OS/390

MVS Conversion Notebook

OS/390

IBM

MVS Conversion Notebook

Ninth Edition, September 1999

This is a major revision of GC28-1747-07.

This edition applies to Version 2 Release 8 of OS/390 (5647-A01) and to all subsequent releases and modifications until otherwise indicated in new editions.

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Contents

Figures

About This Book

| This book provides information on migrating the MVS element from MVS/ESA SP
| 5.2.2 to the current release of OS/390. Specifically, this book:

- Gives technical descriptions of the enhancements provided by the MVS
  element of OS/390.

- Describes MVS-related migration actions that customers must take when
  migrating from MVS/ESA SP 5.2.2 to OS/390.

| For WLM-specific migration actions, see *OS/390 MVS Planning: Workload
| Management*.

Who Should Use This Book

This book is intended for experienced system programmers responsible for
converting from MVS/ESA SP 5.2.2 to the current OS/390 release.

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.

This book works best when considered as a companion book to other books:

- Read *OS/390 Planning for Installation* to develop a plan for installing this
  release of OS/390.

  Note: *OS/390 Planning for Installation* contains pointers to information on
  migration actions for other OS/390 elements.

- Use the documentation that is shipped with your order to perform the actual
  installation of OS/390.

- Use other books in the OS/390 library (such as *OS/390 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 OS/390:

- Chapter 1, "OS/390 Summary Tables" on page 1-1 summarizes the new,
  changed, and deleted interfaces. The chapter provides charts for changes to
  SYS1.PARMLIB members, system commands, macros, callable services for
  high-level languages, installation exits, and control blocks.

- 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 4, "Migration Actions: Customization" on page 4-1 describes the changes that your installation might need to make to installation exits.
- 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.

Read the following if you are using ESCON CTCs:

- Appendix A, "ESCON CTC Considerations" on page A-1 describes differences between ESCON CTCs and 3088 CTCs.

Where to Find More Information

If you are migrating from MVS/ESA SP 5.2.2, the information in this book should be sufficient for you. If you are migrating from an MVS release earlier than SP 5.2.2, then you will need to be familiar with the conversion information in one or more of the following:

- *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

OS/390 home page

For more information about OS/390, come visit us at our home page:

`http://www.s390.ibm.com/os390`

If you are viewing this book using IBM BookManager BookServer, you can click on the Web address above to go to OS/390's home page.

Related Books for OS/390

Where necessary, this book references information in other books, using shortened versions of the book title. For complete titles, and order numbers of the books for all products that are part of OS/390, see *OS/390 Information Roadmap*, GC28-1727.

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

Summary of Changes

| The book contains information previously presented in GC28-1747-07, which
| supports OS/390 Version 2 Release 7.

| **New Information**

| - Information on migrating from OS/390 Release 7 to OS/390 Release 8.

| This book includes 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.

The book contains information previously presented in GC28-1747-06, which
supports OS/390 Version 2 Release 6.

New Information

- Information on migrating from OS/390 Release 6 to OS/390 Release 7.

Deleted Information

- Changes to macros and callable services that occurred in MVS/ESA SP 4.1,
  4.2, 4.2.2, and 4.3 have been removed from Figure 1-6 on page 1-17 and
  Figure 1-7 on page 1-48. This information has been removed because
  MVS/ESA SP Version 4 releases are no longer supported in a multisystem
  complex or sysplex.

This book includes 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.

The following changes appear only in the online version of this publication.

This revision reflects the deletion, addition, or changing of information to support
miscellaneous maintenance items.

The book contains information previously presented in GC28-1747-04, which supports OS/390 Version 2 Release 5.

New Information

- Information on migrating from OS/390 Release 5 to OS/390 Release 6.

Changed Information

- As part of the name change of OS/390 OpenEdition to OS/390 UNIX System Services, occurrences of OS/390 OpenEdition have been changed to OS/390 UNIX System Services or its abbreviated name, OS/390 UNIX. OpenEdition may continue to appear in messages, panel text, and other code with OS/390 UNIX System Services.

This book includes terminology, maintenance, and editorial changes.

Summary of Changes for GC28-1747-04
as Updated April, 1998
online only on IBM BookManager BookServer

The following changes appear only in the online version of this publication.

This revision restores topics that were published in the Release 4 edition, but inadvertently omitted from the Release 5 edition:

- "Dynamic LPA Services" on page 2-17
- "Standalone Dump Enhancements" on page 2-18

Summary of Changes
for GC28-1747-04
OS/390 Version 2 Release 5

The book contains information previously presented in GC28-1747-03, which supports OS/390 Version 2 Release 4.

New Information

- Information on migrating from OS/390 Release 4 to OS/390 Release 5.

This book includes terminology, maintenance, and editorial changes.

Summary of Changes
for GC28-1747-03
OS/390 Version 2 Release 4

The book contains information previously presented in GC28-1747-02, which supports OS/390 Version 2 Release 3.

New Information

- Information on migrating from OS/390 Release 3 to OS/390 Release 4.

This book includes terminology, maintenance, and editorial changes.

Summary of Changes for GC28-1747-02
as Updated June, 1997

online only for SK2T-6700–05

The following changes appear only in the online version of this publication.

This revision reflects the deletion, addition, or modification of information to support:

- APPC/MVS protected conversations.
- RRS/MVS
- Miscellaneous maintenance items.

This book includes terminology, maintenance, and editorial changes.

Summary of Changes
for GC28-1747-02
OS/390 Version 2 Release 3

The book contains information previously presented in GC28-1747-01, which supports OS/390 Version 2 Release 2.

New Information

- Information on migrating from OS/390 Release 2 to OS/390 Release 3.

This book includes terminology, maintenance, and editorial changes.

Summary of Changes
for GC28-1747-01
OS/390 Version 2 Release 2

This book contains information previously presented in GC28-1747-00, which supports OS/390 Version 2 Release 1.

This book is new for OS/390 Release 1. Its objective is to assist a system programmer in converting from MVS/ESA SP 5.2.2 to OS/390 Release 1.

Chapter 1. OS/390 Summary Tables

This chapter summarizes the new, changed, and deleted interfaces for OS/390. For macros and callable services, information for MVS/ESA SP V4 and MVS/ESA SP V5 is also included.

Note to the Reader

Information on new, changed and deleted messages is necessary to migrate automated operations. However, because this information is so voluminous, and is described in detail in the Summary of Changes sections of the System Messages books, this book does not describe changes to messages. Instead, see the following books:

- For changes to messages for multiple products, see *OS/390 Summary of Message Changes*

- *OS/390 MVS System Messages, Vol 1 (ABA-ASA)*

- *OS/390 MVS System Messages, Vol 2 (ASB-EZM)*

- *OS/390 MVS System Messages, Vol 3 (GDE-IEB)*

- *OS/390 MVS System Messages, Vol 4 (IEC-IFD)*

- *OS/390 MVS System Messages, Vol 5 (IGD-IZP)*

- *OS/390 MVS Dump Output Messages*

- *OS/390 MVS Routing and Descriptor Codes*

For information on changes to system completion codes and wait state codes, see *OS/390 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 *OS/390 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

Figure 1-1 identifies members of SYS1.PARMLIB that are new, changed, or deleted in OS/390. For a complete description of each member, see *OS/390 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 OS/390, 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.

Figure 1-1 (Page 1 of 4). Changed members of SYS1.PARMLIB in OS/390

Member	Release	Description of Changes
ADYSETxx	OS/390 Release 4	**Changed member:** This member now allows an installation to control the suppression of duplicate transaction dumps.
ALLOCxx	APAR OW08887; integrated into OS/390 Release 4	**New subparameter:** - The REDIRECTED_TAPE subparameter specifies the installation default as to how batch-allocated unopened DASD data sets that were redirected from TAPE should be treated.

Figure 1-1 (Page 2 of 4). Changed members of SYS1.PARMLIB in OS/390		
Member	**Release**	**Description of Changes**
APPCPMxx	OS/390 Release 3	**Changed member:** • The new GRNAME parameter for the LUADD statement specifies the generic resource name to be associated with a specific APPC/MVS LU. • The new NQN parameter for the LUADD statement specifies that the APPC/MVS LU is enabled to use a network-qualified partner LU name when first allocating an outbound conversation. The NONQN parameter, which is the default for the LUADD statement, allows APPC/MVS LUs to use only the network-LU-name portion of the name when allocating the conversation, as in OS/390 V1R2 and previous releases.
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.
BPXPRMxx	OS/390 Release 7	Changed member: Three new keyword parameters have been added: SYNCDEFAULT(t), VIRTUAL(max), FIXED(min)
CSVLLAxx	OS/390 Release 2	**Changed member:** A new parameter, the PARMSUFFIX statement, allows you to specify an additional CSVLLAxx member to be processed. The system processes this member completely when encountering this statement.
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.
CSVRTLxx	OS/390 Release 4	**New Member:** Defines the run-time library services (RTLS) configuration. It is read during IPL through the RTLS=xx parameter (which may be specified either in IEASYSxx or by the operator when replying to system parameters) or after IPL through the SET RTLS=xx command. You can use CSVRTLxx to specify the names of libraries to be managed, the names of modules to be managed, storage to be used to cache the libraries, and volume serials of libraries.
CTIXCF00	OS/390 Release 8	**Changed default member:** The default buffer size is changed from 72K to 1008K.
CTnGRSxx	OS/390 Release 2	**Changed member:** Four trace options CONTROL, REQUEST, MONITOR and SIGNAL have been extended to increase granularity and flexibility of tracing global resource serialization star events. A new option, FLOW, has been added to trace the flow of control from one entry point to another.
GRSCNFxx	OS/390 Release 7	**New option:** The Synchronous RESERVE option can be activated through the SYNCHRES keyword on the GRSDEF statement.
IEASLP00	OS/390 Release 4	**Changed member:** Maintenance.
	OS/390 Release 5	**Changed member:** Maintenance.

Figure 1-1 (Page 3 of 4). Changed members of SYS1.PARMLIB in OS/390		
Member	**Release**	**Description of Changes**
IEASYMxx	OS/390 Release 2	**Changed member:** Each system in a sysplex must have a unique SYSCLONE value.
IEASYSxx	OS/390 Release 2	**Changed member:** The GRS=STAR parameter has been added to specify that the system being initialized is to participate in a global resource serialization star complex.
	OS/390 Release 6	**Changed member:** The CON=xx parameter will allow for national ($,#,@) characters.
IEAVIPCS	OS/390 Release 4	**Changed member:** Maintenance. Also, added the RTLS=xx parameter. This parameter specifies the parmlib member, CSVRTLxx, from which the Runtime Library Service (RTLS) is configured.
IECIOSxx	OS/390 Release 6	**Changed member:** • The TERMINAL option allows you to specify special processing for each device class on the CHPID when recovering from a hung interface. • 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.
IFAPRDxx	OS/390 Release 1	**New Member:** One or more IFAPRDxx members define the enablement policy. A WHEN statement defines a system environment. Subsequent PRODUCT statements identify products and features with an enablement state of enabled or disabled. IBM ships a tailored member, IFAPRD00, with each order of OS/390.
IVTPRM00	OS/390 Release 5	**New member:** Sets parameters for the Communications Storage Manager (CSM)
IXZIPCSP	OS/390 Release 4	**Changed member:** Maintenance.
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. • 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. • 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. 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 2	**Changed member:** HWNAME, LPARNAME and VMUSERID filter statements have been added so you can use a single LOADxx member to define IPL parameters for multiple systems. A PARMLIB statement has been added to allow you to specify parmlib data sets that, in addition to SYS1.PARMLIB, make up the parmlib concatenation.

Figure 1-1 (Page 4 of 4). Changed members of SYS1.PARMLIB in OS/390		
Member	**Release**	**Description of Changes**
PROGxx	OS/390 Release 2	**Changed member:** SYSLIB and LNKLST statements have been added. SYSLIB allows you to specify alternate data sets for the system default data sets SYS1.LINKLIB, SYS1.MIGLIB, SYS1.CSSLIB, and SYS1.LPALIB. LNKLST allows you to define the LNKLST concatenation. Instead of specifying LNKLSTxx at IPL, you can specify PROGxx that defines and activates a LNKLST set as the LNKLST concatenation.
	OS/390 Release 3	**Changed member:** New options for the LNKLST statements in PROGxx have been added.
	OS/390 Release 4	**Changed member:** New LPA statement to manage adding modules to, deleting modules from LPA after IPL.
TSOKEY00	VTAM V4R3, which was included in OS/390 Release 1	**Changed member:** Added support for system symbols.
	OS/390 Release 3	**Changed member:** A new parameter, the GNAME statement, allows you to specify a generic name by which one or more TSO/VTAM systems in a sysplex may be referenced.

Summary of Changes to SYS1.PROCLIB

Figure 1-2 identifies members of SYS1.PROCLIB that are new, changed, or deleted in OS/390.

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.

Figure 1-2. Changed Members of SYS1.PROCLIB in OS/390		
Member	**Release**	**Description of Changes**
No known changes.	OS/390 Release 1	
ATRRRS	OS/390 Release 3	**New Procedure:** Starts resource recovery services (RRS).
BLSJIPCS	OS/390 Release 2	**Changed Procedure:** Concatenated parmlib support.
BLSJPRMI	OS/390 Release 2	**Changed Procedure:** Concatenated parmlib support.
CBDJCMPR	OS/390 Release 3	**Changed Procedure:** Added a //STEPLIB DD statement for SYS1.SCBDHENU. This load library contains the NLS load modules for US English and is required for the OS Compare Reports.
INIT	OS/390 Release 5	**Changed Procedure:** Added an IEFINDMY DD statement.
VLF	OS/390 Release 3	**Changed Procedure:** Deleted IEFPARM DD statement.

Summary of Changes to SYS1.SAMPLIB

Figure 1-3 identifies members of SYS1.SAMPLIB that are new, changed, or deleted in OS/390.

Once you have installed the new release of OS/390, 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.

Figure 1-3 (Page 1 of 4). Changed Members of SYS1.SAMPLIB in OS/390		
Member	**Release**	**Description of Changes**
AJVBOOT	OS/390 Release 1	**New member**
	APAR OW29109; incorporated into OS/390 Release 5	**Changed member:** Maintenance.
ALLOC00	APAR OW08887; integrated into OS/390 Release 4	**Changed member:** ALLOC00 now supports the REDIRECTED_TAPE subparameter, which specifies the installation default as to how batch-allocated unopened DASD data sets that were redirected from TAPE should be treated.
AMDSADDD	OS/390 Release 3	**Changed member:** Maintenance.
	OS/390 Release 4	**Changed member:** Maintenance; write only one null record to initialize data set.
APPCPMXX	OS/390 Release 3	**Changed member:** APPCPMXX now contains GRNAME and NQN/NONQN parameters and values on sample LUADD statements.
ATBALL	OS/390 Release 1	**Changed member:** Maintenance.
	OS/390 Release 6	**Changed member:** Maintenance.
ATBCMC	OS/390 Release 3	**Changed member:** Added support for protected conversations.
ATBCMCOB	OS/390 Release 3	**Changed member:** Added support for protected conversations.
ATBCMFOR	OS/390 Release 3	**Changed member:** Added support for protected conversations.
ATBCMPLI	OS/390 Release 3	**Changed member:** Added support for protected conversations.
ATBCMREX	OS/390 Release 3	**Changed member:** Added support for protected conversations.
ATBCMRPG	OS/390 Release 3	**Changed member:** Added support for protected conversations.
ATBCOCAI	OS/390 Release 3	**Changed member:** Maintenance.
ATBCOCAO	OS/390 Release 3	**Changed member:** Maintenance.
ATBCTC	OS/390 Release 3	**Changed member:** Added support for protected conversations.
ATBCTCOB	OS/390 Release 3	**Changed member:** Added support for protected conversations.
ATBCTFOR	OS/390 Release 3	**Changed member:** Added support for protected conversations.
ATBCTPLI	OS/390 Release 3	**Changed member:** Added support for protected conversations.
ATBCTREX	OS/390 Release 3	**Changed member:** Added support for protected conversations.
ATBLJOB	OS/390 Release 1	**Changed member:** Maintenance.
ATBPBC	OS/390 Release 3	**Changed member:** Added support for protected conversations.
ATBPBCOB	OS/390 Release 3	**Changed member:** Added support for protected conversations.

Member	Release	Description of Changes
ATBPBFOR	OS/390 Release 3	**Changed member:** Added support for protected conversations.
ATBPBPLI	OS/390 Release 3	**Changed member:** Added support for protected conversations.
ATBPBRWEX	OS/390 Release 3	**Changed member:** Added support for protected conversations.
ATBRGCAI	OS/390 Release 3	**Changed member:** Maintenance.
ATBRGCAO	OS/390 Release 3	**Changed member:** Maintenance.
ATRCOLD	OS/390 Release 3	**New member:** Sample JCL to delete and redefine the resource recovery services (RRS) resource manager data log.
ATRRC	APARs OW27920 and OW29566	**Changed member:** Added XID support and additional maintenance.
ATRRRS	OS/390 Release 3	**New member:** A sample procedure to start resource recovery services (RRS).
ATRSC	OS/390 Release 5	**Changed member:** Maintenance.
CLNDLELFN	OS/390 Release 1	**Changed member:** Maintenance.
	OS/390 Release 3	**Changed member:** Maintenance.
	OS/390 Release 4	**Changed member:** Maintenance.
	OS/390 Release 5	**Changed member:** Maintenance.
CLNGLBW1	OS/390 Release 4	**New member**
	OS/390 Release 5	**Changed member:** Maintenance.
CLNGLBW2	OS/390 Release 4	**New member**
	OS/390 Release 5	**Changed member:** Maintenance.
CLNGLOBL	OS/390 Release 1	**Changed member:** Maintenance.
	OS/390 Release 3	**Changed member:** Maintenance.
	OS/390 Release 5	**Changed member:** Maintenance.
CLNSYSLB	OS/390 Release 4	**Changed member:** Maintenance.
	OS/390 Release 5	**Changed member:** Maintenance.
CNLCOMP	OS/390 Release 4	**Changed member:** Maintenance.
	OS/390 Release 5	**Changed member:** Maintenance.
	OS/390 Release 6	**Changed member:** Maintenance.
CNLDEFCL	OS/390 Release 4	**Changed member:** Maintenance.
	OS/390 Release 5	**Changed member:** Maintenance.
CRGC	OS/390 Release 5	**Changed member:** Maintenance.
CSRSIC	OS/390 Release 8	**New member:** 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 *OS/390 MVS Programming: Callable Services for HLL*.
CSVLNKPR	OS/390 Release 2	**New member:** CSVLNKPR is a REXX edit macro that converts an existing LNKLSTxx member to PROGxx. PROGxx now allows you to define the LNKLST concatenation. For migration actions, see Chapter 3, "Migration Actions: Initialization and Tuning" on page 3-1.

Figure 1-3 (Page 2 of 4). Changed Members of SYS1.SAMPLIB in OS/390

Member	Release	Description of Changes
		Figure 1-3 (Page 3 of 4). Changed Members of SYS1.SAMPLIB in OS/390
CSVRTLLE	OS/390 Release 4	**New member**
CTXC	APAR OW23376; incorporated in OS/390 Release 5	**Changed member:** Maintenance. Also, new context services supported in OS/390 Release 5.
IEACWAIT	OS/390 Release 2	**Changed member:** Maintenance.
IEAEXMCS	OS/390 Release 2	**Changed member:** Maintenance.
IEAIPL00	OS/390 Release 3	**Changed member:** Maintenance.
IEAJTRCK	OS/390 Release 2	**Changed member:** Maintenance.
IEAMDBLG	OS/390 Release 3	**Changed member:** Maintenance.
IEARELCN	V5 or OS/390 with APAR OW05419	**New member:** A sample program that removes an MCS or subsystem console from a system or sysplex. See *OS/390 MVS Planning: Operations*.
	OS/390 Release 6	**Changed member:** Enhance the console definition removal service by unpinning a console device's UCB during console definition removal.
IEASYMCK	OS/390 Release 3	**Changed member:** Maintenance.
IEESMJCL	OS/390 Release 2	**Changed member:** Maintenance.
IEFESOJL	OS/390 Release 1	**Changed member:** Maintenance.
IEFJSXIT	OS/390 Release 3	**Changed member:** Maintenance.
IEFOFLNE	OS/390 Release 1	**Changed member:** Maintenance.
IFAEDC	OS/390 Release 2	**Changed member:** Maintenance.
	OS/390 Release 4	**Changed member:** Maintenance.
IPXLOADX	OS/390 Release 5	**Changed member:** Maintenance.
ISGAJE1	OS/390 Release 3	**New member**
	OS/390 Release 4	**Changed member:** Rewrite ISGAUDIT.
ISGAJE1A	OS/390 Release 3	**New member**
ISGAJE2	OS/390 Release 3	**New member**
	OS/390 Release 4	**Changed member:** Rewrite ISGAUDIT.
ISGAJ2A	OS/390 Release 3	**New member**
	OS/390 Release 4	**Changed member:** Rewrite ISGAUDIT.
ISGAJE3	OS/390 Release 3	**New member**
	OS/390 Release 4	**Changed member:** Rewrite ISGAUDIT.
ISGAJE3A	OS/390 Release 3	**New member**
	OS/390 Release 4	**Changed member:** Rewrite ISGAUDIT.
ISGAMF00	OS/390 Release 3	**New member**
	APAR OW26611; incorporated into OS/390 Release 5	**Changed member:** Maintenance; change SYSPUNCH to SYSLIN.
ISGCGRA	OS/390 Release 2	**New member**
ISGLMC	OS/390 Release 6	**Changed member:** Added C++ support.
ISGNQRSP	OS/390 Release 2	**New member**

Figure 1-3 (Page 4 of 4). Changed Members of SYS1.SAMPLIB in OS/390		
Member	**Release**	**Description of Changes**
ISGRNLCK	OS/390 Release 6	**Changed member:** Accept additional characters.
ISGRUNAU	OS/390 Release 3	**New member**
	APAR OW26611; incorporated into OS/390 Release 5	**Changed member:** Rewrite ISGAUDIT.
IVPJOBS	OS/390 Release 1	**Changed member:** Maintenance.
	OS/390 Release 4	**Changed member:** Maintenance.
	OS/390 Release 5	**Changed member:** Maintenance.
IWMFTCDS	OS/390 Release 4	**Changed member:** Maintenance.
IXCARMF	OS/390 Release 5	**Changed member:** Add MAXSYSTEM keyword.
IXCCFRMF	OS/390 Release 2	**Changed member:** Maintenance.
	OS/390 Release 8	**Changed member:** Add ITEM NAME(SMREBLD) NUMBER(1) statement in support of system-managed rebuild processing.
IXCCFRMP	OS/390 Release 2	**Changed member:** Maintenance.
	OS/390 Release 3	**Changed member:** Maintenance.
	OS/390 Release 6	**Changed member:** Add description of DUPLEX keyword.
IXCSFMF	OS/390 Release 5	**Changed member:** Add MAXSYSTEM keyword.
IXCSYSPF	OS/390 Release 2	**Changed member:** Maintenance.
IXGRPT1	OS/390 Release 3	**Changed member:** Maintenance.
	OS/390 Release 4	**Changed member:** Maintenance.
	OS/390 Release 6	**Changed member:** Maintenance.
SMFEXITS	OS/390 Release 1	**Changed member:** Maintenance.
SMFE15	OS/390 Release 1	**Changed member:** Maintenance.
SMFE35	OS/390 Release 1	**Changed member:** Maintenance.
SPPACK	Every OS/390 Release	**Changed member:** Maintenance.
SPPINST	OS/390 Release 1	**Changed member:** Maintenance.
	APAR OW16294: integrated with OS/390 Release 2	**Changed member:** Added support for using SPPINST and SPPACK to verify system symbolics without an IPL.
	OS/390 Release 3	**Changed member:** Maintenance.
TESTEXIT	OS/390 Release 1	**Changed member:** Maintenance.

Summary of Changes to System Commands

Figure 1-4 identifies MVS commands that are new, changed, or deleted in OS/390. For a complete description of each command, see *OS/390 MVS System Commands*. For information about how to handle incompatibilities, see Chapter 5, Migration Actions: Operations.

Note for Online Users: In the following table, selecting the command name opens *OS/390 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 *OS/390 MVS System Commands*.

Command	Release	Description of Changes
Figure 1-4 (Page 1 of 4). Changed System Commands in OS/390		
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.
DISPLAY	OS/390 Release 1	**New option:** PROD displays information about registered products, enabled products, and the enablement policy entry that applies to a product.
DISPLAY	OS/390 Release 2	**New options:** • DISPLAY PROG,LNKLST displays information about the LNKLST concatenation. The LNKLST concatenation is defined at IPL through either LNKLSTxx or PROGxx. • DISPLAY PROG,EXIT,EXITNAME=*exitname*,DIAG displays diagnostic information about the specified exit, including entry point and load address. • DISPLAY IPLINFO displays information about the general IPL information used by the system such as the date and time of the IPL, the release level of the system, the LOADxx information used for the IPL and options for parmlib members IEASYSxx and IEASYMxx. • DISPLAY PARMLIB displays information about the logical parmlib setup for the system such as the parmlib data sets and volumes that were defined in LOADxx and parmlib data sets and volumes defined in Master JCL (when there were no parmlib statements in LOADxx). **Changed options:** • DISPLAY GRS command has been enhanced to display global resource serialization star status.
DISPLAY	OS/390 Release 3	**New options:** • DISPLAY APPC,TP or DISPLAY APPC,LU with the new PNET filter keyword results in a display of information about transaction programs or logical units in a particular network. • DISPLAY APPC,UR allows you to display information about units of recovery (URs) related to protected conversations between APPC/MVS TPs and their partner TPs. • New options for DISPLAY PROG,LNKLST have been added to obtain information about a LNKLST set. • DISPLAY WLM,APPLENV=*applenvname*|* displays status information for the specified application environment (applenvname); if * is specified, status for all application environments is displayed.

Figure 1-4 (Page 2 of 4). Changed System Commands in OS/390		
Command	**Release**	**Description of Changes**
DISPLAY	OS/390 Release 4	**New options:** • DISPLAY WLM,SCHENV=*scheduling_environment* displays information about the named scheduling environment. • DISPLAY WLM,RESOURCE=*resource* displays information about the named resource. • DISPLAY PROG,LPA displays information about modules that have been added to or deleted from LPA after IPL. • DISPLAY RTLS displays common storage definitions and utilizations, names of physical and logical libraries, and various library characteristics.

DISPLAY	OS/390 Release 5	**Changed option:** The IPLINFO option displays different information. For example:
		
		`RELEASE OS/390 02.05.00`
		`USED LOADJH IN SYS1.PARMLIB ON 980`
		`IEASYM LIST = KP`
		`IEASYS LIST = AB, AC (OP)`
		`IODF DEVICE 0224`
		`IPL DEVICE 0980 VOLUME DR150B`

DISPLAY	OS/390 Release 6	**New options:** • DISPLAY LOGGER,STATUS displays the current status of the system logger. • 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. • DISPLAY LOGGER,LOGSTREAM displays log stream sysplex information. Filters include LSNAME, STRNAME, and DASDONLY. • D LOGGER,STRUCTURE displays all log streams defined to a structure on a sysplex. **Changed options:** 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:** DISPLAY EMCS displays information about extended MCS (EMCS) consoles. 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. **Changed options:** The DISPLAY DUMP,OPTIONS command is changed to identify when the SDATA=SERVERS options has been specified on the CHNGDUMP command.

Figure 1-4 (Page 3 of 4). Changed System Commands in OS/390		
Command	**Release**	**Description of Changes**
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: • DISPLAY XCF,STRNAME provides detail about structures, connection attributes, and system-managed processes. • 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.
DUMP	OS/390 Release 7	**New option:** DUMP PARMLIB=xx,SYMDEF=(symbol_def,symbol_def) allows symbols to be defined for use within dump command parmlib members.
MODIFY	OS/390 Release 4	**New option:** F WLM,RESOURCE=resource_name,ON|OFF|RESET sets the resource state for the given resource name.
RESET	OS/390 Release 3	**Changed option:** The QUIESCE option on RESET jobname can now be abbreviated to Q. **New audit record:** RESET jobname writes an SMF 90 subtype 30 record.
	OS/390 Release 4	**Changed options:** The RESET command is changed to permit the internally defined SYSSTC and SYSTEM service classes to be specified with the SRVCLASS keyword. Prior to OS/390 Release 4, you could only specify service classes that were defined by the installation in the active service policy.
SET	OS/390 Release 1	**New option:** PROD indicates the particular IFAPRDxx parmlib member(s) that the system is to use to build the enablement policy.
	OS/390 Release 3	**Changed option:** SET PROG=xx now allows you to specify a PROGxx member with LNKLST statements after IPL. With LNKLST statements, you can define and activate a LNKLST set. The SET command and the replies to messages IEA886A and IEA888A accept only 4-digit years.
	OS/390 Release 4	**Changed option:** SET PROG=xx now allows you to specify a PROGxx member with names of modules that can be added to or deleted from LPA after IPL. **New option:** SET RTLS allows you to establish the RTLS configuration by telling the system to process the statements in one or more CSVRTLxx parmlib members.
SETGRS	OS/390 Release 2	**New option:** SETGRS MODE=STAR allows for dynamic migration from a global resource serialization ring to a star complex.
	OS/390 Release 7	**New option:** SETGRS SYNCHRES=YES activates the synchronous RESERVE function.

Figure 1-4 (Page 4 of 4). Changed System Commands in OS/390		
Command	**Release**	**Description of Changes**
SETLOAD	OS/390 Release 2	**New Command:** The SETLOAD command allows you to dynamically switch from one logical parmlib to another without having to initiate an IPL. This can be accomplished by issuing the SETLOAD command specifying the LOADxx member suffix containing PARMLIB statements for the desired logical parmlib.
SETPROG	OS/390 Release 3	**New option:** SETPROG LNKLST allows you to make dynamic changes to the LNKLST set after IPL.
	OS/390 Release 4	**New option:** SETPROG LPA allows you to make dynamic changes (add or delete modules) to LPA after IPL.
SETRRS CANCEL	OS/390 Release 3	**New command:** The SETRRS CANCEL command allows you to stop resource recovery services (RRS).
SETXCF	OS/390 Release 2	**New option:** SETXCF START,REBUILD,LESSCONNACTION allows you to specify the action the system is to take when rebuilding the structure results in a new structure with poorer connectivity relative to the set of active connections than the connectivity to the current structure.
	OS/390 Release 6	**New options:** • 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. • 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:** SETXCF START,REBUILD might result in the initiation of a system-managed rebuild.
START	OS/390 Release 3	**New option:** The START command now allows you to start resource recovery services (RRS).
VARY	OS/390 Release 3	**New Option:** VARY WLM,APPLENV=*applenvname* with the new QUIESCE, RESUME, and REFRESH parameters allow control of a named application environment.
	OS/390 Release 4	**New Option:** VARY WLM,POLICY=*policyname* with the new REFRESH parameter signals WLM to discard all of its historical data.

Summary of Changes to SMF Records

Figure 1-5 identifies SMF records that are added, changed, or deleted in OS/390. For complete information about SMF records, see *OS/390 MVS System Management Facilities (SMF)*.

Figure 1-5 (Page 1 of 4). Changed SMF Records in OS/390		
SMF Record	**Release**	**Description of Changes**
Type 4 (Step Termination)	OS/390 Release 2	Changed date to 0cyydddF format for SMF4STID.

SMF Record	Release	Description of Changes
Figure 1-5 (Page 2 of 4). Changed SMF Records in OS/390		
Type 5 (Job Termination)	OS/390 Release 2	Changed date to 0cyydddF format for SMF5JID.
Type 6 (Print Services Facility (PSF))	OS/390 Release 2	Added file transfer section for PSF. Added IP PrintWay section.
	OS/390 Release 8	Changed information in the • All-points-addressable printing subsystem section for PSF • File transfer section for PSF
Type 14 (INPUT or RDBACK Data Set Activity)	OS/390 Release 4	Added SMS class section (Type 3).
	OS/390 Release 7	Added information on: • ISO/ANSI Version 4 CCSID (coded character set ID) • step information
Type 26 (JES2 Job Purge)	OS/390 Release 5	• Added Workload Management information, including service class and initiator type. • Changed header/self-defining section, offset 48
Type 30 (Common Address Space Work)	OS/390 Release 2	Changed date to 0cyydddF format for SMF30STD and SMF30IDT.
	OS/390 Release 3	Changed to collect (1) dependent enclave CPU time and (2) I/O priority management data.
	OS/390 Release 4	Added new fields for detail on job queue time.
	OS/390 Release 8	Information changes for header/self-defining section and the description of the SMF30STI field.
Type 33 (APPC/MVS TP Accounting)	OS/390 Release 3	Added new values for synchronization level and conversation state to the conversation ID section.
Type 42 (DFSMS Statistics and Configuration)	OS/390 Release 3	Added a new subtype 14 for ADStar Distributed Storage Manager and 19 for VSAM RLS local buffer manager. Subtypes 15-18 have numerous changes.
	OS/390 Release 4	Added subtypes 5 and 9
	OS/390 Release 7	Changed subtypes 5 and 6
Type 70 (RMF CPU Activity)	OS/390 Release 7	Changed ICF support information
Type 71 (RMF Paging Activity)	OS/390 Release 4	Additional storage information
Type 72 (RMF Workload Activity and Storage Data)	OS/390 Release 3	Changed subtype 1, Performance Group Period, to reflect new I/O priority management data. Changed subtype 3, Service Class Period, to reflect I/O priority management data, server queueing delay, and enclave storage delays.
	OS/390 Release 4	WLM enhancements.
Type 73 (RMF Channel Path Activity)	OS/390 Release 6	Channel path acronym
	OS/390 Release 7	Fiber channel support

SMF Record	Release	Description of Changes
Type 74 (RMF Activity of Several Resources)	OS/390 Release 2	Added subtype 5 (cache subsystem device activity)
	OS/390 Release 4	Coupling facility enhancements
	OS/390 Release 6	• Subtype 4 - Coupling facility update • Subtype 5 - Cache subsystem enhancements
	OS/390 Release 7	Added subtype 6 (hierarchical file system statistics)
Type 79 (RMF Monitor II Activity)	OS/390 Release 3	Subtypes 1 and 2 have been updated with WLM enhancements.
	OS/390 Release 4	Added subtype 15 for IBM long lock detection
	OS/390 Release 6	Subtype 12 - Channel path acronym
	OS/390 Release 7	Subtype 12 - Fiber channel support
Type 82 (ICSF/MVS Record)	OS/390 Release 4	Added subtypes 9, 10, 11, and 12
Type 84 (JES3 Monitoring Facility (JMF) Data)	OS/390 Release 8	• Changes to FCT information • New Subtype 10 (JES3 Workload Manager Analysis)
Type 85 (Object Access Method)	OS/390 Release 4	New record
Type 88 (System Logger Data)	OS/390 Release 3	Split into two subtypes, 1 and 11, with additional structure-related data.
Type 89 (Usage Data)	OS/390 Release 1	Added subtype 2 (State Data Section) to collect product registration and enablement state information.
	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 3	Added subtype 29 (LNKLST Set Activation) to collect information about the activation of a LNKLST set. Added subtype 30 (RESET service class or PGN) to collect information each time a RESET command completes successfully.
	OS/390 Release 4	Added subtype 31 to record the dynamic addition of modules to and deletion of modules from LPA after IPL. Added subtype 32 to record the configuration of the WLM scheduling environments following a WLM policy activation from a newly installed service definition.
	OS/390 Release 5	Added subtype 32 to record scheduling environment information following a successful policy change.
Type 92 (OpenMVS File System Activity)	OS/390 Release 8	• Changes to subtype 11 • New Subtype 12 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

Figure 1-5 (Page 3 of 4). Changed SMF Records in OS/390

SMF Record	Release	Description of Changes
Figure 1-5 (Page 4 of 4). Changed SMF Records in OS/390		
Type 99 (System Resource Manager Decisions)	OS/390 Release 3	Changed subtype 1 to collect TSO generic resource information.
		Changed subtype 2 to collect server delay information.
		Changed subtype 3 to collect server delay information.
		Added subtype 4 to collect information about a device cluster. A device cluster is a set of service classes that compete to use the same DASD devices.
	OS/390 Release 4	Added new fields for new algorithmic decisions.
		Added subtype 6 to collect summary data.
	OS/390 Release 5	Added subtype 6 to collect information about each service class period.
		Changed information in
		• Subtype 2 (server sample data entry section, queue server data entry section, and remote queue server data entry section)
		• Subtype 3 (period self defining section and queue delay plot section)
		• Subtype 5 (self-defining section)
	OS/390 Release 6	Added fields to subtype 6, including a new server section.

Summary of Changes to Macros

Figure 1-6 identifies macros that are added, changed, or deleted in MVS/ESA SP V4, MVS/ESA SP V5, and OS/390. For additional information about 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:

  - *OS/390 MVS Programming: Authorized Assembler Services Reference ALE-DYN*

  - *OS/390 MVS Programming: Authorized Assembler Services Reference ENF-IXG*

  - *OS/390 MVS Programming: Authorized Assembler Services Reference LLA-SDU*

  - *OS/390 MVS Programming: Authorized Assembler Services Reference SET-WTO.*

- **Unauth** refers to *OS/390 MVS Programming: Assembler Services Reference*.

- **Both** refers to both **Auth** and **Unauth**.

- **Service Aids** refers to *OS/390 MVS Diagnosis: Tools and Service Aids*.

- **SMF** refers to *OS/390 MVS System Management Facilities (SMF)*.

- **Sysplex** refers to *OS/390 MVS Programming: Sysplex Services Reference*.

- **JES Common Coupling** refers to *OS/390 MVS Programming: JES Common Coupling Services*.
- **WLM** refers to *OS/390 MVS Programming: Workload Management Services*.
- **Resource Recovery** refers to *OS/390 MVS Programming: Resource Recovery*.

\[Figure 1-6 (Page 1 of 32). Macros Changed Since MVS/ESA SP 4.3\]			
Name of Service	**Release**	**Description of Changes**	**Reference**
several macros in Version 5		**New parameter:** PLISTVER specifies the version of the parameter list for the macro. IBM recommends that you specify PLISTVER=MAX when possible.	*Both*
ALESERV	5.1	**Enhancement:** Programs can use ALESERV to add, extract, and delete the ALET for a subspace.	*Auth*
ASASYMBM	5.2	**New service:** Programs can call ASASYMBM to substitute text for symbols.	*Unauth*
ATRQUERY	OS/390 Release 3	**New macro:** Programs can issue ATRQUERY to obtain information about resource recovery services (RRS), including information about resource managers and units of recovery (URs).	*Resource Recovery*
	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.	
ATRSRV	OS/390 Release 3	**New macro:** Authorized programs can issue ATRSRV to override RRS processing by removing a resource manager's interest in a unit of recovery (UR) or resolving the state of a UR.	*Resource Recovery*
	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.	
ATTACH and ATTACHX	5.1	ATTACH and ATTACHX are changed from a type 3 SVC to a type 2 SVC.	*Both*
BPXESMF	5.1	**New macro:** Provides OS/390 UNIX System Services accounting data.	*Auth*
CheckSchEnv	OS/390 Release 4	**New macro:** C-language interface for invoking IWMSEDES macro.	*WLM*
ConnectServer	OS/390 Release 4	**New macro:** C-language interface for invoking IWMCONN macro with the following parameters assumed: • WORK_MANAGER(NO) • ROUTER(NO) • QUEUE_MANAGER(YES) • SERVER_MANAGER(YES)	*WLM*

Figure 1-6 (Page 2 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
ConnectWorkMgr	OS/390 Release 4	**New macro:** C-language interface for invoking IWMCONN macro with the following parameters assumed: • WORK_MANAGER(YES) • ROUTER(NO) • QUEUE_MANAGER(YES) • SERVER_MANAGER(NO)	*WLM*
ContinueWorkUnit	OS/390 Release 4	**New macro:** C-language interface for invoking IWMECREA macro with the following parameters assumed: • TYPE(DEPENDENT)	*WLM*
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	5.2	**Enhancement:** Callers can specify that the CPOOL be obtained from new subpool 249.	*Auth*
CreateWorkUnit	OS/390 Release 4	**New macro:** C-language interface for invoking IWMECREA macro with the following parameters assumed: • TYPE(INDEPENDENT)	*WLM*
CSRCMPSC	5.1	**New macro:** Compresses data, and expands, or expands, previously-compressed data **Note:** This support was originally shipped as an SPE for MVS/ESA SP V4, and is incorporated into MVS/ESA SP V5.	*Unauth*
CSVDYLPA	OS/390 Release 4	**New macro:** Authorized programs can issue CSVDYLPA to: • Add one or more modules to LPA following IPL. • Delete one or more modules from LPA following IPL. • Request information about support for dynamic LPA services.	*Auth*

Figure 1-6 (Page 3 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
CSVDYNEX	5.1	**New macro:** Authorized programs can issue CSVDYNEX to: • Define an exit • Add an exit routine to an exit • Change the state of an exit routine • Delete an exit routine from an exit • Remove the definition of an exit • Change the attributes of an exit • List information about an exit • Provide recovery for an exit routine. Authorized or unauthorized programs can issue CSVDYNEX to: • Call an exit routine at an exit • Determine whether an exit routine exists for an exit.	*Auth*
	5.2	**Changed requirements:** The data set specified in the DSNAME parameter does not need to be APF-authorized if the caller of CSVDYNEX is in supervisor state, system key, or is APF-authorized. **New parameters:** • The ANYKEY parameter on the DEFINE request specifies whether a FASTPATH exit may be called in any PSW key. • The POS parameter on the ADD request specifies the order that the system is to call an exit routine. • The EXAAVER parameter on the LIST request specifies the format of the information to be returned, as mapped by DSECTs within the CSVEXAA mapping macro. • The EXRETVER parameter on the CALL and RECOVER requests specifies the format of the information to be returned, as mapped by DSECTs within the CSVEXRET mapping macro.	
CSVDYNL	OS/390 Release 3	**New macro:** Authorized programs can issue CSVDYNL to: • Define a LNKLST set that can be used as the LNKLST concatenation. • Add a data set to a LNKLST set. • Delete a data set from a LNKLST set. • Remove the definition of a LNKLST set. • Test to determine if a module can be located in a LNKLST set. • Obtain a list of LNKLST sets and users. • Update jobs and address spaces to use the current LNKLST set. • Query information about support for LNKLST services.	*Auth*
CSVINFO	5.1	**Changed usage:** For OS/390 UNIX modules, the CSVINFO macro also provides the full OS/390 UNIX file name.	*Unauth*

Figure 1-6 (Page 4 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
CSVQUERY	5.2	**New parameter:** The SEARCHMINOR parameter specifies whether or not to search for minor entry points. **Changed parameters:** If a minor entry point is found, the information returned is for the module that contains the major entry point associated with the minor entry point.	*Unauth*
CSVRTLS	OS/390 Release 4	**New macro:** Provides an interface to request functions of run-time library services (RTLS). Programs can issue CSVRTLS to: • Connect to a library managed by RTLS (REQUEST=CONNECT). • Load a load module from a library managed by RTLS (REQUEST=LOAD). • Delete a load module previously loaded by REQUEST=LOAD (REQUEST=DELETE). • Disconnect (REQUEST=DISCONNECT). • Obtain a list of RTLS libraries and users (REQUEST=LIST).	*Unauth*
CTRACE	OS/390 Release 3	**New parameter:** DISPNAM keyword for the display exit routine.	*Auth*
CTRACECS	5.2	**New parameters:** Allow installation-written component tracing to control the buffers, which contain the component trace entries. • CSLABEL parameter allows specification of a label that the system will branch to when the current buffer does not agree with the TESTMODE or TESTSEQ# values. • MODE=AVAIL parameter indicates that the buffer is to be made available. • TESTMODE parameter specifies the expected status of the buffer, which is available, filling with entries, or full. • TESTSEQ# parameter specifies the expected buffer sequence number.	*Auth*
CTRACEWR	OS/390 Release 3	**New parameter:** SYNCH causes CTRACE to copy the application's buffers before control is returned instead of scheduling an asynchronous SRB to copy the buffer.	*Auth*
DeleteWorkUnit	OS/390 Release 4	**New macro:** C-language interface for invoking IWMEDELE macro.	*WLM*
DEQ	5.2	**New parameter:** The LOC parameter indicates a 24-bit or 31-bit UCB address for the device that the caller wants released.	*Both*
DisconnectServer	OS/390 Release 4	**New macro:** C-language interface for invoking IWMDISC macro.	*WLM*
DSPSERV	5.2.2	**New parameter:** The INLIST parameter allows ranges of storage to be identified to help reduce the number of DSPSERV calls.	*Both*

Figure 1-6 (Page 5 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
DYNALLOC (SVC 99)	5.2	**New text unit key:** DYNALLOC supports a new text unit key, called DALOVAFF, which will cause any job submitted to the internal reader to run on the system on which it was submitted. Any system affinity for the input device or job class is overridden. **New flags:** • S99NOSYM, to disable symbolic substitution for the current request. • S99ACUCB, to use 4-byte actual UCB addresses. **Changed parameters:** DALSHOLD and DUNOVSNH have been changed to support the internal reader.	*Auth*
DYNALLOC (SVC 99) (continued)	OS/390 Release 2	**New text unit key:** DYNALLOC supports a new text unit key, DINRTVOL, which returns the first volume serial number associated with the specified allocation.	*Both*
	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*
EDTINFO	5.2	**New parameter:** The LOC parameter indicates whether the caller should receive device numbers for unit control blocks (UCBs) that are below 16 megabytes or also for UCBs that are above 16 megabytes.	*Unauth*
	5.2.2	**New parameter:** The RTNUNAFF parameter requests that EDTINFO return the value associated with the ALLOCxx UNITAFF parameter.	

Figure 1-6 (Page 6 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
ENFREQ	5.1	**New parameters:** • EOT - Indicate whether ENF should continue to pass control to the listener user exit routine after the listener's task ends • EOM - Indicate whether ENF should continue to pass control to the listener user exit routine after the listener's address space ends • PARM - Pass parameters to the listener user exit routine when it gets control • SRBEXIT - Request that the listener user exit routine gets control in SRB mode in the listener's address space **New event codes:** • 35 - Broadcast when coupling facility resources become available. • 41 - Broadcast when a WLM service policy is activated • 42 - Broadcast when the WLM mode of a system is changed, and when a SET IPS or a SET ICS was issued. • 43 - Broadcast when a copy of WLM address space information is available. • 44 - Broadcast when a configuration change involving paths to a coupling facility has occurred. • 46 - Broadcast when OS/390 UNIX has been initialized or re-initialized.	*Auth*
	5.2	**New event codes:** • 33 - Broadcast a change to the hardware configuration of a device. • 38 - Broadcast a change in the status of an automatic restart management element. • 45 - Broadcast when the SMSVSAM server address space has been initialized or reinitialized. • 47 - Notify listeners that the system has reached the threshold for completed or suppressed dumps related to a particular symptom string. • 48 - Broadcast status changes within system logger. • 49 - Broadcast a change in the logrec recording medium. **Changed event codes:** • 36 - Broadcast when the system records an error in either the logrec data set or the logrec log stream.	

Figure 1-6 (Page 7 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
ENFREQ (continued)	OS/390 Release 2	**New parameters:** • XSYS=YES|NO specifies whether this system's listening exit is to receive signals from other systems (YES) or only signals originating from the local system (NO). • BITQUAL specifies a field, constant or register containing a bit-mapped qualifier that further defines the event. • BITCOMPARE specifies the comparison operation ENF is to use in interpreting the bit-mapped qualifier specified with the BITQUAL parameter. • PLISTVER specifies the version of the ENFREQ parameter list to be used for this request. **New event codes:** • 51 - Listen for global resource serialization-related system events.	
ENFREQ (continued)	OS/390 Release 3	**New event codes:** • 52 - A LNKLST set has been activated. • 53 - A timer-related event has occurred. • 55 - SRM has detected a significant MVS image event. (In OS/390 Release 3, this will be used to signal a shortage of fixed storage.) **Expanded event code functions:** • 35 - New function codes notify users when a system is joining or has been partitioned from a sysplex. • 48 - Event is now cross-system capable..	*Auth*
	OS/390 Release 4	**New event codes:** • 56 - The service class association for an address space has been altered. • 57 - The state of a Workload Management scheduling environment has been altered.	
ENQ	OS/390 Release 3	**New restrictions:** • if you are using tasks in enclaves, you should not issue a directed or MASID type ENQ. • While serialized on a resource using ENQ, a task cannot join or leave an enclave.	*Both*
FREEMAIN	5.2	**Enhancement:** Callers can specify that the storage be released from new subpool 249.	*Auth*
GETMAIN	5.2	**Enhancement:** Callers can specify that the storage be obtained from new subpool 249.	*Auth*
GQSCAN	OS/390 Release 2	**New parameter:** XSYS=YES|NO specifies whether GQSCAN gathers complex-wide global resource information (YES) or global information that pertains only to requestors on GQSCAN caller's system (NO).	*Both*
IARR2V	5.2	**New macro:** Converts a central storage address a to virtual storage address.	*Both*
IARSUBSP	5.1	**New macro:** Creates, deletes, and manages subspaces.	*Auth*

Figure 1-6 (Page 8 of 32). Macros Changed Since MVS/ESA SP 4.3

Name of Service	Release	Description of Changes	Reference
IARVSERV	5.2	**New macro:** Allows programs to share data in virtual storage, without using as much central storage or I/O resources as with other methods of data sharing.	*Both*
	5.2.2	**New parameter and function:** The CHANGEACCESS parameter allows the type of storage access to be changed. Additional new parameters control sharing the target view.	
IAZFSIP	OS/390 Release 5	**Enhancement:** Will now support a new unsolicited SEND requesting that the End of dataset ENF be issued.	*Auth*
IAZXJSAB	5.2	**New macro:** Allows a program to obtain information about the currently running job.	*Auth*
	OS/390 Release 3	**New parameter:** The JESTAT parameter reports the JES status of the job.	
	OS/390 Release 5	**New parameter:** The JSABLVL parameter returns the level of the JSAB used for the READ request.	
IAZXCTK	OS/390 Release 5	**New macro:** Will expand in-line to compare two client tokens.	*Auth*
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*
IEAINTKN	5.1	**New macro:** Builds an incident token, which can be used to identify related dumps.	*Unauth*
IEALSQRY	5.2	**New macro:** Checks the level of the current entry on the linkage stack relative to the level of the entry associated with the most recent recovery routine.	*Auth*
IEAMSCHD	5.2	**New macro:** Schedules an SRB.	*Auth*
	OS/390 Release 3	**New parameter and function:** The SYNCH parameter synchronizes the caller's work unit with the scheduled SRB.	
IEANTRT	5.1	**New function:** Retrieves the name of the logrec data set.	*Both*
	5.2	**Changed use:** Obtains the name of the logrec medium, either the name of the logrec data set or the name of the logrec log stream.	
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.	
IEEQEMCS	OS/390 Release 7	**New macro:** Returns the state of any EMCS consoles in the sysplex.	*Both*
IEEVARYD	5.1	**New macro:** Allows a program to vary devices online and offline (like the VARY command).	*Auth*
	5.2	**Changed macro:** Supports automatic tape switching.	
IEFDDSRV	5.2	**New macro:** Returns the UCB addresses of the devices that were allocated for an allocation request.	*Both*

Figure 1-6 (Page 9 of 32). Macros Changed Since MVS/ESA SP 4.3

Name of Service	Release	Description of Changes	Reference
IEFPRMLB	OS/390 Release 2	**New macro:** Allows for system and user programs to allocate, unallocate, read and obtain information about the logical parmlib.	*Unauth*
IEFSSI	5.2	**New macro:** Dynamically controls a subsystem.	*Both*
IEFSSVT	5.2	**New macro:** Builds and modifies subsystem vector tables (SSVTs).	*Auth*
IEFSSVTI	5.2	**New macro:** Defines the table of function routines and function codes that is passed to the IEFSSVT macro as input when creating or modifying a SSVT.	*Auth*
IOSADMF	5.1	**New macro:** Transfers data between virtual storage areas in address spaces and hiperspaces. It takes advantage of the ADMF (Asynchronous Data Mover Facility).	*Auth*
IOSCAPF	5.2	**New macro:** Provides a fast path to translate a captured UCB address to an actual UCB address.	*Auth*
IOSCAPU	5.2	**New macro:** Allows a caller to capture a UCB, release a captured UCB, or translate a captured UCB address to an actual UCB address.	*Auth*
IOSCDR	5.1	**New macro:** The IOSCDR macro retrieves configuration data records, which contain information about I/O hardware located along a specific I/O path.	*Auth*
	5.2	**New parameter:** The LINKAGE parameter enables applications that are not in supervisor state to call the IOSCDR macro.	
IOSCMXA	5.1	**New macro:** The IOSCMXA macro obtains the address of the UCB prefix extension segment.	*Auth*
IOSCMXR	5.2	**New macro:** Obtains the address of the UCB common extension segment.	*Auth*
IOSDCXR	5.2	**New macro:** Obtains the address of the UCB device class extension (DCE) segment.	*Auth*
IOSPTHV	5.1	**New macro:** The IOSPTHV macro validates the physical connection between a channel path and a device.	*Auth*
IOSUPFA	5.1	**New macro:** The IOSUPFA macro obtains the address of the UCB common extension segment.	*Auth*
IOSUPFR	5.2	**New macro:** Obtains the address of the UCB prefix extension segment.	*Auth*
IWMCLSFY	5.1	**New macro:** Lets a caller associate incoming work requests with a service class.	*WLM*
	5.2	**New parameters:** Lets a caller specify additional work classification qualifiers.	
	OS/390 Release 3	**New parameters:** Lets a caller specify additional work classification qualifiers.	
	OS/390 Release 4	**New parameter:** The PRIORITY classification qualifier has been added.	

Figure 1-6 (Page 10 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
IWMCONN	5.1	**New macro:** Generates a token required for workload management services.	*WLM*
	OS/390 Release 3	**Changed macro:** Requests that the workload management queueing manager or routing manager services be available to the connecting address space.	
IWMCQRY	5.2	**New macro:** Queries the classification information associated with work.	*WLM*
	OS/390 Release 4	**New output data:** A priority classification qualifier has been added to the return area mapped by IWMSVDCR.	
IWMDEXTR	5.2	**New macro:** Lets a caller extract a service definition from the WLM couple data set.	*WLM*
	OS/390 Release 3	**New output data:** Application environment information.	
	OS/390 Release 4	**New output data:** Scheduling environment definitions returned in the answer area.	
IWMDINST	5.2	**New input data:** Lets a caller install a service definition onto the WLM couple data set.	*WLM*
	OS/390 Release 3	**New input data:** Caller allowed to provide application environment definitions.	
	OS/390 Release 4	**New input data:** Caller allowed to provide scheduling environment definitions.	
IWMDISC	5.1	**New macro:** Deletes the connect token, allowing a caller to disconnect from workload management services.	*WLM*
	5.2	**Changed macro:** Deletes enclaves associated with a connect token.	
IWMDNDRG	OS/390 Release 4	**New macro:** Deregisters a domain name server from WLM. (This is a C-stub for invoking IWMSRDRS.)	*WLM*
IWMDNLOC	OS/390 Release 4	**New macro:** Retrieves a list of server groups from WLM. (This is a C-stub for invoking IWMSRDNS.)	*WLM*
IWMDNREG	OS/390 Release 4	**New macro:** Registers a domain name server with WLM. (This is a C-stub for invoking IWMSRSRG.)	*WLM*
IWMDNSRV	OS/390 Release 4	**New macro:** Retrieves a list of associated IP addresses and WLM weight information for each server in a named server group. (This is a C-stub for invoking IWMSRSRS.)	*WLM*
IWMECQRY	5.2	**New macro:** Lets a caller receive the classification qualifiers associated with a work request.	*WLM*
	OS/390 Release 3	**New parameters:** Lets a caller receive additional work classification qualifiers.	
	OS/390 Release 4	**New output data:** A priority classification qualifier has been added to the return area mapped by IWMECD.	
IWMECREA	5.2	**New macro:** Creates an enclave.	*WLM*
	OS/390 Release 3	**New parameter:** Added dependent enclaves.	
IWMEDELE	5.2	**New macro:** Deletes a previously created enclave.	*WLM*

Figure 1-6 (Page 11 of 32). Macros Changed Since MVS/ESA SP 4.3

Name of Service	Release	Description of Changes	Reference
IWMEJOIN	OS/390 Release 3	**New macro:** Allows a task to join an enclave.	**WLM**
IWMELEAV	OS/390 Release 3	**New macro:** Allows a task to leave an enclave.	**WLM**
IWMEQTME	OS/390 Release 7	**New macro:** Returns the enclave CPU time if the current dispatchable workunit is associated with an enclave.	**WLM**
IWMESQRY	OS/390 Release 3	**New macro:** Queries whether or not the current dispatchable workunit is associated with an enclave.	**WLM**
IWMMABNL	5.1	**New macro:** Lets a caller record the abnormal processing of work.	**WLM**
IWMMCHST	5.1	**New macro:** Let the caller reflect the current state (such as ready, active, waiting) of a work request in the workload management monitoring environment.	**WLM**
	OS/390 Release 3	**New States:** New delay states added.	
IWMMCREA	5.1	**New macro:** Lets a caller create a workload management monitoring environment in which to record the states and delays of work requests as they are being processed.	**WLM**
IWMMDELE	5.1	**New macro:** Lets a caller delete the workload management monitoring environment.	**WLM**
IWMMEXTR	5.1	**New macro:** Lets a caller extract information it has stored in the workload management monitoring environment.	**WLM**
IWMMINIT	5.1	**New macro:** Lets a caller initialize a workload management monitoring environment with some information identifying a work request, such as userid, transaction name, transaction class, accounting information, or a product-specific identifier.	**WLM**
IWMMNTFY	5.1	**New macro:** Lets a caller notify workload management that the execution phase of a work request associated with a monitoring environment has completed.	**WLM**
IWMMRELA	5.1	**New macro:** Lets a caller relate two different workload management monitoring environments that are associated with the same work request.	**WLM**
IWMMSWCH	5.1	**New macro:** Lets a caller indicate to workload management that the state and delay information associated with a work request may reside in another workload management monitoring environment.	**WLM**
IWMMXFER	5.1	**New macro:** Lets a caller indicate to workload management that the state and delay information associated with a work request either: • Is transferred to another workload management monitoring environment. • No longer resides in the current workload management monitoring environment.	**WLM**
IWMPACT	5.2	**New macro:** Lets a caller activate a service policy.	**WLM**

Figure 1-6 (Page 12 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
IWMPQRY	5.1	**New macro:** Lets a caller obtain a copy of the active workload management service policy.	*WLM*
	OS/390 Release 4	**New Reason Code:** A new warning code has been added to indicate the default policy.	
IWMQCXIT	OS/390 Release 3	**New macro:** Used in list form only, it maps the input parameter list passed to the exit specified by a queueing manager on the IWMCONN macro. (The execute and standard form of this macro are used only by the operating system itself.)	*WLM*
IWMQDEL	OS/390 Release 3	**New macro:** Allows a queueing manager address space to delete a work request that was previously queued using IWMQINS but has not been selected for execution.	*WLM*
IWMQINS	OS/390 Release 3	**New macro:** Inserts a work request onto the workload management work queues.	*WLM*
IWMRCOLL	5.1	**New macro:** Lets a caller obtain the following workload activity data: resource consumption data, response time and response time distributions, general execution delays, subsystem work manager delay states.	*WLM*
	OS/390 Release 3	**New output data:** New fields for enclaves and application environments have been added in the return area mapped by IWMWRCAA.	
	OS/390 Release 4	**New output data:** New fields for job queue times have been added in the return area mapped by IWMWRCAA.	
IWMRESET	OS/390 Release 4	**New macro:** Changes the service class (or PGN, in compatibility mode) of an address space, or quiesces or resumes an address space. Replaces SYSEVENT RESETPG, which is obsolete, and functions the same as the RESET command.	*WLM*
IWMRPT	5.1	**New macro:** Lets a caller tell workload management the response time of a completed work request.	*WLM*
IWMRQRY	5.1	**New macro:** Provides a caller with information on address space related general execution delays.	*WLM*
	5.2	**New parameter:** Lets a caller receive information on enclave processing.	
	OS/390 Release 4	**New parameter:** Allows information retrieval for a single enclave. Also, new information retrieved for all enclave requests.	
IWMSCXIT	OS/390 Release 3	**New macro:** Used in list form only, it maps the input parameter list passed to the exit specified by a routing server on the IWMCONN macro. (The execute and standard form of this macro are used only by the operating system itself.)	*WLM*
IWMSEDES	OS/390 Release 4	**New macro:** Determines if a scheduling environment is available on a specified system.	*WLM*

Figure 1-6 (Page 13 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
IWMSEQRY	OS/390 Release 4	**New macro:** Returns information about the scheduling environments and resources that are defined in the active service policy. This information includes the current state of each scheduling environment and resource on the current system and on other systems in the sysplex.	*WLM*
IWMSESET	OS/390 Release 4	**New macro:** Allows a caller to modify the state of a resource.	*WLM*
IWMSEVAL	OS/390 Release 4	**New macro:** Validates a scheduling environment name. Can be used to validate a scheduling environment prior to associating it with a work item (such as a job or transaction).	*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*
IWMSRDRS	5.2	**New macro:** Lets a caller remove a server from a list of servers eligible to participate in sysplex workload balancing.	*WLM*
	OS/390 Release 4	**Changed macro:** A HOST parameter has been added. Can now be invoked by an unauthorized program.	
IWMSRFSV	OS/390 Release 3	**New macro:** For a routing manager, finds a server associated with a specified application environment and returns the associated server data which was passed at the time the server connected to workload management (using IWMCONN).	*WLM*
IWMSRSRG	5.2	**New macro:** Lets a caller register a server that is eligible to participate in sysplex workload balancing.	*WLM*
	OS/390 Release 4	**Changed macro:** A HOST parameter has been added. Can now be invoked by an unauthorized program.	
IWMSRSRS	5.2	**New macro:** Provides a list of servers eligible to participate in sysplex workload balancing.	*WLM*
	OS/390 Release 4	**Changed environment:** Can now be invoked by an unauthorized program.	
IWMSSEL	OS/390 Release 3	**New macro:** For a server, obtains the next work request queued by the queueing manager associated with the server (using IWMQINS).	*WLM*
	OS/390 Release 5	**New parameter:** A new optional parameter, SERVER_TOKEN=, is added to allow a queueing manager to queue secondary work requests.	
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*
IWMSTBGN	OS/390 Release 3	**New macro:** For a server, establishes the environment to process a work request that was previously selected using IWMSSEL.	*WLM*

Figure 1-6 (Page 14 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
IWMSTEND	OS/390 Release 3	**New macro:** For a server, removes the environment which was previously established using IWMSTBGN to process a work request.	*WLM*
	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.	
IWMWMCON	5.2	**New macro:** Allows a caller to change the subsystem name and subsystem type provided on a previous call to IWMCONN.	*WLM*
	OS/390 Release 3	**Changed environment:** The environment in which this macro can be called has been changed.	
IWMWQRY	5.1	**New macro:** Lets a caller obtain the associated performance goals for the performance periods of a specified service class.	*WLM*
IWMWQWRK	5.1	**New macro:** Lets a caller query whether work is being abnormally processed.	*WLM*
IWMWSYSQ	5.2 (with APAR OW20726)	**New macro:** Returns a list of systems running in goal mode and information related to available CPU capacity and resource constraints. Can be used for sysplex workload balancing.	*WLM*
IXCARM	5.2	**New macro:** Allows started tasks and batch jobs to register as automatic restart management elements, which can be restarted when a system leaves the sysplex, or when the element terminates unexpectedly.	*Sysplex*
IXCJOIN	5.1	**New parameter:** The MEMASSOC parameter allows an XCF member to be associated with an address space, a jobstep task, or the issuing task.	*Sysplex*
	5.2	**New parameter:** The SYSCLEANUPMEM parameter indicates whether this member will perform system-wide cleanup for systems that leave the sysplex. Completion of the cleanup process is indicated by issuing the IXCSYSCL macro.	
	OS/390 Release 3	**New parameters:** Support XCF-managed response collection. • The CANREPLY parameter allows a member to specify whether it can participate in a message response collection protocol. • The NOTIFYEXIT parameter identifies the message notify user routine.	
	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.	
IXCMG	5.1	**New support:** Supports the reporting of tuning and capacity planning data for a coupling facility structure that is being used for XCF signalling.	*Sysplex*

Figure 1-6 (Page 15 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
IXCMSGC	OS/390 Release 3	**New macro:** Allows an XCF member to interact with the XCF signalling services to provide additional functions for: • Saving a message for later processing • Retrieving information about messages that have been saved • Redelivering a message to the member that previously saved the message • Forcing a message response request to be considered complete • Discarding a message that a member had previously saved.	*Auth*
	OS/390 Release 8	**Additional reason code information:** Return code X'4', reason code X'xxxx0018' provides additional information.	
IXCMSGI	5.1	**New parameters:** Allow callers to: • Receive message data into multiple buffers • Indicate the storage key of the buffers they provide to receive the message • Specify buffers located in a common area data space.	*Sysplex*
	OS/390 Release 3	**New parameter:** The TOKEN parameter replaces the MSGTOKEN parameter when using the expanded XCF signalling functions.	
IXCMSGO	5.1	**New parameters:** Allow callers to: • Send message data located in multiple buffers • Indicate the storage key of the buffers containing the message data • Specify buffers located in a common area data space.	*Sysplex*
	OS/390 Release 3	**New parameters:** Allow callers to: • Use XCF-managed response collection • Broadcast a message to more than one member in the XCF group.	
	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.	

Figure 1-6 (Page 16 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
IXCQUERY	5.1	**New parameters:** The PLEXNAME parameter returns the sysplex name and the CURRMAXSYS parameter returns the current maximum number of systems allowed in the sysplex as specified in the sysplex couple data set. **New parameters:** Support requests for information about coupling facilities and coupling facility structures defined in an active CFRM policy.	*Sysplex*
	5.2	**Changed parameters:** Two new REQINFO types, ARMSTATUS and ARMS_ALLDATA, return information about specific or all automatic restart management elements. **New support:** Reports structure, connection, and policy information relevant to structure alter processing. IXCYQUAA is expanded to include this new information.	
	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. **Additional information returned:** • Structure information related to system-managed rebuild. • Connector information related to system-managed rebuild. A query for member information returns data indicating whether the member supports the large message delivery protocol (messages up to 128M bytes in length.	
IXCSYSCL	5.2	**New macro:** Indicates this XCF member has completed its cleanup for a system that left the sysplex. This macro may be issued only if the SYSCLEANUPMEM parameter was specified when this member issued the IXCJOIN macro.	*Sysplex*
IXCTERM	5.1	**Changed use:** Does not terminate a member associated with an address space (as specified by the MEMASSOC keyword of IXCJOIN).	*Sysplex*

Figure 1-6 (Page 17 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
IXGBRWSE	5.2	**New macro:** Browses, or reads, log blocks from a log stream.	***Both***
	OS/390 Release 3	**Changed environment**: You can now issue IXGBRWSE in either task or SRB dispatchable unit mode. **New parameters:** • For both authorized and unauthorized programs, the VIEW parameter specifies whether requests issued during this browse session return active data only, or both active and inactive data. • For authorized programs: MODE=SYNCEXIT specifies that the request process synchronously, if possible, and if not, that a complete exit (specified on IXGCONN) get control.	
	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.	

Name of Service	Release	Description of Changes	Reference
Figure 1-6 (Page 18 of 32). Macros Changed Since MVS/ESA SP 4.3			
IXGCONN	5.2	**New macro:** Connects or disconnects a program to a specific log stream.	***Both***

	OS/390 Release 3	**New parameters:**
		
		• For both authorized and unauthorized programs, the COMPLETEEXIT parameter specifies a user complete exit for the caller. The complete exit gets control when the system processes IXGBRWSE, IXGDELET, or IXGWRITE requests specifying MODE=SYNCEXIT asynchronously.
		• For authorized programs:
		  – IMPORTCONNECT specifies whether the connection is for writing or importing log data to a log stream.
		  – RMNAME specifies the name of the resource manager program connecting to the log stream.
		  – RMEXIT specifies a user resource manager exit for the resource manager connecting to the log stream.
		  – RMDATA specifies user data for the resource manager exit.
		  – RMEVENT specifies the events that you want to have trigger the resource manager user exit.
		
		Changed parameter: For installations using an OS/390 release level 3 or above LOGR couple data set, system logger dynamically manages the average buffer size automatically. The AVGBUFSIZE output parameter shows only the **initial** setting specified in the LOGR couple data set.	

	OS/390 Release 4	**Changed parameters:** When you connect to a DASD-only log stream, some of the structure related fields returned by IXGCONN, STRUCTNAME, AVGBUFSIZE, and ELEMENTSIZE will be returned containing hexadecimal zeros. The answer area mapped by IXGANSAA macro will contain a new flag indicating whether a log stream is a DASD-only log stream. **New reason codes:** • Indicating that there was an attempt to connect to a DASD-only log stream from more than one system. • Indicating that there was an attempt to connect to a type of log stream not supported at the current system level.	
	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.	

Figure 1-6 (Page 19 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
IXGDELET	5.2	**New macro:** Deletes log blocks from a log stream.	***Both***

	OS/390 Release 3	**Changed environment**: You can now issue IXGDELET in either task or SRB dispatchable unit mode.
		
		New parameters:
		
		• For both authorized and unauthorized programs:
		  – FORCE specifies whether a delete request can be overridden by a resource manager exit.
		  – OBLOCKID specifies the block identifier where the resource manager places the override block identifier.
		  – MODE=ASYNCNORESPONSE specifies that the request process asynchronously.
		• For authorized programs: MODE=SYNCEXIT specifies that the request process synchronously, if possible, and if not, that a complete exit (specified on IXGCONN) get control.	

	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.	
IXGIMPRT	OS/390 Release 3	**New macro:** Allows a program to import a copy of a log block from one log stream to another, specifying a log block identifier and time stamp to be assigned to the log block.	***Both***

Name of Service	Release	Description of Changes	Reference
IXGINVNT	5.2	**New macro:** Manages the system logger inventory by either defining, updating, or deleting entries for log streams in the inventory or defining or deleting entries for coupling facility structures in the inventory.	*Both*
	OS/390 Release 3	**New parameters** for both authorized and unauthorized programs: • RMNAME specifies the name of the resource manager program associated with the log stream. • DESCRIPTION specifies user defined data describing a log stream. • AUTODELETE specifies when system logger physically deletes data. • RETPD specifies the number of days of the retention period for log data in the log stream. **Changed parameter:** For installations using an OS/390 release level 3 or above LOGR couple data set, system logger dynamically manages the average buffer size automatically. The AVGBUFSIZE parameter is only the **initial** setting for the log stream.	
	OS/390 Release 4	**New parameters** for both authorized and unauthorized programs: • DASDONLY specified on REQUEST=DEFINE TYPE=LOGSTREAM specifies whether the log stream being defined or updated is a DASD-only or coupling facility log stream. • MAXBUFSIZE specified on REQUEST=DEFINE TYPE=LOGSTREAM with DASDONLY=YES lets you define the size of the largest log block that can be written to this DASD-only log stream. • STRUCTNAME specified on REQUEST=UPDATE lets you upgrade a DASD-only log stream to a coupling facility log stream by associating a structure name with the log stream in the log stream definition. **New reason code** for parameter combinations that are not valid.	
	OS/390 Release 8	**New parameters** for defining a logstre am 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. **New parameters** for updating a logstrea m 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.	
IXGOFFLD	OS/390 Release 3	**New macro:** Allows a program to initiate an offload of log data from the coupling facility structure associated with a log stream to DASD log data sets.	*Both*

Figure 1-6 (Page 20 of 32). Macros Changed Since MVS/ESA SP 4.3

Figure 1-6 (Page 21 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
IXGQUERY	OS/390 Release 3	**New macro:** Allows a program to retrieve information about a log stream.	*Both*
IXGUPDAT	OS/390 Release 3	**New macro:** Allows a program to update the GMT time stamp maintained in the control information for a log stream.	*Both*
IXGWRITE	5.2	**New macro:** Writes a log block to a log stream.	*Both*
	OS/390 Release 3	**Changed environment**: You can now issue IXGWRITE in either task or SRB dispatchable unit mode. **New parameters:** • For both authorized and unauthorized programs, the MODE=ASYNCNORESPONSE parameter specifies that the request process asynchronously. • For authorized programs: MODE=SYNCEXIT specifies that the request process synchronously, if possible, and if not, that a complete exit (specified on IXGCONN) get control.	
IXLALTER	5.2	**New macro:** Provides the ability to expand, contract, and/or reapportion a coupling facility structure.	*Sysplex*
IXLCACHE	5.1	**New macro:** Provides operations to manipulate data in a coupling facility cache structure.	*Sysplex*
	5.2	**New reason code:** Provides reason for rejection of reclaim vector processing while the structure is being altered. **New support:** Allows the specification of up to 255 entries per element in a cache structure allocated in a coupling facility with CFLEVEL=1 or higher.	
	OS/390 Release 8	**Performance enhancement:** Provides support for IXLCACHE REQUEST=DELETE_NAME in a coupling facility of CFLEVEL=7 or higher. **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.	

Figure 1-6 (Page 22 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
IXLCONN	5.1	**New macro:** Establishes a connection to a coupling facility structure.	***Sysplex***
	5.2	**New parameters:** The ALLOWALTER, RATIO, MINENTRY, and MINELEMENT parameters are added to support the coupling facility structure alter function available in MVS/ESA SP 5.2. • ALLOWALTER specifies whether or not the connector supports the structure alter function for this structure. • RATIO specifies whether or not the connector supports a change to the entry-to-element ratio. • MINENTRY specifies the percentage of "in-use" (list structure) or "in-use and changed" (cache structure) entries that should be available at structure alter completion. • MINELEMENT specifies the percentage of "in-use" (list structure) or "in-use and changed" elements that should be available at structure alter completion.	
	OS/390 Release 2	**New parameters:** The RNAMELEN and CONNECTIVITY parameters are added to support new IXLCONN functions. • The RNAMELEN parameter allows you to specify whether resource names are a fixed or variable-length for a lock structure. • The CONNECTIVITY parameter allows you to define its connectivity requirements to the coupling facility in which a structure is to be allocated.	
	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. The ALLOWAUTO and SUSPEND parameters are added to support system-managed processing.	
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***
IXLDISC	5.1	**New macro:** Disconnects a connection to a coupling facility structure.	***Sysplex***
IXLEERSP	5.1	**New macro:** Responds to events presented to an event exit.	***Sysplex***
	OS/390 Release 8	**New event:** The Structure Temporarily Unavailable (STRTEMPUNAVAIL) event is added in support of system-managed processes.	
IXLFCOMP	5.1	**New macro:** Forces the completion of an IXLCACHE or IXLLIST request. Can also return status information about the IXLCACHE or IXLLIST request.	***Sysplex***

Figure 1-6 (Page 23 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
IXLFORCE	5.1	**New macro:** Forces deletion of one of the following: • A persistent coupling facility structure with no connectors • A failed-persistent connector to a structure • All failed-persistent connectors to a structure • A structure dump associated with a structure • Dump serialization for a structure dump associated with a structure.	*Sysplex*

Figure 1-6 (Page 24 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
IXLLIST	5.1	**New macro:** Provides operations to manipulate data in a coupling facility list structure.	*Sysplex*
	5.2	**New parameters:** Several new parameters are added to support new functions available in SP 5.2. All except PLISTVER require a coupling facility with a CFLEVEL=1.	
		• VERSCOMPTYPE specifies whether an entry version number comparison is to be equal or less-than-or-equal. This parameter applies to all request types that support entry version number comparison.	
		• LISTKEY and MAXLISTKEY let you automatically assign a key to a list entry, based on current and maximum list key values specified as list controls. These parameters are added to the WRITE_LCONTROLS request.	
		• SETCURSOR, added to the WRITE_LCONTROLS request, lets you set the cursor and the cursor direction for a particular list. The list cursor direction is only used when UPDATECURSOR=YES and CURSORUPDTYPE=NEXTCOND are specified.	
		• CURSORUPDTYPE provides additional options for updating a list cursor. This parameter is added to the READ, WRITE, MOVE, and DELETE requests and applies only when UPDATECURSOR=YES is specified.	
		• AUTHCOMP and AUTHCOMPTYPE let you conditionally process a request based on the list authority value of a list. These parameters apply to the READ, WRITE, MOVE, DELETE, READ_LIST, READ_MULT, DELETE_MULT, and DELETE_ENTRYLIST requests and apply only when LISTNUM is specified.	
		• LISTKEYTYPE and LISTKEYINC let you assign list entry key values automatically on MOVE and WRITE requests. LISTKEYTYPE controls when key assignment is performed; LISTKEYINC controls updates to the list key.	
		• KEYCOMP allows you to specify a value to be compared with a list entry to determine if a particular list entry should be processed. This parameter is added to the READ_LIST, READ_MULT, DELETE_MULT, and DELETE_ENTRYLIST requests.	
		New output data: The list answer area contains data that indicates what actions the macro performed as a result of a WRITE or MOVE request.	
		New support: Allows the specification of up to 255 entries per element in a list structure allocated in a coupling facility with CFLEVEL=1.	
	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.	

Figure 1-6 (Page 25 of 32). Macros Changed Since MVS/ESA SP 4.3

Name of Service	Release	Description of Changes	Reference
IXLLOCK	5.1	**New macro:** Provides operations to allow serialization and contention management for shared resources through the use of a coupling facility lock structure.	*Sysplex*
	OS/390 Release 2	**New parameter:** The RNAMELEN parameter specifies the length of the resource name when variable-length resource names are in effect.	
IXLMG	5.1	**New macro:** Provides tuning and capacity planning data for coupling facilities and coupling facility structures defined in an active CFRM policy.	*Sysplex*
	5.2	**New output data:** • The macro returns additional structure control information for a cache structure. • The macro reports structure alter information. The size of certain records in IXLYAMDA is increased to include this new information.	
	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.	
IXLPURGE	5.1	**New macro:** Completes operations in progress to a coupling facility and purges operations not yet processed.	*Sysplex*
IXLREBLD	5.1	**New macro:** Starts and stops rebuild processing for a coupling facility structure.	*Sysplex*
	OS/390 Release 2	**New parameter:** The LESSCONNACTION parameter specifies whether the system is to allow a structure rebuild to continue in spite of a degradation in connectivity.	
	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.	
IXLRT	5.1	**New macro:** Manipulates record data in a coupling facility lock structure.	*Sysplex*
	5.2	**New parameters:** • FASTPATH uses an optimized access method when accessing record data. • FASTRESTOKEN passes control information when FASTPATH=YES is specified. **Changed parameter:** RESTOKEN cannot be used when FASTPATH=YES is specified.	
	OS/390 Release 8	**New parameter:** The EXTRESTOKEN parameter is added to the READALL, READBYCONN, and DELETEBYCONN request types to support extended restart tokens.	
IXLSYNCH	5.1	**New macro:** Modifies attributes of the ownership state of a resource or data associated with a resource.	*Sysplex*
IXLUSYNC	5.1	**New macro:** Sets or confirms a user event (a sync point event) to allow synchronization of processing between connectors to a coupling facility structure.	*Sysplex*

Name of Service	Release	Description of Changes	Reference
IXLVECTR	5.1	**New macro:** Modifies local vector size, tests list header states, and tests local cache buffer states.	*Sysplex*
IXLZSTR	5.1	**New macro:** Requests coupling facility structure data from a dump containing the data. Used in an IPCS environment only.	*Sysplex*
	5.2	**New output data:** For a cache structure, the macro returns additional structure control information. For a list structure, the macro returns additional list control information. When IXLALTER has been invoked, additional cache structure controls and list structure controls are also returned.	
IXZXIXAC	5.1	**New macro:** Acknowledge receipt of a JES XCF message.	*JES Common Coupling*
IXZXIXAT	5.1	**New macro:** Attach to JES XCF.	*JES Common Coupling*
	OS/390 Release 3	**New parameter:** PLISTVER added to IXZXIXAT macro to provide selection of macro version.	
IXZXIXCL	5.2	**New macro:** Indicate system cleanup complete.	*JES Common Coupling*
IXZXIXDT	5.1	**New macro:** Detach from JES XCF.	*JES Common Coupling*
IXZXIXIF	5.1	**New macro:** Obtain member information.	*JES Common Coupling*
	5.2	**New parameters:** Allow you to filter (limit) the information JES XCF returns about JES XCF group members.	
IXZXIXMB	5.1	**New macro:** Build a JES XCF mailbox.	*JES Common Coupling*
IXZXIXMC	5.1	**New macro:** Clear a JES XCF mailbox.	*JES Common Coupling*
IXZXIXMD	5.1	**New macro:** Delete a JES XCF mailbox.	*JES Common Coupling*
IXZXIXPI	5.2	**New macro:** Collect JES3 performance information.	*JES Common Coupling*
IXZXIXRM	5.1	**New macro:** Receive a message from a JES XCF mailbox.	*JES Common Coupling*

Figure 1-6 (Page 26 of 32). Macros Changed Since MVS/ESA SP 4.3

Figure 1-6 (Page 27 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
IXZXIXSM	5.1	**New macro:** Send a message to a JES XCF mailbox.	*JES Common Coupling*
JoinWorkUnit	OS/390 Release 4	**New macro:** C-language interface for invoking IWMEJOIN macro.	*WLM*
LeaveWorkUnit	OS/390 Release 4	**New macro:** C-language interface for invoking IWMELEAV macro.	*WLM*
MCSOPER	5.1	**Changed parameter:** The HARDCOPY option on the OPERPARM parameter allows an extended MCS console to receive the hardcopy message set.	*Auth*
	APAR OW20039 integrated into OS/390 Release 4	**New keyword:** On the ACTIVATE option, the MIGIDREL keyword that specifies if the migration ID is to be automatically released.	
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*
QueryMetrics	OS/390 Release 4	**New macro:** C-language interface for invoking IWMWSYSQ macro.	*WLM*
QuerySchEnv	OS/390 Release 4	**New macro:** C-language interface for invoking IWMSEQRY macro.	*WLM*
RESERVE	5.2	**New parameter:** The LOC parameter indicates a 24-bit or 31-bit address for the device that the caller wants reserved.	*Both*
SDUMP	5.2	**Enhancement:** Callers can use the RGN option of the SDATA parameter to include new subpool 249 in an SVC dump.	*Auth*

Figure 1-6 (Page 28 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
SDUMPX	5.1	**New parameters:** • DSPLIST specifies data spaces to be dumped. • INTOKEN specifies an incident token that can be used to correlate dumps for the same problem from different systems in a sysplex. • JOBLIST specifies jobs to be dumped. • PROBDESC provides information for describing the problem that caused the dump. • REMOTE specifies other systems in a sysplex to be dumped. • STRLIST specifies a dump parameter list for dumping information from a coupling facility. STRLIST is built by the IHABLDP macro. **Changed parameters:** • Generic characters, * or ?, can be specified in in job names, data space names, system names, XCF group names, and XCF member names. • The XESDATA option on the SDATA parameter requests that cross-system extended services (XES) data is to be dumped. • The COUPLE option on the SDATA parameter provides new information about coupling facility resource management. • The WLM option on the SDATA parameter provides storage information from workload manager. **New exit routines used with SDUMPX macro:** • IEASDUMP.QUERY - SVC dump query routine • IEASDUMP.GLOBAL - SVC dump routine for capturing common storage • IEASDUMP.LOCAL - SVC dump routine for capturing storage in an address space **New reason codes for return code 08:** 3F through 45. **Processing:** Dumps on other systems contain areas specified in LISTD, but not in LIST or LISTA.	*Auth*
	5.2	**New exit routine used with SDUMPX macro:** • IEASDUMP.SERVER - SVC dump routine for adding data to the dump	
	OS/390 Release 7	**New Parameter:** The SDATA=SERVERS keyword values causes registered IEASDUMP.SERVER dynamic exits to receive control.	
SETRP	5.1	**New parameter:** The SSRESET parameter allows a recovery routine that abnormally ends to determine the subspace environment in which the next recovery routine will get control.	
SNAP and SNAPX	5.2	**Enhancement:** Callers can use the RGN option of the SDATA parameter to include new subpool 249 in a dump.	*Unauth*

Figure 1-6 (Page 29 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
SPLEVEL	5.1	**Changed default:** Specifies that level number 5 is the default value.	*Unauth*
	OS/390 Release 2	**Changed default:** Specifies that level number 6 is the default value.	
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*
STORAGE	5.2	**Enhancement:** Callers can specify that storage is to be obtained or released from new subpool 249.	*Auth*
SUSPEND	5.1	**Changed environment:** Programs can issue the SUSPEND for SRB macro while holding a local or CML lock. They can hold no other locks.	*Auth*

Figure 1-6 (Page 30 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
SYSEVENT	5.1	**New parameters:** • REQSRMST - specifies the SYSEVENT to check: – The workload management mode of a system – The active service policy, or current IPS and ICS, of a system – The service definition name from which the currently active service policy was extracted. • REQASD and REQFASD - both specify the SYSEVENT to obtain workload management information, such as the workload, service class, and resource group associated with an address space. REQFASD is a faster, unauthorized version of REQASD with no recovery.	*Auth*
	5.2	**New parameters:** • ENCSTATE indicates that an enclave's state is either idle or non-idle. • ENQHOLD identifies the holder of a resource causing contention. • ENQRLSE indicates that a holder has released a resource causing contention. • REQASCL requests the classification attributes for an address space.	
	OS/390 Release 3	**New parameter:** ENCASSOC - lets a caller associate an enclave and an address space so that they can be related for purposes of storage management. **New outputs:** • REQASD and REQFASD SYSEVENT output includes CPU time for owned enclaves. **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. • REQASCL SYSEVENT output includes PERFORM value from the JOB statement or the TSO logon procedure.	
	OS/390 Release 4	**New output data:** • SYSEVENT REQASD and REQFASD (Request Address Space Data) - The return area for these sysevents (IRARASD) now includes service class token, and reset indicator. • SYSEVENT REQASCL (Request Address Space Classification) - The return area for this sysevent (IRARASC) now includes the priority classification qualifier.	
	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.	

Figure 1-6 (Page 31 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
TESTART	5.1	**New parameter:** The CADS parameter specifies whether TESTART is to check the caller's PASN-AL to see if the specified access list entry token (ALET) points to an entry for a SCOPE=COMMON data space.	*Unauth*
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*
UCBDEVN	5.2	**New restriction:** Programs calling UCBDEVN and passing an above 16 megabyte UCB must run in AMODE 31. If the caller runs in AMODE 31 and passes a 24-bit UCB pointer, the pointer must have a clean high order byte.	*Unauth*
UCBINFO	5.1	**New parameters:** • DEVCOUNT returns a count of the UCBs for a device class. • DEVINFO retrieves information about a device, specifically, reasons for the device being offline. • PRFXDATA obtains a copy of the UCB prefix extension segment.	*Both*
UCBLOOK	5.2	**New parameters:** • The LOC parameter indicates whether the caller should receive addresses for only below 16 megabyte UCBs or also above 16 megabyte UCBs.	*Auth*
UCBSCAN	5.2	**New parameters:** • LOC - Indicates whether the caller should receive addresses for only below 16 megabyte UCBs or also above 16 megabyte UCBs. • UCBCXPTR - Returns the address of the UCB common extension. • UCBPXPTR - Returns the address of the UCB prefix extension. Only specify these parameters with the ADDRESS option of UCBSCAN.	*Auth*
VSMLIST	5.2	**Enhancement:** Callers can use the SP parameter to request information about storage allocated from new subpool 249.	*Auth*
VSMLOC	5.2	**Enhancement:** Callers can use the CPOOLLCL parameter to verify that a local cell pool has been allocated from new subpool 249.	*Auth*
WTO	5.2	**New parameters:** • JOBID is the job id of the issuer of the message. • JOBNAME is the job name of the issuer of the message. • SYSNAME specifies a system name to be associated with this message.	*Both*

Figure 1-6 (Page 32 of 32). Macros Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
WTOR	5.2	**New parameters:** • JOBID is the job id of the issuer of the message. • JOBNAME is the job name of the issuer of the message. • SYSNAME specifies a system name to be associated with this message.	*Both*

Summary of Changes to Callable Services for High-Level Languages

Figure 1-7 identifies callable services that are added, changed, or deleted in MVS/ESA SP V4, MVS/ESA SP V5, and OS/390. 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 *OS/390 MVS Programming: Callable Services for HLL*.

- **Product Reg** refers to *OS/390 MVS Programming: Product Registration*.

- **Resource Recovery** refers to *OS/390 MVS Programming: Resource Recovery*.

- **Writing Scheds** refers to *OS/390 MVS Programming: Writing Transaction Schedulers for APPC/MVS*.

- **Writing Servers** refers to *OS/390 MVS Programming: Writing Servers for APPC/MVS*.

- **Writing TPs** refers to *OS/390 MVS Programming: Writing TPs for APPC/MVS*.

Figure 1-7 (Page 1 of 9). Callable Services Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
ATBALC2	OS/390 Release 3	• **Changed usage:** For the value of the Partner_LU_name parameter, a TP may supply a VTAM generic resource name. • **Changed processing:** – Only when an APPC/MVS LU is enabled to support network-qualified names, APPC/MVS uses the 17-byte network-qualified name of the partner LU on outbound Allocate requests. When the LU is not enabled for this support, APPC/MVS does not use the network-ID portion of the name on outbound Allocate requests, even though the entire network-qualified name is a valid value for TPs to specify for Partner_LU_name. – If any of your installation's TPs specifies a blank or null mode name on Allocate calls, APPC/MVS now substitutes a mode name, ATB#MODE, which uses VTAM's default log mode. • **New parameter value:** For the Sync_level parameter, a TP may specify the value 2 (syncpt) to allocate a protected conversation. • **Changed output:** For the Return_code parameter, ATBALC2 returns new codes for errors related to protected conversations.	***Writing TPs***
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: • Timeout_Value specifies the time period in minutes in which the allocate and each subsequent APPC/MVS TP conversation call should complete.	***Writing TPs***

Name of Service	Release	Description of Changes	Reference

ATBALLC	OS/390 Release 3	• **Changed usage:** For the value of the Partner_LU_name parameter, a TP may supply a VTAM generic resource name.
		
		• **Changed processing:**
		
		  – Only when an APPC/MVS LU is enabled to support network-qualified names, APPC/MVS uses the 17-byte network-qualified name of the partner LU on outbound Allocate requests. When the LU is not enabled for this support, APPC/MVS does not use the network-ID portion of the name on outbound Allocate requests, even though the entire network-qualified name is a valid value for TPs to specify for Partner_LU_name.
		
		  – If any of your installation's TPs specifies a blank or null mode name on Allocate calls, APPC/MVS now substitutes a mode name, ATB#MODE, which uses VTAM's default log mode.
		
		• **New parameter value:** For the Sync_level parameter, a TP may specify the value 2 (syncpt) to allocate a protected conversation.
		
		• **Changed output:** For the Return_code parameter, ATBALLC returns new codes for errors related to protected conversations.
			Writing TPs

ATBCAS1	OS/390 Release 3	**Changed processing:** Processing varies for protected conversations.	*Writing Scheds*
ATBCFM	OS/390 Release 3	**Changed output:** For the Return_code parameter, ATBCFM returns new codes for errors related to protected conversations.	*Writing TPs*
ATBCFMD	OS/390 Release 3	**New error condition:** ATBCFMD returns the Program_state_check return code for an error related to protected conversations.	*Writing TPs*
ATBCMAS	OS/390 Release 3	**Changed processing:** Processing varies for protected conversations.	*Writing Scheds*
ATBCMTP	OS/390 Release 3	**Changed processing:** Processing varies for protected conversations.	*Writing Scheds*
ATBCNTL	OS/390 Release 3	**Changed processing:** Processing varies for protected conversations.	*Writing Scheds*
ATBCTP1	OS/390 Release 3	**Changed processing:** Processing varies for protected conversations.	*Writing Scheds*
ATBCTP3	5.1	**New version of callable service:** The new version of the Cleanup_TP service allows an APPC/MVS or alternate transaction scheduler to send error log information to a partner system or transaction program.	*Writing Scheds*
	OS/390 Release 3	**Changed processing:** Processing varies for protected conversations.	

Figure 1-7 (Page 2 of 9). Callable Services Changed Since MVS/ESA SP 4.3

Figure 1-7 (Page 3 of 9). Callable Services Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
ATBCUC1	OS/390 Release 3	**Changed processing:** Processing varies for protected conversations.	*Writing TPs*
ATBDEAL	OS/390 Release 3	For the Deallocate service: • **Changed processing:** Deallocation processing varies for protected conversations. • **Changed output:** For the Return_code parameter, ATBDEAL returns new codes for errors related to protected conversations.	*Writing TPs*
ATBEES3	5.1	**New callable service:** The new Error_Extract service returns detailed information about errors indicated by APPC/MVS return codes.	*Writing TPs*
ATBEXAI	5.1	**Changed usage:** The Access_token parameter, which specifies the ALET of the address space or data space in which the buffer for this service resides, can specify an ALET for a SCOPE=COMMON data space.	*Writing TPs*
	OS/390 Release 3	**Changed output:** For specific conversation information (extract_code X'0001'), ATBEXAI returns unit of recovery identifiers (URIDs) for protected conversations. **New output:** URID for syncpt conversations.	
ATBFLUS	OS/390 Release 3	**New error condition:** ATBFLUS returns the Program_state_check return code for an error related to protected conversations.	*Writing TPs*
ATBGETA	OS/390 Release 3	**New output:** New value for Sync level of conversation.	*Writing TPs*
ATBGETC	OS/390 Release 3	**Changed output:** For the Get_Conversation service: • APPC/MVS might return a VTAM generic resource name for the value of the Partner_LU_name parameter. • APPC/MVS might return a value of 2 (Syncpt) for the Sync_level parameter, to indicate a protected conversation.	*Writing TPs*
ATBGTA2	OS/390 Release 3	**Changed output:** APPC/MVS might return: • A VTAM generic resource name for the value of the Partner_LU_name parameter. • A new value of 2 (syncpt) for the Sync_level parameter, to indicate a protected conversation. • New codes for the Return_code parameter, to indicate errors related to protected conversations. • New values for conversation states for protected conversations.	*Writing TPs*
ATBGTP4	OS/390 Release 3	**New version of callable service:** This new version of ATBGTP4 allows a transaction program to obtain its current syncpoint options for APPC/MVS processing of protected conversations.	*Writing TPs*

Figure 1-7 (Page 4 of 9). Callable Services Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
ATBIDN4	OS/390 Release 3	**New version of callable service:** This new version of ATBIDN1 allows an alternate transaction scheduler to provide a resource manager name when identifying itself to APPC/MVS.	***Writing Scheds***
ATBPTR	OS/390 Release 3	For the Prepare_to_Receive service: • **Changed processing:** Processing varies for protected conversations. • **Changed output:** For the Return_code parameter, ATBPTR returns new codes for errors related to protected conversations.	***Writing TPs***
ATBRAL2	OS/390 Release 3	**Changed output:** For the Receive_Allocate service, APPC/MVS might return: • A VTAM generic resource name for the value of the Partner_LU_name parameter. • A new value of 2 (syncpt) for the Sync_level parameter, to indicate that an allocate queue request represents a protected conversation. • New reason codes 44 and 45 for the Reason_code parameter, when the Return_code parameter value is 16. These reason codes indicate an error condition related to a server's processing of protected conversations.	***Writing Servers***
ATBRCVI	5.1	**Changed usage:** The Access_token parameter, which specifies the ALET of the address space or data space in which the buffer for this service resides, can specify an ALET for a SCOPE=COMMON data space.	***Writing TPs***
	OS/390 Release 3	**Changed output:** For the Receive_Immediate service, APPC/MVS might return: • New values for the Status_received parameter, for control information related to protected conversations • New codes for the Return_code parameter, to indicate errors related to protected conversations.	
ATBRCVW	5.1	**Changed usage:** The Access_token parameter, which specifies the ALET of the address space or data space in which the buffer for this service resides, can specify an ALET for a SCOPE=COMMON data space.	***Writing TPs***
	OS/390 Release 3	**Changed output:** For the Receive_and_Wait service, APPC/MVS might return: • New values for the Status_received parameter, for control information related to protected conversations • New codes for the Return_code parameter, to indicate errors related to protected conversations.	

Name of Service	Release	Description of Changes	Reference
Figure 1-7 (Page 5 of 9). Callable Services Changed Since MVS/ESA SP 4.3			
ATBRFA2	OS/390 Release 3	**New possible error condition:** The Register_for_Allocates service fails with return code 16 and reason code 12 for the following conditions: • The caller specifies that APPC/MVS is to use a side information entry for the local LU name, and that entry contains a VTAM generic resource name. • The caller specifies a VTAM generic resource name for the Local_LU_name parameter.	*Writing Servers*
ATBRJC2	OS/390 Release 4	**Changed processing:** Processing is changed for protected conversations.	*Writing TPs*
ATBRTS	OS/390 Release 3	**New error condition:** ATBRTS returns the Program_state_check return code for an error related to protected conversations.	*Writing TPs*
ATBSEND	5.1	**Changed usage:** The Access_token parameter, which specifies the ALET of the address space or data space in which the buffer for this service resides, can specify an ALET for a SCOPE=COMMON data space.	*Writing TPs*
	OS/390 Release 3	**Changed output:** For the Return_code parameter, ATBSEND returns new codes for errors related to protected conversations.	
ATBSERR	OS/390 Release 3	**Changed output:** For the Return_code parameter, ATBSERR returns new codes for errors related to protected conversations.	*Writing TPs*
ATBSSO4	OS/390 Release 3	**New callable service:** Changes the default options that govern APPC/MVS processing of syncpoint operations.	*Writing TPs*
ATBSTO5	OS/390 Release 8	**New callable service:** • Sets a time limit on network-related delays for subsequent APPC/MVS conversation calls issued by the TP.	*Writing TPs*
ATBUID1	OS/390 Release 3	**Changed processing:** Processing varies for protected conversations.	*Writing Scheds*
ATRABAK	OS/390 Release 3	**New callable service:** Called from a communication resource manager, tells RRS to back out the associated unit of recovery.	*Resource Recovery*
ATRACMT	OS/390 Release 3	**New callable service:** Called from a communication resource manager, tells RRS to commit the associated unit of recovery.	*Resource Recovery*
ATRAFGT	OS/390 Release 3	**New callable service:** Called from a communication resource manager, tells RRS to forget the associated unit of recovery.	*Resource Recovery*
ATRAPRP	OS/390 Release 3	**New callable service:** Called from a communication resource manager, tells RRS to initiate the prepare phase for the associated unit of recovery.	*Resource Recovery*
ATRBACK	OS/390 Release 3	**New callable service:** Called from a resource manager or application program, tells RRS to back out the unit of recovery.	*Resource Recovery*

Name of Service	Release	Description of Changes	Reference
ATRCMIT	OS/390 Release 3	**New callable service:** Called from a resource manager or application program, tells RRS to commit the unit of recovery.	*Resource Recovery*
ATRDINT	OS/390 Release 3	**New callable service:** Called from a resource manager, tells RRS to delete an interest in a unit of recovery.	*Resource Recovery*
ATREINT	OS/390 Release 3	**New callable service:** Called from a resource manager, expresses an interest in a unit of recovery.	*Resource Recovery*
ATRIBRS	OS/390 Release 3	**New callable service:** Called from a resource manager, tells RRS that the resource manager is beginning its restart process.	*Resource Recovery*
ATRIERS	OS/390 Release 3	**New callable service:** Called from a resource manager, tells RRS that the resource manager is ending its restart process.	*Resource Recovery*
ATRIRLN	OS/390 Release 3	**New callable service:** Called from a resource manager, retrieves log name information from RRS.	*Resource Recovery*
ATRIRNI	OS/390 Release 3	**New callable service:** Called from a resource manager during restart, retrieves from RRS information about an incomplete protected unit of recovery (UR).	*Resource Recovery*
ATRIRRI	OS/390 Release 3	**New callable service:** Called from a resource manager, tells RRS how to process an interest in an incomplete unit of recovery (UR).	*Resource Recovery*
ATRISLN	OS/390 Release 3	**New callable service:** Called from a resource manager, presents the name of the resource manager log name to RRS.	*Resource Recovery*
ATRPDUE	OS/390 Release 3	**New callable service:** Called from a resource manager, tells RRS the results of asynchronous processing.	*Resource Recovery*
ATRREIC	OS/390 Release 3	**New callable service:** Called from a resource manager, determines if resource managers have expressed more than one interest in a unit of recovery.	*Resource Recovery*
ATRRID	OS/390 Release 3	**New callable service:** Called from a resource manager, retrieves from RRS data about an interest in a unit of recovery (UR).	*Resource Recovery*
ATRRURD	OS/390 Release 3	**New callable service:** Called from a resource manager, retrieves from RRS data for a unit of recovery (UR).	*Resource Recovery*
ATRRUSI	OS/390 Release 3	**New callable service:** Called from a resource manager, retrieves from RRS side information for an interest in a unit of recovery (UR).	*Resource Recovery*
ATRRWID	OS/390 Release 3	**New callable service:** Called from a resource manager, retrieves from RRS the work identifier related to a unit of recovery (UR).	*Resource Recovery*
ATRSIT	OS/390 Release 3	**New callable service:** Called from a resource manager, changes an interest in a unit of recovery (UR) from unprotected to protected.	*Resource Recovery*

Figure 1-7 (Page 6 of 9). Callable Services Changed Since MVS/ESA SP 4.3

Name of Service	Release	Description of Changes	Reference
ATRSPID	OS/390 Release 3	**New callable service:** Called from a resource manager, provides persistent interest data for a protected interest in a unit of recovery (UR).	*Resource Recovery*
ATRSROI	OS/390 Release 3	**New callable service:** Called from a resource manager, retains the resource manager's interest in a subsequent unit of recovery (UR) related to the current UR.	*Resource Recovery*
ATRSSPC	OS/390 Release 3	**New callable service:** Called from a resource manager, defines the resource manager's role in a distributed resource recovery environment.	*Resource Recovery*
ATRSUSI	OS/390 Release 3	**New callable service:** Called from a resource manager, presents to RRS side information for an interest in a unit of recovery (UR).	*Resource Recovery*
ATRSWID	OS/390 Release 3	**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*
CRGDRM	OS/390 Release 3	**New callable service:** Called from a resource manager, tells RRS that the resource manager is no longer participating with RRS in a resource recovery environment.	*Resource Recovery*
CRGGRM	OS/390 Release 3	**New callable service:** Called from a resource manager, registers the resource manager so that it can participate with RRS in a resource recovery environment.	*Resource Recovery*
CRGRRMD	OS/390 Release 3	**New callable service:** Called from a resource manager, obtains from RRS global data related to a specified resource manager.	*Resource Recovery*
CRGSEIF	OS/390 Release 3	**New callable service:** Called from a resource manager, identifies for RRS the entry points of the resource manager's exit routines.	*Resource Recovery*
CSRPFR1	OS/390 Release 3	**New callable service:** New version of CSRPFRE, provides slightly enhanced performance.	*Unauth*
CSRPGT1	OS/390 Release 3	**New callable service:** New version of CSRPGET, provides slightly enhanced performance.	*Unauth*
CSRPRFR1	OS/390 Release 3	**New callable service:** New version of CSRPRFR, provides slightly enhanced performance.	*Unauth*
CSRPRGT1	OS/390 Release 3	**New callable service:** New version of CSRPRGT, provides slightly enhanced performance.	*Unauth*
CSRSI	OS/390 Release 8	**New callable service:** This service retrieves system information.	*Unauth*
CTXBEGC	OS/390 Release 3	**New callable service:** Called from a resource manager that is also a work manager, creates a privately managed context to represent the resources for a work request.	*Resource Recovery*
CTXDINT	OS/390 Release 3	**New callable service:** Called from a resource manager, deletes its interest in a context that represents the resources for a work request.	*Resource Recovery*

Name of Service	Release	Description of Changes	Reference
Figure 1-7 (Page 8 of 9). Callable Services Changed Since MVS/ESA SP 4.3			
CTXEINT	OS/390 Release 3	**New callable service:** Called from a resource manager, expresses an interest in a context that represents the resources for a work request.	*Resource Recovery*
CTXENDC	OS/390 Release 3	**New callable service:** Called from a resource manager, ends a context that represents the resources for a work request.	*Resource Recovery*
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*
CTXRCID	OS/390 Release 3	**New callable service:** Called from a resource manager, retrieves the interest data supplied for a context that represents the resources for a work request.	*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*
CTXSCID	OS/390 Release 3	**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*
CTXSWCH	OS/390 Release 3	**New callable service:** Called from a resource manager, switches the context associated with an application's task or SRB to another context.	*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*
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*
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*
IFAEDDRG	OS/390 Release 1	**New callable service:** The Deregister service deregisters a product when it has finished processing and is no longer running.	*Product Reg*

Figure 1-7 (Page 9 of 9). Callable Services Changed Since MVS/ESA SP 4.3			
Name of Service	**Release**	**Description of Changes**	**Reference**
IFAEDLIS	OS/390 Release 1	**New callable service:** The List_Status service requests information about the registration and enablement status of one or more products. It can also return the enablement policy entry that applies to a product.	*Product Reg*
IFAEDREG	OS/390 Release 1	**New callable service:** The Register service registers a product with the system as a running product.	*Product Reg*
IFAEDSTA	OS/390 Release 1	**New callable service:** The Query_Status service requests information about whether a particular product is registered or enabled.	*Product Reg*
SRRBACK	OS/390 Release 3	**New callable service:** Indicates that changes for a unit of recovery (UR) are not to be made.	*Calls*
SRRCMIT	OS/390 Release 3	**New callable service:** Indicates that changes for a unit of recovery (UR) are to be made.	*Calls*

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 *OS/390 C/C++ Run-Time Library Reference.*

Figure 1-8 (Page 1 of 2). Changed C Language Interfaces for Workload Management Services	
Name of Interface	**Release**
QueryMetrics (IWMWSYSQ)	OS/390 Release 4
QuerySchEnv (IWMSEQRY)	OS/390 Release 4
CheckSchEnv (IWMSEDES)	OS/390 Release 4
DisconnectServer (IWMDISC)	OS/390 Release 4
DeleteWorkUnit (IWMEDELE)	OS/390 Release 4
JoinWorkUnit (IWMEJOIN)	OS/390 Release 4
LeaveWorkUnit (IWMELEAV)	OS/390 Release 4

ConnectWorkMgr
 	
`IWMCONN`
`  WORK_MANAGER(YES)`
`  ROUTER(NO)`
`  QUEUE_MANAGER(YES)`
`  SERVER_MANAGER(NO)`
	OS/390 Release 4

ConnectServer
 	
`IWMCONN`
`  WORK_MANAGER(NO)`
`  ROUTER(NO)`
`  QUEUE_MANAGER(YES)`
`  SERVER_MANAGER(YES)`
	OS/390 Release 4

Figure 1-8 (Page 2 of 2). Changed C Language Interfaces for Workload Management Services	
Name of Interface	**Release**

CreateWorkUnit
 	
`IWMECREA`
`  TYPE (INDEPENDENT)`
	OS/390 Release 4

ContinueWorkUnit
 	
`IWMECREA`
`  TYPE (DEPENDENT)`
	OS/390 Release 4

The following table shows the C language interfaces that can be used to access WLM sysplex routing services.

Figure 1-9. C Language Interfaces for WLM Sysplex Routing Services		
C Language Interface	**WLM Sysplex Routing Service**	**Release**
IWMDNREG	IWMSRSRG	OS/390 Release 4
IWMDNDRG	IWMSRDRS	OS/390 Release 4
IWMDNGRP	IWMSRDNS	OS/390 Release 4
IWMDNSRV	IWMSRSRS	OS/390 Release 4

Summary of Changes to Installation Exits

Figure 1-10 identifies the installation exits that are added, changed, or deleted in OS/390. For complete information about each exit, see *OS/390 MVS Installation Exits*. For information about how to handle incompatibilities, see Chapter 4, Migration Actions: Customization.

Figure 1-10. Changed Installation Exits in OS/390		
Name of Exit	**Release**	**Description of Changes**
IEAVMXIT and MPF	Introduced by PTF UW28193	A default IEAVMXIT is no longer shipped in SYS1.LINKLIB. If you do not specify UEXIT= in the CONSOLxx parmlib member, the system will use the default IEAVMXIT installation exit if one has been installed. If IEAVMXIT is not installed then the system will come up with no UEXIT (as if UEXIT=N had been specified).

Summary of Changes to Control Blocks

This section identifies MVS control blocks that are changed in OS/390 releases.

When a change to a control block affects *programming interfaces*, the control block is listed in Figure 1-11 on page 1-59. When a change to a control block affects *diagnosis, modification, or tuning* information, the control block is listed in Figure 1-12 on page 1-66. Figure 1-13 on page 1-72 lists control blocks whose mapping macros have moved from one library to another.

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:

- *OS/390 MVS Data Areas, Vol 1 (ABEP-DALT)*
- *OS/390 MVS Data Areas, Vol 2 (DCCB-ITTCTE)*
- *OS/390 MVS Data Areas, Vol 3 (IVT-RCWK)*
- *OS/390 MVS Data Areas, Vol 4 (RD-SRRA)*
- *OS/390 MVS Data Areas, Vol 5 (SSAG-XTLST)*.

For information about changes to JES2 control blocks, see *OS/390 JES2 Migration Notebook*.

For information about changes to JES3 control blocks, see *OS/390 JES3 Conversion Notebook*.

For information about changes to OS/390 UNIX System Services control blocks, see *OS/390 UNIX System Services Programming: Assembler Callable Services Reference*.

For information about changes to security server (RACF) control blocks, such as ACEE, see *OS/390 Security Server (RACF) Data Areas*.

For information about changes to communications server (VTAM) control blocks, see *OS/390 SecureWay Communications Server: SNA Data Areas Volume 1* and *OS/390 SecureWay 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.

Control Block (Mapping Macro)	Release
ADYDSTAT	OS/390 Release 6
ASCB (IHAASCB)	OS/390 Release 3
ASSB (IHAASSB)	OS/390 Release 2
	OS/390 Release 3
	OS/390 Release 6
ASXB (IHAASXB)	OS/390 Release 4

Figure 1-11 (Page 1 of 8). Changed Control Blocks in OS/390 — Part 1

Figure 1-11 (Page 2 of 8). Changed Control Blocks in OS/390 — Part 1	
Control Block (Mapping Macro)	**Release**
ATBASASM	OS/390 Release 8
ATBEXCOS	OS/390 Release 3
ATBXCFMS	OS/390 Release 3
	OS/390 Release 6
ATRFZQRY	OS/390 Release 5
	OS/390 Release 6
	OS/390 Release 8
ATRFZSRV	OS/390 Release 5
	OS/390 Release 8
ATRRASM	OS/390 Release 3
	OS/390 Release 5
	OS/390 Release 6
	OS/390 Release 8
ATRSZAUR	OS/390 Release 5
	OS/390 Release 6
ATRSZPUR	OS/390 Release 5
	OS/390 Release 6
	OS/390 Release 8
BLSRXMSP	OS/390 Release 3
	OS/390 Release 5
BLSRDRPX	OS/390 Release 3
	OS/390 Release 6
BPXYTCPP	OS/390 Release 3
CBLS (IHACBLS)	OS/390 Release 8
CDE (IHACDE)	OS/390 Release 4
CIB (IEZCIB)	OS/390 Release 3
CMB (IRACMB)	OS/390 Release 8
CMDX (IEZVX101)	OS/390 Release 3
CRGASM	OS/390 Release 3
	OS/390 Release 6
CSVDLAA	OS/390 Release 5
	OS/390 Release 6
CSVDLENF	OS/390 Release 5
CSVEXRET	OS/390 Release 6
CSVLPRET	OS/390 Release 5
CSVRTAA	OS/390 Release 6
CTXT (IEZVX100)	OS/390 Release 1 with APAR OW37807
	OS/390 Release 8

Control Block (Mapping Macro)	Release
CTSS (ITTCTSS)	OS/390 Release 3
	OS/390 Release 6
CTXASM	OS/390 Release 5
	OS/390 Release 6
CVT	OS/390 Release 1
	OS/390 Release 2
	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 5
	OS/390 Release 6
	OS/390 Release 7
	OS/390 Release 8
DOMC (IHADOMC)	OS/390 Release 3
	OS/390 Release 6
	OS/390 Release 8
ECVT (IHAECVT)	OS/390 Release 1
	OS/390 Release 2
	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 6
	OS/390 Release 8
ENFCT (IEFENFCT)	OS/390 Release 2
	OS/390 Release 4
	OS/390 Release 5
ENFPM (IEFENFPM)	OS/390 Release 2
	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 5
EPIE (IHAEPIE)	OS/390 Release 6
FSIP (IAZFSIP)	OS/390 Release 4
	OS/390 Release 5
HCL (IHAHCLOG)	OS/390 Release 3
IAZCHK	OS/390 Release 4
IAZBTOKP	OS/390 Release 3
	OS/390 Release 5
IEFDOKEY	OS/390 Release 5
IEFJSQRY	OS/390 Release 3

Figure 1-11 (Page 3 of 8). Changed Control Blocks in OS/390 — Part 1

Figure 1-11 (Page 4 of 8). Changed Control Blocks in OS/390 — Part 1	
Control Block (Mapping Macro)	**Release**
IEFZB4D2	OS/390 Release 2
	OS/390 Release 5
IFAUPRM	OS/390 Release 3
	OS/390 Release 5
	OS/390 Release 8
IHADWHDR	OS/390 Release 8
IHAIPA	OS/390 Release 3
	OS/390 Release 4
IHAPRD	OS/390 Release 6
IHASDEXI	OS/390 Release 7
IHASDMSE	OS/390 Release 7
IHASDRMT	OS/390 Release 7
IHAUPRM	OS/390 Release 1
IMDMEDIT (IMDMEDIT)	OS/390 Release 8
IOBE (IOSDIOBE)	OS/390 Release 7
	OS/390 Release 8
IOCOM (IECDIOCM)	OS/390 Release 3
	OS/390 Release 7
	OS/390 Release 8
IOSDDACH	OS/390 Release 7
IOSDDEVI	OS/390 Release 7
IOSDFEAT	OS/390 Release 7
IOSDPATH	OS/390 Release 8
IRAENF55	OS/390 Release 3
IRAEVPL	OS/390 Release 3
IRARASC	OS/390 Release 3
	OS/390 Release 4
IRARASD	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 5
ISGE51CN	OS/390 Release 3
IWMECD	OS/390 Release 3
	OS/390 Release 4
IWMPB	OS/390 Release 7
IWMSERVD	OS/390 Release 3
	OS/390 Release 4
IWMSET	OS/390 Release 4

Control Block (Mapping Macro)	Release
IWMSVAEA	OS/390 Release 4
	OS/390 Release 6
	OS/390 Release 7
IWMSVDCR	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 6
	OS/390 Release 7
IWMSVDEF	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 6
	OS/390 Release 7
IWMSVIDS	OS/390 Release 3
IWMSVNPA	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 6
	OS/390 Release 7
IWMSVPCD	OS/390 Release 3
IWMSVPOL	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 6
	OS/390 Release 7
IWMSVPSE	OS/390 Release 4
	OS/390 Release 6
	OS/390 Release 7
IWMSVSEA	OS/390 Release 4
	OS/390 Release 6
	OS/390 Release 7
IWMWRCAA	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 7
IWMWRQAA	5.2
	OS/390 Release 3
IWMWSYSI	OS/390 Release 3
IWMWSYSR	OS/390 Release 3
	OS/390 Release 4

Figure 1-11 (Page 5 of 8). Changed Control Blocks in OS/390 — Part 1

Control Block (Mapping Macro)	Release
IWMYCON	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 5
	OS/390 Release 6
	OS/390 Release 8
IXCYAMDA	OS/390 Release 3
IXCYARM	OS/390 Release 8
IXCYENF	OS/390 Release 3
IXCYMEPL	OS/390 Release 3
IXCYMNPL	OS/390 Release 3
	OS/390 Release 8
IXCYMQAA	OS/390 Release 8
IXCYMSGC	OS/390 Release 3
IXCYQUAA	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 6
	OS/390 Release 8
IXGANSAA	OS/390 Release 3
	OS/390 Release 4
IXGCON	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 6
	OS/390 Release 8
IXGENF	OS/390 Release 3
	OS/390 Release 4
IXGQBUF	OS/390 Release 4
IXGSXUP	OS/390 Release 3
IXLYAMDA	OS/390 Release 4
	OS/390 Release 6
	OS/390 Release 8
IXLYCAA	OS/390 Release 6
	OS/390 Release 8
IXLYCANB	OS/390 Release 6
IXLYCCIH	OS/390 Release 6
IXLYCOMP	OS/390 Release 6
	OS/390 Release 8

Figure 1-11 (Page 6 of 8). Changed Control Blocks in OS/390 — Part 1

Control Block (Mapping Macro)	Release
IXLYCON	OS/390 Release 2
	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 6
	OS/390 Release 8
IXLYCONA	OS/390 Release 3
	OS/390 Release 6
	OS/390 Release 8
IXLYDCAC	OS/390 Release 6
	OS/390 Release 8
IXLYDCCC	OS/390 Release 8
IXLYDDIB	OS/390 Release 6
	OS/390 Release 8
IXLYDEIB	OS/390 Release 6
IXLYDLC	OS/390 Release 8
IXLYDLIC	OS/390 Release 8
IXLYDSCC	OS/390 Release 8
IXLYEEPL	OS/390 Release 2
	OS/390 Release 6
	OS/390 Release 8
IXLYLAA	OS/390 Release 3
	OS/390 Release 8
IXLYLEPL	OS/390 Release 3
IXLZSTRB	OS/390 Release 6
	OS/390 Release 8
JFCB (IEFJFCBN)	OS/390 Release 5
JFCBX (IEFJFCBX)	OS/390 Release 5
JMR (IEFJMR)	OS/390 Release 5
JSCB (IEZJSCB)	OS/390 Release 6
LLT (IHALLT)	OS/390 Release 2
MCHEAD	OS/390 Release 6
MDB (IEAVM105)	OS/390 Release 3
ORE (IHAORE)	OS/390 Release 8
OUCB (IRAOUCB)	OS/390 Release 3
	OS/390 Release 6
OUXB (IHAOUXB)	OS/390 Release 3
PSA (IHAPSA)	OS/390 Release 6
PVT (IHAPVT)	OS/390 Release 6

Figure 1-11 (Page 7 of 8). Changed Control Blocks in OS/390 — Part 1

Figure 1-11 (Page 8 of 8). Changed Control Blocks in OS/390 — Part 1	
Control Block (Mapping Macro)	**Release**
RIB (ISGRIB)	OS/390 Release 2
RMEX (IRARMEX)	OS/390 Release 4
SCCB (IHASCCB)	OS/390 Release 6
SDRSN (IHASDRSN)	OS/390 Release 3
SDWA (IHASDWA)	OS/390 Release 6
SIOT (IEFASIOT)	OS/390 Release 6
SSAL (IEFSSAL)	OS/390 Release 5
SSCF (IEFSSCF)	OS/390 Release 3
SSVI (IEFSSVI)	OS/390 Release 3
SSCM (IEFSSCM)	OS/390 Release 3
SSJI (IEFSSJI)	OS/390 Release 4
SSS2 (IAZSSS2)	OS/390 Release 4
	OS/390 Release 5
	OS/390 Release 6
STCB (IHASTCB)	OS/390 Release 3
	OS/390 Release 6
SSST (IAZSSST)	OS/390 Release 4
	OS/390 Release 5
	OS/390 Release 8
SSS2 (IAZSSS2)	OS/390 Release 8
SSTA (IEFSSTA)	OS/390 Release 5
SVT (IHASVT)	OS/390 Release 6
TPC (IEAVVTPC)	OS/390 Release 6
TCT (IEFTCT)	OS/390 Release 3
UXPARMD (IEFZB481)	OS/390 Release 5
WPL (IEZWPL)	OS/390 Release 3
WQE (IHAWQE)	OS/390 Release 3
	OS/390 Release 6
	OS/390 Release 8
XTLST (IHAXTLST)	OS/390 Release 4

Figure 1-12 identifies control blocks with significant changes for OS/390. These control blocks are classified as *diagnosis, modification, and tuning* information.

Figure 1-12 (Page 1 of 7). Changed Control Blocks in OS/390 — Part 2	
Control Block	**Release**
ASCB (IHAASCB)	OS/390 Release 5

Control Block	Release
ASSB (IHAASSB)	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 5
	OS/390 Release 8
BASEA (IEEBASEA)	OS/390 Release 6
CBLS (IHACBLS)	OS/390 Release 4
CLTE (IHACLTE)	OS/390 Release 3
CMB (IRACMB)	OS/390 Release 3
	OS/390 Release 7
CMCT (IRACMCT)	OS/390 Release 7
CTXASM	OS/390 Release 8
CVT	OS/390 Release 2
CSCB (IEECHAIN)	OS/390 Release 5
DDRCOM (IHADDR)	OS/390 Release 3
	OS/390 Release 8
DDT (IECDDT)	OS/390 Release 6
DFLM (ADYDFLM)	OS/390 Release 3
DMDT (IRADMDT)	OS/390 Release 3
	OS/390 Release 7
DSAB (IHADSAB)	OS/390 Release 3
DSABQDB	OS/390 Release 3
DSABQDB	OS/390 Release 4
ECVT (IHAECVT)	OS/390 Release 2
	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 5
	OS/390 Release 6
EDT (IEFZB421)	OS/390 Release 6
EED (IHART1W)	OS/390 Release 6
ENFDS (IEFENFDS)	OS/390 Release 2
ENFLS (IEFENFLS)	OS/390 Release 2
ENFSC (IEFENFSC)	OS/390 Release 2
ENFVT (IEFENFVT)	OS/390 Release 2
EPCB (IECDEPCB)	OS/390 Release 3
ESCT (IRAESCT)	OS/390 Release 7
ESW (IHAESW)	OS/390 Release 3
ESWL (IHAESWL)	OS/390 Release 3
	OS/390 Release 8

Figure 1-12 (Page 2 of 7). Changed Control Blocks in OS/390 — Part 2

Control Block	Release
EWA (EWAMAP)	OS/390 Release 8
FIB (IGVFIB)	OS/390 Release 3
	OS/390 Release 8
FTPT (IEZVR001)	OS/390 Release 5
	OS/390 Release 7
	OS/390 Release 8
GSDA (IHAGSDA)	OS/390 Release 3
GVT (ISGGVT)	OS/390 Release 2
	OS/390 Release 3
	OS/390 Release 6
	OS/390 Release 7
	OS/390 Release 8
GVTX (ISGGVTX)	OS/390 Release 2
	OS/390 Release 3
	OS/390 Release 6
	OS/390 Release 7
	OS/390 Release 8
HIDT (IOSDHIDT	OS/390 Release 6
IGVDGNB	OS/390 Release 8
IHACDR	OS/390 Release 5
IEDB (IOSDIEDB)	OS/390 Release 7
IEFCNPRM	OS/390 Release 7
IEFZDDWA	OS/390 Release 3
	OS/390 Release 5
IHASVTX	OS/390 Release 7
	OS/390 Release 8
IHATDUMP	OS/390 Release 4
	OS/390 Release 7
IHAWEB	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 8
IHSA (IHAIHSA)	OS/390 Release 6
IOBE (IOSDIOBE)	OS/390 Release 7
IOCOM (IECDIOCM)	OS/390 Release 3
IOQ (IECDIOQ)	OS/390 Release 3
	OS/390 Release 6
	OS/390 Release 7

Figure 1-12 (Page 3 of 7). Changed Control Blocks in OS/390 — Part 2

Control Block	Release
IOSB (IECDIOSB)	OS/390 Release 5
	OS/390 Release 7
	OS/390 Release 8
IPIB (IECDIPIB)	OS/390 Release 3
IPWA (IOSDIPWA)	OS/390 Release 3
IRACPMB	OS/390 Release 7
	OS/390 Release 8
IVT (IOSDIIT)	OS/390 Release 3
	OS/390 Release 8
IWMPB	OS/390 Release 3
JCT (IEFAJCTB)	OS/390 Release 3
JCTX (IEFJCTX)	OS/390 Release 3
	OS/390 Release 6
JSAB (IAZJSAB)	OS/390 Release 5
LCCA (IHALCCA)	OS/390 Release 3
	OS/390 Release 6
	OS/390 Release 8
LLCB (IHALLCB)	OS/390 Release 2
LLE (IHALLE)	OS/390 Release 4
LPDE (IHALPDE)	OS/390 Release 4
LLP2 (IHALLP2)	OS/390 Release 7
LRB (IHALRB)	OS/390 Release 6
MGCRE (IEZMGCRE)	OS/390 Release 2
MQE (IHAMQE)	OS/390 Release 2
NVT (IHANVT)	OS/390 Release 2
ORB (IHAORB)	OS/390 Release 8
OUCB (IRAOUCB)	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 8
OUSB (IHAOUSB)	OS/390 Release 3
PCB (IARPCB)	OS/390 Release 6
PCCW (ILRPCCW)	OS/390 Release 3
PFTE (IARPFTE)	OS/390 Release 6
PQCB (ISGPQCB)	OS/390 Release 2
PRMESTAE (IEFZB447)	OS/390 Release 6
PSA (IHAPSA)	OS/390 Release 3
	OS/390 Release 8
QCB (ISGQCB)	OS/390 Release 2

Figure 1-12 (Page 4 of 7). Changed Control Blocks in OS/390 — Part 2

Control Block	Release
QEL (ISGQEL)	OS/390 Release 2
	OS/390 Release 3
	OS/390 Release 7
QHT (ISGQHT)	OS/390 Release 2
QWA (ISGQWA)	OS/390 Release 2
QWB (ISGQWB)	OS/390 Release 2
	OS/390 Release 3
QXB (ISGQXB)	OS/390 Release 2
	OS/390 Release 7
RCE (IARRCE)	OS/390 Release 6
RCT (IRARCT)	OS/390 Release 3
RIT (IARRIT)	OS/390 Release 6
RMCT (IRARMCT)	OS/390 Release 3
RPT (ISGRPT)	OS/390 Release 2
RRPA (IRARRPA)	OS/390 Release 3
	OS/390 Release 4
RTCT (IHARTCT)	OS/390 Release 7
RTSD (IHARTSD)	OS/390 Release 4
	OS/390 Release 6
	OS/390 Release 7
	OS/390 Release 8
RSA (ISGRSA)	OS/390 Release 2
RTM2WA (IHARTM2WA)	OS/390 Release 6
SCA (IHASCA)	OS/390 Release 8
SCANPARM (IEZVQ100)	OS/390 Release 7
SCCB (IHASCCB)	OS/390 Release 3
	OS/390 Release 8
SCCW (ILRSCCW)	OS/390 Release 3
SCE (IHASCE)	OS/390 Release 4
SCHIB (IHASCHIB)	OS/390 Release 8
SCVA (IHASCVA)	OS/390 Release 3
	OS/390 Release 4
SCWA (IHASCWA)	OS/390 Release 6
SDMPX (IHASDMPX)	OS/390 Release 4
	OS/390 Release 7
SDUMP (IHASDUMP)	OS/390 Release 4
	OS/390 Release 7
SDWA (IHASDWA)	OS/390 Release 3

Figure   1-12 (Page 5 of 7). Changed Control Blocks in OS/390 — Part 2

Control Block	Release
SDWORK (IHASDWORK)	OS/390 Release 3
	OS/390 Release 6
SHDR (IHASHDR)	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 6
SIOT (IEFASIOT)	OS/390 Release 8
SJKEY (IEFSJKEY)	OS/390 Release 4
SJRC (IEFSJRC)	OS/390 Release 5
SLWA (IHASLWA)	OS/390 Release 3
	OS/390 Release 6
SMCA (IEESMCA)	OS/390 Release 8
SPTRC (IHASPTRC)	OS/390 Release 2
	OS/390 Release 8
SMPL (ISGSMPL)	OS/390 Release 2
SRB (IHASRB)	OS/390 Release 3
SRPL (IEEZB814)	OS/390 Release 7
SSDA (IEFSSDA)	OS/390 Release 3
SSJI (IAZSSJI)	OS/390 Release 4
SSJS (IEFSSJS)	OS/390 Release 4
SSRB (IHASSRB)	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 6
SSS2 (IAZSSS2)	OS/390 Release 4
	OS/390 Release 7
SSST (IAZSSST)	OS/390 Release 4
SSUS (IEFSSUS)	OS/390 Release 5
STCB (IHASTCB)	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 7
	OS/390 Release 8
SVT (IHASVT)	OS/390 Release 3
	OS/390 Release 8
SVTX (IHASVTX)	OS/390 Release 3
TCB (IKJTCB)	OS/390 Release 8
TCT (IEFTCT)	OS/390 Release 3
TFWA (IHATFWA)	OS/390 Release 3
TICB (IOSDTICB)	OS/390 Release 6
TPC (IEAVVTPC)	OS/390 Release 8

Figure 1-12 (Page 6 of 7). Changed Control Blocks in OS/390 — Part 2

Figure 1-12 (Page 7 of 7). Changed Control Blocks in OS/390 — Part 2	
Control Block	**Release**
UCB (IEFUCBOB)	OS/390 Release 7
UCM (IEECUCM)	OS/390 Release 2
	OS/390 Release 3
	OS/390 Release 5
	OS/390 Release 6
	OS/390 Release 8
UXPARMB (IEFZB479)	OS/390 Release 8
UXPARMC (IEFZB480)	OS/390 Release 8
UXPARMD (IEFZB481)	OS/390 Release 8
VTSPL (IEFVTSPL)	OS/390 Release 3
WSAVT (IHAWSAVT)	OS/390 Release 6
WSAVTC (IHAWSAVT)	OS/390 Release 3
	OS/390 Release 5
	OS/390 Release 8
WMST (IRAWMST)	OS/390 Release 3
	OS/390 Release 4
	OS/390 Release 7
XSA (IEEXSA)	OS/390 Release 3

Figure 1-13 and Figure 1-14 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.

Figure 1-13. Changed Control Blocks in OS/390 — Part 3 (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	

Figure 1-14. Changed Control Blocks in OS/390 — Part 4 (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 OS/390, 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 Commands

Figure 1-15 identifies IPCS commands that are new, changed, or deleted in OS/390. For a complete description of each command, see *OS/390 MVS IPCS Commands*. For information about how to handle incompatibilities, see Chapter 6, Migration Actions: Problem Determination and Diagnosis.

Figure 1-15 (Page 1 of 3). Changed IPCS Commands in OS/390		
Command	**Release**	**Description of Changes**

APPCDATA	OS/390 Release 3	**Changed reports:**
		
		• CONFIGURATION reports contain the VTAM generic resource name, if any, of an APPC/MVS LU.
		
		• CONFIGURATION reports contain:
		  – The VTAM generic resource name, if any, of an APPC/MVS LU
		  – Information about the participation of APPC/MVS in resource recovery.
		
		• CONVERSATION reports contain information about protected conversations, and the participation of APPC/MVS in resource recovery.
		
		• Dates in reports are in the format mm/dd/yyyy.
		
		• Partner LU names in reports are network-qualified names, if the network ID is known.
		
		• SERVERDATA reports reflect the synchronization level of conversations: none, confirm and now syncpt.

Figure 1-15 (Page 2 of 3). Changed IPCS Commands in OS/390		
Command	**Release**	**Description of Changes**
ASCHDATA	OS/390 Release 3	**Changed reports:** • Dates in reports are in the format mm/dd/yyyy. • Partner LU names in reports are network-qualified names, if the network ID is known.
COUPLE	OS/390 Release 8	**Additional information:** New information about system-managed processing is added to the CFRM report.
CTRACE	OS/390 Release 3	**New component trace:** The SYSDSOM trace name identifies the distributed SOM component trace. **New values for the OPTIONS parameter:** • SYSDSOM component trace: all values **Changed report:** SYSAPPC component trace data might now contain: • The VTAM generic resource name, if any, associated with the LU when it is activated. • The network-qualified name of partner LUs, if the network ID is known. • Information about protected conversations, and the participation of APPC/MVS in resource recovery. **New value for the APPC/MVS component trace (SYSAPPC) OPTIONS parameter:** The new RR option traces events related to APPC/MVS participation in resource recovery for protected conversations.
	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.
LOGGER	OS/390 Release 3	**New subcommand:** New LOGGER subcommand formats data from the system logger address space in a dump.
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:** • ALLOCSM is allowed as an object state in the STATUS parameter of the RSMDATA EXPFRAME subcommand. • ALLOCSM is allowed as an object state in the STATUS parameter of the RSMDATA REALFRAME subcommand. • 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.
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.

Figure 1-15 (Page 3 of 3). Changed IPCS Commands in OS/390		
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.
		New information about system-managed processing is added to various STRDATA reports.
WLMDATA	OS/390 Release 3	**New reports:** There are two new report options: QUEUEMANAGER and SERVERMANAGER.
	OS/390 Release 4	**New report:** There is a new report option: SCHENV.
SYSTRACE	OS/390 Release 3	The IPCS SYSTRACE subcommand has been updated to include the following new keywords: • TCB • TTCH • WEB
XESDATA	OS/390 Release 2	**Additional information:** New lock structure information is added to the LOCKMGR and LOCKRESOURCE reports.
	OS/390 Release 8	**Additional information:** The following new information is added to the CONNECTION report. • New cache structure information to show the nameclassmask in use for a dumped structure. • New information to report on response monitoring that was in progress when the dump was taken. New information about system-managed processing is added to the CONNECTION, FACILITY, CACHE, and LIST reports.

Summary of New System Address Spaces

Figure 1-16 identifies address spaces that have been added to MVS and OS/390.

Notes:

1. Installations can change the names of some address spaces.

2. Installing other program products, such as CICS and DB2, can also add address spaces to the system.

Figure 1-16 (Page 1 of 3). Summary of New System Address Spaces		
Address Space Name	**Release Added**	**Description**
MASTER	--	Master address space
ABARS ABARxxxx	DFHSM V2	1 to 15 DFSMShsm secondary address spaces to perform aggregate backup or aggregate recovery processing.
ALLOCAS	MVS/SP Version 1 Release 3.0	Allocation services and data areas
ANTMAIN	DFSMS/MVS V1R1	Concurrent copy support
APPC	MVS/ESA SP 4.2	APPC/MVS component

Address Space Name	Release Added	Description
ASCH	MVS/ESA SP 4.2	APPC/MVS scheduling
CATALOG	MVS/XA DFP Version 2	Catalog functions. Also known as CAS (catalog address space).
BPXOINIT	OS/390 Release 3	OS/390 UNIX System Services
CONSOLE	MVS/SP Version 1 Release 3.0	Communications task
DFM	DFSMS/MVS V1R2	Distributed File Manager/MVS
DFMCAS	DFSMS/MVS V1R2	Distributed File Manager/MVS
DLF	MVS/ESA SP 3.1.3	Data lookaside facility
DUMPSRV	MVS/SP Version 1 Release 3.0	Dumping services
HSM	DFHSM V1	DFSMShsm
FTPSERVE	TCP/IP	FTP server(s); can be user-specified names.
GDEDFM	DFSMS/MVS V1R2	For each Distributed File Manager/MVS user conversation that is active, an address space named GDEDFM is created.
GRS	MVS/SP Version 1 Release 3.0	Global resource serialization
IEFSCHAS	OS/390 Version 1 Release 2	Scheduler address space
IOSAS	MVS/ESA SP 3.1.0e	I/O supervisor, ESCON, I/O recovery
IXGLOGR	MVS/ESA SP 5.2	System logger
JES2	--	JES2
JES2AUX	OS/390 Release 3	JES2 additional support
JES3	--	JES3
JES3AUX	JES3 1.3.0	JES3 additional support
JES3DLOG	JES3 5.2.1	JES3 hardcopy log (DLOG)
JESXCF	MVS/ESA SP 5.1	JES common coupling services address space
LLA	MVS/XA Version 2	Link list and library lookaside (Library lookaside function added in 3.1)
NFS	MVS/DFP V3 Network File System	DFSMS/MVS Network File System address space
OAM	MVS/DFP V3	Object access for ImagePlus applications
	DFSMS/MVS V1R1	IBM 3494 and IBM 3495 Tape Library Data Servers
OMVS	MVS/ESA SP 5.1	OS/390 UNIX System Services
PCAUTH	MVS/SP Version 1 Release 3.0	Cross-memory support
PORTMAP	TCP/IP	Portmapper function
RASP	MVS/ESA SP 3.1	Real storage manager (includes advanced address space facilities support)

Figure 1-16 (Page 2 of 3). Summary of New System Address Spaces

Figure 1-16 (Page 3 of 3). Summary of New System Address Spaces		
Address Space Name	**Release Added**	**Description**
RMM	DFRMM R1	DFSMSrmm
RRS	OS/390 Release 3	Resource recovery services (RRS)
SMF	MVS/XA Version 2	System management facilities
SOM		SOMobjects
SMS	MVS/DFP 3.1.0	Storage management subsystem
SMSVSAM	DFSMS/MVS V1R3	VSAM record level sharing
SMXC	MVS/DFP 3.2.0	PDSE locking support
SYSBMAS	MVS/DFP 3.2.0	PDSE buffering support
TCPIP	TCP/IP	TCP/IP for MVS
TRACE	MVS/XA Version 2	System trace
VLF	MVS/ESA SP 3.1	Virtual lookaside facility
XCFAS	MVS/ESA SP 4.1	Cross system coupling facility
VTAM	pre-VTAM Version 3	VTAM
WLM	MVS/ESA SP 5.1	Workload management

Chapter 2. Release Summary

This chapter provides a technical description of functions provided in OS/390. Where appropriate, it references other books in the OS/390 library where you can find additional information about the topic being discussed.

OS/390 Release 1

This section provides an overview of the new functions introduced in OS/390 Release 1 and of the enhancements made to existing functions provided by MVS/ESA SP Version 5. 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 OS/390 library.

Product Registration and Enablement

OS/390, through product registration services and reporting, provides mechanisms that products can use to indicate to the system that they are running and that installations can use to report on registered products. These mechanisms support product enablement under OS/390.

Like measured usage pricing, product registration attempts to reduce the additional administration, technical complexity, and operational impact by:

- Extending the existing System Management Facilities (SMF) mechanism to automatically collect information about any product that registers with OS/390 as a running product.

- Providing a reporting function in the form of a postprocessor program that calculates and reports product registration and enablement based on the information SMF collects.

- Providing IFAPRDxx, a member of SYS1.PARMLIB that defines the enablement policy for a system.

It is the responsibility of each product, not the installation, to register to identify itself to OS/390. Because most installations already use SMF to track, report, and bill many hardware and software activities, this use of SMF takes advantage of the many SMF procedures and jobs these installations use.

For more information about product enablement, see:

- *OS/390 MVS Initialization and Tuning Reference* for an explanation of how to update IFAPRDxx.

- *OS/390 MVS Product Management* for information about reporting on registered products and information about enabling specific OS/390 features.

- *OS/390 MVS Programming: Product Registration* for information about how to use registration services in product code.

Removing an MCS or Subsystem Console from a System or Sysplex

A new console service allows you to remove an MCS or subsystem console from a system or sysplex. The service is available as a sample job in SYS1.SAMPLIB member IEARELCN. Before you can use the service, the system must be at the MVS/ESA SP Version 5 or OS/390 level. In a sysplex, you must ensure that the service for APAR OW05419 is installed on each system. For information on the console service, see *OS/390 MVS Planning: Operations*.

OS/390 Release 2

This section provides an overview of the new functions introduced in OS/390 Release 2, and of the enhancements made to existing MVS functions. 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 OS/390 library.

Year 2000 Support for MVS (the BCP)

MVS (the BCP) is an element of OS/390. Beginning with OS/390 Version 1 Release 2, OS/390 is certified as a Year 2000–ready operating system by the Information Technology Association of America (ITAA). Follow-on releases are also Year 2000 ready.

Previous products, such as OS/390 Version 1 Release 1, and all releases of MVS/ESA SP V5, are Year 2000 ready with maintenance applied. Previous products that are not Year 2000 ready will not be marketed after December 31, 1997.

For the BCP, the following changes were made to ensure Year 2000 readiness:

- The following messages, which previously used a 2-digit year field, now use a 4-digit year field:

    - APPC: ATB103I replaced by ATB100I

    - Consoles: IEE114I, IEE115I, IEE116I, IEE042I

    - IPCS: BLS18011I

    - SDUMP: IEE853I, IEE854I

    - SMF: IEF373I, IEF374I, IEF375I, IEF376I

    - XCF: IXC218I, IXC500I

    - WLM: IWM025I

- SMF records that previously used a 2-digit year field now include a century field:

    - Type 4: Changed date to 0cyydddF format for SMF4STID.

    - Type 5: Changed date to 0cyydddF format for SMF5JID.

    - Type 30: Changed date to 0cyydddF format for SMF30STD and SMF30IDT.

- MVS control block fields:

    - ACEEDATE: use ACEEDAT4 instead of ACEEDATE if ACEED4OK is set.

    - JCTJMRJD: use JCTXJMRD instead of JCTJMRJD.

    – JCTSSD: use JCTXSSD instead of JCTSSD.

    – WQEDATE: use WQECENT for century part of year.

- OS/390 provides optional support for 4-digit years in SYSLOG and master trace hardcopy records:

    – CONSOLxx parmlib member: Specify HARDCOPY HCFORMAT (CENTURY) to override the default of HARDCOPY HCFORMAT (YEAR).

    – For programs that use hardcopy records, the IHAHCLOG mapping macro is changed. If field HCLFRMT is blank, then expect 2–digit years (YY), else expect 4–digit years (YYYY).

- The variable &TPDATE, which is one qualifier in the default data set name for an APPC/MVS TP message log, now resolves to contain a 4–digit year instead of a 2–digit year.

For further information on Year 2000 Support, see *The Year 2000 and 2-Digit Dates: Guide*, GC28-1251. For additional information on Year 2000, see:

`http://www.ibm.com/IBM/year2000/`

For information about migrating to OS/390, see *OS/390 Planning for Installation*, GC28-1726.

For information about migrating to MVS/ESA SP V5, see:

- *MVS/ESA SP V5 Planning: Installation and Migration JES2*, GC28-1428
- *MVS/ESA SP V5 Planning: Installation and Migration JES3*, GC28-1429
- *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.

Parmlib Concatenation Support

Logical parmlib concatenation is a set of up to 10 partitioned data sets defined by PARMLIB statements in the LOADxx member of either SYSn.IPLPARM or SYS1.PARMLIB which contains many initialization parameters in a pre-specified form in a single logical data set. This minimizes the need for the operator to enter parameters. SYS1.PARMLIB makes the 11th or last data set in the concatenation, and is the default logical parmlib data set if no PARMLIB statements exist in LOADxx.

This support allows installations to partition access to parmlib and to isolate members customized by an installation from IBM maintenance and product level upgrades.

A new SETLOAD command allows you to switch from one logical parmlib to another without an IPL.

PROGxx and Enhancements for LNKLST Concatenation

You can use LNKLST statements in PROGxx to define a LNKLST set and activate it at IPL. The LNKLST set is a set of ordered data sets to be used as the LNKLST concatenation. Instead of specifying LNK=xx at IPL, you can specify PROG=xx to activate the LNKLST set. You can also define SYSLIB statements in PROGxx. SYSLIB allows you to define alternate data sets for the system defaults used in the LNKLST and LPALST concatenations.

Global Resource Serialization Star

Global resource serialization can now use the lock structure on a coupling facility that is connected to all of the systems in the complex to serialize requests for global resources. This method, named global resource serialization star, converts ENQ, DEQ, or RESERVE requests for global resources into XES IXLLOCK requests. The advantages of global resource serialization star are:

- Elimination of "ring disruptions," because systems in the sysplex are not connected to each other

- Decrease in real storage consumption by global resource serialization

- Processing capacity does not diminish as the sysplex grows

- Decrease in global resource serialization processing time

- Improved availability and recovery

Coupling Facility Failure Policy Support

An installation can specify its most important systems in a sysplex by assigning system weights in the System Failure Management (SFM) policy. Currently, the system uses these system weights when reconfiguring a sysplex after a failure such as a loss of connectivity occurs.

With the XCF coupling facility failure policy support, an OS/390 Release 2 system uses the system weights to provide optimal sysplex connectivity both when allocating a structure initially and when rebuilding the structure. The application using the structure has the option of specifying the amount of connectivity that is required for its use. The installation can assign system weights in its SFM policy so that if a structure requires rebuilding, the system can choose the best combination of systems in the sysplex having connectivity to the rebuilt structure. If that level of connectivity is not equivalent or better than the original level of connectivity, by default the system does not allow the rebuild process to continue.

OS/390 Release 3

This section provides an overview of the new functions introduced in OS/390 Release 3, and of the enhancements made to existing MVS functions. 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.

System Logger Enhancements

The system logger function has been enhanced to include:

- **Log data archival and deletion** - System logger now provides support to assist installations in managing the size of log streams and archival of log data. For more information, see the system logger chapter in *OS/390 MVS Setting Up a Sysplex*.

- **Improved connect performance** - System logger connect processing has been restructured in this release to provide more parallelism. This can result in better performance at connect time, because connects for log streams in different coupling facilities can be processed in parallel.

- **Data reliability enhancements** - System logger can automatically allocate staging data sets during certain structure rebuild failures, even when the customer does not request staging data sets for their logging configuration. This ensures a reliable, non-volatile copy of log data for recovery. For more information, see the system logger chapter in *OS/390 MVS Setting Up a Sysplex*.

- **System logger management of the average log block size** - System logger will now manage the entry-to-element ratio for the coupling facility structures associated with log streams. Previously, an estimated average log block size for a structure, specified on the AVGBUFSIZE parameter in the LOGR policy was used to calculate an entry-to-element ratio that applied for the life of the structure. Now, system logger uses the value specified on AVGBUFSIZE only to set an initial element-to-entry ratio. System logger then dynamically monitors and manages the entry-to-element ratio for structures based on actual structure usage. Dynamic management of the entry-to-element size will help maintain efficient use of coupling facility structure space.

  For more information, see the system logger chapter in *OS/390 MVS Setting Up a Sysplex*.

- **Removal of 168 limit on DASD log data sets** - Prior to this release, a log stream was limited to spanning a maximum of 168 log data sets. In this release, a log stream can span more than 168 log data sets. For more information, see the system logger chapter in *OS/390 MVS Setting Up a Sysplex*.

- **Resource manager support** - Provides new services that allow development of a resource manager application to monitor writes and deletes issued against a log stream. The resource manager application can then be associated with a log stream. The resource manager can be informed of all successful writes to a log stream and potentially modify the range of data to be deleted. In addition, a new log block import service (IXGIMPRT) is provided for copying a log block from one log stream to another with identical log block identifier and time stamp as the original. New ENF events are provided to assist a resource manager in managing the log stream. For more information, see the system logger chapter in *OS/390 MVS Setting Up a Sysplex*.

Compatibility:

This support includes some incompatible changes. For more information, see the appropriate sections later in this book.

PROGxx and Enhancements for LNKLST Concatenation

Enhancements have been made to the LNKLST statements for PROGxx. The LNKLST enhancements allow you delete a LNKLST set, remove the definition of a LNKLST set, test for a given module in a LNKLST set, and update jobs or address spaces to use a LNKLST set. Enhancements have also been made to the following commands:

- DISPLAY PROG,LNKLST to display information about the LNKLST set

- SET PROG=xx to define a PROGxx member with LNKLST statements after IPL

- SETPROG LNKLST to change the LNKLST set after IPL

A new authorized macro service CSVDYNL exists that allows programs to define the LNKLST set and related information.

Workload Management (WLM) Enhancements

Workload management enhancements for Release 3 include:

- TSO Sysplex support for VTAM Generic Resource, which distributes TSO logons to available capacity in a coupled systems environment.

- DB2 Stored SQL Procedures support, which provides the capability for DB2 to allow its stored procedures to run in multiple server spaces. Enclaves have been enhanced to support TCB work units in addition to SRB work units. (These services are also available to other work managers that need a dynamic pool of server address spaces.)

- DB2 TCP/IP support, which provides the ability to spread work across a DB2 datasharing group using the WLM recommendation given in the sysplex routing selection service.

- Sysplex I/O Priority Management, which provides dynamic management of I/O priority for work across the sysplex to address DASD usage and delays.

- Other WLM base enhancements, such as enhanced print function for the WLM service definition, support of up to 999 report classes, use of the JCL PERFORM keyword as a WLM classification attribute, and the ability to write an SMF record when the Reset command is used to change a job's performance characteristics.

Recoverable Resource Management Services (RRMS)

OS/390 Release 3 provides, for the first time, an OS/390 resource recovery platform. To appreciate the significance of this new platform, you need to understand a few key concepts:

- **Resource:** Many computer resources are so critical to an enterprise that the system must guarantee the integrity of these resources in spite of hardware or software failure, human error, or a disaster. The system must be able to restore, or recover, the resources, such as a database of checking or savings accounts.

- **Resource Manager:** Applications running at an enterprise access resources through a resource manager. DB2 is an example of a resource manager. Resource managers provide recovery for the resources they manage. For example, a request to transfer money from checking to savings requires two operations; a single resource manager can coordinate both changes and provide recovery.

- **Recovery:** Recovery of a resource means that the system must be able to restore the resource to a consistent state, regardless of the changes requested or the cause of the failure. Resource recovery requires additional processing, such as logging multiple events, so there are costs or tradeoffs involved. You probably need to provide recovery for only a subset of critical resources, and you need to provide this extra protection only when the resources are actually updated, not just for a read operation that does not change the resource. These critical resources, when they are updated, are called recoverable, or protected, resources.

- **Sync-point Processing:** Providing recovery for a single protected resource is straightforward. However, many online transaction processing systems, or transaction monitors, process single transactions that update multiple resources, which might be managed by multiple resource managers, running on multiple systems, or even multiple system platforms. Resources changed through transactions involving multiple systems require coordinated updating, called distributed resource recovery or distributed sync-point processing. Distributed sync-point processing means that a sync-point manager coordinates the changes across multiple resource managers in a two-phase commit protocol.

- **Two-Phase Commit:** The two-phase commit protocol is a series of actions to ensure that an application program makes all changes to a collection of resources or makes no changes to the collection. The protocol guarantees all changes or no changes even if the application program, the system, the sync-point manager, or the resource manager fails.

  In phase 1, the system determines whether all resource managers can make the changes. If they cannot, the system backs out the changes; the resources are not changed. If the resource managers can make the changes, the system commits the changes.

  In phase 2, the resource managers carry out the decision; they back out the changes or make the changes.

  If a failure occurs before the system commits the changes, the changes are backed out. If a failure occurs after the system commits the changes, the sync-point manager provides the information the resource managers need to make the committed changes after they restart.

Recoverable resource management services (RRMS) provides, as an integral part of OS/390, sync-point manager services that use the two-phase commit protocol to coordinate multiple resource changes made through a single transaction. Because IMS TM, CICS, and DB2 provide their own transaction management services, they do not require system services for current function, but they can use these services to extend the scope of their commit processing. The system services, combined with participating communication managers, such as APPC/MVS, can provide distributed resource recovery in all OS/390 application environments.

Both existing and new resource managers can use the Release 3 system services to either introduce or extend their abilities to process transactions in a distributed environment. The services enable heterogeneous communications managers, resource managers such as database managers or transaction monitors, and servers to:

- Participate in a local resource recovery environment where several resource managers run on a single system

- Participate, through a communications manager, in a distributed resource recovery environment of multiple systems or multiple platforms

To provide resource recovery, three programs must work together: the application program, the resource manager, and the sync-point manager.

Application Program

In a resource recovery environment, the application program accesses protected resources and requests changes to those resources. A local transaction might involve an application program that debits a checking account and credits a savings account, making updates to two protected resources managed by different resource managers. A distributed transaction might involve an application program that debits the checking account and makes an online payment to an electric company database that resides on another system.

RRS provides two callable services for application programs. These services are:

- Application_Commit_UR
- Application_Backout_UR

These services implement the CPI-RR Commit and Backout services on the MVS platform. They allow the application, when its resources are managed by resource managers that support sync-point processing, to either commit or back out all of the changes to resources a transaction requests. A unit of recovery (UR) represents the set of changes.

Through these services, an application can participate in either local or distributed resource recovery.

Resource Manager

A resource manager provides an application programming interface (API) that allows an application program to read and update a resource. In a resource recovery environment, it takes actions to commit or back out changes to the protected resources it manages.

Resource managers, which can be IBM products, parts of IBM products, or products from another vendor, can provide different functions, including:

- A database manager, such as DB2

- A work manager, such as IMS/ESA Transaction Manager (IMS/TM), that accepts work from an end user or another system and manages that work

- A communications resource manager that handles protected communications, such as APPC/MVS.

Sync-Point Manager

The sync-point manager coordinates changes to protected resources, ensuring that all UR changes are made or that no UR changes are made. The sync-point manager also recognizes a resource manager that registers as a communication manager for a distributed two-phase commit process. It can coordinate the local commit processing with the communication manager's management of the distributed commit.

In OS/390 Release 3, APPC/MVS provides distributed transaction processing for both inbound and outbound protected conversations, which are conversations

allocated to communicate changes to protected resources. APPC/MVS supports the SNA sync-point architecture for LU 6.2 conversations. This support allows distributed transactions between two LUs on the same system, between two systems in a parallel sysplex, or between one system and any remote system that supports the same sync-point architecture. Another key advantage is that, with this support, applications running in all MVS application environments can participate in local and distributed sync-point operations.

Because resource recovery services (RRS), a component of MVS, provides sync-point processing, most technical information uses RRS to refer to the sync-point manager. RRS logs URs as they move through the two-phase commit. The logging RRS provides is essential; if a failure occurs, resource managers restart, retrieving their incomplete URs from RRS. RRS uses the contents of its logs to return transaction information to the resource managers, and the resource managers proceed to process the URs.

Note: To provide sync-point processing, RRS uses two other MVS components, registration services and context services, and you will sometimes see RRMS used to describe the function the three components provide.

RRMS Services
RRMS provides three sets of callable services for the use of resource managers involved in resource recovery, or sync-point processing.

RRS also requires some actions from the system programmers who manage MVS at a customer installation.

Registration Services: Registration services allow a resource manager to:

- Register itself as part of resource recovery processing

- Establish the connections between its processing and resource recovery. To establish the connection, the resource manager provides exit routines that are invoked when various events occur. For example, the resource manager COMMIT exit routine gets control when resource changes are committed.

The registration services component of MVS provides these services. While resource recovery registration is the major focus of these services, other system functions might also use them.

Context Services: Context services are services that create, use, and end a context, which provides an association between an application program and its work request. A work manager often creates a context to represent a work request from another system. You could also think of a context as representing one or more units of recovery (URs) with the associated application programs, resource managers, and protected resources.

Not every resource manager needs to manipulate contexts. A context is useful, for example, when it represents an environment that will persist over multiple URs. In this case, the context can act as the anchor for the resource manager's control structures.

The context services component of MVS provides these services.

Resource Recovery Services: Resource recovery services are services that implement the two-phase commit protocol, which provides sync-point processing in a local or distributed environment.

A resource manager, which must be an authorized program, uses RRS services to take such actions as:

- Express an interest in a unit of recovery (UR), a set of resource changes that must be committed or backed out together.

- Indicate whether or not a UR is to be committed or backed out.

- During restart after a failure, obtain information about URs that were incomplete when the failure occurred.

- Inform the sync-point manager when UR processing is complete.

- Define its role in processing a particular UR. A resource manager is normally a participant while the sync-point manager is the coordinator, but, in a distributed environment a resource manager can take the role of a coordinator and act as either:

  – A distributed sync-point resource manager (DSRM), which is the role APPC/MVS takes in a peer-to-peer distributed environment.

  – A server distributed sync-point manager (SDSRM), which is the role a resource manager takes in a client-server distributed environment, where an application running on a client system requests changes to resources stored on a server system.

The resource recovery services (RRS) component of MVS provides these services.

System Management

RRS uses the OS/390 system logger to log the information about URs and about resource managers that it needs to recover protected resources after a failure.

Installations that run applications that, through a resource manager, use the OS/390 Release 3 resource recovery functions need to perform a minimal amount of system setup:

- Define the system logger logstreams that RRS will use.

- Define performance goals and priorities for RRS to the workload manager (WLM).

- Define RRS as a subsystem and educate operators in the use of the commands to start and stop RRS, including use of the automatic restart management (ARM).

- Determine any customizing needed for the RRS component trace.

RRS provides a set of interactive ISPF panels that allow people to locate sources of problems related to resource recovery and to take actions to commit or back out a UR or to remove a resource manager's interest in a UR. Because these actions can override normal processing, they would be taken only in cases where there is no alternative. For example, if a resource manager on a remote system fails and is not expected to restart for a significant time, it might be a good idea to remove its interests in incomplete URs so that the URs can complete.

Summary

In the Release 3 time frame, OS/390 provides key building blocks to allow it to provide local and distributed sync-point processing across a parallel sysplex.

APPC/MVS Enhancements

Enhancements to APPC/MVS provide customers with the following benefits:

- Reduced time and effort to diagnose problems with APPC/MVS transaction programs (TPs); "Application Programming Interface Tracing" provides an overview of this new function.

- Improved availability of APPC/MVS resources in a distributed processing environment, through the ability to define multiple APPC/MVS logical units (LUs) in a VTAM generic resource group. "Support for VTAM Generic Resource Names" on page 2-12 lists additional benefits resulting from this new capability.

- Reduced effort to manage interconnected networks in a distributed processing environment. See "Support for Network-Qualified Names" on page 2-13 for more information.

- Improved data integrity of resources updated by APPC/MVS TPs, and the portability of TPs that use the two-phase commit protocol to coordinate updates to protected resources. "Protected Conversations" on page 2-14 describes these improvements in more detail.

Also, APPC/MVS exploits new VTAM enhancements to achieve additional benefits for customer installations; "Migrating APPC/MVS Resources to OS/390 Release 3" on page 2-15 provides a summary of the changes to APPC/MVS configuration and workload, and "APPC/MVS Configuration and Workload Changes" on page 9-2 contains a summary of migration actions.

Application Programming Interface Tracing

The APPC/MVS application programming interface (API) trace facility allows programmers to more easily diagnose problems with APPC/MVS transaction programs (TPs). This diagnostic capability reduces the amount of time and effort required to develop and service APPC applications.

Using the API trace facility, programmers can collect data about APPC/MVS or Common Programming Interface Communications (CPI-C) calls that an APPC/MVS TP issues. With this trace data, programmers can diagnose not only errors that occur during a specific call, but also problems with the conversation flow between the TP and its partners. Depending on the location of the partners, programmers might have to use the API trace facility together with tracing facilities provided for other platforms.

API trace data includes entries for:

- Parameters and values specified on calls issued for APPC/MVS and CPI-C services, and values provided on return from those calls.
- The same diagnostic information that the APPC/MVS Error_Extract service provides for calls that return non-zero return codes.
- Parameters and values specified on START and STOP requests for the API trace facility.

To control tracing activity on OS/390, programmers use the ATBTRACE REXX exec to start, stop, or list the status of API tracing activity. They can invoke the ATBTRACE exec in several ways:

- Through TSO/E logon

- Through an MVS batch job

- From an instruction in a high-level language program

- Through JCL in the TP profile.

Through ATBTRACE parameters, programmers can start tracing for only specific TPs or users, or for many TPs, many conversations, and many users.

For more information about the API trace facility, see:

- *OS/390 MVS Planning: APPC/MVS Management* for information about managing tracing activity, including security profiles for protecting API tracing resources.

- *OS/390 MVS Programming: Writing TPs for APPC/MVS* for information about:

    – Deciding when to use the API trace facility instead of another diagnostic tool for APPC/MVS

    – Setting up data sets for API trace data

    – Starting, stopping, or listing the status of API tracing activity

    – Interpreting API trace data.

Support for VTAM Generic Resource Names

APPC/MVS support of VTAM generic resources can reduce the effort, complexity, and cost of managing a distributed processing environment that includes MVS systems. When several APPC/MVS logical units (LUs) share the same generic resource name, installations benefit primarily from the ability to improve availability of APPC/MVS resources. If one LU in the generic resource group or one MVS system is brought down or fails, APPC/MVS work can continue, because other group members are still available to handle requests that specify the generic resource name. Work from remote systems is less affected by the removal of any single APPC/MVS LU or MVS system.

Other benefits of using generic resource names include:

- Providing a single-system image for a multi-system APPC/MVS configuration.

- More easily expanding the APPC/MVS configuration.

- Allowing VTAM and WLM to balance sessions among two or more active APPC/MVS LUs on a single MVS system or in a sysplex.

To define APPC/MVS LUs as members of a generic resource group, the installation must:

- Meet the requirements documented for generic resources in *OS/390 SecureWay Communications Server: SNA Network Implementation*.

- Through an APPCPMxx parmlib member, use an LUDEL statement to delete each existing, active LU that is to register with a generic resource name.

- Also through an APPCPMxx member, use an LUADD statement with the GRNAME parameter to define each LU and associate it with a generic resource name.

After these requirements are met, the installation may use generic resource names for APPC/MVS LUs by:

- Modifying existing, or coding new, TPs to use the generic resource name for the partner LU for calls to the Common Programming Interface Communications (CPI-C) CMSPLN verb, or any version of the APPC/MVS Allocate callable service. You can specify the generic resource name either directly on the appropriate call, or through a side information entry.

- Modifying existing, or defining new, security profiles to control LU-to-LU access, user access to LUs, and to protect the use of the generic resource name.

For further details about using generic resource names for APPC/MVS LUs, see *OS/390 MVS Planning: APPC/MVS Management*.

Support for Network-Qualified Names

APPC/MVS support of VTAM network-qualified LU names can reduce the effort of changing the distributed processing environment in an installation that includes several interconnected networks. Previously, if your company merged existing networks, system programmers or administrators had to rename any LU that did not have a unique network LU name (the 8-byte local LU name) within the larger installation. Renaming an LU requires changes to several sources of configuration data on several systems, which complicates the tasks required only to define an LU on other systems.

With APPC/MVS support of network-qualified names, renaming LUs is no longer necessary when your installation adds networks containing MVS systems. Once your installation defines APPC/MVS LUs as capable of using network-qualified names, the network ID makes partner LU names unique.

To enable APPC/MVS LUs to support network-qualified names, the installation must:

- If your installation uses a security product to define LU-to-LU access authority, changes to those security profiles are necessary. The session management and security management sections of *OS/390 MVS Planning: APPC/MVS Management* contain more detail about the required changes.

- Through an APPCPMxx parmlib member, use an LUDEL statement to delete each existing, active LU that is to support network-qualified names.

- Also through an APPCPMxx member, use an LUADD statement with the NQN parameter for each LU that is to be enabled to support network-qualified names for its partner LUs.

Changes to existing TPs are not necessary; however, you might consider modifying them to improve performance.

For further details about using network-qualified LU names, see *OS/390 MVS Planning: APPC/MVS Management*.

Protected Conversations

To improve data integrity in a distributed processing environment, APPC/MVS, together with RRS, participates in the two-phase commit protocol to provide resource recovery for transaction programs. Transaction programs that use APPC/MVS as a communications mechanism may now establish protected conversations within a single system, between systems in a sysplex, or between OS/390 and another platform that supports the LU 6.2 two-phase commit (also known as syncpoint) protocol. This capability improves the portability of applications as well; client/server applications that use the Commit and Backout syncpoint services can now be run on OS/390 systems.

To enable APPC/MVS to support protected conversations, your installation must be set up to use RRS for resource recovery, which includes having a coupling facility available, with a LOGR couple data set and policy. In addition, your installation must:

- Define APPC/MVS logical units (LUs) as syncpoint-capable, by specifying SYNCLVL=SYNCPT and ATNLOSS=ALL on APPL statements in SYS1.VTAMLST

- Define a log stream, ATBAPPC.LU.LOGNAMES, for APPC/MVS to use for information related to resource recovery.

After these requirements are met, APPC/MVS LUs, servers, and the APPC/MVS transaction scheduler are all capable of handling protected conversations. Your installation may exploit this capability by:

- Updating existing, or coding new, transaction programs to:

    - Issue Allocate calls with a synchronization level of syncpt

    - Issue Commit or Backout callable services to coordinate resource updates with partner TPs

    - Issue the new Set_Syncpt_Options callable service to alter the default options that determine how APPC/MVS processes Commit and Backout requests.

- Evaluating existing code to determine whether logic changes are required to correctly handle new return codes from APPC/MVS or CPI-C services.

For further details, see *OS/390 MVS Planning: APPC/MVS Management* for installation set-up, and *OS/390 MVS Programming: Writing TPs for APPC/MVS* for transaction program design and coding.

Changes to alternate transaction schedulers and APPC/MVS servers are not necessary; however, you may design a scheduler or server to function as a resource manager, which works together with context services, RRS and APPC/MVS. Relatively speaking, designing and coding such resource managers can be complicated. For additional requirements for schedulers, see *OS/390 MVS Programming: Writing Transaction Schedulers for APPC/MVS*. For additional requirements for servers, see *OS/390 MVS Programming: Writing Servers for APPC/MVS*.

Migrating APPC/MVS Resources to OS/390 Release 3

With the base MVS and VTAM elements of OS/390 Version 1 Release 3, all APPC/MVS conversations are processed through VTAM. This change in processing now provides your installation with more control over its APPC/MVS work. For example, with previous releases of OS/390, changing the APPC/MVS configuration or stopping APPC/MVS work could take a long time, because you had to wait for LU=OWN and LU=LOCAL conversations to complete. With OS/390 V1R3, LU=OWN and LU=LOCAL conversations are processed through VTAM, so you can use VTAM commands to quickly stop the conversation between an APPC/MVS TP and its partner.

Also, with OS/390 V1R3, your installation can benefit from additional system management, resource availability, and performance improvements, such as the use of VTAM generic resource names for APPC/MVS logical units (LUs). To provide these benefits, however, APPC/MVS introduces some incompatible changes or different behavior that system programmers, security administrators, and application programmers might need to understand. These changes vary, depending on whether your installation uses the base elements of OS/390 V1R3, or customizes OS/390 V1R3 to use a downlevel release of VTAM (VTAM V4R3 or earlier). To minimize the complexity introduced by these changes, IBM recommends that installations use the base MVS and VTAM elements for OS/390 V1R3.

Figure 2-1 summarizes these changes, as well as describing the behavior for previous releases of OS/390. This comparison, and your understanding of the installation's APPC/MVS configuration and workload, can help you determine whether the migration actions described in "APPC/MVS Configuration and Workload Changes" on page 9-2 are necessary. At a minimum, for OS/390 V1R3, each APPC/MVS LU **must** be defined to VTAM through an APPL definition statement in SYS1.VTAMLST.

		OS/390 V1R3 or later	
Task	OS/390 V1R1 or V1R2	With VTAM V4R3 or earlier	With VTAM V4R4 or later
Figure 2-1 (Page 1 of 2). Summary of APPC/MVS Changes Introduced by OS/390 V1R3			
APPC/MVS Session Management			
Defining an APPC/MVS LU to VTAM	Not required for an LU that only serves as both the local and partner LU for the same conversation (that is, an LU that handles only LU=OWN conversations)	Not required for an LU that only serves as both the local and partner LU for the same conversation (that is, an LU that handles only LU=OWN conversations)	All LUs must be defined to VTAM through an APPL definition statement in SYS1.VTAMLST.
APPC/MVS Security Management			
Defining session-level LU-to-LU verification	Not available for LU=OWN and LU=LOCAL conversations	Not available for LU=OWN conversations	Available for all conversations
Defining conversation-level security	Not enforced for LU=OWN and LU=LOCAL conversations	Not enforced for LU=OWN conversations	Enforced for all conversations

		OS/390 V1R3 or later	
Task	**OS/390 V1R1 or V1R2**	**With VTAM V4R3 or earlier**	**With VTAM V4R4 or later**
Controlling the opening of VTAM ACBs	Not enforced for LU=OWN and LU=LOCAL conversations	Not enforced for LU=OWN conversations	Enforced for all conversations
Passing a security label (SECLABEL) to a partner TP through an Allocate call on an LU=OWN or LU=LOCAL conversation	Propagated for LU=OWN and LU=LOCAL conversations	Propagated for only LU=OWN conversations	No longer propagated for any conversations
APPC/MVS Operation			
Using VTAM commands, such as DISPLAY and VARY, to manage APPC/MVS work	VTAM commands do not affect LU=OWN and LU=LOCAL conversations	VTAM commands do not affect LU=OWN conversations	VTAM commands affect **all** conversations
APPC/MVS Transaction Program Design			
Using a mode name for Allocate requests	APPC/MVS ignores mode names on Allocate requests for LU=OWN or LU=LOCAL conversations.	APPC/MVS ignores mode names on Allocate requests for LU=OWN conversations. For LU=LOCAL and remote conversations, APPC/MVS uses either: • The mode name specified on the Allocate request, or • The default mode name, ATB#MODE, if the Allocate request contains a blank or null mode name.	For all conversations, APPC/MVS uses either: • The mode name specified on the Allocate request, or • The default mode name, ATB#MODE, if the Allocate request contains a blank or null mode name.
Designing a TP to issue the CPI-C CMTRTS service	Supported for LU=OWN and LU=LOCAL conversations. Results for remote conversations are unpredictable.	Supported for only LU=OWN conversations. For LU=LOCAL and remote conversations, APPC/MVS returns return code 20 (product_specific_error).	For all conversations, APPC/MVS returns return code 20 (product_specific_error).
APPC/MVS Alternate Transaction Scheduler Design			
Designing an alternate transaction scheduler to issue the Unidentify service to immediately stop its work	LU=OWN and LU=LOCAL conversations continue without interruption	Only LU=OWN conversations continue without interruption	All conversations end immediately

Figure 2-1 (Page 2 of 2). Summary of APPC/MVS Changes Introduced by OS/390 V1R3

OS/390 Release 4

This section provides an overview of the new functions introduced in OS/390 Release 4, and of the enhancements made to existing MVS functions. 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.

Workload Management (WLM) Enhancements

Workload management enhancements for Release 4 include:

- Scheduling environments, which provide a way to define resource requirements for different types of work, and to ensure that work is assigned only to systems that satisfy those resource requirements. (In this release, batch jobs submitted through JES2 are the only work units that use scheduling environments.)

- Batch initiator management, in which WLM can now dynamically manage the number of initiators for one or more JES2 job classes to meet the performance goals of the work.

- A new work classification qualifier for job priority.

- Reported batch response times will now exclude hold time for jobs submitted with the TYPRUN=HOLD keyword parameter on the JOB statement.

- The ability to use the SYSTEM and SYSSTC service class names within installation-defined work classification rules and on the RESET operator command.

- A new mechanism, in concert with the Domain Name System component of TCP/IP, to provide intelligent distribution of TCP/IP network connections across multiple systems in a sysplex.

- Less disruptive policy activation, which preserves existing workload characterization data if the data would not be affected by switching to the new policy from the old policy.

Dynamic LPA Services

The PROGxx parmlib member now includes the LPA statement, which is used to define modules that can be added to or deleted from LPA after IPL. The following commands have been changed to support dynamic LPA services:

- DISPLAY PROG,LPA to display information about modules that are currently in LPA, whether placed there during or after IPL.

- SET PROG=xx to process LPA statements in a PROGxx parmlib member to initiate a change (add, delete) to LPA after IPL.

- SETPROG LPA to initiate a change to add or delete a module to LPA after IPL.

A new authorized macro service CSVDYLPA allows an authorized program to initiate dynamic LPA services.

Transaction Dumping

Transaction dumping allows multiple, concurrent, unformatted dumps to be requested and processed. It supports dump suppression using DAE and manages dumps across address spaces and MVS images.

Standalone Dump Enhancements

The enhancements to standalone dump provide performance improvements, specifically during the virtual phase of the standalone dump. For example:

- Improve the way DASD tracks are read.
- Dump real storage in a prioritized order to improve the chances that the dump will contain the needed data if the customer or an error terminates the dump before it is completed.
- Defer reading non-page-table pages and sort them into page slot order while performing the virtual phase of Standalone Dump, to reduce the overhead required to locate areas of paged-out storage.
- Perform format-writes instead of update-writes to gain better performance on RAID devices.
- Reduce the frequency with which informational message AMD095I is issued.

In addition, the enhancements provide relief for some commonly-reported usability concerns.

Enhancements to Sharing System Resources by Using System Symbols

MVS/ESA SP 5.2 enhanced the ability of two or more systems to share system definitions in a multisystem environment. Using system symbols, installations can use the same commands, dynamic allocations, parmlib members, and job control language (JCL) for started tasks while retaining unique values where required.

OS/390 Release 4 provides an additional system symbol:

&SYSR1 The volume serial of the IPL volume

This support solves the following problem: Extended indirect volser support, which gave customers the ability to spread the data sets that logically belong on SYSRES across multiple volumes and refer to the additional volumes indirectly, cannot be easily used by some customers. The support makes use of system symbols to identify the additional volumes, and those symbols are defined in parmlib member IEASYMxx. The problem comes from the fact that a separate IEASYMxx member is needed for each SYSRES volume that can be IPLed by a given hardware image. For customers who run with a large number of images and allow multiple SYSRES volumes per image, the number of IEASYMxx members that need to be managed can create a management problem.

Using the &SYSR1 symbol, you can define a system-defined symbol that is set to the volser of the IPL volume. You can specify a single definition in IEASYMxx that uses substrings of the &SYSR1; symbol to define the additional volumes. For example, if the IPL volume RESA01 has an additional volume of RESA02, and RESB01 has RESB02, and so forth, a single definition can be used to apply to all SYSRES volumes. For example: if &SYSR1 is the new system-assigned symbol and &SYSR2 is the installation-defined symbol for the additional volume,

```
SYMDEF &SYSR2.='&SYSR1(1:4).02'
```

would apply to all SYSRES volumes.

Run-Time Library Services

The run-time library services (RTLS) function eases the installation complexities involved with the use of STEPLIBs to bind applications to a specific language run-time environment. RTLS allows the programmer to tag applications with a specific language run-time environment without specifying STEPLIB DD statements in the JCL. This change reduces installation management and system overhead when loading modules into storage. A new macro service, CSVRTLS, requests services from RTLS.

For more information about RTLS, see

- *OS/390 MVS Programming: Assembler Services Guide* for a description of the RTLS function.

- *OS/390 MVS Programming: Assembler Services Reference* for a description of how to code CSVRTLS to request specific services from RTLS.

- *OS/390 MVS Initialization and Tuning Reference* for a description of how to use the CSVRTLxx member of SYS1.PARMLIB.

System Logger Enhancements

The system logger function has been enhanced to include support for DASD-only log streams. DASD-only log streams do not use coupling facility storage. The coupling facility is used by system logger as the interim storage for log stream data before it is offloaded (hardened) to DASD log data sets. For a DASD-only log stream, however, the log data is stored in local storage buffers before being offloaded (hardened) to DASD log data sets.

A DASD-only log stream has a single-system scope; only one system at a time can connect to DASD-only log stream. Multiple applications from the same system can, however, simultaneously connect to a DASD-only log stream. When a system logger application writes a log block to a DASD-only log stream, system logger writes it first to the local storage buffers for the system and then automatically duplexes it to a DASD staging data set associated with the log stream.

A DASD-only log stream can be upgraded to a coupling facility log stream by updating the log stream definition in the LOGR policy couple data set to associate a coupling facility structure with the log stream.

For more information on DASD-only log stream support, see *OS/390 MVS Setting Up a Sysplex*.

For information on using system logger services to write system logger applications, see *OS/390 MVS Programming: Assembler Services Guide*.

OS/390 Release 5

This section provides an overview of the new functions introduced in OS/390 Release 5 and of the enhancements made to existing MVS functions. 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.

Workload Management (WLM) Enhancements

A new subsystem type, CB, is added to support Component Broker work requests.

Recoverable Resource Management Services (RRMS) Enhancements

Support for X/Open Identifiers (XID) is added.

Three new callable context services are added:

- Set_Context_Data

  A resource manager calls the Set_Context_Data service to save data to be associated with a specific context and to identify it with a specified key. This key can be used to identify the data in subsequent calls to Set_Context_Data, or to the Retrieve_Context_Data service.

- Retrieve_Context_Data

  A resource manager calls the Retrieve_Context_Data service to retrieve data associated with a specific context. This data must have previously been set by a call to Set_Context_Data service. The resource manager specifies a key which identifies the data to be retrieved.

- Retrieve_Current_Context_Token

  A resource manager calls the Retrieve_Current_Context_Token service to obtain the context token for the currently active context. The token can be used in subsequent calls to other context services to identify that context.

The current URID is available through the Retrieve_UR_Data service.

New XES Functions

The following XES functions are new to OS/390 R5:

- The IXLUSYNC service (Synchronizing Processing for User-Defined Events) now allows a user to specify a completion code when confirming a sync point. When all connectors have responded to the sync point, the system reports the highest completion code to the event exit of all connectors. Also, if a user is unable to confirm a sync point, because the user has failed or disconnected, the system will confirm the sync point for the user with a completion code of X'0000FFFF'.

- The structure rebuild process now provides information to connectors to a structure during an MVS-initiated rebuild due to loss of connectivity. The information includes the percent of lost connectivity that precipitated the rebuild action. Connectors to the structure can evaluate this percentage of lost connectivity to determine if rebuild is to continue or is to be stopped or to take any other actions that might be dependent upon the percent loss of connectivity.

OS/390 Release 6

This section provides an overview of the new functions introduced in OS/390 Release 6 and of the enhancements made to existing MVS functions. 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.

Workload Management (WLM) Enhancements

Workload management enhancements for Release 6 include the following:

- When defining classification rules and classification groups, the WLM ISPF application now includes an additional 32-character description field for each rule or group.

- Scheduling environments, which help ensure that units of work are sent to the systems that have the appropriate resources to handle them, can now be used by JES3. (Previously, only JES2 could use scheduling environments.)

- Discretionary goal management has been adjusted — when other workloads are overachieving on their performance goals, resources will now be diverted so that work with a discretionary goal can be run.

Recoverable Resource Management Services (RRMS) Enhancements

Starting in Release 6, RRMS has the following enhancements:

- Usability Enhancements:

  RRS system management panels and programmable interfaces have enhanced function in two key areas: selection and sorting. Selection enhancements include the ability to use wildcard strings for certain fields, the ability to track work manager names, and the ability to track UR state duration and exit times. sorting enhancements offer users the ability to organize query output based on a variety of sort keys and options.

- Unauthorized Context Switching:

  Previously, context services were only enabled for authorized, key 0–7 or supervisor state callers. To enable work context switching, some context services are enabled for unauthorized, key 8–15 problem state, callers.

Improved Security using Network-Qualified Names for APPC/MVS

In Release 6, APPC/MVS lifts two restrictions related to security management:

- Security management was limited to defining LU-to-LU access authority through RACF APPCLU profiles. RACF APPL and APPCPORT profiles did not support network-qualified LU names, so your installation was required to define unique network LU names for each LU to reliably do either of the following:

  – Limit access to a specific local LU from a specific partner LU

  – Limit access to the local system from a specific partner LU.

- Also, security management for persistent verification was unpredictable, because only the network-LU-name portion of a partner LU name was used to verify persistent verification requests. For example, without unique network LU names, LUs might have accepted conversations from the wrong partner LUs.

Because of this unpredictability, IBM did not recommend using network-qualified names for LUs intended for persistent verification requests.

However, starting with OS/390 Release 6, if the system is running with OS/390 V2R6 Security Server (or another security product that supports the POENET= keyword on the RACROUTE macro), you can define RACF profiles in the APPCPORT class that control access to LUs that have network-qualified names.

For more information, see *OS/390 MVS Planning: APPC/MVS Management*.

System Logger Enhancements

System logger enhancements for Release 6 include the following:

- **DISPLAY LOGGER command** — The system logger function has been enhanced to include support of the DISPLAY LOGGER command. This command can be used to determine the operational status of the system logger, individual log streams, log streams from a sysplex view, as well as determining utilization of list structures assigned to log streams. For more information, see *OS/390 MVS System Commands*.

- **Control Interval Size** — System logger log stream offload processing performance was improved in this release. Logger now provides support for DASD log data set control interval sizes of larger than 4096. DFSMS data classes for DASD log data sets can also be defined to specify a control interval size larger than 4096. Larger control interval sizes generally provide better I/O performance. See "Optimizing Control Interval Size" in *OS/390 MVS Setting Up a Sysplex* for general information or "Control Interval Size" in *OS/390 Planning for Installation* for information on service support.

Console Services Enhancements

Console services enhancements for Release 6 include:

- Improved performance of DOM processing during task termination by building DOMs by ASID/jobstep TCB only for terminating jobstep tasks that issued WTOs.

- Additional flexibility in naming the CONSOLxx member of SYS1.PARMLIB by allowing the 3 national characters ($,#, and @) on the CON=xx system parameter in IEASYSxx.

- Ability to display only the consoles which are active on, or eligible to be activated on, the specified system by coding the SYS= keyword parameter on the DISPLAY CONSOLES command.

- Ability to display only the current master console by specifying the MCONLY positional parameter on the DISPLAY CONSOLES command.

- Enhancement of the console definition removal service by unpinning a console device's UCB during console definition removal.

For more information, see *OS/390 MVS Planning: Operations* and *OS/390 MVS System Commands*.

IEEE Floating Point Enhancements

Institute of Electrical and Electronics Engineers (IEEE) Floating Point enhancements for Release 6 include:

- OS/390 Version 2 Release 6 support for the common industry standard IEEE Floating Point hardware in the G5 processor enhances OS/390 openness. This support provides improved performance for Java applications using floating point operations, and for C/C++ programs recompiled to allow usage of the additional floating point registers, including programs using the current S/390 floating point. In addition, portability is improved for C/C++ applications and Domino Companion Products that use floating point.

The MVS BCP support for IEEE floating point includes the following functions:

- System support to allow programs to use the IEEE and other new floating point hardware instructions, the 12 Additional Floating Point (AFP) registers, and the Floating Point Control (FPC) register in the IBM S/390 Generation 5 processor.

- Simulation of all the new floating point instructions, and the AFP and FPC registers. Simulation is transparent; the same object or load module will execute on a G5 processor using the new floating point hardware instructions, and on a pre-G5 processor using simulation. Because simulation involves significant overhead per instruction, it is intended only for running applications that make light use of the new floating point instructions, or for testing.

- The CPU presents IEEE floating point exceptions as data exceptions (PIC 7). A new Data Exception Code (DXC) indicates which IEEE floating point exception occurred. MVS passes the DXC value to ESPIE routines and to recovery routines in a new field in the SDWA.

- Dump and formatting support is for the AFP and FPC registers.

- The AFP and FPC registers will be saved during ACR, Loadwait/Restart and Stand-alone dump processing.

- MVS tasks and SRBs that use IEEE floating point instructions or the AFP registers incur some additional overhead in the MVS dispatcher to save and restore the AFP and FPC register. A new MVS service IEAFP provides a way for subsystems to request that the MVS dispatcher stop saving and restoring the AFP and FPC registers, for example when reusing a task for a new transaction.

Allocation Enhancements

Allocation enhancements for Release 6 include:

- Removal of the 10,000 DD statements limit. This support was requested by DB2 but may also benefit other products and programs. Products and programs that perform large numbers of dynamic allocations, run authorized and currently specify S99TIOEX in the FLAGS2 field of the SVC99 Request Block (S99RB) are likely to benefit from this support.

- Addition of a symptom record to the SYS1.LOGREC data set when message IEF289E is issued. The information included in this symptom record is provided to the operator when IEF877E is issued. The symptom record is NOT provided when the system defaults specified via ALLOCxx are applied and IEF289E is issued instead of IEF877E.

IOS Channel Path Recovery Enhancements

Enhancements to IOS channel path recovery for Release 6 include:

- Elimination of Disabled Console Communication (DCCF) for hot I/O and channel path recovery messages for non-DASD and console devices.

- Expansion of the IOACTION command to cover tape and unit record devices.

- Addition of the BOX_LP recovery option in the IECIOSxx member of SYS1.PARMLIB to guide IOS in processing other device classes on the same channel path.

For more information, see *OS/390 MVS Initialization and Tuning Reference*.

New Coupling Facility Rebuild Functions

OS/390 R6 introduced two new rebuild functions:

- User-managed duplexing is a new structure rebuild function that is intended for improved availability and usability for cache structures. You might initiate structure duplexing for continuous use of the structure by an application in the event of a structure failure or loss of connectivity to a coupling facility by one system. The function provided by user-managed duplexing is integrated into OS/390 R6 but is also available via PTFs for OS/390 R3 (UW54153), OS/390 R4 (UW54153), and OS/390 R5 (UW54154).

- Rebuild for coupling facility maintenance allows you to rebuild structures into a coupling facility after the coupling facility is introduced (or reintroduced) into a configuration. The structures chosen to populate the coupling facility are those that list the coupling facility higher in their CFRM preference list than their current location.

OS/390 Release 7

This section provides an overview of the new functions introduced in OS/390 Release 7 and of the enhancements made to existing MVS functions. 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.

Workload Management (WLM) Enhancements

Support for MQSeries Workflow requests, previously available only with APAR OW33509 installed on OS/390 Release 6, is now included in the base function of OS/390 Release 7.

Allocation Enhancements

The enhancements made to the allocation component remove the need for customers to modify their JCL or change their operational habits relative to DCB=OPTCD=B processing. Allocation now supports the input DD statements for volumes of a data set created on different device types and/or different libraries by concatenating them into a single DD statement that will allocate each volume to the appropriate device type and library/VTS.

Component Trace by Message ID

The new CTRACE by message ID support can be used as a filter to create CTRACE entries for a specific message and reduce the frequency of the trace table wrapping. This support can be invoked in one of three ways:

- via the CTIOPSxx member of parmlib during MVS initialization.

- as an option on the operator TRACE CT command when starting component trace.

- as an IPCS CTRACE subcommand for the operation's component SYSOPS.

Using MSG=msgid should cause a significant reduction of data in the component trace output for extraneous messages making it easier to locate the records for the message in question. This new support is described in *OS/390 MVS Diagnosis: Tools and Service Aids*.

Dump Enhancements

Enhancements to dump support provide the following:

- SVC Dump tailoring allows operators and client components to modify the contents of the dump thus providing additional problem determination data. This support is directed at servers which contain client-related data in address and data spaces other than the client's which would not otherwise appear in the dump. New component exits can be created to identify storage to be dumped.

- Transaction Dump allows dataspaces to be specified for output.

- The DUMP command allows symbols used within dump command parmlib members to be specified on the DUMP command line.

System Logger IPCS Subpool Commands Support

Service aids are upgraded to support new I/O devices, improve diagnosis of problems in components supporting a sysplex, and provide the ability to work with dumps where data areas have been overlaid.

Two new general-purpose IPCS subcommands, RUNARRAY and RUNCPOOL can reduce the analysis associated with the components directly involved with support of the sysplex. They are described in *OS/390 MVS IPCS Commands*.

SMF Exit Support in SAMPLIB

Samples of six SMF exits are provided in SYS1.SAMPLIB. The exits are:

- IEFACTRT — Termination Exit

- IEFUJV — Converter/Interpreter SMF User Exit

- IEFUSI — User Step Initiation Exit

- IEFUTL — User Time Limit Exit

- IEFU29 — SMF Dump Exit

- IEFU83 — SMF Record Exit (SVC)

These exits are described in *OS/390 MVS Installation Exits*.

Global Resource Serialization Enhancements

The Synchronous RESERVE (SYNCHRES) feature is available with global resource serialization in Release 7. The SYNCHRES option allows an installation to specify whether a system should obtain a hardware RESERVE for a device prior to granting a global resource serialization ENQ. This option might prevent jobs that have a delay between a hardware RESERVE request being issued and the first I/O operation to the device. Prior to the implementation of the SYNCHRES option, the opportunity for a deadlock situation was more likely to occur.

The SYNCHRES option can be activated through either the GRSCNFxx parmlib member or the SETGRS operator command. On the GRSDEF statement of GRSCNFxx, you can specify the SYNCHRES (Yes or No) parameter; from the console, an operator can issue the SETGRS SYNCHRES=YES command.

See *OS/390 MVS Planning: Global Resource Serialization*.

OS/390 Release 8

This section provides an overview of the new functions introduced in OS/390 Release 8 and of the enhancements made to existing MVS functions. 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.

Workload Management (WLM) Enhancements

In conjunction with OS/390 support of the Enterprise Storage Server, Workload Management will now include support for dynamic alias management. With dynamic alias management enabled, WLM can automatically perform alias address reassignments to help work meet its goals and to minimize IOS queueing.

For more information, see *OS/390 MVS Planning: Workload Management*.

TimeOut Support for APPC/MVS

Starting with Release 8, APPC/MVS transaction programs (TPs) can avoid application hangs caused by network or partner system delays by invoking a Set_Timeout_Limit conversation call or by specifying a TimeOut_Limit parameter on an allocation call. New and enhanced callable services include:

- A new callable service, ATBSTO5 (Set_TimeOut_Value)

- A new parameter, Timeout_value, on the allocate callable service (supported by the new call ATBALC5)

- An update to the Version_Service callable service to allow applications to determine that the current system supports the setting of timeout limits.

For more information, see *OS/390 MVS Programming: Writing TPs for APPC/MVS*.

System Logger Enhancements

The system logger has been enhanced to include dumping for system logger applications when missing data is encountered.

Enhancements to Logger include:

- Allowance of logger initiating dumps for ABEND1C5, RSN0804 conditions

- Inclusion of structure information in dumps when a CF structure is being used for the log stream.

- Sysplex-wide dumps taken when "TASK=END" is specified as the response to MSGIXG115A.

- Providing LOGR couple data set format level and record information as part of D XCF,COUPLE,TYPE=LOGR command.

For more information on using system logger services see *OS/390 MVS Setting Up a Sysplex* and *OS/390 MVS Programming: Assembler Services Reference*.

Sysplex Unique Store Clock Value

MVS Timer Services and XCF provide support for the new architected 128-bit extended time-of-day (ETOD) clock that is available on S/390 Parallel Enterprise G5 Servers. Timer Services simulates support on earlier servers. The extended format provides improved resolution for faster S/390 processors as they become available and provides for sysplex-wide uniqueness of ETOD values.

For more information on obtaining ETOD clock values, see *OS/390 MVS Programming: Assembler Services Reference*.

Enhancements to XCF and XES

The following enhancements to the XCF and XES components of OS/390 are available in Release 8.

XCF Signalling Enhancements

The XCF signalling service is extended to support messages as large as 128M bytes in length. Prior to the XCF Large Message Support, messages could be at most 61K bytes long.

In order to exploit the large message delivery support, the following restrictions apply:

- Both the sending and target systems must be running OS/390 Release 8 or higher.

- Both the sending and target members must have specified when they joined their XCF group that they supported large message delivery.

Installations running subsystems that exploit the large message delivery protocol should understand that XCF may need to increase its use of auxiliary storage. Installations should therefore monitor their auxiliary storage utilization.

LPAR Sysplex Timer Support

XCF provides support for a logical time offset relative to the Sysplex Timer that can be set for a group of LPARs that make up a sysplex running on multiple CPCs. This support allows multiple sysplexes with different time settings to run on the same CPCs with the same Sysplex Timer.

The time of day for each LPAR is the Sysplex Timer time adjusted by the logical time offset value. In a multisystem environment, XCF will allow only images with the same logical offset value to participate in the same sysplex with one another. At IPL-time, XCF detects any inconsistent logical offset values and prevents the IPL-ing system from joining the sysplex.

System-Managed Rebuild

System-managed rebuild provides a simplified protocol for structure rebuild in planned reconfiguration scenarios. The system performs all the significant steps in the rebuild process with minimal participation by the connectors, although the connectors are aware that the structure is temporarily unavailable. This function requires the following:

- The CFRM couple data set must be formatted with a new ITEM NAME(SMREBLD) NUMBER(1) statement and be activated as the primary CFRM couple data set.

  Note that only systems at OS/390 Release 8 or higher support using a CFRM couple data set formatted with this new statement.

- The structure to be rebuilt must reside in a coupling facility at CFLEVEL=8 or higher and the preflist in the CFRM policy must contain two or more coupling facilities at CFLEVEL=8 or higher.

- All systems in the sysplex must be at OS/390 Release 8 or higher for a system-managed rebuild to be initiated. Lower-level systems can be in the sysplex, but cannot use the CFRM couple data set or the coupling facilities.

- List structures and lock structures with record data must have been allocated by an OS/390 Release 8 or higher system in order for their system-managed rebuild to occur.

- Coexistence support is required for systems running a release lower than OS/390 Release 8. System-managed rebuild will not be enabled in such a mixed sysplex.

Structure Computation Service (IXLCSP)

The IXLCSP service provides the ability to compute either a structure size, given structure attributes and object counts, or structure object counts, given structure size and attributes. The calculations do not result in the actual allocation of a structure in the coupling facility, nor do they affect the current contents of the target coupling facility in which the results are determined.

An authorized application can use the IXLCSP service to assist in coupling facility capacity planning and exploitation. The service requires that the coupling facility for which the calculations are to be performed be defined in the active CFRM policy, be connected to the system from which IXLCSP is issued, and be at CFLEVEL=8 or higher.

Monitoring for Sysplex Hang Conditions

XES provides support for monitoring certain XES processes that require a response from all active structure connectors. When an expected response from one or more of the connectors is not received in a timely manner, XES issues a message for each non-responding connector to the operator to alert them of a potential hang condition. The operator or automation can then take the appropriate actions to diagnose or alleviate the hang condition.

An installation should be aware that an expected response that is not received in a timely manner does not necessarily indicate that the connector is hung, but could mean that because of environmental conditions, the connector is simply taking a long time to respond. It is highly recommended that before cancelling the connector, the operator, system programmer, or automation program used for

| message handling should examine some diagnostic data to confirm that the
| connector is truly hung.

Optimization of Cache Structure Functions
| The IXLCACHE programming interface used to delete entry names from a cache
| structure allocated in a coupling facility of CFLEVEL=7 or higher is enhanced to
| improve its performance. DB2 will exploit and benefit from this enhancement.

| The NAMECLASSMASK parameter on IXLCONN allows you 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. Name classes can be used to improve
| the processing efficiency of the IXLCACHE REQUEST=DELETE_NAME command.

| Recoverable Resource Management Services (RRMS) Enhancements
| Starting in Release 8, RRS system management panels and programmable
| interfaces are enhanced to allow management of all RRS images in a sysplex from
| a single image.

Chapter 3. Migration Actions: Initialization and Tuning

This section describes changes in your initialization and tuning procedures between MVS/ESA SP 5.2.2 and OS/390 releases. For a description of the changes to individual members of SYS1.PARMLIB in OS/390, see Figure 1-1 on page 1-2.

Checklist of Migration Actions for OS/390 Release 1 Initialization and Tuning

- **Required:** In OS/390 systems that run JES2, make sure that CON=NOJES3 is specified on the IEASYSxx parmlib member.

- **Required:** Make sure that SYS1.PARMLIB includes the tailored product enablement policy that IBM ships with your order in the IFAPRD00 member of SYS1.PARMLIB.

  You must copy the PRODUCT statements supplied in the tailored member into the IFAPRDxx member that applies to each OS/390 system image for which the product and optional features were ordered. On each system, set the PROD system parameter in IEASYSxx to point to the appropriate IFAPRDxx member(s). (See *OS/390 MVS Initialization and Tuning Reference* for more information about using IFAPRDxx.)

  If you do not take these actions, you will not be able to use all the optional features you ordered. Before you make changes to the PRODUCT statements IBM supplied, see the information on enabling OS/390 features in *OS/390 MVS Product Management*.

Checklist of Migration Actions for OS/390 Release 2 Initialization and Tuning

- If you run IPCS and have a permanently allocated IPCSPARM DDname, IBM recommends the following:

  - If IPCS is used on the same OS/390 Release 2 system that generated the dumps and traces, remove the IPCSPARM DDname and allow IPCS to dynamically access the correct logical parmlib.

  - If IPCS is used on an MVS/ESA system or an OS/390 Release 1 system other than the one that produced the dump, you must continue to supply an appropriate IPCSPARM DDname as well as other DDnames that would cause the dumping system's version of IPCS to be used.

- Examine your installation configuration and determine if you should consolidate all LOADxx information for all MVS images in a sysplex into one LOADxx member using the HWNAME, LPARNAME and VMUSERID parameters. The LOADxx parameters HWNAME, LPARNAME and VMUSERID provide segmentation of the processor hardware name, the logical partition name and the VM Userid. For more information on LOADxx filter parameters, see *OS/390 MVS Initialization and Tuning Reference*.

- Examine your installation CSVLLAxx members. If they currently contain PARMLIB (dsn) SUFFIX (xx) parameters, determine if the (dsn) specified is a data set in the parmlib concatenation. If so, consider replacing the PARMLIB (dsn) SUFFIX (xx) parameters with the new PARMSUFFIX (xx) parameter so

you won't have to change the PARMLIB (dsn) SUFFIX (xx) parameters if you move the member to another data set within the parmlib concatenation.

- IBM recommends that the IEFPARM DD statements be removed from the Master JCL if you have PARMLIB statements in the LOADxx member. If there are PARMLIB statements in LOADxx and an IEFPARM DD statement in Master JCL, the IEFPARM DD statement will be ignored. If there are no PARMLIB statements in LOADxx and no IEFPARM DD statement in Master JCL, Master Scheduler processing will use SYS1.PARMLIB.

- Examine the IEFPARM DD statements in your installation start procedures for DLF, VLF and LLA. If the data set specified on the IEFPARM DD statement is in the parmlib concatenation, IBM recommends you remove the IEFPARM DD statement so you won't have to change the IEFPARM DD statement if you move the member to another data set within the parmlib concatenation.

- If you want to define the LNKLST concatenation through PROGxx, convert the definitions in LNKLSTxx to equivalent definitions in PROGxx.

  You can use the CSVLNKPR REXX exec to convert the syntax of LNKLSTxx to a PROGxx format.

  To install CSVLNKPR, place the exec in a data set that is accessible to ISPF and PDF edit macros. If you specify EXECUTIL SEARCHDD(YES) command, or if you have modified the TSO/E installation parameters to search SYSEXEC automatically, place CSVLNKPR in a data set allocated to SYSEXEC. Otherwise, place CSVLNKPR in a data set allocated to SYSPROC.

  To invoke CSVLNKPR:

  1. Make sure that the LNKLSTxx member to be converted is valid and syntactically correct.

  2. Edit a new PROGxx parmlib member.

  3. Copy the LNKLST statements from the old LNKLSTxx member into the new PROGxx member.

     Note:

     – The new PROGxx member should be empty prior to copying in the LNKLSTxx member, because CSVLNKPR comments out any statement not previously in LNKLSTxx format.

       Make sure to run CSVLNKPR against a member that contains only LNKLST statements. This is because CSVLNKPR comments out any statement that is not in the older LNKLST format, including APF and EXIT statements.

     – If you want to let CSVLNKPR convert MIGLIB, LINKLIB, and CSSLIB, they should be commented out or deleted if not using SYSLIB.

     – If MIGLIB, LINKLIB, and CSSLIB data sets are specified in the LNKLSTxx member, the system will issue CSV532I as an informational message stating that there are superfluous LNKLST statements in your PROGxx member.

  4. Enter CSVLNKPR on the edit command line. The system places the modified member in the edit buffer.

If you enter `CSVLNKPR` without a name, the name of the LNKLST set in PROGxx defaults to LNKLSTXX. If you specify `CSVLNKPR[name]`, the system uses `name` as the name of the LNKLST set in PROGxx.

5. Save the new PROGxx member.

After you convert to PROGxx, remove the LNK=xx system parameter from IEASYSxx and from IEASYS00, and then activate PROGxx (specify the PROG=xx system parameter at the next IPL). You can place PROG=xx in IEASYSxx and IEASYS00.

- To support using up to 255 extents for the LNKLST concatenation, you must have DFSMS/MVS V1R3 or later installed.

Checklist of Migration Actions for OS/390 Release 3 Initialization and Tuning

For a complete description of these actions, see the section on migrating to workload management in *OS/390 MVS Planning: Workload Management*.

- **Mixed release sysplex:** Before installing OS/390 Release 3 in a multi-system sysplex, you must install a compatibility PTF on each pre-OS/390 Release 3 system in the sysplex. The APAR number is OW20913.

- **Goal mode compatibility:** You can install OS/390 Release 3 with no changes to the workload management service definition or to the WLM couple data sets, and workload management will run the same as it did before installing OS/390 Release 3.

  Note: The only exception to this is where the pre-OS/390 Release 3 service definition has more than 100 service classes defined. In this case, the service definition must be modified so that there are no more than 100 service classes because OS/390 Release 3 changes the maximum number of allowable service classes from 999 to 100.

- **Service definition changes:** If you want to make changes to the service definition but not use any new OS/390 Release 3 workload management functions, you can continue to use a pre-OS/390 Release 3 workload management ISPF application to edit, install, and activate the service definition. This assumes that you have at least one pre-OS/390 Release 3 system in the sysplex.

- **Reallocating the WLM couple data set:** If one of the following conditions exist, you must reallocate the WLM couple data set, and reinstall and activate the service definition:

  – You want to be able to install and activate a policy from any system in the sysplex.

  – You want to use some of the new OS/390 Release 3 workload management functions.

    This includes any use of SOMobjects in OS/390 Release 3 because SOM uses new workload management services in OS/390 Release 3.

  – You plan to migrate all the systems in the sysplex to OS/390 Release 3.

  The OS/390 Release 3 version of the workload management application works *only* with a reallocated WLM couple data set, even if the new workload management functions are not used. Systems running with earlier levels of

WLM can use a WLM couple data set formatted by OS/390 Release 3 as long as the service definition exploits only functions supported by those earlier levels of WLM.

For a complete description of the following action, see *OS/390 UNIX System Services Planning*.

- **Required:** Make sure that the BPXOINIT procedure is installed and is customized appropriately for your system. Make sure that a security identity has been assigned, either by adding a profile to the STARTED class, adding an entry in the RACF started procedures table, or both.

  If you are not planning on using OS/390 UNIX System Services (OS/390 UNIX) immediately, you only need to ensure that the BPXOINIT and OMVS procedures are installed in SYS1.PROCLIB. You do not need to add anything to the RACF started procedure table. RACF sets up a default security environment if entries are not found for OMVS and BPXOINIT. This default set up is intended to allow OMVS and BPXOINIT to initialize for installations that are not using OS/390 UNIX, or are using OS/390 UNIX in a minimal way.

Checklist of Migration Actions for OS/390 Release 4 Initialization and Tuning

- Allow for more space to contain the SADMP program because the size of SYS1.PAGEDUMP has nearly doubled in size from slightly over 300 4K blocks to 600 4K blocks.

- **Goal mode compatibility:** You can install OS/390 Release 4 with no changes to the workload management service definition or to the WLM couple data sets, and workload management will run the same as it did before installing OS/390 Release 4 operationally. If you want to use the OS/390 Release 4 application, you must reallocate the WLM couple data set.

  Note: The only exception to this is where the pre-OS/390 Release 3 service definition has more than 100 service classes defined. In this case, the service definition must be modified so that there are no more than 100 service classes because OS/390 Release 3 changed the maximum number of allowable service classes from 999 to 100.

- **Service definition changes:** If you want to make changes to the service definition but not use any new OS/390 Release 4 workload management functions, you can continue to use a pre-OS/390 Release 4 workload management ISPF application to edit, install, and activate the service definition. This assumes that you have at least one pre-OS/390 Release 4 system in the sysplex.

- **Reallocating the WLM couple data set:** If one of the following conditions exist, you must reallocate the WLM couple data set:

  - You want to be able to install and activate a policy from any system in the sysplex.

  - You want to use some of the new OS/390 Release 4 workload management functions.

  - You plan to migrate all the systems in the sysplex to OS/390 Release 4.

  The OS/390 Release 4 version of the workload management application works *only* with a reallocated WLM couple data set, even if the new workload

management functions are not used. Systems running with earlier levels of WLM can use a WLM couple data set formatted by OS/390 Release 4 as long as the service definition exploits only functions supported by those earlier levels of WLM.

- **Scheduling environments:** If you are using scheduling environments, you must be running JES2 Release 4 with the Release 4 checkpoint format. You must also determine what scheduling environments and resources you will be using, and define them via the WLM ISPF application.

- **WLM-managed batch initiators:** If you are using WLM-managed batch initiators, you must be running JES2 Release 4 with the Release 4 checkpoint format. You also need to be aware of the affect that initiation delays for job classes in WLM-managed mode will have on your velocity values and adjust your goals accordingly.

Checklist of Migration Actions for OS/390 Release 5 Initialization and Tuning

There are no known migration actions for this topic.

Checklist of Migration Actions for OS/390 Release 6 Initialization and Tuning

- In the OS/390 Release 6 edition of *OS/390 MVS Planning: Workload Management*, the migration steps have been streamlined into two scenarios:

  - Creating a service definition for the first time

  - Migrating to a new OS/390 release with an existing service definition.

  See that manual for a complete list of steps for each scenario.

- The OS/390 Release 6 version of the WLM administrative application only works with a WLM couple data set allocated by OS/390 Release 4 or above. If your WLM couple data set was allocated by OS/390 Release 3 or below, you must reallocate it. This is required regardless of whether you want to use the new functions in OS/390 Release 4 and above. Previous versions of the WLM administrative application can be used with a WLM couple data set formatted by OS/390 Release 4 or above, provided that new function is not exploited.

- In OS/390 Release 6, certain types of work, *when overachieving their goals*, will potentially have their resources "capped" in order to give discretionary work a better chance to run. Specifically, work that is *not* part of a resource group and has one of the following two types of goals will be eligible for this resource donation:

  - A velocity goal of 30 or less

  - A response time of over one minute.

  Work that is eligible for resource donation may be affected in OS/390 Release 6 if this work has been significantly overachieving its goals. If you have eligible work that must overachieve its goals to provide the required level of service, adjust the goals to more accurately reflect the work's true requirements.

- If you are running with mixed MVS releases on a sysplex, you need to install the Release 6 compatibility PTF OW30930 to allow downlevel systems to use

service definition PDSs that have been edited by the Release 6 application. Note that if you ship such a service definition PDS to other sysplexes, you need to also install this PTF on any system outside the sysplex that will be using the PDS. Because PTF OW30930 itself introduces the PDS incompatibility, you should install this PTF only when you are ready to install it on all systems that will be using the same service definition.

Checklist of Migration Actions for OS/390 Release 7 Initialization and Tuning

- There are no known migration actions for this topic.

Checklist of Migration Actions for OS/390 Release 8 Initialization and Tuning

- The system-managed rebuild function is an enhancement to the Parallel Sysplex environment in which the sytem coordinates the rebuilding of a coupling facility structure with minimal participation by the connected users to the structure. To enable the system-managed rebuild function, do the following:

  – Migrate all systems in the parallel sysplex to releases at or above OS/390 Release 8.

  – Use the IXCL1DSU data set utility with the new ITEM NAME(SMREBLD) NUMBER(1) statement to format a primary and alternate CFRM couple data set.

  – Activate the new primary CFRM couple data set. Note than once a data set formatted to support system-managed rebuild has been activated as the primary CFRM couple data set, a downlevel couple data set cannot be brought into use as either a primary or an alternate CFRM couple data set. To switch to a downlevel CFRM couple data set you must do a sysplex-wide IPL.

  Some migration concerns when enabling system-managed rebuild in a parallel sysplex are:

  – The system-managed rebuild function is not available unless all systems in the sysplex are at or above OS/390 Release 8, and the CFRM couple data set in use by the sysplex has been formatted with the new ITEM NAME(SMREBLD) NUMBER(1) statement.

  – Before installing OS/390 Release 8 on any system in the parallel sysplex, you must install a compatibility PTF on each pre-OS/390 Release 8 system in the sysplex (APAR OW37958). An OS/390 Release 8 system cannot coexist in a parallel sysplex with systems that either do not have the compatibility PTF or are at or below MVS SP 4.3.0.

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 OS/390 Release 1 Customization

- If you use an IEAVMXIT routine or an MPF exit routine to suppress write-to-programmer (WTP) messages, revise the code to set additional bits added to the CTXT data area. For specific information, see *OS/390 MVS Installation Exits*.

Checklist of Migration Actions for OS/390 Release 2 Customization

There are no known migration actions for this topic.

Checklist of Migration Actions for OS/390 Release 3 Customization

There are no known migration actions for this topic.

Checklist of Migration Actions for OS/390 Release 4 Customization

There are no known migration actions for this topic.

Checklist of Migration Actions for OS/390 Release 5 Customization

There are no known migration actions for this topic.

Checklist of Migration Actions for OS/390 Release 6 Customization

There are no known migration actions for this topic.

Checklist of Migration Actions for OS/390 Release 7 Customization

There are no known migration actions for this topic.

Checklist of Migration Actions for OS/390 Release 8 Customization

There are no known migration actions for this topic.

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 MVS/ESA SP 5.2.2 to OS/390 releases.

Checklist of Migration Actions for OS/390 Release 1 Operations

- **Required:** In OS/390 systems that run JES2, make sure that CON=NOJES3 is specified in the IEASYSxx parmlib member.

Checklist of Migration Actions for OS/390 Release 2 Operations

This section describes operation changes caused by migrating from OS/390 Release 1 to OS/390 Release 2.

- OS/390 Release 2 changes some system messages so that they have 4-digit years (yyyy) rather than 2-digit years (yy). These messages are listed in the Summaries of Changes of *OS/390 System Messages*. Examine any automation routines that use these messages to ensure that the year information continues to be processed correctly.

Checklist of Migration Actions for OS/390 Release 3 Operations

There are no known migration actions for this topic.

Checklist of Migration Actions for OS/390 Release 4 Operations

There are no known migration actions for this topic.

Checklist of Migration Actions for OS/390 Release 5 Operations

There are no known migration actions for this topic.

Checklist of Migration Actions for OS/390 Release 6 Operations

There are no known migration actions for this topic.

Checklist of Migration Actions for OS/390 Release 7 Operations

There are no known migration actions for this topic.

| # Checklist of Migration Actions for OS/390 Release 8 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 OS/390 Release 1 Problem Determination and Diagnosis

- The recovery termination manager (RTM), component identifier SC1CM, has been split into four individual components:

  - SCRTM - RTM, including RTM1, RTM2, SPIE/ESPIE, and RECORD

  - SCDMP - SDUMP and SNAP/ABDUMP

  - SCSLP - SLIP (serviceability level indicator processing)

  - SCACR - ACR (Alternate CPU Recovery)

  This change will affect automation based on the SC1CM component identifier.

Checklist of Migration Actions for OS/390 Release 2 Problem Determination and Diagnosis

There are no known migration actions for this topic.

Checklist of Migration Actions for OS/390 Release 3 Problem Determination and Diagnosis

There are no known migration actions for this topic.

Checklist of Migration Actions for OS/390 Release 4 Problem Determination and Diagnosis

There are no known migration actions for this topic.

Checklist of Migration Actions for OS/390 Release 5 Problem Determination and Diagnosis

There are no known migration actions for this topic.

Checklist of Migration Actions for OS/390 Release 6 Problem Determination and Diagnosis

There are no known migration actions for this topic.

Checklist of Migration Actions for OS/390 Release 7 Problem Determination and Diagnosis

There are no known migration actions for this topic.

Checklist of Migration Actions for OS/390 Release 8 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 OS/390 Release 1 system.

Checklist of Migration Actions for MVS Security in OS/390 Release 1

Review the changes to MVS commands, RACF access authorities, and resource names described in *OS/390 MVS Planning: Operations*.

Checklist of Migration Actions for MVS Security in OS/390 Release 2

Review the changes to MVS commands, RACF access authorities, and resource names described in *OS/390 MVS Planning: Operations*.

Checklist of Migration Actions for MVS Security in OS/390 Release 3

There are no known migration actions for this topic.

Checklist of Migration Actions for MVS Security in OS/390 Release 4

Review the changes to MVS commands, RACF access authorities, and resource names described in *OS/390 MVS Planning: Operations*.

Checklist of Migration Actions for MVS Security in OS/390 Release 5

Review the changes to MVS commands, RACF access authorities, and resource names described in *OS/390 MVS Planning: Operations*.

Checklist of Migration Actions for MVS Security in OS/390 Release 6

- Review the changes to MVS commands, RACF access authorities, and resource names described in *OS/390 MVS Planning: Operations*.

- If all of the following are true:

  - The system is running with a security product that supports the POENET= keyword on the RACROUTE macro (for example, OS/390 V2R6 Security Server).

  - If the OS/390 V2R6 Security Server is installed, the system has APPCPORT profiles defined and the APPCPORT class is active.

  - One or more local LUs are NQN capable.

  then you must define new APPCPORT profiles in the form of NetworkId.NetworkLUName to cover the NQN-capable LUs.

Checklist of Migration Actions for MVS Security in OS/390 Release 7

- Review the changes to MVS commands, RACF access authorities, and resource names described in *OS/390 MVS Planning: Operations*.

Checklist of Migration Actions for MVS Security in OS/390 Release 8

- Review the changes to MVS commands, RACF access authorities, and resource names described in *OS/390 MVS Planning: Operations*.

Chapter 8. Migration Actions: Accounting

This chapter describes changes to SMF records that may affect existing accounting programs.

This chapter includes SMF records that are documented in *OS/390 MVS System Management Facilities (SMF)*. Therefore, this chapter includes SMF records that are changed by installing products other than MVS/ESA, such as JES2, JES3, or RMF.

Checklist of Migration Actions for OS/390 Release 1 Accounting

- Check any programs, such as programs for billing TSO/E users, that use SMF record types 30 or 89 to analyze TSO/E usage. Measured usage for TSO/E under OS/390 is reported under the TSO/E element of OS/390, rather than under the TSO/E product. Fields in record type 30 and record type 89 that used to identify the separate product now identify the OS/390 element. For example, in record type 89 subtype 1:

Field	Contents
SMF89UPN	OS/390
SMF89UPV	1.1.0
SMF89UPQ	TSO/E
SMF89UPI	5645-001

- Because it is a part of OS/390, TSO/E is no longer eligible for measured usage license charging. The Software Usage Report that IFAURP produces will show this change, and all IFAURP reports will identify TSO/E as a function of OS/390 rather than as a separate product. For more information, see *OS/390 MVS Product Management*.

Checklist of Migration Actions for OS/390 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 1-13.

Checklist of Migration Actions for OS/390 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 1-13.

Checklist of Migration Actions for OS/390 Release 4 Accounting

There are no known migration actions for this topic.

Checklist of Migration Actions for OS/390 Release 5 Accounting

- Examine changed SMF records and assess the need to change how you use them. See "Summary of Changes to SMF Records" on page 1-13.

Checklist of Migration Actions for OS/390 Release 6 Accounting

- Examine changed SMF records and assess the need to change how you use them. See "Summary of Changes to SMF Records" on page 1-13.

Checklist of Migration Actions for OS/390 Release 7 Accounting

- Examine changed SMF records and assess the need to change how you use them. See "Summary of Changes to SMF Records" on page 1-13.

Checklist of Migration Actions for OS/390 Release 8 Accounting

- Examine changed SMF records and assess the need to change how you use them. See "Summary of Changes to SMF Records" on page 1-13.

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 OS/390 Release 1 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 1-58.

Checklist of Migration Actions for OS/390 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 1-58.

- The variable &TPDATE, which is one qualifier in the default data set name for an APPC/MVS TP message log, now resolves to contain a 4-digit instead of a 2-digit year. If your installation currently uses &TPDATE as one qualifier in the data set names of existing TP message logs, make sure that the additional two digits do not cause the resolved data set name to exceed limits on the length of data set names.

Checklist of Migration Actions for OS/390 Release 3 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 1-58.

- If you use APPC/MVS, see "APPC/MVS Configuration and Workload Changes" on page 9-2.

- The SYS1.CSSLIB data set contains stubs for callable services supplied by IBM. The stubs do some validity checking, and then route the call to the proper service routine. In OS/390 Release 3, IBM added several stubs to SYS1.CSSLIB to support the introduction of RRS. For example, one of the stubs is for SRRCMIT. However, other products (such as DB2 and IMS) also provide libraries that contain a stub for SRRCMIT, and they have done so for a long time. Programmers that want to call a callable service must do one of the following before they call the service: (1) load or link the callable service, or (2) linkedit their program so as to include the proper stub from SYS1.CSSLIB.

  You must take care when recompiling and linkediting any application that expects to use these stubs. When you do the linkedit, make sure that the data sets in the syslib concatenation are in the right order. For example, if you want the application to use RRS's SRRCMIT, you must ensure that SYS1.CSSLIB precedes the data sets that contain DB2's SRRCMIT. If you inadvertently cause

applications to use RRS when they expect, for example, IMS, the application will probably start seeing return code 301 (X'12D') from the SRRCMIT call. Note that we've used SRRCMIT as an example - it is not the only service that can behave this way.

APPC/MVS Configuration and Workload Changes

With the base MVS and VTAM elements of OS/390 V1R3, all APPC/MVS conversations are processed through VTAM. This change affects the APPC/MVS configuration and workload as described in Figure 2-1 on page 2-15. The following information duplicates the tasks in Figure 2-1, and lists their associated migration actions, if any. Your installation's setup determines whether the migration actions are optional or required.

APPC/MVS Session Management

- Defining an APPC/MVS LU to VTAM

  If any conversations are to be processed through VTAM, you must ensure that:

  – VTAM is active, and

  – All APPC/MVS LUs associated with those conversations are defined to VTAM in an APPL definition statement in SYS1.VTAMLST, and are active.

  To determine which conversations are processed through VTAM, refer to Figure 2-1 on page 2-15.

  If you did not provide an APPL definition statement for an LU, you must now supply one; each LUADD statement for a specific LU in an APPCPMxx parmlib member must have a corresponding APPL definition statement.

  If you did provide APPL definition statements for LUs that previously handled LU=OWN or LU=LOCAL conversations, you should review the values supplied in those APPL statements, particularly those for:

  – Tuning session limits: DLOGMOD, DMINWNL, DMINWNR, DSESLIM, and EAS parameters

  – Providing security characteristics: SECACPT and VERIFY parameters.

  If you do not review existing APPL statements, the performance and security of APPC/MVS work might be affected.

  For more information about the APPL definition statement, see *OS/390 MVS Planning: APPC/MVS Management* for APPC/MVS-specific information, and *OS/390 SecureWay Communications Server: SNA Resource Definition Reference* for a complete list of statement parameters and default values.

APPC/MVS Security Management

The checklist items for session-level security, conversation-level security, and VTAM ACBs, apply only if your installation is adding new VTAM APPL definition statements for APPC/MVS LUs.

- Defining session-level LU-to-LU verification

  If your installation uses the VERIFY parameter on the APPL definition statement for an APPC/MVS LU, make sure the local LU and its partner LUs have matching passwords (session keys) defined in their respective APPCLU profiles. See *OS/390 MVS Planning: APPC/MVS Management* for more information about session-level security.

- Defining conversation-level security

  Because APPC/MVS now uses VTAM for all conversations, even those within the same OS/390 image, the values specified for conversation-level security for APPC/MVS LUs are now enforced by VTAM for all conversations. As a result, your installation should carefully check the conversation security levels for all APPC/MVS LUs in the following two places:

  – The SECACPT parameter on the APPL definition statement
  – The CONVSEC field in the SESSION segment of the RACF APPCLU profile.

  These values need to match the level of security information that the LU requires when an incoming allocate request is received.

  When Security_None is specified on an Allocate request, it is expected that no security information will be sent to the partner LU for verification. If the LU allows a request to proceed without any identification, then the request can continue.

  When Security_Same is specified on an APPC/MVS Allocate request, APPC/MVS treats this as an already-verified request. The userid and security profile (if present) are passed along with an indication that this user is already verified. If Security_Same is specified, but the partner LU does not specify ALREADYV or AVPV, the allocate request will be sent but VTAM will strip all security information out of the request.

  When Security_Pgm is specified on an APPC/MVS Allocate request, APPC/MVS will attempt to send the access security information specified by the Allocate caller. The User_id, Password, and optional Profile provide this information. If Security_Pgm is specified, but the partner LU does not support CONV or higher, the allocate request will be sent, but VTAM will strip all security information out of the request.

  Use the following chart as an aid in determining the necessary value to configure your LU based on the security type used by the outbound transaction program. Intended security information sent:

APPC/MVS Security_Type specified on Allocate	CONVSEC or SECACPT value specified on LU that is receiving incoming Allocate requests				
	NONE	CONV	ALREADYV	PERSISTV	AVPV
None	OK	OK	OK	OK	OK
Same	NO	NO	OK	NO	OK
Program	NO	OK	OK	OK	OK

  In all cases above, NO indicates that the request will still be attempted, but no security information will be sent to the partner. If no security information is sent, the request may fail with a Security_Not_Valid return code or the inbound TP may not have access to the necessary resources.

  See *OS/390 MVS Planning: APPC/MVS Management* for more information about conversation-level security.

- Controlling the opening of VTAM ACBs

  Consider restricting access to APPC/MVS LUs through the RACF VTAMAPPL class. If you do not define and activate a VTAMAPPL class profile for each LU,

unauthorized programs can open the access method control block (ACB) for a specific LU, and intercept requests addressed to that LU. See *OS/390 MVS Planning: APPC/MVS Management* for more information about controlling the opening of VTAM ACBs.

- Passing a security label (SECLABEL) to a partner TP through an Allocate call on an LU=OWN or LU=LOCAL conversation

  Since all APPC/MVS conversations now go through VTAM, regardless of the location of the partner LU, propagation of the SECLABEL to the partner LU is no longer possible. Any programs that specified a Security_Type of Security_Pgm and did not pass a userid or password, or specified a Security_Type of Security_None, will have no security information propagated to the partner LU (including SECLABELs), whether a User_Token value has been specified or not. If the User_Token value has been specified on the Allocate request, APPC/MVS will only propagate the userid and RACF group name from the UTOKEN if the Security_Type is Security_Same. If you wish to change your program to use Security_Same, be aware of the security implications that exist when only a userid without a password is sent to the partner LU. To determine which changes are necessary for the partner LU to accept a Security_Same request coming from an APPC/MVS LU, see the item on on page 9-3. For more information on security management, see *OS/390 MVS Planning: APPC/MVS Management*.

APPC/MVS Operation

- Using VTAM commands to control APPC/MVS work

  No migration action required; just be aware that VTAM commands now affect more APPC/MVS work than before. For VARY and HALT commands specifically, see the chapter on operating APPC/MVS in *OS/390 MVS Planning: APPC/MVS Management* for further information and recommendations about proper use for APPC/MVS work. See *OS/390 SecureWay Communications Server: SNA Operation* for complete information about VTAM commands.

APPC/MVS Transaction Program Design

- Using a mode name for Allocate requests

  If any of your installation's TPs specify a blank or null mode name on Allocate calls, APPC/MVS now substitutes a mode name, ATB#MODE, which uses VTAM's default log mode. Because of this substitution, no migration action is required; however, you might want to review your installation's TPs to determine whether providing a specific mode name on Allocate calls is preferable. This advice applies to TPs with Allocate requests that specify a particular mode name, as well; if you do not review session characteristics, including session limits, you might see performance changes in APPC/MVS work.

- Designing a TP to issue the CPI-C CMTRTS service

  If the TP issues the CMTRTS (Test_Request_to_Send) call in send state, you can achieve the same results by issuing a Send call with a length of 0. If you cannot replace the CMTRTS call with a Send call, make sure that the TP design is not dependent upon specific results from the CMTRTS service.

APPC/MVS Alternate Transaction Scheduler Design

- Designing an alternate transaction scheduler to issue the Unidentify service to immediately stop its work

  No migration action required.

APPC/MVS Protected Conversations

With OS/390 V1R3, APPC/MVS introduces support for protected conversations, which has only one optional migration action:

- Recompile programs that issue the Extract_Information (ATBEXAI) service.

  If your installation has programs that issue ATBEXAI for Extract_code X'0001', passing a buffer size that exactly matches the size of ATBEXCOS in previous releases, the programs now receive a Return_code value of 4 instead of 0. This non-zero return code is a problem only if you want those programs to receive the new information related to protected conversations. Although the return code has changed, the programs receive the same information in ATBEXCOS as that returned in previous releases.

Checklist of Migration Actions for OS/390 Release 4 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 1-58.

Checklist of Migration Actions for OS/390 Release 5 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 1-58.

- The SMF dump program (IFASMFDP) no longer defaults to a block size of 4096 for its output data sets. Instead it sets the block size to zero, which allows the system to use SDB (system determined block size) to choose the optimum block size for the device allocated. As a result, you might choose to specify BLKSIZE=0 on IFASMFDP jobs. For more information, see *OS/390 MVS System Management Facilities (SMF)*.

Checklist of Migration Actions for OS/390 Release 6 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 1-58.

- APPC/MVS header files, which are also called interface definition files (IDFs), were formerly shipped in SYS1.SAMPLIB. Starting with OS/390 Release 6, they are shipped in SYS1.SIEAHDR.H. Also, C header files for use by APPC/MVS applications are now shipped in the HFS (hierarchical file system) data set.

Checklist of Migration Actions for OS/390 Release 7 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 1-58.

Checklist of Migration Actions for OS/390 Release 8 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 1-58.

Supporting System-Managed Rebuild

System-managed rebuild is a new function in OS/390 Release 8 that provides a simplified protocol for rebuilding a coupling facility structure in planned reconfiguration scenarios. Applications in a parallel sysplex environment that do not current support structure rebuild should do the following in order to support system-managed rebuild.

- Indicate support for system-managed processes by having all connectors specify ALLOWAUTO=YES when connecting to the structure. Connectors must also specify the IXLCONN SUSPEND keyword to indicate whether the system may suspend the unit of work making a coupling facility request during the time the structure is unavailable due to system-managed processing.

- Update event exit(s) to react to the new Structure Temporarily Unavailable event, Structure Available event, and Structure State Change event.

- Use extended restart tokens for IXLCACHE, IXLLIST, and IXLRT requests that are subject to premature completion and which today return standard restart tokens.

- Consider supporting structure alter processing by specifying IXLCONN ALLOWALTER=YES (and optionally RATIO=YES) when connecting to the structure, and by updating event exit(s) to respond to the Alter Begin and Alter End events. This gives the system the greatest possible flexibility when allocating a new instance of the structure during system-managed rebuild.

- Update documented procedures for planned reconfiguration involving movement of the structure from one coupling facility to another. Once the application supports system-managed rebuild, this can be accomplished by the

```
        SETXCF START,REBUILD
```

command.

Applications that already support user-managed rebuild should follow the same actions listed above. In addition, the application should do the following to support system-managed rebuild. When connecting to the structure, connectors should specify both ALLOWREBLD=YES and ALLOWAUTO=YES on their IXLCONN invocations until all connectors have specified ALLOWAUTO=YES. If this recommendation is not followed, the application could place itself in a situation in which it supports neither user-managed nor system-managed rebuild. Once all

connectors have specified ALLOWAUTO=YES, the application can, if desired, specify ALLOWREBLD=NO on subsequent connect requests.

Appendix A. ESCON CTC Considerations

OS/390 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.

A-1

- 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 *OS/390 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.

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Index

Numerics

3088 CTC (channel-to-channel adapter)
not-operational condition   A-1
not-ready condition   A-1
3088 CTC (channel-to-channel adapter) architecture
supported by OS/390   A-1

A

accounting
migration actions for OS/390 Release 1   8-1
migration actions for OS/390 Release 2   8-1
migration actions for OS/390 Release 3   8-1
migration actions for OS/390 Release 5   8-2
migration actions for OS/390 Release 6   8-2
migration actions for OS/390 Release 7   8-2
migration actions for OS/390 Release 8   8-2
address spaces
introduced by new products releases   1-76
alias management, dynamic   2-26
API trace facility of APPC/MVS
enhancements in OS/390 Release 3   2-11
APPC/MVS
enhancements in OS/390 Release 3   2-11
header files
migration actions for OS/390 Release 6   9-5
interface definition files (IDFs)
migration actions for OS/390 Release 6   9-5
application development
migration actions for OS/390 Release 1   9-1
migration actions for OS/390 Release 2   9-1
migration actions for OS/390 Release 3   9-1
migration actions for OS/390 Release 4   9-5
migration actions for OS/390 Release 5   9-5
migration actions for OS/390 Release 6   9-5
migration actions for OS/390 Release 7   9-6
migration actions for OS/390 Release 8   9-6
automation routines
finding message text changes for automation
routines   1-1

B

BPXOINIT parmlib member
migration action   3-4

C

C interfaces
summary of changes   1-57
callable services
summary of changes   1-48

commands
summary of changes   1-9
control blocks
summary of changes   1-58
Coupling Facility rebuild
new functions in OS/390 Release 6   2-24
CSVLNKPR REXX exec   3-2

D

device verification
ESCON device support   A-1
diagnosis
migration actions for OS/390 Release 1   6-1
dynamic alias management   2-26

E

Enterprise Storage Server   2-26
ESCON basic mode CTC   A-1
EXCP macro
migration concerns related to ESCON CTC or
ESCON basic mode CTC   A-2
not-operational conditions   A-3
reset events   A-3
setting an ESCON CTC back to basic mode   A-3
exits
summary of changes   1-58

H

header files for APPC/MVS
migration actions for OS/390 Release 6   9-5

I

IEASYSxx parmlib member
migration action   3-1
IFAPRDxx parmlib member
migration action   3-1
IFCC (interface control check)
ESCON CTC   A-2
initialization and tuning
migration actions for OS/390 Release 1   3-1
migration actions for OS/390 Release 2   3-1
migration actions for OS/390 Release 3   3-3
migration actions for OS/390 Release 4   3-4
migration actions for OS/390 Release 6   3-5
installation exits
summary of changes   1-58
interface definition files (IDFs) for APPC/MVS
migration actions for OS/390 Release 6   9-5

T
timeout service for APPC/MVS   2-26
TSO/E reporting
   migration action for OS/390 Release 1   8-1

U
UCB data area
   UCBTYP field   A-2

V
VTAM generic resource names
   APPC/MVS enhancements in OS/390 Release
     3   2-12

X
XES
   new functions in OS/390 Release 5   2-20

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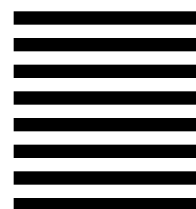
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