z/OS

# MVS Migration

GA22-7580-03

z/OS

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GA22-7580-03

**Note**

Before using this information and the product it supports, be sure to read the general information under “Notices” on page D-1.

**Fourth Edition, March 2002**

This is a major revision of GA22-7580-02.

This edition applies to Version 1 Release 3 of z/OS (5694-A01), and to subsequent releases and modifications until otherwise indicated in new editions.

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# About This Book

This book provides information on migrating the MVS element to the current release of z/OS from OS/390 Release 10. Specifically, this book:

- Gives technical descriptions of the enhancements provided by the MVS element of z/OS.
- Describes MVS-related migration actions that customers must take when migrating the MVS element to the current release of z/OS from OS/390 Release 10.

For WLM-specific migration actions, see *z/OS MVS Planning: Workload Management*.

## Who Should Use This Book

This book is intended for experienced system programmers responsible for converting MVS-specific functions to the current release of z/OS from OS/390 Release 10.

Readers of this book should have an in-depth knowledge of the configuration and procedures of the system currently installed.

The system programmer reading this book might need to inform other users (operators, application programmers, other system programmers) about the migration actions they need to take for this migration.

The following documentation, which is supplied with your product order, provides information about installing your z/OS system. In addition to specific information about MVS, this documentation contains information about all of the z/OS elements.

- *z/OS Planning for Installation*

  This book describes the installation requirements for z/OS at a system and element level. It includes hardware, software, and service requirements for both the driving and target systems. It also describes coexistence considerations and actions.
- *z/OS Program Directory*

  This document, which is provided with your z/OS product order, leads you through the specific installation steps for MVS and the other z/OS elements.
- *ServerPac Installing Your Order*

  This is the order-customized, installation book for using the ServerPac Installation method. Be sure to review the appendix on product information, which describes data sets that are supplied, jobs or procedures that have been completed for you, and product status. IBM may have run jobs or made updates to PARMLIB or other system control data sets. These updates could affect your migration.
- Use other books in the MVS library (such as *z/OS MVS Initialization and Tuning Reference*) to activate new functions.

## How To Use This Book

Read the following chapters to learn about changes to MVS that support this release of z/OS:

- Chapter 1, “Migration Roadmap for MVS functions” on page 1-1 provides a roadmap that lists new and changed MVS functions under major categories such as “System Management”.
- Chapter 2, “Release Summary” on page 2-1 summarizes compatible and incompatible added, changed, and deleted MVS functions. Other books in the MVS library provide information about how to implement and use new MVS functions.

Read the following chapters to determine which migration actions your installation requires:

- Chapter 3, “Migration Actions: Initialization and Tuning” on page 3-1 describes the initialization changes that your installation might need to make.
- Chapter 5, “Migration Actions: Operations” on page 5-1 describes changes to operational considerations.
- Chapter 6, “Migration Actions: Problem Determination and Diagnosis” on page 6-1 describes changes to services that your installation might use for problem determination.
- Chapter 7, “Migration Actions: Security” on page 7-1 describes changes that your installation might need to make to ensure its security.
- Chapter 8, “Migration Actions: Accounting” on page 8-1 describes changes to system management facilities (SMF) records that might affect the accounting procedures at your installation.
- Chapter 9, “Migration Actions: Application Development” on page 9-1 describes changes in macros and system services that might affect existing application programs at your installation.

Check the following for interface changes:

- Appendix A, “Summary Tables for MVS Interfaces and Published Control Blocks” on page A-1 summarizes the new, changed, and deleted interfaces. The chapter provides tables for changes to SYS1.PARMLIB members, system commands, macros, callable services for high-level languages, installation exits, and control blocks.

Read the following if you are using ESCON CTCs:

- Appendix B, “ESCON CTC Considerations” on page B-1 describes differences between ESCON CTCs and 3088 CTCs.

## Where to Find More Information

If you are migrating from OS/390 Release 10, the information in this book should be sufficient for you. If you are migrating from an OS/390 release earlier than Release 10, or from MVS/ESA, then you will need to be familiar with the conversion information in one or more of the following:

- *OS/390 MVS Conversion Notebook* , GC28-1747
- *Conversion Notebook for System Product Version 5* , GC28-1436
- *Conversion Notebook for System Product Version 4* , GC28-1608
- *Conversion Notebook for System Product Version 3* , GC28-1568
- *Conversion Notebook for System Product Version 2* , GC28-1567

## Related Books for z/OS

Where necessary, this book references information in other books, using shortened versions of the book title. For complete titles, and order numbers of books for the base elements and optional features of z/OS, see *z/OS Information Roadmap*, SA22-7500.

| Short Title Used in this Book | Title | Order Number |
|---|---|---|
| *ESA/390 Common I/O-Device Commands* | *ESA/390 Common I/O-Device Commands* | SA22-7204 |
| *ESA/390 ESCON Channel-To-Channel Adapter* | *ESA/390 ESCON Channel-To-Channel Adapter* | SA22-7203 |

## Using LookAt to look up message explanations

LookAt is an online facility that allows you to look up explanations for z/OS messages, system abends, and some codes. Using LookAt to find information is faster than a conventional search because in most cases LookAt goes directly to the message explanation.

You can access LookAt from the Internet at:

`http://www.ibm.com/servers/eserver/zseries/zos/bkserv/lookat/lookat.html`

or from anywhere in z/OS where you can access a TSO command line (for example, TSO prompt, ISPF, z/OS UNIX System Services running OMVS).

To find a message explanation on the Internet, go to the LookAt Web site and simply enter the message identifier (for example, `IAT1836` or `IAT*`). You can select a specific release to narrow your search. You can also download code from the *z/OS Collection*, SK3T-4269 and the LookAt Web site so you can access LookAt from a PalmPilot (Palm VIIx suggested).

To use LookAt as a TSO command, you must have LookAt installed on your host system. You can obtain the LookAt code for TSO from a disk on your *z/OS Collection*, SK3T-4269 or from the LookAt Web site. To obtain the code from the LookAt Web site, do the following:

1. Go to http://www.ibm.com/servers/eserver/zseries/zos/bkserv/lookat/lookat.html.
2. Click the **News** button.
3. Scroll to **Download LookAt Code for TSO and VM.**
4. Click the ftp link, which will take you to a list of operating systems. Select the appropriate operating system. Then select the appropriate release.
5. Find the **lookat.me** file and follow its detailed instructions.

To find a message explanation from a TSO command line, simply enter: **lookat** *message-id*. LookAt will display the message explanation for the message requested.

**Note:** Some messages have information in more than one book. For example, IEC192I has routing and descriptor codes listed in *z/OS MVS Routing and Descriptor Codes*. For such messages, LookAt prompts you to choose which book to open.

## Accessing licensed books on the Web

z/OS licensed documentation in PDF format is available on the Internet at the IBM Resource Link Web site at:

`http://www.ibm.com/servers/resourcelink`

Licensed books are available only to customers with a z/OS license. Access to these books requires an IBM Resource Link Web userid and password, and a key code. With your z/OS order you received a memo that includes this key code.

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3. Click on **Access Profile.**
4. Click on **Request Access to Licensed books.**
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4. Click on **Software**.
5. Click on **z/OS**.
6. Access the licensed book by selecting the appropriate element.

# Summary of changes

**Summary of changes**
**for GA22-7580-03**
**z/OS Version 1 Release 3**

The book contains information previously presented in *z/OS MVS Migration*, GA22-7580-02, which supports z/OS Version 1 Release 2.

**New information**

- Information on migrating the MVS element from z/OS Release 1 to z/OS Release 3.

This book contains terminology, maintenance, and editorial changes. Technical changes or additions to the text and illustrations are indicated by a vertical line to the left of the change.

Starting with z/OS V1R2, you may notice changes in the style and structure of some content in this book—for example, headings that use uppercase for the first letter of initial words only, and procedures that have a different look and format. The changes are ongoing improvements to the consistency and retrievability of information in our books.

We added an appendix with z/OS product accessibility information.

**Summary of changes**
**for GA22-7580-02**
**as updated December 2001**

The book contains information previously presented in *z/OS MVS Migration*, GA22-7580-01, which also supports z/OS Version 1 Release 2.

**New information**

- ATS STAR is a new function available in Release 2 for the handling of automatically switchable tape devices.

This book contains terminology, maintenance, and editorial changes, including changes to improve consistency and retrievability.

**Summary of changes**
**for GA22-7580-01**
**z/OS Version 1 Release 2**

The book contains information previously presented in *z/OS MVS Migration*, GA22-7580-00, which supports z/OS Version 1 Release 1.

**New information**

- Information on migrating the MVS element from z/OS Release 1 to z/OS Release 2.

This book contains terminology, maintenance, and editorial changes, including changes to improve consistency and retrievability.

**Summary of changes**
**for GA22-7580-00**
**z/OS Version 1 Release 1**

The book contains information also presented in *OS/390 MVS Conversion Notebook*, GC28-1747.

**New information**

- Information on migrating the MVS element from OS/390 Release 10 to z/OS Release 1.

This book contains terminology, maintenance, and editorial changes, including changes to improve consistency and retrievability.

# Chapter 1. Migration Roadmap for MVS functions

*Table 1-1. Migration Roadmap for MVS Functions*

| Changes to MVS Functions | For Overview Information, see... |
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# Chapter 2. Release Summary

This chapter provides a technical description of new functions, and enhancements to existing functions, provided by the MVS element of z/OS. Where appropriate, it references other books in the MVS library where you can find additional information about the topic being discussed.

## z/OS Release 1

This section provides an overview of the new and enhanced MVS functions introduced in z/OS Release 1. Any specific conversion information (involving migration actions) is given later in this book. Information about how to use a function appears in other books in the MVS library.

### Using msys for Setup to Set up a Parallel Sysplex: New for Release 1

Starting with z/OS V1R1, IBM provides a new way to customize a parallel sysplex using msys for Setup.

- For information on msys for Setup, see *z/OS Managed System Infrastructure for Setup User's Guide*.
- For specific information on using msys for Setup to customize a parallel sysplex, see *z/OS MVS Setting Up a Sysplex*.

### Intelligent Resource Director: New for Release 1

The **Intelligent Resource Director** (IRD) extends the concept of goal-oriented resource management by allowing you to group logical partitions that are resident on the same physical server, and in the same sysplex, into an "LPAR cluster." This gives Workload Management the ability to manage resources, both processor and DASD I/O, not just in one single image but across the entire cluster of logical partitions.

The three functions that make up IRD are as follows:

- **LPAR CPU Management**, which lets Workload Manager distribute processor resources across an LPAR cluster by dynamically adjusting the LPAR weights in response to changes in the workload requirements. When important work is not meeting its goals, WLM will raise the weight of the partition where that work is running, thereby giving it more processing power. As part of LPAR CPU Management, WLM will also optimize the number of online logical CPUs configured online to each partition. As the LPAR weights change, the number of online logical CPUs are also changed to maintain the closest match between logical CPU speed and physical CPU speed.

  LPAR CPU Management requires a CF level 9 coupling facility structure and z/OS images running in goal mode on a zSeries machine in z/Architecture mode.
- **Dynamic Channel Path Management**, which lets Workload Manager dynamically move channel paths through the ESCON Director from one I/O control unit to another, in response to changes in the workload requirements. By defining a number of channel paths as "managed," they become eligible for this dynamic assignment. By moving more bandwidth to the important work that needs it, your DASD I/O resources are used much more efficiently. This may decrease the number of channel paths you need in the first place, and could improve availability — in the event of a hardware failure, another channel could be dynamically moved over to handle the work requests.

Dynamic Channel Path Management requires z/OS and a zSeries machine in z/Architecture mode, which can be running in either Basic or LPAR mode. It supports DASD control units which are non synchronous and are connected via an ESCON Director. (Initially, it supports ESCON channels only.) It's optimized when WLM is running in goal mode.

- **Channel Subsystem Priority Queuing** is an extension of I/O priority queuing, a concept that has been evolving in MVS over the past few years. If important work is missing its goals due to I/O contention on channels shared with other work, it will be given a higher channel subsystem I/O priority than the less important work. This function goes hand in hand with the Dynamic Channel Path Management described above — as additional channel paths are moved to control units to help an important workload meet goals, Channel Subsystem Priority Queueing ensures that the important workload receives the additional bandwidth before less important workloads that happen to be using devices assigned to the same control unit.

  Channel Subsystem Priority Queuing requires a zSeries machine in z/Architecture mode. It initially supports ESCON and OEMI channels only. It's optimized when WLM is running in goal mode.

For more detailed information on the Intelligent Resource Director, see *z/OS MVS Planning: Workload Management* and the IBM Redbook *z/OS Intelligent Resource Director*.

## Additional Support for Operator Consoles: New for Release 1

z/OS Version 1 Release 1 supports a new type of console, called SMCS (SNA Multiple Console Support). SMCS is a VTAM application, and can use VTAM controlled devices for console support, eliminating the need for a non-SNA 3174 Terminal Control Unit.

For more information, see *z/OS MVS Planning: Operations*.

---

# z/OS Release 2

This section provides an overview of the new and enhanced MVS functions introduced in z/OS Release 2. Any specific conversion information (involving migration actions) is given later in this book. Information about how to use a function appears in other books in the MVS library.

## 64–bit virtual addressing: New for Release 2

Starting with z/OS V1R2, MVS address spaces are immensely larger than previously allowed. The new, larger address spaces are 16 exabytes, which is 8 billion (8 thousand million or 8 000 000 000) times the size of the former 2–gigabyte address space. The new address has $2^{64}$ logical addresses. That is 16 with 18 zeroes after it: 16 000 000 000 000 000 000 bytes, or 16 exabytes.

In some fundamental ways the new address space is the same as the earlier address spaces (24–bit address spaces, introduced by MVS in the 1970s, and 31–bit address spaces, introduced by MVS/XA in the early 1980s). The address space structure below the 2 gigabyte address has not changed; because of this, all programs that run in 24–bit addressing mode (AMODE 24) or 31–bit addressing mode (AMODE 31) continue to run without change.

In 31–bit and 64–bit address spaces, a virtual ″line″ marks the 16–megabyte address. Addresses below 16 megabytes were ″below the line″. Addresses above

16 megabytes were ″above the line″. With 64–bit addressing, a virtual ″bar″ marks the 2–gigabyte address. Addresses below 2 gigabytes are ″below the bar″. Addresses above 2 gigabytes are ″above the bar″.

The area above the bar is intended for data; no programs run above the bar. Also, there is no area above the bar that is common to all address spaces, and there are no system control blocks above the bar. IBM reserves an area of storage above the bar for special uses to be developed in the future.

When setting up the system, the system programmer can set a limit on how much virtual storage above the bar each address space can use. This limit is called the MEMLIMIT. If you do not set a MEMLIMIT, the system default is 0, meaning that no address space can use virtual storage above the bar. You can set a system-wide MEMLIMIT through SMF, and you can also set a MEMLIMIT for a specific address space in the JCL that creates the address space.

All programs start in AMODE 31 or AMODE 24; at that time, they are unable to work with data above the bar. To use virtual storage above the bar, a program must request storage above the bar, be in AMODE 64, and use the new z/Architecture assembler instructions.

There are two reasons why someone designing an application would want to use the area above the bar:

- The program needs more than 2 gigabytes of virtual storage at one time.
- The program uses complex algorithms to manage storage, re-allocating and re-using areas and checking storage availability. Running in a 64–bit addresss space means that you do no need this kind of programming effort. A program can potentially have as much virtual storage above the bar as it needs, without running out of storage or overlaying another program's data. The application programmer's job is easier and the performance of the program improves.

For more information about 64–bit addressing, see the following:

- To learn more about the 64-bit address space and how to use it, see *z/OS MVS Programming: Extended Addressability Guide* and *z/OS MVS Programming: Authorized Assembler Services Guide*.
- The system service that programs use to create and free storage above the 2-gigabyte address is the IARV64 macro. For more information on using the IARV64 macro in unauthorized programs, see the *z/OS MVS Programming: Assembler Services Reference IAR-XCT*. For authorized programs, see*z/OS MVS Programming: Authorized Assembler Services Reference ENF-IXG*.
- For a description of the new assembler instructions that apply to programs using storage above the 2-gigabyte address, see *z/Architecture Principles of Operation*.

## Command Flooding: New for Release 2

Most MVS commands are executed by attaching a task in either the *MASTER* or CONSOLE address space. If too many of these tasks are attached at one time (usually because a program has issued too many MGCRE macros), the system could run short of space in LSQA, and eventually enter wait state 07E, which would require a re-IPL.

Starting with APAR OW45398, which is incorporated into z/OS V1R2, attached commands that run in the *MASTER* or CONSOLE address space are divided into four ″command classes″. In each class, only 50 commands can execute at one

time. Any additional commands in that class must wait for execution. This prevents the out-of-space condition and the resulting wait state 07E from occurring.

To manage the number of commands that are awaiting execution, the system operator can issue the CMDS command to display the status of commands, remove selected commands that are awaiting execution, or cancel commands that are executing. When a command is removed before execution, the command issuer receives message IEE065I COMMAND NOT EXECUTED, CMD=*command* instead of the usual command response message.

The IEECMDS macro provides similar function for use in programs.

For more information, see:

- For information about the authorization needed to issue the CMDS command:*z/OS MVS Planning: Operations*
- For information about the CMDS command:*z/OS MVS System Commands*
- For information about the IEECMDS macro:*z/OS MVS Programming: Authorized Assembler Services Reference ENF-IXG*

## System-Managed Duplexing Rebuild: New for Release 2

System-managed duplexing rebuild is a process by which a duplexed copy of a coupling facility structure is created and maintained, so that in the event of a failure, a viable structure will remain available to the application. While the structure is duplexed, operations to the structure are maintained in a synchronized manner through protocols established by z/OS. As opposed to user-managed duplexing rebuild, which applies only to cache structures, system-managed duplexing rebuild applies to all structure types.

For more information, see the following:

- For planning and setup information, see *z/OS MVS Setting Up a Sysplex*
- For information on the availability of this new function, see the PSP bucket for Release 2.

## System Logger Exploitation of CF Duplexing Rebuild: New for Release 2

Starting with z/OS V1R2, system logger exploits the coupling facility duplexing rebuild facility. This provides the following advantage. Every time a system logger application writes a log block to a log stream, system logger automatically ensures there is a duplicate copy of the data. This helps ensure against data loss caused by coupling facility, system, or system logger failure. System logger keeps a duplex copy of data in log stream interim storage only. The duplicate copy is kept until the data is offloaded from interim storage to DASD log data sets.

For more information, see the following:

- For planning and setup information, see *z/OS MVS Setting Up a Sysplex*
- For information on changes to the IXGINVNT macro, see *z/OS MVS Programming: Assembler Services Reference IAR-XCT*.

## Wildcard Support for Global Resource Serialization Resource Name Lists: Enhancement for Release 2

Starting with z/OS V1R2, an installation can specify wildcards in resource name lists used in GRS (global resource serialization). This allows the customer to customize ENQ/DEQ processing in a sysplex.

For more information, see the following:

- For planning and setup information, see *z/OS MVS Planning: Global Resource Serialization*.
- For information on changes to the GRSRNLxx parmlib member, see *z/OS MVS Initialization and Tuning Reference*.
- For information on changes to installation exits, see *z/OS MVS Installation Exits*.

## Workload Management: Enhancements for Release 2

Starting with z/OS V1R2, IBM provides WLM support for non-z/OS operating systems (including LINUX). The new support allows WLM to manage the number of server instances per server address space.

For more information, see:

- *z/OS MVS Planning: Workload Management*
- *z/OS MVS Programming: Workload Management Services*
- For information about enhancements to the VARY WLM command, see:*z/OS MVS System Commands*
- *z/OS MVS Diagnosis: Reference*
- *z/OS MVS System Management Facilities (SMF)*

## Recoverable Resource Management Services (RRMS): Enhancements for Release 2

Starting with z/OS V1R2, RRS supports multisystem cascaded transactions. This support enhances the scope of cascaded transactions to span multiple systems in a sysplex as long as the systems all use the same logging group. With multisystem cascaded transaction support, RRS can also allow resource managers to restart on any system in the same RRS logging group.

For more information, see:

- *z/OS MVS Programming: Resource Recovery*

## Open Data Set Relief: Enhancement to MVS Allocation for Release 2

Starting with z/OS V1R2, certain control blocks used by allocation can be moved above the 16 MB line. This is done by specifying LOC=ANY on the GETDSAB macro. This allows customers to increase the number of dynamically allocated data sets.

For more information, see the following:

- For guidance information on using the LOC parameter of the GETDSAB macro, see *z/OS MVS Programming: Authorized Assembler Services Guide*
- For information on the LOC parameter of the GETDSAB macro, see *z/OS MVS Programming: Authorized Assembler Services Reference ENF-IXG*

## Service Aids Enhancements for Release 2

Starting with z/OS V1R2, the following enhancements are made to the MVS service aids. These enhancements are intended to offset the increasing complexity of installing and maintaining z/OS systems:

- IPCS enhancements:
  - When IPCS is invoked, it states which level of the operating system it is intended to support. This helps when debugging dumps or traces in a multi-system, multi-level environment.
  - IPCS allows users to access HFS paths.
  - IPCS uses data spaces to make more private area storage available for analysis and to accommodate larger reports.
  - The IPCS dialog provides a SORT primary command, which helps users manage multiple IPCS reports.
  - IPCS enhances the WHERE command to associate private area addresses with storage subpools.
  - IPCS eases problems when multiple dumps are required to adequately analyze a problem.

  For more information on IPCS enhancements, see
  - *z/OS MVS IPCS User's Guide*
  - *z/OS MVS IPCS Commands*
  - *z/OS MVS IPCS Customization*
- Starting with z/OS V1R2, IBM supplies a large set of sample DUMP command parmlib members in SYS1.SAMPLIB. Each of the parmlib members can be used as supplied by IBM, or can be used as a base for further modification depending on installation-specific requirements, such as system names, address space names, and so on. To use these parmlib members, IBM recommends that you copy them to a data set in your parmlib concatenation. Care has been taken to ensure that system symbols are used where names can vary by installation.

  For more information about setting up the IBM-supplied DUMP command parmlib members, see *z/OS MVS Diagnosis: Tools and Service Aids*. For more information about using the PARMLIB= parameter of the DUMP command, see *z/OS MVS System Commands*.
- The SLIP command has additional parameters:
  - ACTION=STOPGTF
  - MSGID=

  For more information, see *z/OS MVS System Commands*.

## Automatic Tape Switching in Release 2

The new ATS STAR design improves the availability and system management characteristics of the existing automatic tape switching function. The ATS STAR design drops the use of the IEFAUTOS coupling facility structure and instead uses global resource serialization and XCF services to maintain serialization when allocating shared tape devices. Both ATS STAR and the IEFAUTOS function can coexist in a sysplex composed of z/OS R2 and levels of z/OS and OS/390 lower than z/OS R2, and will properly maintain the integrity of the allocation of shared tape devices across the mixed sysplex. Systems at a level lower than z/OS R2 will continue to use the IEFAUTOS structure and systems at R2 will use the ATS STAR function. Once all systems sharing the device are at the R2 level, the IEFAUTOS structure can be removed from the CFRM policy. To maximize the performance of

the ATS STAR function, it is strongly recommended that you use the global resource serialization Star configuration, rather than the Ring configuration.

Coexistence of the ATS STAR and IEFAUTOS functions is enabled by having the system maintain information about the use of an autoswitchable device in either the Allocation address space (ALLOCAS) or in the IEFAUTOS structure. The two functions act independently of each other, each as a subset of the systems in the sysplex. When a device is in use by a system in either subset, the device will appear as ″Assigned to Foreign Host (AFH)″ to any other system that is not a member of that subset.

Toleration support for the ATS STAR function is required for users of the Multi-Image Integrity (MII) and Multi-Image Allocation (MIA) functions of Computer Associates Multi-Image Manager (MIM). Before applying the PTF for OW51003, contact Computer Associates for the associated support.

For more information, see the following books:
- *z/OS MVS Programming: Authorized Assembler Services Reference ALE-DYN*
- *z/OS MVS Programming: Authorized Assembler Services Reference ENF-IXG*
- *z/OS MVS Programming: Authorized Assembler Services Reference LLA-SDU*

## z/OS Release 3

In this section, we provide an overview of the new and enhanced MVS functions introduced in z/OS Release 3. You can find specific conversion information (involving migration actions) later in this book, and information about how to use a function in other books in the MVS library.

Note that not every new or changed function appears in this release summary. We document some smaller changes in migration actions or interface summary tables. You should check each chapter for changes that may affect your installation.

### System Logger enhancements for Release 3

System logger provides the following enhancements:
- You can now dynamically change policy attributes for log streams and structures without having to disconnect all the applications and subsystems connected to the log stream. This includes changing structure definitions in the LOGR couple data set without having to delete and redefine associated resources (staging data sets, for example).
- System logger now allows more flexible high-level qualifiers for log stream data sets. The new EHLQ (extended high-level qualifier) parameter for log stream definitions in the LOGR couple data set allows you to use more than one qualifier for log stream high-level qualifiers.

For more information, see *z/OS MVS Setting Up a Sysplex*.

### TSO/E dynamic broadcast support for Release 3

The TSO/E broadcast data set contains notices and messages for TSO/E users on z/OS. TSO/E will now allow more flexible broadcast data set processing:
- You no longer have to call the broadcast data set SYS1.BRODCAST. You can specify the broadcast data set name that you wish to use on the new BROADCAST parameter on the SEND statement of the IKJTSOxx parmlib member.
- You can switch to a different broadcast data set dynamically without an IPL.

- The entry for the broadcast data set is no longer included in master JCL. Instead, TSO/E allocates the broadcast data during IPL.
- The TSO/E LOGON function now allows you to log on even if the broadcast data set has not been allocated.
- You can specify the IKJTSOxx parmlib member on the IPL parameters. This support also allows the IKJTSOxx parmlib member to be specified (SET) and displayed (DISPLAY) using MVS system commands. Prior to z/OS Release 3, you could only display the IKJTSOxx parmlib member by using the TSO/E PARMLIB command.

For more information see:
- *z/OS MVS Initialization and Tuning Reference*
- *z/OS TSO/E General Information*

.

## Removal of Workload Management compatibility mode in Release 3

Since its introduction in MVS 5.1.0, Workload Management could be run in one of two modes, compatibility mode and goal mode. Beginning with z/OS V1R3, Workload Management will run only in goal mode. Accordingly, all systems at the z/OS V1R3 level or higher will now IPL in Workload Management goal mode, using either the existing service definition, or a default service definition if one does not exist yet. Once IPLed, customers can then define their own couple data set, modify their service definition, install it, and then activate a policy.

For more information, see *z/OS MVS Planning: Workload Management*.

## 64–bit virtual addressing: Additional services supported for Release 3

For z/OS V1R3, there are now additional authorized and unauthorized services allowing you to do virtual 64–bit addressing.

For more information, see the following books:
- For unauthorized services, see:
  - *z/OS MVS Programming: Assembler Services Reference ABE-HSP*
  - *z/OS MVS Programming: Assembler Services Reference IAR-XCT*
  -
- For authorized services, see:
  - *z/OS MVS Programming: Authorized Assembler Services Reference ALE-DYN*
  - *z/OS MVS Programming: Authorized Assembler Services Reference ENF-IXG*
  - *z/OS MVS Programming: Authorized Assembler Services Reference LLA-SDU*
  - *z/OS MVS Programming: Authorized Assembler Services Reference SET-WTO*

## Program Management support for 64–bit virtual addressing in Release 3

Program Management now provides support for 64–bit virtual addressing, including:
- AMODE(64) as a binder option
- AMODE(64) in ESD records
- 8–byte adcons

Program management provides 64–bit virtual addressing support for the following on **input**:
- load modules
- PO4 format program objects
- GOFF

- old-style object modules (OBJ). Note that this does not include support for XOBJ modules.

Program management provides 64-bit virtual addressing support for the following on **output**:

- load modules
- PO4 format program objects
- binder load function

For more information, see *z/OS MVS Program Management: User's Guide and Reference* and *z/OS MVS Program Management: Advanced Facilities*.

## Program Management COMPAT binder option default change in Release 3

The default for the Program Management COMPAT binder option, which lets you specify the compatibility level of the binder, has changed from CURRENT to the new option, MIN. The old default, CURRENT, specifies that the binder output is defined for the current level of the binder. For example, for a system running at the z/OS V1R3 level that specifies COMPAT=CURRENT will get the z/OS V1R3 PM4 program object format. The new default, MIN, specifies that the binder will choose the earliest format supporting all of the binder features in use. This means that a system at the z/OS V1R3 level specifying or defaulting to COMPAT=MIN will get the program object format appropriate to the binder features in use, rather than the current one.

For complete information on the COMPAT binder option default, see the *z/OS MVS Program Management: User's Guide and Reference*.

## SMF support for sub-capacity pricing in Release 3

With z/OS Release 3, customers can set a new SMFPRMxx parameter, MULCFUNC or NOMULCFUNC, which allows an installation to specify whether their IFAUSAGE users must specify the REQUEST=FUNCTIONxxx parameter. MULCFUNC, which is the default, means that users of IFAUSAGE (who register and deregister) must specify REQUEST=FUNCTIONxxx requests. NOMULCFUNC means that users of IFAUSAGE do not need to use the FUNCTIONxxx requests. Specifying NOMULCFUNC can help people using the Sub-Capacity Reporting Tool to limit the volume of the SMF records.

For more information, see the following Sub-Capacity Reporting Tool Web site:

`http://www.ibm.com/servers/eserver/zseries/wlc_lm/scrt.html`

# Chapter 3. Migration Actions: Initialization and Tuning

This section describes changes in your initialization and tuning procedures between OS/390 and z/OS. For a description of the changes to individual members of the parmlib data set in z/OS, see Table A-1 on page A-3.

## Checklist of Migration Actions for z/OS Release 1 Initialization and Tuning

- In support of IBM License Manager, the IEASYSxx parmlib member will have new keywords ILMMODE and ILMLIB. With z/OS running on a zSeries server and with IBM License Manager in production mode, SYS1.PARMLIB will no longer be the vehicle for determining which z/OS priced features have been ordered. For up-to-the-minute information on IBM License Manager, see:

  ```
  http://www.ibm.com/servers/eserver/zseries/zos/ilm/
  ```

  When available, detailed information on IBM License Manager will be published in *z/OS IBM License Manager: Planning and Customization*.
- Starting with z/OS V1R1, the default value on the ARCHLVL parameter in the LOADxx parmlib member is different from OS/390 Release 10:
  - In OS/390 Release 10, for all processors, the default value for ARCHLVL was 1 (ESA/390 mode). To run in z/Architecture mode in OS/390 Release 10, you needed to specify:

    ```
    ARCHLVL 2
    ```

    in the LOADxx parmlib member and you needed to run on a processor that supports z/Architecture mode.
  - Starting with z/OS V1R1:
    - On a processor that supports z/Architecture, the ARCHLVL default is 2 (run in z/Architecture mode).
    - On other processors, specifying ARCHLVL 2 results in a wait state. The default value is 1 (run in ESA/390 mode).

  For normal processing, you can omit the ARCHLVL parameter from LOADxx, and remove it if you had previously specified it.. For more information on the ARCHLVL parameter, see *z/OS MVS Initialization and Tuning Reference*.
- If you are migrating to z/Architecture mode, convert expanded storage to central storage. If you run in z/Architecture mode and have expanded storage defined, the expanded storage is not used. The system issues message IAR016I. In z/Architecture mode, system services that used expanded storage in ESA/390 mode (such as hiperspaces) have been changed to use real storage instead. Programs that use these system services should not require any changes.
- If you are migrating from OS/390 Release 10, you do not have to re-create the standalone dump program.
- In a PFK table for an MCS console, if you have a double underscore in a command, it will be treated slightly differently than before. The double underscore will be changed to one underscore, but will not cause the cursor to be placed after the underscore. If you want the command to have an underscore with the cursor on the next character, code three underscores. For more information and an example, see the section on setting up PFKs for consoles in *z/OS MVS Planning: Operations*.

## Checklist of Migration Actions for z/OS Release 2 Initialization and Tuning

- Before installing z/OS V1R2 (or the coexistence PTFs on lower-level systems), when the system is IPLed, the system invokes the GRS RNL exit points defined in the nucleus (ISGGSIEX, ISGGSEEX, and ISGGRCEX). Starting with z/OS V1R2 (or, on lower-level systems, when the coexistence PTFs are installed), the system invokes new exit point ISGNQXIT. If any of the old exits are detected during system initialization, GRS issues message ISG351I to indicate that the exit will not be invoked. To maintain function, you must install exit ISGNQXIT and migrate any desired function from the old exits to the new exit. For more information, see *z/OS MVS Installation Exits*.
- If the LOADxx ARCHLVL statement does not specify the proper level for the processor being used, it will be ignored with an error message. The ARCHLVL statement should be removed from all LOADxx members used with z/OS.

## Checklist of Migration Actions for z/OS Release 3 Initialization and Tuning

Following are the initialization and tuning migration actions for z/OS Release 3 of MVS:

- **BPXPRMxx**: For migration actions for the BPXPRMxx member, see *z/OS UNIX System Services Planning*.
- **IEAICSxx**: Because Workload Management compatibility mode has been removed for z/OS Release 3, the system ignores parmlib member IEAICSxx.
- **IEAIPSxx**: Because Workload Management compatibility mode has been removed for z/OS Release 3, the system ignores parmlib member IEAIPSxx.
- **IEASYSxx**:
  - The ICS= and IPS= parameters, previously used for WLM compatibility mode, will be ignored by the system.
  - You can now specify optional parameter, LICENSE=, in IEASYSxx to specify which operating system is running. For z/OS, you do not need to specify this parameter – it will default to the proper value when running z/OS.
  - You can now optionally specify the particular IKJTSOnn member you want to use on the IKJTSO= parameter in IEASYSxx. The default is IKJTSO00. No change is required unless you want to use a member other than IKJTSO00.
- **IKJTSOxx:** TSO/E now allows you to specify a broadcast data set other than SYS1.BRODCAST. You can specify the broadcast data set on the BROADCAST parameter of the SEND statement. TSO/E will default to SYS1.BRODCAST, so no action is required unless you want to use a different data set.
- **MSTJCLxx**: The MSTJCLxx member no longer has to point to the broadcast data set. Instead, you can specify the broadcast data set in the IKJTSOxx member if you want to use a broadcast data set other than SYS1.BRODCAST. The master JCL will no longer allocate the broadcast data set. Instead, TSO/E will use either the default (SYS1.BRODCAST) or the BROADCAST parameter in IKJTSOxx to allocate the broadcast data set.
- **SCHEDxx**: The PGMNAME(name) statement with PRIV keyword, previously used only in WLM compatibility mode, is no longer valid, and will be ignored by the system.
- **Running z/OS on the z800 server**: In order to run z/OS on the IBM @server zseries 800 (z800) server, make sure that the LPAR you are running on is not

named ZOSExxxx. If an LPAR on the z800 server is named ZOSExxxx, you cannot run either OS/390 or z/OS on that LPAR. For complete information, see *z/OS Planning for Installation*.

# Chapter 4. Migration Actions: Customization

This chapter describes migration actions that you might need to take related to installation exits.

## Checklist of Migration Actions for z/OS Release 1 Customization

There are no known migration actions for this topic.

## Checklist of Migration Actions for z/OS Release 2 Customization

- Exit ISGGREX0 is deleted and is replaced by new dynamic exit ISGNQXIT. If you previously used exit ISGGREX0, and need to continue to use functions supported by ISGGREX0, update ISGNQXIT to support those functions.

## Checklist of Migration Actions for z/OS Release 3 Customization

- System Logger lets you dynamically change policy attributes for log streams and structures without having to disconnect all the applications and subsystems connected to the log stream. This includes changing structure definitions in the LOGR couple data set without having to delete and redefine associated resources. You can use these System Logger enhancements on a z/OS V1R3 system when the primary LOGR couple data set is at least at the z/OS V1R2 format level. For details on formatting the LOGR couple data set, see the description of the LOGR parameters for the format utility in *z/OS MVS Setting Up a Sysplex*.
- The default for the Program Management COMPAT binder option, which lets you specify the compatibility level of the binder, has changed from CURRENT to the new option, MIN. The old default, CURRENT, specifies that the binder output is defined for the current level of the binder. For example, for a system running at the z/OS V1R3 level that specifies COMPAT=CURRENT will get the z/OS V1R3 PM4 program object format. The new default, MIN, specifies that the binder will choose the earliest format supporting all of the binder features in use. This means that a system at the z/OS V1R3 level specifying or defaulting to COMPAT=MIN will get the program object format appropriate to the binder features in use, rather than the current one. Take a look at your COMPAT binder option, and make sure you have specified the right option for the binder output you want.

  For complete information on the COMPAT binder option default, see the *z/OS MVS Program Management: User's Guide and Reference*.
- When you select your program object format on the COMPAT binder option, you must take into account where the output program object will run – program objects can only run on a system that supports that program object format or higher. For example, if you decide to create program objects in PM4 format (by specifying either COMPAT=CURRENT, COMPAT=PM4 or COMPAT=MIN and exploiting PM4 functions in your code), the resulting program object must run on a z/OS Release 3 or higher system.

  See *z/OS MVS Program Management: User's Guide and Reference* for how to specify program object format on the COMPAT binder option.

# Chapter 5. Migration Actions: Operations

This chapter describes migration actions that you might need to take related to system commands.

This section describes operation changes caused by migrating from OS/390 to z/OS.

## Checklist of Migration Actions for z/OS Release 1 Operations

There are no known migration actions for this topic.

## Checklist of Migration Actions for z/OS Release 2 Operations

- To manage the number of commands that are awaiting execution, the system operator can issue the CMDS command to display the status of commands, remove selected commands that are awaiting execution, or cancel commands that are executing. When a command is removed before execution, the command issuer receives message IEE065I COMMAND NOT EXECUTED, CMD=*command* instead of the usual command response message. You might need to change your system automation routines so that they recognize and handle message IEE065I.

## Checklist of Migration Actions for z/OS Release 3 Operations

There are no known migration actions for this topic.

# Chapter 6. Migration Actions: Problem Determination and Diagnosis

This chapter describes migration actions that you might need to take related to dumping services, trace facilities, and debugging.

## Checklist of Migration Actions for z/OS Release 1 Problem Determination and Diagnosis

- Because diagnostic control blocks have changed in this release, you can get unpredictable results (for example abend 0C4) when diagnostic data such as dumps, logrec records, and trace data sets are processed on a system running an earlier release. To avoid this problem, you must steplib as shown in the following example, where the new formatting routines are on volume SY1PAK:

```
//*== TSO/E LOGON PROCEDURE FOR RUNNING IPCS USING SYS1.MIGLIB ==*
//IPCSPROC EXEC PGM=IKJEFT01,DYNAMNBR=70,REGION=3072K
//STEPLIB DD   DSN=SYS1.MIGLIB,DISP=SHR,     Steplib for SYS1.MIGLIB
//          UNIT=3390,VOL=SER=SY1PAK           defining alternate system
//SYSPROC  DD   DSN=COMPCTR.CLIST,DISP=SHR     Installation CLISTs
//         DD   DSN=ISR.V210.ISRCLIB,DISP=SHR  ISPF Version 2 CLISTs
//         DD   DSN=SYS1.SBLSCLI0,DISP=SHR,    IPCS CLISTs
//          UNIT=3390,VOL=SER=SY1PAK            define alternate system
⋮
```

  For a more complete example, see the description of how to run IPCS on another system in *z/OS MVS IPCS Customization*.

  Similarly, if you are using EREP, and the new formatting routines are on volume SY1PAK, your job step might look like:

```
//EREPDALY EXEC  PGM=IFCEREP1,PARM=('HIST,ACC=Y,SYSUM')
//STEPLIB  DD DSN=SYS1.MIGLIB,DISP=SHR,
//            UNIT=3390,VOL=SER=SY1PAK
//ACCIN    DD DSN=SYSPLEX.LOGREC.ALLRECS,
//            SUBSYS=(LOGR,IFBSEXIT,,'DEVICESTATS,LASTRUN'
//            DCB=(RECFM=VB,BLKSIZE=4000)
//ACCDEV   DD DSN=EREP.HISTORY,
//            DISP=(NEW,CATLG),
//            DCB=(RECFM=VB,BLKSIZE=4000),
//            UNIT=SYSDA,SPACE=(CYL,(25,5))
//SERLOG   DD DUMMY
//DIRECTWK DD UNIT=SYSDA,SPACE=(CYL,15,,CONTIG)
//TOURIST  DD SYSOUT=A,DCB=BLKSIZE=133
//EREPPT   DD SYSOUT=A,DCB=BLKSIZE=133
//SYSABEND DD SYSOUT=A
//SYSIN    DD DUMMY
/*
```

- If you are migrating from OS/390 Release 10, you do not have to re-create the stand-alone dump program.

## Checklist of Migration Actions for z/OS Release 2 Problem Determination and Diagnosis

- Because diagnostic control blocks have changed in this release, you can get unpredictable results (for example abend 0C4) when diagnostic data such as dumps, logrec records, and trace data sets are processed on a system running an earlier release. To avoid this problem, you must steplib as shown in the following example, where the new formatting routines are on volume SY1PAK:

```
//*== TSO/E LOGON PROCEDURE FOR RUNNING IPCS USING SYS1.MIGLIB ==*
//IPCSPROC EXEC PGM=IKJEFT01,DYNAMNBR=70,REGION=3072K
//STEPLIB DD   DSN=SYS1.MIGLIB,DISP=SHR,     Steplib for SYS1.MIGLIB
//          UNIT=3390,VOL=SER=SY1PAK           defining alternate system
//SYSPROC  DD   DSN=COMPCTR.CLIST,DISP=SHR     Installation CLISTs
//         DD   DSN=ISR.V210.ISRCLIB,DISP=SHR  ISPF Version 2 CLISTs
//         DD   DSN=SYS1.SBLSCLI0,DISP=SHR,    IPCS CLISTs
//          UNIT=3390,VOL=SER=SY1PAK            define alternate system
:
```

For a more complete example, see the description of how to run IPCS on another system in *z/OS MVS IPCS Customization*.

Similarly, if you are using EREP, and the new formatting routines are on volume SY1PAK, your job step might look like:

```
//EREPDALY EXEC  PGM=IFCEREP1,PARM=('HIST,ACC=Y,SYSUM')
//STEPLIB  DD DSN=SYS1.MIGLIB,DISP=SHR,
//            UNIT=3390,VOL=SER=SY1PAK
//ACCIN    DD DSN=SYSPLEX.LOGREC.ALLRECS,
//            SUBSYS=(LOGR,IFBSEXIT,,'DEVICESTATS,LASTRUN'
//            DCB=(RECFM=VB,BLKSIZE=4000)
//ACCDEV   DD DSN=EREP.HISTORY,
//            DISP=(NEW,CATLG),
//            DCB=(RECFM=VB,BLKSIZE=4000),
//            UNIT=SYSDA,SPACE=(CYL,(25,5))
//SERLOG   DD DUMMY
//DIRECTWK DD UNIT=SYSDA,SPACE=(CYL,15,,CONTIG)
//TOURIST  DD SYSOUT=A,DCB=BLKSIZE=133
//EREPPT   DD SYSOUT=A,DCB=BLKSIZE=133
//SYSABEND DD SYSOUT=A
//SYSIN    DD DUMMY
/*
```

- You must re-create the stand-alone dump program. For specific information, see *z/OS MVS Diagnosis: Tools and Service Aids*.
- IBM supplies sample DUMP command parmlib members in SYS1.PARMLIB. See "Service Aids Enhancements for Release 2" on page 2-6 for more information. To use these sample dump commands, IBM recommends that you copy them to a data set in your parmlib concatenation.

## Checklist of Migration Actions for z/OS Release 3 Problem Determination and Diagnosis

There are no known migration actions for this topic.

# Chapter 7. Migration Actions: Security

This chapter describes migration actions that you might need to take related to the security of your z/OS system.

## Checklist of Migration Actions for z/OS Release 1 Security

- Review the changes to MVS commands, RACF access authorities, and resource names described in *z/OS MVS Planning: Operations*.

## Checklist of Migration Actions for z/OS Release 2 Security

- Review the changes to MVS commands, RACF access authorities, and resource names described in *z/OS MVS Planning: Operations*.

## Checklist of Migration Actions for z/OS Release 3 Security

- Review the changes to MVS commands, RACF access authorities, and resource names described in *z/OS MVS Planning: Operations*.

# Chapter 8. Migration Actions: Accounting

For a complete description of SMF records, see *z/OS MVS System Management Facilities (SMF)*. .

## Checklist of Migration Actions for z/OS Release 1 Accounting

- Examine changed SMF records and assess the need to change how you use them. See “Summary of Changes to SMF Records” on page A-15.

## Checklist of Migration Actions for z/OS Release 2 Accounting

- Examine changed SMF records and assess the need to change how you use them. See “Summary of Changes to SMF Records” on page A-15.

## Checklist of Migration Actions for z/OS Release 3 Accounting

- Examine changed SMF records and assess the need to change how you use them. See “Summary of Changes to SMF Records” on page A-15.

# Chapter 9. Migration Actions: Application Development

Application development is the process of planning, designing, and coding application programs that run under MVS. This chapter describes migration actions that you might need to take related to application programs in your installation.

## Checklist of Migration Actions for z/OS Release 1 Application Development

- When z/OS is running in z/Architecture mode, authorized applications that issue the LRA instruction against unfixed storage might receive an abend 0D3, reason code 13. The results of an LRA instruction against unfixed storage has always been unpredictable. In z/Architecture mode, the LRA instruction might require a 64–bit result when only a 32–bit result can be returned; in that case, the hardware causes a program interrupt. If the program is using the LRA instruction to validate that the virtual address is backed by real storage, then use the TPROT instruction instead. If a valid real address is required, the storage must be properly fixed in real storage below 2 GB before issuing the LRA instruction. The STRAG or LRAG instruction can be used to obtain a 64–bit real address if the storage can be backed anywhere.
- The following is a summary of migration considerations about control block fields that application programs might use. For more information on the CVT data area, see *z/OS MVS Data Areas, Vol 1 (ABEP-DALT)*. For more information on the ECVT data area, see *z/OS MVS Data Areas, Vol 2 (DCCB-ITZYRETC)*.
  - CVTOSLVL is a bitstring in the CVT data area with each 'feature bit' representing an operating system release level or an operating system feature. A program can check if the appropriate bit is on to determine if it is running on a particular release of the operating system or higher.
  - ECVTPSEQ is a field in the ECVT data area representing the product sequence number. It can be used to determine if the operating system is at a suitable level for a desired function. Its value will always increase from one release level to the next regardless of the character release identifier assigned to that release.
  - ECVTPNAM is a field in the ECVT data area representing the product name in character form. If you depend on this being OS/390, you will have a migration problem.
  - ECVTVER is a field in the ECVT data area representing the release version number in character form. If you make the assumption that this field will increase from one release to the next, you will have a migration problem. For example, OS/390 Release 10 is version 2 while z/OS Release 1 is version 1.
  - ECVTREL is a field in the ECVT data area representing the release number in character form. If you make the assumption that this field will increase from one release to the next, you will have a migration problem. For example, the first z/OS release has a smaller release number, 1, than its predecessor, OS/390 Release 10.
  - ECVTMOD is a field in the ECVT data area representing the modification number in character form. Do not assume this field will increase from one release to the next.
- If Vary CPU management (part of the Intelligent Resource Director) is enabled, then any program that specifies the CPUMASK keyword on the IEAMSCHD macro, or directly updates the SRBCPAFF field in an SRB or the TCBAFFN field in a TCB, must be modified to use the IWMCPAFN macro. It is not necessary to

use the IWMCPAFN macro when CPU affinity is set in the program properties table in the SCHEDxx parmlib member. It is also not necessary to use it for programs that use cryptographic coprocessors. (WLM will not vary offline processors that have cryptographic coprocessors associated with them.) See *z/OS MVS Programming: Workload Management Services* for more information on the IWMCPAFN macro.

- Examine changed control blocks and assess the need to reassemble or rewrite application programs. See "Summary of Changes to Control Blocks" on page A-35.

## Checklist of Migration Actions for z/OS Release 2 Application Development

- Examine changed control blocks and assess the need to reassemble or rewrite application programs. See "Summary of Changes to Control Blocks" on page A-35.

## Checklist of Migration Actions for z/OS Release 3 Application Development

- Examine the list of macros that support 64–bit virtual addressing and asses the need to rewrite application programs. See "Summary of Changes to Macros" on page A-19.
- Examine changed control blocks and assess the need to reassemble or rewrite application programs. See "Summary of Changes to Control Blocks" on page A-35.
- In application programs using Program Management, you must take into account where the output program object will run when selecting the program object format on the COMPAT binder option. For example, if you decide to create program objects in PM4 format (by specifying either COMPAT=CURRENT, COMPAT=PM4 or COMPAT=MIN and exploiting PM4 functions in your code), the resulting program object must run on a z/OS Release 3 or higher system.

  See *z/OS MVS Program Management: User's Guide and Reference* for how to specify program object format on the COMPAT binder option.

# Appendix A. Summary Tables for MVS Interfaces and Published Control Blocks

This chapter summarizes the new, changed, and deleted interfaces for MVS, and changed control blocks that are published in the *MVS Data Areas* books. For macros and callable services, information for changes introduced by MVS/ESA SP V5 (changed since MVS/ESA SP 4.3).

## Where to Find Changes to System Messages

Information on new, changed and deleted messages is necessary to migrate automated operations. For lists of new, changed, and deleted messages, see:

- *z/OS Summary of Message Changes*.

For information on changes to system completion codes and wait state codes, see *z/OS MVS System Codes*.

## A Method for Finding Changes to MVS and TSO/E Message Texts

Automation routines are sensitive to changes to message text between releases. You can find changes to message texts in the following ways:

- The Summary of Changes of the related messages book can be helpful when you go from one release to the next.
- Data set SYS1.MSGENU contains data that can help you identify changes to message texts more accurately. This method allows you to find message text changes between your current release and whatever release you choose to migrate to. This method is described below.

### Using SYS1.MSGENU to Find Message Text Changes

IBM supplies a data set containing the text of system messages that are translated. This data set, called SYS1.MSGENU, contains the text of system messages in the form of message skeletons. (For more information, see *z/OS MVS Planning: Operations*.)

Note that this method will not show changes to:

- MVS system messages that are not translated, such as IPL and NIP messages (which are issued before the MVS message service is available)
- Other product messages that are not translated, such as DFSMS/MVS messages, and JES3 messages.
- For JES2 messages, use the appropriate SYS1.VnRnMn.SHASMENU data set.

Also, this method works better if the “old” copy of SYS1.VnRnMn.SHASMENU has the same level of service as the system from which you are migrating.

Once you have installed the OS/390 Release 4 or higher level of the data set you are comparing, you can compare the new data set with the data set on the system from which you are migrating. Depending on how you do the comparison, you can get output like the following.

For new messages, the output might show an I (for Insert) on the left:

```
I - IEA403I     VALUE OF RMAX HAS BEEN CHANGED TO 99
```

For messages whose text has changed, the output might show both an I and a D, indicating that a record in the message file has been replaced:

```
I - IEE162I 46  &NNN. ROLL &A. MESSAGES (DEL=R OR RD)
D - IEE162I 46  &NNN. ROLL &A. MESSAGES (DEL=R, RD)
```

This means that, in message IEE162I, (DEL=R, RD) was replaced by (DEL=R OR RD).

Using this information, you can decide if your automation routines need to be changed.

## Summary of Changes to SYS1.PARMLIB

Table A-1 identifies members of SYS1.PARMLIB that are new, changed, or deleted starting with OS/390 Release 5. For a complete description of each member, see *z/OS MVS Initialization and Tuning Reference*. For information about how to handle incompatibilities, see Chapter 3, “Migration Actions: Initialization and Tuning”.

**Note:** Once you have installed the new release of z/OS, you can compare the new copy of SYS1.PARMLIB with a copy of SYS1.PARMLIB on the system from which you are migrating. If you are migrating multiple products, you can use this method to compare SYS1.PARMLIB members from each of those products. For best results, make sure that the ″old″ copy of SYS1.PARMLIB has the same level of service as the system from which you are migrating.

*Table A-1. SYS1.PARMLIB Members Changed Starting with OS/390 Release 5*

| Member | Release | Description of Changes |
|---|---|---|
| ALLOCxx | APAR OW39170; incorporated into OS/390 Release 8 | **New statement:** The POLICY option on the new 2DGT_EXPDT statement specifies the action to be taken if the expiration date on a new data set is given with a 2-digit year (yyddd). The policy applies to both the EXPDT option in JCL and the DALEXPDT text unit in dynamic allocation.<br>• POLICY(ALLOW) allows the data set allocation with no messages.<br>• POLICY(WARN) allows the data set allocation but issues a warning message.<br>• POLICY(FAIL) prevents the data set allocation and issues a failure message. |
| | OS/390 Release 10 | **New function:** FSFULL specifies conditions of HFS capacity at which operator messages are issued. |
| BLSCECT | APAR OW27160; incorporated into OS/390 Release 5 | **Changed member:** Added logger serviceability. |
| | OS/390 Release 6 | **Changed member:** Support bits 0-31 of a TODCLOCK. Also, support additional floating point registers. |
| BLSCUSER | OS/390 Release 10 | **Changed member:** New options are added to support ESAME (64-bit) architecture. |
| BPXPRMxx | Many OS/390 releases and z/OS Release 1 | **Changed member:** For specific information, see *z/OS UNIX System Services Planning*. |
| | z/OS Release 2 | **Changed member:** For specific information, see *z/OS UNIX System Services Planning*. |
| | z/OS Release 3 | **Changed member:**<br>• New option, start_parms, is added to the ASNAME parameter on the FILESYSTYPE statement. For specific information, see *z/OS UNIX System Services Planning*.<br>• New UNMOUNT option added to the AUTOMOVE\|NOAUTOMOVE option of the MOUNT statement.<br>• PRIORITYPG statement, previously used only in WLM compatibility mode, is no longer valid, as compatibility mode is no longer available. |

*Table A-1. SYS1.PARMLIB Members Changed Starting with OS/390 Release 5 (continued)*

| Member | Release | Description of Changes |
|---|---|---|
| CONFIGxx | OS/390 Release 10 | **Changed member:**<br>• STOR is enhanced to support real storage above 2 gigabytes.<br>• ESTOR is not supported in z/Architecture mode. |
| | z/OS Release 1 | **Changed member:** New parameters on the CHP statement indicate whether a channel path will be statically defined or else defined to be dynamically managed. A new statement, SWITCH, specifies the configuration of the switch ports for dynamic channel path management. |
| CONSOLxx | OS/390 Release 7 | **Changed member:** The action of the SYSTEM keyword in the CONSOLE statement in CONSOLxx has changed. Starting with Release 7, the system refuses to activate a console at IPL only if the statement has a SYSTEM keyword and its value is different from the name of the IPLing system. Previously, it would not activate a console if the IPLing system was different from the last system the console had been active on. |
| | z/OS Release 1 | **New subparameter:** SMCS is a new subparameter of DEVNUM.<br>**New parameters:**<br>• LU is a new parameter on the CONSOLE statement. For LU(*nnnnnnnn*) the LU keyword is optional, but may only be specified with DEVNUM(SMCS). This keyword defines the LU that may only use this console.<br>• LOGON is a new parameter on the CONSOLE statement that may be used to override the LOGON specified on the DEFAULT statement (if any).<br>• APPLID is a new parameter on the INIT statement that specifies the SecureWay Communication Server APPLID that SMCS is to use on this system.<br>• GENERIC is a new parameter on the INIT statement that specifies the SecureWay Communication Server Generic Resource name that SMCS is to use in this sysplex. |
| COUPLExx | OS/390 Release 10 | **Changed member:** CFRMPOL, CFRMPOLNAME specifies the name of the CFRM policy that is to be started at IPL-time if there is no other previously-activated CFRM policy. |
| CTIXCF00 | OS/390 Release 8 | **Changed default member:** The default buffer size is changed from 72K to 1008K. |
| DEVSUPxx | OS/390 Release 10 | **Changed member:**<br>• The new TAPEBLKSZLIM parameter specifies the default block size limit for the system to use when a user omits the block size limit on a DD statement and the data class does not supply one.<br>• The new COPYSDB parameter supplies the system-level default for the SDB keyword for IEBGENER. |
| DIAG00 | OS/390 Release 9 | **Changed member:** If you do not specify a DIAGxx parmlib member at IPL, the system processes the default member DIAG00, which turns on storage tracking and turns off the GFS trace function. |
| | OS/390 Release 10 | **New keyword:** LOCREAL specifies central storage locations for which trace records should be produced. |
| GRSCNFxx | OS/390 Release 7 | **New option:** The Synchronous RESERVE option can be activated through the SYNCHRES keyword on the GRSDEF statement. |

*Table A-1. SYS1.PARMLIB Members Changed Starting with OS/390 Release 5 (continued)*

| Member | Release | Description of Changes |
|---|---|---|
| GRSRNLxx | z/OS Release 2 | **Changed member:**<br>• The TYPE keyword on GRSRNLxx parameter has been changed by the addition of a new option, PATTERN. This allows use of wildcard characters within resource names. |
| IEAICSxx | z/OS Release 3 | **Changed member:** With the removal of WLM compatibility mode in z/OS Release 3, this member is no longer used. |
| IEAIPSxx | z/OS Release 3 | **Changed member:** With the removal of WLM compatibility mode in z/OS Release 3, this member is no longer used. |
| IEAOPTxx | OS/390 Release 10 | **Changed member:** LSCTUCT and RCCUICT have new requirements for the difference between the low and high threshold. For ESCTxxx, only ESCTBDS and ESCTVIO apply in z/Architecture mode. |
| | z/OS Release 1 | **Changed member:** A new statement, VARYCPU, specifies whether LPAR Vary CPU management is available or not available. |
| | z/OS Release 3 | **Changed member:** With the removal of WLM compatibility mode in z/OS Release 3, most of the options specified in this member are no longer valid. See the *z/OS MVS Initialization and Tuning Reference* for more information. |
| IEASLP00 | OS/390 Release 4 | **Changed member:** Maintenance. |
| | OS/390 Release 5 | **Changed member:** Maintenance. |
| IEASYSxx | OS/390 Release 6 | **Changed member:** The CON=xx parameter will allow for national ($,#,@) characters. |
| | z/OS Release 1 | **Changed member:** New parameters ILMLIB and ILMMODE provide support for IBM License Manager. |
| | z/OS Release 3 | **Changed member:**<br>• New IKJTSO parameter specifies the parmlib member from which TSO/E settings are obtained.<br>• The ICS= and IPS= parameters, previously used only in WLM compatibility mode, are no longer valid, as compatibility mode is no longer available.<br>• New LICENSE= parameter specifies which operating system is running. The default is for z/OS. |
| IECIOSxx | OS/390 Release 6 | **Changed member:**<br>• The TERMINAL option allows you to specify special processing for each device class on the CHPID when recovering from a hung interface.<br>• The BOX_LP HOTIO option allows you to specify which device classes should be boxed if, and only if, the only path to the device is the path undergoing recovery and recovering the device will require multi-system coordination. |
| IKJTSOxx | z/OS Release 3 | **Changed member:**<br>• New BROADCAST keyword on SEND statement lets you specify the broadcast data set.<br>• New value for LOGNAME keyword on SEND statement. |
| IVTPRM00 | OS/390 Release 5 | **New member:** Sets parameters for the Communications Storage Manager (CSM) |

*Table A-1. SYS1.PARMLIB Members Changed Starting with OS/390 Release 5 (continued)*

| Member | Release | Description of Changes |
|---|---|---|
| LNKLSTxx | OS/390 Release 6 | **New keyword:** For LNKLST ADD, keyword CONCAT(NOCHECK\|CHECK) indicates whether to check if the concatenation defined by the LNKLST set is full.<br>• NOCHECK (the new default) does not check if the concatenation is full. If the concatenation is full, it will be detected when the LNKLST set is activated.<br>• CHECK checks to see if the concatenation is full. This implies that all the data sets in the LNKLST set must be concatenated. Specifying CHECK causes system processing to take longer.<br>Note that the new default (NOCHECK) is a change that is intended to improve performance. To retain the previous system processing, specify CONCAT(CHECK). |
| LOADxx | OS/390 Release 10 | **Changed member:** The ARCHLVL allows you to specify the architecture level of your system. ARCHLVL 1 means ESA mode. ARCHLVL 2 means z/Architecture mode (64-bit support). |
| | z/OS Release 2 | ARCHLVL statement should be removed. |
| MSTJCLxx | z/OS Release 3 | **Changed member:** MSTJCLxx no longer points to the broadcast data set. You can now specify the broadcast data set in the IKJTSOxx member. |
| SCHEDxx | z/OS Release 3 | **Changed member:** PGMNAME(name) statement with PRIV keyword, previously used only in WLM compatibility mode, is no longer valid, as compatibility mode is no longer available. |
| SMFPRMxx | z/OS Release 2 | **Changed member:**<br>• A new parameter has been added to the SMFPRMxx parmlib member. MEMLIMIT specifies the default value used by SMF jobs that do not have an explicit memory limit. |
| | z/OS Release 3 | **New Keyword:** New keyword, MULCFUNC or NOMULCFUNC, allows an installation to specify whether their IFAUSAGE users must specify the REQUEST=FUNCTIONxxx parameter. MULCFUNC, which is the default, means that users of IFAUSAGE (who register and deregister) must specify REQUEST=FUNCTIONxxx requests. NOMULCFUNC means that users of IFAUSAGE do not need to use the FUNCTIONxxx requests. Specifying NOMULCFUNC can help people using the Sub-Capacity Reporting Tool to limit the volume of the SMF records. |

## Summary of Changes to SYS1.PROCLIB

Table A-2 identifies members of SYS1.PROCLIB that are new, changed, or deleted in z/OS.

Once you have installed the new release of MVS/ESA, you can compare the new copy of SYS1.PROCLIB with a copy of SYS1.PROCLIB on the system from which you are migrating. If you are migrating multiple products, you can use this method to compare SYS1.PROCLIB members from each of those products. For best results, make sure that the ″old″ copy of SYS1.PROCLIB has the same level of service as the system from which you are migrating.

*Table A-2. SYS1.PROCLIB Members Changed Starting with OS/390 Release 5*

| Member | Release | Description of Changes |
|---|---|---|
| ILMTAGNT and ILMTSRVR | z/OS Release 1 | **New Procedures:** Support for IBM License Manager. |
| INIT | OS/390 Release 5 | **Changed Procedure:** Added an IEFINDMY DD statement. |

## Summary of Changes to SYS1.SAMPLIB

Table A-3 identifies members of SYS1.SAMPLIB that are new, changed, or deleted in z/OS.

Once you have installed the new release of z/OS, you can compare the new copy of SYS1.SAMPLIB with a copy of SYS1.SAMPLIB on the system from which you are migrating. If you are migrating multiple products, you can use this method to compare SYS1.SAMPLIB members from each of those products. For best results, make sure that the ″old″ copy of SYS1.SAMPLIB has the same level of service as the system from which you are migrating.

*Table A-3. SYS1.SAMPLIB Members Changed Starting with OS/390 Release 5*

| Member | Release | Description of Changes |
|---|---|---|
| AJVBOOT | APAR OW29109; incorporated into OS/390 Release 5 | **Changed member:** Maintenance. |
| ALLOC00 | APAR OW39170; incorporated into OS/390 Release 9 | **Changed member:** ALLOC00 now has an example of the 2DGT_EXPDT statement, which can request a warning or failure when an expiration date has a 2-digit year. |
| ATBALL | OS/390 Release 6 | **Changed member:** Maintenance. |
| ATRSC | OS/390 Release 5 | **Changed member:** Maintenance. |
| CLNDELFN | OS/390 Release 5 | **Changed member:** Maintenance. |
| CLNGLBW1 | OS/390 Release 5 | **Changed member:** Maintenance. |
| CLNGLBW2 | OS/390 Release 5 | **Changed member:** Maintenance. |
| CLNGLOBL | OS/390 Release 5 | **Changed member:** Maintenance. |
| CLNSYSLB | OS/390 Release 5 | **Changed member:** Maintenance. |
| CNLCOMP | OS/390 Release 5 | **Changed member:** Maintenance. |
| | OS/390 Release 6 | **Changed member:** Maintenance. |
| CNLDEFCL | OS/390 Release 5 | **Changed member:** Maintenance. |
| CRGC | OS/390 Release 5 | **Changed member:** Maintenance. |
| CSRSIC | OS/390 Release 8 | **New member:**<br><br>For the C programmer, provides equates for return codes and data constants, such as Register service request types. To use CSRSIC, copy the file from SYS1.SAMPLIB to the appropriate local C library. The contents of the file are displayed in *z/OS MVS Programming: Callable Services for HLL*. |
| CTXC | APAR OW23376; incorporated in OS/390 Release 5 | **Changed member:** Maintenance. Also, new context services supported in OS/390 Release 5. |
| IEACONXX | z/OS V1R2 | **Changed member:** Maintenance. Also, add sample SMCS console definitions. |
| IEARELCN | OS/390 Release 6 | **Changed member:** Enhance the console definition removal service by unpinning a console device's UCB during console definition removal. |
| ILMELGCA, ILMELGCG, ILMELGDA, ILMELGDG, ILMELGDS, ILMELGSS, ILMHXSLM, and ILMLIBAL. | z/OS Release 1 | **New members:** Support for IBM License Manager. |
| IPXLOADX | OS/390 Release 5 | **Changed member:** Maintenance. |

*Table A-3. SYS1.SAMPLIB Members Changed Starting with OS/390 Release 5 (continued)*

| Member | Release | Description of Changes |
|---|---|---|
| ISGAMF00 | APAR OW26611; incorporated into OS/390 Release 5 | **Changed member:** Maintenance; change SYSPUNCH to SYSLIN. |
| ISGLMC | OS/390 Release 6 | **Changed member:** Added C++ support. |
| ISGRNLCK | OS/390 Release 6 | **Changed member:** Accept additional characters. |
| ISGRUNAU | APAR OW26611; incorporated into OS/390 Release 5 | **Changed member:** Rewrite ISGAUDIT. |
| IVPJOBS | OS/390 Release 5 | **Changed member:** Maintenance. |
| IWMINSTL | z/OS Release 3 | **New Member:** JCL to install and optionally activate a service definition. |
| IWMSSDEF | z/OS Release 3 | **New Member:** Simple service definition, used by default if migrating to z/OS Release 3 without an existing service definition. |
| IXCARMF | OS/390 Release 5 | **Changed member:** Add MAXSYSTEM keyword. |
| IXCCFRMF | OS/390 Release 8 | **Changed member:** Add ITEM NAME(SMREBLD) NUMBER(1) statement in support of system-managed rebuild processing. |
| IXCCFRMP | OS/390 Release 6 | **Changed member:** Add description of DUPLEX keyword. |
| IXCSFMF | OS/390 Release 5 | **Changed member:** Add MAXSYSTEM keyword. |
| IXGRPT1 | OS/390 Release 6 | **Changed member:** Maintenance. |
| SPPACK | Every release | **Changed member:** Maintenance. |

## Summary of Changes to System Commands

Table A-4 identifies MVS commands that are new, changed, or deleted in z/OS. For a complete description of each command, see *z/OS MVS System Commands*. For information about how to handle incompatibilities, see Chapter 5, “Migration Actions: Operations”.

Changes to MVS system commands introduced by elements other than MVS are not listed in this section. For a description of those command changes, see the migration guide for that element.

**Note for Online Users:** In the following table, selecting the command name opens *z/OS MVS System Commands* at the topic describing the specific command (if the book is available to be opened). For example, if you move the cursor to DISPLAY, and press Enter, you should see the explanation of DISPLAY from *z/OS MVS System Commands*.

*Table A-4. System Commands Changed Starting with OS/390 Release 5*

| Command | Release | Description of Changes |
|---|---|---|
| CHNGDUMP | OS/390 Release 7 | **New option:** CHNGDUMP SET,SDUMP=(SERVERS) allows the SERVERS SDATA option to override or be added to all SVC Dump requests on an installation basis. |
| CMDS | z/OS Release 2 | **New command:** Displays executing and waiting MVS commands, deletes commands that are waiting for execution, and cancels commands that are executing. |
| CONFIG | z/OS Release 1 | **Changed options:**<br>The CONFIG CHP(*xx*),OFFLINE command has changes associated with SMCS consoles.<br>The CONFIG command continues to be rejected if a CHPID that is being taken offline will result in a loss of the sysplex master console only if the master console is an MCS console. If the sysplex master console is an SMCS console, the system cannot determine if the CHPID is associated with the LU in use by the master console, and will allow the CHPID to be taken offline even if it is in use by the sysplex master console.<br>With SMCS consoles, there is no way to associate the CHPID to an LU. Therefore, the CONFIG command would be accepted. If SecureWay Communication Server is using the CHPID to communicate with the consoles, the consoles will be lost when the CONFIG command executes. |
| CONTROL | z/OS Release 1 | **New Options:** CONTROL M provides support for the SMCS APPLID and GENERIC.<br>**Changed Information:** CONTROL V,USE=MS and CONTROL V,USE=SD will not work for SMCS consoles.<br>**,REF**<br>This command will display the SMCS APPLID of the current system and SecureWay Communication Server Generic name for SMCS. |

*Table A-4. System Commands Changed Starting with OS/390 Release 5 (continued)*

| Command | Release | Description of Changes |
|---|---|---|
| DISPLAY | OS/390 Release 5 | **Changed option:** The IPLINFO option displays different information. For example:<br>`RELEASE OS/390 02.05.00`<br>`USED LOADJH IN SYS1.PARMLIB ON 980`<br>`IEASYM LIST = KP`<br>`IEASYS LIST = AB, AC (OP)`<br>`IODF DEVICE 0224`<br>`IPL DEVICE 0980 VOLUME DR150B` |
| DISPLAY | OS/390 Release 6 | **New options:**<br>• DISPLAY LOGGER,STATUS displays the current status of the system logger.<br>• DISPLAY LOGGER,CONNECTION displays all log streams with one or more connections for the system(s) that the command was issued on. Filters include LSNAME, JOBNAME, SUMM, DETAIL, SYSPLEX, and DASDONLY.<br>• DISPLAY LOGGER,LOGSTREAM displays log stream sysplex information. Filters include LSNAME, STRNAME, and DASDONLY.<br>• D LOGGER,STRUCTURE displays all log streams defined to a structure on a sysplex.<br>**Changed options:**<br>DISPLAY CONSOLES command now allows you to display the status of consoles which are active on (or eligible to be activated on) a specified system with the SYS=*system name* keyword. DISPLAY CONSOLES command now allows you to display the status of the current master console, if any, with the MCONLY positional parameter. |
| DISPLAY | OS/390 Release 7 | **New options:**<br>DISPLAY EMCS displays information about extended MCS (EMCS) consoles.<br>The DISPLAY EMCS command is like the DISPLAY CONSOLES command; however, DISPLAY EMCS displays information about EMCS consoles, while DISPLAY CONSOLES includes other kinds of consoles as well.<br>**Changed options:**<br>The DISPLAY DUMP,OPTIONS command is changed to identify when the SDATA=SERVERS options has been specified on the CHNGDUMP command. |
| DISPLAY | OS/390 Release 8 | **Additional information:** DISPLAY XCF provides additional information related to the SYSPLEX and CFRM couple data sets, including whether a global resource serialization STAR complex is supported. In addition, the following new information is provided by the XCF component:<br>• DISPLAY XCF,STRNAME provides detail about structures, connection attributes, and system-managed processes.<br>• DISPLAY XCF,COUPLE displays the capabilities for which a couple data set has been formatted and the level of system-managed processing of which a system is capable. |
| DISPLAY | OS/390 Release 9 | **New option:** DISPLAY TRACE,TT displays the transaction trace parameters currently in effect in the sysplex. |

*Table A-4. System Commands Changed Starting with OS/390 Release 5 (continued)*

| Command | Release | Description of Changes |
|---|---|---|
| DISPLAY | z/OS Release 1 | **New options:**<br>• DISPLAY CONSOLES,SMCS provides additional information by displaying the status of SMCS applications in the sysplex.<br>• DISPLAY IOS,DCM displays dynamic channel path management information.<br>• DISPLAY IOS,GROUP displays XCF group information.<br>• DISPLAY SWITCH displays switch port information. |
| DISPLAY | z/OS Release 2 | **New options:** DISPLAY U provides the ability to request the status of automatically switchable devices on another system. |
| DISPLAY | z/OS Release 3 | **New option:** DISPLAY IKJTSO displays the specifications in the active IKJTSOxx parmlib member, which contains current values for TSO/E.<br><br>**Changed options:**<br>• DISPLAY M now does the following:<br>– Displays the status of all processors, even those that are neither online nor offline.<br>– Displays the number of online channel paths to devices or a single channel path to a single device.<br>• The DISPLAY DMN command, previously available only on systems operating in WLM compatibility mode, is disabled because WLM compatiblity mode is no longer available..<br><br>**Additional information:**<br>• DISPLAY OMVS now provides additional output showing the state of the OMVS address space during a shutdown or restart.<br>• DISPLAY IPLINFO includes the value currently in use for the LICENSE= keyword used for IPL, showing the operating system currently in use. |
| DUMP | OS/390 Release 7 | **New option:**<br><br>DUMP PARMLIB=xx,SYMDEF=*(symbol_def,symbol_def)* allows symbols to be defined for use within dump command parmlib members. |
| | z/OS Release 2 | **Changed option:**<br>• PARMLIB= allows the operator to avoid having to enter multiple DUMP command options and instead specify the suffixes of one or more DUMP command parmlib members (IEADMCxx parmlib members). |
| DUMPDS | z/OS Release 2 | **New function:** Symbol substitution is now supported on all sub-operands of the DUMPDS command. |
| LOGOFF | z/OS Release 1 | **Additional Information:**<br><br>The LOGOFF command is enhanced to support SMCS consoles. |
| LOGON | z/OS Release 1 | **Additional Information:**<br><br>LOGON is enhanced to support SMCS consoles. |

*Table A-4. System Commands Changed Starting with OS/390 Release 5 (continued)*

| Command | Release | Description of Changes |
|---|---|---|
| MODIFY | z/OS Release 3 | **New option:** The new MODIFY OMVS command for limited use in shutting down or restarting the z/OS UNIX System Services environment. See *z/OS UNIX System Services Planning* for details **before** using this command.<br><br>**Changed option:** With compatibility mode no longer available, the MODIFY WLM, MODE= command, previously used to switch WLM between goal mode and compatibility mode, is disabled. |
| RESET | z/OS Release 1 | **New options:** The RESET CN command is enhanced to support SMCS consoles. |
| | z/OS Release 3 | **Changed option:**<br><br>The RESET jobname command is partially disabled. With compatibility mode no longer available, you can no longer use the RESET command to change the performance group of a job currently in execution. |
| SET | z/OS Release 3 | **New option:** IKJTSO=xx which updates the current TSO/E settings from the IKJTSOxx parmlib member, can now include a broadcast dataset switch. The TSO/E PARMLIB UPDATE command performs the same function. |
| SETGRS | OS/390 Release 7 | **New option:** SETGRS SYNCHRES=YES activates the synchronous RESERVE function.r complex. |
| SETIOS | z/OS Release 1 | **New option:** The SETIOS DCM=YES\|NO\|REFRESH lets you specify that dynamic channel path management is to be turned on or off, or that a control unit model table update is to be initiated. |
| SETSMF | z/OS Release 3 | **New options:** New MULCFUNC and NOMULCFUNC SMF parameters on the SETSMF command allow you to update SMFPRMxx to specify whether any measured usage programs should record usage data (MULCFUNC) or registration data (NOMULCFUNC). |
| SETOMVS | z/OS Release 3 | **New option:** New UNMOUNT option added to the AUTOMOVE=YES\|NO parameter. In a sysplex where systems are participating in shared HFS, these parameters indicate what happens if the system that owns a file system goes down. UNMOUNT indicates that the file system and any filesystems mounted within its subtree should be unmounted if the system's owner should crash. |
| SETXCF | OS/390 Release 6 | **New options:**<br>• SETXCF START\|STOP,REBUILD,POPULATECF allows you to start or stop populating a coupling facility that has been newly brought into service in a sysplex with structures selected from the set of those defined in the active CFRM policy.<br>• SETXCF START\|STOP,REBUILD,DUPLEX allows you to start or stop user-managed duplexing of one or more structures in a coupling facility. |
| | OS/390 Release 8 | **Changed option:**<br><br>SETXCF START,REBUILD might result in the initiation of a system-managed rebuild. |

*Table A-4. System Commands Changed Starting with OS/390 Release 5 (continued)*

| Command | Release | Description of Changes |
|---|---|---|
| SLIP | z/OS Release 2 | **New Options:**<br>• ACTION=STOPGTF: Turns off GTF tracing when the SLIP trap becomes disabled (or deleted).<br>• MSGID=: Supports activation of a SLIP trap if ESTAE recovery is invoked out of a branch entry WTO. |
| SWITCH | z/OS Release 1 | **Additional Information:** The SWITCH command is enhanced to support SMCS consoles. |
| TRACE | OS/390 Release 9 | **New option:** The TRACE command with the new TT parameter starts and stops a transaction trace in the sysplex. |
| VARY | z/OS Release 1 | **New options:** The VARY CN(....),LOGON= command can be used to change the LOGON value of an individual MCS or SMCS console.<br><br>VARY SWITCH lets you place a switch port online or offline to dynamic channel path management.<br><br>The VARY CN(....),LU= command can be used to change the LU that an SMCS console can be activated at.<br><br>**Changed Information:** The VARY CN(....),OFFLINE and VARY ....,OFFLINE, and VARY ....,MSTCONS commands are enhanced to support SMCS consoles. VARY CN(....),ONLINE and VARY ....,ONLINE are not supported for SMCS consoles. |
| | z/OS Release 2 | **New options:** The new REFRESH\|QUIESCE option on the VARY WLM,APPLENV=applenv_name command allows you to to determine how many regions have temporal affinities. |

## Summary of Changes to SMF Records

Table A-5 identifies SMF records that are added, changed, or deleted in z/OS. For complete information about SMF records, see *z/OS MVS System Management Facilities (SMF)*.

*Table A-5. SMF Records Changed Starting with OS/390 Release 5*

| SMF Record | Release | Description of Changes |
|---|---|---|
| Type 6 (Print Services Facility (PSF)) | OS/390 Release 8 | Changed information in the<br>• All-points-addressable printing subsystem section for PSF<br>• File transfer section for PSF |
| Type 14 (INPUT or RDBACK Data Set Activity) | OS/390 Release 7 | Added information on:<br>• ISO/ANSI Version 4 CCSID (coded character set ID)<br>• step information |
| | OS/390 Release 10 | Added Additional Data Set Characteristics Section |
| Type 16 (DFSORT Statistics) | OS/390 Release 10 | Added fields |
| Type 21 (Error Statistics by Volume) | OS/390 Release 10 | Changed the header/self-defining section |
| Type 26 (JES2 Job Purge) | OS/390 Release 5 | • Added Workload Management information, including service class and initiator type.<br>• Changed header/self-defining section, offset 48 |
| Type 30 (Common Address Space Work) | OS/390 Release 8 | Information changes for header/self-defining section and the description of the SMF30STI field. |
| | OS/390 Release 9 | Added a new multisystem enclave remote system data section |
| | OS/390 Release 10 | Added fields to the Performance Section and the the EXCP Section |
| | z/OS Release 2 | Added the following:<br>• Added bit 2 in field SMF30SFL of Storage and Paging Section.<br>• New field SMF30MEM for MEMLIMIT value in Storage and Paging Section. |
| | z/OS Release 3 | Added a new field in the Processing Accounting section. |
| Type 42 (DFSMS Statistics and Configuration) | OS/390 Release 7 | Changed subtypes 5 and 6 |
| | OS/390 Release 9 | Record environment added |
| Type 62 (VSAM Component or Cluster Opened) | OS/390 Release 10 | Added statistics section |
| Type 64 (VSAM Component or Cluster Status) | OS/390 Release 10 | Added ACB MACRF flag byte and SMB ACCESS BIAS Information |

*Table A-5. SMF Records Changed Starting with OS/390 Release 5 (continued)*

| SMF Record | Release | Description of Changes |
|---|---|---|
| Type 70 (RMF CPU Activity) | OS/390 Release 7 | Changed ICF support information |
| | OS/390 Release 10 | LPAR management. |
| | z/OS Release 1 | • Update RMF product section<br>• Update for Intelligent Resource Director and IBM License Manager |
| | z/OS Release 2 | • New subtype 2 for cryptographic processors. Data of the traditional record type 70 is described as type70 subtype 1. |
| Type 71 (RMF Paging Activity) | OS/390 Release 10 | ESAME mode |
| | z/OS Release 1 | Update RMF product section |
| | z/OS Release 2 | New swap reason code. |
| Type 72 (RMF Workload Activity and Storage Data) | OS/390 Release 9 | Enclave-related fields added to subtypes 1 and 3. |
| | OS/390 Release 10 | Workload activity |
| | z/OS Release 1 | Update RMF product section |
| | z/OS Release 2 | Updates for report class period reporting and crypto support in WLM. |
| Type 73 (RMF Channel Path Activity) | OS/390 Release 6 | Channel path acronym |
| | OS/390 Release 7 | Fiber channel support |
| | OS/390 Release 10 | Dynamic channel management |
| | z/OS Release 1 | Update RMF product section |
| | z/OS Release 2 | Updates for new channel measurement group. |
| Type 74 (RMF Activity of Several Resources) | OS/390 Release 6 | • Subtype 4 - Coupling facility update<br>• Subtype 5 - Cache subsystem enhancements |
| | OS/390 Release 7 | Added subtype 6 (hierarchical file system statistics) |
| | OS/390 Release 10 | • Subtype 1: PAV support<br>• Subtype 3: z/OS UNIX support<br>• Subtype 5: RAID rank data |
| | z/OS Release 1 | • Update RMF product section<br>• Subtype 7 - New subtype with data for FICON director activities |
| | z/OS Release 2 | • Subtype 4 - Updates for enhanced reporting for duplexed coupling facilities. |
| Type 78 (RMF Monitor I Activity) | OS/390 Release 10 | Subtype 3: Dynamic channel management. |
| | z/OS Release 1 | • Update RMF product section<br>• Subtype 1 - Removed (4381 I/O queuing data) |
| | z/OS Release 2 | • Subtype 3 - Removed two fields with I/O queuing activity data. |

*Table A-5. SMF Records Changed Starting with OS/390 Release 5 (continued)*

| SMF Record | Release | Description of Changes |
|---|---|---|
| Type 79 (RMF Monitor II Activity) | OS/390 Release 6 | Subtype 12 - Channel path acronym |
| | OS/390 Release 7 | Subtype 12 - Fiber channel support |
| | OS/390 Release 10 | Miscellaneous enhancements |
| | z/OS Release 1 | • Update RMF product section<br>• Subtype 7 - New subtype with data for FICON director activities<br>• Subtype 13 - Removed (4381 I/O queuing data) |
| | z/OS Release 2 | • Subtype 1 - New swap reason code and enhanced SDSF support.<br>• Type 79, Subtype 2 - Enhanced SDSF support.<br>• Type 79, Subtype 12 - Updates for new channel measurement group.<br>• Type 79, Subtype 14 - Removed two fields with I/O queuing activity data. |
| Type 82 (ICSF/MVS Record) | OS/390 Release 9 | Added subtypes 14 through 18 |
| | z/OS Release 2 | Updated for z/OS V1R2. |
| Type 84 (JES3 Monitoring Facility (JMF) Data) | OS/390 Release 8 | • Changes to FCT information<br>• New Subtype 10 (JES3 Workload Manager Analysis) |
| | OS/390 Release 9 | Added subtype 10 |
| Type 89 (Usage Data) | OS/390 Release 8 | Added new fields to the System ID Section to identify a concurrent CP upgrade. |
| Type 90 (System Status) | OS/390 Release 5 | Added Subtype 32 to record scheduling environment information following a successful policy change. |
| | OS/390 Release 10 | Added SET TIME, SET DATE sections (Subtypes 1 or 2). |
| | z/OS Release 3 | Added new information in several fields in Subtype 30. |
| Type 92 (OpenMVS File System Activity) | OS/390 Release 8 | • Changes to subtype 11<br>• New Subtype 12 and 13 |
| | OS/390 Release 9 | New File System Move Data Section added (subtype 7). |
| | OS/390 Release 10 | Added fields for subtypes 11 and 13. |
| Type 94 (IBM Tape Library Dataserver Statistics) | OS/390 Release 5 | Added new triplet section for VTS statistics |
| | OS/390 Release 8 | Added information for import/export statistics |
| Type 97 (Foreign Enclave Resource Data) | OS/390 Release 9 | New record. |

*Table A-5. SMF Records Changed Starting with OS/390 Release 5 (continued)*

| SMF Record | Release | Description of Changes |
|---|---|---|
| Type 99 (System Resource Manager Decisions) | OS/390 Release 5 | Added subtype 6 to collect information about each service class period.<br><br>Changed information in<br>• Subtype 2 (server sample data entry section, queue server data entry section, and remote queue server data entry section)<br>• Subtype 3 (period self defining section and queue delay plot section)<br>• Subtype 5 (self-defining section) |
| | OS/390 Release 6 | Added fields to subtype 6, including a new server section. |
| | OS/390 Release 8 | Added subtype 7 to collect data for the Enterprise Storage Server (ESS) with Parallel Access Volume (PAV) feature. |
| | OS/390 Release 10 | Added Subtype 7. |
| | z/OS Release 1 | Added subtype 8 to collect data for LPAR CPU management, and subtype 9 for dynamic channel path management. |
| | z/OS Release 3 | Added new fields in the Subtype 7, PAV Device section. |
| Type 108 (Domino Server Statistics | OS/390 Release 9 | New record. |
| Type 115 (MQSeries Statistics | OS/390 Release 9 | New record. |
| Type 116 (MQSeries Statistics) | OS/390 Release 9 | New record. |
| Type 119 (TCP/IP Statistics) | z/OS Release 2 | New record. |
| Type 120 (OS/390 Component Broker Performance) | OS/390 Release 10 | New record. |

## Summary of Changes to Macros

Table A-6 identifies macros that are added, changed, or deleted starting with OS/390 Release 5. For information about earlier changes, see the following books:

- *OS/390 MVS Conversion Notebook*, GC28-1747
- *MVS/ESA SP V5 Conversion Notebook*, GC28-1436
- *Conversion Notebook for System Product Version 4*, GC28-1608
- *Conversion Notebook for System Product Version 3*, GC28-1568
- *Conversion Notebook for System Product Version 2*, GC28-1567

For information about migration actions you might need to take because of incompatibilities, see Chapter 9, "Migration Actions: Application Development".

The column "Reference" indicates the book that contains the macro description:

- ***Auth*** refers to one of the following:
  - *z/OS MVS Programming: Authorized Assembler Services Reference ALE-DYN*
  - *z/OS MVS Programming: Authorized Assembler Services Reference ENF-IXG*
  - *z/OS MVS Programming: Authorized Assembler Services Reference LLA-SDU*
  - *z/OS MVS Programming: Authorized Assembler Services Reference SET-WTO*.
- ***Unauth*** refers to one of the following:
  - *z/OS MVS Programming: Assembler Services Reference ABE-HSP*
  - *z/OS MVS Programming: Assembler Services Reference IAR-XCT*
- ***Both*** refers to both ***Auth*** and ***Unauth***.
- ***Service Aids*** refers to *z/OS MVS Diagnosis: Tools and Service Aids*.
- ***SMF*** refers to *z/OS MVS System Management Facilities (SMF)*.
- ***Sysplex*** refers to *z/OS MVS Programming: Sysplex Services Reference*.
- ***JES Common Coupling*** refers to *z/OS MVS Programming: JES Common Coupling Services*.
- ***WLM*** refers to *z/OS MVS Programming: Workload Management Services*.
- ***Resource Recovery*** refers to *z/OS MVS Programming: Resource Recovery*.
- ***TSO/E*** refers to *z/OS TSO/E Programming Services*.

*Table A-6. Macros Changed Starting with OS/390 Release 5*

| Name of Service | Release | Description of Changes | Reference |
|---|---|---|---|
| ABEND | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Unauth*** |
| ATTACH and ATTACHX | z/OS Release 2 | **New parameter:**<br>• SDWALOC31: provides support for 64–bit virtual storage. | ***Unauth*** |
| | z/OS Release 3 | **New function:** ATTACHX provides support for 64-bit addressing mode. | |

*Table A-6. Macros Changed Starting with OS/390 Release 5 (continued)*

| Name of Service | Release | Description of Changes | Reference |
|---|---|---|---|
| ATRQUERY | OS/390 Release 8 | **New parameters:** The GNAME and SYSNAME parameters can be used to specify the name of the logging group and system name filters on returned information. The RCTABLE and RCNUM parameters can be used to provide return and reason codes from each system and logging group processing a request. | ***Resource Recovery*** |
| | OS/390 Release 9 | **New parameters:** The XID, XIDFORMATIDSTR, XIDGTRIDSTR, and XIDBQUALSTR parameters can be used to specify X/Open identifier filters on returned information. New masks are available to filter returned information about cascaded transactions. | |
| ATRSRV | OS/390 Release 8 | **New parameters:** The GNAME and SYSNAME parameters can be used to specify the name of the logging group and system containing a specified resource manager or URID. The RCTABLE and RCNUM parameters can be used to provide return and reason codes from the system and logging group processing a request. | ***Resource Recovery*** |
| BLSACBSP | OS/390 Release 10 | **New parameter:** The ABITS parameter specifies whether 31-bit or 64-bit storage is to be referenced. | ***Unauth*** |
| BLSRDRPX | OS/390 Release 10 | **New parameter:** The ABITS parameter specifies the format (either 31-bit or 64-bit) of the dump prefix to be used for addresses. | ***Unauth*** |
| BLSRPWHS | OS/390 Release 10 | **New parameter:** The ABITS parameter specifies whether 31-bit or 64-bit storage is to be referenced. | ***Unauth*** |
| BLSRESSY | OS/390 Release 10 | **New parameter:** The ABITS parameter specifies whether the record mapped is to be a 31-bit or 64-bit mapping. | ***Unauth*** |
| BLSRSASY | OS/390 Release 10 | **New parameter:** The ABITS parameter specifies whether the structure contains 31-bit or 64-bit fields. | ***Unauth*** |
| CALLDISP | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Auth*** |
| CHAP | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Unauth*** |
| CONVCON | z/OS Release 1 | **New parameter:** The CONVSMCS parameter specifies the output of a console name, console id or console validate request for an SMCS console. | ***Unauth*** |
| CONVTOD | OS/390 Release 8 | **New parameter:** The ETODVAL parameter specifies that the extended time-of-day (ETOD) clock value is to be returned. | ***Unauth*** |
| CPOOL | OS/390 Release 10 | **New parameters:** The BNDRY parameter specifies the either a doubleword or quad-word boundary for each cell in each extent. The LOC parameter is enhanced to support real storage specifications in 64-bit storage. | ***Auth*** |
| CSRUNIC | OS/390 Release 10 | **New macro:** Provides support for processing hardware instructions related to unicode data. Unicode data uses the binary codes of the Unicode Worldwide Character Standard; these codes support the characters of most of the world's written languages. | ***Both*** |
| CSVQUERY | z/OS Release 2 (introduced by APAR OW18167) | **New parameter:**<br>• OUTXLST: provides support for split RMODE load modules. | ***Unauth*** |
| | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | |

*Table A-6. Macros Changed Starting with OS/390 Release 5 (continued)*

| Name of Service | Release | Description of Changes | Reference |
|---|---|---|---|
| DELETE | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Unauth*** |
| DETACH | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Unauth*** |
| DEQ | z/OS Release 2 | **New parameter:** The LINKAGE parameter specifies the type of linkage the caller is using to invoke the DEQ service. | ***Both*** |
| | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | |
| DOM | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Unauth*** |
| DSPSERV | OS/390 Release 10 | **New parameters:** The BACK parameter allows for backing in either 31-bit or 64-bit real storage, if your system supports them. | ***Both*** |
| DYNALLOC (SVC 99) | OS/390 Release 5 | **New text unit key:** DYNALLOC supports a new text unit key, DALRTCTK, which will allow the Dynamic Allocation invoker to request return of a client token that is associated with the SYSOUT dataset being allocated. | ***Both*** |
| | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | |
| ENQ | z/OS Release 2 | **New parameter:** The LINKAGE parameter specifies the type of linkage the caller is using to invoke the ENQ service. | ***Both*** |
| | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | |
| ESPIE | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Both*** |
| ESTAEX | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Both*** |
| FREEMAIN | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Both*** |
| GETMAIN | OS/390 Release 10 | **New parameters:** The STARTBDY parameter specifies the boundary where obtained storage must start. The CONTBDY parameter specifies the boundary within which obtained storage must be contained. The LOC parameter is enhanced to support real storage specifications in 64-bit storage. | ***Auth*** |
| | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | |
| GETDSAB | z/OS Release 2 | **New parameter:**<br>• The LOC parameter specifies whether the macro should examine all of the DSABs or only those which reside below the 16M line. | ***Both*** |
| GTRACE | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Auth*** |
| IARR2V | OS/390 Release 10 | **New parameter:**<br>• VSA64 keyword. | ***Both*** |
| IARVSERV | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Both*** |
| IDENTIFY | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Unauth*** |
| IARV64 | z/OS Release 2 | **New macro:**<br>• Allocate 64-bit virtual storage. | ***Both*** |
| IAZFSIP | OS/390 Release 5 | **Enhancement:** Will now support a new unsolicited SEND requesting that the End of dataset ENF be issued. | ***Auth*** |
| IAZXJSAB | OS/390 Release 5 | **New parameter:** The JSABLVL parameter returns the level of the JSAB used for the READ request. | ***Auth*** |
| IAZXCTK | OS/390 Release 5 | **New macro:** Will expand in-line to compare two client tokens. | ***Auth*** |

*Table A-6. Macros Changed Starting with OS/390 Release 5 (continued)*

| Name of Service | Release | Description of Changes | Reference |
|---|---|---|---|
| IEABRC | OS/390 Release 10 | **New macro:** Works with other macros to convert their base-displacement branch instructions to relative branch equivalents. | ***Unauth*** |
| IEAFP | OS/390 Release 6 | **New macro:** Stops the system's status saving of additional floating point registers and the floating point control register. | ***Both*** |
| IEARBUP | OS/390 Release 10 | **New macro:** Requests the system to update the PSW address in the RB. | ***Auth*** |
| IEATDUMP | OS/390 Release 4 | **New macro:** Requests an unformatted user dump. | ***Both*** |
| | OS/390 Release 7 | **New parameters:** DSP_STOKEN, DSP_ORIGIN, and DSP_RECORDS@ keywords allow transaction dump output to be directed to a user-specified dataspace. | |
| IEECMDS | z/OS Release 2 | **New macro:** Query or remove attached commands. | ***Both*** |
| IEEQEMCS | OS/390 Release 7 | **New macro:** Returns the state of any EMCS consoles in the sysplex. | ***Both*** |
| IOSCHPD | z/OS Release 1 | **New parameters:** New parameters are added in support of dynamic channel path management. | ***Unauth*** |
| IOSCUMOD | z/OS Release 1 | **New macro:** Load module template for building IOS control unit entry. | ***Unauth*** |
| IOSENQ | z/OS Release 1 | **New macro:** Performs IOS enqueues. | ***Auth*** |
| IOSWITCH | z/OS Release 1 | **New macro:** Returns IOS switch information. | ***Auth*** |
| IRDFSD | z/OS Release 2 | **New macro:**<br>• FICON switch data services | ***Both*** |
| IRDFSDU | z/OS Release 2 | **New macro:**<br>• FICON switch data update services | ***Both*** |
| IWMCLSFY | OS/390 Release 9 | **New parameters:** Lets a caller request a transaction trace token. | |
| | OS/390 Release 10 | **New parameters:** The SUBCOLN, SCHEDENV, and SCHEDENV_LEN parameters have been added. | |
| IWMCONN | OS/390 Release 9 | **New Parameter:** Allows the caller to specify whether the address space will need access to enclave exporting and importing services. | ***WLM*** |
| IWMCPAFN | z/OS Release 1 | **New macro:** Enforces the CPU affinity by bringing online any CPU that was taken offline by WLM. | ***WLM*** |
| IWMECREA | OS/390 Release 9 | **Changed macro:** Eliminated limit on the number of enclaves allowed. | ***WLM*** |
| IWMEQTME | OS/390 Release 7 | **New macro:** Returns the enclave CPU time if the current dispatchable workunit is associated with an enclave. | ***WLM*** |
| IWMEXPT | OS/390 Release 9 | **New macro:** Exports an enclave to all systems in a parallel sysplex. | ***WLM*** |
| IWMIMPT | OS/390 Release 9 | **New macro:** Imports an enclave that has been exported to all systems in a parallel sysplex. | ***WLM*** |
| IWMMEXTR | OS/390 Release 9 | **New Parameter:** Allows the caller to specify a transaction trace token. | ***WLM*** |

*Table A-6. Macros Changed Starting with OS/390 Release 5 (continued)*

| Name of Service | Release | Description of Changes | Reference |
|---|---|---|---|
| IWMMINIT | OS/390 Release 9 | **New Parameter:** Allows the caller to specify a transaction trace token. | ***WLM*** |
| | OS/390 Release 9 | **New output data:** New fields for enclaves have been added in the return area mapped by IWMWRCAA. | |
| IWMRQRY | OS/390 Release 9 | **New output data:** New fields for enclaves have been added in the return area mapped by IWMWRQAA. Note that the enclave counts are now fullwords instead of halfwords. If there are more than 32K enclaves, the old halfword fields (RQAAED# and RQAAEE#) will contain a value of 32767, and the new fullword fields (RQAAXED# and RQAAXEE#) will contain the true count. | ***WLM*** |
| IWMSLIM | OS/390 Release 10 | **New macro:** Allows an application to establish a maximum and/or minimum number of server address spaces that can be started for a given application environment. | ***WLM*** |
| IWMSRDNS | OS/390 Release 4 | **New macro:** Returns the location name for a list of registered servers known to the system on which the service is invoked. | ***WLM*** |
| IWMSSEL | OS/390 Release 5 | **New parameter:** A new optional parameter, SERVER_TOKEN=, is added to allow a queueing manager to queue secondary work requests. | ***WLM*** |
| IWMSSEM | OS/390 Release 5 | **New macro:** For a server, obtains the next secondary work request queued by the queueing manager associated with the server (using IWMQINS). | ***WLM*** |
| IWMSTEND | OS/390 Release 5 | **New Reason Code:** A new reason code is added to indicate that you cannot issue IWMSTEND until all secondary requests are complete. | ***WLM*** |
| IWMUEXPT | OS/390 Release 9 | **New macro:** Undoes an export of an enclave to all systems in a parallel sysplex. | ***WLM*** |
| IWMUIMPT | OS/390 Release 9 | **New macro:** Undoes an import of an enclave. | ***WLM*** |
| IWMWSYSQ | OS/390 Release 10 | **New output data:** New data, related to the caller's importance level, is added to the return area mapped by IWMWSYSI. | ***WLM*** |
| IXCARM | OS/390 Release 9 | **New and changed parameters:**<br>• ELEMBIND is a new parameter to specify the relationship between the element and the system.<br>• RMTOKEN is a new parameter to identify a restart manager token.<br>• TERMTYPE=SYSTERM is a new option to indicate that the element is to be restarted only if the system on which it is registered unexpectedly fails. | ***Sysplex*** |
| IXCJOIN | OS/390 Release 8 | **New parameter:** The GT61KMSG parameter indicates whether this member supports sending or receiving messages (or both) greater than 61K bytes in length, up to a maximum length of 128M bytes. | ***Sysplex*** |
| IXCMSGC | OS/390 Release 8 | **Additional reason code information:** Return code X'4', reason code X'xxxx0018' provides additional information. | ***Auth*** |

*Table A-6. Macros Changed Starting with OS/390 Release 5 (continued)*

| Name of Service | Release | Description of Changes | Reference |
|---|---|---|---|
| IXCMSGO | OS/390 Release 8 | **New parameter:** The MSGACCESS parameter is added to support XCF large message delivery (messages up to 128M bytes in length). MSGACCESS indicates how XCF can access the storage containing the message. | ***Sysplex*** |
| | z/OS Release 3 | **New options:** ALL and OTHER are new options for the MEMBERS parameter. | |
| IXCQUERY | OS/390 Release 8 | **New information returned:** A query for structure information returns the new QUASTRSYS mapping, containing system-specific information for a given structure. IXCYQUAA is expanded to include this new information.<br><br>**Additional information returned:**<br>• Structure information related to system-managed rebuild.<br>• Connector information related to system-managed rebuild.<br><br>A query for member information returns data indicating whether the member supports the large message delivery protocol (messages up to 128M bytes in length. | ***Sysplex*** |
| | OS/390 Release 10 | **New parameter:** The MONOPLEX parameter is added to the REQINFO=COUPLE request to return an indication of whether the sysplex in in monoplex mode. | |
| IXGBRWSE | OS/390 Release 8 | **New parameters:** DIAG=NO_DIAG\|NO\|YES is an optional keyword input that indicates whether or not the DIAG option on the IXGCONN for this logstream will be in effect for this browse session. Refer to the DIAG keyword on the IXGINVNT, IXGCONN and IXGDELET macro services. | ***Both*** |
| | OS/390 Release 10 | **New parameter:** MULTIBLOCK=NO\|YES is an optional keyword input that indicates whether multiple log stream blocks are to be returned on the read cursor request. If MULTIBLOCK=YES is specified, system logger will return as many log blocks in a single request as can fit in the invoker's buffer. | |
| IXGCONN | OS/390 Release 8 | **New parameters:** DIAG=NO_DIAG\|NO\|YES is an optional keyword input that indicates whether Logger should provide additional diagnostics as specified on the logstream definition DIAG parameter. This indication is used over the span of this connection. Refer to the DIAG keyword on the IXGINVNT, IXGBRWSE and IXGDELET macro services. | ***Both*** |
| IXGDELET | OS/390 Release 8 | **New parameters:** DIAG=NO_DIAG\|NO\|YES is an optional keyword input that indicates whether or not the DIAG option on the IXGCONN for this logstream will be in effect for this delete log data request. Refer to the DIAG keyword on the IXGINVNT, IXGCONN and IXGBRWSE macro services. | ***Both*** |

*Table A-6. Macros Changed Starting with OS/390 Release 5 (continued)*

| Name of Service | Release | Description of Changes | Reference |
|---|---|---|---|
| IXGINVNT | OS/390 Release 8 | **New parameters** for defining a logstream request. DIAG=NO\|YES is an optional keyword input that indicates whether or not dumping or additional diagnostics should be provided by Logger for certain conditions. Refer to the DIAG keyword on the IXGCONN, IXGBRWSE and IXGDELET macro services.<br><br>**New parameters** for updating a logstream request. DIAG=NO_DIAG\|NO\|YES is an optional keyword input that indicates whether or not dumping or additional diagnostics should be provided by Logger for certain conditions. Refer to the DIAG keyword on the IXGCONN, IXGBRWSE and IXGDELET macro services. | ***Both*** |
| | z/OS Release 2 | **New parameter**: The LOGGERDUPLEX parameter supports automatically duplexing a coupling facility. | ***Both*** |
| | z/OS Release 3 | **New parameter**: The EHLQ parameter specifies the enhanced (or extended) high- level qualifier that will be used to construct the log stream offload data set names and log stream staging data set names when used. | |
| IXLCACHE | OS/390 Release 8 | **Performance enhancement:** Provides support for IXLCACHE REQUEST=DELETE_NAME in a coupling facility of CFLEVEL=7 or higher.<br><br>**New parameter:** The EXTRESTOKEN parameter is added to the CROSS_INVAL, DELETE_NAME, READ_COCLASS, READ_DIRINFO, and RESET_REFBIT request types to support extended restart tokens. | ***Sysplex*** |
| | OS/390 Release 9 | **New parameter:** For cache structures allocated in a coupling facility of CFLEVEL=9 or higher, the ASSIGN parameter on an IXLCACHE REQUEST=WRITE_DATA,WHENREG=NO request allows you to specify that the system is to suppress the creation of a new directory entry when an existing directory entry is not found. | |
| | OS/390 Release 10 | **New parameter:** The BUFADDRSIZE parameter is added to the CASTOUT_DATA, DELETE_NAMELIST, PROCESS_REFLIST, READ_COCLASS, READ_COSTATS, READ_DATA, READ_DIRINFO, UNLOCK_CASTOUT, and WRITE_DATA request types. BUFADDRSIZE specifies whether a 31-bit or 64-bit real address is specified by a BUFLIST entry. | |

*Table A-6. Macros Changed Starting with OS/390 Release 5 (continued)*

| Name of Service | Release | Description of Changes | Reference |
|---|---|---|---|
| IXLCONN | OS/390 Release 8 | **New parameter:** The NAMECLASSMASK parameter is added to specify the name class mask pattern to be applied to entry names in a cache structure allocated in a coupling facility of CFLEVEL=7 or higher.<br><br>The ALLOWAUTO and SUSPEND parameters are added to support system-managed processing. | ***Sysplex*** |
| | OS/390 Release 9 | **New parameters:**<br>• The SUPPRESSEVENTS parameter indicates whether a connector to a cache structure wants the system to suppress certain connection and disconnection events generated by the connector.<br>• The MINCFLEVEL parameter indicates that the connector requires that the structure be allocated in a coupling facility that supports at least the indicated minimum CFLEVEL.<br>• The ENTRYIDTYPE parameter indicates whether the system or the user will assign the list entry ID for list entries created in the list structure.<br>• The KEYTYPE parameter indicates whether keyed list entries will use entry keys and secondary keys or only entry keys. | |
| | OS/390 Release 10 | **New default values:** The default values for the MINELEMENT, MINEMC, and MINENTRY parameters are changed from 0 to 25.<br><br>**New option** for SUSPEND keyword: SUSPEND=FAIL allows you to specify that the system is to fail a request rather than have the request suspended or processed asynchronously during a system-managed process. | |
| IXLCSP | OS/390 Release 8 | **New macro:** Provides a means to calculate both structure size and structure object counts to assist in coupling facility capacity planning. | ***Sysplex*** |
| | OS/390 Release 9 | **New parameter:** The KEYTYPE parameter indicates whether keyed list entries will use entry keys and secondary keys or only entry keys. | ***Sysplex*** |
| IXLEERSP | OS/390 Release 8 | **New event:** The Structure Temporarily Unavailable (STRTEMPUNAVAIL) event is added in support of system-managed processes. | ***Sysplex*** |
| IXLLIST | OS/390 Release 8 | **New parameter:** The EXTRESTOKEN parameter is added to the DELETE_MULT and READ_MULT request types to support extended restart tokens. | ***Sysplex*** |
| IXLLSTC | OS/390 Release 9 | **New macro:**Provides operations to manipulate control data in a list structure, such as perform locking functions, monitor list state changes, read and write list controls, read event queue controls and event monitor controls, and dequeue event monitor controls. | ***Sysplex*** |
| | OS/390 Release 10 | **New parameter:** The BUFADDRSIZE parameter specifies whether a 31-bit or a 64-bit real address is specified by a BUFLIST entry. | ***Sysplex*** |

*Table A-6. Macros Changed Starting with OS/390 Release 5 (continued)*

| Name of Service | Release | Description of Changes | Reference |
|---|---|---|---|
| IXLLSTE | OS/390 Release 9 | **New macro:** Provides functions to operate on individual list entries in a list structure. | ***Sysplex*** |
| | OS/390 Release 10 | **New parameter:** The BUFADDRSIZE parameter specifies whether a 31-bit or a 64-bit real address is specified by a BUFLIST entry. | ***Sysplex*** |
| IXLLSTM | OS/390 Release 9 | **New macro:** Provides functions to operate on multiple list entries in a list structure. | ***Sysplex*** |
| | OS/390 Release 10 | **New parameter:** The BUFADDRSIZE parameter specifies whether a 31-bit or a 64-bit real address is specified by a BUFLIST entry. | ***Sysplex*** |
| IXLMG | OS/390 Release 8 | **New parameter:** The STRCOPYCNTLS parameter is added to indicate whether the structure copy controls record should be included with the measurement data. | ***Sysplex*** |
| IXLREBLD | OS/390 Release 8 | **New reason codes:** New reason codes are provided when a request that requires system-managed processing (for example, rebuild) is rejected. | ***Sysplex*** |
| LOAD | z/OS Release 2 (introduced by APAR OW18167) | **New function:**<br>• Support for split RMODE load modules. | ***Both*** |
| IXLRT | OS/390 Release 8 | **New parameter:** The EXTRESTOKEN parameter is added to the READALL, READBYCONN, and DELETEBYCONN request types to support extended restart tokens. | ***Sysplex*** |
| | OS/390 Release 10 | **New parameters:** The MRTDLEVEL parameter is added to the READALL and READBYCONN request types to specify the level of IXLYMRTD records. The OUTRDATATYPE parameter is added to the READENTRY request type to support output of the returned record record data type. | ***Sysplex*** |
| LINKX | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Unauth*** |
| LOAD | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Both*** |
| MODESET | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Auth*** |
| OUTADD | OS/390 Release 5 | **New text unit identifiers:** Enhance PSF/MVS and IP PrintWay and facilitate Client Print interface with those products. The new keywords correspond to keyword on the OUTPUT JCL statement except for FSSDATA. The keywords are: DUPLEX, FSSDATA, INTRAY, OFFSET, OVERLAY, PORTNO. | ***Auth*** |
| PGSER | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Both*** |
| POST | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Both*** |
| RESERVE | z/OS Release 2 | **New parameter:** The LINKAGE parameter specifies the type of linkage the caller is using to invoke the RESERVE service. | ***Both*** |
| | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | |
| SDUMPX | OS/390 Release 7 | **New Parameter:** The SDATA=SERVERS keyword causes registered IEASDUMP.SERVER dynamic exits to receive control. | ***Auth*** |
| | z/OS Release 2 | Enhanced functions available when using 64-bit addressing mode. | ***Both*** |

*Table A-6. Macros Changed Starting with OS/390 Release 5 (continued)*

| Name of Service | Release | Description of Changes | Reference |
|---|---|---|---|
| SETRP | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Both*** |
| STAX | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***TSO/E*** |
| STCKCONV | OS/390 Release 8 | **New parameter:** The STCKEVAL parameter specifies the address of the extended time-of-day clock value to be converted. | ***Unauth*** |
| STCKSYNC | OS/390 Release 8 | **New parameter:** The ETOD parameter specifies that the extended time-of-day (ETOD) clock value is to be returned. | ***Unauth*** |
| STIMER | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Unauth*** |
| STIMERM | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Unauth*** |
| STORAGE | OS/390 Release 10 | **New parameters:** The STARTBDY parameter specifies the boundary where obtained storage must start. The CONTBDY parameter specifies the boundary within which obtained storage must be contained. The LOC parameter is enhanced to support real storage specifications in 64-bit storage. | ***Auth*** |
| | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | |
| SYNCHX | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Both*** |
| SYSEVENT | OS/390 Release 5 | **New Return Code:** SYSEVENT REQASD and REQFASD (Request Address Space Data) now have a new return code indicating that processing could not be completed because a mode switch or policy activation is in progress. | ***Auth*** |
| | OS/390 Release 10 | **New outputs:** REQASD and REQFASD SYSEVENT output includes new information (from new classification attributes).<br>**Note:** This change is incompatible with previous releases. You are required to use the current (larger) parameter list. Therefore, any code issuing these SYSEVENTs must be reassembled. | |
| | z/OS Release 1 | **New parameter:** QVS returns capacity information for software licensing. | |
| | z/OS Release 3 | **New parameter:** REQLPDAT returns performance data relating to defined capacities from WLM.<br><br>**New output parameter:** A new output parameter, SRMSTCAP, is added to the REQSRMST SYSEVENT. Prospective callers of the REQLPDAT SYSEVENT should first invoke the REQSRMST SYSEVENT, and then check the SRMSTCAP output parameter to see if the REQLPDAT SYSEVENT is available on the system.<br><br>**New keyword:** A new TYPE=2 keyword is added to the SYSEVENT macro, for use only by SYSEVENT ENQHOLD and ENQRLSE. | |
| TIME | OS/390 Release 8 | **New parameter:** The STCKE parameter specifies that the extended time-of-day (ETOD) clock value is to be returned. | ***Unauth*** |
| | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | |
| TIMEUSED | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Both*** |
| TTIMER | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Unauth*** |

*Table A-6. Macros Changed Starting with OS/390 Release 5 (continued)*

| Name of Service | Release | Description of Changes | Reference |
|---|---|---|---|
| VRADATA | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Unauth*** |
| VSMLIST | OS/390 Release 10 | **New parameters:** The REAL31 and REAL64 parameters indicate where storage blocks are backed in real storage. The LOC parameter is enhanced to support real storage specifications in 64-bit storage. | ***Auth*** |
| WAIT | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Both*** |
| WTO | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Both*** |
| WTOR | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Both*** |
| XCTLX | z/OS Release 3 | **New function:** Adds support for 64-bit addressing mode. | ***Unauth*** |

## Summary of Changes to Callable Services for High-Level Languages

Table A-7 identifies callable services that are added, changed, or deleted in starting with OS/390 Release 5. For information about earlier changes, see the following books:

- *OS/390 MVS Conversion Notebook*, GC28-1747
- *MVS/ESA SP V5 Conversion Notebook*, GC28-1436
- *Conversion Notebook for System Product Version 4*, GC28-1608
- *Conversion Notebook for System Product Version 3*, GC28-1568
- *Conversion Notebook for System Product Version 2*, GC28-1567

For information about migration actions you might need to take because of incompatibilities, For additional information about incompatibilities, see Chapter 9, “Migration Actions: Application Development”.

The column “Reference” indicates in which book you can find a description of the callable service:

- ***Both*** refers to both ***Auth*** and ***Unauth***.
- ***Calls*** refers to *z/OS MVS Programming: Callable Services for HLL*.
- ***Product Reg*** refers to *z/OS MVS Programming: Product Registration*.
- ***Resource Recovery*** refers to *z/OS MVS Programming: Resource Recovery*.
- ***Writing Scheds*** refers to *z/OS MVS System Messages, Vol 3 (ASB-BPX)*.
- ***Writing Servers*** refers to *z/OS MVS Programming: Writing Servers for APPC/MVS*.
- ***Writing TPs*** refers to *z/OS MVS Programming: Writing Transaction Programs for APPC/MVS*.

*Table A-7. Callable Services Changes Starting with OS/390 Release 5*

| Name of Service | Release | Description of Changes | Reference |
|---|---|---|---|
| ATBALC5 | OS/390 Release 8 | **New callable service:** The ATBALC5 callable service is a new version of the allocate service (previous versions were ATBALLC and ATBALC2). The new version provides the following new parameter:<br>• Timeout_Value specifies the time period in minutes in which the allocate and each subsequent APPC/MVS TP conversation call should complete. | ***Writing TPs*** |
| ATBSTO5 | OS/390 Release 8 | **New callable service:**<br>• Sets a time limit on network-related delays for subsequent APPC/MVS conversation calls issued by the TP. | ***Writing TPs*** |
| ATRADCT | OS/390 Release 10 | **New callable service:** Called from a communication resource manager, tells RRS to initiate and commit a syncpoint operation for the associated unit of recovery. | ***Resource Recovery*** |
| ATRCCUR2 | OS/390 Release 9 | **New callable service:** Called from a resource manager, tells RRS to create a cascaded unit of recovery. | ***Resource Recovery*** |
| ATRCCUR3 | z/OS V1R2 | **New callable service:** Called from a resource manager, tells RRS to create a cascaded unit of recovery. | ***Resource Recovery*** |
| ATRDPSP2 | OS/390 Release 9 | **New callable service:** Called from a resource manager, disassociates a pause element token (PET) from a target UR. | ***Resource Recovery*** |

*Table A-7. Callable Services Changes Starting with OS/390 Release 5 (continued)*

| Name of Service | Release | Description of Changes | Reference |
|---|---|---|---|
| ATREINT2 | OS/390 Release 9 | **New callable service:** Called from a resource manager, expresses an interest in a unit of recovery. | ***Resource Recovery*** |
| ATREINT3 | z/OS V1R2 | **New callable service:** Called from a resource manager, expresses an interest in a unit of recovery. | ***Resource Recovery*** |
| ATRRURD1 | OS/390 Release 6 | **New callable service:** Called from a resource manager, retrieves from RRS data for a unit of recovery (UR). | ***Resource Recovery*** |
| ATRRURD2 | OS/390 Release 9 | **New callable service:** Called from a resource manager, retrieves from RRS data for a unit of recovery (UR). | ***Resource Recovery*** |
| ATRRUSI2 | OS/390 Release 9 | **New callable service:** Called from a resource manager, retrieves from RRS side information for an interest in a unit of recovery (UR). | ***Resource Recovery*** |
| ATRRWID2 | OS/390 Release 9 | **New callable service:** Called from a resource manager, retrieves from RRS the work identifier related to a unit of recovery (UR). | ***Resource Recovery*** |
| ATRSPSP2 | OS/390 Release 9 | **New callable service:** Called from a resource manager, associates a pause element token (PET) with a target UR. | ***Resource Recovery*** |
| ATRSUSI2 | OS/390 Release 9 | **New callable service:** Called from a resource manager, presents to RRS side information for an interest in a unit of recovery (UR). | ***Resource Recovery*** |
| ATRSWID2 | OS/390 Release 9 | **New callable service:** Called from a resource manager, sets the current or next unit of work identifier (UWID) for a unit of recovery (UR). | ***Resource Recovery*** |
| CSRSI | OS/390 Release 8 | **New callable service:** This service retrieves system information. | ***Unauth*** |
| CTXRCC | OS/390 Release 5 | **New callable service:** Called from a resource manager, obtains the context token for the currently active context and returns it to the caller. | ***Resource Recovery*** |
| CTXRDTA | OS/390 Release 5 | **New callable service:** Called from a resource manager, retrieves the data associated with a specified key which was saved previously via a call to CTXSDTA. | ***Resource Recovery*** |
| CTXSCID2 | OS/390 Release 9 | **New callable service:** Called from a resource manager, supplies or changes the interest data for a context that represents the resources for a work request. | ***Resource Recovery*** |
| CTXSDTA | OS/390 Release 5 | **New callable service:** Called from a resource manager, saves data to be associated with a specific context and identified with a specified key. | ***Resource Recovery*** |
| IEAVAPE | OS/390 Release 8 | **New callable service:** The Allocate_Pause_Element service obtains a pause element token (PET), which uniquely identifies a pause element. | ***Both*** |
| IEAVDPE | OS/390 Release 8 | **New callable service:** The Deallocate_Pause_Element service returns a pause element, that is no longer needed. | ***Both*** |
| IEAVPSE | OS/390 Release 8 | **New callable service:** The Pause service is used to make the current task or SRB nondispatchable. | ***Both*** |

*Table A-7. Callable Services Changes Starting with OS/390 Release 5 (continued)*

| Name of Service | Release | Description of Changes | Reference |
|---|---|---|---|
| IEAVRLS | OS/390 Release 8 | **New callable service:** The Release service is used to release a paused task, or to keep a task or SRB from being paused. | ***Both*** |
| IEAVRPI | OS/390 Release 9 | **New callable service:** The Retrieve_Pause_Element_Information service is used to retrieve the authorization level, owning address space, and state of a pause element. | ***Both*** |
| IEAVTPE | OS/390 Release 9 | **New callable service:** The Test_Pause_Element service is a high performance way of testing a pause element. | ***Both*** |
| IEAVXFR | OS/390 Release 8 | **New callable service:** The Transfer service is used to release a paused task or SRB, and when possible, give it immediate control. This service can also, optionally, pause the task or SRB under which the Transfer request is made. | ***Both*** |

## Summary of Changes to C Language Interfaces for Workload Management Services

The following table shows changes to the C language interfaces that can be used to access WLM services. For more information on these interfaces, see *z/OS C/C++ Run-Time Library Reference*.

*Table A-8. C Language Interfaces for Workload Management Services — Changes Starting with OS/390 Release 5*

| Name of Interface | Release |
|---|---|
| ConnectExportImport<br>`IWMCONN`<br>`  WORK_MANAGER(NO)`<br>`  ROUTER(NO)`<br>`  QUEUE_MANAGER(NO)`<br>`  SERVER_MANAGER(NO)`<br>`  EXPTIMPT(YES)` | OS/390 Release 9 |
| ExportWorkUnit (IWMEXPT) | OS/390 Release 9 |
| ExtractWorkUnit (IWMESQRY) | OS/390 Release 9 |
| ImportWorkUnit (IWMIMPT) | OS/390 Release 9 |
| QueryWorkUnitClassification (IWMECQRY) | OS/390 Release 9 |
| UnDoExportWorkUnit (IWMUEXPT) | OS/390 Release 9 |
| UnDoImportWorkUnit (IWMIMXPT) | OS/390 Release 9 |
| __server_classify (IWMCLSFY) | z/OS V1R2 |
| __server_classify_create (IWMCLSFY) | z/OS V1R2 |
| __server_init (IWMCONN) | z/OS V1R2 |
| __server_pwu (IWMQINS, IWMSSEL) | z/OS V1R2 |
| __server_threads_query (IWMSINF) | z/OS V1R2 |

## Summary of Changes to Installation Exits

Table A-9 identifies the installation exits that are added, changed, or deleted in z/OS. For complete information about each exit, see *z/OS MVS Installation Exits*. For information about how to handle incompatibilities, see Chapter 4, “Migration Actions: Customization”.

*Table A-9. Installation Exits Changed Starting with OS/390 Release 5*

| Name of Exit | Release | Description of Changes |
|---|---|---|
| IEFUSI | z/OS Release 2 | **Changed exit:** IEFUSI has been updated to support MEMLIMIT used with the SMFPRMxx parmlib member. |
| ISGNQXIT | z/OS Release 2 | **New exit:** A new dynamic exit, ISGNQXIT, has replaced installation exit ISGGREX0. |
| ISGGREX0 | z/OS Release 2 | **Deleted exit:** A new dynamic exit, ISGNQXIT, has replaced installation exit ISGGREX0. |
| ISGNQXITBATCH | z/OS Release 2 | **New exit:** A new dynamic exit, ISGNQXITBATCH, is intended for use by monitoring products and OEM serialization products. |
| ISGNQXITQUEUED1 | z/OS Release 2 | **New exit:** A new dynamic exit, ISGNQXITQUEUED1, is intended for use by OEM serialization products. |
| ISGENDOFLQCB | z/OS Release 2 | **New exit:** A new dynamic exit, ISGENDOFLQCB, is intended for use by OEM serialization products. |
| ISGDGRSRES | z/OS Release 2 | **New exit:** A new dynamic exit, ISGDGRSRES, allows an application to provide additional information about an ENQ resource name. |

## Summary of Changes to Control Blocks

This section identifies MVS control blocks that are changed in OS/390 Release 5 and later, and in z/OS.

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Before using a control block as part of a programming interface, verify that you are using it as intended.

For information about new and deleted MVS control blocks, see the summary of changes sections in the following books:

- *z/OS MVS Data Areas, Vol 1 (ABEP-DALT)*
- *z/OS MVS Data Areas, Vol 2 (DCCB-ITZYRETC)*
- *z/OS MVS Data Areas, Vol 3 (IVT-RCWK)*
- *z/OS MVS Data Areas, Vol 4 (RD-SRRA)*
- *z/OS MVS Data Areas, Vol 5 (SSAG-XTLST)*.

For information about changes to JES2 control blocks, see *z/OS JES2 Migration*.

For information about changes to JES3 control blocks, see *z/OS JES3 Migration*.

For information about changes to z/OS UNIX System Services control blocks, see *z/OS UNIX System Services Programming: Assembler Callable Services Reference*.

For information about changes to security server (RACF) control blocks, such as ACEE, see *z/OS Security Server RACF Data Areas*.

For information about changes to communications server (VTAM) control blocks, see *z/OS Communications Server: SNA Data Areas Volume 1* and *z/OS Communications Server: SNA Data Areas Volume 2*.

If your program is using a mapping macro, a change to the mapping macro might require one of the following actions:

- **Reassemble the program:** To accommodate the change, simply reassemble the program.
- **Rewrite the program:** To accommodate the change, rewrite the program. This can be necessary if fields were moved, or changed their meaning or use.
- **Use a supported service instead of the mapping macro:** Use a supported service (such as a macro or callable service) to obtain the needed information.

Make sure to test your applications in the new release before going to production.

**Note:** In OS/390 Release 10 a great many control blocks changed. Counting only MVS BCP control blocks (not control blocks owned by other elements such as DFSMSdfp or Communications Server), approximately 200 mapping macros changed. Please check carefully to ensure that your application programs run correctly with OS/390 Release 10.

*Table A-10. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5)*

| Control Block (Mapping Macro) | Release |
|---|---|
| ACA (ILRACA) | OS/390 Release 10 |

*Table A-10. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)*

| Control Block (Mapping Macro) | Release |
|---|---|
| ACE (ILRACE) | OS/390 Release 10 |
| | z/OS Release 2 |
| ADB (IEFZB4H1) | z/OS Release 3 |
| ADYDSTAT | OS/390 Release 6 |
| AE (IHAAE) | OS/390 Release 10 |
| AIA (ILRAIA) | OS/390 Release 10 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| ASCB (IHAASCB) | OS/390 Release 5 |
| ASMVT (ILRASMVT) | OS/390 Release 10 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| ASSB (IHAASSB) | OS/390 Release 5 |
| | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 9 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| ATBASASM | OS/390 Release 8 |
| ATBXCFMS | OS/390 Release 6 |
| ATRFZQRY | OS/390 Release 5 |
| | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 9 |
| ATRFZSRV | OS/390 Release 5 |
| | OS/390 Release 8 |
| | OS/390 Release 9 |
| ATRRASM | OS/390 Release 5 |
| | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 9 |
| | OS/390 Release 10 |
| ATRSZAUR | OS/390 Release 5 |
| | OS/390 Release 6 |
| | OS/390 Release 9 |
| ATRSZPUR | OS/390 Release 5 |
| | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 9 |
| BASEA (IEEBASEA) | OS/390 Release 6 |

*Table A-10. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)*

| Control Block (Mapping Macro) | Release |
|---|---|
| BLSABDPL | OS/390 Release 10 |
| BLSACBSP | OS/390 Release 10 |
| BLSRDATC | OS/390 Release 10 |
| BLSRDATT | OS/390 Release 10 |
| BLSRPWHS | OS/390 Release 10 |
| BLSRDRPX | OS/390 Release 6 |
| | OS/390 Release 10 |
| BLSRESSY | OS/390 Release 10 |
| BLSRPRD | OS/390 Release 10 |
| BLSRSASY | OS/390 Release 10 |
| BLSRXMSP | OS/390 Release 5 |
| | OS/390 Release 10 |
| BLSRXSSP | OS/390 Release 10 |
| CACHE (ILRCACHE) | OS/390 Release 10 |
| CAFM (IEFZB428) | OS/390 Release 10 |
| CBLS (IHACBLS) | OS/390 Release 8 |
| | OS/390 Release 10 |
| CDE (IHACDE) | OS/390 Release 9 |
| | z/OS Release 3 |
| ACMB (CMB) | OS/390 Release 7 |
| | OS/390 Release 8 |
| CMCT (CMCT) | OS/390 Release 7 |
| CRGASM | OS/390 Release 6 |
| CSCB (IEECHAIN) | OS/390 Release 5 |
| CSRLJASM | OS/390 Release 10 |
| | z/OS Release 1 |
| CSRCPASM | z/OS Release 2 |
| | z/OS Release 3 |
| CSRSIIDF | z/OS Release 2 |
| | z/OS Release 3 |
| CSRYL16J | OS/390 Release 10 |
| | z/OS Release 1 |
| CSVDLAA | OS/390 Release 5 |
| | OS/390 Release 6 |
| CSVDLENF | OS/390 Release 5 |
| CSVEXRET | OS/390 Release 6 |
| CSVLPRET | OS/390 Release 5 |
| | OS/390 Release 10 |
| | z/OS Release 3 |

*Table A-10. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)*

| Control Block (Mapping Macro) | Release |
|---|---|
| CSVMODI | OS/390 Release 10 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| CSVRTAA | OS/390 Release 6 |
| CTSS (ITTCTSS) | OS/390 Release 6 |
| CTXT (IEZVX100) | OS/390 Release 8 |
| CTXASM | OS/390 Release 5 |
| | OS/390 Release 6 |
| | OS/390 Release 10 |
| CVT | OS/390 Release 5 |
| | OS/390 Release 6 |
| | OS/390 Release 7 |
| | OS/390 Release 8 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| DCCD (IOSDDCCD) | OS/390 Release 10 |
| | z/OS Release 1 |
| | z/OS Release 3 |
| DOMC (IHADOMC) | OS/390 Release 6 |
| | OS/390 Release 8 |
| DDRCOM (IHADDR) | OS/390 Release 8 |
| DDT (IECDDT) | OS/390 Release 6 |
| DEIB (ILRDEIB) | OS/390 Release 10 |
| DFE (IHADFE) | OS/390 Release 10 |
| DQE (IHADQE) | OS/390 Release 10 |
| DMDT (DMDT) | OS/390 Release 7 |
| | z/OS Release 1 |
| DSAB (IHADSAB) | OS/390 Release 10 |
| ECVT (IHAECVT) | OS/390 Release 5 |
| | OS/390 Release 6 |
| | OS/390 Release 7 |
| | OS/390 Release 8 |
| | OS/390 Release 9 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| | z/OS Release 3 |
| EDT (IEFZB421) | OS/390 Release 6 |
| | z/OS Release 3 |

*Table A-10. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)*

| Control Block (Mapping Macro) | Release |
|---|---|
| EED (IHART1W) | OS/390 Release 6 |
| ENFCT (IEFENFCT) | OS/390 Release 5 |
| | OS/390 Release 9 |
| | z/OS Release 1 |
| ENFLS (IEFENFLS) | z/OS Release 3 |
| ENFPM (IEFENFPM) | OS/390 Release 5 |
| | OS/390 Release 9 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| ENV (IEFENV) | OS/390 Release 10 |
| EPIE (IHAEPIE) | OS/390 Release 6 |
| | OS/390 Release 10 |
| EQSRD (ILREQSRD) | OS/390 Release 10 |
| ESCT (ESCT) | OS/390 Release 7 |
| ESTA (IHAESTA) | OS/390 Release 10 |
| ESWL (IHAESWL) | OS/390 Release 8 |
| | OS/390 Release 10 |
| ETE (IHAETE) | OS/390 Release 10 |
| ETIORB (IEFZB430) | OS/390 Release 10 |
| EWA (EWAMAP) | OS/390 Release 8 |
| FBQE (IHAFBQE) | OS/390 Release 10 |
| FIB (IGVFIB) | OS/390 Release 8 |
| | OS/390 Release 10 |
| | z/OS Release 3 |
| FQE (IHAFQE) | OS/390 Release 10 |
| FSIP (IAZFSIP) | OS/390 Release 5 |
| | OS/390 Release 10 |
| FTPT (IEZVR001) | OS/390 Release 5 |
| | OS/390 Release 7 |
| | OS/390 Release 8 |
| | z/OS Release 1 |
| GDA (IHAGDA) | OS/390 Release 10 |
| | z/OS Release 3 |
| GSDA (IHAGSDA) | OS/390 Release 10 |
| | z/OS Release 3 |

*Table A-10. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)*

| Control Block (Mapping Macro) | Release |
|---|---|
| GVT (ISGGVT) | OS/390 Release 6 |
| | OS/390 Release 7 |
| | OS/390 Release 8 |
| | OS/390 Release 10 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| GVTX (ISGGVTX) | OS/390 Release 6 |
| | OS/390 Release 7 |
| | OS/390 Release 8 |
| | OS/390 Release 10 |
| | z/OS Release 3 |
| HIDT (IOSDHIDT | OS/390 Release 6 |
| IAZBTOKP | OS/390 Release 5 |
| | OS/390 Release 10 |
| IAZJBCLD | OS/390 Release 10 |
| IEAASM | OS/390 Release 9 |
| IEANTASM | OS/390 Release 10 |
| | z/OS V1R2 |
| | z/OS Release 3 |
| IEANUCMP | z/OS Release 2 |
| IEAVM101 | z/OS Release 1 |
| | z/OS Release 3 |
| IEDB (IOSDIEDB) | OS/390 Release 7 |
| | OS/390 Release 10 |
| IEFCNPRM | OS/390 Release 7 |
| IEFZDDWA | OS/390 Release 5 |
| IEEZB834 | OS/390 Release 10 |
| IEFDOKEY | OS/390 Release 5 |
| IEFZDDWA | OS/390 Release 10 |
| IEFZB4D2 | OS/390 Release 10 |
| IEFZB4F7 | OS/390 Release 10 |
| IEZVD200 | z/OS Release 1 |
| IEZVG200 | z/OS Release 1 |
| IFAUCCC | OS/390 Release 9 |
| IFAUMCC | OS/390 Release 9 |
| IFAUPRM | OS/390 Release 5 |
| | OS/390 Release 8 |
| IFBLOGLB | OS/390 Release 10 |
| IGVDGNB | OS/390 Release 8 |

*Table A-10. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)*

| Control Block (Mapping Macro) | Release |
|---|---|
| IGVVSMWK | OS/390 Release 9 |
| | OS/390 Release 10 |
| IHACDE | z/OS Release 2 |
| IHACDR | OS/390 Release 5 |
| IHACLTE | z/OS Release 2 |
| | z/OS Release 3 |
| IHADDR | z/OS Release 2 |
| | z/OS Release 3 |
| IHADWHDR | OS/390 Release 8 |
| IHAIPA | OS/390 Release 10 |
| | z/OS Release 1 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| IHALPDE | z/OS Release 2 |
| | z/OS Release 3 |
| IHAOUXB | z/OS Release 2 |
| IHAPRD | OS/390 Release 6 |
| | OS/390 Release 10 |
| | z/OS Release 2 |
| IHASDEPL | OS/390 Release 10 |
| IHARBUP | z/OS Release 1 |
| IHASDEXI | OS/390 Release 7 |
| | OS/390 Release 10 |
| IHASAVER | z/OS Release 2 |
| | z/OS Release 3 |
| IHASDMSE | OS/390 Release 7 |
| IHASDRMT | OS/390 Release 7 |
| IHASVTX | OS/390 Release 7 |
| | OS/390 Release 8 |
| | OS/390 Release 10 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| IHATDUMP | OS/390 Release 7 |
| IHAWEB | OS/390 Release 8 |
| | OS/390 Release 9 |
| | OS/390 Release 10 |
| IHAWEE | OS/390 Release 9 |
| IHSA (IHAIHSA) | OS/390 Release 6 |
| | OS/390 Release 10 |

*Table A-10. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)*

| Control Block (Mapping Macro) | Release |
|---|---|
| IKJTAIE | OS/390 Release 10 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| IMDMEDIT (IMDMEDIT) | OS/390 Release 8 |
| | OS/390 Release 10 |
| IOBE (IOSDIOBE) | OS/390 Release 7 |
| | OS/390 Release 8 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| IOCOM (IECDIOCM) | OS/390 Release 7 |
| | OS/390 Release 8 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| IOQ (IECDIOQ) | OS/390 Release 6 |
| | OS/390 Release 7 |
| | OS/390 Release 10 |
| IORB (ILRIORB) | OS/390 Release 10 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| IHASAVER | z/OS Release 2 |
| IOSB (IECDIOSB) | OS/390 Release 5 |
| | OS/390 Release 7 |
| | OS/390 Release 8 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| | z/OS Release 3 |
| IOSDDACH | OS/390 Release 7 |
| | OS/390 Release 9 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| IOSDDEVI | OS/390 Release 7 |
| | z/OS Release 1 |
| IOSDFEAT | OS/390 Release 7 |
| IOSDMAP | OS/390 Release 10 |
| IOSDPATH | OS/390 Release 8 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| | z/OS Release 3 |
| IOSDPAVA | OS/390 Release 10 |
| | z/OS Release 1 |

*Table A-10. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)*

| Control Block (Mapping Macro) | Release |
|---|---|
| IPWA (IOSDIPWA) | z/OS Release 2 |
| IRACPMB | OS/390 Release 7 |
| | OS/390 Release 8 |
| | z/OS Release 2 |
| IRAOUCBX | OS/390 Release 10 |
| | z/OS Release 1 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| IRAENF55 | OS/390 Release 10 |
| IRAEVPL | z/OS Release 2 |
| | z/OS Release 3 |
| IRARASC | z/OS Release 1 |
| IRARASD | OS/390 Release 5 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| | z/OS Release 2 |
| IRASRMST | z/OS Release 2 |
| | z/OS Release 3 |
| IVT (IHAIVT) | OS/390 Release 8 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| IWMECD | z/OS Release 1 |
| IWMPB | OS/390 Release 7 |
| | OS/390 Release 9 |
| IWMRENF2 | z/OS Release 2 |
| | z/OS Release 3 |
| IWMSVAEA | OS/390 Release 6 |
| | OS/390 Release 7 |
| | z/OS Release 1 |
| IWMSVDCR | OS/390 Release 6 |
| | OS/390 Release 7 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| IWMSVDEF | OS/390 Release 6 |
| | OS/390 Release 7 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| IWMSVNPA | OS/390 Release 6 |
| | OS/390 Release 7 |
| | OS/390 Release 10 |

*Table A-10. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)*

| Control Block (Mapping Macro) | Release |
|---|---|
| IWMSVPOL | OS/390 Release 6 |
| | OS/390 Release 7 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| IWMSVPSE | OS/390 Release 6 |
| | OS/390 Release 7 |
| IWMSVSEA | OS/390 Release 6 |
| | OS/390 Release 7 |
| | z/OS Release 1 |
| IWMWRCAA | OS/390 Release 7 |
| | OS/390 Release 9 |
| | z/OS Release 3 |
| IWMWRQAA | OS/390 Release 9 |
| | z/OS Release 1 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| IWMYCON | OS/390 Release 5 |
| | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 9 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| IXCYARM | OS/390 Release 8 |
| | OS/390 Release 9 |
| IXCYERE | OS/390 Release 9 |
| IXCYGEPL | z/OS Release 3 |
| IXCYMNPL | OS/390 Release 8 |
| IXCYMQAA | OS/390 Release 8 |
| IXCYQUAA | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 9 |
| | OS/390 Release 10 |
| IXGANSAA | OS/390 Release 10 |
| IXGCON | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 10 |
| | z/OS Release 3 |
| IXGENF | z/OS Release 3 |

*Table A-10. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)*

| Control Block (Mapping Macro) | Release |
|---|---|
| IXGSXCMP | z/OS Release 2 |
| IXGSXTXT | z/OS Release 2 |
| IXLYAMDA | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 9 |
| | z/OS Release 1 |
| | z/OS Release 3 |
| IXLYCAA | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 10 |
| IXLYCANB | OS/390 Release 6 |
| IXLYCCIH | OS/390 Release 6 |
| IXLYCOMP | OS/390 Release 6 |
| | OS/390 Release 8 |
| IXLYCON | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 9 |
| IXLYCONA | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 9 |
| | OS/390 Release 10 |
| | z/OS Release 3 |
| IXLYCSPA | OS/390 Release 9 |
| IXLYDCAC | OS/390 Release 6 |
| | OS/390 Release 8 |
| IXLYDCCC | OS/390 Release 8 |
| IXLYDDIB | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 9 |
| IXLYDEIB | OS/390 Release 6 |
| IXLYDEQC | OS/390 Release 9 |
| IXLYDLC | OS/390 Release 8 |
| | OS/390 Release 9 |
| IXLYDLIC | OS/390 Release 8 |
| | OS/390 Release 9 |
| IXLYDSCC | OS/390 Release 8 |
| IXLYEEPL | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 9 |
| IXLYEMC | OS/390 Release 9 |

*Table A-10. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)*

| Control Block (Mapping Macro) | Release |
|---|---|
| IXLYLAA | OS/390 Release 8 |
| | OS/390 Release 9 |
| | OS/390 Release 10 |
| IXLYNEPL | OS/390 Release 10 |
| IXLYLMI | OS/390 Release 9 |
| IXLYMSRI | OS/390 Release 9 |
| IXLZSTRB | OS/390 Release 6 |
| | OS/390 Release 8 |
| JCT (IEFAJCTB) | OS/390 Release 10 |
| JCTX (IEFJCTX) | OS/390 Release 6 |
| JFCB (IEFJFCBN) | OS/390 Release 5 |
| | OS/390 Release 10 |
| JFCBX (IEFJFCBX) | OS/390 Release 5 |
| JMR (IEFJMR) | OS/390 Release 5 |
| JSAB (IAZJSAB) | OS/390 Release 5 |
| | OS/390 Release 10 |
| JSCB (IEZJSCB) | OS/390 Release 6 |
| | OS/390 Release 10 |
| LCCA (IHALCCA) | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 10 |
| LDA (IHALDA) | OS/390 Release 10 |
| LGE (ILRLGE) | OS/390 Release 10 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| LGVT (ILRLGVT) | OS/390 Release 10 |
| LLP2 (IHALLP2) | OS/390 Release 7 |
| | OS/390 Release 10 |
| LRB (IHALRB) | OS/390 Release 6 |
| | OS/390 Release 10 |
| MCHEAD | OS/390 Release 6 |
| MCT (IRAMCT) | OS/390 Release 10 |
| MQE (IHAMQE) | OS/390 Release10 |
| NUCMP (IEANUCMP) | OS/390 Release 10 |
| NVT (IHANVT) | OS/390 Release 10 |
| | z/OS Release 1 |
| OPSPL (ILROPSPL) | OS/390 Release 10 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| ORB (IHAORB) | z/OS Release 1 |

*Table A-10. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)*

| Control Block (Mapping Macro) | Release |
|---|---|
| ORE (IHAORE) | OS/390 Release 8 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| OUCB (IRAOUCB) | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 9 |
| | OS/390 Release 10 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| OUSB (IHASOUSB) | z/OS Release 3 |
| PART (ILRPART) | OS/390 Release 10 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| PAT (ILRPAT) | OS/390 Release 10 |
| PCB (IARPCB) | OS/390 Release 6 |
| | OS/390 Release 10 |
| PCCA (IHAPCCA) | OS/390 Release 10 |
| PCCAVT (IHAPCCAT) | OS/390 Release 10 |
| PCCW (ILRPCCW) | OS/390 Release 10 |
| PEL (ISGPEL) | z/OS Release 3 |
| PFTE (IARPFTE) | OS/390 Release 6 |
| PPD (IGVPPD) | OS/390 Release 10 |
| PQCB (ISGPQCB) | OS/390 Release 10 |
| PRMESTAE (IEFZB447) | OS/390 Release 6 |
| | OS/390 Release 10 |
| | z/OS Release 3 |
| PSA (IHAPSA) | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| PXT (IGVPXT) | OS/390 Release 10 |
| QEL (ISGQEL) | OS/390 Release 7 |
| | OS/390 Release 10 |
| QSRCD (ILRQSRCD) | OS/390 Release 10 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| QWA (ISGQWA) | z/OS Release 2 |
| | z/OS Release 3 |

*Table A-10. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)*

| Control Block (Mapping Macro) | Release |
|---|---|
| QWB (ISGQWB) | z/OS Release 2 |
| | z/OS Release 3 |
| QXB (ISGQXB) | OS/390 Release 7 |
| | z/OS Release 3 |
| RAB (IARRAB) | OS/390 Release 10 |
| RAX (IARRAX) | OS/390 Release 10 |
| RCB (IHARCB) | OS/390 Release 10 |
| RCE (IARRCE) | OS/390 Release 6 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| RCT (IRARCT) | OS/390 Release 10 |
| | z/OS Release 1 |
| | z/OS Release 2 |
| RMCT (IRARMCT) | z/OS Release 2 |
| RD (IHARD) | OS/390 Release 10 |
| RDCM (IEERDCM) | z/OS Release 1 |
| RGR (IHARGR) | OS/390 Release 10 |
| RIT (IARRIT) | OS/390 Release 6 |
| | OS/390 Release 10 |
| RMCT (IRARMCT) | OS/390 Release 10 |
| RSRRB (IHARSRRB) | OS/390 Release 10 |
| RTCT (IHARTCT) | OS/390 Release 7 |
| RTM2WA (IHARTM2WA) | OS/390 Release 6 |
| | OS/390 Release 10 |
| RTSD (IHARTSD) | OS/390 Release 6 |
| | OS/390 Release 7 |
| | OS/390 Release 8 |
| | OS/390 Release 10 |
| RT1W (IHART1W) | OS/390 Release 10 |
| SART (ILRSART) | OS/390 Release 10 |
| SAT (ILRSAT) | OS/390 Release 10 |
| SCA (IHASCA) | OS/390 Release 8 |
| | OS/390 Release 10 |
| SCANPARM (IEZVQ100) | OS/390 Release 7 |
| SCB (IHASCB) | OS/390 Release 10 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| SCD (IOSDSCD) | z/OS Release 1 |
| SCFS (IHASCFS) | OS/390 Release 10 |

*Table A-10. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)*

| Control Block (Mapping Macro) | Release |
|---|---|
| SCCB (IHASCCB) | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| SCHIB (IHASCHIB) | OS/390 Release 8 |
| SCVA (IHASCVA) | OS/390 Release 10 |
| SCWA (IHASCWA) | OS/390 Release 6 |
| SDMPX (IHASDMPX) | OS/390 Release 7 |
| SDRSB (IHASDRSB) | OS/390 Release 10 |
| SDUMP (IHASDUMP) | OS/390 Release 7 |
| SDWA (IHASDWA) | OS/390 Release 6 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| SDWORK (IHASDWORK) | OS/390 Release 6 |
| SHDR (IHASHDR) | OS/390 Release 6 |
| | OS/390 Release 10 |
| SIOT (IEFASIOT) | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 10 |
| SJKEY (IEFSJKEY) | OS/390 Release 10 |
| SJRC (IEFSJRC) | OS/390 Release 5 |
| SLPL (IHASLPL) | OS/390 Release 10 |
| SLWA (IHASLWA) | OS/390 Release 6 |
| | OS/390 Release 10 |
| SMDLR (IHASMDLR) | OS/390 Release 10 |
| SMCA (IEESMCA) | OS/390 Release 8 |
| SPQA (IHASPQA) | OS/390 Release 10 |
| SPQE (IHASPQE) | OS/390 Release 10 |
| SPT (IHASPT) | OS/390 Release 10 |
| SPTRC (IHASPTRC) | OS/390 Release 8 |
| SPTT (IHASPTT) | OS/390 Release 10 |
| SRPL (IEEZB814) | OS/390 Release 7 |
| SSAL (IEFSSAL) | OS/390 Release 5 |
| SSJS (IEFSSJS) | OS/390 Release 10 |
| SSRB (IHASSRB) | OS/390 Release 10 |
| SSRB (IHASSRB) | OS/390 Release 6 |
| SSST (IAZSSST) | OS/390 Release 5 |
| | OS/390 Release 8 |

*Table A-10. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)*

| Control Block (Mapping Macro) | Release |
|---|---|
| SSS2 (IAZSSS2) | OS/390 Release 5 |
| | OS/390 Release 6 |
| | OS/390 Release 7 |
| | OS/390 Release 8 |
| | OS/390 Release 10 |
| SSTA (IEFSSTA) | OS/390 Release 5 |
| | OS/390 Release 10 |
| SSUS (IEFSSUS) | OS/390 Release 5 |
| STCB (IHASTCB) | OS/390 Release 6 |
| | OS/390 Release 7 |
| | OS/390 Release 8 |
| | OS/390 Release 9 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| SVC (IHASVC) | OS/390 Release 10 |
| SVT (IHASVT) | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 10 |
| S99PARMS (IEFZB4D0) | OS/390 Release 10 |
| TBVT (IHATBVT) | OS/390 Release 10 |
| TCB (IKJTCB) | OS/390 Release 8 |
| | OS/390 Release 9 |
| | z/OS Release 3 |
| TCCW (IECDTCCW) | OS/390 Release 10 |
| TDCM (IEETDCM) | z/OS Release 1 |
| | z/OS Release 3 |
| TFWA (IHATFWA) | OS/390 Release 10 |
| TPC (IEAVVTPC) | OS/390 Release 6 |
| TCT (IEFTCT) | OS/390 Release 9 |
| | OS/390 Release 10 |
| | z/OS Release 3 |
| TICB (IOSDTICB) | OS/390 Release 6 |
| | z/OS Release 1 |
| TOB (IHATOB) | OS/390 Release 9 |
| | OS/390 Release 10 |
| TOT (IHATOT) | OS/390 Release 10 |
| TROB (IHATROB) | OS/390 Release 10 |
| TRVT (IHATRVT) | OS/390 Release 10 |

*Table A-10. Changed Control Blocks — Part 1 (Control Blocks Changed Starting with OS/390 Release 5) (continued)*

| Control Block (Mapping Macro) | Release |
|---|---|
| TTE (IHATTE) | OS/390 Release 10 |
| TPC (IEAVVTPC) | OS/390 Release 8 |
| UCB (IEFUCBOB) | OS/390 Release 7 |
| UCM (IEECUCM) | OS/390 Release 5 |
| | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 10 |
| | z/OS Release 1 |
| | z/OS Release 3 |
| UXPARMB (IEFZB479) | OS/390 Release 8 |
| UXPARMC (IEFZB480) | OS/390 Release 8 |
| UXPARMD (IEFZB481) | OS/390 Release 5 |
| | OS/390 Release 8 |
| VCB (IHAVCB) | OS/390 Release 10 |
| WQE (IHAWQE) | OS/390 Release 6 |
| | OS/390 Release 8 |
| | OS/390 Release 10 |
| WMST (IRAWMST) | OS/390 Release 7 |
| | OS/390 Release 9 |
| WSAVT (IHAWSAVT) | OS/390 Release 6 |
| | OS/390 Release 10 |
| | z/OS Release 2 |
| | z/OS Release 3 |
| WSAVTC (IHAWSAVT) | OS/390 Release 5 |
| | OS/390 Release 8 |
| | OS/390 Release 9 |
| XMD (IHAXMD) | z/OS Release 2 |
| | z/OS Release 3 |
| XQSRD (ILRXQSRD) | OS/390 Release 10 |
| XSA (IHAXSA) | z/OS Release 1 |
| XSB (IEEXSB) | OS/390 Release 10 |
| XTLST (IHAXTLST) | OS/390 Release 9 |
| | OS/390 Release 10 |

Table A-11 and Table A-12 identify control blocks whose mapping macros have moved from the PVTMACS library to the AMODGEN library. These control blocks do not contain programming interface information.

*Table A-11. Changed Control Blocks — Part 2 (Mapping Macros Moved in OS/390 Release 6)*

| | | | | |
|---|---|---|---|---|
| IEAMMB | IEEZB809 | IFDIOUSE | IHASPTRC | IRAEPAT |
| IEAMQE | IEEZB810 | IFDOECB | IHASSRB | IRAEPDT |
| IEAPMNIP | IEEZB811 | IFDPF1 | IHASTKE | IRAEPST |
| IEARCTD | IEEZB812 | IGFDDPRM | IHASYMP | IRAESCT |
| IEAVM100 | IEEZB813 | IGFPWA | IHASYSM | IRAFIPEP |
| IEAVM101 | IEEZB814 | IGFRWA | IHATBVT | IRAICSE |
| IEAVM102 | IEEZB816 | IGFTHB | IHATDUMP | IRAICSP |
| IEAVM108 | IEEZB818 | IGVPXT | IHATMTRC | IRAICSS |
| IEAVM109 | IEEZB823 | IHAABDA | IHATOB | IRAICT |
| IEAVM110 | IEFCIFP | IHACLTE | IHATOT | IRALSCT |
| IEAVN101 | IEFJCLS | IHADCQ | IHATRCW | IRAMCT |
| IEAVN102 | IEFPTRS | IHAESPI | IHATRFM | IRAOLST |
| IECDBEB | IEFSJDFP | IHAESTA | IHATRPC | IRARCT |
| IECDEPCB | IEFSJJDP | IHAETE | IHAVCB | IRARMCA |
| IECDEXFR | IEFVJSEL | IHAHDR | IHAVSMA | IRARMEX |
| IECDFIX | IEFVJSOL | IHAIVT | IHAXTABL | IRARMPT |
| IECDIDAL | IEFVJSWA | IHALCCAT | IHAYSTAK | IRARMQH |
| IECDIOQ | IEFVMAWA | IHALLCB | ILRASMVT | IRARQSRV |
| IECDPBLK | IEFVMCWA | IHALLPM | ILRIORB | IRARRPA |
| IECDRRQ | IEFVMDWA | IHALLPP | IOSDCHRB | IRARSPL |
| IECDSMGC | IEFVMEWA | IHALTE | IOSDIOPT | IRASWCT |
| IECDSMGR | IEFVMFWA | IHAMSYS | IOSDIOWA | IRATRQEL |
| IECDTCCW | IEFVMIWA | IHANSQA | IOSDIPID | IRAWMST |
| IECDVOID | IEFVMJWA | IHAPAWA | IOSDISDT | IRAWPGDT |
| IECDXDBA | IEFVMMWA | IHAQDB | IOSDLXCH | IRAWPODT |
| IECDXFRR | IEFVORWA | IHAQIO | IOSDLXCP | ISGDPL |
| IEECSUB | IEFZB429 | IHARCT | IOSDLXC2 | ISGGVT |
| IEECVMAP | IEFZB435 | IHARRRA | IOSDMIHA | ISGGVTX |
| IEELCA | IEFZB507 | IHARTCT | IOSDMIHB | ISGPEXB |
| IEEMEXSN | IEFZB622 | IHARTSD | IOSDMLBK | ISGQCB |
| IEEPARSE | IEFZB630 | IHART1W | IOSDPTUD | ISGQEL |
| IEERDCM | IEFZB9RD | IHASCFS | IOSDQMGC | ISGQFPL |
| IEESDT | IEZIEL | IHASCRA | IOSDSFRR | ISGQHT |
| IEETDCM | IEZMPL | IHASCWA | IOSDSLHL | ISGQWA |
| IEEUCDX | IEZVC100 | IHASHDR | IOSDSMGC | ISGQWB |
| IEEVC101 | IEZVQ100 | IHASLA | IOSDSMGR | ISGQXB |
| IEEVC102 | IFBLOGBL | IHASLFP | IOSDSRIO | ISGSAHT |
| IEEVC103 | IFBLOGCA | IHASLPL | IOSDURSV | ISGSMPL |
| IEEZB800 | IFBSVCDS | IHASLWA | IOSDURVL | ITRSRVID |
| IEEZB801 | IFDEVTAB | IHASMEW | IRACCT | PCAX |
| IEEZB808 | IFDIEDAT | IHASNP | IRADMDT | |

*Table A-12. Changed Control Blocks — Part 3 (Mapping Macros Moved in OS/390 Release 7)*

| |
|---|
| MMB (IEAMMB) |
| MSGS (IEEZB833) |
| MSRASDCA |
| PFK (IEEVC103) |
| QWA (ISGQWA) |
| QXB (ISGQXB) |
| RDCM (IEERDCM) |
| RRPA (IRARRPA) |
| TDCM (IEETDCM) |

## A Method for Finding Changes to MVS Control Blocks

When you order z/OS, IBM supplies data sets containing the mapping macros for many control blocks. After SMP/E RECEIVE processing, the new mapping macros are in the SMPTLIB data sets. After SMP/E APPLY processing, the new mapping macros are in the target libraries.

To find mapping macros for MVS control blocks, look in the MODGEN, MACLIB, and ATSOMAC libraries. Mapping macros for JES2, VTAM, and other elements and products may be in the same libraries, or in other libraries specific to the element or product.

You might want to use ISPF's SuperCE (Compare data sets Extended) dialog, which has the following advantages:

- You can concatenate several data sets together for both the old and the new data.
- You can specify a set of SELECT statements that name the mapping macros you are interested in. Make sure to specify the name of the mapping macro. This is not always the same as the control block name. For example, to check for changes to the PSA, compare old and new copies of the IHAPSA mapping macro.

This method works better if the old data has the same level of service as the system from which you are migrating.

## Summary of Changes to IPCS Subcommands

Table A-13 identifies IPCS subcommands that are new, changed, or deleted in z/OS. For a complete description of each command, see *z/OS MVS IPCS Commands*. For information about how to handle incompatibilities, see Chapter 6, "Migration Actions: Problem Determination and Diagnosis".

*Table A-13. IPCS Subcommands Changed Starting with OS/390 Release 5*

| Command | Release | Description of Changes |
|---|---|---|
| Many IPCS subcommands | z/OS Release 2 | **Additional support:** Allows users to access hierarchical file system (HFS) paths through the new PATH keyword and the existing FILE keyword. |
| COUPLE | OS/390 Release 8 | **Additional information:** New information about system-managed processing is added to the CFRM report. |
| CTRACE | OS/390 Release 7 | **Changed report:** SYSOPS component trace has added a new OPTIONS keyword, 'MSG=msgid', that can be specified with WTO, MSGDLVRY or MESSAGES to trace the processing of a specific message. |
| | OS/390 Release 9 | **New parameter:** CTRACE COMP(SYSTTRC) is used to view transaction trace records. |
| EVALDUMP | z/OS V1R2 | **Additional support:** Allow processing of a directory other than the IPCS user's session directory. |
| EVALSYM | z/OS V1R2 | **Additional support:** Allow processing of a directory other than the IPCS user's session directory. |
| IPLDATA | z/OS V1R3 | **New subcommand:** New IPLDATA subcommand allows the generation of reports about the IPL process and options. |
| LISTDUMP | z/OS V1R2 | **Additional support:** Allow processing of a directory other than the IPCS user's session directory. |
| OPCODE | OS/390 Release 10 | **New subcommand and primary command:** New OPCODE subcommand and primary command displays the mnemonic operation code associated with an instruction. |
| PATCH | OS/390 Release 8 | **New subcommand:** New PATCH subcommand repairs data residing in a dump data set or manages the list of patches in effect for a dump. |
| RSMDATA | OS/390 Release 6 | **New filter:**<br>• ALLOCSM is allowed as an object state in the STATUS parameter of the RSMDATA EXPFRAME subcommand.<br>• ALLOCSM is allowed as an object state in the STATUS parameter of the RSMDATA REALFRAME subcommand.<br>• SMEG is allowed as an object state in the STATUS parameter of the RSMDATA VIRTPAGE subcommand. |
| RUNARRAY | OS/390 Release 7 | **New subcommand:** New RUNARRAY subcommand allows the elements of an array to be processed in ascending or descending order by subscript. |
| RUNCHAIN | z/OS V1R3 | **New parameter:** New SORTBY parameter on the RUNCHAIN subcommand lets you control the order of processing for chain elements. |
| RUNCPOOL | OS/390 Release 7 | **New subcommand:** New RUNCPOOL subcommand allows the cells in storage allocated and managed by the CPOOL macro to be processed. |

*Table A-13. IPCS Subcommands Changed Starting with OS/390 Release 5 (continued)*

| Command | Release | Description of Changes |
|---|---|---|
| STRDATA | OS/390 Release 8 | **Additional information:** New cache structure information is added to report the nameclassmask in use for a dumped structure.<br><br>New information about system-managed processing is added to various STRDATA reports. |
| VERBEXIT IEFIVAWT | z/OS V1R3 | **New verb exit routine:** New VERBEXIT IEFIVAWT subcommand allows you to format a list of pending XCF work for tape allocation. |
| VERBEXIT IEFIVIGD | z/OS V1R3 | **New verb exit routine:** New VERBEXIT IEFIVIGD subcommand allows you to format the global tape devices |
| VERBEXIT VSMDATA | z/OS V1R3 | **New filters:** The OWNCOMM parameter now provides greater selectivity by allowing you to select the new CSA or SQA options. |
| WHERE | z/OS V1R2 | **Additional information:** Provides information about addresses that fall in private or extended private area storage. |
| WLMDATA | OS/390 Release 9 | **New report:** There is a new report option: CFMANAGER. |
| | OS/390 Release 8 | **Additional information:** The following new information is added to the CONNECTION report.<br>• New cache structure information to show the nameclassmask in use for a dumped structure.<br>• New information to report on response monitoring that was in progress when the dump was taken.<br><br>New information about system-managed processing is added to the CONNECTION, FACILITY, CACHE, and LIST reports. |

# Appendix B. ESCON CTC Considerations

OS/390 supports both the ESCON and the 3088 channel-to-channel-adapter (CTCA) architecture.

## Differences Between ESCON and 3088 CTCs

ESCON and ESCON basic mode CTCs differ from 3088 CTCs in the following respects:

- Operations
- Definition
- Unit control block (UCB)
- Execute Channel Program (EXCP) instruction use

## Operational Differences for ESCON CTCs

Operationally, ESCON CTCs differ from 3088 CTCs in how channel initialization is done, in the support of reset event processing, in the addition of a sense byte, and in the response to a Set Basic Mode command.

- An important difference between an ESCON CTC and a 3088 CTC is that the ESCON CTC is physically incorporated into the channel of the processor that is defined to contain the ESCON CTC CHPID. Logically, the channel operates as if it were separate like a 3088, except for one significant case: when the system containing the ESCON CTC is IPLed (system reset), the channel path is initialized and light on the link from the channel is dropped. This action causes all the logical paths to the ESCON CTC to be removed and a system reset to occur for each path. Any operations that were in progress by other systems, including operations that are disconnected, terminate with a device status that indicates interface control check (IFCC). The link continues to appear not-operational to all attached systems until the channel completes initialization.

  A 3088 CTC appears *not-ready* when the system on the other side IPLs. The operating system typically queues the I/O operation again and waits for the CTC to become ready before restarting the operation. However, with an ESCON CTC, the re-IPL causes the CTC temporarily to appear as *not-operational*. Not-operational conditions in the middle of a CCW chain appear as interface control checks (IFCCs) to the operating system. Not-operational conditions, whether encountered immediately or during an Error Recovery Program (ERP) retry of the IFCC, are treated as a permanent error if the application requests posting on not-operational conditions and allows the IBM ERP to get control. If the application does not request posting on *not-operational* conditions, then the operating system queues the I/O operation until the CTC becomes operational.
- All ESCON devices are required to support the reset event architecture to guarantee that the operating system is notified whenever a potential reconfiguration action occurs (such as re-plugging a cable or changing a connection in the ESCON director). Additionally, all ESCON devices are required to support the self-description architecture so that the operating system can perform a device verification. For more information, see *ESA/390 Common I/O-Device Commands*, SA22-7204.
- ESCON CTCs provide an additional sense byte. This second sense byte, in bit 0, indicates whether or not a reset event caused the unit check.
- To preserve compatibility, an ESCON CTC accepts the Set Extended Mode command. (For more information, see *ESA/390 ESCON Channel-to-Channel Adapter*, SA22-7203.) Thus, existing programs that set extended mode can run

without error on an ESCON CTC. However, the ESCON CTC rejects the Set Basic Mode command with unit check status and sense data indicating a command reject.

## Operational Differences for ESCON Basic Mode CTCs

As with the ESCON CTC, an ESCON basic mode CTC is physically incorporated into the channel of the processor that is defined to contain the ESCON basic mode CTC CHPID. Logically, the channel operates as if it were separate like a 3088, except for one significant case: when the system containing the ESCON basic mode CTC is IPLed (system reset), the channel path is initialized and light on the link from the channel is dropped. This action causes all the logical paths to the ESCON basic mode CTC to be removed and a system reset to occur for each path. Any operations that were in progress by other systems, including operations that are disconnected, terminate with a device status that indicates interface control check (IFCC). The link continues to appear not-operational to all attached systems until the channel completes initialization.

## Definition Differences

The three types of CTCs are defined as follows:

- Define a 3088 CTC by specifying the model as CTC
- Define an ESCON CTC by specifying the model as SCTC
- Define an ESCON basic mode CTC by specifying the model as BCTC

For information on defining devices, see *z/OS HCD User's Guide*.

## UCB Differences

The UCBTYP field of the unit control block (UCB) contains four bytes of device unique data:

- The fourth byte of UCBTYP contains X'00' for a 3088 CTC.
- The fourth byte of UCBTYP contains X'01' for an ESCON CTC.
- The fourth byte of UCBTYP contains X'02' for an ESCON basic mode CTC.

## Migration Concerns for EXCP Users

There are certain points that EXCP users should keep in mind when migrating to an ESCON CTC or ESCON basic mode CTC.

### ESCON CTCs and ESCON Basic Mode CTCs

The following considerations apply to both ESCON CTCs and ESCON basic mode CTCs:

- Interface control check (IFCC)

  When the system containing the ESCON CTC CHPID is IPLed, active operations in all logically attached systems (including those operations that are disconnected) terminate with an IFCC.

- Errors between primary and secondary status

  When applications require that certain operations complete in a sequence without any intervening errors, the ESCON CTC operational characteristics might lead to unexpected results. For example, assume that an application issues a command, such as CONTROL or PREPARE. The device splits channel end and device end status for the command. The operating system posts the operation complete (enters the channel end appendage for EXCP users) upon acceptance of clean primary status (channel end). If the application starts a subsequent command at that time, it may encounter a not-operational condition because the system

containing the CTC CHPID is being IPLed. If the application is not requesting posting on not-operational conditions, then the I/O is queued until the CTC becomes operational. When the CTC becomes operational, the command is re-driven by the operating system, but the two sides may be out of synchronization.

If the link is operational, but secondary status has not been received yet (no device end), the operating system starts the operation at the subchannel, but the channel subsystem holds it until clean secondary status comes in. If secondary status does come in, then the channel subsystem starts the operation immediately without an additional I/O interrupt to the system.

If secondary status does not come in clean, for example, an interface control check (IFCC) may come in as secondary status if the remote system was IPLed, then the operating system automatically restarts the request after it receives the secondary status. However, this I/O operation might not occur in the correct sequence because the first operation really did not complete. The restarted request could execute or it could encounter a not-operational condition and remain queued until the CTC becomes operational.

- Not-Operational Conditions

  The EXCP user can choose whether or not to be posted when a not-operational condition is encountered by setting the IOBCC3WE flag:

  – If the flag is not set, the operating system leaves the I/O operation queued for the device, waiting for manual intervention to make the CTC operational. If the CTC becomes ready, the operating system re-drives the I/O.

  – If the flag is set and the IBM-provided CTC error recovery program (ERP) is used, the I/O error is considered permanent, and the I/O request is posted with an error.

  **Note:** EXCP users can optionally bypass the IBM-provided ERP by setting the DCBIFIOE flag on.

## ESCON CTCs

The following considerations apply only to ESCON CTCs, and do not apply to ESCON basic mode CTCs:

- Reset Events

  The first I/O operation following a system reset receives a unit check with sense data that indicates a reset event. The IBM-supplied CTC ERP automatically retries any I/O operations that receive a reset event unit check.

  **Note:** EXCP users can optionally bypass the IBM-supplied ERP, but if so, they are responsible for managing the retries.

- Set Extended Mode/Set Basic Mode

  EXCP users that attempt to set the CTC back to basic mode when deallocating it receive an error.

# Appendix C. Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully. The major accessibility features in z/OS enable users to:

- Use assistive technologies such as screen-readers and screen magnifier software
- Operate specific or equivalent features using only the keyboard
- Customize display attributes such as color, contrast, and font size

## Using assistive technologies

Assistive technology products, such as screen-readers, function with the user interfaces found in z/OS. Consult the assistive technology documentation for specific information when using it to access z/OS interfaces.

## Keyboard navigation of the user interface

Users can access z/OS user interfaces using TSO/E or ISPF. Refer to *z/OS TSO/E Primer*, *z/OS TSO/E User's Guide*, and *z/OS ISPF User's Guide Volume I* for information about accessing TSO/E and ISPF interfaces. These guides describe how to use TSO/E and ISPF, including the use of keyboard shortcuts or function keys (PF keys). Each guide includes the default settings for the PF keys and explains how to modify their functions.

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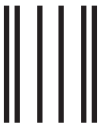

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