the CTDSNAM option reference.

Default value is IMS.XRA.

**CTDSMGCL**

The SMS management class that is used when allocating the CTDS data sets. This option is optional. No default value.

**CTDSNAM=NOPGM | NOPSB | BOTH**

The CTDSNAM option can have the following values:

**NOPGM**

Excludes the program name from the CTDS data set name. When this value is specified, the CTDS HLQ that is specified with the CTDSHLQ option can be 1 - 17 characters in length.

When you specify CTDSNAM=NOPGM, the data set names that are generated for the CTDS data sets use the following format:

- `ctdshlq.jobname.imsid.psbsname.CTA`
- `ctdshlq.jobname.imsid.psbsname.CTB`
- `ctdshlq.jobname.imsid.psbsname.CTX`
- `ctdshlq.jobname.imsid.psbsname.LOG`

**NOPSB**
Excludes the PSB name from the CTDS data set name. When this value is specified, the CTDS HLQ that is specified with the CTDSHLQ option can be 1 - 17 characters in length.

When you specify CTDSNAM=NOPSB, the data set names that are generated for the CTDS data sets use the following format:
- ctdshlq.jobname.imsid.pgmname.CTA
- ctdshlq.jobname.imsid.pgmname.CTB
- ctdshlq.jobname.imsid.pgmname.CTX
- ctdshlq.jobname.imsid.pgmname.LOG

**BOTH**

Includes both the PSB and program name in the CTDS data set name.

When you specify CTDSNAM=BOTH, the data set names that are generated for the CTDS data sets use the following format:
- ctdshlq.jobname.imsid.psbname.pgmname.CTA
- ctdshlq.jobname.imsid.psbname.pgmname.CTB
- ctdshlq.jobname.imsid.psbname.pgmname.CTX
- ctdshlq.jobname.imsid.psbname.pgmname.LOG

Default value is BOTH.

**Recommendation:** Set the CTDSNAM value to CTDSNAM=BOTH. If you exclude the program name from the CTDS name, the data sets are not uniquely identified if the same PSB name is used by other programs in a job. If you exclude the PSB name from the CTDS name, the data sets are not uniquely identified if the same program can use different PSB names.

If multiple jobs attempt to use the same CTDS files, one or both jobs could restart incorrectly and require complex recovery. To help avoid this situation, when you specify a CTDSHLQ value of less than 9 characters, CTDSNAM=BOTH is forced, resulting in the inclusion of both the PSB and the program name in the CTDS data set name.

**CTDSSTCL**

The SMS storage class that is used when allocating the CTDS data sets. This option is optional.

No default value.

**CTDSTRKS=nnnn**

The number of tracks that are required for the primary allocation for each CTDS. The secondary allocation is equal to the primary allocation. Specify the nnnn value as a 1-to-4-digit integer.

The CTDS data sets hold a single set of IMS checkpoint records and a few additional IMS Program Restart Facility control records. The size that is required is dependent on the amount of data that is checkpointed by each application program. For programs that checkpoint a small amount of data, a value of 1 is sufficient.

Default value is 1.

**CTDSUNIT**

The UNIT name that is used when allocating the CTDS data sets. This option is optional. The CTDS data set must reside on DASD.

Default value is SYSDA.
CTDSVOL=volser

The volume serial number of the DASD unit that is used when allocating the CTDS data sets. This option is optional. The CTDS data sets must reside on DASD.

No default value.

TEMPUNIT

The TEMUNIT option is used to specify the unit name of any device to which IMS Program Restart Facility allocates temporary data sets during the course of a job. The value of this option is valid only for the duration of the job.

The value specified for the device can be up to 8 characters in length.

Default value is SYSDA.
General options reference

This section contains a reference for the IMS Program Restart Facility general options.

**ABRETRY=NO | YES**

This option identifies whether abend retry is active for a job.

Abend retry processing is invoked when an abend occurs during IMS application program processing. If an abend occurs, and an abend retry table entry requests that IMS Program Restart Facility attempt to retry the abend, IMS Program Restart Facility automatically invokes IMS again and has IMS restart the application program from the last checkpoint. This is done without any intervention, so it is not necessary to resubmit the job.

Abends that are considered for retry must be coded in an abend retry table. The name of the table must be specified in the ABTABLE option. If the table named in the ABTABLE option does not exist, ABRETRY=NO is used as the default setting.

**ABTABLE**

The name of a valid IMS Program Restart Facility abend retry table as defined in the IMS Program Restart Facility options data set. The table name is used when ABRETRY=YES is in specified, and when an abend occurs in IMS application program processing. The entries in the abend retry table determine whether IMS Program Restart Facility tries to automatically restart the application program without having to resubmit the job.

No default value.

**AUTOWTOR=NO | YES**

Specify one of the following values for this option:

- **NO**: IMS Program Restart Facility does not produce a WTOR if the job is an extended restart job.
- **YES**: IMS Program Restart Facility issues a WTOR for message IRT014A if an automatic extended restart can be performed and no extended restart checkpoint ID is specified in the JCL for the restarted job. Message IRT014A prompts the operator to reply with either YES, NO, or ABEND with the following outcomes for each response:
  - **YES**: Extended restart is performed.
  - **NO**: No extended restart is performed.
  - **ABEND**: The job terminates with a U3627 abend.

Default value is NO.

**AUTOXRST=YES | NO | FORCE | LAST**

Specify one of the following values to indicate the type of restart that is done:

- **YES**: IMS Program Restart Facility automatically supplies the IMS Extended Restart checkpoint ID if the job previously abended.
- **NO**: IMS Program Restart Facility does not provide automatic IMS restart services.
Extended Restart processing. No Extended Restart checkpoint ID is automatically supplied for the job if the previous job abended.

**FORCE**

The current indoubt checkpoint ID is committed for the next restart of the abended job. Do not make this specification in the global or job override options. You can use this specification to temporarily override the restart JCL as part of the IRT$CNTL DD * JCL statement or in the CTX data set.

**LAST**
The last verified checkpoint ID is used for the next restart of the abended job. Do not specify this value in the global or job override options. You can use this value to temporarily override the restart JCL as part of the IRT$CNTL DD * JCL statement or in the CTX data set.

Default value is YES.

**CHKPINT=hh:mm:ss**
The CHKPINT specification is optional. When specified, IMS Program Restart Facility monitors checkpoint activity and sends message IRT090I to the JESLOG of the job when the length of time since the prior checkpoint exceeds the interval that is specified in the option.

Programs that do extensive internal processing have messages sent to the JESLOG of the job that are not relevant. For example, if a program reads a large amount of data, sorts the data, and does additional processing, checkpoint interval warning messages are probably produced while the internal sort processing is occurring.

No default value.

**DEBUG**
The DEBUG option provides additional debug information when you have a re-creatable problem that requires additional documentation. This product option is provided for backward compatibility with V2.1 of IMS Program Restart Facility.

The option is ignored if specified in V2.2 of IMS Program Restart Facility.

Default value is 00000000.

**EXCLUDE=YES | NO**
Specify one of the following values for this option:

- **YES** No IMS Program Restart Facility processing occurs during the execution of the job, other than the process of reading option specifications.
- **NO** IMS Program Restart Facility processing occurs during the execution of the job.

Default value is NO.

**FORCEID=YES | NO**
Specify one of the following values for this option:

- **YES** IMS Program Restart Facility substitutes checkpoint IDs that are generated by IMS Program Restart Facility automatically for those created by the application program.
NO IMS Program Restart Facility retains the checkpoint IDs that are created by the application program.

Checkpoint IDs generated by IMS Program Restart Facility take the form $aaaaaannnn$, where $aaaa$ is the address space ID (ASID) of the job, represented by 4 hexadecimal characters, and $nnnn$ is a 4-digit sequence number between 0001 - 9999, which wraps back to 0000 after 9999.

Default value is NO.

**FSTOP=YES | NO**

Specify one of the following values for this option:

**YES** IMS Program Restart Facility processes operator initiated MVS MODIFY commands. The command is processed by IMS Program Restart Facility only if the application already issued an XRST call.

**NO** IMS Program Restart Facility ignores any operator-issued MODIFY commands for the job that is running.

Default value is NO.

**IGNXIOA=YES | NO**

Specify one of the following values for this option:

**YES** IMS Program Restart Facility ignores data that is provided by the application program in the IOAREA of an XRST call.

**NO** If there are no CTA and CTB data sets for the job, IMS Program Restart Facility obtains the restart checkpoint ID from the information that is specified in the IOAREA of an XRST call, if the area is non-blank. In this scenario, you must include a log file in the job, using the //IMSLOGR DD statement, that contains the checkpoint ID.

**Note:** IGNXIOA is ignored if there are CTA and CTB data sets for the job, or if the checkpoint ID is specified through the PARM field.

Default value is NO.

**IMSLOGR=YES | NO**

Specify one of the following values for this option:

**YES** IMS Program Restart Facility ignores any existing IMSLOGR DD in the JCL of a job, and overrides the IMSLOGR data set with its own LOG data set.

**NO** IMS Program Restart Facility uses any existing IMSLOGR DD in the JCL of the job.

The IMSLOGR=YES specification helps to ensure that IMS reads the correct checkpoint data.

Default value is NO.

**IRT#CPID**

The IRT#CPID specification defines the load module name of the checkpoint ID table to be used. The default name is IRT#CPID. This is the load module name that is created by the process that is described in "Overriding IMS Extended Restart processing" on page 117.
Default value is IRT#CPID.

**RDORETRY=**YES | NO

The RDORETRY option enables IMS Program Restart Facility to restart an abended read-only DLI- or DBB-type batch job that does not perform logging. IMS Program Restart Facility uses the CTDS data sets to restart the job even though there is no IMS log.

**YES**
IMS Program Restart Facility restarts a read-only DLI- or DBB-type batch job that does not perform logging. If the job abends with one of the abend codes that are specified in the active abend retry table, IMS Program Restart Facility attempts to automatically retry the job by restarting IMS batch processing even though the job step has not ended.

If you specify RDORETRY=**YES**, you must also specify ABRETRY=**YES**.

**NO**
IMS Program Restart Facility does not restart a read-only DLI- or DBB-type batch job that does not perform logging. If you specify this option, IMS Program Restart Facility also changes the DBRC option to DBRC=N.

The read-only job that is being restarted does not perform logging, so IMS Program Restart Facility does not allocate any log data sets for the IEFRDER and IEFRDER2 DD statements.

**Restriction:** The DFSIDEF0 module, if present, cannot have DBRC=FORCE specified. Also, DBRC=FORCE cannot be specified for the IMSCTRL macro for IMS versions before IMS Version 9.

The IMS DD statement must be present with the named PSB that is present in the specified library, or with one of the libraries that are listed in the concatenation.

Default value is NO.

**REGJBP=**YES | NO

This option determines whether IMS Program Restart Facility support for Java™ applications should be enabled.

**YES**
Use this option to enable IMS Program Restart Facility support for Java applications that run in the IMS JBP-dependent regions and issue extended restart and checkpoint calls.

**NO**
IMS Program Restart Facility support is not be enabled for Java applications that run in the IMS JBP-dependent regions.

Default value is NO.

**SHOWOPTS=**YES | NO | ONLY | PRINT

The SHOWOPTS option determines which IMS Program Restart Facility messages are written for IMS batch jobs, and where they are written.

Specify one of the following values for this option:

**YES**
Summary option information is written to the JESLOG of IMS batch jobs. Some informational messages are suppressed, and remaining informational and status messages are written to the JESLOG of the job.
NO  No option information is written for IMS batch jobs, and limited informational messages providing job status are written to the JESLOG of the job.

ONLY  Option information is written to the JESLOG of the IMS batch job only if the job is not excluded from IMS Program Restart Facility processing. Limited informational and status messages are written to the JESLOG of the batch job.

PRINT  IMS Program Restart Facility dynamically allocates DD name IRTPRINT if it is not present in the job, and writes all option information and status messages to the IRTPRINT output file. This option provides additional information not only about the options in use for a job, but additional status messages during the execution of a job. See the SYSOUT option, which defines the SYSOUT class that should be dynamically allocated for the IRTPRINT file.

Default value is NO.

Recommendation: Specify SHOWOPTS=PRINT, as this option provides additional informational messages during the execution of the job, a full listing of all options in use for the job, and the source of each option. You can use SHOWOPTS=PRINT with no JCL changes by using the SYSOUT option to specify the SYSOUT class that will be used when IRTPRINT is dynamically allocated.

SYSDUMP=x

Specify a one-character SYSOUT class that is used for the IRTPRINT DD (see the SHOWOPTS option).

No default value.

TRACK=YES | NO

The TRACK option specifies whether IMS Program Restart Facility should track checkpoints and provide automatic restart support.

Specify one of the following values for this option:

YES  IMS Program Restart Facility provides checkpoint ID tracking services, which are used to provide automatic restart support.

NO  IMS Program Restart Facility does not provide any checkpoint ID tracking services (no CTDS is allocated). In addition, IMS Program Restart Facility does not provide automatic restart support for the job.

Default value is YES.
Bypass checkpoint options reference

This section contains a reference for the IMS Program Restart Facility bypass checkpoint options.

Bypass checkpoint processing reduces the number of checkpoints that are taken by IMS on request of the application program. The other options that are documented in this section control IMS Program Restart Facility processing associated with bypass checkpoint processing.

**BCDINTVL=hhmmsssth**

Use to bypass extended checkpoint calls made by the application according to the time interval specified, where:

- **hh** Hours
- **mm** Minutes
- **ss** Seconds
- **t** Tenths of a second
- **h** Hundredths of a second

You can specify this option to reduce the number of checkpoints that are taken by an application that might be taking checkpoints too frequently.

Default value is 00010000.

**Attention:** Use this option carefully. Some applications might need to take frequent checkpoints.

**BCERRXT=nnnn**

Use this option to pass the value *nnnn* to the IMS application program when any checkpoint call is bypassed. The *nnnn* value will be returned in the AIBERRXT field, in the application interface block (AIB) for the application after any checkpoint call is bypassed according to the delay interval that is specified in the BCDINTVL option.

Specify *nnnn* as a 1-4-digit integer.

No default value.

**Attention:** Application coding changes might be required to take advantage of this option because the status code is not IBM standard. Such changes could create a dependency on IMS Program Restart Facility that could prevent you from uninstalling it later.

**BCREASN=nnnn**

Use this option to pass the value *nnnn* to the IMS application program when any checkpoint call is bypassed. The *nnnn* value will be returned in the AIBCREASN field, in the application interface block (AIB) for the application after any checkpoint call is bypassed according to the delay interval that is specified in the BCDINTVL option.

Specify *nnnn* as a 1-4-digit integer.

No default value.
Attention: Application coding changes might be required to take advantage of this option because the status code is not IBM standard. Such changes could create a dependency on IMS Program Restart Facility that could prevent you from uninstalling it later.

**BCRETRN=nnnn**

Use this option to pass the value $nnnn$ to the IMS application program when any checkpoint call is bypassed. The $nnnn$ value will be returned in the AIBRETRN field, in the application interface block (AIB) for the application after any checkpoint call is bypassed according to the delay interval that is specified in the BCDINTVL option.

Specify $nnnn$ as a 1- 4-digit integer.

No default value.

Attention: Application coding changes might be required to take advantage of this option because the status code is not IBM standard. Such changes could create a dependency on IMS Program Restart Facility that could prevent you from uninstalling it later.

**BCSTATUS=axx**

Use to return the specified status code to the application after any checkpoint call is bypassed according to the delay interval that is specified in the BCDINTVL option.

No default value.

Attention: Application coding changes might be required to take advantage of this option because the status code is not IBM standard. Such changes could create a dependency on IMS Program Restart Facility that could prevent you from uninstalling it later.

**BCSTCLST=status_codes**

Use to make IMS Program Restart Facility honor a checkpoint call that is issued by the application if any of the special DL/I status codes that are listed for this option are present in any database PCBs after the previous checkpoint call.

The following example shows the minimum specifications that are recommended for installations that use the bypass checkpoint processing feature:

`BCSTCLST=GBFGFW`

This example specifies that the next checkpoint call that is attempted after receiving a database GB status code will be allowed.

A maximum of ten 2-character status codes can be specified for this option.

No default value.

**BYPCHKP=YES | NO**

Specify one of the following values for this option:

- **NO** Bypass checkpoint processing is not used for the job. The default value is NO.
- **YES** Bypass checkpoint processing is enabled for the job.
If an application program uses IMS Fast Path databases, bypass checkpoint processing is automatically disabled because Fast Path applications are required to take checkpoints under certain processing circumstances.
Application return code and testing options reference

This section contains a reference for the IMS Program Restart Facility application program return code and testing options.

**CHKPCMP=nnnn**

Use to facilitate the testing of the restart logic for an application. Add an IRT$CNTL DD statement to the run JCL, and specify this option and the CHKPCNT option to force an abend after the specified number of checkpoint calls have completed.

Specify the value *nnnn* as a number from 1 - 4095. This integer represents the abend completion code that is used by IMS Program Restart Facility when an abend is forced after the number of checkpoint calls that are specified by the CHKPCNT option are completed.

No default value.

**CHKPCNT=nnn**

Use to facilitate the testing of the restart logic for an application. Add an IRT$CNTL DD statement to the run JCL, and specify this option and the CHKPCMP option to force an abend after the specified number of checkpoint calls have completed.

Specify the value *nnn* as a 1- to 3-digit integer, where *nnn* represents the number of checkpoint calls that must complete before IMS Program Restart Facility forces an abend.

No default value.

**FABXRST=YES | NO**

This option applies when using the CHKPCNT or CHKPCMP option above. The FABXRST option controls whether a restarted job abends after the specified number of checkpoint calls.

Specify one of the following values for this option:

- **YES** When a job is restarted, it abends after the number of checkpoint calls specified for the CHKPCNT option are issued by the application program.
- **NO** When a job is restarted, the CHKPCNT option is ignored, and the job runs to completion without regard to the number of checkpoint calls issued by the application program.

Default value is NO.

**RCABEND=nnnn**

Specify this option to force an application that issues a return code that is equal to or higher than the integer that you specify for *nnnn* to abend. IMS Program Restart Facility will cause the job step to abend with a U3624 (or with the abend code that you specify in UABEND=*nnn*).

Specifying RCABEND=0 disables RCABEND feature processing. In the global or job options, specify blanks for the value to disable processing.

Cleanup of the checkpoint-tracking data sets still occurs unless you made a corresponding RCERROR specification, so if you want the application to perform a restart, you must make an identical specification for the RCERROR option.
Attention: If this option is used for BMPs, the PSB does not need to be started by an operator after an abend.

RCERROR=nnnn

Specify this option to bypass checkpoint-tracking data set cleanup processing for an application that terminates with a return code that is equal to or higher than the integer that you specify for nnnn. The subsequent job restart is considered an IMS Extended Restart, and IMS Program Restart Facility determines which checkpoint should be used for restart.

No default value.

UABEND=nnnn

Use this option to change the user abend code that is issued by IMS Program Restart Facility when an application issues a return code that is greater than the one specified for the RCABEND option. If the UABEND option is coded, the user abend code that is issued changes from a U3624 to the abend code that you specify by using the UABEND option.

The value for nnnn must be a number from 1 - 4095.

Default value is 3624.
IMS PROC override options reference

This section contains a reference for the IMS Program Restart Facility IMS BMP/DBB/DLI PROC override options.

AGN

The AGN option allows you to change the specification of the AGN IMS parameter that is specified in the JCL of the job.

No default value.

APARM

The APARM option allows you to override the specification of the APARM IMS parameter that is specified in the JCL of the job.

To specify the APARM option, enclose a PARM string of 32 or less characters in single quotation marks. For example, if you wanted to code the APARM option in an IRT$CNTL DD, you would use the following syntax:

`APARM='data to be passed to pgm'`

No default value.

CKPTID=NOMSGS | NOMSG540 | NOMSG681 | NOMSG542 | NO681542

The CKPTID option allows you to override the specification of the CKPTID IMS parameter that is specified in the JCL of the job.

In the global or job override options, you can specify one of the following values for the CKPTID option:

NOMSGS

This value has the same effect as coding CKPTID=NOMSGS in the IMSBATCH or DLIBATCH procedures. IMS suppresses the DFS540 and DFS681 messages that are generated after the application completes a successful checkpoint call.

NOMSG540

This value has the same effect as coding CKPTID=NOMSG540 in the IMSBATCH or DLIBATCH procedures. IMS suppresses the DFS540 message that is generated after the application completes a successful checkpoint call.

NOMSG542

This value has the same effect as specifying CKPTID=NOMSG542 in the IMSBATCH or DLIBATCH procedures. IMS suppresses the DFS542 message that is generated after the application completes a successful checkpoint call.

NOMSG681

This value has the same effect as coding CKPTID=NOMSG681 in the IMSBATCH or DLIBATCH procedures. IMS suppresses the message that is generated after the application completes a successful checkpoint call.

NO681542

This value has the same effect as coding CKPTID=NO681542 in the IMSBATCH or DLIBATCH procedures. IMS suppresses DFS681 and DFS542 messages that are generated after the application completes a successful checkpoint call.

Default value is NOMSGS.
CPUTIME

The CPUTIME option allows you to override the specification of the CPUTIME IMS parameter that is specified in the JCL of the job.

No default value.

DBRC

The DBRC option allows you to override the specification of the DBRC IMS parameter that is specified in the JCL of the job.

No default value.

GSGNAME

The GSGNAME option allows you to override the specification of the GSGNAME IMS parameter that is specified in the JCL of the job.

No default value.

IRLM

The IRLM option allows you to override the specification of the IRLM IMS parameter that is specified in the JCL of the job.

No default value.

IRLMNM

The IRLMNM option allows you to override the specification of the IRLMNM IMS parameter that is specified in the JCL of the job.

No default value.

LOCKMAX=nnnnn

The LOCKMAX option allows you to override the specification of the LOCKMAX IMS parameter that is specified in the JCL of the job.

No default value.

OPT

The OPT option allows you to override the specification of the OPT IMS parameter that is specified in the JCL of the job.

No default value.

PARDLI

The PARDLI option allows you to override the specification of the PARDLI IMS parameter that is specified in the JCL of the job.

No default value.

PREINIT

The PREINIT option allows you to override the specification of the PREINIT IMS parameter that is specified in the JCL of the job.

No default value.

PRLD

The PRLD option allows you to override the specification of the PRLD IMS parameter that is specified in the JCL of the job.

No default value.

SSM
The SSM option allows you to override the specification of the SSM IMS parameter that is specified in the JCL of the job.
No default value.

**STIMER**

The STIMER option allows you to override the specification of the STIMER IMS parameter that is specified in the JCL of the job.
No default value.

**TMINAME**

The TMINAME option allows you to override the specification of the TMINAME IMS parameter that is specified in the JCL of the job.
No default value.

For more information about these parameters, refer to *IMS System Definition*. 
IMS batch backout options reference

This section contains a reference for the IMS Program Restart Facility batch backout options.

**AUTOBKO=**YES | NO

Specify one of the following values for this option:

**YES**  
If a job step abends, IMS Program Restart Facility attempts automatic batch backout processing for the selected job at the time of the abend.

If the job ends abnormally due to an error where ESTAE processing is not possible, such as a memory allocation error or a problem that causes your z/OS system to come down, batch backout processing occurs at job restart.

**NO**  
If a job step abends, IMS Program Restart Facility attempts automated batch backout processing for the selected job at the time you restart the job.

At that time, IMS Program Restart Facility drives batch backout processing and causes the job to abend, based on the values of the CMPCBKOK/CMPCBKER options for the job, prior to calling the application.

A subsequent restart of the job causes the job to restart as it normally would, based on your IMS Program Restart Facility job restart options.

**Note:** If you specify AUTOBKO=NO, and your job contains a DD statement that exists in the exclusion DD name table, and the entry in the table for that DD statement specifies YES for the "Disable BBO" value, then batch backout processing is completely bypassed for your job.

Default value is NO.

**BYPLOGR=**YES | NO

Specify BYPLOGR=YES when running in a DBRC=FORCE environment to prevent logging from being performed. Specifying BYPLOGR=YES prevents batch backout processing from occurring.

When using this option, verify that all databases updated by the job step are offline IMS databases. Databases should not be online to any IMS online systems and IRLM should not be in use. See “17-Installing the bypass logging usermod (optional)” on page 46 for more information.

Default value is NO.

**CATDS=**YES | NO

Specify one of the following values for this option:

**YES**  
IMS Program Restart Facility relies on the catalog for all unit and volume serial number information for log data sets that are referenced during automatic batch backout processing.

**NO**  
IMS Program Restart Facility saves unit and volume serial number information in the batch backout data set that is used when allocating log data sets during batch backout processing.

Default value is YES.
CMPCBKOK=nnnn

The nnnn value is a four-digit user abend completion code that is issued under the following circumstances:

- When an application abends and batch backout processing completes successfully, nnnn is used as a common job step abend completion code.
- When no batch backout processing is required.

If nnnn is blank or zero, then the actual abend completion code of the failed application is used instead of the nnnn value.

No default value.

CMPCBKER=nnnn

The nnnn value is a four-digit user abend completion code that is issued when an application abends and batch backout processing does not complete successfully.

If nnnn is blank or zero, then the actual abend completion code of the failed application is used instead of the nnnn value.

Default value is 3630.

COPY1

IMS Program Restart Facility substitutes whatever value is specified for this option when generating a data set name with &COPY1 coded as a symbolic parameter in the data set name mask.

Default value is 1.

COPY2

IMS Program Restart Facility substitutes whatever value is specified for this option when generating a data set name with &COPY2 coded as a symbolic parameter in the data set name mask.

Default value is 2.

FORCELTR=YES | NO

YES IMS Program Restart Facility always performs IMS log termination processing, except in the case where backout processing occurs immediately after an abend and IMS has successfully closed the log.

NO IMS Program Restart Facility only closes the log when required.

Default value is NO.

IEFRDER=DUMMY | DYNALLOC | FORCE | JCL

Specify one of the following values for the dynamic allocation options of the IEFRDER DDNAME:

DUMMY

Any existing IEFRDER DD is deallocated, and IMS Program Restart Facility allocates the IEFRDER as a DD DUMMY.

DYNALLOC

Dynamic allocation of a log data set occurs for DDNAME IEFRDER whenever a valid data set is not coded for this DDNAME. A valid data set is any data set that is not DD DUMMY, DSN=NULLFILE, or is not a temporary data set name.
FORCE
Dynamic allocation of a log data set is required for DDNAME IEFRDER regardless of any value that is specified in the JCL for this DDNAME.

JCL
The JCL specified for the DDNAME should not be altered.

Default value is JCL.

IEFRDER2=DUMMY | DYNALLOC | FORCE | JCL

Specify one of the following values for the dynamic allocation options of the IEFRDER2 DDNAME:

DUMMY
Any existing IEFRDER2 DD is deallocated, and IMS Program Restart Facility allocates the IEFRDER2 as a DD DUMMY.

DYNALLOC
Dynamic allocation of a log data set occurs for DDNAME IEFRDER2 whenever a valid data set is not coded for this DDNAME. A valid data set is any data set that is not DD DUMMY, DSN=NULLFILE, or is not a temporary data set name.

FORCE
Dynamic allocation of a log data set is required for DDNAME IEFRDER2 regardless of any value that is specified in the JCL for this DDNAME.

JCL
The JCL specified for the DDNAME should not be altered.

Default value is JCL.

NOLOGRO=YES | NO

Specify one of the following values for this option:

YES
If the PSB is present in the library concatenation for the //IMS DD statement, IMS Program Restart Facility analyzes the PSB to determine whether it has any update intent for a non-GSAM database. If no databases have an update intent coded in the PSB, IMS Program Restart Facility does not dynamically allocate log data sets and deallocates the log data sets specified in the JCL.

NO
IMS Program Restart Facility uses whatever logging is requested through the JCL, or the IEEFRDER or IEFRDER2 options, without regard to whether the PSB is read-only or not.

Default value is NO.

Attention: Do not select this option if the job must rely on log data sets in order to use IMS Extended Restart. This warning can be ignored if IMS Program Restart Facility AUTOXRST support is available to the job.
IMS DLI and DBB batch log options reference

This section contains a reference for the IMS Program Restart Facility IMS DLI and DBB batch log options.

These DLI and DBB batch log options apply only to DLI and DBB type IMS jobs. These options do not apply to BMP or JBP region types. Also, these options are used only if IEFRDER=/IEFRDER2= are specified as something other than JCL.

There are many IMS logs that can be created for DLI and DBB IMS batch jobs. In addition to the normally created logs, IEFRDER and optionally IEFRDER2, there are additional log close DUP logs (NEWRDER and NEWRDER2) and batch backout logs (BBO Logs 1 and 2) in the event that a batch backout is required. In addition, if bypass logging is requested for a batch job, IMS Program Restart Facility creates a “dummy” log that can be registered in DBRC and marked in error so that DBRC knows that an image copy is required after a database is updated by a job that does not create a log.

In order to make it easier to specify various log allocation characteristics, IMS Program Restart Facility allows you to specify default allocation values that apply to all log types. Then, you can provide overrides for values for each particular log type. For example, you could specify the BLKSIZE, RETPD, and UNIT names in the default values for all logs, since they would most likely not change by the type of log. Then, you could specify the DSN and space parameters for each specific log type, since you might want different data set names and space allocation parameters, depending on the type of log.

In the IMS Program Restart Facility ISPF dialogs, all these log types can be specified, including the default log type. If you wish to override one of these options, there are separate option keywords for each log type.

The various option keywords are shown below, although they are prefixed by xxxx. The value of xxxx refers to the log type. The following log types are valid values for xxxx:

Log types

LOG
Use options with this prefix to specify default values for all other log types. For example, if you wanted to use BLKSIZE=22528 for all logs, you can use LOGBLKSIZE=22528 to have all IMS batch logs use this block size.

LOG1
Use options with this prefix to specify values for the primary log that is used when an application program is run. Options with this prefix affects the IEFRDER DD name.

LOG2
Use options with this prefix to specify values in the primary log that is used when an application program is run. Options with this prefix affect the IEFRDER2 DD name.

LTR1
Use options with this prefix to specify values for the primary log that is created during the log close process. Options with this prefix affect the NEWRDER DD name.
LTR2
Use options with this prefix to specify values for the secondary log, which is created during the log close process. Options with this prefix affect the NEWRDER DD name.

BBO1
Use options with this prefix to specify values for the primary log, which is created during the batch backout process. Options with this prefix affect the IEFRDER DD name that is used during batch backout processing.

BBO2
Use options with this prefix to specify values for the secondary log, which is created during the batch backout process. Options with this prefix affect the IEFRDER DD name that is used during batch backout processing.

BYP
Use options with this prefix to specify values for the primary log that is used when bypass logging is in effect for a job. Bypass logging requires a “dummy” log data set to be registered in DBRC.

Options

xxxxBLKSZ=nnnnn
The block size of the log data set that is allocated during execution of the DLI or DBB application. If specified, nnnnn must be a number between 8 - 32760.

Note: If you specify different block sizes for data set pairs (for instance, LOG/LOG1/LOG2, LTR1/LTR2, BBO1/BBO2), IMS chooses the larger of the two block sizes and uses that block size for both logs.

No default value.

xxxxBUFNO=nnn
The number of buffers for the log data set that is allocated during execution of the DLI or DBB application. If specified, nnn must be a number between 0 - 255.

No default value.

xxxxDCBDS
The name of a cataloged data set that is used as a model DSCB for the log data set that is allocated during execution of the DLI or DBB application.

No default value.

xxxxDSNAM
The data set name mask that is used for the log data set that is dynamically allocated during execution of the DLI or DBB application. See “Symbolic parameters for log data set names” on page 79 for more information on specifying this mask.

No default value.

xxxxEXPDL=yyyyyddd
The seven-digit expiration date for the log data set that is allocated during execution of the DLI or DBB application, where yyyy is the year and ddd is the day of the year.

No default value.
\texttt{xxxEXPDT=yyddd}

The five-digit expiration date for the log data set that is allocated during execution of the DLI or DBB application, where \texttt{yy} is the last 2 digits of the year and \texttt{ddd} is the day of the year.

For any specific log, specify only one of the following options: \texttt{xxxEXPDL}, \texttt{xxxEXPDT}, or \texttt{xxxRETPD}. Each of these options define how long a log data set should be retained.

No default value.

\texttt{xxxLRECL=nnnnn}

The logical record size of the log data set that is allocated during execution of the DLI or DBB application. If specified, the value for this option must be a number between 4 - 32760.

No default value.

\texttt{xxxPRIME=nnnnn}

The number of primary space units (the \texttt{xxxSPACE} option) that are used for the log data set that is allocated during execution of the DLI or DBB application. This value must be a number between 1 - 9999.

Default value is 15.

\texttt{xxxRETPD=nnnn}

The retention period, \texttt{nnnn}, is a value from 0 - 9999 days for the log data set that is allocated during execution of the DLI or DBB application.

For any specific log, specify only one of the following options: \texttt{xxxEXPDL}, \texttt{xxxEXPDT}, or \texttt{xxxRETPD}. Each of these options define how long a log data set should be retained.

No default value.

\texttt{xxxSECND=nnnnn}

The number of secondary space units (the \texttt{xxxSPACE=} option) that are used for the log data set that is allocated during execution of the DLI or DBB application. This value must be a number between 1 - 9999.

Default value is 15.

\texttt{xxxSPACE=TRK | CYL}

The space units that are used for the log data set that is allocated during execution of the DLI or DBB application.

Specify one of the following values for this option:

- **TRK** The number of tracks that should be used during log data set allocation.
- **CYL** The number of cylinders that should be used during log data set allocation.

If you use the \texttt{xxxSPACE} option, you must also specify the \texttt{xxxPRIME} and \texttt{xxxSECND} option to define how many tracks or cylinders should be used in the log data set allocation.

Default value is TRK.

\texttt{xxxUNCNT=nn}

Chapter 3. Product options reference 77
The number of units (tape drives) used for the log data set that is allocated during execution of the DLI or DBB application. If this option is specified, \( nn \) must be a number between 0 - 59.

No default value.

**UNIT**

The UNIT name (for the UNIT option that is specified in JCL) that is used for the log data set that is allocated during execution of the DLI or DBB application.

Default value is SYSDA.

**VLCNT=nnn**

The number of volumes (typically tape volumes) used for the log data set that is allocated during execution of the DLI or DBB application. If this option is specified, \( nnn \) must be a number between 1 - 255.

No default value.
Symbolic parameters for log data set names

When you specify any of the log data set names that will be allocated dynamically by IMS Program Restart Facility, it might be necessary to specify symbolic parameters to ensure a unique data set name that IMS Program Restart Facility will replace when generating a data set name.

The following symbolic parameters can be specified as part of the data set name mask that IMS Program Restart Facility will replace to generate a valid data set name. Characters that are not part of a symbolic parameter are included in the generated data set name.

Symbolic parameters that are available for log data set name masks

&COPY
IMS Program Restart Facility replaces this special symbolic parameter with the current value for either the &COPY1 or &COPY2 symbolic parameters, depending on the DDNAME of the output log data set that is created.

If &COPY is specified as part of the data set name mask, and the DDNAME of the output log data set will be either IEFRDER or NEWRDER, the current setting for symbolic &COPY1 is substituted for the &COPY symbolic parameter. If the DDNAME of the output log data set will be either IEFRDER2 or NEWRDER2, the current setting for symbolic &COPY2 is substituted for the &COPY specification.

&COPY1
IMS Program Restart Facility replaces this special symbolic parameter with the user-specified value for the COPY1 option. The default value for this symbolic parameter is 1.

&COPY2
IMS Program Restart Facility replaces this special symbolic parameter with the user-specified value for the COPY2 option. The default value for this symbolic parameter is 2.

&DATC
IMS Program Restart Facility replaces this special symbolic parameter with the 7-character representation of the GMT current date (the 4-digit year followed by the 3-digit Julian day (YYYYDDD)).

&DATE
IMS Program Restart Facility replaces this special symbolic parameter with the 5-character representation of the GMT current date (the 2-digit year followed by the 3-digit Julian day (YYDDD)).

&JOBNAME
IMS Program Restart Facility replaces this special symbolic parameter with the up to 8-character representation of the job name of the current job.

&PSBNAME
IMS Program Restart Facility replaces this special symbolic parameter with up to an 8-character representation of the PSB name of the current job.

&SYSUID
IMS Program Restart Facility replaces this special symbolic parameter with up to an 8-character representation of the user id that is assigned to the current job.
&TIME

IMS Program Restart Facility this replaces special symbolic parameter with
the 7-character representation of the current time in hhmmss format,
where:

hh  Hours
mm  Minutes
ss  Seconds
 t  Tenths of a second

Examples of using log data set names

Example 1

Assume that the job name is XYZDLI00, and the following options have been
declared:
COPY1=1
COPY2=2
LOGDSNAM=IMS.DLILOG.&JOBNAME.D&DATE.T&TIME.LOG&COPY

• If the DDNAME to be dynamically allocated is IEFRDER, the data set name will
be IMS.DLILOG.XYZDLI00.Dyyddd.Thhmmsst.LOG1.

• If the DDNAME to be dynamically allocated is IEFRDER2, the data set name
will be IMS.DLILOG.XYZDLI00.Dyyddd.Thhmmsst.LOG2.

Example 2

Assume that the job name is XYZDLI00, and the following options have been
declared:
COPY1=IMS.DLILOG
COPY2=OFFSITE.DLILOG
LOGDSNAM=&COPY.&JOBNAME.D&DATE.T&TIME.LOG

• If the DDNAME to be dynamically allocated is IEFRDER, the data set name will
be IMS.DLILOG.XYZDLI00.Dyyddd.Thhmmsst.LOG.

• If the DDNAME to be dynamically allocated is IEFRDER2, the data set name
will be OFFSITE.DLILOG.XYZDLI00.Dyyddd.Thhmmsst.LOG.
IMS groups

IMS groups define groups of IMS control regions where a BMP can be restarted. If you have an environment, similar to an IMSplex, where databases are shared between some number of IMS systems, you can define these IMS systems as an IMS group.

IMS groups allow a BMP to start on an IMS system that might be different from the IMS system ID (IMSID) that is specified in the JCL of a job. This flexibility is available when a BMP job is initially started, or for a BMP that is being restarted.

IMS Groups can only be defined using the IMS Program Restart Facility ISPF dialog. They cannot be specified in job override options, an IRT$CNTL DD, or a CTX data set.

There are two types of option values that are associated with an IMS group definition:

**IMS group name**

The IMS group name defines the name of an IMS group. The first 4 characters of the IMS group name are used in place of the IMSID in CTDS data set names, so the first 4 characters of IMS group names must be unique.

**Recommendation:** Specify an IMS group name as the main IMSID of an IMS Group, or the IMSID followed by PLEX. This ensures uniqueness among the first 4 characters of IMS group names.

**IMSIDs**

You can define between 1 - 64 IMSIDs as members of an IMS group. A single IMSID can be defined in only one IMS group. Do not define the same IMSID as a member of more than one group.

**Important:** Use extreme care when changing IMS group definitions. The first 4 characters of the IMS group name are used in place of the IMSID in CTDS data set names. Since the CTDS data set names are used by IMS Program Restart Facility to determine if a job should be restarted, making a change to an IMS group definition could result in a job that should be restarted being started from the beginning.
Abend retry tables

Abend retry tables provide the capability to automatically recover from transitory abends that occur in a BMP.

Each IMS BMP job determines if abend retry occurs based on the ABRETRY general option. The abend retry feature can be activated by specifying ABRETRY=YES.

The ABTABLE=table name general option specifies the name of the abend retry table that the job should use. If an abend occurs, IMS Program Restart Facility searches the abend retry table for the abend code and reason code for the abend that occurred and invokes abend retry if it finds those codes in the table.

The ABTABLE general option is defined using a job override option, an IRT$CNTL DD, or a CTX data set. However, the table name value (used by ABTABLE) and other parameters that affect abend retry tables can only be defined by using the IMS Program Restart Facility ISPF dialog.

When you create a new abend retry table or edit an existing abend retry table, you use the IMS Program Restart Facility ISPF dialog to set the values of the parameters that define the table name and other characteristics of the abend retry table.

Abend retry table parameters defined using the IMS Program Restart Facility ISPF dialog (option 8 from the main menu) include:

**table name**

The name of the table of abend codes to be retried for any BMPs that use this abend table name. The table name has a maximum length of 8 characters. After it is defined, the table name must be specified as the value for the ABTABLE option.

**ABCDE**

The abend code. The abend code can be any valid system abend code (an "S" followed by three hexadecimal digits) or user abend code (a "U" followed by 4 decimal digits between U0001 and U4095).

**ABRSN**

The reason code that is associated with the abend. The reason code can either be specified as ANY (which matches any reason code) or a specific 8-digit hexadecimal reason code (for example, 000A0201).

**DELAY**

The delay time. The delay time determines how long IMS Program Restart Facility waits before restarting the BMP. The delay time is specified in the form hh:mm:ss, where hh is the number of hours, mm is the number of minutes, and ss is the number of seconds. You should use this parameter to reduce the likelihood that a transitory abend, such as a PI Pool filling or a deadlock condition, reoccurs.

**MAXRETRY**

The maximum number of times that IMS Program Restart Facility should retry this specific abend code. This option is specified as a number between 0 - 32767.

A value of 0 means that IMS Program Restart Facility performs unlimited retries for the specified abend/reason code.
Exclusion DD name table

The exclusion DD name table provides a list of DD Names that, if present in the JCL of a job, disables IMS Program Restart Facility features for that job. The exclusion DD name table replaces the customized load module IRT$IGNR from IMS Program Restart Facility V2.1.

The exclusion DD name table can be defined only in the IMS Program Restart Facility ISPF dialog. The options that are specified in the exclusion DD name table cannot be specified in job override options, an IRT$CNTL DD, or a CTX data set.

The following options must be specified for each entry in the exclusion DD name table:

DDNAME
The DD name that is checked in the JCL of each IMS batch job.

Disable PRF
Specify one of the following values for this option:

YES All IMS Program Restart Facility features are disabled when the associated DD name is present in the JCL of a job.

NO No IMS Program Restart Facility features are disabled when the associated DD name is present in the JCL of a job.

Disable BBO
Specify one of the following values for this option:

YES The AUTOBKO option is disabled for jobs that specify AUTOBKO=NO.

This option has no effect for jobs that specify AUTOBKO=YES.

NO The AUTOBKO option remains enabled, unless DISABLE PRF=YES is specified.

AUTOBKO is automatically disabled when IMS Program Restart Facility features are disabled.

The exclusion DD name table is automatically populated with default Disable PRF and Disable BBO values that are consistent with prior releases of IMS Program Restart Facility and IMS Batch Backout Manager. The default specifications are in the following table:

Table 4. Default DDNAME table

<table>
<thead>
<tr>
<th>DDNAME</th>
<th>Disable PRF values</th>
<th>Disable BBO values</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCM$IGNR</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>IRT$IGNR</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>UPX$EXCL</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>
Chapter 4. Restarting abended IMS batch jobs

You can specify extended restart options to make an abended job restart from the last verified checkpoint or from the beginning of the job. If your restart abends because of an indoubt checkpoint, you can determine the correct checkpoint for restart and then specify the appropriate extended restart option.

These topics provide instructions for restarting abended IMS batch jobs and for resolving restart abends that result from indoubt checkpoints.

Topics:
- “Prerequisites for restarting jobs” on page 86
- “Restarting a job from the last verified checkpoint ID” on page 87
- “Restarting a job from the beginning” on page 88
- “Restarting a job on a different version of IMS” on page 89
- “Preventing indoubt checkpoints” on page 90
- “Resolving restart abends caused by indoubt checkpoints” on page 91
- “Flow chart of resolving a restart abend” on page 93
- “IMS Extended Restart options for abended jobs” on page 94
Prerequisites for restarting jobs

Before restarting abended IMS batch jobs, ensure that checkpoint ID tracking is active and that a batch backout, if needed, is performed.

Checkpoint ID tracking

Before restarting any abended job step, ensure that message IRT001I is displayed on the job log of the abended job. If this message is not displayed, manually determine the correct checkpoint ID and specify it in the CKPTID parameter in the JCL.

DL/I batch backout

If you require a DL/I batch backout, ensure that the backout is done before any restart is attempted. Only the last uncommitted database changes can be backed out. A backout to a previous checkpoint (before the last successful checkpoint) requires manual intervention.

BMP batch backout

Normally batch backout is automatic after a BMP abend and, therefore, not required before a job step restart.
Restarting a job from the last verified checkpoint ID

When you restart an abended IMS batch job, IMS Program Restart Facility can automatically provide the last verified checkpoint ID. This functionality reduces the risk of data corruption that would result from invalid checkpoint IDs that were entered manually.

About this task

The AUTOXRST=YES specification should be the typical value used for automatic restart. With this specification, IMS Program Restart Facility automatically provides the last verified checkpoint ID when the job is resubmitted.

Procedure

If AUTOXRST=YES is specified for the application that is being restarted, no action is required with IMS Program Restart Facility. Resubmit the abended job from the abended job step.
**Restarting a job from the beginning**

You can restart a job from the beginning as opposed to from the last checkpoint.

**Procedure**

1. Access the IMS Program Restart Facility ISPF main menu.
2. To access a list of abended jobs, Select option 1, **Administer abended jobs**.
3. In the ACTION column, enter `NOXRST` next to the name of the job that you want to restart.
4. Restart the job. The NOXRST option affects only this one restart.
Restarting a job on a different version of IMS

After you change your IMS version, you can use IMS Program Restart Facility to restart a batch job that abended under an earlier version of IMS. This feature is supported only for IMS Version 10 (with APAR PK46917/UK27322 from PUT 0707) and above.

If an IMS batch job that is specified for restart processing abends under IMS Version 10 or later, you can use IMS Program Restart Facility to restart that batch job on a later version of IMS.

For example, you can abend a BMP before an IMS migration and use IMS Program Restart Facility to restart the job on the new version of IMS without backing out the job and starting it over from the beginning.

The following restrictions apply:
- The backout of updates to the last checkpoint must have completed successfully before you attempt to restart the job.
- If the abended job uses a feature of IMS that is not available on an earlier version of IMS, you might not be able to restart the job on the earlier IMS version.
  For example, if a job abends under IMS Version 12 and uses GSAM data sets that are greater than 64,000 tracks in length, the job cannot be restarted under IMS Version 10.
  However, if an earlier version of IMS has a compatibility APAR for the function that is provided in the newer version (in this example, PM15152 for IMS Version 10), IMS Program Restart Facility provides support to restart the job under the earlier version of IMS.
- Restrictions for changes to DBDs apply. You cannot change DBDs between the time of the abend and the time the job is restarted.

After changing your IMS version, restart your abended job as described in “Restarting a job from the last verified checkpoint ID” on page 87 or “Restarting a job from the beginning” on page 88.
Preventing indoubt checkpoints

Prevent indoubt checkpoints by using a specific MVS command to interrupt jobs.

Before you begin

To ensure that IMS Program Restart Facility recognizes the correct command for interrupting jobs, specify the following global parameter in the inclusion options data set:

FSTOP=YES

About this task

If a checkpoint call is interrupted before IMS Program Restart Facility can confirm its completion, the checkpoint that is being processed becomes indoubt.

These interruptions can be caused by users that issue STOP REGION commands for IMS BMPs or cancel commands for DL/I batch jobs. Because these commands can cause indoubt checkpoints, interrupt jobs by using the following procedure instead.

Procedure

To prevent indoubt checkpoints, interrupt BMPs and DL/I batch jobs that are supported by IMS Program Restart Facility by issuing this command from an MVS console or EMCS console:

MODIFY jobname,STOP
Resolving restart abends caused by indoubt checkpoints

A restart of an abended IMS batch job abends if the last checkpoint ID that was supplied by IMS Program Restart Facility is indoubt. If such an abend occurs, determine the correct checkpoint ID and restart option for the job.

About this task

Indoubt checkpoints most often occur for BMPs that are active at the time an IMS control region abends or for canceled DL/I batch jobs. The condition is caused when the next checkpoint ID that is requested by the application is not confirmed to IMS Program Restart Facility, presumably because the logging request did not complete.

If a restart abend from an indoubt checkpoint occurs, determine if you must restart the original abended job by using the last indoubt checkpoint or the last verified checkpoint. You can also restart the job from the beginning.

Indoubt checkpoints are flagged by messages IRT010W and IRT017I.

Procedure

If a restart of an abended job abends with a PRF U3625 or an IMS U0102 completion code, review the IMS logs and message DFS682I. With this information, select one of these actions:

- If the restart checkpoint ID that is displayed in message DFS682I matches the checkpoint ID that is displayed in message IRT010W, restart the job by using the last indoubt checkpoint ID:
  1. Access the IMS Program Restart Facility ISPF main menu.
  2. To access a list of abended jobs, Select option 1, **Administer abended jobs**.
  3. In the **ACTION** column, enter **FORCE** next to the name of the job that you want to restart.
  4. Restart the job. The **FORCE** option affects only this one restart.

  **Tip:** You can also specify the **FORCE** option with a temporary JCL override by adding a **IRT$CNTL DD *** statement followed by the **AUTOXRST=FORCE** control statement.

- If the restart checkpoint ID that is displayed in message DFS682I matches the checkpoint ID that is displayed in message IRT017I, restart the job by using the last verified checkpoint ID:
  1. Access the IMS Program Restart Facility ISPF main menu.
  2. To access a list of abended jobs, Select option 1, **Administer abended jobs**.
  3. In the **ACTION** column, enter **LAST** next to the name of the job that you want to restart.
  4. Restart the job. The **LAST** option affects only this one restart.

  **Tip:** You can also specify the **LAST** option with a temporary JCL override by adding a **IRT$CNTL DD *** statement followed by the **AUTOXRST=LAST** control statement.

- If the job must be restarted from the beginning, restart the job by doing these steps:
  1. To start the IMS Program Restart Facility ISPF interface, run **REXX EXEC IRTXISPF**.
2. To access a list of abended jobs, Select option 2, **Administer abended jobs.**
3. In the ACTION column, enter **NOXRST** next to the name of the job that you want to restart.
4. Restart the job. The NOXRST option affects only this one restart.

**Tip:** You can also specify the NOXRST option with a temporary JCL override by adding a IR$CNTL DD * statement followed by the AUTOXRST=NO control statement.
Flow chart of resolving a restart abend

Refer to this diagram to see the process flow of resolving a restart abend.

![Flowchart of resolving a restart abend](image)

*Figure 1. Flowchart of resolving a restart abend*
**IMS Extended Restart options for abended jobs**

You can specify special IMS Extended Restart options for abended jobs in the Active / Abended Jobs List panel.

Use the Primary Option Menu panel to access the Active / Abended Jobs List panel. From here, specify IMS Extended Restart options by entering any one of the following options next to the abended job name:

**DELETE**

Use the DELETE option to delete all data sets for this job that are related to IMS Program Restart Facility. The job starts over and no checkpoint ID is supplied by IMS Program Restart Facility.

If you want to restart the job from the beginning, specify this option.
Ensure that any required database recoveries are performed before you enter this option.
You can abbreviate DELETE as D.

**NOXRST**

Use the NOXRST option to prevent automatic IMS Extended Restart processing for the job the next time that it is submitted. The job starts over completely because no checkpoint ID is automatically supplied by IMS Program Restart Facility.

If you want to restart the job from the beginning, specify this option.
Ensure that any required database recoveries are performed before you enter this option.
You can abbreviate NOXRST as N.

**XRST**

Use the XRST option to cause automatic IMS Extended Restart processing to occur for the job the next time that it is submitted. IMS Program Restart Facility will automatically supply the latest required checkpoint ID for the extended restart.

If you want to resume the job from where it left off, specify this option.
You can abbreviate XRST as X.

**FORCE**

Use the FORCE option to make IMS Program Restart Facility force IMS to accept the indoubt checkpoint ID for extended restart. This processing occurs for the job the next time it is submitted. Use caution when you use this option because it assumes that the indoubt checkpoint has completed. For example, all DASD updates associated with the commit were made.

Do not use this option unless you have manually verified the indoubt checkpoint ID. If you have not committed the indoubt checkpoint ID, you can enter the LAST option instead.

**Attention:** Verify that the checkpoint ID you intend to use is correct before entering the FORCE option. If message DFS682I containing the actual restart checkpoint ID cannot be found, check IMS online logs or IMS batch logs. With this information, determine the correct checkpoint ID to use.

You can abbreviate FORCE as F.

**LAST**

Use the LAST option to make IMS Program Restart Facility provide the LAST verified checkpoint ID for extended restart. This processing will
occur for the job the next time it is submitted. Use this option only if you have verified that the indoubt checkpoint did not complete.

If you are certain that the indoubt checkpoint ID was committed, enter the FORCE option instead.

**Attention:** Verify that the checkpoint ID you intend to use is correct before entering the LAST option. If message DFS682I, which contains the actual restart checkpoint ID, cannot be found, check IMS online logs or IMS batch logs. Use this information to determine the correct checkpoint ID to use.

You can abbreviate LAST as L.

**EDIT** Use the EDIT option to directly edit the special extended restart options data set that is created from this panel. From this panel, you can specify any of the documented IMS Program Restart Facility options.

You can abbreviate EDIT as E.

**SHOWID** Use the SHOWID option to display the extended restart checkpoint ID that is used by IMS Program Restart Facility when the job is restarted.

If (I) is displayed next to the checkpoint ID, the ID is indoubt. If no action is taken, the job abends with U3625 when it is restarted. If (F) is displayed next to the ID, AUTOXRST=FORCE has been specified for this job. If (L) is displayed next to the ID, AUTOXRST=LAST has been specified for this job.

You can abbreviate SHOWID as S.
Chapter 5. Using IMS Program Restart Facility

You can use IMS Program Restart Facility through the ISPF interface, batch utilities, and user exits.

Topics:
- "IMS Program Restart Facility ISPF interface overview" on page 98
- "Starting the ISPF interface" on page 99
- "Viewing product options" on page 100
- "Displaying options for a specific job or job step" on page 101
- "Updating global options" on page 102
- "Specifying job override options" on page 105
- "Viewing the options audit log" on page 108
- "Administering active and abended jobs" on page 109
- "Updating IMS groups" on page 111
- "Updating abend retry tables" on page 112
- "Updating the exclusion DD name table" on page 113
- "Bypassing checkpoint processing" on page 114
- "Forcing dynamic allocation for application logs" on page 116
- "Overriding IMS Extended Restart processing" on page 117
- "Determining IMS Program Restart Facility activation during job runs" on page 118
- "Verifying that a valid checkpoint ID is supplied for restart" on page 120
- "Creating an audit log report" on page 121
- "Converting options to IMS Program Restart Facility V2.2 format" on page 122
- "Listing the contents of the options data set" on page 125
- "Stopping, holding, or restarting BMPs" on page 127
IMS Program Restart Facility ISPF interface overview

You can select options from the IMS Program Restart Facility ISPF main menu to review jobs pending restart and make changes to how jobs are restarted, review, and update your IMS Program Restart Facility options, and review the audit log.

Users who are responsible for running IMS jobs, which may include developers in a development environment and production job schedulers in a production environment, can review jobs that are pending restart and make changes to how jobs are restarted. From the IMS Program Restart Facility ISPF main menu, users can select option 1 Administer Abended/Active Jobs to complete such tasks.

Any users who need to review options or investigate problems that are associated with running IMS batch jobs in development or production environments might find the following three options that are on the IMS Program Restart Facility main menu useful: option 2 Show Options for a Specific Job/Step, option 3 Show PRF Options, and option 4 Show PRF Options Audit Log. These options allow the user to review IMS Program Restart Facility options and the IMS Program Restart Facility Audit Log.

The following options on the IMS Program Restart Facility ISPF main menu are associated with updating IMS Program Restart Facility options, and would typically be used by IMS Program Restart Facility administrators and system programmers who are responsible for product installation: option 5 Update Global Options, option 6 Update Job Override Options, option 7 Update IMS Groups, option 8 Update Abend Retry Tables, and option 9 Update Exclusion DD Name Table.
Starting the ISPF interface

After you complete the required configuration procedures, start the IMS Program Restart Facility ISPF interface.

Procedure

To start the IMS Program Restart Facility ISPF interface:

1. Log on to TSO.
2. If there is an ISPF option that provides access to the IMS Program Restart Facility ISPF main menu, choose that option.
   If a menu option is not in place, you must issue a TSO command from ISPF option 6. Enter the following command, where hlq is the high-level qualifier for your installation:
   EXEC 'hlq.SIRTEXEC(IRTXISPF)' 'hlq'
   The IMS Program Restart Facility ISPF main menu is displayed.
3. Type the fully qualified data set name of the IMS Program Restart Facility options data set that you want to use in the Data Set Name field at the bottom of the main menu. Do not type quotations around the data set name. Press Enter.

What to do next

You can begin using the IMS Program Restart Facility ISPF interface by typing an option number, for example 1 or 3, in the option field and pressing Enter.
Viewing product options

You can view a report that displays all the IMS Program Restart Facility options for the options data set that you specified on the IMS Program Restart Facility main menu.

Procedure

To view the IMS Program Restart Facility options for the options data set that is specified in the main menu:

From the IMS Program Restart Facility ISPF interface, select option 3 Show PRF Options and press Enter. A report is displayed. The report includes the following information for the specified options data set:

- Global options
- Job override entries
- A list of the options that are specified in each job override options entry
- Abend retry table entries
- Exclusion DD names and the options they affect
- IMS groups and the IMSIDs associated with each group
Displaying options for a specific job or job step

You can view the options for an IMS job or job step.

Procedure

To display the options that are used:
1. From the IMS Program Restart Facility ISPF main menu, select option 2 Show Options for a Specific Job/Step.
   Job options are controlled by several job execution time options, including the IMSID, job name, step names, PSB name, and program name. To determine the job override options for a specific job, you must provide this information about the job.
2. In the Show Options for a Specific Job/Step panel specify information about the job in the following required fields and press Enter:
   - **IMSID**
     This is the IMSID specified in the JCL, typically for the IMSID JCL symbolic parameter. If no value is specified in the JCL, you must enter the default IMSID that is coded in the STEPLIB of the job step that is in the IMS RESLIB data set. The IMS RESLIB data set is located in module DFSVC000.
   - **JOBNAME**
     The full job name.
   - **PROCSTEP**
     The step name that is coded within the PROC that is issued.
   - **STEPNAME**
     The step name that is coded in the JCL of the job that runs the PROC.
   - **PROGRAM**
     The IMS application program name that IMS invokes. This parameter is typically coded as the MBR= JCL symbolic parameter in the execution of the IMS PROC.
   - **PSB**
     The PSB name that is used by IMS when the job is run. This parameter is typically coded in the JCL as the PSB symbolic parameter. If the PSB name is not specified in the JCL of the job, IMS uses the application program name.

You must enter the information exactly as it appears in the job. No wildcard characters are permitted.

After you press Enter, you will view an options report, which displays the options data set name in the report title. Options will differ depending on the options data set that is specified on the IMS Program Restart Facility main menu. The report also shows the job override options entry that was selected for job criteria that you entered in the previous screen.
Updating global options

Global options enable your installation to set default option values for all the IMS Program Restart Facility options.

About this task

As you update the global options, there are some things you should understand about using the options specification screens:

- Option names are the first word on each line.
- There is field-level help available for every global option. If you want additional information about the use or syntax of the value for a keyword, you can place the cursor on the field for which you want additional information, and press the Help key to view a help screen for that option.
- Required options have an asterisk (*) before the option name.
- If you need to specify an option in an IRT$CNTL or CTX data set, use the option name as the keyword when entering data in those environments.
- The CANCEL command can be used on any screen.
  - If you are on a panel where you enter option values, the CANCEL command simply throws away any changes you made on that panel only.
  - If you are on the Update Global Options menu screen and enter the CANCEL command, all updates you have entered since the last SAVE command are thrown away.

Procedure

To update the IMS Program Restart Facility global options:

1. From the IMS Program Restart Facility ISPF main menu, select option 5 Update Global Options and press Enter.

   The Update Global Options panel appears. The options on this panel are divided into the following categories according to the option type:

   Option 0 Global
   These options are used by every job that uses the options data set that you identified in the IMS Program Restart Facility main menu. These options cannot be overridden by job override options, and they cannot be specified in an IRT$CNTL DD or CTX data set.

   Option 1 General
   These options are the values for IMS Program Restart Facility general options.

   Option 2 Bypass
   These options are the default values for bypass checkpoint processing options.

   Option 3 Return Code
   These options are used in application return code processing and for application program testing.

   The return code options may be helpful in PL/I environments that issue return codes instead of actually abending. You might be able to use the RCABEND and RCERROR fields to capture errors that did not result in an actual abend, and have IMS Program Restart Facility restart the application from the last successful checkpoint.
The testing options should not be specified in global options. These testing options (CHKPCMP, CHKPCNT, and FABXRST) would typically be used only in a development environment to test program restart logic. In these circumstances, it is far more sensible for the application programmer to add a //IRTS$CNTL DD * statement and specify these options for use in that job execution only.

Option 4 IMS PROC
These options provide the capability to override IMS BMP, DLI, and DBB PROC JCL symbolic specification overrides. IMS Program Restart Facility can be used to automatically change parameters in all jobs without the need to update the JCL in all of your jobs.

Option 5 Batch Backout
These options are for IMS DLI and DBB type batch jobs and include the batch backout options.

If you are migrating to IMS Program Restart Facility V2.2 from a prior version of IMS Program Restart Facility and never had IMS Batch Backout Manager for z/OS installed, you can specify the following option values to maintain compatibility with your previous environment:

AUTOBK=NO
BYPLOGR=NO
IEFRRDER=JCL
IEFRRDER2=JCL
NOLOGRO=NO

You also must add an entry to your exclusion DD name table with the following specifications:

Disable PRF = No
Disable BBO = Yes

Attention: Never specify BYPLOGR=YES in the global options. This option disables the creation of a DLI batch log (SLDS) during the execution of the job, which stops IMS Program Restart Facility from performing batch backout, so that any failure in the job requires a database recovery. In addition, the lack of a log means that forward recovery using the log in the job is not possible, so an image copy would be required after the execution of any job with BYPLOGR=YES.

Option 6 DLI Logs
These options are for DLI and DBB type IMS batch jobs. These options are used only for DLI and DBB jobs, and not for BMP jobs, since BMPs use the logs of the IMS control region.

If the following options are in effect for a job, none of the log options are used. When you review global options, if the following option values are in effect for all jobs, you can ignore all the DLI and DBB log options:

AUTOBK=NO (if you include a DD statement in your jobs from the exclusion DD name table that disables BBO processing)
IEFRRDER=JCL
IEFRRDER2=JCL
BYPLOGR=NO
If you use any of these options, you should review options for IMS log allocations.

IMS Program Restart Facility allows you to specify allocation information for seven different types of batch logs. Instead of having to specify some of the same options seven different times, option 1 Defaults of the IMS DLI / DBB Log Options menu allows you to specify default values for all seven types of logs.

For example, you could set default values for options that set allocation parameters, such as UNIT, SPACE, and RETPD. You can then use the other options of the menu to enter the appropriate DSNAME and override the amount of space allocated to some of the logs.

2. Navigate from the Update Global Options panel through the various screens and enter values for the options in the indicated categories.

Press the End key on the Update Global Options panel to save any updated global options to the IMS Program Restart Facility options data set.

Options are not saved to the IMS Program Restart Facility options data set until you press the End key on the Update Global Options menu screen or you enter the SAVE command on any of the options screens.
Specifying job override options

Job override options provide a way to permanently set changes to default options for a specific job or set of jobs. The default options are specified in option 5 Update Global Options of the IMS Program Restart Facility ISPF interface.

About this task

IMS Program Restart Facility searches the table of job override entries to match the job name, step names, IMSID, program name, and PSB name of the current job. Generics are permitted when you specify a job options entry, so a given job could match more than one job override options entry. IMS Program Restart Facility only uses the first matching job override entry in the list. All other job entries are ignored.

The relationships that are associated with the different ways to specify options include:
- Specifying them as global/general options and job override options via the ISPF Interface
- Using the IRT$CNTL DD in the JCL of the job
- Using the CTX data set
- Using a Checkpoint ID Table module (for example, IRT#CPID)

Changes to IMS Program Restart Facility option values can be introduced in any of these ways. The latter methods in the above list override any values from methods earlier in the same list. For example, the Checkpoint ID Table module takes precedence over both the general options values specified via the ISPF Interface and values specified in the IRT$CNTL DD in the JCL of the job.

As you update the global options, there are some things that you should understand about using the options specification screens:
- Option names are the first word on each line.
- There is field-level help available for every global option. If you want additional information about the use or syntax of the value for a keyword, you can place the cursor on the field for which you want additional information, and press the Help key to view a help screen for that option.
- If you need to specify an option in an IRT$CNTL or CTX data set, use the option name as the keyword when entering data in those environments.
- The CANCEL command can be used on any screen. If you are on a panel where you enter option values, the CANCEL command simply throws away any changes you made on that panel only. If you are on the Update Global Options menu screen and enter the CANCEL command, all updates you have entered since the last SAVE command are thrown away.

Procedure

To specify job override options:
1. From the IMS Program Restart Facility ISPF main menu, select option 6 Update Job Override Options and press Enter.

   The Update Job Override Options tables panel is displayed. The table in this panel shows all the existing job override entries that are defined in the current IMS Program Restart Facility options data set. The order of entries in the table is very important, as IMS Program Restart Facility only uses the first matching
job override entry in the list. For example, in the following panel, if a job has job name of P390MBMP and IMSID=IMS1, then only the first job override entry in the list will be used, even though the third entry would also match the selection criteria, since IMSID **** also matches IMSID=IMS1.

If entries in the table are not in the correct order, you can use the M line command to Move a job override entry either B (before) or A (after) another job override entry in the list. Maintaining the correct order of job override entries is critical to ensuring that the correct job override entry is selected for a job. For example, if the last entry on the previous panel was the first entry instead, then none of the other job override entries would ever be used, since the entry with IMSID **** would match the job, and the entries with IMSID IMS1 and IMS2 would never be looked at by IMS Program Restart Facility during job initialization.

2. Select an existing job override entry to set the options for that entry or create a new entry.
   - To update an existing entry, issue the S line command.
   - To create a new entry, issue the I line command or the Insert primary command.
   a. Enter the specifications for the jobs that use this entry and press Enter.
      In the following example, any job with JOBNAME=P390MBMP uses this job override options entry, since all the other fields are populated with wildcard characters.

After you press Enter, you will be presented with the Update Job Override Options panel.

b. Enter values for the relevant options in the Update Job Override Options panels. When you press the End key on this menu screen, IMS Program Restart Facility saves any updated Job Override options to the IMS Program Restart Facility options data set.
In general, minimize the number of values entered in the Update Job Override Options panel. If the default value (from the global options) is what is desired for a specific job, then there is no need to enter the value in the Update Job Override Options panels.

Related tasks:

“Updating global options” on page 102
Viewing the options audit log

The IMS Program Restart Facility audit log, if enabled, records changes to IMS Program Restart Facility options that have been saved in the options data set.

Procedure

To view the IMS Program Restart Facility options for the options data set that is specified in the main menu:

From the IMS Program Restart Facility ISPF main menu, select option 4 **Show PRF Options Audit Log** and press Enter.

An audit log report is displayed. The report includes the following information about each update that was saved in the specified options data set:

- The time and date of the update.
- A list of the options that were changed and the new values of those options.
- If an option that was changed is associated with a job override entry, the job override options selection criteria is displayed.
Administering active and abended jobs

Procedure

To administer active and abended jobs:

1. From the IMS Program Restart Facility ISPF main menu, select option 1
   **Administer Abended/Active Jobs.**
   A list of all jobs that are active or abended are displayed in the Administer Active/Abended Jobs panel. If you have multiple IMS Program Restart Facility options data sets, only those jobs associated with the options data set that you entered on the IMS Program Restart Facility ISPF main menu are displayed.

   Job information is displayed for each job, including the job name, the IMS group name (or IMSID if no IMS group was found), the PSB name, and the program name. Some status information is displayed on the screen. Status information that is shown on initial entry to the dialog includes whether a job is active, and, if there is a CTX data set present for a job, the first option specified in the CTX data set is shown.

2. Type a line command for an active and abended job and press Enter. You can enter any of the following line commands:

   **D - Delete**
   This command deletes the CTDS data sets associated with the job. When the CTDS data sets are deleted, IMS Program Restart Facility bypasses restart processing, and IMS Program Restart Facility starts the job without any restart checkpoint ID.

   **N - NOXRST**
   The NOXRST line command changes the AUTOXRST option to a value of NO. IMS Program Restart Facility bypasses restart processing, and the job starts without IMS Program Restart Facility altering the CHKPTID option that may or may not be specified in the JCL of the job. The AUTOXRST=NO option is stored in the CTX data set and processed when the job is submitted.

   **F - FORCE**
   The FORCE line command changes the AUTOXRST option to a value of FORCE. As a result of this change, an indoubt checkpoint ID is used instead of the last verified checkpoint ID. The AUTOXRST=FORCE option is stored in the CTX data set and processed when the job is submitted.

   **L - LAST**
   The LAST line command changes the AUTOXRST option to a value of LAST. This change causes an indoubt checkpoint ID to be ignored, and the last verified checkpoint ID to be used for restart. The AUTOXRST=LAST option is stored in the CTX data set and processed when the job is submitted.

   **E - EDIT**
   The EDIT line command allows you to manually update or enter IMS Program Restart Facility option specifications in the CTX data set. After you select the Edit option, the CTX data set will be created if it does not already exist, and you will see the ISPF EDIT panel, at which point you can use edit commands to make changes. When you press PF3, the updated CTX data set is saved.
**S - ShowID**

The ShowID line command allows you to view the current checkpoint ID that is used for restart, as well as the time stamp associated with that checkpoint ID.

**Important:** All the line commands, other than the ShowID line command, change the way that a job is restarted. Entering these options alters how IMS Program Restart Facility restarts a job. Using one of these line commands incorrectly can result in a restart error, which can cause invalid job output and potential corruption of IMS database contents. Use these commands with caution.

When any of the line commands other than ShowID command is issued, message IRT355I is written to the MVS SYSLOG to show the job that was updated and the TSO user ID of the user that made the change. This message creates an audit trail if it is necessary later to determine the restart changes were made to a job.

**What to do next**

If you accidentally issue one of the following line commands, you can undo the change by attempting certain actions before the job is resubmitted:

*Table 5. Corrective actions for undoing line commands*

<table>
<thead>
<tr>
<th>Line command</th>
<th>Corrective action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>D - Delete</strong></td>
<td>Restore the CTDS data sets, including the CTA, CTB, and CTX data sets.</td>
</tr>
<tr>
<td><strong>N - NOXRST, F - FORCE, or L - LAST</strong></td>
<td>Select the <strong>E - EDIT</strong> line command to remove the AUTOXRST option and the value that is specified for that option.</td>
</tr>
<tr>
<td><strong>E - EDIT</strong></td>
<td>Select the <strong>E - EDIT</strong> line command again to undo the changes, and restore the data that is stored in the CTX data set to what was present before the first <strong>E - EDIT</strong> action was undertaken. Normally, the CTX data set has no content.</td>
</tr>
</tbody>
</table>
Updating IMS groups

IMS groups are used to define groups of IMS systems that are used by IMS Program Restart Facility to determine which IMS systems can be used to process an IMS BMP job.

About this task

Restriction: The same IMSID cannot be defined in multiple groups. For example, IMSID PROD cannot belong to the IMS1PLEX and IMS2PLEX IMS groups.

Important: Use extreme caution when making any changes to the IMS group tables. The first 4 characters of an IMS group name are used as the IMSID portion of the CTDS data set names. Changing an IMS group can prevent IMS Program Restart Facility from finding the CTDS data sets for a job that requires restart, which results in an incorrect restart of a job. Incorrect restarts can cause lengthy outages while data is recovered from the invalid job restart.

Procedure

1. From the IMS Program Restart Facility ISPF main menu, select option 7 Update IMS Groups and press Enter.
   The Update IMS Groups panel is displays a list of IMS groups.
2. Edit an existing group definition, add a new IMS group, or delete an IMS group:
   • To edit an existing group definition, issue the E line command and press Enter. Then, edit the IMS group.
     You cannot update the IMS group name. You can, however, make changes to the IMSIDs defined as members of the IMS group.
   • To add a new IMS group, issue the INSERT command or the I line command and press Enter. Then, set the IMS group name and a maximum of 64 IMSIDs that will be considered part of the IMS group.
     You must enter a 1-8 character IMS group name. The first four characters of the IMS group name must be unique among IMS group names. For example, you cannot define an IMS group named IMS1GRP and another IMS group named IMS1PLEX.
     Each IMSID can only belong to one group.
   • To delete an IMS group, issue the D line command and press Enter.
Updating abend retry tables

The abend retry feature allows IMS Program Restart Facility to automatically restart a job after an abend without having to resubmit the job. This feature can be useful in the case of a transitory abend such as a U0775 (PI Pool out of space) or U0777 (PI deadlock) abend.

Procedure

To update an abend retry table:

1. From the IMS Program Restart Facility ISPF main menu, select option 8 Update Abend Retry Tables and press Enter. A list of abend retry tables is displayed.
2. Delete an abend retry table, add a new abend retry table, or edit an existing abend retry table:
   • To delete an abend retry table, issue the D line command and press Enter.
   • To add a new abend retry table, issue the INSERT command or the I line command and press Enter. Then, specify the new abend retry table name, and optionally, enter the name of an abend retry table to copy an existing abend retry entry. Finally, specify options for the new abend retry entry.
   • To edit an existing abend retry table, issue the E line command and press Enter.
Updating the exclusion DD name table

The exclusion DD name table allows you to exclude a job from IMS Program Restart Facility processing by placing a designated DD name in any IMS job. The exclusion DD name table defines the DD names that can be used in a job to exclude the job from IMS Program Restart Facility processing.

Procedure

To update the exclusion DD name table:

1. From the IMS Program Restart Facility ISPF main menu, select option 9 Update Exclusion DD Name Table and press Enter. A list of the existing exclusion DD name table entries appears.

2. Delete a DD name entry, insert a new DD name entry, or update an existing DD name entry:
   - To delete a DD name entry, issue the D line command and press Enter.
   - To add a DD name entry, issue the INSERT command or the I line command and press Enter. Then, specify options for the new exclusion DD name entry.
   - To edit a DD name entry, issue the E line command and press Enter. Then, specify options for the existing exclusion DD name entry.

Related reference:

"Exclusion DD name table" on page 83
Bypassing checkpoint processing

You can reduce the processing load that is incurred by applications that take checkpoints too frequently by using the bypass checkpoint processing feature.

Before you begin

Before using bypass checkpoint processing, consider the following guidelines:

- To properly use this feature, you might need to change your application design. Therefore, if you later want to uninstall this feature, you might need to change the application code.
- Global installation of this feature is not recommended unless the design of each application in your installation is understood.
- In general, do not implement this feature for the following types of applications:
  - Transaction-oriented BMPs that use the IMS message queues
  - BMPs that update DEDB databases
  - BMP or DL/I batch jobs that will use the ROLB call to back out individual logical units of work and that do not intend to abend immediately afterward.

Batch applications that use the ROLB call only once, before program termination, can use bypass checkpoint processing.

About this task

Bypass checkpoint processing prevents a job step from taking checkpoints more frequently than the delay interval that you specify for the job. This reduction in the frequency of checkpoint calls can result in faster run times and can reduce the batch window.

Procedure

1. Access the IMS Program Restart Facility primary options menu.
2. In the appropriate JOB options entry, activate bypass checkpoint processing by specifying BYPCHKP=YES in the bypass checkpoint options.
3. Specify the BCDINTVL=hhmmssst parameter for the application. The application bypasses checkpoint processing according to the time interval, where:

   - hh: Hours
   - mm: Minutes
   - ss: Seconds
   - t: Tenths of a second
   - h: Hundredths of a second

4. Optional: To specify a list of status codes that allow the next checkpoint to be processed, specify BCSTCLST=aabbccdd for the application. You can specify a maximum of ten 2-character status codes for this parameter.
5. Optional: Specify the following parameters for the application.

   Attention: To use these parameters, you might need to change application code. These changes can result in a dependency on IMS Program Restart Facility that could prevent you from uninstalling it.
a. To create the status code that is returned to the application when a
checkpoint call is bypassed, specify BCSTATUS=xx, where xx is the status
code.

b. To return the nnnn value to the n AIBERRXT field in the application
interface block (AIB) for the application after any checkpoint call is
bypassed, specify BCERRXT=nnnn, where nnnn is an integer with 1 – 4
digits.

c. To return the nnnn value to the n AIBREASN field in the AIB for the
application after any checkpoint call is bypassed, specify BCREASN=nnnn,
where nnnn is an integer with 1 – 4 digits.

d. To return the nnnn value to the n AIBRETRN field in the AIB for the
application after any checkpoint call is bypassed, specify BCRETRN=nnnn,
where nnnn is an integer with 1 – 4 digits.

6. Save the updated job options.
Forcing dynamic allocation for application logs

**Procedure**

Use the options IEFRDER and IEFRDER2 to use existing JCL allocations for creating log data sets or to dynamically allocate different data sets.

- At least for the initial use of this product, it is best to use your existing JCL allocations without applying the changes made through dynamic allocation (the default is IEFRDER=JCL and IEFRDER2=JCL).
- Eventually, you might want to enforce naming standards.
  
  To enforce naming standards, specify IEFRDER=FORCE and IEFRDER2=FORCE.
Overriding IMS Extended Restart processing

Optionally, you can have IMS Program Restart Facility check the CKPTID= value specified in the JCL of a job for certain values.

Procedure

If the CKPTID= value is present in a table, the IMS Program Restart Facility option will be overridden based on the specification in the table. You can create this override by customizing the checkpoint ID table module (IRT#CPID).

To override IMS Extended Restart processing:

1. Add checkpoint IDs to member IRT#CPID of the SIRTSAMP library.
   In the following example, the checkpoint IDs are symbolic and enable IMS Program Restart Facility to ignore any automatic IMS Extended Restart processing (CHKPTIDs beginning with NOXR), or to override the SHOWOPTS and EXCLUDE general options (using CHKPTID SHOWEXCL).
   For each symbolic checkpoint ID in the table, the associated parameters in the 80-byte options area take effect if that checkpoint ID is specified.
   The following example shows source code for member IRT#CPID::

   ```plaintext
   IRT#CPID CSECT
   IRT#CPID RMODE ANY
   *
   NOXR       DC CL08'NOXR'
   DC CL08'AUTOXRST=NO CKPTID='
   NOXRMSGS   DC CL08'NOXRMSGS'
   DC CL08'AUTOXRST=NO CKPTID=NOMSGS'
   NOXR540    DC CL08'NOXR540'
   DC CL08'AUTOXRST=NO CKPTID=NOMSG540'
   NOXR681    DC CL08'NOXR681'
   DC CL08'AUTOXRST=NO CKPTID=NOMSG681'
   SHOWEXCL   DC CL08'SHOWEXCL'
   DC CL08'SHOWOPTS=PRINT EXCLUDE=NO'
   *
   DC X'FF' (this last entry is required)
   
   If a batch job has a CKPTID value of NOXR681, as shown in the previous example, no IMS Extended Restart processing occurs. Instead, the CKPTID value of NOMSG681 replaces the NOXR681 value that is specified in the JCL and averts a U0102 abend.

2. Assemble module IRT#CPID by using the JCL in the SIRTSAMP library member IRT#CPID.
Determining IMS Program Restart Facility activation during job runs

The IMS Program Restart Facility initialization user exit can be used to determine whether it is necessary for IMS Program Restart Facility to be active for the running of a job. This exit, IRTUXIN0, can determine from the run environment whether IMS Program Restart Facility should be active.

About this task

This exit is optional. If you choose to write this exit, you must link it as load module IRTUXIN0, and it must be available in the STEPLIB of any IMS jobs that use the exit.

The exit must be coded to run in the following environment:

- The module must be linked as load module IRTUXIN0 and be present in the STEPLIB of the IMS job.
- IRTUXIN0 must run in AMODE 31.
- This exit uses the following input registers:
  - R1: The address of a pointer to the PARM= string of the job, as specified in the JCL.
  - R13: The address of a save area that is used by the exit routine.
  - R14: The return address that is used by the exit routine.
  - R15: The entry point address of the exit routine.

After the exit routine completes, registers should have the following values:

- R13: The address of the save area that was passed to the exit.
- R14: The return address that is used to return to IMS Program Restart Facility.
- R15: The return code that indicates whether IMS Program Restart Facility should be excluded from the running of this job. A value of R15=0 indicates that IMS Program Restart Facility should be active. Any other return code indicates that IMS Program Restart Facility should be excluded.

Set the return code to indicate whether the job should be excluded from IMS Program Restart Facility processing. A return code of 0 indicates that the job should not be excluded, while any other return code indicates that IMS Program Restart Facility should exclude the job step.

If the exit returns with a non-zero return code, IMS Program Restart Facility backs out all IMS Program Restart Facility activation processing, and will pass control to IMS without any future interaction with IMS Program Restart Facility. IMS Program Restart Facility also backs out of any restart or batch backout processing, and will not create any checkpoint tracking data sets. Since there are no CTDS or BBDS data sets created, IMS Program Restart Facility will not be able to properly restart the job should an abend occur. If the job must be restarted, you must supply the appropriate checkpoint ID in the JCL of the job (or on the XRST call), and you must provide the IMSLOGR DD that refers to the IMS log created by the abending job.

There are no messages that indicate the success or failure of running this exit routine. The only indication of exit routine processing is when the exit returns with
a non-zero return code. Message IRT316I is issued when the job is excluded on request for the IRTUXINO exit routine. The message appears as:

IRT316I PRF INACTIVATED FOR THIS JOB - USER EXIT IRTUXINO REQUEST
Verifying that a valid checkpoint ID is supplied for restart

The IMS Program Restart Facility checkpoint ID verification exit, IRTUX001, can be used to verify that a valid checkpoint ID has been supplied for a restart.

About this task

Using this exit is optional. If you choose to create it, it must be linked as load module IRTUX001, and it must be available in the STEPLIB of any IMS jobs that should use the exit.

IRTUX001 is only called when IMS Program Restart Facility determines that a job should be restarted, and when AUTOXRST=NO is not specified for the job step. At the point when the exit is called, IMS Program Restart Facility has already determined the checkpoint ID that will be used for restart.

Procedure

Create and run exit IRTUX001.

This exit uses the following input registers:

• The module must be linked as member IRTUX001 and be present in the STEPLIB of the IMS job.
• IRTUX001 must be coded to be entered and run in AMODE 31.
• Registers at entry to the exit are:

  R1  The address of a standard format parameter list with one parameter. The first parameter is the address of the checkpoint ID that IMS Program Restart Facility plans to use for restart.

  R13  The address of a save area that should be used by the exit routine.

  R14  The return address that should be used by the exit routine.

  R15  The entry point address of the exit routine.

• Registers at completion of the exit routine must be:

  R13  The address of the save area that was passed to the exit.

  R14  The return address that is used to return to IMS Program Restart Facility.
Creating an audit log report

The IRTAUDT utility produces an audit log report. The report shows the entries in the IMS Program Restart Facility audit log. It shows IMS Program Restart Facility option data set updates, the time stamp, and the user ID that made each change.

About this task

In order to produce an audit log report that contains valid data, you must have the audit log data set name that is specified in the IMS Program Restart Facility Global Only options. The report lists only those options that were updated while audit logging was in effect.

Procedure

To create an audit log report:

Edit and run sample job IRTAUDT of the SIRTSAMP data set. To run the JCL in the IRTAUDT job, you must update the following lines of code to provide the data set names of the SIRTLOAD and the IRTAUDIT data sets:

```
SET SIRTLOAD=IMS.IRT220.SIRTLOAD
SET IRTAUDIT=IMS.IRT.IRTAUDIT
```

The job produces a listing of updates to the audit log. Updates are grouped according to when changes were saved to the IMS Program Restart Facility options data set. Groups of updates begin with a header line showing the date and time that the updates were updated. On the header line, the report shows the type of options that were updated (for example, global options or job override options).
Converting options to IMS Program Restart Facility V2.2 format

The IRTINCL utility converts IMS Program Restart Facility for OS/390 V2.1 and IMS Batch Backout Manager for z/OS inclusion options files to the IMS Program Restart Facility V2.2 options format.

Before you begin

Important: The IMS Program Restart Facility V2.2 options data set (IRTOPT) must be empty to run this utility. If the data set is not empty, a message is issued and the job abends.

About this task

The IRTINCL utility makes changes to the format of the V2.1 options inclusion data set, especially when converting to abend retry tables (from ABRCC to IRT#ABND), IMS Group table (from IMSGROUP to IRT#IGRP), and job override options entries in the ISPF dialogs (from JOB, PGM, PSB, and IJS to IRT#JOB and IRT#GLBL).

Abend retry tables

Abend retry tables are built that mirror the specifications in the old format inclusion options. The abend retry table that was specified in GBL statements is converted to an abend retry table named DEFAULT. If you have any ABRCC statements that define changes to the abend retry table in JOB, PGM, PSB, or IJS statements, new tables are defined in the IMS Program Restart Facility V2.2 options data set (for example, ABRCC001 is placed in IRT#ABND), and the job override option entry is updated to refer to the new table.

IMS Group tables

For IMS Program Restart Facility V2.2, IMS Groups are created from IMS Program Restart Facility V2.1 GBL statements. The conversion program ignores IMSGROUP keywords provided on JOB, PGM, PSB, or IJS statements.

Be aware that in V2.2, you cannot override an IMS Group specification for a given Job entry. Also be aware that in V2.2, a given IMS instance can only be part of one IMS Group.

If you have IMS Groups defined in V2.1 JOB, PGM, PSB, or IJS statements which contain IMS instances that are not part of a V2.1 GBL IMSGROUP statement, perform one of the following steps:

- Modify one of the V2.1 GBL IMSGROUP statements to include the IMS instance.
- After running the IRTINCL utility, use the IMS Program Restart Facility V2.2 ISPF interface (Option 7 from the main panel) to modify your IMS Group definitions.

Job override options

In IMS Program Restart Facility V2.2, there are no JOB, PGM, or PSB statements. Any JOB, PGM, or PSB statements are converted to job override options entries and all other selection values that they contain are specified as wildcards. Wildcards include IMSID, PROCSTEP, and STEPNAME.

Exclusion DD entries

If your IMS Program Restart Facility V2.1 environment contains an
Exclusion DD name load module, the conversion program reads this load module and converts the entries in this load module to V2.2 format.

When a V2.1 Exclusion DD name load module is found by the conversion program, the conversion program begins by creating four default entries in the V2.2 Exclusion DD name load module as follows:

Table 6. Default entries in the V2.2 Exclusion DD name load module

<table>
<thead>
<tr>
<th>DDNAME</th>
<th>Exclude PRF?</th>
<th>Exclude BBO?</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCM$EXCL</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>BCM$IGNR</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>IRT$IGNR</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>UPX$EXCL</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

The conversion program then reads the V2.1 Exclusion DD name load module and adds entries for each DD name that is found in the load module. These entries are defined as "Exclude PRF (YES)" and "Exclude BBO (YES)".

If an entry is found in the V2.1 load module that matches an entry previously added in the V2.2 load module, the entry in the V2.1 load module replaces the entry in the V2.2 load module. For example, if the V2.1 load module contains an entry for BCM$EXCL, the V2.2 entry is replaced with an entry defined as "Exclude PRF (YES)" and "Exclude BBO (YES)".

If no V2.1 Exclusion DD name load module is found, no V2.2 Exclusion DD name load module is created. When no Exclusion DD name load module is found by IMS Program Restart Facility V2.2, IMS Program Restart Facility V2.2 uses the following defaults:

Table 7. Default entries when no Exclusion DD name load module is found

<table>
<thead>
<tr>
<th>DDNAME</th>
<th>Exclude PRF?</th>
<th>Exclude BBO?</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCM$IGNR</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>IRT$IGNR</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>UPX$EXCL</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

BBDSHLQ

For IMS Program Restart Facility V2.2, the default value for BBDSHLQ is IMS.BACKOUT. This differs from the IMS Batch Backout Manager V1.2 default value, which is IMS.BKOT.

If no BBDSHLQ entry exists in the IMS Batch Backout Manager V1.2 inclusion options data set, the IRTINCL utility detects it and automatically sets the former default value for BBDSHLQ, IMS.BKOT, in the options set for IMS Program Restart Facility V2.2. This way, the utility ensures that jobs can restart properly after converting from IMS Program Restart Facility V2.1 and IMS Batch Backout Manager V1.2 to IMS Program Restart Facility V2.2.

If a BBDSHLQ entry does exist in the IMS Batch Backout Manager V1.2 inclusion options data set, the IRTINCL utility uses that value for the IMS Program Restart Facility V2.2 BBDSHLQ value.
Procedure

To convert options to the IMS Program Restart Facility V2.2 format:

1. Edit sample job IRTINCL of the SIRTSAMP data set.
   Before you run the JCL in the IRTINCL job, update the following lines of code to provide the data set names of the SIRTLOAD, IRTINCL, and IRTUSRL data sets:
   
   ```
   SET SIRTLOAD=IMS.IRT220.SIRTLOAD
   SET IRTOFT=IMS.IRT220.IRTOFT
   SET IRTINCL=IMS.IRT210.IRTINCL
   SET BCMINCL=IMS.BCM110.BCMINCL
   SET V21USRL=IMS.IRT210.IRTUSRL
   ```
   
   The IRTINCL and BCMINCL symbolic parameters refer to the IMS Program Restart Facility V2.1 inclusion options file and the Batch Backout Manager V1.2 inclusion options file.
   
   The V21USRL symbolic parameter refers to the IMS Program Restart Facility V2.1 User library. This is the default library that contains the IMS Program Restart Facility V2.1 Exclusion Options load module, named IRT#IGNR. If you stored this module in a different library, specify that library in the V21USRL symbolic parameter.
   
   - If you do not have a Batch Backout Manager inclusion options file, specify BCMINCL=NULLFILE.
   - If you do not have an IMS Program Restart Facility V2.1 inclusion options file, specify IRTINCL=NULLFILE.
   - If you have no IMS Program Restart Facility V2.1 Exclusion DD name load module, specify V21USRL=NULLFILE.
   - If you do not have any inclusion options files and you do not have a V2.1 Exclusion DD name load module, you do not need to run this job.

2. Run sample job IRTINCL of the SIRTSAMP data set.
   The sample job produces the inclusion options conversion report and the IMS Program Restart Facility V2.2 options data set report. The inclusion options conversion report lists the options that were read by the utility and provides clarification messages on any records that cause issues.
   
   The IMS Program Restart Facility V2.2 options data set report shows all options that are contained in the IMS Program Restart Facility V2.2 options data set. Review the output of the options listing to ensure that all options were properly re-created in the IMS Program Restart Facility V2.2 format.
Listing the contents of the options data set

The IROPTL utility lists the contents of the IMS Program Restart Facility options data set.

About this task

Recommendation: Schedule a periodic backup of the options data set. You might want to include a listing of the options data set, and if the IMS Program Restart Facility audit log is enabled, a listing of the changes to the options using the IRTAUDT utility.

Procedure

To create a list of the contents of the IMS Program Restart Facility options data set:

Edit and run sample job IROPTL of the SIRTSAMP data set. To run the JCL in the IROPTL job, you must update the job according to your installation requirements and update the following lines of code:

```bash
SET SIRTLOAD=IMS.IRT220.SIRTLOAD
SET IROPT=IMS.IRT220.IROPT
```

The SIRTLOAD symbolic parameter is used to define the IMS Program Restart Facility load library (the SIRTLOAD data set). The IROPT symbolic parameter defines the data set name of the options data set that is to be listed. The utility produces an options report. The option report displays all the options that are saved in the options data set. There are multiple sections in the report:

**DDNAME exclusion table**

The DDNAME exclusion table shows the DD names that are defined in the IMS Program Restart Facility options. These DD names, and the impact on a job that includes any of these DD names, are shown in the report.

The impact of DD names on a job can be to disable IMS Program Restart Facility (which disables all IMS Program Restart Facility functionality) or to disable BBO (which disables IMS Program Restart Facility automatic batch backout processing when AUTOBK=NO is specified for a job).

**IMSGROUP table**

The IMSGROUP table displays a list of the IMS groups that are defined in IMS Program Restart Facility and the IMSIDs that are defined as members of each group.

**Abend retry tables**

The abend retry table displays the name of each abend retry table, along with each abend code defined in the tables and the processing options for each abend code.

**Global options**

The global options section of the report shows every option and the value that is defined for each option. It is broken down into the 14 sections of the global options, beginning with the global only options through all the IMS DLI and DBB batch job overrides.

**Job override table entries**

This section lists the job override entries that are defined in the options data set. This section of the report shows only the job selection criteria –
the job name, step names, IMSID, program name, and PSB name. This section does not show the actual overrides that are defined for that job override entry.

**Job options**

The job options section of the report shows each job override table entry, along with all the option overrides specified for that job override entry.
Stopping, holding, or restarting BMPs

You can stop, hold, or restart a BMP by issuing z/OS MVS commands.

Before you begin

To stop, interrupt, and restart a BMP that is running with IMS Program Restart Facility support, you must have FSTOP=YES specified for that job in the options data set.

Procedure

- To stop a BMP, issue this command:
  ```
  MODIFY jobname,STOP
  ```

  The BMP terminates with an abend U0474.

- To hold a BMP, issue this command:
  ```
  MODIFY jobname,HOLD
  ```

  The BMP terminates with an abend U3303 but is then placed in a wait state until an operator issues a subsequent command to restart the BMP.

- To restart a BMP that was put on hold, issue this command:
  ```
  MODIFY jobname,XRST
  ```

  The BMP is reattached and is later supported by the standard IMS extended restart facility as if the BMP had terminated abnormally and been restarted with CKPTID=LAST specified in the JCL.
Chapter 6. Bypass logging option

By using the bypass logging option, you can avoid the overhead of logging even when the DLI batch job is running in a DBRC=FORCE environment. Bypass logging uses the batch backout functionality of IMS Program Restart Facility.

When using this option, a small log data set is opened and recorded by DBRC. However, in the event that the job terminates abnormally, no significant logging occurs and no automatic batch backout processing is performed.

Bypass logging restrictions

The bypass logging option should be selected only when updating offline IMS databases that cannot be shared by any other batch or online subsystem. No IRLM should be in use, and no other concurrent updating of Db2® (or any other DB manager) databases should be performed. Unpredictable results can occur during syncpoint processing or during an abnormal termination of the DLI batch job.

Installing the bypass logging option

To use the bypass logging option, you must receive an IMS version-specific usermod into the SMP/E global zone that is used to maintain your IMS software and applied to the appropriate target IMS zone.

The usermod updates DFSXLGI0 so that Batch Backout Manager loads its own logger exit routine only for DLI batch jobs which use the bypass logging option. Your version of DFSFLGX0 (if present) is still loaded for all other applicable region types. All sample usermods can be found in your SIRTDATA library.

- For IMS V11, receive and apply sample usermod IRT111C
- For IMS V12, receive and apply sample usermod IRT121C
- For IMS V13, receive and apply sample usermod IRT131C
- For IMS V14, receive and apply sample usermod IRT141C
- For IMS V15, receive and apply sample usermod IRT151C

Bypass logging inclusion options

For jobs requiring the bypass logging option, include the BYPLOGR option as part of the inclusion entry for the job. You can accomplish this in one of two ways:

- Update your batch job to include the //IRT$CNTL DD statement, or update an already existing allocation, including the following line:
  BYPLOGR=YES
  You can also add lines for the other bypass logging options, as described in “IMS DLI and DBB batch log options reference” on page 75.
- Use the ISPF interface:
  1. Select Option 6 (Job Options).
      Select the entry that matches the job you want to change.
      If there are no entries, you should create one as described in “Specifying job override options” on page 105.
  2. After you select or create a job override option, select Option 5 (Batch Backout).
Set the BYPLOGR to “YES”.
Press End (PF3).
3. Select Option 6 (DLI Logs).
4. Select Option 8 (Bypass Log).

Enter the required values for the fields on this panel, as described in “IMS DLI and DBB batch log options reference” on page 75.

Bypass logging data set specification

Because a log data set is created, you should specify bypass log data set allocation options through the ISPF panels to ensure that the required log data set is allocated. This is done in one of two ways:

• To specify global default options for all jobs for which you want to use bypass logging, follow these steps:
  1. Select Option 5 (Global Opts) in the IMS Program Restart Facility main ISPF panel.
  2. Select Option 6 (DLI Logs).
  3. Select Option 8 (Bypass LOG).
  4. Enter the necessary details.

• To specify job-specific options, follow these steps:
  1. Select Option 6 (Job Options) in the IMS Program Restart Facility main ISPF panel.
  2. Select (or create) the Job Override entry that includes the job for which you want to use bypass logging.
  3. Select Option 6 (DLI Logs).
  4. Select Option 8 (Bypass LOG).
  5. Enter the necessary details.

It is recommended that the options specified allocate a very small DASD data set.

RECON cleanup

The logs created for jobs that use the bypass logging option are marked in error by IMS Program Restart Facility. This prevents DBRC from using the log data sets in any GENJCL.RECOVER situation.

These entries can be removed by using the DBRC DELETE.LOG INACTIVE command. Refer to IMS Commands Volume 3: IMS Component and z/OS Commands for details.
Chapter 7. Troubleshooting

IMS Program Restart Facility issues messages that help you diagnose and solve processing errors.

Topics:

- “Runtime messages (IRT)” on page 132
- “ISPF messages (IRTA, IRTB, IRTC)” on page 165
- “Abend codes” on page 183
- “Gathering diagnostic information” on page 186
Runtime messages (IRT)

This topic describes the runtime messages that are issued by IMS Program Restart Facility.

There are two types of messages that are issued by IMS Program Restart Facility:
- Runtime messages that are written to the output of a job (IRT)
- ISPF messages that are presented to the user by ISPF (IRTA, IRTB, IRTC)

Use the information in these messages to help you diagnose and solve IMS Program Restart Facility problems.

Runtime message format

IMS Program Restart Facility runtime messages adhere to the following format:

\[ \text{IRT}nnnx \]

where:

- \( \text{IRT} \) Indicates that the message was issued by IMS Program Restart Facility
- \( nnn \) Indicates the message identification number
- \( x \) Indicates the severity of the message:
  - \( A \) Indicates that operator intervention is required before processing can continue.
  - \( E \) Indicates that an error occurred, which might or might not require operator intervention.
  - \( I \) Indicates that the message is informational only.
  - \( S \) Indicates that a severe error occurred, which might require operator intervention.
  - \( W \) Indicates that the message is a warning to alert you to a possible error condition.

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.

**System action:**
The System action section explains what the system will do in response to the event that triggered this message.

**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.

**Module**
The Module section indicates which module or modules are affected.

---

IRTO00I  \( \text{trace information} \)

**Explanation:** IRTO00I messages are produced as a result of the IMS Program Restart Facility debug trace feature. These messages should only be produced when the trace is enabled. If the trace was requested by the IBM Software Support, provide the job output to them for analysis.
System action: The job continues processing normally.
User response: None. This message is informational.

IRT001I  CHECKPOINT ID TRACKING [IS ACTIVE | NOT ENABLED]
Explanation: This message identifies whether IMS Program Restart Facility is tracking application program checkpoints so it can assist in restart processing. If tracking is active, IMS Program Restart Facility allocates checkpoint tracking data sets and assists with program restart. If tracking is not enabled, IMS Program Restart Facility will not be able to assist with any restart processing.
System action: The job continues normal processing.
User response: No action is required. However, if this message does not appear in the message log for the job or tracking is not enabled, and the job later abends, you might have to manually supply the restart checkpoint ID if you determine that the job step needs to be restarted.

IRT002I  CHECKPOINT ID TRACKING CLEANUP IS COMPLETE
Explanation: The job completed normally, and the CTDS was successfully deleted.
System action: The job terminates normally.
User response: None. This message is informational.

IRT003W  CHECKPOINT ID TRACKING CLEANUP BYPASSED
Explanation: The application terminated without abending. However, the RCERROR=nnnn return code threshold signified that no cleanup or delete of the CTDSs should take place.
System action: The job terminates normally.
User response: The next run of the job proceeds as if an abend had occurred, and an extended restart was to be done. No action is required unless this result was not your intention in specifying the RCERROR=nnnn parameter. In this case, you might want to delete the CTDSs before the next run of the job.

IRT004W  AUTOXRST=NO PARAMETER IN EFFECT - NO AUTOMATIC XRST WILL BE ATTEMPTED
Explanation: AUTOXRST=NO was specified in one of the following places:
• the options in the IRTOPT data set entry for this job
• as a specification in the IRTSCNTL DD statement
• in the IRT#CPID JCL CKPTID module
No automatic IMS Extended Restart processing occurs; even if the CTDS exists from a previous abend of the job.
System action: The job continues normal processing.
User response: No action is required if you did not intend automatic IMS Extended Restart processing for this job. In this case this message is for information only.

IRT005E  CTDSHLQ MUST BE 1-8 CHARACTERS - ABEND U3626 WILL FOLLOW
Explanation: You cannot specify the CTDSHLQ parameter with more than eight characters, or more than 17 characters if the CTDSNAM option is not set to BOTH. Be very careful when changing the CTDSHLQ parameter in the global options, as making a change to this parameter will prevent IMS Program Restart Facility from restarting any jobs that were pending restart at the time CTDSHLQ is updated.
System action: The job abends with a U3626 completion code.
User response: Correct the value that is specified in the CTDSHLQ parameter in the global options.

IRT006E  SVC99 FAILED DD ddbname R15=rc
RSN=reason [SMSRSN=code] [DSN=dsn]
Explanation: The attempt to dynamically allocate or deallocate a required data set was unsuccessful. When an SMS error code is returned, the SMSRSN code is included in the message. The SMSRSN field shows an IGD* message that describes the reason for the error. The DSN field is presented when a data set name was present in the dynamic allocation or deallocation request.
System action: The job abends with a U3620 completion code, unless the dynamic allocation request was for a deallocated data set.
User response: Other IKJ* or IGD* series messages preceding this message might give you enough information about what caused the abend. You might have to review and possibly change the global parameters specified to dynamically allocate the data set. If these actions do not resolve the problem, contact IBM Software Support.

IRT007I  CURRENT JOB: JOB=jobname
PGM=pgmname PSB=psbname PSTP=proc-step JSTP=stepname IMSversion
Explanation: Messages IRT007I, IRT008E, and IRT009E are displayed if a job requiring restart is being restarted in the wrong job step.
System action: The job abends with a U3621
A user response is required unless this restart attempt abnormally terminates with a U3625 or a U0102 abend completion code, see “Resolving restart abends caused by indoubt checkpoints” on page 91 to determine the corrective action.

The last time the job ran, an abend occurred. This message indicates that the checkpoint ID might be committed, but IMS Program Restart Facility was unable to confirm its completion.

The job abends with a U3621 completion code after messages IRT007E, IRT008E, and IRT009E are displayed.

User response: Restart the job from the correct step.

If the checkpoint ID displayed in message IRT017I is correct, make sure AUTOXRST=LAST is also specified for the restart. If the checkpoint ID displayed in message IRT010W is correct, make sure AUTOXRST=FORCE is specified instead. If you do not make corrections, the job abends with a U3625 completion code.

If the control region abended, wait for the DFS682I message to be displayed before issuing a control region emergency restart.

Review the appropriate IMS logs to determine the checkpoint ID from which the job can be restarted.

If there is no indoubt checkpoint ID, IMS Program Restart Facility provides the last verified checkpoint ID to IMS Extended Restart.
User response: No action is required unless message IRT010W is also displayed and this restart attempt abnormally terminates with a U3625 or U0102 abend completion code; see “Resolving restart abends caused by indoubt checkpoints” on page 91 to determine the corrective action.

IRT019W BCDINTVL MUST BE IN HHMMSSSTH FORMAT

Explanation: The BCDINTVL parameter was specified in the version 2.1 inclusion options data set (when running the IRTINCL conversion utility) or in an IRTSCNTL DD data set; however, the parameter was specified incorrectly.

System action: The job continues processing as if the BCDINTVL parameter was not specified.

User response: Specify an eight character length HHMMSSSTH format where:

- **HH** represents hours
- **MM** represents minutes
- **SS** represents seconds
- **T** represents tenths of a second
- **H** represents hundredths of a second

Make the necessary correction to either the inclusion options data set or the in-stream IRTSCNTL DD statement.

IRT020W OPTION UNKNOWN: *keyword*

Explanation: The *keyword* parameter that is displayed in the message text is not a valid IMS Program Restart Facility option keyword name.

System action: The job continues processing as if the unknown parameter was not specified.

User response: While this specification error does not cause an abend to be issued, review the entry and correct it.

IRT021I PROGRAM RC=X’xxxxxxxx’

Explanation: The return code of the IMS application program is displayed. The value is displayed in hexadecimal format and represents the fullword value that the program specified in register 15 just before ending.

System action: The job step proceeds to completion.

User response: None. This message is informational.

IRT022I BYPASS CHECKPOINT PROCESSING IS ACTIVE

Explanation: Option BYPCHKP=YES was specified, enabling the bypass checkpoint processing feature.

System action: The job step continues to run, bypassing checkpoint processing for some checkpoint calls based on the time interval that was specified for the BCDINTVL parameter.

User response: None. This message is informational.

IRT023I BCDINTVL=xxxxxxxxx BCSTATUS=xx BCRETRN=X’xxxxxxxxx’ BCREASEN=X’xxxxxxxxx’ BCERRXT=X’xxxxxxxxx’

Explanation: Bypass checkpoint processing is active. This message displays the parameters related to the bypass checkpoint that are in effect for this job step.

System action: The job step continues running.

User response: None. This message is informational.

IRT024W AUTOXRST=LAST SPECIFIED - LAST VERIFIED CHECKPOINT ID WILL BE SELECTED

Explanation: The extended restart that was attempted uses the last committed checkpoint ID, which is specified in message IRT017I, instead of the last indoubt checkpoint ID. This extended restart is happening because AUTOXRST=LAST was specified.

System action: The job step continues to run.

User response: Remove any special JCL override as soon as possible.

IRT025W USING LAST SUCCESSFUL RESTART CKPTID=value

Explanation: IMS Program Restart Facility has reviewed the checkpoints available for restart, and has selected a checkpoint ID returned by DFSZSR00.

System action: The job continues restart processing with the selected checkpoint ID.

User response: None.

IRT026W USING CKPTID FROM OPTIONS DATASET

Explanation: A checkpoint ID was specified in the IRTSCNTL DD or in the CTX data set (as created by the ISPF Job Administration screens). This checkpoint ID value will be used by IMS Program Restart Facility to restart the job.

System action: The job continues restart processing by using the specified checkpoint ID.

User response: None.

IRT027W USING CKPTID FROM JCL

Explanation: IMS Program Restart Facility had an indoubt checkpoint, but the checkpoint ID specified in the JCL (via the CKPTID=JCL symbolic parameter) matched the last verified checkpoint ID. IMS Program restart processing for some checkpoint...
Restart Facility will proceed to restart the job using this checkpoint ID instead of the indoubt checkpoint.

**System action:** The job continues restart processing using the specified checkpoint ID.

**User response:** None.

---

**IRT028E** PROGRAM RC ABEND THRESHOLD REACHED - ABEND FOLLOWS

**Explanation:** The application terminated and issued a non-zero return code that is equal to, or higher than the value specified in the RCABEND parameter. IMS Program Restart Facility treats this job as if it has abended.

**System action:** The job step abends with a U3624, or with the abend code specified by the user in the UABEND parameter.

**User response:** An automatic extended restart is attempted the next time the job is run.

---

**IRT031W** WAITING FOR CTX DSN=xxxxxxxx

**Explanation:** Another job, task, or TSO user exclusively holds the CTX data set. A TSO user might be editing the job override data set in the ISPF Job Administration screens.

**System action:** The job attempts to allocate the data set every minute for 8 minutes.

**User response:** None. However, until the TSO user or the batch job holding the data set releases it, the batch job cannot run. If the situation persists, have an operator issue the appropriate display commands to determine the source of the delay (DIR GRS, RES=(SYSdsn,dsn)).

---

**IRT036W** USING IN-DOUBT CKPTID FROM [OPTIONS | JCL]

**Explanation:** IMS Program Restart Facility had an indoubt checkpoint, and the checkpoint ID specified in the JCL (via the CKPTID JCL symbolic parameter) or in the options (IRTOPT, IRT$CNTL or CTX data set) matched the indoubt checkpoint ID. IMS Program Restart Facility will proceed to restart the job using this checkpoint ID instead of the last verified checkpoint.

**System action:** The job continues restart processing using the specified checkpoint ID.

**User response:** None.

---

**IRT037W** AUTOXRST=FORCE SPECIFIED - INDOUBT CHECKPOINT ID WILL BE FORCED

**Explanation:** The extended restart being attempted uses the indoubt checkpoint ID recorded in the CTDS. This extended restart is happening because you resubmitted the job with an override with the option AUTOXRST=FORCE.

**System action:** The job step continues processing.

**User response:** Remove any overrides from the JCL of the job before the next execution of the job.

---

**IRT038W** JCL SPECIFIED CKPTID=xxxxxxxxx

**Explanation:** A value for a symbolic checkpoint ID was specified in the JCL for the job being run.

**System action:** The job uses this checkpoint ID for any IMS Extended Restart processing.

**User response:** This message can serve as a warning for you to remove this checkpoint ID to avoid future U0102 abends.

---

**IRT039E** NO IMSvvvv SUPPORT FOR IMSwwww EXTENDED RESTARTS

**Explanation:** A job that was previously run using IMS version vvvv was restarted using IMS wwww. IMS Program Restart Facility does not support this restart capability.

**System action:** The job abends with a U3621 completion code.

**User response:** Restart the job by using the same version of IMS that was in use before the abend, or restart the job using a version of IMS that IMS Program Restart Facility provides compatibility for.

---

**IRT040I** JOB RUN UNDER IMS VERSION vvvv RESTARTING UNDER IMS VERSION www

**Explanation:** A job that was previously run using IMS version vvvv was restarted using IMS version www. IMS Program Restart Facility automatically provides conversion support between releases of IMS.

**System action:** IMS Program Restart Facility will provide the support for restarting this job under the different release of IMS.

**User response:** None. This message is informational.

---

**IRT041W** BYPASS CHECKPOINT PROCESSING REQUEST IGNORED - reason

**Explanation:** The request to use the bypass checkpoint processing feature was ignored because of the reason listed in the message. The reason will be one of the following circumstances:

- **FAST PATH PRESENT**
- **IN= HAS BEEN SPECIFIED**
- **NO CHKP INTERVAL SET (BCDINTVL=0)**

IMS Program Restart Facility does not support bypass checkpoint processing in these circumstances.
**IRT042I**

**BCSTCLST=xxxxxxxxxxxxx**

*Explanation:* The list of status codes specified by the BCSTCLST parameter that is used by bypass checkpoint processing is displayed.

*System action:* The job continues running.

*User response:* None. This message is informational.

**IRT043I**

**CKPTID TABL: xxxxxxxxxxxxx**

*Explanation:* The parameters for the special checkpoint ID coded in the IRT#CPID table are displayed. The IRT#CPID table name is displayed first. The value specified in the checkpoint ID table for the CKPTID value that is specified in the JCL of the job is displayed next.

*System action:* The job continues running.

*User response:* None. This message is informational.

**IRT044W**

**PROGRAM RC THRESHOLD REACHED**

*Explanation:* The IMS application program terminated with a return code equal to, or higher than the threshold return code specified in the RCERROR parameter.

*System action:* The job terminates. However, CTDS cleanup is bypassed so that the subsequent restart of the job is considered an extended restart.

*User response:* None.

**IRT045W**

**IMSLOGR= CANNOT BE DSNAME IF SPECIFIED AS GBL OPTION**

*Explanation:* The IMS Program Restart Facility V2.1 conversion utility encountered a GBL option for parameter IMSLOGR, which specifies a data set name. This is not permitted.

*System action:* The specification for the IMSLOGR parameter is ignored.

*User response:* Correct the IMSLOGR value specified in the options, or correct the value in the resulting IRTOPT data set by using the IMS Program Restart Facility V2.2 ISPF interface.

**IRT046W**

**IRTRCC00 ESTAE number CREATE FAILED: 'RC = X'\textit{reason} REASON = X'bbbb'**

*Explanation:* IMS Program Restart Facility abend protection logic could not be initialized.

*System action:* The job continues processing.

Certain abends, such as those caused by operator cancel or CPU timeout, are not backed out when the job abends. In that case, restarting the job causes backout to occur.

*User response:* Contact IBM Software Support. Provide all job output for analysis.

**IRT047I**

**ENTERING IRTRCC00 ESTAE number DUE TO abend-code ABEND IN [IRTRCC00 | APPLICATION]**

*Explanation:* IMS Program Restart Facility abend protection logic has been activated.

*System action:* IMS Program Restart Facility initiates backout processing.

*User response:* This message normally occurs when a Sx22 or out-of-memory condition occurs, so that backout processing can be initiated.

Determine the reason for the abend and proceed with normal job restart procedures.

**IRT048W**

**RECURSIVE ENTRY FOR IRTRCC00 ESTAE number**

*Explanation:* IMS Program Restart Facility abend protection logic has encountered a problem.

*System action:* The job terminates.

*User response:* If backout processing has started for the job when you see this message, it is likely that either the IMS log termination utility or the IMS Batch Backout utility has abended.

In this case, determine why the utility abended, then restart the job so that IMS Program Restart Facility can finish backout processing for the job.

If backout processing has not started for the job, contact IBM Software Support and provide all job output for analysis.

**IRT053W**

**PGM xxxxxxxx**

**IOAREA='Xxxxxxxxxxxxxxxx'**

**JOB=xxxxxxxx**

*Explanation:* The IOAREA for the XRST call in the application was not initialized to spaces.

*System action:* The job continues processing as if the area were initialized to spaces.

*User response:* Change the application program to
initialize this field to spaces as time permits.

**IRT054I**  XRT CKPTID=value

**Explanation:** The checkpoint ID from which the job is being restarted is displayed.

**System action:** The job continues processing.

**Programmer response:** None.

**IRT055I**  XRT FOR BMP zzzzzzzz ON xxxx - ABEND IMSID=aaaa

**Explanation:** The last time the job, that is indicated by the value of zzzzzzzz, terminated abnormally on the IMS subsystem that is indicated by the value of aaaa. The job is being restarted on the IMS subsystem that is indicated by the value of xxxx.

**System action:** The extended restart continues to be processed for the job.

**User response:** None. This message is informational.

**IRT059I**  DETACH SUCCESSFUL

**Explanation:** The IMS task has completed processing and IMS Program Restart Facility has detached the task.

**System action:** Processing continues normally.

**User response:** None. This message is informational.

**IRT060W**  IMMEDIATE ABEND Uxxxx SCHEDULED DB=xxxxxxxx

**Explanation:** This message is issued for ABEND U0474 or ABEND U3303.

For ABEND U0474, an operator has entered a MODIFY jobname, STOP command.

For ABEND U3303, one of various IMS licensed programs is attempting to take a database that is being used by the running job offline.

**System action:** For the U0474 form of this message, the job abends with a U0474 user abend code. For the U3303 form of this message, the job step of the job is suspended after a U3303 abend and put into a wait state. This wait state persists until the database that was taken offline is started again. When the database is started again, IMS Extended Restart resumes the job step from the last successfully completed checkpoint.

**User response:** None.

**IRT061I**  [ATTACH | REATTACH] IN PROGRESS

**Explanation:** IMS Program Restart Facility uses MVS ATTACH processing to invoke IMS after the execution environment is prepared for IMS. This message is issued just before invoking IMS to process the application program.

The REATTACH form of the message occurs when IMS processing is interrupted by an abend or by a request by an online reorganization for access to a database. The REATTACH occurs when IMS Program Restart Facility determines that it should try to invoke IMS to restart the application program.

**System action:** The job continues processing normally.

**User response:** None. This message is informational.

**IRT062W**  IMS JOB STEP ABEND code [REASON=xxxxxxxx]

**Explanation:** The IMS task for the application abnormally terminated. The abend code and, if present, the abend reason code are shown.

**System action:** The job continues processing normally.

**User response:** None.

**IRT063W**  MODIFY COMMAND INVALID - JOB=xxxxxxxx

**Explanation:** You issued an MVS MODIFY command for the job, but the operand was not STOP or HOLD.

**System action:** The job continues processing.

**User response:** Issue the MVS MODIFY command again with either the STOP or HOLD operand.

**IRT064I**  [STOP | HOLD] COMMAND ACCEPTED - JOB=xxxxxxxx

**Explanation:** The MVS MODIFY command you issued for the job was accepted for processing.

**System action:** The job step is abended. If the STOP operand was issued, the job step terminates with a U0474 abend.

If the HOLD operand was issued, the application abends with a U3303 code and goes into a wait state until a MODIFY jobname, XRST command is issued.

**User response:** No action is required if you issued the STOP operand. If you issued the HOLD operand, you must also issue a MODIFY jobname, XRST command to resume the job.

**IRT066I**  [STOP | HOLD] COMMAND ACCEPTED - JOB=xxxxxxxx DB=xxxxxxxx

**Explanation:** The MVS MODIFY command that you issued for the job was accepted for processing because the database you specified is used by the job.

**System action:** The job step abends. If you issued the STOP operand, the job step terminates with a U0474 abend.
If you issued the HOLD operand, the application abends U3303 and goes into a wait state.

**User response:** No action is required if you issued the STOP operand.

If you issued the HALT operand, you must also issue a MODIFY jobname, XRST command to resume the job.

---

### IRT067W

**[STOP | HOLD] COMMAND IGNORED - JOB=jobname DB=x

**Explanation:** The MVS MODIFY command you issued for the job was ignored because the database specified is not used by the job.

**System action:** The job continues processing.

**User response:** None.

---

### IRT069I

**MODIFY xjobname xxxx**

**Explanation:** You issued an MVS MODIFY command for the job. The text of the command is displayed in the job log.

**System action:** The job continues processing.

**User response:** None. This message is informational.

---

### IRT070I

**REATTACH SCHEDULED FOR JOB jobname PSB=psb insid**

**Explanation:** An abend occurred while processing the application program. An entry in the abend retry table matched the abend condition, so IMS Program Restart Facility will attempt to restart the program after the delay interval has elapsed.

**System action:** IMS Program Restart Facility waits for the delay interval, and then attempts to restart the abended application program.

**User response:** None. This message is informational.

---

### IRT071W

**REATTACH WAITING FOR MVS CMD: F jobname, XRST**

**Explanation:** The displayed job name was held because of a MODIFY jobname,HOLD command. The job is now waiting for an operator command MODIFY jobname,XRST to allow IMS Program Restart Facility to restart the application program.

**System action:** The job waits to be issued the MVS command F jobname, XRST.

**User response:** You can either issue the indicated MVS command or issue an MVS CANCEL command.

---

### IRT073E

**ABRETRY SYS ABEND CODE MUST BE 3 HEX DIGITS 0-9, A-F ONLY**

**Explanation:** You have specified an ABRCC system abend completion code incorrectly in the inclusion options data set or in an IRT$CNTL statement.

**System action:** IMS Program Restart Facility ignores the incorrect ABRCC control statement.

**User response:** Correct the ABRCC control statement and resubmit the job.

---

### IRT074E

**ABRETRY USER ABEND CODE MUST BE 4 DECIMAL DIGITS 0-9 ONLY**

**Explanation:** Either there is an incorrect ABRCC system abend completion code in the inclusion options data set and the IRTINCL conversion utility was run, or there is an incorrect ABRCC system abend completion code in an IRT$CNTL statement.

**System action:** IMS Program Restart Facility ignores the incorrect ABRCC control statement.

**User response:** Correct the ABRCC control statement and resubmit the job.

---

### IRT075E

**ABRETRY SYSTEM/USER ABEND CODE REQUIRED**

**Explanation:** Either there is an invalid system or user completion code in the inclusion options data set and the IRTINCL conversion utility was run, or there is a valid system or user completion code in an IRT$CNTL statement.

**System action:** IMS Program Restart Facility ignores the incorrect ABRCC control statement.

**User response:** Correct the ABRCC control statement and resubmit the job.

---

### IRT076E

**ABRETRY RECORD INVALID KEYWORD FOUND**

**Explanation:** Either there is an invalid keyword parameter in the inclusion options data set and the IRTINCL conversion utility was run, or there is an invalid keyword parameter in an IRT$CNTL statement.

**System action:** IMS Program Restart Facility ignores the ABRCC control statement.

**User response:** Correct the ABRCC control statement and resubmit the job.

---

### IRT077E

**ABRETRY REASON= MUST BE 8 HEX DIGITS 0-9, A-F**

**Explanation:** Either there is an invalid value for the REASON parameter in the inclusion options data set and the IRTINCL conversion utility was run, or there is...
an invalid value for the REASON parameter in an IRT$CNTL statement.

System action: IMS Program Restart Facility ignores the invalid ABRCC control statement keyword parameter.

User response: Correct the ABRCC control statement and resubmit the job.

IRT078E ABRETRY MAXRETRY PARAMETER COUNT MUST BE DEC DIGITS 0-9

Explanation: Either there is an invalid value for the MAXRETRY parameter in the inclusion options data set and the IRT$INCL conversion utility was run, or there is an invalid value for the MAXRETRY parameter in an IRT$CNTL statement.

System action: IMS Program Restart Facility ignores the invalid ABRCC control statement keyword parameter.

User response: Correct the ABRCC control statement and resubmit the job.

IRT079E ABRETRY DELAY PARAMETER IN MINUTES MUST BE 1-99

Explanation: Either there is an invalid value for the DELAY parameter in the inclusion options data set and the IRT$INCL conversion utility was run, or there is an invalid value for the DELAY parameter in an IRT$CNTL statement.

System action: IMS Program Restart Facility ignores the invalid ABRCC control statement keyword parameter.

User response: Correct the ABRCC control statement and resubmit the job.

IRT083E LOCATE FOR MODULE name FAILED

Explanation: IMS Program Restart Facility loaded the module named in the message, but was unable to find the module name in the CDE list.

System action: IMS Program Restart Facility abends the job step with a U3628 abend code.

User response: Contact IBM Software Support for assistance.

IRT084E INTERCEPT FOR module FAILED RSN=reason

Explanation: IMS Program Restart Facility attempted to set an intercept in the module named in the message, but the attempt failed. The reason code identifies the reason for the failure.

System action: IMS Program Restart Facility abends the job step with a U3628 abend code.

User response: Contact the IBM Support Center and provide the STIMERM return code.

IRT085E MVS IDENTIFY SERVICE FAILED, RC=reason

Explanation: An MVS IDENTIFY macro failed. The reason code indicates the reason for the failure.

System action: IMS Program Restart Facility abends the job step with a U3628 abend code.

User response: Contact IBM Software Support for assistance.

IRT086E PRF OPTIONS MODULE IRT#OPT NOT FOUND

Explanation: The module that identifies the data set name of the options data set was not found in the STEPLIB of the batch job. Module IRT#OPT should be created during the IMS Program Restart Facility installation process, and be available in the STEPLIB of every IMS DLI or BMP batch job.

System action: IMS Program Restart Facility is not active for this job step.

User response: Ensure that module IRT#OPT is available in the STEPLIB libraries of the job.

IRT087I modname ESTAI ABEND=abcde [REASON=reason]

Explanation: An abend occurred when the IMS task that executes the application program was running. This message indicates the abend code abcde and reason code reason, if those values were supplied.

System action: IMS Program Restart Facility continues processing, and may attempt an abend retry if specified in the abend retry table.

User response: None. This message is informational.

IRT089I STIMERM RETURN CODE rc CHKPIINT FUNCTION NOT AVAILABLE

Explanation: IMS Program Restart Facility issued an MVS STIMERM request, but the request failed with return code rc.

System action: The job continues processing, but the CHKPIINT function that warns of excessive time between application checkpoint calls is disabled.

User response: Contact the IBM Support Center and provide the STIMERM return code.
IRT090I  CHKPINT EXCEEDED BY hhmms
Explanation: The checkpoint interval defined in the IMS Program Restart Facility options was exceeded. This interval is defined to provide a warning when the IMS application program fails to issue a checkpoint call for the interval defined by option CHKPINT.
System action: None.
User response: Investigate whether the CHKPINT interval is too low or why the application program failed to issue a checkpoint call for the hhmms time period.

IRT097I  TOTAL CHKP CALLS: nnnn BYPASSED: nnnn
Explanation: The bypass checkpoint processing feature of Program Restart Facility was active during the IMS job step. This message indicates the number of checkpoint calls that were issued by the application program and the number of checkpoint calls that were bypassed by the bypass checkpoint processing feature.
System action: None.
User response: None. This message is informational.

IRT098I  AVERAGE CHKp INTERVAL: nnnn SECONDS
Explanation: The bypass checkpoint processing feature of IMS Program Restart Facility was active during the IMS job step. This message displays the average number of seconds between the checkpoints that were taken after bypass checkpoint processing completed.
System action: None.
User response: None. This message is informational.

IRT100E  UNABLE TO FIND PRF CONTROL BLOCK HKIB
Explanation: IMS Program Restart Facility attempted to locate module IRTHKIB, but the module was not found in the CDE list.
System action: The job step abends with a U3628.
User response: Gather documentation and contact IBM Software Support.

IRT101I  UNABLE TO FIND PRF CONTROL BLOCK HKIB
Explanation: The "C" USERMOD was installed to enable the BYPASS LOGGING option, and is running a batch job (DLI/DBB) outside of IMS Program Restart Facility control.
System action: The job continues.
User response: If you want to have this job run outside of IMS Program Restart Facility control, no action need be taken.

If you want to have this job run under IMS Program Restart Facility control, determine why the job is not running under IMS Program Restart Facility control and fix the problem. To diagnose the problem, check the following:
- You have not applied the "B" USERMOD to include the IMS Program Restart Facility modules in your IMS SDFSRESL data set.
- If you choose not to apply the "B" USERMOD, ensure that the IMS Program Restart Facility load modules are part of the job's JOBLIB or STEPLIB concatenation.
- Ensure you have not included the //IRSIGNR DD DUMMY data definition statement in the job's JCL.

IRT101I  BYPASS LOGGING SUPPORT ENABLED FOR JOB jobname
Explanation: The BYPLOGR=YES option was specified for this job. Bypass logging is now active for this job.
System action: The job continues normal processing, although no valid IMS log is created.
User response: None. This message is informational.

IRT103I  DFSULTR0 input-parameters
Explanation: The IMS log close utility (DFSULTR0) is being invoked to close an IMS DLI job log so that batch backout can be performed. This message describes the input parameters that are supplied to DFSULTR0 by IMS Program Restart Facility for the log close process.
System action: The job continues processing.
User response: None. This message is informational.

IRT104I  DFSULTR0 [ABEND code RETURN CODE=nnnn]
Explanation: The IMS log close utility has completed. This message displays the return code nnnn or abend code that the utility returns after finishing.
System action: The job continues to attempt a batch backout.
User response: None. This message is informational.

IRT105I  DFSBB000 SYSIN: xxxxxxx
Explanation: The IMS Batch Backout Utility (DFSBB000) is being invoked to perform batch backout of a previous abend of this job. This message describes the input parameters xxxxxxx, which were supplied to DFSBB000 by IMS Program Restart Facility for the batch backout process.
System action: The job continues processing.
The use to dynamically allocate the data set name that IMS Program Restart Facility will dynamically allocate to contain control information about logs that will be used by the current job.

System action: The job continues to run.

User response: None. This message is informational.

IRT117E  type DSNAME NOT VALID - dataset name

Explanation: The data set name that was generated for a log data set is not valid. The type parameter can be any of the following values:

LOG1 The name of the log data set that IMS Program Restart Facility will dynamically allocate for the IEFRDER DD statement if JCL allocation is not being used.

LOG2 The name of the log data set that IMS Program Restart Facility will dynamically allocate for the IEFRDER2 DD statement if JCL allocation is not being used.

LTR1 Represents the name of the log data set that IMS Program Restart Facility will dynamically allocate for the NEWRDER DD statement if the log recovery utility (DFSULTR0) needs to be invoked by IMS Program Restart Facility in DUP mode to create an interim log before attempting batch backout (DFSBBBO00).

LTR2 Represents the name of the log data set that IMS Program Restart Facility will dynamically allocate for the NEWRDER2 DD statement if the log recovery utility (DFSULTR0) needs to be invoked by IMS Program Restart Facility in DUP mode to create an interim log before attempting batch backout (DFSBBBO00).
BBO1  Represents the name of the log data set that IMS Program Restart Facility will dynamically allocate for the IEFRDER DD statement if the batch backout utility (DFSBBO00) needs to be invoked by IMS Program Restart Facility.

BBO2  Represents the name of the log data set that IMS Program Restart Facility will dynamically allocate for the IEFRDER2 DD statement if the batch backout utility (DFSBBO00) needs to be invoked by IMS Program Restart Facility.

BBDS  Represents the name of the batch backout data set that IMS Program Restart Facility will dynamically allocate to contain control information about logs that will be used by the current job.

System action: The job will abend with a U3630 completion code and a 00000299 reason code.

User response: Correct the specification for the erroneous log data set name mask.

---

IRT118E  FATAL ERRORS FOUND DURING PARM PROCESSING

Explanation: Significant errors were found during parameter and option processing phase.

System action: The job will abend with a U3630 completion code and a 00000299 reason code.

User response: Correct the JCL for the job and rerun the job as required.

---

IRT125E  UNEXPECTED RETURN CODE FROM DFSULTR0

Explanation: The log recovery utility (DFSULTR0) completed with an unexpected return code.

System action: The job step will abend with a U3630 completion code and a reason code of 00000500.

User response: Check the error messages that precede this message and make the necessary corrections.

---

IRT131E  DATASET NAME CANNOT BE GREATER THAN 44 CHARACTERS

Explanation: A log data set name that was generated by the corresponding data set name mask is invalid.

System action: The job will abend with a U3630 completion code and a 00000299 reason code.

User response: Correct the specification for the invalid log data set name mask.

---

IRT133I  AUTOBK FOR SUBSYSTEM xxxxxxxx IS BEING ATTEMPTED

Explanation: IMS Program Restart Facility attempts to perform an automated batch backout either because a prior execution of the job failed and did not successfully backout, or because the job has failed and automatic batch backout processing is being attempted following an abend.

System action: IMS Program Restart Facility attempts automatic batch backout for this failed job.

User response: None. This message is informational.

---

IRT134E  AUTOBK INFO INDOUBT FOR SUBSYSTEM

Explanation: The information stored in the batch backout data set does not match the attributes of the job that is running.

System action: IMS Program Restart Facility causes the job step to abend with a U3630 completion code and a 00000400 reason code.

User response: Correct the JCL for the job and rerun the job as required.

---

IRT136E  FAILED SUBSYSTEM xxxxxxxx ABEND/RERUN PSB CONFLICT

Explanation: The information that is stored in the batch backout control data set for the PSB that was used at the time of the original abend does not match the PSB of the currently running job. See accompanying message IRT137E for more information.

System action: IMS Program Restart Facility causes the job step to abend with a U3630 completion code and a 00000410 reason code.

User response: Correct the JCL for the job being rerun as required.

---

IRT137E  ABENDPSB=xxxxxxxx RERUNPSB=yyyyyyyy ** NOT A MATCH

Explanation: The information stored in the batch backout control data set for the PSB that was in use at the time of the original abend does not match the PSB of the job that is currently running.

System action: IMS Program Restart Facility will cause the job step to abend with a U3630 completion code and a 00000410 reason code.

User response: Correct the JCL for the job being rerun as required.
**IRT144I**  AUTOBK0 FOR SUBSYSTEM xxxxxxx COMPLETE

*Explanation:* IMS Program Restart Facility has completed all automatic batch backout processing for this job.

*System action:* The job step terminates with either the original abend completion code of the failed job, a U3630 abend and a 00000507 reason code, or both.

*User response:* Prepare the job to be resubmitted. If an extended restart is indicated, the value specified for CKPTID must match the CHKPT ID specified in the DFS395I BACKOUT COMPLETE message or in the DFS888I NO DATA BASE RECORDS READ message, which is displayed by the batch backout utility.

**IRT145W**  RERUN/XRST MAY BE PENDING FOR JOB xxxxxxx

*Explanation:* IMS Program Restart Facility has completed all automatic batch backout processing for this job. This message might be displayed with message IRT144I.

*System action:* The job step will terminate with a U3630 abend and reason code 00000507.

*User response:* Prepare the job to be resubmitted. If an extended restart is indicated, the value specified for CKPTID must match the CHKPT ID specified in the DFS395I BACKOUT COMPLETE message or the DFS888I NO DATA BASE RECORDS READ message, which is displayed by the batch backout utility.

**IRT146E**  UNRESOLVED SYMBOLIC IN DSN xxxxxxx

*Explanation:* One of the log data set names that was generated for a log data set name using mask xxxxxxx contains an unresolved symbolic parameter.

*System action:* The job will abend with a U3630 completion code and a 00000299 reason code.

*User response:* Correct the log data set name mask and resubmit the job.

**IRT147I**  BATCH BACKOUT INFORMATION SAVED.

*Explanation:* The application program abended and AUTOBK0=NO was specified.

*System action:* No backout is performed. However, the backout information is saved in the BBDS.

*User response:* When you rerun the job, the BBDS information is used to backout prior to the rerun/restart of the application. You might also want to modify the backout information using the IMS Program Restart Facility ISPF dialog.

**IRT148I**  DUAL LOGGING REQUESTED

*Explanation:* Dual logging is detected if 1) the IEFRDER2 option is specified in the JCL, or 2) if the IEFRDER2 option is specified in the control cards (for example, IEFRDER2=DYNALLOC).

*System action:* Both IEFRDER2 and IEFRDER options can be allocated dynamically depending on the options value.

*User response:* None. However, in the exception where IEFRDER2=JCL is specified, then IEFRDER2 must be in the JCL.

If IEFRDER2=JCL is specified and no IEFRDER2 is in the JCL, single logging is in effect.

**IRT149W**  INVALID LOG DSN NAME FOR DDN IEFRDER (or IEFRDER2)

*Explanation:* An invalid data set name for log data set(s) was specified. Invalid data set names are:
- NULLFILE
- Temporary data set name
- JES file (for example, SYSOUT=*)
- DD DUMMY

*System action:* If IEFRDER=DYNALLOC was specified, the current allocation is deallocated and a new allocation is made using the options definition.

*User response:* No action is necessary. However, it is recommended that you clean up the JCL for this JOB.

**IRT150E**  UNEXPECTED RETURN CODE FROM DFSBB00

*Explanation:* The batch backout utility (DFSBBO00) completed with an unexpected return code.

*System action:* The job step will abend with a U3630 completion code and 00000507 reason code.

*User response:* Review preceding messages for the return code issued by DFSBBO00 and for any other messages that relate to the cause of the failure. Consult IMS System Utilities to determine the next course of action.

**IRT151W**  USING UNCATALOGED VOLSERS FOR DSN=ddddd

*Explanation:* The IMS Program Restart Facility is using a data set that is not cataloged for a log volume.

*System action:* None.

*User response:* Do not use the CATDS option with DBRC or it will cause failures when using the log data set.
IRT152W  BYPASS LOGGING OPTION HAS BEEN SELECTED

Explanation: The BYPLOGR option has been selected for this job.

System action: The job step will continue to run, and if all conditions for use of the bypass logging option are met, no logging will be performed.

User response: None.

IRT153E  BYPASS LOGGING OPTION NOT ALLOWED WITH IRLM=Y

Explanation: The BYPLOGR option was selected for this job, but IRLM=Y was also specified.

System action: The job step will continue to execute, but logging will still occur.

User response: None.

IRT154I  BYPASS LOGGING IN EFFECT

Explanation: The BYPLOGR option was selected for this job.

System action: The job step will continue to run and no logging will occur.

User response: None. This message is informational.

IRT155I  LISTLOG OPEN PROCESSING FOR SSID=ssssssss

Explanation: The IRTUSTP0 utility has initiated processing to list the open logs for the subsystem ID sssssss.

System action: None.

User response: None. This message is informational.

IRT156I  DSPURX00 LINK SUCCESSFUL

Explanation: The IRTUSTP0 utility has completed a DBRC request to list the open logs for the subsystem that was specified in message IRT155I.

System action: None.

User response: None. This message is informational.

IRT157E  DSPURX00 LINK ERROR - RC=nnnn

Explanation: The IRTUSTP0 utility called the DBRC utility DSPURX00 to list the open logs, but the utility received an unexpected return code, as shown in nnnn.

System action: The IRTUSTP0 utility continues to process the logs that were successfully listed by DBRC.

User response: The RECON data sets may contain a log record that causes DBRC to return the error return code. Run a DBRC batch utility on the LISTLOG OPEN command to identify the reason for the unexpected return code.

IRT158W  SVC99 VERB=vv DD=ddddddd RC=rc RSN=reason

Explanation: The IRTUSTP0 utility received an unexpected return code from an MVS dynamic allocation. The dynamic allocation verb vv, DD name dddddddd, return code rc, and reason code reason are displayed in the message text.

System action: If the error occurred while attempting to allocate a required data set, IRTUSTP0 abends with a U3630 abend code and reason code 103. If the error occurred while attempting to deallocate a data set, IRTUSTP0 attempts to continue.

User response: Investigate the dynamic allocation return code and reason code to determine the reason for the error.

IRT159E  DFSULTR0 DUP MODE ERROR(S) FOUND

Explanation: IMS Program Restart Facility invoked the IMS utility DFSULTR0 as part of the log close process. DFSULTR0 found errors while attempting to perform duplicate processing.

System action: The batch job abends.

User response: Try to close the log by using the standard IMS utilities and perform batch backout by using the closed logs. If you cannot close the logs, see the IMS product documentation. The log close failures will generate DFS messages or an IMS abend.

IRT160W  DFSULTR0 REP MODE MAY BE REQUIRED

Explanation: IMS Program Restart Facility invoked the IMS utility DFSULTR0 as part of the log close process. DFSULTR0 found errors while attempting to perform duplicate processing.

System action: The batch job abends.

User response: Try closing the log by using the standard IMS utilities and perform batch backout by using the closed logs. If you cannot close the logs, see the IMS product documentation. The log close failures will generate DFS messages or an IMS abend.

IRT161W  DFSULTR0 MAY BE REQUIRED

Explanation: IMS Program Restart Facility invoked the IMS utility DFSULTR0 as part of the log close process. DFSULTR0 found errors while attempting to close the log.

System action: The batch job abends.

User response: Try closing the log by using the
standard IMS utilities and perform batch backout by using the closed logs. If you cannot close the logs, see the IMS product documentation. The log close failures will generate DFS messages or an IMS abend.

IRT163E  ERROR ALLOCATING SYSIN
Explanation: The IRTUSTP0 utility attempted to allocate a SYSIN data set that is used to call DBRC, but the allocation failed.
System action: The batch job abends with abend code 3630 and reason code 103.
User response: Review the MVS syslog for the job error messages that occurred prior to the IRT163E message.

IRT164E  ERROR ALLOCATING SYSPRINT
Explanation: The IRTUSTP0 utility attempted to allocate a SYSPRINT data set that is used in calling DBRC, but the allocation failed.
System action: The batch job abends with abend code 3630 and reason code 103.
User response: Review the MVS syslog for the job error messages that occurred prior to the IRT164E message.

IRT165E  ERROR ALLOCATING BCMPRINT
Explanation: The IRTUSTP0 utility attempted to allocate DD BCMPRINT, but the allocation failed.
System action: The batch job abends with abend code 3630 and reason code 103.
User response: Review the MVS syslog for the job error messages that occurred prior to the IRT165E message.

IRT166E  ERROR ALLOCATING BCMPUNCH
Explanation: The IRTUSTP0 utility attempted to allocate DD BCMPUNCH, but the allocation failed.
System action: The batch job abends with abend code 3630 and reason code 103.
User response: Review the MVS syslog for the job error messages that occurred prior to the IRT166E message.

IRT167E  FATAL ERROR HAS OCCURRED
Explanation: The IRTUSTP0 utility encountered a fatal error.
System action: The batch job abends with abend code 3630 and reason code 103.
User response: Review the MVS syslog for the job error messages that occurred prior to the IRT167E message.

IRT170I  LOG BLOCK COUNT =nnnnnnnnn
Explanation: The bypass logging option was in use for this job. The number nnnnnnnn of blocks that were bypassed by this feature is shown.
System action: None.
User response: None. This message is informational.

IRT171E  UNABLE TO FORCE LOG CLOSE
Explanation: Either IMS Program Restart Facility was unable to read the interim log to determine the block count, or no blocks were written to the interim log.
System action: The job abends with abend code 3630 and reason code 500.
User response: Review the MVS syslog of this job for additional related error messages about the log close process or log open failures.

IRT172W  IMS RELEASE UNKNOWN – AUTOBK0=YES PROCESSING BYPASSED
Explanation: IMS Program Restart Facility encountered an unknown release of IMS, causing it to be bypassed, so automated batch backout is unavailable for this job execution.
System action: Automated batch backout processing is performed for this job.
User response: Determine if additional maintenance is required for IMS Program Restart Facility to support the version of IMS that is to run the job.

IRT173W  AUTOBK0 PROCESSING BYPASSED - DFSBSCD LOAD FAILED
Explanation: An MVS LOAD failed for module DFSBSCD.
System action: The job continues without automatic batch backout processing.
User response: Ensure that the IMS RESLIB is included in the STEPLIB concatenation of the job.

IRT174E  BATCH BACKOUT PROCESSING FAILED
Explanation: An IMS batch DLI job failed and required Batch Backout processing. The Batch Backout processing failed.
System action: The job abends either with the original abend code or with the abend code specified for the job’s IMS Program Restart Facility job entry CMPCBKER specification.
| **User response:** | Determine the reason for the Batch Backout failure by searching the job's JESLOG for prior IMS Program Restart Facility or Batch Backout messages. |
| **System action:** | Correct both the problem that caused the batch backout to fail and the problem that caused the original abend, and then resubmit the job. |
| **User response:** | IMS Program Restart Facility retries the Batch Backout processing when the job is restarted. |

| **IRT174I** | **BATCH BACKOUT PROCESSING COMPLETE** |
| **Explanation:** | An IMS batch DLI job failed and required Batch Backout processing. The Batch Backout processing completed successfully. |
| **System action:** | The job abends either with the original abend code or with the abend code specified for the job's IMS Program Restart Facility job entry. |
| **User response:** | Fix the problem that caused the job to abend and resubmit the job. |

| **IRT175I** | **BACKOUT NOT REQUIRED FOR SUBSYSTEM jobname** |
| **Explanation:** | IMS Program Restart Facility determined that a batch backout was required for a job, and performed backout processing. IMS batch backout determined that backout was not required. |
| **System action:** | The job continues processing. |
| **User response:** | None. This message is informational. |

| **IRT176W** | **VSAM BUFFERPOOL RESET REQUEST NAME TOKEN [CREATE | ACCESS] FAILURE. RETURN CODE = 0Xyyyyyyyy** |
| **Explanation:** | An attempt to create a VSAM buffer pool reset request, or to access a currently-existing request, failed with the provided return code. |
| **System action:** | The job continues. |
| **User response:** | Verify that Batch Backout processing worked as expected. If so, no further action is required. |

| **IRT177W** | **PREVIOUS VSAM BUFFERPOOL RESET REQUEST SET TO NO** |
| **Explanation:** | An IMS batch DLI job failed and required Batch Backout processing. |
| **System action:** | ims Program Restart Facility attempted to create a VSAM buffer pool reset request and discovered a currently-existing request. |
| **User response:** | This request was set to not reset the VSAM buffer pool. |

| **IRT178W** | **UNABLE TO REQUEST VSAM BUFFER POOL RESET** |
| **Explanation:** | An IMS batch DLI job failed and required Batch Backout processing. |
| **System action:** | IMS Program Restart Facility attempted to create a VSAM buffer pool reset request and was unable to do so. |
| **User response:** | Verify that Batch Backout processing worked as expected. If so, no further action is required. |

| **IRT180E** | **DBRC FAILURE IN IMS LOGGER EXIT. RC= xxxx** |
| **Explanation:** | The BYPASS LOGGING option was selected and IMS Program Restart Facility's IMS logger exit failed to mark the temporary log in error. |
| **System action:** | The job fails with a U4002 abend. |
| **User response:** | The DBRC output is found as a SYSPRINT and the DDNAME IRTDSPPR. Review the DBRC output. If the problem is environmental, fix the problem and restart the job. If the problem is due to a failure of one of the DBRC commands, contact IBM Software Support for assistance. |
IRT181E  LOGGER EXIT CANNOT CLOSE BYPASS LOG [IEFRDER | IEFRDER2]

**Explanation:** The BYPASS LOGGING option was selected, and IMS Program Restart Facility’s IMS logger exit could not close the temporary log.

**System action:** The logger exit fails with a U4002 abend. IMS Program Restart Facility notes this in message IRT087I and causes the job to fail with a U3667 abend.

**User response:** Review the job output for system messages detailing the problem. Fix the problem and restart the job. If you cannot fix the problem or the problem re-occurs, contact IBM Software Support for assistance.

---

IRT200E  OPTION keyword VALUE NOT A VALID VALUE FOR THIS KEYWORD

**Explanation:** The value specified for the option keyword is invalid.

**System action:** The job continues processing. If the message was issued by the IMS Program Restart Facility inclusion options conversion utility IRTINCL, then a return code of 8 is generated for the job. If this message is encountered in an IMS batch job, the invalid value is ignored, and processing continues.

**User response:** Review the specification of the option that is specified in the message and correct the value.

---

IRT201E  OPTION keyword INVALID - CAN ONLY BE SPECIFIED AS A GLOBAL OPTION

**Explanation:** The option keyword cannot be specified in a source other than the global options. If the value was specified in the IRT$CNTL DD statement or in the CTX data set, it should be removed.

**System action:** The job continues processing. If the message was issued by the IMS Program Restart Facility inclusion options conversion utility IRTINCL, then a return code of 8 is generated for the job. If this message is encountered in an IMS batch job, the invalid value is ignored, and processing continues.

**User response:** Review the specification of the option and correct or remove the specification.

---

IRT202E  OPTION keyword INVALID - LENGTH OF VALUE EXCEEDS MAX ALLOWED

**Explanation:** The option keyword has a value that exceeds the maximum allowable value for that keyword.

**System action:** The job continues processing. If the message was issued by the IMS Program Restart Facility inclusion options conversion utility IRTINCL, then a return code of 8 is generated for the job. If this message is encountered in an IMS batch job, the invalid value is ignored, and processing continues.

**User response:** Review the specification of the option and correct or remove the specification.
**IRT203E**  
**OPTION** `keyword` **VALUE NOT NUMERIC**

**Explanation:** The option `keyword` has a value that exceeds the maximum allowable value for that keyword.

**System action:** The job continues processing. If the message was issued by the IMS Program Restart Facility inclusion options conversion utility, IRTINCL, then a return code of 8 is generated for the job. If this message is encountered in an IMS batch job, the invalid value is ignored, and processing continues.

**Programmer response:** Review the specification of the option and correct the value.

**IRT204W**  
**OPTION** `keyword` **HAS CHANGED FORMAT - SPECIFY THIS VALUE MANUALLY**

**Explanation:** The APARM option used in IMS Program Restart Facility V2.2 uses a different format for specifying values than the APARM32 option used in IMS Program Restart Facility V2.1. The values currently specified are ignored.

**System action:** The job continues processing. The values for APARM and APARM32 are ignored.

**User response:** Values specified for the APARM32 parameter in IMS Program Restart Facility V2.1 must now be placed in the APARM parameter for IMS Program Restart Facility V2.2.

After the IRTINCL conversion utility completes, use the IMS Program Restart Facility ISPF interface to manually add the required values for the APARM option.

**IRT205I**  
**OPTION** `keyword` **IS NO LONGER SUPPORTED [AND IS IGNORED DURING CONVERSION]**

**Explanation:** The option `keyword` is not supported in this version of IMS Program Restart Facility.

If the message format is "and is ignored", the option is ignored.

If the message format is "but may affect other options during conversion", the option is not supported under this version of IMS Program Restart Facility, but its specification in the prior version of IMS Program Restart Facility might affect how the conversion program specifies other options.

If other options are affected, message IRT289W is generated by the conversion program to provide more detail.

**System action:** The job continues processing.

If the message format is "and is ignored", the specification is ignored.

**IRT206W**  
**IMSGROUP** **SPECIFIED WITH NO VALUES**

**Explanation:** The IMSGROUP keyword requires at least one IMSID.

**System action:** The job continues processing. The specification is ignored.

**User response:** Review the specification of the IMSGROUP statement and remove it.

**IRT207W**  
**IMSGROUP KEYWORD IGNORED ON NON-GBL STATEMENT**

**Explanation:** An IMSGROUP statement was found on a JOB, PGM, PSB, or IJS statement during the conversion process from IMS Program Restart Facility V2.1 to IMS Program Restart Facility V2.2.

The conversion process creates IMS Groups only from IMSGROUP specifications found on GBL statements coded in the IMS Program Restart Facility V2.1 inclusion options data set.

**System action:** The job continues. The IMSGROUP specification is ignored.

**User response:** If the IMSGROUP specification on your JOB, PGM, PSB, or IJS statement differs from any of your IMSGROUP specifications on your GBL statement, add a new GBL statement containing the appropriate IMSGROUP specification, and re-run the conversion process.

**IRT208I**  
**PRECEDING RECORD IS A COMMENT RECORD**

**Explanation:** The inclusion options statement listed above this message is a comment line. This message is issued because it may not be obvious that it is a comment line. For example, if GBL in column one is spelled incorrectly, it becomes a comment line.

**System action:** The job continues processing. The specification is ignored.
IRT209W • IRT225E

User response: None. This message is informational.

IRT209W DUPLICATE type JOB MASK - RECORD IGNORED

Explanation: The inclusion options contained a duplicate JOB, PGM, PSB, or IJS statement. The inclusion options conversion utility ignores this statement.

System action: The job continues processing. The specification is ignored.

User response: None.

IRT210W IMSGROUP VALUES SPECIFIED IN THE ISPF INTERFACE CANNOT BE OVERRIDEN

Explanation: There was an IMSGROUP specification found in the IRT$CNTL input or in the CTX data set. IMS Program Restart Facility only allows IMS group specifications in the ISPF generated options modules.

System action: The job continues processing. The specification is ignored.

User response: Review and remove the specification of the IMSGROUP statement.

IRT211E ALLOCATION FAILED ERCODE=code DSN=dsn

Explanation: IMS Program Restart Facility attempted to allocate the CTX data set associated with the job execution, but the allocation failed.

System action: The job abends with a U3622 abend code.

Programmer response: Review the dynamic allocation error code in the message. If a TSO user is editing job options using the job administration panels in the IMS Program Restart Facility ISPF interface, the allocation can fail because the data set is in use.

IRT212E CTX DATA SET NOT AVAILABLE

Explanation: IMS Program Restart Facility attempted to allocate the CTX data set associated with the job execution a total of eight times (once every two minutes), but the data set was still in use after the eighth attempt.

System action: The job abends with a U3622 abend code.

User response: If a TSO user is editing job options using the job administration panels in the IMS Program Restart Facility ISPF interface, the data set will not be available to be allocated to the job.

IRT213E SWAREQ FAILED RC=rc

Explanation: An MVS SWAREQ macro execution returned with unexpected return code rc.

System action: The job abends with a U4001 abend code.

User response: Review the return code, and contact IBM Software Support for assistance.

IRT214E OPEN FAILED FOR ddbname DATA SET RC=rc

Explanation: An MVS OPEN attempt failed for DD name ddbname.

System action: The job abends with a U4001 abend code.

User response: Review the JESLOG of the job for additional error messages, and contact IBM Software Support for assistance.

IRT215E CLOSE FAILED FOR ddbname DATA SET RC=rc

Explanation: An MVS CLOSE attempt failed for DD name ddbname.

System action: The job abends with a U4001 abend code.

User response: Review the JESLOG of the job for additional error messages, and contact IBM Software Support for assistance.

IRT216E UNEXPECTED RECORD TYPE FOUND IN AUDIT LOG – code

Explanation: An invalid audit record was encountered while reading the audit log. The code parameter is a numeric code that identifies where the error was found, and why.

System action: The job abends with a U4001 abend code.

User response: Review the JESLOG of the job for additional error messages, and contact IBM Software Support for assistance.

IRT217E UNEXPECTED rec-type RECORD SUBTYPE IN AUDIT LOG – code

Explanation: An invalid audit record was encountered while reading the audit log. The rec-type parameter is the internal record type. The code parameter is a numeric code that identifies where the error was found, and why.

System action: The job abends with a U4001 abend code.

User response: Contact IBM Software Support for assistance. A copy of the audit log data set will probably be requested.
assistance. A copy of the audit log data set will probably be requested.

IRT226E  IRTAUDIT DD NOT FOUND
Explanation: The IRTAUDIT DD statement was not found in the JCL of the IRTAUDT batch utility.
System action: The job abends with a U4001 abend code.
User response: Review the job output for any other messages that might indicate the cause of the failure. Also, review the log data set names that were specified in the log options.

IRT238E  BBDS DDNAME NOT FOUND
Explanation: The BBDS data set processing module did not find the DD name of the BBDS data set.
System action: The job terminates with a U3628 abend.
User response: Review the job output for any other messages that might indicate the cause of the failure, such as a dynamic allocation failure.

IRT239W  BBDS OPTION UNKNOWN: keyword
Explanation: The BBDS data set contains a statement with an invalid keyword. The option keyword is listed in the message.
System action: The invalid statement is ignored, and processing continues.
User response: Gather documentation and contact IBM Software Support.

IRT241E  INVALID logtype DSN VALUE – dsn
Explanation: The batch backout process attempted to perform symbolic substitution for dsn, where dsn is an IMS log data set name, as specified in the log data set name options. The symbolic substitution process encountered an error. The logtype is the four-character log type (LOG1, LTR2, BBO2, BYP).
System action: The job terminates with a U3628 abend.
User response: Review the job output for any other messages that may indicate the cause of the failure. Also, review the log data set names that are specified in the log options.

IRT242E  SWAREQ FAILED RC=rc
Explanation: An MVS SWAREQ macro execution returned with unexpected return code rc.
System action: The job abends with a U4001 abend code.
User response: Review the return code, and call the IBM Support Center for assistance.
**IRT243E** REQUIRED DDNAME NOT FOUND – *ddname*

**Explanation:** The required DD name for the inclusion options conversion utility, *ddname*, was not found.

**System action:** The job abends with a U4001 abend code.

**User response:** Ensure that the DD name is defined properly in the JCL of the job.

---

**IRT244E** OPEN FAILED FOR THE IRTOPT DIRECTORY RC=rc

**Explanation:** An MVS OPEN request for the IRTOPT data set directory failed with the return code *rc*.

**System action:** The job abends with a U4001 abend code.

**User response:** Ensure that the IRTOPT DD is defined properly in the JCL of the job.

---

**IRT245E** IRTOPT DATA SET IS NOT EMPTY

**Explanation:** The inclusion options conversion utility requires that the IRTOPT data set is empty before the job is started. The data set is not empty.

**System action:** The job abends with a U4001 abend code.

**User response:** Delete and reallocate the IRTOPT data set.

---

**IRT246E** CLOSE FAILED FOR THE IRTOPT DIRECTORY RC=rc

**Explanation:** An attempt to close the IRTOPT data set failed with the return code *rc*.

**System action:** The job abends with a U4001 abend code.

**User response:** Review the job output for any additional messages that might indicate the reason for the error.

---

**IRT247E** OPEN FAILED FOR *ddname* RC=rc

**Explanation:** An MVS OPEN failed for a required data set with the DD name *ddname*.

**System action:** The job abends with a U4001 abend code.

**User response:** Check that the indicated DD name is properly specified in the JCL of the job. Review the job output for additional messages that might indicate the reason for the error.

---

**IRT248E** CLOSE FAILED FOR *ddname* RC=rc

**Explanation:** An MVS CLOSE failed for a required data set with the DD name *ddname*.

**System action:** The job abends with a U4001 abend code.

**User response:** Review the job output for additional messages that might indicate the reason for the error.

---

**IRT249E** OPEN FAILED FOR IRTPRINT DATA SET

**Explanation:** An MVS OPEN failed for the IRTPRINT DD name.

**System action:** The job abends with a U4001 abend code.

**User response:** Ensure that the IRTPRINT DD name is properly specified in the JCL of the job. Review the job output for additional messages that might indicate the reason for the error.

---

**IRT250E** LOAD FAILED FOR *modname* - BYPCHKP PROCESSING WILL NOT BE AVAILABLE

**Explanation:** An MVS LOAD failed for module *modname*.

**System action:** Bypass checkpoint processing is disabled for this job step.

**User response:** Review the job output for any additional messages that might indicate the reason for the error.

---

**IRT251E** UNABLE TO ISSUE ERROR MESSAGE DUE TO ERROR LOCATING CONTROL BLOCK

**Explanation:** The IMS Program Restart Facility message routing routine was unable to locate the IRTKIB module in storage.

**System action:** A message that was going to be written to the job output is not issued.

**User response:** Review the job output for additional messages that might indicate the reason for the error.

---

**IRT252E** IRTMSG RECEIVED AN INVALID REQUEST BYTE

**Explanation:** The IMS Program Restart Facility message routing routine was invoked with an invalid request indicator.

**System action:** A message that was going to be written to the job output is not issued.

**User response:** Review the job output for additional messages that might indicate the reason for the error.
**IR**

<table>
<thead>
<tr>
<th>IRT253E</th>
<th>IRTMSG FILL REQUEST WITH MSG IN PROGRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The IMS Program Restart Facility message routing routine was invoked with an invalid request indicator.</td>
</tr>
<tr>
<td><strong>System action:</strong></td>
<td>A message that was going to be written to the job output is not issued.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Review the job output for additional messages that might indicate the reason for the error.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IRT254E</th>
<th>IRTMSG RECEIVED AN INVALID WTO FLAG BYTE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The IMS Program Restart Facility message routing routine was invoked with an invalid request indicator.</td>
</tr>
<tr>
<td><strong>System action:</strong></td>
<td>A message that was going to be written to the job output is not issued.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Review the job output for additional messages that might indicate the reason for the error.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IRT255E</th>
<th>IRTMSG SRCH REQUEST WITH NO MSG IN PROGRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The IMS Program Restart Facility message routing routine was invoked with an invalid request indicator.</td>
</tr>
<tr>
<td><strong>System action:</strong></td>
<td>A message that was going to be written to the job output is not issued.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Review the job output for additional messages that might indicate the reason for the error.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IRT256E</th>
<th>IRTMSG EXEC REQUEST WITH NO MSG IN PROGRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The IMS Program Restart Facility message routing routine was invoked with an invalid request indicator.</td>
</tr>
<tr>
<td><strong>System action:</strong></td>
<td>A message to be routed to job output is ignored.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Review the job output for additional messages that might indicate the reason for the error.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IRT257E</th>
<th>IRTMSG INPUT REQUEST WITH MSG IN PROGRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The IMS Program Restart Facility message routing routine was invoked with an invalid request indicator.</td>
</tr>
<tr>
<td><strong>System action:</strong></td>
<td>A message to be routed to job output is ignored.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Review the job output for additional messages that might indicate the reason for the error.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IRT258E</th>
<th>IRTMSG SKIP REQUEST WITH MSG IN PROGRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The IMS Program Restart Facility message routing routine was invoked with an invalid request indicator.</td>
</tr>
<tr>
<td><strong>System action:</strong></td>
<td>A message to be routed to job output is ignored.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Review the job output for additional messages that might indicate the reason for the error.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IRT259E</th>
<th>DYNAMIC ALLOCATION FAILED FOR IRTPRINT ERROR=code INFO=code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The IMS Program Restart Facility message routing routine attempted to dynamically allocate the IRTPRINT data set to the SYSOUT class that is specified in the global options. The request failed.</td>
</tr>
<tr>
<td><strong>System action:</strong></td>
<td>IMS Program Restart Facility messages will not be written to the IRTPRINT data set.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Review the job output for any additional messages that may indicate the reason for the error. Also, review the SYSOUT specification in the global options to ensure that a valid SYSOUT class is specified.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IRT260E</th>
<th>OPEN FAILED FOR ddname</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>An MVS OPEN was attempted for DD name ddname, but the request failed.</td>
</tr>
<tr>
<td><strong>System action:</strong></td>
<td>IMS Program Restart Facility messages will not be written to the indicated data set.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Review the job output for any additional messages that may indicate the reason for the error.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IRT261E</th>
<th>IRTMSG LENGTH OF MESSAGE EXCEEDS 126</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>The IMS Program Restart Facility message routing routine was invoked with an invalid message length.</td>
</tr>
<tr>
<td><strong>System action:</strong></td>
<td>The message is ignored.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>Review the job output for additional messages that might indicate the reason for the error.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IRT262I</th>
<th>PRF OPTIONS IN USE FOR THIS EXECUTION:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation:</strong></td>
<td>A list of all the options used for the job is displayed after this message.</td>
</tr>
<tr>
<td><strong>System action:</strong></td>
<td>Job processing continues.</td>
</tr>
<tr>
<td><strong>User response:</strong></td>
<td>None. This message is informational.</td>
</tr>
</tbody>
</table>
**IRT263I • IRT273E**

**IRT263I** ABRETRY=NO - NO ABEND RETRY TABLE ENTRIES ARE ACTIVE

Explanation: No abend retry table entries are printed because ABRETRY=NO is specified.

System action: Job processing continues.

User response: None. This message is informational.

**IRT264I** NO ABEND RETRY TABLE ENTRIES ARE ACTIVE

Explanation: No abend retry table entries are printed because no active abend retry entries are active.

System action: Job processing continues.

User response: None. This message is informational.

**IRT265E** SWAREQ FAILED RC=rc

Explanation: An MVS SWAREQ macro execution returned with the unexpected return code rc.

System action: The job terminates with a U4001 abend code.

User response: Review the return code, and contact IBM Software Support for assistance.

**IRT266E** OPEN FAILED FOR IRTPRINT DATA SET RC=rc

Explanation: An MVS OPEN request for the IRTPRINT data set failed with return code rc.

System action: The job terminates with a U4001 abend code.

User response: Check that the IRTPRINT data set is properly specified in the JCL of the job. Also, review the job log for messages related to this error.

**IRT267E** CLOSE FAILED FOR IRTPRINT DATA SET RC=rc

Explanation: An MVS CLOSE request for the IRTPRINT data set failed with return code rc.

System action: The job terminates with a U4001 abend code.

User response: Check that the IRTPRINT data set is properly specified in the JCL of the job. Also, review the job log for messages related to this error.

**IRT268E** VALIDATION OF JOB OPTIONS ENTRY FAILED

Explanation: An error occurred when validating a job options entry in the IRTOPT data set.

System action: The job terminates with a U4001 abend code.

User response: Contact IBM Software Support. Provide a copy of the IRTOPT data set and the job output.

**IRT269E** ERROR LOADING OPTIONS MODULES

Explanation: The options list module attempted to load modules from the IRTOPT data set, but MVS LOAD experienced an error.

System action: The job terminates with a U4001 abend code.

User response: Contact IBM Software Support. Provide a copy of the IRTOPT data set and the job output.

**IRT270E** VALIDATION OF HKIB CONTROL BLOCK FAILED IN MODULE IRTOPTM

Explanation: IMS Program Restart Facility attempted to locate module IRTHKIB, but the module was not found in the CDE list.

System action: The job step abends with a U4000.

User response: Contact IBM Software Support for assistance.

**IRT271E** VALIDATION OF type CONTROL BLOCK FAILED IN MODULE IRTOPTR

Explanation: IMS Program Restart Facility failed to validate one of its main control blocks.

System action: The job step abends with a U4000.

User response: Contact IBM Software Support for assistance.

**IRT272E** IRTOPT DSN NOT PRESENT IN MODULE IRTOPTR

Explanation: The data set name of the IRTOPT data set was not populated as it should have been when module IRTOPTR was called.

System action: The job step abends with a U4000.

User response: Contact IBM Software Support for assistance.

**IRT273E** LOAD FAILED FOR MODULE modname ABEND code IN MODULE IRTOPTR

Explanation: Module IRTOPTR attempted to load the modname IRTOPT member, but the load failed. The abend code code is associated with the load failure.

System action: The job step abends with a U4000.

User response: Review the abend code and any other
messages in the job log that might be related to the load failure.

**IRT274E**  
MODULE IRT#OPT IS INVALID - INVALID LENGTH/AUTH CODE

**Explanation:** The IRT#OPT module created during the IMS Program Restart Facility installation process is invalid.

**System action:** The job step abends with a U4000.

**User response:** Review the IRT#OPT module, and recreate the IRT#OPT load module that defines the IROPT data set name.

**IRT275E**  
MODULE IRT#OPT IS INVALID - DSNAME NOT PRESENT IN MODULE

**Explanation:** The IRT#OPT module created during the IMS Program Restart Facility installation process is invalid.

**System action:** The job step abends with a U4000.

**User response:** Review the IRT#OPT module, and recreate the IRT#OPT load module that defines the IROPT data set name.

**IRT276W**  
DELETE FOR MODULE modname FAILED RC=rc

**Explanation:** MVS DELETE macro modname returned with unexpected return code rc.

**System action:** Job processing continues.

**User response:** Review the job output for messages that may be associated with the error, and contact IBM Software Support for assistance.

**IRT277E**  
DYNAMIC ALLOCATION FAILED RC=rc ERR CODE=code INFO=code DSN=dsn

**Explanation:** Dynamic allocation failed for the data set name dsn. The return code rc and error code code can be used to identify the reason for the failure.

**System action:** The job step abends with a U4000 completion code.

**User response:** Review the job output for messages that may be associated with the error. Also, review the error code associated with the failure to identify the reason for the error.

**IRT278E**  
OPEN FAILED FOR IROPT DATA SET RC=rc

**Explanation:** An MVS OPEN request for the IROPT data set failed with return code rc.

**System action:** The job step abends with a U4000 completion code.

**User response:** Review the job output for messages that might be associated with the error.

**IRT279E**  
CLOSE FAILED FOR IROPT DATA SET RC=rc

**Explanation:** An MVS CLOSE request for the IROPT data set failed with return code rc.

**System action:** Job processing continues.

**User response:** Review the job output for messages that might be associated with the error.

**IRT280E**  
DYNAMIC UNALLOCATION FAILED RC=rc ERR CODE=errorcode INFO=code DDN=ddname

**Explanation:** Dynamic deallocation failed for the DD name ddname. The return code rc and error code errorcode can be used to identify the reason for the failure.

**System action:** Job processing continues.

**User response:** Review the job output for messages that might be associated with the error. Also, review the error code associated with the failure to identify the reason for the error.

**IRT282E**  
MODULE modname IS INVALID (reason)

**Explanation:** The modname member of the IROPT data set was loaded successfully, but the module failed validation for the reason reason.

**System action:** The job terminates with a U4000 abend code.

**User response:** Review the job output for messages that might be associated with the error. Make a backup of the IROPT data set that contains the invalid module. Consider restoring the IROPT data set from a backup that did not experience this error.

**IRT283E**  
INVALID ENTRY VECTOR DETECTED IN MODULE IROPTR

**Explanation:** Module IROPTR was called by another IMS Program Restart Facility program before the proper parameters were set.

**System action:** The job terminates with a U4000 abend code.

**User response:** Retain a copy of the job output and contact IBM Software Support for assistance.

**IRT284I**  
PRF V2.1 USERLIB NOT FOUND. NO DDNAME EXCLUSION TABLE WILL BE BUILT

**Explanation:** The IMS Program Restart Facility V2.1 -> V2.2 conversion program determined that an IRT21OPL
DD statement did not exist for the job step.

**System action:** The conversion program continues.

No IMS Program Restart Facility V2.2 Exclusion DD name load module is built.

**User response:** Verify that you have specified the correct data set on the IRT21OPL DD statement in the job step that runs the IMS Program Restart Facility V2.1 -> V2.2 conversion utility program (IRTINCL).

This data set is the load library that contains module IRT#IGNR.

If your IMS Program Restart Facility V2.1 environment did not contain an Exclusion DD name load module, you can ignore this message.

Otherwise, specify the correct data set and re-run the job.

---

**IRT288I**  
**dsname** WILL BE SEARCHED FOR PRF V2.1 DDNAME EXCLUSION TABLE

**Explanation:** The IMS Program Restart Facility V2.1 -> V2.2 conversion program searches the data set **dsname** for the IMS Program Restart Facility V2.1 DD name exclusion table.

**System action:** The conversion program continues.

**User response:** None. This message is informational.

---

**IRT286W** UNABLE TO OPEN PRF V2.1 USERLIB dsname. NO DDNAME EXCLUSION TABLE WILL BE BUILT.

**Explanation:** The IMS Program Restart Facility V2.1 -> V2.2 conversion program could not open data set **dsname** to search for the IMS Program Restart Facility V2.1 Exclusion DD name table.

**System action:** The conversion program continues.

No IMS Program Restart Facility V2.2 Exclusion DD name load module is built.

**User response:** Verify that you have specified the correct data set on the IRT21OPL DD statement in the job step that runs the IMS Program Restart Facility V2.1 -> V2.2 conversion utility program (IRTINCL).

This data set is the load library that contains module IRT#IGNR.

Specify the correct data set and re-run the job.

---

**IRT287I** DDNAME EXCLUSION MEMBER NOT FOUND IN dsname. NO DDNAME EXCLUSION TABLE WILL BE BUILT.

**Explanation:** The IMS Program Restart Facility V2.1 -> V2.2 conversion program could not find the IMS Program Restart Facility V2.1 DDNAME exclusion load module in data set **dsname**.

**System action:** The conversion program continues.

---

**IRT289W** REATTACH=NO OR UNSPECIFIED WILL FORCE THIS JOB ENTRY'S keyword VALUE TO 'NO'.

**Explanation:** The IMS Program Restart Facility V2.1 -> V2.2 conversion program found that a specification (or lack of specification) for the REATTACH keyword forced the conversion program to modify the specified keyword in the associated job entry. The current job behavior is therefore not modified upon conversion to the current release of IMS Program Restart Facility.

**System action:** The conversion program continues.

The specified keyword in the associated job option being created for the current IMS Program Restart Facility release is modified to avoid a change of
behavior for the associated job when converting to the
new release of IMS Program Restart Facility.

User response: If any instance of this message
indicates that a job option was created with unwanted
options, modify the job option in question by using the
ISPF panels for the current version of IMS Program
Restart Facility.

IRT291E  VALIDATION OF type CONTROL
    BLOCK FAILED IN MODULE IRTOPTW

Explanation: IMS Program Restart Facility failed to
validate one of its main control blocks.

System action: The job terminates with a U4000 abend
code.

User response: Retain a copy of the job output and contact IBM Software Support for assistance.

IRT292E  DYNAMIC ALLOCATION FAILED
    RC=rc ERR CODE=code INFO=code
    DSN=dsn

Explanation: Dynamic allocation failed for data set
name dsn. The return code rc and error code code can
be used to identify the reason for the failure.

System action: The job step abends with a U4000
code.

User response: Review the job output for messages
that might be associated with the error. Also, review
the error code associated with the failure to identify the
reason for the error.

IRT294E  RESERVE FAILED FOR IRTOPT DATA
    SET RC=rc

Explanation: An MVS RESERVE request returned with
the unexpected return code rc.

System action: The job step abends with a U4000
completion code.

User response: Review the job output for messages
that might be associated with the error. Also, review
the return code that is associated with the failure to
identify the reason for the error.

IRT295I  WAITING FOR ACCESS TO UPDATE
    THE IRTOPT DATA SET

Explanation: An MVS RESERVE request indicates that
another user is using the IRTOPT data set or the
volume where the IRTOPT data set is allocated.

System action: IMS Program Restart Facility waits for
access to the IRTOPT data set.

User response: None. This message is informational.

IRT296E  OPEN FAILED FOR ddbname DATA SET
    RC=rc

Explanation: An MVS OPEN request returned with an
unexpected return code indicating that the OPEN
request failed. The DD name ddbname and return code rc
are indicated in the message.

System action: The job step abends with a U4000
code.

User response: Review the job output for messages
that might be associated with the error.

IRT297E  BLOCK SIZE OF IRTOPT DATA SET
    LESS THAN 6144

Explanation: The block size of the IRTOPT data set
being written is less than 6144. The minimum block size
for IRTOPT is 6144.

System action: The job step abends with a U4000
code.

User response: Reallocation of the IRTOPT data set with
a block size of at least 6144.

IRT298E  OPTIONS MODULE SIZE TO BE
    WRITTEN IS INVALID

Explanation: The module that writes updated IRTOPT
options modules has detected an error in the load
module passed to it to be written.

System action: The job step abends with a U4000.

User response: Retain the job output and contact IBM
Software Support.

IRT299E  NOTE FAILED RC=rc

Explanation: An MVS NOTE request returned with an
unexpected return code.

System action: The job step abends with a U4000
completion code.

User response: Review the job output for messages
that might be associated with the error.

IRT300E  STOW FAILED RC=rc REASON
    CODE=reason

Explanation: An MVS STOW request returned with an
unexpected return code. The return code rc and reason
code reason are displayed in the message.

System action: The job step abends with a U4000
completion code.

User response: Review the job output for messages
that might be associated with the error.
IRT301W  CLOSE FAILED FOR ddname DATA SET
           RC=rc
Explanation: An MVS CLOSE request returned with an unexpected return code for DD name ddname.
System action: The job continues processing.
User response: Review the job output for messages that might be associated with the error.

IRT302W  DEQUEUE FAILED FOR ddname RC=rc
Explanation: An MVS DEQ request returned with the unexpected return code rc for DD name ddname.
System action: The job continues processing.
User response: Review the job output for messages that might be associated with the error.

IRT303E  UNABLE TO LOCATE TIOT ENTRY FOR DDNAME ddname
Explanation: Program Restart Facility was unable to locate the TIOT entry for the DDNAME indicated in the message.
System action: The job terminates with a U4000 abend code.
User response: Contact IBM Software Support for assistance.

IRT304S  SWAREQ FAILED RC=rc
Explanation: An MVS SWAREQ request returned with unexpected return code rc.
System action: The job terminates with a U4000 abend code.
User response: Review the job output for messages that might be associated with the error.

IRT307E  INVALID AUDIT RECORD ENCOUNTERED DURING LOGGING
Explanation: While writing queued audit records, an invalid audit record was encountered.
System action: The job terminates with a U4000 abend code.
User response: Obtain a dump for the error condition, and contact IBM Software Support for assistance.

IRT308E  ENQUEUE FAILED FOR IRTAUDIT
           RC=rc
Explanation: An MVS ENQ request to enqueue the IRTAUDIT data set returned with unexpected return code rc.
System action: The job terminates with a U4000 abend code.

User response: Review the job output for messages that might be associated with the error.

IRT309W  DYNAMIC UNALLOCATION FAILED
           RC=rc ERR CODE=code INFO=code
           DDN=ddname DS=dsn
Explanation: An MVS dynamic deallocate request failed for DD name ddname and the listed data set name dsn.
System action: The job continues processing.
User response: Review the job output for messages that may be associated with the error. Report the error to IBM Software Support.

IRT312E  ERROR LOADING JOB OPTIONS
Explanation: An error occurred while attempting to load the IMS Program Restart Facility options modules.
System action: The job terminates with a U3622 abend.
User response: Review the job output for messages that might be associated with the error.

IRT315I  PRF LOADED FROM APF AUTHORIZED LIBRARY
Explanation: After reviewing the execution environment, IMS Program Restart Facility has determined that it is being loaded from an APF Authorized Library.
Examples are JOBLIB, STEPLIB, MVS Link List, and Link Pack Area.
System action: Job processing continues.
User response: None. This message is informational.

IRT316I  PRF INACTIVATED FOR THIS JOB – reason
Explanation: After reviewing the execution environment and job options, IMS Program Restart Facility has determined that it should be inactive while this job runs.
As indicated by the reason parameter, IMS Program Restart Facility is inactive for any of the following reasons:

STEPLIB IS APF AUTHORIZED
IMS Program Restart Facility cannot run in an APF-authorized environment. Add a non-APF authorized program library to the STEPLIB of the job to eliminate this restriction.

NAME/TOKEN ENTRY PRESENT
IMS Program Restart Facility allows a user program to define an MVS name or token entry to exclude the job from IMS Program
Restart Facility processing. The name entry “ZSSLIMS_IRT$EXCL” was found for this job, so the is excluded from IMS Program Restart Facility processing.

**USER EXIT IRTUXIN0 REQUEST**
User exit IRTUXIN0 was found and called, and it returned a non-zero return code, which indicates that IMS Program Restart Facility should be deactivated.

**MODULE IRTNOPRF IS LOADED**
Module IRTNOPRF was found in the list of loaded modules for this job. When this module is loaded in storage, IMS Program Restart Facility is deactivated.

**MBR=program-name IS AUTO-EXCLUDED**
Several OEM and IMS products call the IMS Region Controller (DFSRRC00) in a way that IMS Program Restart Facility does not support. This can cause abends in the IMS or OEM product.

When IMS Program Restart Facility detects that it is being called by one of these programs, it deactivates itself to protect you from abends and other problems that can occur in this environment.

The current list of programs that are known to have issues, for which IMS Program Restart Facility deactivates itself, are:
- IXPBATDV (Compuware File-AID for IMS)
- DFS3UACB (IBM IMS ACB Generation and Catalog Populate Utility)
- DFS3CCI0 (IBM IMS Catalog Copy Import Utility)
- DFS3PU00 (IBM IMS Catalog Populate Utility)

**EXCLUSION DDNAME FOUND**
The job had a DD name that is defined in the DD name table of the IRTOPT options library. The DD name that was found indicates that IMS Program Restart Facility should be deactivated.

**PGM=DFSBBBO00**
IMS Program Restart Facility deactivates itself when the IMS batch backout utility is run.

**EXCLUDE=YES**
The job options specified that the job should be excluded from IMS Program Restart Facility processing.

**REGJBP=NO**
The job has a region type of JBP, but the IMS Program Restart Facility option REGJBP=NO, meaning that JBP jobs should be excluded.

**System action:** The job continues processing without IMS Program Restart Facility.

**User response:** None. This message is informational.

**IRT317I  IMS GROUP IN USE FOR THIS EXECUTION: name**

**Explanation:** The IMS Program Restart Facility IMS group definition name was found and will be used for this job execution. This message is followed by message IRT318, which shows the actual IMSIDs that are included in this group definition.

**System action:** The job continues processing.

**User response:** None. This message is informational.

**IRT318I  insid-list**

**Explanation:** An IMS Program Restart Facility IMS group definition was found and will be used for this job execution. This message displays the IMSIDs that are included for the group name that is shown in message IRT317I.

**System action:** The job continues processing.

**User response:** None. This message is informational.

**IRT320I  OPTIONS IN USE: AUTOXRST=value**

**Explanation:** A IMS Program Restart Facility initialization has reviewed the execution environment and options settings. The selected option values are listed in the JESLOG of the job.

**System action:** The job continues processing.

**User response:** None. This message is informational.

**IRT321I  OPTIONS IN USE: TRACK=value**

**Explanation:** An IMS Program Restart Facility initialization has reviewed the execution environment and options settings. The selected option values are listed in the JESLOG of the job.

**System action:** The job continues processing.

**User response:** None. This message is informational.

**IRT330I  OPTIONS IN USE: AUTOBKO=value**

**Explanation:** An IMS Program Restart Facility initialization has reviewed the execution environment and options settings. The selected option values are listed in the JESLOG of the job.

**System action:** The job continues processing.

**User response:** None. This message is informational.
IRT331I  OPTIONS IN USE: BYPLOGR=value
Explanation: An IMS Program Restart Facility initialization has reviewed the execution environment and options settings. The selected option values are listed in the JESLOG of the job.
System action: The job continues processing.
User response: None. This message is informational.

IRT332I  OPTIONS IN USE: NOLOGRO=value
Explanation: An IMS Program Restart Facility initialization has reviewed the execution environment and options settings. The selected option values are listed in the JESLOG of the job.
System action: The job continues processing.
User response: None. This message is informational.

IRT341E  ABTABLE name REQUESTED FOR THIS JOB WAS NOT FOUND
Explanation: IMS Program Restart Facility options for this job requested the specific abend retry table name name. However, there was no abend retry table with that name defined in the IMS Program Restart Facility options.
System action: The job continues processing with abend retry disabled.
User response: Review the ABTABLE name that was selected for this job, and either correct the ABTABLE name or create an abend retry table with the proper name.

IRT342I  PROCESSING INPUT FROM source
Explanation: IMS Program Restart Facility reads option overrides from several sources. The records read from these sources are shown in the IRTPRINT output if IRTPRINT is enabled. The source in the message will be one of the following values:
BCMSCN TL
The BCMSCN TL DD statement, which is available for former Batch Backout Manager customers who have not converted to using DD name IRTSCN TL.
IRTSCN TL
The IRTSCN TL data set can be included in a job to provide overrides to options.
CTX DATA SET
The CTX data set is created when the IMS Program Restart Facility ISPF interface job administration option is used to specify overrides for a specific job execution.
System action: The job continues processing.
User response: None. This message is informational.
IR\text{T349I}  PRF IS ACTIVE FOR THIS JOB EXECUTION

\textbf{Explanation:} Program Restart Facility initialization has determined that it should be active while this job is running.

\textbf{System action:} The job continues processing.

\textbf{User response:} None. This message is informational.

IR\text{T350I}  AUTOBKO DISABLED BY DDNAME \textit{ddname}

\textbf{Explanation:} IMS Program Restart Facility initialization detected a DD name in the JCL of this job that was also defined in the DD name table to disable AUTOBKO.

\textbf{System action:} The job continues processing, although AUTOBKO is disabled.

\textbf{User response:} None. This message is informational.

IR\text{T351I}  AUTOBKO DISABLED BY MODULE BCMNOBBM

\textbf{Explanation:} IMS Program Restart Facility initialization detected that module BCMNOBBM was loaded in storage. This module disables AUTOBKO.

\textbf{System action:} The job continues processing, although AUTOBKO is disabled.

\textbf{User response:} None. This message is informational.

IR\text{T352E}  INVALID OPTION PASSED TO IRTZGETV

\textbf{Explanation:} IMS Program Restart Facility program IRTZGETV was invoked without the appropriate entry parameters being defined.

\textbf{System action:} The job terminates with abend code U4001.

\textbf{User response:} Contact IBM Software Support for assistance. Obtain a dump for the abend to supply to the support center.

IR\text{T353W}  ERROR PARSING A CTDS DATA SET NAME \textit{(code)}

\textbf{Explanation:} IMS Program Restart Facility encountered an error condition while parsing and building the checkpoint tracking data sets. The code parameter is an internal code that support uses to identify the cause of the error.

\textbf{System action:} The job listing is presented, but it might be missing a job.

\textbf{User response:} Contact IBM Software Support for assistance.

IR\text{T354I}  IMS PRF JOB RESTART DATA FOR JOB \textit{jobname} DELETED BY USER \textit{userid}

\textbf{Explanation:} A user deleted IMS Program Restart Facility restart data (the CTDS data sets) using the DELETE line command in the ISPF dialog for IMS Program Restart Facility.

\textbf{System action:} The next execution of the job will not be a restart.

\textbf{User response:} None. This message is informational.

IR\text{T355I}  IMS PRF JOB RESTART DATA FOR JOB \textit{jobname} UPDATED BY USER \textit{userid}

\textbf{Explanation:} A user that was updating a job status in the IMS Program Restart Facility ISPF interface changed the restart options for job \textit{jobname}. This message is written to the MVS SYSLOG as an audit trail to identify when job restart data was updated.

\textbf{System action:} None. Restart data has been updated for the next execution of an IMS batch job.

\textbf{User response:} None. This message is informational.

IR\text{T356I}  IMS PRF JOB RESTART DATA FOR JOB \textit{jobname} EDITED BY USER \textit{userid}

\textbf{Explanation:} A user that was updating a job status in the IMS Program Restart Facility ISPF interface changed the restart options for job \textit{jobname}. This message is written to the MVS SYSLOG as an audit trail to identify when job restart data was updated.

\textbf{System action:} None. Restart data has been updated for the next execution of an IMS batch job.

\textbf{User response:} None. This message is informational.

IR\text{T357E}  INVALID AUDIT RECORD ENCOUNTERED IN MODULE \textit{name} \textit{userid}

\textbf{Explanation:} While processing audit records for the IMS Program Restart Facility audit log, an error was found.

\textbf{System action:} The task ends with a U4000 abend code.

\textbf{User response:} Obtain a dump of the error, and contact IBM Software Support for assistance.

IR\text{T358E}  VALIDATION OF JOB OPTIONS ENTRY FAILED \textit{code}

\textbf{Explanation:} While processing IMS Program Restart Facility job option entries, an error was encountered during validation.

\textbf{System action:} The task ends with a U4001 abend code.
User response: Obtain a dump of the error, and contact IBM Software Support for assistance.

IRT359E UNABLE TO FIND CURRENT ENTRY IN IJS TABLE

Explanation: While processing IMS Program Restart Facility job option entries, an error occurred while locating the job entry that was being edited.

System action: The task ends with a U4001 abend code.

User response: Obtain a dump of the error, and contact IBM Software Support for assistance.

IRT361E IRTPUTV WAS PASSED AN INVALID OPTION FLAG

Explanation: IMS Program Restart Facility program IRTZPUTV was invoked without the appropriate entry parameters being defined.

System action: The job terminates with abend code U4001.

User response: Obtain a dump of the error, and contact IBM Software Support for assistance. Obtain a dump for the abend to supply to the support center.

IRT362E IMSGROUP group name PREVIOUSLY DEFINED

Explanation: When creating IMSGROUPs during the conversion process from IMS Program Restart Facility V2.1 to IMS Program Restart Facility V2.2, the conversion job names the IMSGROUPs based on the first IMS instance defined in a GBL IMSGROUP definition that is found in the IMS Program Restart Facility V2.1 inclusion options data set. This message is generated when a GBL IMSGROUP statement contains the same IMS instance that occurs in a previous GBL IMSGROUP statement.

System action: The job continues. The IMSGROUP specification is ignored.

User response: Edit your IMSGROUP definitions so that a given IMS instance is a member of only one IMSGROUP. Then rerun the conversion job.

IRT363E IMSID IMS id name PREVIOUSLY DEFINED IN GROUP IMSGROUP name

Explanation: During the conversion process from IMS Program Restart Facility V2.1 to IMS Program Restart Facility V2.2, the conversion job found an IMS ID that was previously defined in this or a previous IMSGROUP statement found in the IMS Program Restart Facility V2.1 inclusion options data set.

System action: The job continues. The IMSGROUP specification containing the duplicate IMS ID is ignored.

User response: Edit your IMSGROUP definitions so that a given IMS ID is a member of only one IMSGROUP. Then rerun the conversion job.

IRT364W IMSGROUP group name CONTAINS NO MEMBERS AND WILL BE IGNORED

Explanation: When creating IMSGROUPs during the conversion process from IMS Program Restart Facility V2.1 to IMS Program Restart Facility V2.2, the conversion job encountered a GBL IMSGROUP definition in the IMS Program Restart Facility V2.1 inclusion options data set that did not include any IMS instances.

System action: The job continues. The IMSGROUP specification is ignored.

User response: If you do not need this particular IMSGROUP, you can ignore this warning message. If you need this IMSGROUP definition, add the required IMS instance names to the definition, and rerun the conversion job.

IRT365W RDORETRY DISABLED BECAUSE [ABRETRY=NO | PSB NOT R/O]

Explanation: The RDORETRY=YES specification for the job has been disabled. You have either specified ABRETRY=NO or are using a PSB that is not read-only. IMS Program Restart Facility does not attempt to restart the job should it abend.

NOTE: When IMS Program Restart Facility activates RDORETRY processing, IMS Program Restart Facility:
  • Modifies your DBRC setting to "NO",
  • Deallocates the files specified by your IEFRDER/IEFRDER2 DD statements, and
  • Re-allocates them as DD DUMMY.

IMS Program Restart Facility does not perform these tasks when RDORETRY processing is disabled.

System action: The job continues processing with RDORETRY processing disabled.

User response: If you do not require RDORETRY processing, no action is necessary.

If you do not want IMS Program Restart Facility to generate the message, you can modify the job options to specify RDORETRY=NO.

If you require RDORETRY processing, ensure you are using a read-only PSB, and specify ABRETRY=YES as a job option. Additionally, ensure that the job's ABTABEL job option points to the appropriate abend table.
IR551I  type JOB jobname PGM pgmname PSB psbname REGID=nnnn DATE=date TIME=time

Explanation: IMS has begun processing the application program pgmname.
System action: The job continues processing.
User response: None. This message is informational.

IR601I  //IVPSYSIN: options

Explanation: This message identifies the Install Verification Program (IVP) options that are defined in the IVPSYSIN DD statement.
System action: None.
User response: None. This message is informational.

IR602I  XRST CKPTID=id

Explanation: When an IVP program performs a restart, the restart checkpoint ID that is used for the IMS restart is shown in this message.
System action: None.
User response: None. This message is informational.

IR603W  DI21PART GN STATUS=st

Explanation: An unexpected status code was returned from an IMS GN call for database DI21PART. The status code st is shown in the message.
System action: The IVP program ends.
User response: Review the MVS SYSLOG of the job for any IMS error messages that might indicate the reason for the unexpected status code. Messages for BMP jobs might be written to the IMS master terminal instead of the MVS SYSLOG of the job. Also, review the status code shown in the message.

IR604E  DI21PART REPOSITION GU STATUS=st

Explanation: An unexpected status code was returned following a GU call to the DI21PART database, which was preceded by a CHKP call.
System action: The job abends with a U3618 abend code.
User response: Review the status code and any other IMS error messages that might be present in the MVS SYSLOG of the job, or if the job is a BMP, in the IMS master terminal log.

IR651E  CKPTLAST STATUS=st

Explanation: The final checkpoint call issued by the IVP sample program received an unexpected status code st from IMS.
System action: The job ends.
User response: Review the status code and any other IMS error messages that may be present in the MVS SYSLOG of the job, or if the job is a BMP, in the IMS master terminal log.

IR652E  CHKP STATUS=status

Explanation: A checkpoint call issued by the IVP sample program received an unexpected status code from IMS.
System action: Processing continues.
User response: Review the status code and any other IMS error messages that may be present in the MVS SYSLOG of the job, or if the job is a BMP, in the IMS master terminal log.

IR653E  ABENDCNT= MUST BE NUMERIC

Explanation: The ABENDCNT parameter in the IVPSYSIN data set had a non-numeric specification.
System action: The specification is ignored.
User response: Specify a numeric value for the ABENDCNT parameter.

IR654E  ABENDCMP= MUST BE NUMERIC

Explanation: The ABENDCMP parameter in the IVPSYSIN data set had a non-numeric specification.
System action: The specification is ignored.
User response: Specify a numeric value for the ABENDCMP parameter.

IR655E  ABENDRSN= MUST BE NUMERIC

Explanation: The ABENDRSN parameter in the IVPSYSIN data set had a non-numeric specification.
System action: The specification is ignored.
User response: Specify a numeric value for the ABENDRSN parameter.

IR656E  GBCNT= MUST BE NUMERIC

Explanation: The GBCNT parameter in the IVPSYSIN data set had a non-numeric specification.
System action: The specification is ignored.
User response: Specify a numeric value for the GBCNT parameter.
IR\textit{T655E}  SETRC= MUST BE NUMERIC

\textbf{Explanation:} The SETRC= parameter in the IVPSYSIN data set had a non-numeric specification.

\textbf{System action:} The specification is ignored.

\textbf{User response:} Specify a numeric value for the SETRC parameter.

---

IR\textit{T656I}  IVPDB1 REPL COMPLETE

\textbf{Explanation:} A REPL call that was issued by the IVP sample program completed.

\textbf{System action:} Processing continues.

\textbf{User response:} None. This message is informational.

---

IR\textit{T657I}  IVPDB2 REPL COMPLETE

\textbf{Explanation:} A REPL call that was issued by the IVP sample program completed.

\textbf{System action:} Processing continues.

\textbf{User response:} None. This message is informational.
ISPF messages (IRTA, IRTB, IRTC)

This topic describes the ISPF messages that are issued by IMS Program Restart Facility.

There are two types of messages that are issued by IMS Program Restart Facility:
- Runtime messages that are written to the output of a job (IRT)
- ISPF messages that are presented to the user by ISPF (IRTA, IRTB, IRTC)

Use the information in these messages to help you diagnose and solve IMS Program Restart Facility problems.

ISPF message format

ISPF messages are initially presented to the user in the form of a short message in the upper right corner of the screen. You can obtain the long version of the message, which contains additional information about the nature of the error, by pressing the ISPF help key (typically PF1).

IMS Program Restart Facility ISPF messages include the following message categories:
- IRTA - ISPF errors
- IRTB - operational errors
- IRTC - invalid options

The long versions of IMS Program Restart Facility ISPF messages adhere to the following format:

\[\text{IRTA}nnn\]

where:

- **IRT** Indicates that the message was issued by IMS Program Restart Facility
- 
- **annn** Indicates the message identification number where \(a\) is a letter, and \(nnn\) is a 3-digit number.
- 
- **x** Indicates the severity of the message:
  - **A** Indicates that operator intervention is required before processing can continue.
  - **E** Indicates that an error occurred, which might or might not require operator intervention.
  - **I** Indicates that the message is informational only.
  - **W** Indicates that the message is a warning to alert you to a possible error condition.

Each message also includes the following information:

**Long message:**

The long version of the ISPF message typically contains additional information about the nature of the error.

**System action:**

The System action section explains what the system will do in response to the event that triggered this message.
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.

IRTA000E  ISPF VDEFINE Failed
Long message: An ISPF VDEFINE service call in module xxxxxxxx failed RC=xx
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTA001E  ISPF DISPLAY Failed
Long message: An ISPF DISPLAY service call in module xxxxxxxx for panel xxxxxxxx failed RC=xx
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTA002E  ISPF SETMSG Failed
Long message: An ISPF SETMSG call in module xxxxxxxx for message xxxxxxxx failed RC=xx
System action: The request fails.
Programmer response: Gather documentation and contact IBM Software Support.

IRTA003E  ISPF TBEND Failed
Long message: An ISPF TBEND service call in module xxxxxxxx for table xxxxxxxx failed with RC=xx
System action: The request fails.
Programmer response: Gather documentation and contact IBM Software Support.

IRTA004E  ISPF TBCREATE Failed
Long message: An ISPF TBCREATE service call in module xxxxxxxx for table xxxxxxxx failed with RC=xx
System action: The request fails.
Programmer response: Gather documentation and contact IBM Software Support.

IRTA005E  ISPF TBADD Failed
Long message: An ISPF TBADD service call in module xxxxxxxx for table xxxxxxxx failed with RC=xx
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTA006E  ISPF TBTOP Failed
Long message: An ISPF TBTOP service call in module xxxxxxxx for table xxxxxxxx failed with RC=xx
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTA007E  ISPF TDISPL Failed
Long message: An ISPF TDISPL service call in module xxxxxxxx for table xxxxxxxx failed with RC=xx
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTA008E  ISPF TBDELETE Failed
Long message: An ISPF TBDELETE service call in module xxxxxxxx for table xxxxxxxx failed with RC=xx
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTA009E  ISPF TBMOD Failed
Long message: An ISPF TBMOD service call in module xxxxxxxx for table xxxxxxxx failed with RC=xx
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTA010E  ISPF TBSORT Failed
Long message: An ISPF TBSORT service call in module xxxxxxxx for table xxxxxxxx failed with RC=xx
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTA011E  ISPF Table In Use
Long message: An ISPF TBOPEN service call from module xxxxxxxx failed for table xxxxxxxx due to an ENQ failure.
System action: The request fails.
User response: Another TSO user (or a split screen of a single user) already has a required ISF table open. Ensure that the other ISPF session is closed before trying to issue the function again.
IRTA012E  ISPTLIB Not Alloc
Long message: An ISPF TBOPEN service call from module xxxxxxxx failed for table xxxxxxxx due to ISPTLIB not being allocated.
System action: The request fails.
User response: The IMS Program Restart Facility ISPF application does not save any tables, so this error should not occur. Contact IBM Software Support.

IRTA013E  ISPF TBOPEN Failed
Long message: An ISPF TBOPEN service call in module xxxxxxxx for table xxxxxxxx failed with RC=xx.
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTA014E  ISPF Table Not Found
Long message: An ISPF TBSORT service call in module xxxxxxxx for table xxxxxxxx failed because the table was not found.
System action: The request fails.
User response: The IMS Program Restart Facility ISPF application does not save any tables, so this error should not occur. Contact IBM Software Support.

IRTA015E  ISPF TBCLOSE Failed
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTA016E  ISPF TBGET Failed
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTA017E  ISPF CONTROL Failed
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTA018E  ISPF TBBOTTOM Failed
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTA019E  ISPF TBSCAN Failed
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTA020E  ISPF VPUT Failed
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTA021E  ISPF TBSKIP Failed
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTA022E  ISPF VGET Failed
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTA023E  ISPF TBPUT Failed
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTA024E  ISPF FTOPEN Failed
System action: The request fails.
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Long message</th>
<th>System action</th>
<th>User response</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRTA026E</td>
<td>ISPF FTCLOSE Failed</td>
<td>An ISPF FTCLOSE service call in module xxxxxxxxx failed with RC=xx.</td>
<td>The request fails.</td>
<td>Gather documentation and contact IBM Software Support.</td>
</tr>
<tr>
<td>IRTA027E</td>
<td>ISPF BROWSE Failed</td>
<td>An ISPF BROWSE service call in module xxxxxxxxx failed with RC=xx.</td>
<td>The request fails.</td>
<td>Gather documentation and contact IBM Software Support.</td>
</tr>
<tr>
<td>IRTA031E</td>
<td>ISPF VREPLACE Failed</td>
<td>An ISPF VREPLACE service call in module xxxxxxxxx failed with RC=xx.</td>
<td>The request fails.</td>
<td>Gather documentation and contact IBM Software Support.</td>
</tr>
<tr>
<td>IRTA033E</td>
<td>ISPF EDIF Failed</td>
<td>An ISPF EDIF service call in module xxxxxxxxx failed with RC=xx.</td>
<td>The request fails.</td>
<td>Gather documentation and contact IBM Software Support.</td>
</tr>
<tr>
<td>IRTA034E</td>
<td>ISPF CONTROL ERROR Fail</td>
<td>An ISPF CONTROL ERROR service call in module xxxxxxxxx failed with RC=xx.</td>
<td>The request fails.</td>
<td>Gather documentation and contact IBM Software Support.</td>
</tr>
<tr>
<td>IRTA037E</td>
<td>ISPF DISPLAY Failed</td>
<td>An ISPF DISPLAY service call in module xxxxxxxxx failed with RC=xx.</td>
<td>The request fails.</td>
<td>Gather documentation and contact IBM Software Support.</td>
</tr>
</tbody>
</table>
IRT038E  •  IRTB009E

Chapter 7. Troubleshooting  169

System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRT038E  •  ISPF LMINIT Failed
Long message: An ISPF LMINIT service call in module xxxxxxx failed with RC=xx.
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRT039E  •  ISPF LMFREE Failed
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRT000E  •  Copy Table Invalid
Long message: The Copy table name specified contained an error in at least one of the field values.
System action: The request fails.
User response: Correct any errors in the abend retry table that you are trying to copy.

IRT001E  •  Copy Table Name Invalid
Long message: The Copy table name specified was not found in the abend retry table.
System action: The request fails.
User response: Enter a valid table name.

IRT002E  •  Unable To Find IRTOPT DD
Long message: PRF module xxxxxxx was unable to find the TIOT entry for the IRTOPT DD.
System action: The request fails.
User response: Verify that the IRTOPT data set name specified on the IMS Program Restart Facility main menu is a valid fully qualified data set name with no quotes.

IRT003E  •  SWAREQ macro failed
Long message: An SWAREQ request failed in module xxxxxxx with return code xx.
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRT004E  •  Allocation failed
System action: The request fails.
User response: If the allocation failed for the IRTOPT data set, correct the data set name on the IMS Program Restart Facility ISPF main menu. If the allocation failed for the IRTAUDIT data set, ensure that the data set name specified in the global options for the Audit Log data set exists.

IRT005E  •  Deallocation failed
System action: The request fails.
User response: Review the error code and DDNAME, and contact IBM Software Support for assistance.

IRT006E  •  Open Failed
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRT007E  •  STOW Failed
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRT008E  •  NOTE Failed
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRT009E  •  Error in Options Module
Long message: The options module length is invalid.
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.
IRTBO10E  •  IRTBO22E

IRTBO10E  RESERVE error
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTBO11E  Command Conflict
Long message: There was more than one Move, Before, or After line command. There can only be one Move and one Before or After line command.
System action: None.
User response: Correct the M - Move, B - Before, and A - After line commands so that there is one M - Move line command and either one A - After or B - Before line command specified.

IRTBO12E  Move Command Pending
Long message: There is only a Move or a Before or After line command. Enter the remaining line command to allow the move to complete.
System action: None.
User response: Enter the remaining line command to allow the Move command to complete.

IRTBO13E  IRTOPT BLKSIZE invalid
Long message: The block size of the IRTOPT data set is less than 6144. It must be at least 6144.
System action: The request fails.
User response: Reallocate the IRTOPT data set with a block size of at least 6144.

IRTBO14E  Load failed for xxxxxxxx
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTBO15E  Dynamic Allocation fail
Long message: Dynamic allocation failed RC=xx Error Code=xxx Info Code xxx Module xxxxxxxx DSN=xxxx
System action: The request fails.
User response: If the IRTOPT data set failed, correct the data set name on the IMS Program Restart Facility ISPF main menu. If the IRTAUDIT data set failed, ensure that the data set name that was specified in the global options for the Audit Log data set exists.

IRTBO16E  Open failed for IRTOPT
Long message: An MVS open failed for the IRTOPT data set (DDN=xxxxxxxx) RC=xx in module xxxxxxxx
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTBO17E  Dynamic Unalloc Failed
Long message: Dynamic unallocation failed RC=xx Error Code=xxx Info=xxxx Module xxxxxxxx DDN=xxxxxxx
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTBO18E  Table Name not Found
Long message: An internal error occurred saving the Abend Retry Table.
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTBO19E  Global Options Not Found
Long message: Job Options cannot be created until Global Options have been created.
System action: The request fails.
User response: Ensure that global options are defined in the IRTOPT data set before you define job options.

IRTBO20I  CANCEL Command Accepted
Long message: The CANCEL command was processed. Any changes made were not saved to the IRTOPT data set.
System action: Updates are not saved.
User response: None. This message is informational.

IRTBO21I  Options Saved
Long message: Options have been saved to the IRTOPT data set.
System action: Updates are saved.
User response: None. This message is informational.

IRTBO22E  Invalid command
Long message: The entered command is invalid.
System action: The command is ignored.
User response: Enter the correct command.
IRTB023I  No Options Changed

Long message: There were no changes in the IMS Program Restart Facility options, so the options were not saved.

System action: Options were not saved.

User response: None. This message is informational.

IRTB024I  Cancel Command Accepted

Long message: Changes to the prior screen were discarded. Any changes made on other screens are still waiting to be saved.

System action: Updates on the prior screen were discarded.

User response: None. This message is informational.

IRTB025E  Recovery Error

Long message: There was an error in option xxxxxxxx but the option name was not found in the table of option names by xxxxxxxx.

System action: Option xxxxxxxx is ignored.

User response: Review option xxxxxxxx, and correct the value.

IRTB026E  Invalid Line Command

Long message: The entered line command, &LINECMD, is not a valid line command. Valid commands are S, I, and D.

System action: The command is ignored.

User response: Review and correct the line command.

IRTB027E  No IMSIDs in group

Long message: There were no IMSIDs defined for this group. You must define at least one IMSID for a group.

System action: IMS Program Restart Facility waits for a valid IMSID to be specified.

User response: Add one or more IMSIDs to the IMSGROUP definition.

IRTB028E  Duplicate Abend Entry

Long message: The Abend Code (xxxx) and Reason Code (xxxxxxxx) are already defined. Update the existing entry instead of inserting a new abend entry.

System action: None.

User response: Change the abend code or reason code, or cancel adding the abend table entry.
interspaced between valid IMSIDs.

**IRTB036E**  Group has no IMSIDs

*Long message:* Group xxxxxxx has no IMSIDs.

*System action:* The request is ignored.

*User response:* Add at least one valid IMSID to the IMS group definition.

**IRTB037E**  Duplicate IMSID

*Long message:* A single IMSID can only appear in one group. IMSID xxxx appears in groups aaaaaaaaa and bbbbbbbbb.

*System action:* The IMS group is not saved.

*User response:* The duplicate IMSID must be removed from one of the groups.

**IRTB038E**  Dup Abend/Reason Code

*Long message:* The abend code and reason code were changed on the edit Abend Retry screen, but the new Abend/Reason code is already defined.

*System action:* The abend retry entry is not saved.

*User response:* Update the abend code or reason code, or use the CANCEL command to remove the updates that you entered.

**IRTB040E**  Error locating CTDS


*System action:* The request fails.

*User response:* Gather documentation and contact IBM Software Support.

**IRTB041I**  No Jobs Found

*Long message:* There were no active or abended jobs found to list.

*System action:* The request fails.

*User response:* None. This message is informational.

**IRTB042E**  CTDSHLQ is Invalid

*Long message:* The CTDSHLQ IMS Program Restart Facility option is either not defined or is invalid. Check PRF Global Options to verify CTDSHLQ value.

*System action:* The request fails.

*User response:* Review and correct the CTDSHLQ parameter.

**IRTB043E**  Allocation Failed

*Long message:* Dynamic Allocation failed for data set xxxx RC=xx INFO=xxx ERRC=xxxx

*System action:* The request fails.

*User response:* Review the data set name and reason codes to determine the reason for the allocation failure.

**IRTB044E**  RACF Error

*Long message:* RACF® error for data set xxxx RC=xxxx.

*System action:* The request fails.

*User response:* Review the MVS SYSLOG for other indications of the security error.

**IRTB045E**  Error in Global Options

*Long message:* There was an invalid value in the Global Options. Edit the Global Options to correct this error before editing job options.

*System action:* The request fails.

*User response:* Use the ISPF interface to edit the global options. When you edit the global options, any invalid option values will be presented for you to correct.

**IRTB046E**  Duplicate Table Name

*Long message:* The specified table name to be inserted already exists.

*System action:* The request fails.

*User response:* Use a different table name that is not already in use.

**IRTB047E**  Global Options Not Found

*Long message:* The specified PRF Options Data Set does not have a Global Options member defined. Specify a valid Options Data Set Name.

*System action:* The request fails.

*User response:* Update the IRTOPT data set name that is specified on the IMS Program Restart Facility ISPF main menu.

**IRTB048E**  Open Failed

*Long message:* An MVS Open for the temporary report file failed with a return code of xxxx.

*System action:* The request fails.

*User response:* Review the MVS SYSLOG to determine if there are any other error messages that indicate the reason for the failure.
IRTB049E Close Failed
Long message: An MVS Close for the temporary report file failed with a return code of xxxx.
System action: The request fails.
User response: Review the MVS SYSLOG to see if there are any other error messages that indicate the reason for the failure.

IRTB050E Dynamic Allocation Fail
System action: The request fails.
User response: Review the dynamic allocation error code to determine the reason for the allocation failure.

IRTB051E Dynamic Unalloc Fail
System action: The request fails.
User response: Review the dynamic allocation error code to determine the reason for the deallocation failure.

IRTB052E Global Options Error
Long message: An error occurred loading the PRF Global Options. Review the Global Options to determine the cause of the error.
System action: The request fails.
User response: Use the ISPF interface to edit the global options. When you edit the global options, any invalid option values will be presented for you to correct.

IRTB053E Options in Use
Long message: Another user is currently editing the options you selected (options module xxxxxxxx).
System action: The request fails.
User response: Wait for the other TSO user to finish editing the options and then retry.

IRTB054E Enqueue Failed
Long message: An MVS Enqueue failed for the PRF Audit Log (RC=xxxx).
System action: The request fails.
User response: Review the return code from the enqueue request and contact IBM Software Support for assistance.

IRTB055E SWAREQ Failed
Long message: An MVS SWAREQ returned an unexpected return code, xxxx.
System action: The request fails.
User response: Review the return code from the enqueue request and contact IBM Software Support for assistance.

IRTB056E Open Failed
System action: The request fails.
User response: Review the MVS SYSLOG to see if any other error messages indicate the reason for the failure.

IRTB057E Unexpected Record Type
Long message: An unexpected record type was encountered in the PRF Audit Log data set. Record type found was xxxx.
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTB058E Audit Log not Defined
Long message: There is no Audit Log data set name defined in the Global Options for this Options Data set.
System action: The request fails.
User response: To use the audit log features, enable audit logging by entering a data set name in the AUDITLOG global option.

IRTB059E Unexpected Audit Record
Long message: There was an unexpected xxxx audit record subtype encountered in the Audit Log.
System action: The request fails.
User response: Gather documentation and contact IBM Software Support.

IRTB060E Cannot allocate dataset
Long message: The dataset was allocated to another task.
RC=xxxxxxx Error Code=yyyyyyyyy Info=zzzzzzzzzzz Module aaaaaaaa DSN=bbb.
System action: The panel is redisplayed.
IRTB061E  Dataset not found
Long message: The dataset was not found.
RC=xxxxxxx Error Code=yyyyyyyyy Info=zzzzzzzz
Module aaaaaaaa DSN=bbb.
System action: The panel is redisplayed.
User response: Correct the file name and retry the request.

IRTC010E  AUTOWTOR Option Invalid
Long message: The AUTOWTOR value specified is not valid. The value must be specified as either YES or NO.
System action: None.
User response: Enter a valid value for the AUTOWTOR option.

IRTC011E  AUTOXRST Option Invalid
Long message: The AUTOXRST value specified is not valid. The value must be specified as YES, NO, FORCE, or LAST.
System action: None.
User response: Enter a valid value for the AUTOXRST option.

IRTC012E  CKPTID Option Invalid
Long message: The CKPTID value specified is not valid. The value must be specified as NOMSGS, NOMSG540, NOMSG542, NOMSG681, or NO681542.
System action: None.
User response: Enter a valid value for the CKPTID option.

IRTC013E  EXCLUDE Option Invalid
Long message: The EXCLUDE value specified is not valid. The value must be specified as either YES or NO.
System action: None.
User response: Enter a valid value for the EXCLUDE option.

IRTC014E  FSTOP Option Invalid
Long message: The FSTOP value specified is not valid. The value must be specified as either YES or NO.
System action: None.
User response: Enter a valid value for the FSTOP option.
IRTC015E  IGNXIOA Option Invalid
Long message: The IGNXIOA value specified is not valid. The value must be specified as either YES or NO.
System action: None.
User response: Enter a valid value for the IGNXIOA option.

IRTC016E  IMSLOGR Option Invalid
Long message: The IMSLOGR value specified is not valid. The value must be specified as either YES or NO.
System action: None.
User response: Enter a valid value for the IMSLOGR option.

IRTC017E  RCABEND Option Invalid
Long message: The RCABEND value specified is not valid. The value must be blank or a number between 1 and 4095.
System action: None.
User response: Enter a valid value for the RCABEND option.

IRTC018E  RCERROR Option Invalid
Long message: The RCERROR value specified is not valid. The value must be blank or a number between 1 and 4095.
System action: None.
User response: Enter a valid value for the RCERROR option.

IRTC019E  RDORETRY Option Invalid
Long message: The RDORETRY value specified is not valid. The value must be specified as either YES or NO.
System action: None.
User response: Enter a valid value for the option.

IRTC021E  REGJBP Option Invalid
Long message: The REGJBP value specified is not valid. The value must be specified as either YES or NO.
System action: None.
User response: Enter a valid value for the REGJBP option.

IRTC022E  TEMPUNIT Option Invalid
Long message: The TEMPUNIT value specified is not valid. The value must be specified as a valid UNIT name (as coded in UNIT= in JCL).
System action: None.
User response: Enter a valid value for the TEMPUNIT option.

IRTC023E  TRACK Option Invalid
Long message: The TRACK value specified is not valid. The value must be specified as either YES or NO.
System action: None.
User response: Enter a valid value for the TRACK option.

IRTC024E  UABEND Option Invalid
Long message: The UABEND value specified is not valid. The value must be blank or a number between 1 and 4095.
System action: None.
User response: Enter a valid value for the UABEND option.

IRTC025E  BYPCHKP Option Invalid
Long message: The BYPCHKP value specified is not valid. The value must be specified as either YES or NO.
System action: None.
User response: Enter a valid value for the BYPCHKP option.

IRTC026E  BCDINTVL Option Invalid
Long message: The BCDINTVL value specified is not valid. The value must be specified as a time interval in the form hhmmss.th.
System action: None.
User response: Enter a valid value for the option.

IRTC027E  BCERRXT Option Invalid
Long message: The BCERRXT value specified is not valid. The value must be blank or a number between 0 and 9999.
System action: None.
User response: Enter a valid value for the BCERRXT option.
IRTC028E  BCREASN Option Invalid

**Long message:** The BCREASN value specified is not valid. The value must be blank or a number between 0 and 9999.

**System action:** None.

**User response:** Enter a valid value for the BCREASN option.

IRTC029E  BCRETRN Option Invalid

**Long message:** The BCRETRN value specified is not valid. The value must be blank or a number between 0 and 9999.

**System action:** None.

**User response:** Enter a valid value for the option.

IRTC030E  BCSTATUS Option Invalid

**Long message:** The BCSTATUS value specified is not valid. The value must be blank or a two character status code.

**System action:** None.

**User response:** Enter a valid value for the BCSTATUS option.

IRTC031E  BCSTCD Option Invalid

**Long message:** The BCSTCD value specified is not valid. The value must be blank or two character status codes.

**System action:** None.

**User response:** Enter a valid value for the BCSTCD option.

IRTC032E  CTDSHLQ Option Invalid

**Long message:** The CTDSHLQ value specified is not valid. The value must be specified as a valid data set name prefix.

**System action:** None.

**User response:** Enter a valid value for the option.

IRTC033E  CTDSNAM Option Invalid

**Long message:** The CTDSNAM value specified is not valid. The value must be specified as BOTH, NOPSB, or NOPGM.

**System action:** None.

**User response:** Enter a valid value for the CTDSNAM option.

IRTC034E  CTDSHLQ Option Invalid

**Long message:** The CTDSHLQ value specified is not valid. The value must be 8 characters or less when CTDSNAM is BOTH.

**System action:** None.

**User response:** Enter a valid value for the CTDSHLQ option.

IRTC035E  CTDSHLQ Option Invalid

**Long message:** The CTDSHLQ value specified is not valid. The value must be 17 characters or less when CTDSNAM is NOPGM or NOPSB.

**System action:** None.

**User response:** Enter a valid value for the CTDSHLQ option.

IRTC036E  CTDSDAACL Option Invalid

**Long message:** The CTDSDAACL value specified is not valid. The value must be blank or a valid SMS data class name.

**System action:** None.

**User response:** Enter a valid value for the CTDSDAACL option.

IRTC037E  CTDSMGCL Option Invalid

**Long message:** The CTDSMGCL value specified is not valid. The value must be blank or a valid SMS management class name.

**System action:** None.

**User response:** Enter a valid value for the CTDSMGCL option.

IRTC038E  CTDSSTCL Option Invalid

**Long message:** The CTDSSTCL value specified is not valid. The value must be blank or a valid SMS Storage class name.

**System action:** None.

**User response:** Enter a valid value for the option.

IRTC039E  CTDSTRKS Option Invalid

**Long message:** The CTDSTRKS value specified is not valid. The value must be specified as a number between 1 and 9999.

**System action:** None.

**User response:** Enter a valid value for the option.
**IRTC040E** CTDSUNIT Option Invalid

Long message: The CTDSUNIT value specified is not valid. The value must be blank or a valid UNIT name (UNIT=).

System action: None.

User response: Enter a valid value for the option.

**IRTC041E** CTDSVOL Option Invalid

Long message: The CTDSVOL value specified is not valid. The value must be blank or a valid volume serial number (VOL=SER=).

System action: None.

User response: Enter a valid value for the option.

**IRTC042E** CTDSVOL Option Invalid

Long message: The CTDSVOL value specified is not valid. The value must be blank or a name of 6 characters or less.

System action: None.

User response: Enter a valid value for the CTDSVOL option.

**IRTC043E** DBRC Option Invalid

Long message: The DBRC value specified is not valid. The value must be blank or Y, or N.

System action: None.

User response: Enter a valid value for the DBRC option.

**IRTC044E** IRLM Option Invalid

Long message: The IRLM value specified is not valid. The value must be blank or Y, or N.

System action: None.

User response: Enter a valid value for the option.

**IRTC045E** IRLMNM Option Invalid

Long message: The IRLMNMM value specified is not valid. The value must be blank or a valid IRLM subsystem name.

System action: None.

User response: Enter a valid value for the IRLMNM option.

**IRTC046E** LOCKMAX Option Invalid

Long message: The LOCKMAX value specified is not valid. The value must be blank or number between 0 and 32767.

System action: None.

User response: Enter a valid value for the option.

**IRTC047E** CHKPCMP Option Invalid

Long message: The CHKPCMP value specified is not valid. The value can be left blank or specified as a number between 1 and 4095.

System action: None.

User response: Enter a valid value for the CHKPCMP option.

**IRTC048E** CHKPCNT Option Invalid

Long message: The CHKPCNT value specified is not valid. The value can be left blank or specified as a number between 1 and 999.

System action: None.

User response: Enter a valid value for the IRTC048E option.

**IRTC049E** ABRETRY Option Invalid

Long message: The ABRETRY value specified is not valid. The value must be specified as either YES or NO.

System action: None.

User response: Enter a valid value for the option.

**IRTC050E** SHOWOPTS Option Invalid

Long message: The SHOWOPTS value specified is not valid. The value must be specified as either YES, ONLY, or PRINT.

System action: None.

User response: Enter a valid value for the option.

**IRTC051E** DEBUG Option Invalid

Long message: The DEBUG value specified is not valid. The value must be blank or up to 8 hexadecimal digits.

System action: None.

User response: Enter a valid value for the DEBUG option.
IRTC052E  •  IRTC066E

IRTC052E  •  SYSOUT Option Invalid
Long message: The SYSOUT value specified is not valid. The value must be specified, even if the DEBUG and SHOWOPTS options do not request the use of SYSOUT.
System action: None.
User response: Enter a valid value for the option.

IRTC053E  •  ABCDE Option Invalid
Long message: The Abend Code value is not valid. It must be specified as a system abend (Sxxx) or a user abend (Unnnn).
System action: None.
User response: Enter a valid value for the option.

IRTC054E  •  ABRSN Option Invalid
Long message: The Abend Reason Code value is not valid. It must be specified as an 8 character hexadecimal value less than 7FFFFFFF.
System action: None.
User response: Enter a valid value for the option.

IRTC055E  •  DELAY Option Invalid
Long message: The DELAY value must be specified in the format hh:mm:ss and must be less than 24 hours.
System action: None.
User response: Enter a valid value for the option.

IRTC056E  •  MAXRETRY Option Invalid
Long message: The MAXRETRY value must be specified as 0 or a number less than 32768.
System action: None.
User response: Enter a valid value for the option.

IRTC057E  •  AGN Option Invalid
Long message: The AGN value must be blank or an up to 8 character value.
System action: None.
User response: Enter a valid value for the AGN option.

IRTC058E  •  APARM Option Invalid
Long message: The APARM value must start and end with a quote (').
System action: None.

IRTC059E  •  CPUTIME Option Invalid
Long message: The CPUTIME value must be blank or a value of 0 to 1440.
System action: None.
User response: Enter a valid value for the option.

IRTC061E  •  GSGNAME Option Invalid
Long message: The GSGNAME value must be blank or an up to 8 character name.
System action: None.
User response: Enter a valid value for the option.

IRTC062E  •  AUDITLOG Option Invalid
Long message: The AUDITLOG value must be specified as the fully qualified unquoted data set name of the Audit Log data set.
System action: None.
User response: Enter a valid value for the option.

IRTC063E  •  OPT Option Invalid
Long message: The OPT value must be blank or C, N, or W.
System action: None.
User response: Enter a valid value for the OPT option.

IRTC064E  •  PARDLI Option Invalid
Long message: The PARDLI value must be blank or 0 or 1.
System action: None.
User response: Enter a valid value for the PARDLI option.

IRTC065E  •  PREINIT Option Invalid
Long message: The PREINIT value must be blank or a 2 character member name suffix.
System action: None.
User response: Enter a valid value for the PREINIT option.

IRTC066E  •  PRLD Option Invalid
Long message: The PRLD value must be blank or a 2 character member name suffix.
System action: None.
User response: Enter a valid value for the PRLD option.

IRTC067E SSM Option Invalid
Long message: The SSM value must be blank or an up to 4 character member name suffix.
System action: None.
User response: Enter a valid value for the option.

IRTC068E STIMER Option Invalid
Long message: The STIMER value must be blank or 0, 1, or 2.
System action: None.
User response: Enter a valid value for the STIMER option.

IRTC069E TMINAME Option Invalid
Long message: The TMINAME value must be blank or an up to 4 character Transport Manager name.
System action: None.
User response: Enter a valid value for the TMINAME option.

IRTC070E FORCEID Option Invalid
Long message: The FORCEID value must be specified as either YES or NO.
System action: None.
User response: Enter a valid value for the FORCEID option.

IRTC071E BBDSHLQ Option Invalid
Long message: The BBDSHLQ value must be a valid data set prefix, with 1 or more qualifiers.
System action: None.
User response: Enter a valid value for the BBDSHLQ option.

IRTC072E BBDSDAACL Option Invalid
Long message: The BBDSDAACL value must be a valid Data Class name.
System action: None.
User response: Enter a valid value for the BBDSDAACL option.

IRTC073E BBDSMGCL Option Invalid
Long message: The BBDSMGCL value must be a valid Management Class name.
System action: None.
User response: Enter a valid value for the BBDSMGCL option.

IRTC074E BBDSSTCL Option Invalid
Long message: The BBDSSTCL value must be a valid Storage Class name.
System action: None.
User response: Enter a valid value for the BBDSSTCL option.

IRTC075E BBDSUNIT Option Invalid
Long message: The BBDSUNIT value must be a valid MVS UNIT= name.
System action: None.
User response: Enter a valid value for the BBDSUNIT option.

IRTC076E BBDSVOL Option Invalid
Long message: The BBDSVOL value must be a valid MVS volume name.
System action: None.
User response: Enter a valid value for the BBDSVOL option.

IRTC077E FABXRST Option Invalid
Long message: The FABXRST value must be specified as either YES or NO.
System action: None.
User response: Enter a valid value for the FABXRST option.

IRTC078E IRT#CPID Option Invalid
Long message: The IRT#CPID value must be specified as a valid module name.
System action: None.
User response: Enter a valid value for the IRT#CPID option.

IRTC079E CHKPINT Option Invalid
Long message: The CHKPINT value must be specified as a valid timestamp (hh:mm:ss).
System action: None.
User response: Enter a valid value for the CHKPINT option.

IRTC080E LOG BLKSZ Option Invalid
Long message: The BLKSZ value for a LOG data set must be specified as a number between 8 and 32760.
System action: None.
User response: Enter a valid value for the BLKSZ option.

IRTC081E LOG BUFNO Option Invalid
Long message: The BUFNO value for a LOG data set must be specified as a number between 3 and 255.
System action: None.
User response: Enter a valid value for the option.

IRTC082E LOG DCBDS Option Invalid
Long message: The DCBDS value for a LOG data set must be a valid fully qualified, unquoted, data set name of an existing data set.
System action: None.
User response: Enter a valid value for the option.

IRTC083E LOG DSNAM Option Invalid
Long message: The DSNAM value for a LOG data set must be a valid fully qualified, unquoted, data set name.
System action: None.
User response: Enter a valid value for the DSNAM option.

IRTC084E LOG EXPDL Option Invalid
Long message: The EXPDL value for a LOG data set must be a valid long Julian date in the format yyyyddd.
System action: None.
User response: Enter a valid value for the EXPDL option.

IRTC085E LOG EXPDT Option Invalid
Long message: The EXPDT value for a LOG data set must be a valid Julian date in the format yyyyddd.
System action: None.
User response: Enter a valid value for the EXPDT option.

IRTC086E LOG LRECL Option Invalid
Long message: The LRECL value for a LOG data set must be specified as a number between 4 and 32760.
System action: None.
User response: Enter a valid value for the LRECL option.

IRTC087E LOG PRIME Option Invalid
Long message: The PRIME value for a LOG data set must be specified as a number between 1 and 9999.
System action: None.
User response: Enter a valid value for the PRIME option.

IRTC088E LOG RETPD Option Invalid
Long message: The RETPD value for a LOG data set must be specified as a number between 1 and 9999.
System action: None.
User response: Enter a valid value for the RETPD option.

IRTC089E LOG SECND Option Invalid
Long message: The SECND value for a LOG data set must be specified as a number between 1 and 9999.
System action: None.
User response: Enter a valid value for the SECND option.

IRTC090E LOG SPACE Option Invalid
Long message: The SPACE value for a LOG data set must be specified as either TRKS or CYLS.
System action: None.
User response: Enter a valid value for the option.

IRTC091E LOG UNCNT Option Invalid
Long message: The UNCNT value for a LOG data set must be specified as a number between 1 and 59.
System action: None.
User response: Enter a valid value for the UNCNT option.

IRTC092E LOG UNIT Option Invalid
Long message: The UNIT value for a LOG data set must be specified as a valid MVS unit name.
System action: None.
User response: Enter a valid value for the UNIT option.

IRT093E LOG VLCNT Option Invalid
Long message: The VLCNT value for a LOG data set must be specified as a number between 1 and 255.
System action: None.
User response: Enter a valid value for the VLCNT option.

IRT094E Exclusive Options Entered
Long message: The Log options EXPDT, EXPDL, and RETPD are mutually exclusive. Specify only one of these parameters.
System action: None.
User response: Specify either the EXPDT, EXPDL, or RETPD parameter.

IRT095E ABT ABLE Option Invalid
Long message: The ABRETRY option is required if ABRETRY is specified as YES.
System action: None.
User response: Enter a valid value for the ABT ABLE option.

IRT096E IMSGROUP Required
Long message: The IMSGROUP name is a required field.
System action: None.
User response: Enter a valid value for the option.

IRT097E CTDSNAM changed to BOTH
Long message: The CTDSNAM option value is set to BOTH when CTDSHLQ is less than 9 characters.
System action: The CTDSNAM option value is changed to BOTH, resulting in the inclusion of both the PSB and the program name in the CTDS data set name.
User response: If this option value is acceptable, no response is necessary. Otherwise, specify a CTDSHLQ value greater than 8 characters.
NOTE: Specifying a CTDSHLQ value greater than 8 characters is not recommended because it increases the chances that multiple jobs might attempt to use the same CTDS files. If multiple jobs attempt to use the same CTDS files, one or both jobs could restart incorrectly and require complex recovery. Refer to the global options references for CTDSNAM and CTDSHLQ in Chapter 7. Troubleshooting on page 55.

IRT100E AUTOBKOK Option Invalid
Long message: The AUTOBKOK option must be specified as either YES or NO.
System action: None.
User response: Enter a valid value for the AUTOBKOK option.

IRT101E BYPLOGR Option Invalid
Long message: The BYPLOGR option must be specified as either YES or NO
System action: None.
User response: Enter a valid value for the option.

IRT102E BYPLOGR Enabled Globally
Long message: The BYPLOGR has been enabled on a global basis. Bypass Logging on all jobs is probably not what you want!
System action: None.
User response: Specifying a value of NO for the BYPLOGR global option is highly recommended.

IRT103E CATDS Option Invalid
Long message: The CATDS option must be specified as either YES or NO.
System action: None.
User response: Enter a valid value for the CATDS option.

IRT104E CMPCBKOK Option Invalid
Long message: The CMPCBKOK option must be specified as a number between 1 and 4095.
System action: None.
User response: Enter a valid value for the CMPCBKOK option.

IRT105E CMPCBKER Option Invalid
Long message: The CMPCBKER option must be specified as a number between 1 and 4095.
System action: None.
User response: Enter a valid value for the CMPCBKER option.

IRT106E FORCELTR Option Invalid
Long message: The FORCELTR option must be specified as either YES or NO.
System action: None.
IRTC107E • IRTC111E

User response: Enter a valid value for the FORCELTR option.

IRTC107E IEFRDER Option Invalid

Long message: The IEFRDER option must be specified as JCL, DUMMY, DYNALLOC, or FORCE.

System action: None.

User response: Enter a valid value for the IEFRDER option.

IRTC108E IEFRDER2 Option Invalid

Long message: The IEFRDER2 option must be specified as JCL, DUMMY, DYNALLOC, or FORCE.

System action: None.

User response: Enter a better value for the IEFRDER2 option.

IRTC109E NOLOGRO Option Invalid

Long message: The NOLOGRO option must be specified as either YES or NO.

System action: None.

User response: Enter a valid value for the NOLOGRO option.

IRTC110E COPY1 Option Invalid

Long message: The COPY1 option must contain valid characters.

System action: None.

User response: Enter a valid value for the COPY1 option.

IRTC111E COPY2 Option Invalid

Long message: The COPY2 option must contain valid characters.

System action: None.

User response: Enter a valid value for the COPY2 option.
Abend codes

This topic describes the abend codes that are issued by IMS Program Restart Facility.

Use the information in these codes to help you diagnose and solve IMS Program Restart Facility problems.

For each abend code, the following accompanying information is provided where applicable:

**Explanation:**
The Explanation section explains what the message text means, why it occurred, and what its variables represent.

**System action:**
The System action section explains what the system will do in response to the event that triggered this message.

**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.

---

### 474

**Explanation:**
Both IMS Program Restart Facility and IMS can issue this abend. IMS Program Restart Facility issues this abend when an MVS MODIFY jobname,ST command is issued.

**System action:**
The job step abends with a U0474 completion code.

**User response:**
None.

### 3303

**Explanation:**
Both IMS Program Restart Facility and IMS can issue this abend. IMS Program Restart Facility issues this abend when an MVS MODIFY jobname,HOLD command is issued or when IMS Online Reorganization Facility requires exclusive use of a database.

**System action:**
The job step abends with a U3303 completion code.

**User response:**
If IMS Online Reorganization Facility has requested that the job be paused, no action is required. In this case, IMS Online Reorganization Facility will notify the job when it can restart autonomically after it no longer requires exclusive use of a database. If an MVS MODIFY jobname,HOLD command was issued to pause the job, use the MVS MODIFY jobname,XRST command to restart job processing.

### 3618

**Explanation:**
The IMS Program Restart Facility IVP program IRTIVPG1 detected an unexpected condition while it was reading the DI21PART database. It attempted to reposition to the last root after a checkpoint call, but an unexpected status was returned by IMS. Message IRTIV04E shows the status code that was received.

**System action:**
The job step abends with a U3618 completion code.

**User response:**
For BMP jobs, review the IMS JESLOG to see whether any other IMS error conditions occurred at the time of the failure. For DLI jobs, review the JESLOG of that job. Correct the underlying cause of the condition code.

### 3619

**Explanation:**
The IVP program abended because the threshold for the number of successful checkpoints (as set in the CHKPCNT parameter) was exceeded. This abend code can be updated by changing the CHKPCMP parameter to a different abend code.

**System action:**
The job step abends with a U3619 completion code.

**User response:**
Rerun the abended job step.

### 3620

**Explanation:**
Dynamic allocation failed while trying to create the CTDS. Message IRT006E in the JESLOG log of the job provides information about the return codes that describe the dynamic allocation error.

**System action:**
The job step abends with a U3620 completion code.
User response: For more information about the dynamic allocation failure, see message “IRTO06E” on page 133.

3621

Explanation: The current program and PSB do not match the program and PSB recorded in the CTDS from the previous abend of the job. Before the abend, messages IRT008E and IRT009E are written to the JESLOG log of the job. These messages provide details about the job.

System action: The job step abends with a U3621 completion code.

User response: Determine the reason why the information for the abended job that was saved in the CTDS data set does not match the information for the current job, which is shown in message IRT008E. The reason might be that a job with the same job name was run with a different program or PSB name before the original abending job was restarted.

3622

Explanation: An error occurred while trying to load IMS Program Restart Facility options. This error is accompanied by error messages that describe the error, including IRT012E, IRT211E, IRT212E, IRT312E, IRT345E, and IRT346E.

System action: The job step abends with a U3622 completion code.

User response: Review the job output from messages IRT012E, IRT211E, IRT212E, IRT312E, IRT345E, and IRT346E, and the output from other messages that indicate the cause of the failure. This abend is typically caused by a dynamic allocation failure or invalid load modules in the IRTOPT data set.

3623

Explanation: Dynamic allocation failed while trying to allocate or deallocate a data set, such as a CTDS or LOG, that might be required for extended restart.

System action: The job step abends with a U3623 completion code.

User response: For more information about the dynamic allocation failure, see message “IRTO06E” on page 133.

3624

Explanation: An application terminated with a non-zero return code greater than or equal to the return code value specified in the RCABEND parameter. The abend code that is issued can be updated by changing the UABEND options (3624 is the default abend code). This abend is accompanied by message IRT028E.

System action: The job step abends with a U3624 completion code without doing any cleanup of the CTDS for the job. At the next execution of this job, the job will be restarted.

User response: When this job step is restarted, an automatic extended restart is attempted. For more information, see message “IRTO28E” on page 136 and the description of the RCABEND parameter.

3625

Explanation: When restarting a job, an indoubt checkpoint might be committed. However, IMS Program Restart Facility was unable to confirm if the checkpoint is committed, possibly because the IMS control region abended before the checkpoint call completed.

System action: The job step abends with a U3625 completion code.

User response: For more information, see message “IRTO11E” on page 134. You must investigate the last checkpoint committed by IMS, and use the AUTOXRST=LAST or AUTOXRST=FORCE option to allow the job to restart.

3626

Explanation: The value for the CTDSHLQ parameter was more than the maximum number of characters allowed. The CTDSHLQ parameter has an 8-character maximum when the CTDSNAM option is not set to BOTH, and a 17-character maximum in all other cases.

System action: The job step abends with a U3626 completion code.

User response: See message IRT005E for more details.

3627

Explanation: AUTOWTOR=YES was specified in the options. An automatic extended restart was possible, and the operator replied ABEND to the IRT014A WTOR when the job was resubmitted.

System action: The job step terminates abnormally with a U3627 completion code.

User response: See message IRT014A for more detailed information.

3628

Explanation: Processing encountered an error. An error message preceding the abend describes the error that was encountered. Messages IRT083E, IRT084E, IRT085E, IRT086E, IRT100E, IRT236E, IRT237E, IRT238E, IRT241E, or IRT344E might be issued to indicate the reason for the abend.

System action: The job step terminates abnormally
with a U3628 completion code.

**User response:** Review the job log of the abending job to find the error messages. For more information, see the error message descriptions.

### 3630

**Explanation:** IMS Program Restart Facility processing encountered an error, typically related to DLI batch backout processing. This abend might also be issued when batch backout processing completes successfully during job initialization (meaning that a backout was pending for the job when it was resubmitted).

An error message that precedes the abend describes the error that was encountered. Messages IRT039E, IRT107E, IRT118E, IRT125E, IRT134E, IRT136E, IRT137E, IRT161W, or IRT172E might be issued to indicate the reason for the abend.

**System action:** The job step terminates abnormally with a U3630 completion code.

**User response:** For more information, review the job log of the abending job to find error messages and refer to the description of the error.

### 3773

**Explanation:** This abend can be issued by IMS Program Restart Facility when certain debug features are enabled. It should not occur unless the IBM Software Support directed you to update options for the job and provide a memory dump.

**System action:** The job step ends abnormally with a U3773 completion code.

**User response:** For more information, review the job log of the abending job to find error messages and refer to the description of the error messages found.

### 4000

**Explanation:** IMS Program Restart Facility detected an error while reading the IRTOPT data set, or while processing in a IMS Program Restart Facility batch utility or in the ISPF environment. An error message is written to the system log (JESLOG of the job/TSO user that encountered the error).

**System action:** The process ends abnormally with a U4000 completion code. In an ISPF environment, any changes are not saved.

**User response:** Review the JESLOG/SYSLOG for error messages that indicate the cause of the error condition, and refer to those messages for further information.

### 4001

**Explanation:** IMS Program Restart Facility detected an error while processing in a IMS Program Restart Facility batch utility or in the ISPF environment. An error message is written to the system log, which is in the JESLOG of the job or TSO user that encountered the error.

**System action:** The process ends abnormally with a U4001 completion code. In an ISPF environment, any changes are not saved.

**User response:** Review the JESLOG/SYSLOG for error messages that indicate the cause of the error condition, and refer to those messages for further information.

### 4002

**Explanation:** A fatal error has occurred in the IMS Program Restart Facility IMS logger exit’s initialization phase. Refer to prior messages for an explanation of the problem.

**System action:** The job abends.

**User response:** Refer to the prior error messages to determine how to fix the problem. When you have fixed the problem, the job can be restarted because no updates have taken place.
Gathering diagnostic information

Before you report a problem with IMS Program Restart Facility to IBM Software Support, you need to gather the appropriate diagnostic information.

Procedure

Provide the following information for all IMS Program Restart Facility 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 IMS that you are using and the type and version of the operating system that you are using

Provide additional information based on the type of problem that you experienced:

**For ISPF online abends, provide the following information**

- A screen shot of the panel that you were using when the abend occurred
- The job log from the TSO session that encountered the abend
- A description of the task that you were doing before the abend occurred
- If there is an ISPF message, press the help key (usually PF1) and provide the full text of the long form of the error message.

**For errors in batch processing, provide the following information**

- The complete job log
- Print output
- Contents of the any data sets that were used during the processing. For example, checkpoint tracking data sets (CTDS) and the options data set (IRTOPT).
Notices

This information was developed for products and services offered in the U.S.A.

This material may be available from IBM in other languages. However, you may be required to own a copy of the product or product version in that language in order to access it.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

Intellectual Property Licensing
Legal and Intellectual Property Law
IBM Japan Ltd.
19-21, Nihonbashi-Hakozakicho, Chuo-ku
Tokyo 103-8510, Japan

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law:

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.
Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this information and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement, or any equivalent agreement between us.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. The sample programs are provided "AS IS", without warranty of any kind. IBM shall not be liable for any damages arising out of your use of the sample programs.

**Trademarks**

IBM, the IBM logo, and ibm.com® are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at "Copyright and trademark information" at [http://www.ibm.com/legal/copytrade.shtml](http://www.ibm.com/legal/copytrade.shtml).

Other company, product, and service names may be trademarks or service marks of others.
Terms and conditions for product documentation

Permissions for the use of these publications are granted subject to the following terms and conditions:

Applicability: These terms and conditions are in addition to any terms of use for the IBM website.

Personal use: You may reproduce these publications for your personal, noncommercial use provided that all proprietary notices are preserved. You may not distribute, display or make derivative work of these publications, or any portion thereof, without the express consent of IBM.

Commercial use: You may reproduce, distribute and display these publications solely within your enterprise provided that all proprietary notices are preserved. You may not make derivative works of these publications, or reproduce, distribute or display these publications or any portion thereof outside your enterprise, without the express consent of IBM.

Rights: Except as expressly granted in this permission, no other permissions, licenses or rights are granted, either express or implied, to the publications or any information, data, software or other intellectual property contained therein.

IBM reserves the right to withdraw the permissions granted herein whenever, in its discretion, the use of the publications is detrimental to its interest or, as determined by IBM, the above instructions are not being properly followed.

You may not download, export or re-export this information except in full compliance with all applicable laws and regulations, including all United States export laws and regulations.

IBM MAKES NO GUARANTEE ABOUT THE CONTENT OF THESE PUBLICATIONS. THE PUBLICATIONS ARE PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT, AND FITNESS FOR A PARTICULAR PURPOSE.

Privacy policy considerations

IBM Software products, including software as a service solutions, ("Software Offerings") may use cookies or other technologies to collect product usage information, to help improve the end user experience, to tailor interactions with the end user or for other purposes. In many cases no personally identifiable information is collected by the Software Offerings. Some of our Software Offerings can help enable you to collect personally identifiable information. If this Software Offering uses cookies to collect personally identifiable information, specific information about this offering’s use of cookies is set forth below.

This Software Offering does not use cookies or other technologies to collect personally identifiable information.

If the configurations deployed for this Software Offering provide you as customer the ability to collect personally identifiable information from end users via cookies and other technologies, you should seek your own legal advice about any laws applicable to such data collection, including any requirements for notice and consent.
Index

A
abend codes 183
abend retry tables 82
abend retry tables, description 6
abended IMS batch jobs, restarting 85
flow chart 93
IMS Extended Restart options 94
prerequisites 86
preventing indoubt checkpoints 90
restart abend caused by indoubt checkpoint 91
restart from beginning 88
restart from last verified checkpoint ID 87
restart on different IMS version 89
ABRCC 50
ABRETRY 50, 59, 82
ABTABLE 50, 59, 82
accessibility overview 16
AGN 69
APARM 50, 69
APARM32 50
audit log report 121
AUDITLOG 55
authorization for data sets 32
AUTOBK 72
automated batch backout, description 6
automated IMS batch backout, description 11
automatic job restart, description 6
AUTOWTOR 59
AUTOXRST 59

B
batch backout data set 1
BBDSACL 55
BBDSHLQ 55
BBDSMGCL 55
BBDSSTCL 55
BBDSUNIT 55
BBDSVOL 55
BCDINTVL 64
BCERRXT 64
BCREASN 64
BCRETRN 64
BCSTATUS 64
BCSTCLST 64
benefits, product 4
BLKTSZ 76
BMP 127
BUFNO 76
bypass checkpoint processing, description 6
bypass logging 129
bypass logging usermod 46
BYPCHKP 64
BYPLOGR 72

C
codes, abend 183
configuration audit log 27
batch backout tracking data sets 29
BMP pausing 21, 22, 23
checkpoint ID tracking 29
copy load modules 44
customizing modules and exits 41
customizing options 35
data set allocation 25
data set security 28
enable the product 42
environments 18
install bypass logging usermod 46
introduction 17
ISPF application 33
migration 34
naming data sets 18
options data set 18
options data set, define name 26
usermods 24
verifying the installation 36
conversion, options 122
cookie policy 187, 189
COPY1 72
COPY2 72
CPUTIME 69
CTDSACL 55
CTDSHLQ 55
CTDSMGCL 55
CTDSNAM 55
CTDSSTCL 55
CTDSTRKPS 55
CTDSUNIT 55
CTDSVOL 55
CTX data set 54
diagnostic information gathering 186
DLI and DBB batch log log types 75
documentation accessing 14
sending feedback 14
DSNAM 76
dynamic allocation for application logs 116

E
EXCLUDE 50, 59
Exclusion DD name load module 122
exclusion DD name table 83
EXPDL 76
EXPDT 77

F
FABXRST 67
features, product 6
force dynamic allocation for application logs 116
FORCEID 59
FORCELTR 72
FSTOP 59

G
GSGNAME 69

I
IEFRDER 72
IEFRDER2 72
IGNXIAOA 59
IMS batch log data sets, description 6
IMS DLI and DBB batch log log types 75
IMS Extended Restart processing, description 11
IMS Extended Restart processing, override 117
IMS groups 81
IMS groups, description 6
IMS PROC overrides, description 6
IMS Program Restart Facility configuration 20
IMS release identifiers 42
IMSGROUP 50
IMSLOGR 59
inclusion options data set 34
initialization user exit 41, 118
installation verification program (IVP) 36
IRLM 69
IRLMNMR 69
Product Number: 5655-E14

Printed in USA