

OS/390



JES3 Migration

OS/390



JES3 Migration

Note

Before using this information and the product it supports, be sure to read the general information under Appendix C, "Notices" on page 215.

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About This Book

This book is for any JES3 installation that runs OS/390. The information in this book is intended to guide installations through the migration process to from a previous version of JES3 to OS/390 Version 2 Release 10 JES3.

Who Should Use This Book

This book is intended primarily for system programmers. However, anyone who is responsible for planning, installing, initializing, operating, customizing, tuning, or diagnosing JES3 may also find this book helpful.

Readers are expected to have an in-depth knowledge of JES3 and the MVS base control program. They should also be aware of the configuration and operating procedures of the current installation, as well as the target installation.

JES3 Product Abbreviations

Throughout this book, the following abbreviations are used to indicate the JES3 component of the MVS/ESA System Product or of OS/390:

Abbreviation	Release Title
JES3 SP1.3.4	MVS/ESA System Product - JES3 Version 1 Release 3.4
JES3 SP2.1.5	MVS/ESA System Product - JES3 Version 2 Release 1.5
JES3 SP2.2.1	MVS/ESA System Product - JES3 Version 2 Release 2.1
JES3 SP3.1.2	MVS/ESA System Product - JES3 Version 3 Release 1.2
JES3 SP3.1.3	MVS/ESA System Product - JES3 Version 3 Release 1.3
JES3 SP4.2.1	MVS/ESA System Product - JES3 Version 4 Release 2.2
JES3 SP5.1.1	MVS/ESA System Product - JES3 Version 5 Release 1.1
JES3 SP5.2.1	MVS/ESA System Product - JES3 Version 5 Release 2.2
JES3 V1R1	OS/390 Version 1 Release 1 JES3
JES3 V1R2	OS/390 Version 1 Release 2 JES3
JES3 V1R3	OS/390 Version 1 Release 3 JES3
JES3 V2R4	OS/390 Version 2 Release 4 JES3
JES3 V2R5	OS/390 Version 2 Release 5 JES3
JES3 V2R6	OS/390 Version 2 Release 6 JES3
JES3 V2R7	OS/390 Version 2 Release 7 JES3
JES3 V2R8	OS/390 Version 2 Release 8 JES3
JES3 V2R9	OS/390 Version 2 Release 9 JES3
JES3 V2R10	OS/390 Version 2 Release 10 JES3

How to Use This Book

This book contains information about compatible and incompatible changes between the JES3 component of OS/390 JES3. A **compatible** change does not require any action on the part of your installation to ensure the continued availability of functions that were available before converting to the new release of JES3. An **incompatible** change may require your installation to make certain changes to installation modifications, operating procedures, or installation policy to ensure the continued availability of existing functions.

This book is organized as follows:

- Chapter 1, Migration Overview provides you with an overview of the product information supplied with your product order. This overview provides general information about installing your OS/390 system. In addition to specific information about JES3, this documentation contains information about all of the OS/390 elements.
- Chapter 2, Migration Roadmap describes a snapshot of each OS/390 JES3 release, the content of that release and a series of migration actions you need to consider in your migration plan.
- Chapter 3, Release Overviews provides an overview of each JES3 release, the functional content, and the general implications to your existing JES3 release. These overviews give you an idea of the potential changes needed to carry out your migration plan.
- Chapters on Migration Actions describe the actions you will need to consider when migrating from one JES3 release to the next. If you plan to migrate over several JES3 releases then several of these chapters will apply to your migration plan. Each chapter describes migration actions in the following categories:

Initialization

This section describes the changes to JES3 initialization statements and initialization processing that you should be aware of.

Installation Modifications

This section describes the changes to JES3, such as exits and macros that you use to modify JES3 processing.

Operations

This section describes changes to JES3 operations, focused on changes to operator commands and procedures.

Applications

This section describes any application dependencies that are affected by the JES3 release.

Problem Determination and Diagnosis

This section describes changes and updates to JES3 that improve or aid in diagnosing JES3 problems.

Accounting

This section describes any JES3 product changes that affect your installation accounting processes or procedures.

- Chapter 14, Version Summary Tables provide a set of quick reference charts that list all new, changed, and deleted interfaces for each release of OS/390 JES3. Each table provides specific topic references where the interface is described. This section also lists user group requirements that this release satisfies or partially satisfies.
- Chapter 15, Migration Summary lists the kinds of JES3 restarts that are required for the various JES3 migration paths and other special migration considerations.
- Appendix A, List of JES3 Macros Intended for Customer Use summarizes the JES3 macros you can use.

- Appendix B, Split/New/Deleted/Resequenced Parts for JES3 summarizes the various JES3 parts - new, changed, resequenced, and deleted, that make up each release.
- Appendix C, Notices from IBM that pertain to this publication.

If you are interested in an overview of what is new, changed, or deleted in a release, you should read the Chapter 3, “Release Overviews” on page 19 of this publication.

If you are the person planning the migration, you should read this book sequentially.

If you are the person implementing the migration, this book contains the specific step-by-step migration instructions.

Where to Find More Information

Before reading this book, readers should become familiar with the MVS/ESA overview information in the Licensed Programming Announcement letters.

Because *OS/390 JES3 Migration* describes only the changes between this release and the last release of JES3, you may need to obtain additional *JES3 Conversion Notebooks* to plan for migration. Use Figure 1 to identify the *JES3 Conversion Notebooks* you require.

Figure 1 (Page 1 of 2). Conversion Notebooks for JES3

If You Migrate From This Level	You Require These Books	Order Numbers
JES3 SP1.3.4 or JES3 SP2.1.2	<i>MVS/XA JES3 Conversion Notebook for Version 2</i>	SBOF-0262
JES3 SP1.3.4 or JES3 SP2.1.2	<i>MVS/ESA JES3 Conversion Notebook for Version 3</i>	GC23-0079
JES3 SP1.3.4 or JES3 SP2.1.2	<i>MVS/ESA JES3 Conversion Notebook for Version 4</i>	GC23-0087
JES3 SP1.3.4 or JES3 SP2.1.2	<i>MVS/ESA JES3 Conversion Notebook for Version 5</i>	GC23-1438
JES3 SP2.1.5	<i>MVS/XA JES3 Conversion Notebook for Version 2</i>	SBOF-0262
JES3 SP2.1.5	<i>MVS/ESA JES3 Conversion Notebook for Version 3</i>	GC23-0079
JES3 SP2.1.5	<i>MVS/ESA JES3 Conversion Notebook for Version 4</i>	GC23-0087
JES3 SP2.1.5	<i>MVS/ESA JES3 Conversion Notebook for Version 5</i>	GC28-1438
JES3 SP2.2.1	<i>MVS/ESA JES3 Conversion Notebook for Version 3</i>	GC23-0079
JES3 SP2.2.1	<i>MVS/ESA JES3 Conversion Notebook for Version 4</i>	GC23-0087
JES3 SP2.2.1	<i>MVS/ESA JES3 Conversion Notebook for Version 5</i>	GC28-1438

Figure 1 (Page 2 of 2). Conversion Notebooks for JES3

If You Migrate From This Level	You Require These Books	Order Numbers
JES3 SP3.1.2	<i>MVS/ESA JES3 Conversion Notebook for Version 3</i> <i>MVS/ESA JES3 Conversion Notebook for Version 4</i> <i>MVS/ESA JES3 Conversion Notebook for Version 5</i>	GC23-0079 GC23-0087 GC28-1438
JES3 SP3.1.3	<i>MVS/ESA JES3 Conversion Notebook for Version 4</i>	GC28-1799
JES3 SP3.1.3	<i>MVS/ESA JES3 Conversion Notebook for Version 5</i>	GC28-1438
JES3 SP4.2.1	<i>MVS/ESA JES3 Conversion Notebook for Version 5</i>	GC28-1438
JES3 SP5.1.1	<i>MVS/ESA JES3 Conversion Notebook for Version 5</i>	GC28-1438
JES3 SP5.2.1	<i>MVS/ESA JES3 Conversion Notebook for Version 5</i>	GC28-1438

Related Publications

This book references the following publications for further details about specific topics. This following table lists the titles used throughout the book, their full titles, and their order numbers.

Figure 2 (Page 1 of 2). Referenced Publications

Title Used in This Book	Order Number
<i>OS/390 JES3 Commands</i>	GC28-1798
<i>OS/390 JES3 Messages</i>	GC28-1804
<i>OS/390 JES3 Customization</i>	SC28-1089
<i>OS/390 JES3 Initialization and Tuning Reference</i>	SC28-1803
<i>OS/390 JES3 Introduction</i>	GC28-1808
<i>OS/390 JES3 Initialization and Tuning Guide</i>	SC28-1802
<i>OS/390 JES3 Diagnosis</i>	SC28-1090
<i>OS/390 JES3 Commands Summary</i>	GX22-0042
<i>OS/390 JES3 Diagnosis Reference</i>	SC28-1092
<i>OS/390 MVS System Management Facilities (SMF) complete explanation of SMF records</i>	GC28-1783
<i>OS/390 MVS Using the Subsystem Interface</i>	SC28-1789
<i>OS/390 Planning for Installation for more information about enabling JES3</i>	GC28-1726
<i>MVS/ESA Program Directory: JES3</i>	GC28-1611
<i>OS/390 SecureWay Security Server RACF Security Administrator's Guide</i>	SC28-1915
<i>OS/390 TSO/E Command Reference</i>	SC28-1969
<i>Hardware Configuration Definition: Using the Dialog</i>	GC33-6459
<i>DITTO/ESA User's Guide and Reference</i>	SH19-8221
<i>HLASM MVS & VM Programmer's Guide</i>	SC26-4941

<i>Figure 2 (Page 2 of 2). Referenced Publications</i>	
Title Used in This Book	Order Number
<i>The Year 2000 and 2-Digit Dates: Guide</i>	GC28-1251
<i>MVS/ESA SP V5 Planning: Installation and Migration JES2</i>	GC28-1428
<i>MVS/ESA SP V5 Planning: Installation and Migration JES3</i>	GC28-1429
<i>Conversion Notebook for System Product Version 5</i>	GC28-1436
<i>Conversion Notebook for System Product Version 4</i>	GC28-1608
<i>Conversion Notebook for System Product Version 3</i>	GC28-1568
<i>Conversion Notebook for System Product Version 2</i>	GC28-1567
<i>HLASM MVS & VM Programmer's Guide</i>	SC26-4941

Additional Information

Additional information about OS/390 elements can be found in the following books.

<i>Figure 3. Additional Information</i>		
Title	Order Number	Description
<i>OS/390 Introduction and Release Guide</i>	GC28-1725	Describes the contents and benefits of OS/390 as well as the planned packaging and delivery of this new product.
<i>OS/390 Planning for Installation</i>	GC28-1726	Contains information that lets users: <ul style="list-style-type: none"> • Understand the content of OS/390 • Plan to get OS/390 up and running • Install the code • Take the appropriate migration actions • Test the OS/390 system
<i>OS/390 Information Roadmap</i>	GC28-1727	Describes the information associated with OS/390 including OS/390 books and books for the participating elements.
<i>OS/390 Summary of Message Changes</i>	GC28-1499	Describes the changes to messages for individual elements of OS/390. Note: This book is provided in softcopy only on the message bookshelf of the OS/390 collection kit.

Determining If a Publication Is Current

As needed, IBM updates its publications with new and changed information. For a given publication, updates to the hardcopy and associated BookManager softcopy are usually available at the same time. Sometimes, however, the updates to hardcopy and softcopy are available at different times. Here's how to determine if you are looking at the most current copy of a publication:

1. At the end of a publication's order number there is a dash followed by two digits, often referred to as the dash level. A publication with a higher dash level is more current than one with a lower dash level. For example, in the publication order number GC28-1747-07, the dash level 07 means that the publication is more current than previous levels, such as 05 or 04.
2. If a hardcopy publication and a softcopy publication have the same dash level, it is possible that the softcopy publication is more current than the hardcopy publication. Check the dates shown in the Summary of Changes. The softcopy

Summary of Changes

publication might have a more recently dated Summary of Changes than the hardcopy publication.

3. To compare softcopy publications, you can check the last two characters of the publication's filename (also called the book name). The higher the number, the more recent the publication. Also, next to the publication titles in the CD-ROM booklet and the readme files, there is an asterisk that indicates whether a publication is new or changed.

Summary of Changes

Summary of Changes for GC28-1799-10 OS/390 Version 2 Release 10

This book contains information previously presented in *OS/390 JES3 Migration*, GC28-1799-09, which supports OS/390 Version 2 Release 9 JES3.

New and Changed Information

This major revision supports OS/390 Version 2 Release 10 JES3 and is a restructuring of JES3 migration material presented in previous editions. OS/390 Version 2 Release 10 JES3 items include:

- Support for SMS unit affinity.
- Support for writing SYSOUT in key 9.
- Support for new workload manager (WLM) classification parameters SCHEDENV, SUBCOLN, and SRMTOKEN to provide greater flexibility in goal mode.
- The password parameter has been removed from the *DUMP and *RETURN commands.
- The MONITOR DSP is called automatically.

Service Changes

DM759 has a new reason code of X'0E' to indicate an eyecatcher for a staging area is incorrect.

For all JES3 migrations, review the information APAR II11768 for any APARs that must be applied to allow coexistence with other JES3 releases, migration to particular JES3 releases, and fallback to JES3 releases.

Any system with JES3 lower than HJS7703 that runs on the OS/390 R10 BCP (HBB7703), or any system lower than HJS7703 that is to coexist with HJS7703, requires APAR OW43086, regardless of whether that system is global or local.

For all JES3 releases (SP5.1.1 through V2R9), you will need to install APAR OW42745 on your current release to be able to successfully fall back from migration of the global to OS/390 Version 2 Release 10 JES3. If you do not install these APARs, jobs submitted on the OS/390 Version 2 Release 10 JES3 global that use SYSIN DD */ DATA files will fail.

For all JES3 releases (SP5.1.1 through V2R9) you will need to install OW42288 on your current release to be able to successfully fall back from migration of the global to OS/390 Version 2 Release 10 JES3. If you do not install APAR OW42288, and then fall back, output created by Unix System Services clients will not print.

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.

Summary of Changes for GC28-1799-09 OS/390 Version 2 Release 9

This book contains information previously presented in *OS/390 JES3 Conversion Notebook*, GC28-1799-08, which supports OS/390 Version 2 Release 8 JES3.

New and Changed Information

OS/390 Version 2 Release 9 JES3 enhancements include:

- NJE Structure Improvements that consist of
 - changes to the NJERMT initialization statement that allow the definition of alias names for final receiving nodes
 - JES3 command changes for *INQUIRY and *MODIFY that allow you to display and change network definitions.
- Configuration enhancements consist of the ability to:
 - Define a range of devices to JES3 and to make changes to these device definitions during hot start with refresh.
 - Specify a main name of *ALL on the XUNIT or JUNIT so that device symmetry to all mains is easier to define.
 - Place NJERMT initialization statements before the MAINPROC and SYSMAIN definitions.
 - Omit the DEVICE, DTYPE=SYSMAIN initialization statement associated with a MAINPROC initialization statement.
 - Activate an HCD configuration that changes or deletes a device defined to JES3.
- Using IATUTJCT to fall back to older releases

Service Changes

OS/390 Version 2 Release 9 JES3 service changes include:

- Information about how the *MODIFY,CONFIG command processes JES3IN concatenated data sets.
- Migration information about falling back from releases HJS6606 (or above) to releases HJS6605 (or below).

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.

Summary of Changes for GC28-1799-08 OS/390 Version 2 Release 8

This book contains information previously presented in *OS/390 JES3 Conversion Notebook*, GC28-1799-07, which supports OS/390 Version 2 Release 7 JES3.

New and Changed Information

OS/390 Version 2 Release 8 JES3 enhancements include WLM batch initiator support, which allows the installation to specify that WLM should control the starting and stopping of initiators for a particular job class group.

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.

Summary of Changes for GC28-1799-07 OS/390 Version 2 Release 7

This book contains information previously presented in *OS/390 JES3 Conversion Notebook*, GC28-1799-06, which supports OS/390 Version 2 Release 7 JES3.

Applicable FMID

There is no new FMID for OS/390 JES3 Version 2 Release 7. HJS6606 identifies the completely compatible JES3 part of OS/390 Version 2 Release 7.

New and Changed Information

Applying the PTF for APAR OW31828 to HJS6606 adds a new keyword, IOBE=, to the JESEXCP macro and allows JES3 to support FICON channels.

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.

Summary of Changes for GC28-1799-06 OS/390 Version 2 Release 7

This book contains information previously presented in *OS/390 JES3 Conversion Notebook*, GC28-1799-05, which supports OS/390 Version 2 Release 6 JES3.

Applicable FMID

There is no new FMID for OS/390 JES3 Version 2 Release 7. HJS6606 identifies the completely compatible JES3 part of OS/390 Version 2 Release 7.

New and Changed Information

OS/390 Version 2 Release 7 JES3 supports FICON channels. The JESEXCP macro is updated with a new keyword IOBE=.

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.

Summary of Changes for GC28-1799-05 OS/390 Version 2 Release 6

This book contains information previously presented in *OS/390 JES3 Conversion Notebook*, GC28-1799-04, which supports OS/390 Version 2 Release 5.

New and Changed Information

- OS/390 Version 2 Release 6 JES3 enhancements include:
 - A JCT Utility implemented as IATUTJCT that allows JES3 installations to copy an existing JCT data set without performing a cold start to do so.
 - Dump Job Enhancements to JES3 Dump Job processing where the tape I/O portion of Dump Job processing can run in its own address space and can use tape drives defined for the entire MVS/JES3 system and not just those defined through JES3 initialization statements. In this way, JES3 can avoid complex wide IPL and warm start necessary for defining dedicated JES3 tape drives.
 - JES3 Resource Affinity is the JES3 exploitation of the workload manager component of OS/390 Version 2 Release 4. JES3 processing is sensitive to a job's scheduling environment and the system resources it needs to successfully complete its processing.
 - Dynamic LPA support allows the installation to change the LPA modules used by JES3 without requiring an IPL.
- A new chapter "Migration Summary" is added to provide summary information about the types of JES3 "starts" that must be performed for the various migration paths among JES3 releases.

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.

Summary of Changes for GC28-1799-04 OS/390 Version 2 Release 5

This book contains information previously presented in *OS/390 JES3 Conversion Notebook*, GC28-1799-03, which supports OS/390 Version 2 Release 4.

New Information

- New release enhancements of OS/390 Version 2 Release 5 are described. These enhancements include:
 - JES3 Support for OS/390 Print Server
 - JES3 Support for IP Printway
 - Output Service Command Enhancements
 - Dump Core Enhancements

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.

Summary of Changes for GC28-1799-03 OS/390 Version 2 Release 4

This book contains information previously presented in *OS/390 JES3 Conversion Notebook*, GC28-1799-02, which supports OS/390 Version 1 Release 3.

New Information

- New release enhancements of OS/390 Release 4 are described. These enhancements include:
 - Hot Start with Refresh
 - Segmented Initialization Stream
 - Dynamic Configuration Change Support
 - Faster JES3 Restart
 - JES3 Statistics
 - JES 64K Job Number Support
 - MVS COMMAND JCL Statement Support
 - Deletion of JES3LIB Support
 - Deletion of Initialization Stream Support from Card Readers

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.

Summary of Changes for GC28-1799-02 OS/390 Version 1 Release 3

This book contains information previously presented in *OS/390 JES3 Conversion Notebook*, GC28-1799-01, which supports OS/390 Version 1 Release 2.

New Information

- New release enhancements of OS/390 Version 1 Release 3 JES3 are described. These enhancements include:
 - JES FSS Interface Example
 - system application printer interface (SAPI)
 - Output Service Commands
 - SSI Function Code 54
 - JES3 Serviceability

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.

Summary of Changes for GC28-1799-01 OS/390 Version 1 Release 2

This book contains information previously presented in *OS/390 JES3 Conversion Notebook*, GC28-1799, which supports OS/390 Version 1 Release 1.

The following summarizes the changes to that information.

New Information

- A new appendix, Appendix B, “Split/New/Deleted/Resequenced Parts for JES3” on page 205, has been added. This appendix lists changes made to JES3 parts.

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.

Chapter 1. Migration Overview

Your plan for migrating to the new level of JES3 should include information from a variety of sources. These sources of information describe topics such as coexistence, service, hardware and software requirements, installation and migration procedures, and interface changes.

The following documentation, which is supplied with your product order, provides information about installing your OS/390 system. In addition to specific information about JES3, this documentation contains information about all of the OS/390 elements.

- *OS/390 Planning for Installation*

This book describes the installation requirements for OS/390 at a system and element level. It includes hardware, software, and service requirements for both the driving and target systems. It also describes any coexistence considerations and actions.

- *OS/390 Program Directory*

This document, which is provided with your OS/390 product order, leads you through the specific installation steps for JES3 and the other OS/390 elements.

- *ServerPac Installing Your Order*

This is the order-customized, installation book for using the ServerPac Installation method. Be sure to review "Appendix A. Product Information," which describes data sets supplied, jobs or procedures that have been completed for you, and product status. IBM may have run jobs or made updates to PARMLIB or other system control data sets. These updates could affect your migration.

Within this book, you can find information about the specific updates and considerations that apply to this release of JES3.

- Chapter 2, "Migration Roadmap" on page 7

This section identifies the JES3 releases and itemizes the content of each release. Specific content descriptions of each release is referenced in the Chapter 3, "Release Overviews" on page 19 section of the publication. These release overviews help you to assess each JES3 release with respect to your current level of JES3.

The migration path you choose is defined as your current JES3 release and the target JES3 release you choose to migrate to. A "Migration Actions" section of each JES3 product roadmap references the migration path or paths that you will need to read. For example, if your present product level is OS/390 Version 1 Release 3 JES3 and you are using this publication, which has a product level of OS/390 Version 2 Release 10 JES3, then you are planning a migration from JES3 V1R3 to JES3 V2R10. You follow these steps:

- Read "JES3 OS/390 Version 1 Release 3 Summary" on page 14 to understand the functional capabilities of your current release. This summary itemizes the function updates to JES3 for this current release and references detailed descriptions of each JES3 functional change. Or you can read "OS/390 Version 1 Release 3 Enhancements" on page 53 to get an overview of the functional areas changed in OS/390 Version 1 Release 3 JES3.

Migration Overview

– Next read "Migration Actions" on page 15, which lists a series of migration actions you need to perform to migrate from OS/390 Version 1 Release 3 JES3 to OS/390 Version 2 Release 10 JES3. By thoroughly reading each of the following "migration action" chapters, you will be able to identify the changes necessary to complete the migration.

- Chapter 7, Migration Actions: JES3 V1R3 to JES3 V2R4 gives migration actions from OS/390 Version 1 Release 3 JES3 to OS/390 Version 2 Release 4 JES3.

- Chapter 8, Migration Actions: JES3 V2R4 to JES3 V2R5 gives migration actions from OS/390 Version 2 Release 4 JES3 to OS/390 Version 2 Release 5 JES3.

- Chapter 9, Migration Actions: JES3 V2R5 to JES3 V2R6 gives migration actions from OS/390 Version 2 Release 5 JES3 to OS/390 Version 2 Release 6 JES3.

- Chapter 10, Migration Actions: JES3 V2R6 to JES3 V2R7 gives migration actions from OS/390 Version 2 Release 6 JES3 to OS/390 Version 2 Release 7 JES3.

- Chapter 11, Migration Actions: JES3 V2R7 to JES3 V2R8 gives migration actions from OS/390 Version 2 Release 7 JES3 to OS/390 Version 2 Release 8 JES3.

- Chapter 12, Migration Actions: JES3 V2R8 to JES3 V2R9 gives migration actions from OS/390 Version 2 Release 8 JES3 to OS/390 Version 2 Release 9 JES3.

- Chapter 13, Migration Actions: JES3 V2R9 to JES3 V2R10 gives migration actions from OS/390 Version 2 Release 9 JES3 to OS/390 Version 2 Release 10 JES3.

– Each "migration action" chapter consists of information that pertains to initialization, installation modifications, operations, applications, problem determination and diagnosis, and accounting. Follow the migration actions that are indicated in each of these sections, then proceed (if applicable) to the next "migration action" chapter, and so forth until all migration actions have been completed.

- Use Chapter 14, "Version Summary Tables" on page 153 as a reference as you perform your migration actions.

This chapter describes the specific updates that were made to JES3 for each release and provides an overview of the changes, a description of any migration and coexistence tasks that may be considered, and where you can find more detailed information.

- Read Chapter 15, "Migration Summary" on page 193 to further complement your migration activity.

This chapter provides a summary of additional migration considerations for JES3.

Terms You Need to Know

This section describes some terms you may need to know as you use this book.

Base Release	The JES3 release you are currently running.
Target Release	The JES3 release you are choosing to migrate to.
Compatible Change	A compatible change does not require action to ensure that functions available before converting to the new release remain available.
Incompatible Change	An incompatible change may require changes to installation-written modifications, operating procedures, or installation policy to ensure the continued availability of existing functions.
Migration	Activities that relate to the installation of a new version or release of a program to replace an earlier level. Completion of these activities ensures that the applications and resources on your system will function correctly at the new level.
Coexistence	Two or more systems at different levels (for example, software, service or operational levels) that share resources. Coexistence includes the ability of a system to respond in the following ways to a new function that was introduced on another system with which it shares resources: ignore a new function, terminate gracefully, support a new function. The following are examples of multisystem configurations in which resource sharing can occur: <ul style="list-style-type: none"> • A single system running multiple LPARs • A single processor that is time-sliced to run different levels of the system (for example, during different times of the day) • Two or more systems running separate processors • A Parallel Sysplex configuration (also includes a basic sysplex)

Developing a Migration Strategy

The recommended steps for migrating to a new release of JES3 are:

1. Become familiar with the supporting migration and installation documentation for the target release.

You should determine what updates are needed for products that are supplied by IBM, system libraries, and non-IBM products. Review *OS/390 Planning for Installation* and *OS/390 Introduction and Release Guide* for information about JES3 and other OS/390 elements.

2. Develop a migration plan for your installation.

When planning to migrate to a new release of JES3, you must consider high-level support requirements, such as machine and programming

restrictions, migration paths, program compatibility, and global-local considerations.

3. Obtain and install any required program temporary fixes (PTFs) or updated versions of the operating system to all members of the complex to ensure functional compatibility and coexistence.

It is important that all those PTFs required on all OTHER members of the complex be installed "before" a member with the new JES3 release is run in the complex.

Call the IBM Software Support Center to obtain the preventive service planning (PSP) upgrade for JES3, which provides the most current information about PTFs for JES3. Check RETAIN again just before testing JES3. For information about how to request the PSP upgrade, refer to *OS/390 Program Directory*. Although *OS/390 Program Directory* contains a list of the required PTFs, the most current information is available from the IBM Software Support Center.

4. Install the product using *OS/390 Program Directory* or *ServerPac Installing Your Order* documentation.
5. Contact programmers who are responsible for updating applications at your installation.

Verify that your installation's applications will continue to run, and, if necessary, make changes to ensure compatibility with the new release.
6. Run the new release before using major new functions. Keep in mind that in some cases, in addition to requiring the new release on a particular processor, new functions will not be available until the global is also at the new release. In other cases, new functions should not be attempted until the entire complex is at the new release level, even if the global is at the new release level.
7. If necessary, customize the new function for your installation.
8. Exercise the new functions now available on this member.
9. Repeat steps #4 thru #8 on the other members in the complex.

Reviewing changes to JES3 processing

As you define your installation's migration plan, consider how the new and changed JES3 support might affect the following areas of JES3 processing. In Chapter 3, "Release Overviews" on page 19, you should review the specific release overview that is the target of your migration path. Then review the "Migration Actions" sections for your migration path to determine how, or if, the support affects the tasks that are performed at your installation.

Initialization. You must be aware of how changes introduced by a new product release can affect JES3 initialization. Changes in initialization can affect real and virtual storage requirements, performance, security, and integrity, as well as automatic command processing and networking.

Installation Modifications. To meet the specific requirements of your installation, you can customize JES3 functions to take advantage of new support after the product is installed. For example, you can tailor JES3 through the use of installation exit routines, macro usage, or options to improve performance. This book lists changes to JES3 that might require your installation to tailor the product, either to ensure that JES3 runs as before or to accommodate new security controls that your installation may need.

Operations. The new JES3 release might introduce changes to its operating characteristics, such as changed commands, new or changed messages, or in the methods of implementing new functions. This book identifies those changes for which you should provide user education before running this release of the product.

Applications. Application development programmers must be aware of new functions introduced in a new release of JES3. To ensure that existing programs run as before, your application programmers need to know about any changes in data areas and processing requirements. This book provides an overview of the changes that might affect existing application programs.

Problem Determination and Diagnosis. Each release of JES3 could introduce changes that affect the way you perform problem determination and diagnose problems. Some of these changes include new traces and logs, modified and new messages, and other diagnostic information that you would need in solving and fixing system problems.

Accounting. Accounting processes are affected by migrations among releases of JES3. To ensure that existing accounting processes run as before, you need to know about any changes in data that is used during these processes, such as job numbers, and SMF record contents. This book identifies any changes in accounting you need to know because of JES3.

Reviewing changes to JES3 interfaces

When defining your installation's migration plan, also consider that JES3 interfaces may also be affected by the new or changed functions that are introduced in this release. These interfaces include or are affected by the following:

- Summary of User Group Requirements
- APARs closed as FIN (Fixed in Next Release of JES3)
- Initialization Statements
- Commands
- Executable Macros
- Data Areas
- Installation Exits
- Messages
- Codes
- SMF Records
- SSI Function Codes

Chapter 14, "Version Summary Tables" on page 153 provides a summary of the JES3 changes that result from these changes. Chapter 2, "Migration Roadmap" on page 7 provides a "roadmap" for your migration. This roadmap itemizes the changes to each release of JES3, references more specific overviews of that release, and references specific migration actions you'll need to consider when migrating from your base release to the target release represented by this publication.

Common Migration Activities

General migration actions for JES3 include examining areas of processing in JES3 that involve:

- Initialization statements and processing
- Installation modifications, customization, exits, and macros
- Operations and commands
- Applications and application development
- Problem determination and diagnosis
- Accounting procedures and processes

Year 2000 Support for JES3

JES3 is an element of OS/390 and is certified as a Year 2000-ready operating system by the Information Technology Association of America (ITAA).

For more information about Year 2000 support, refer to *The Year 2000 and 2-Digit Dates: Guide*, GC28-1251. For additional information about Year 2000, see the following URL: <http://www.ibm.com/IBM/year2000/>

Review Coexistence, Migration, and Fallback Requirements

For all JES3 migrations, review the information APAR II11768 for any APARs that must be applied to allow coexistence with other JES3 releases, migration to particular JES3 releases, and fallback to JES3 releases.

Any system with JES3 lower than HJS7703 that runs on the OS/390 R10 BCP (HBB7703), or any system lower than HJS7703 that is to coexist with HJS7703, requires APAR OW43086, regardless of whether that system is global or local.

For all JES3 releases (V1R1 through V2R9), you will need to install APAR OW42745 on your current release to be able to successfully fall back from migration of the global to OS/390 Version 2 Release 10 JES3. If you do not install APAR OW42745, jobs submitted on the OS/390 Version 2 Release 10 JES3 global that use `SYSIN DD */ DATA` files will fail.

For all JES3 releases (V1R1 through V2R9), you will need to install APAR OW42288 on your current release to be able to successfully fall back from migration of the global to OS/390 Version 2 Release 10 JES3. If you do not install APAR OW42288 and then fall back, output created by UNIX System Services clients will not print.

Chapter 2. Migration Roadmap

This section describes the migration paths that are supported by the current release of JES3. It also provides references to release-specific information for your present release and your target release.

Migration Paths

The following table identifies the various migration paths that are documented in this publication with a page reference to your current release.

Figure 4. Migration Paths to OS/390 JES3 Version 2 Release 10

Current		Target		Roadmap
Release	FMID	Release	FMID	Page
JES3 V2R9	HJS6609	JES3 V2R10	HJS7703	8
JES3 V2R8	HJS6608	JES3 V2R10	HJS7703	9
JES3 V2R7	HJS6606	JES3 V2R10	HJS7703	10
JES3 V2R6	HJS6606	JES3 V2R10	HJS7703	11
JES3 V2R5	HJS6605	JES3 V2R10	HJS7703	12
JES3 V2R4	HJS6604	JES3 V2R10	HJS7703	13
JES3 V1R3	HJS6603	JES3 V2R10	HJS7703	14
JES3 V1R2	HJS6601	JES3 V2R10	HJS7703	15
JES3 V1R1	HJS6601	JES3 V2R10	HJS7703	16

What follows is a summary of each JES3 release, references to the release overview, and reference to migration actions that will take you from your base release to the target release, **(OS/390 JES3 V2R10 - FMID=HJS7703)**, the highest release level for this publication.

Note to Users

This section is designed to show the migration paths that are supported to the current release of JES3. For each release, this section also summarizes the main functional items. Functional items are grouped into the following categories:

- Initialization
- Installation Modifications
- Operations
- Applications
- Problem Determination and Diagnosis
- Accounting
- Migration Actions

The "Migration Actions" category is a reference to a specific chapter in this publication that describes the appropriate actions that are needed to migrate to the target release of JES3.

JES3 OS/390 Version 2 Release 10 Summary

This section describes additions, changes, and deletions introduced by OS/390 Version 2 Release 10 JES3.

Figure 5. JES3 OS/390 Version 2 Release 10 Summary

Migration Topic	Page
Initialization	
None	
Installation Modifications	
None	
None	
Operations	
Command Changes	20
Automatic Start of the MONITOR DSP	21
Applications	
Support for SMS Unit Affinity	19
Support for Writing SYSOUT in Key 9	19
Support for Additional WLM Classification Parameters	20
Problem Determination and Diagnosis	
DM759 New Reason Code	21
Accounting	
None	
Migration Actions	
Not Applicable	

JES3 OS/390 Version 2 Release 9 Summary

This section describes additions, changes, and deletions introduced by OS/390 Version 2 Release 9 JES3.

Figure 6. JES3 OS/390 Version 2 Release 9 Summary

	Migration Topic	Page
Initialization		
	NJE Enhancements	22
	Configuration Enhancements	24
Installation Modifications		
	IATXHOME	23
	Falling Back to Older Releases	27
Operations		
	*INQUIRY Command	23
	*MODIFY Command	23
	Data Areas and Message Updates	24
Applications		
	None	
Problem Determination and Diagnosis		
	None	
Accounting		
	None	
Migration Actions		
	Chapter 13, Migration Actions: JES3 V2R9 to JES3 V2R10	151

JES3 OS/390 Version 2 Release 8 Summary

This section describes additions, changes, and deletions to JES3 introduced by OS/390 JES3 Release 8.

Figure 7. JES3 OS/390 Version 2 Release 8 Summary

	Migration Topic	Page
Initialization		
	Second Level Destinations	29
Installation Modifications		
	Second Level Destinations	29
Operations		
	OS/390 Version 2 Release 8 JES3 Enhancements — WLM initiators	28
	Second Level Destinations	29
Applications		
	None	
Problem Determination and Diagnosis		
	Serviceability Enhancements	29
Accounting		
	None	
Migration Actions		
	Chapter 12, Migration Actions: JES3 V2R8 to JES3 V2R9	143
	Chapter 13, Migration Actions: JES3 V2R9 to JES3 V2R10	151

JES3 OS/390 Version 2 Release 7 Summary

This section describes additions, changes, and deletions to JES3 introduced by OS/390 JES3 Release 7.

 | *Figure 8. JES3 OS/390 Version 2 Release 7 Summary*

Migration Topic	Page
Initialization	
None	
Installation Modifications	
Support for FICON Channels	30
Operations	
*MODIFY,S Change	30
Applications	
None	
Problem Determination and Diagnosis	
None	
Accounting	
SMF26 Support for Job Purge Record	30
Migration Actions	
Chapter 11, Migration Actions: JES3 V2R7 to JES3 V2R8	121
Chapter 12, Migration Actions: JES3 V2R8 to JES3 V2R9	143
Chapter 13, Migration Actions: JES3 V2R9 to JES3 V2R10	151

JES3 OS/390 Version 2 Release 6 Summary

This section describes additions, changes, and deletions to JES3 introduced by OS/390 JES3 Release 6.

Figure 9. JES3 OS/390 Version 2 Release 6 Summary

	Migration Topic	Page
Initialization		
	Dynamic LPA Facility	42
Installation Modifications		
	JES3 Resource Affinity	41
Operations		
	JCT Utility	31
	Dump Job Enhancements	32
Applications		
	None	
Problem Determination and Diagnosis		
	None	
Accounting		
	None	
Migration Actions		
	Chapter 10, Migration Actions: JES3 V2R6 to JES3 V2R7	119
	Chapter 11, Migration Actions: JES3 V2R7 to JES3 V2R8	121
	Chapter 12, Migration Actions: JES3 V2R8 to JES3 V2R9	143
	Chapter 13, Migration Actions: JES3 V2R9 to JES3 V2R10	151

JES3 OS/390 Version 2 Release 5 Summary

This section describes additions, changes, and deletions to JES3 introduced by OS/390 JES3 Release 5.

 | *Figure 10. JES3 OS/390 Version 2 Release 5 Summary*

Migration Topic	Page
Initialization	
None	
Installation Modifications	
None	
Operations	
JES3 Support of OS/390 Print Server	44
JES3 Support of IP Printway	44
Applications	
None	
Problem Determination and Diagnosis	
None	
Accounting	
None	
Migration Actions	
Chapter 9, Migration Actions: JES3 V2R5 to JES3 V2R6	109
Chapter 10, Migration Actions: JES3 V2R6 to JES3 V2R7	119
Chapter 11, Migration Actions: JES3 V2R7 to JES3 V2R8	121
Chapter 12, Migration Actions: JES3 V2R8 to JES3 V2R9	143
Chapter 13, Migration Actions: JES3 V2R9 to JES3 V2R10	151

JES3 OS/390 Version 2 Release 4 Summary

This section describes additions, changes, and deletions to JES3 introduced by OS/390 JES3 Release 4.

Figure 11. JES3 OS/390 Version 2 Release 4 Summary

Migration Topic	Page
Initialization	
Segmented Initialization Stream	51
Deletion of JES3LIB Support	53
Deletion of Initialization Stream Support from Card Readers	53
Installation Modifications	
None	
Operations	
Hot Start with Refresh	51
Faster JES3 Restart	51
JES 64K Job Number Support	52
MVS COMMAND JCL Statement Support	52
Dynamic Configuration Change Support	52
Applications	
None	
Problem Determination and Diagnosis	
JES3 Statistics	52
Accounting	
None	
Migration Actions	
Chapter 8, Migration Actions: JES3 V2R4 to JES3 V2R5	105
Chapter 9, Migration Actions: JES3 V2R5 to JES3 V2R6	109
Chapter 10, Migration Actions: JES3 V2R6 to JES3 V2R7	119
Chapter 11, Migration Actions: JES3 V2R7 to JES3 V2R8	121
Chapter 12, Migration Actions: JES3 V2R8 to JES3 V2R9	143
Chapter 13, Migration Actions: JES3 V2R9 to JES3 V2R10	151

JES3 OS/390 Version 1 Release 3 Summary

This section describes additions, changes, and deletions to JES3 introduced by OS/390 JES3 Release 3.

Figure 12. JES3 OS/390 Version 1 Release 3 Summary

Migration Topic	Page
Initialization	
None	
Installation Modifications	
JES FSS Interface Example	53
Year 2000 Support for JES3	60
Operations	
SYSOUT Application Program Interface Enhancements (SAPI)	54
None	
Applications	
None	
Problem Determination and Diagnosis	
None	
Accounting	
None	
Migration Actions	
Chapter 7, Migration Actions: JES3 V1R3 to JES3 V2R4	77
Chapter 8, Migration Actions: JES3 V2R4 to JES3 V2R5	105
Chapter 9, Migration Actions: JES3 V2R5 to JES3 V2R6	109
Chapter 10, Migration Actions: JES3 V2R6 to JES3 V2R7	119
Chapter 11, Migration Actions: JES3 V2R7 to JES3 V2R8	121
Chapter 12, Migration Actions: JES3 V2R8 to JES3 V2R9	143
Chapter 13, Migration Actions: JES3 V2R9 to JES3 V2R10	151

JES3 OS/390 Version 1 Release 2 Summary

This section describes additions, changes, and deletions to JES3 introduced by OS/390 JES3 Release 2.

Figure 13. JES3 OS/390 Version 1 Release 2 Summary

Migration Topic	Page
Initialization	
None	
Installation Modifications	
Year 2000 Support for JES3	61
Operations	
None	
Applications	
None	
Problem Determination and Diagnosis	
None	
Accounting	
None	
Migration Actions	
Chapter 6, Migration Actions: JES3 V1R2 to JES3 V1R3	71
Chapter 7, Migration Actions: JES3 V1R3 to JES3 V2R4	77
Chapter 8, Migration Actions: JES3 V2R4 to JES3 V2R5	105
Chapter 9, Migration Actions: JES3 V2R5 to JES3 V2R6	109
Chapter 10, Migration Actions: JES3 V2R6 to JES3 V2R7	119
Chapter 11, Migration Actions: JES3 V2R7 to JES3 V2R8	121
Chapter 12, Migration Actions: JES3 V2R8 to JES3 V2R9	143
Chapter 13, Migration Actions: JES3 V2R9 to JES3 V2R10	151

JES3 OS/390 Version 1 Release 1 Summary

This section describes additions, changes, and deletions to JES3 introduced by OS/390 JES3 Release 1.

Figure 14. JES3 OS/390 Version 1 Release 1 Summary

Migration Topic	Page
Initialization	
None	
Installation Modifications	
Library Restructure	63
Support To Modify Local NJE Job Trailers	63
Support To Modify a Tape Request Setup Message	63
Operations	
OS/390 Enablement	62
Tape Utilities Deleted	63
Applications	
None	
Problem Determination and Diagnosis	
None	
Accounting	
None	
Migration Actions	
Chapter 5, Migration Actions: JES3 V1R1 to JES3 V1R2	69
Chapter 6, Migration Actions: JES3 V1R2 to JES3 V1R3	71
Chapter 7, Migration Actions: JES3 V1R3 to JES3 V2R4	77
Chapter 8, Migration Actions: JES3 V2R4 to JES3 V2R5	105
Chapter 9, Migration Actions: JES3 V2R5 to JES3 V2R6	109
Chapter 10, Migration Actions: JES3 V2R6 to JES3 V2R7	119
Chapter 11, Migration Actions: JES3 V2R7 to JES3 V2R8	121
Chapter 12, Migration Actions: JES3 V2R8 to JES3 V2R9	143
Chapter 13, Migration Actions: JES3 V2R9 to JES3 V2R10	151

Chapter 3. Release Overviews

This is an overview of OS/390 Version 2 Release 10. Where appropriate, read the books referenced throughout the release summary for additional information.

Use this information to plan your migration. The information provided will help you understand the differences between OS/390 Version 2 Release 10 and prior JES3 releases. For example, after reading about a new or changed function, you may decide to exploit that function if your installation can benefit from its use.

Some of the topics discussed may require certain actions during your installation to achieve or maintain full function. Specific migration instructions for OS/390 Version 2 Release 10 JES3 are provided in the sections that follow.

OS/390 Version 2 Release 10 JES3 Enhancements

Following are highlights for OS/390 Version 2 Release 10 JES3:

- Support for SMS Unit Affinity
- Support for writing SYSOUT in key 9
- Support for additional WLM classification parameters
- Command changes
- Automatic start of the MONITOR DSP
- DM759 New Reason Code

The following summaries briefly describe what is new, changed, or deleted in OS/390 Version 2 Release 10 JES3. Where appropriate, each summary briefly explains the purpose of the affected function, how the function worked before OS/390 Version 2 Release 10 JES3, how the function has changed in OS/390 Version 2 Release 10 JES3 and might also contain information to help you to perform any necessary migration actions.

Support for SMS Unit Affinity

This line item includes changes to support MVS Version 2 Release 10 SMS and the management and processing of jobs that use SMS-managed devices. JES3 converter/interpreter processing ensures that the automatic class selection routines (ACS) of the installation are able to accurately distinguish between SMS-managed devices and ones that are not SMS-managed. This accuracy improves the efficiencies embodied in SMS-managed devices and enhances the efficiencies provided by the installation's ACS routines.

Support for Writing SYSOUT in Key 9

JES3 allows subtasks of user programs attached to run in key 9 to write SYSOUT data sets concurrently with other tasks in the job. Subsystems such as CICS can take advantage of this JES3 support to ensure that the differing tasks that create SYSOUT data sets will perform successfully.

Support for Additional WLM Classification Parameters

JES3 supports the new Workload Manager (WLM) classification parameters SCHEDENV (scheduling environment), SUBCOLN (subsystem collection name), which contains the XCF group name of the JES3 complex and SRMTOKEN, which contains internal information used by the System Resource Manager (SRM). These classification parameters provide an installation with greater flexibility when moving to WLM goal mode and JES3 support of WLM managed initiators.

Command Changes

Command changes include the following:

- The password parameter on the *RETURN and *DUMP commands has been removed.
- If you issue the *CANCEL, MONITOR command and restart the JES3 global without issuing a new *CALL,MONITOR command, JES3 will issue a *CALL MONITOR command automatically.
- The MONITOR DSP issues messages IAT6399 and IAT6400 in response to the *START,MONITOR,DISPLAY command to describe the monitor parameters currently in effect. The output sample below shows the *START,MONITOR,DISPLAY command default parameters JES3 uses for each resource and queue if you do not change them.

IAT6399 ID	INTERVAL	THRESHOLD	COUNT	SUMMARY	STATUS
IAT6400 RESOURCE	005	001	ALL	YES	ACTIVE
IAT6400 LOCATE	005	001	ALL	YES	ACTIVE
IAT6400 CIFSS	005	001	ALL	YES	ACTIVE
IAT6400 SYSELQ	005	005	ALL	YES	ACTIVE
IAT6400 ALLOCQ	000	000	ALL	YES	INACTIVE
IAT6400 VERIFYQ	000	000	ALL	YES	INACTIVE
IAT6400 SYSVERQ	005	001	ALL	YES	ACTIVE
IAT6400 DSPWAIT	005	005	ALL	ONLY	ACTIVE
IAT6400 JSSWAIT	005	005	ALL	ONLY	ACTIVE
IAT6400 IOWAIT	030	001	ALL	YES	ACTIVE

Changes made with the *START,MONITOR,ID= command take effect immediately. If you cancel the monitor DSP, the same values come back into effect when you reactivate the monitor DSP. However, if you restart JES3, the default parameters go back into effect.

When the modify is complete, the monitor DSP issues the following message:

```
IAT6402 MONITOR MODIFY PROCESSING COMPLETE
```

If any of the modify parameters are incorrect, the monitor DSP issues the following message:

```
IAT6401 MONITOR START COMMAND REJECTED - reasontext
```

- The *MODIFY,X,MODULE=module,REFRESH command is updated to distinguish between a JES3 exit as the module being refreshed and a CSECT that is part of the JES3 IATNUC load module. If the module being refreshed is a module (CSECT) that is part of the JES3 IATNUC load module and it is eligible for refresh, a new copy of the module will be loaded at the time the REFRESH command is issued. If the module specified on the command is a user exit, the User Exit List (IATYUXL) is examined to determine if the user exit is refreshable or not. If it is refreshable, another copy of the exit is loaded into

storage and the address stored into the IATYUXL. The original copy is not deleted.

- The *INQUIRY,U command to display job output is updated with new keywords, CJ=, CJID=, CJNM=.

CJ= displays SYSOUT with spinoff job names only (CJ=Y), displays SYSOUT without spinoff job names only (CJ=N), or displays SYSOUT whose spinoff job name or spinoff job id matches client-job-string only (CJ=client-job-string).

CJID= displays SYSOUT with spinoff job ids only (CJID=Y), displays SYSOUT without spinoff job ids only (CJID=N), or displays SYSOUT from a specific spinoff job id only (CJID=client-job-id).

CJNM= displays SYSOUT with a specific spinoff job name only (CJNM=client-job-name).

- The *MODIFY,U command to modify job output is updated with new keywords, CJ=, CJID=, CJNM=.

CJ= selects SYSOUT with spinoff job names only (CJ=Y), selects SYSOUT without spinoff job names only (CJ=N), or selects SYSOUT whose spinoff job name or spinoff job id matches client-job-string only (CJ=client-job-string).

CJID= selects SYSOUT with spinoff job ids only (CJID=Y), selects SYSOUT without spinoff job ids only (CJID=N), or selects SYSOUT from a specific spinoff job id only (CJID=client-job-id).

CJNM= selects SYSOUT with a specific spinoff job name only (CJNM=client-job-name).

- The *MODIFY,W,...DYNAMIC=(Y,timeout) command is updated to allow you to indicate that you not only want a writer dynamically started, but also that the writer should stop after some "timeout" value has elapsed.

Automatic Start of the MONITOR DSP

The MONITOR DSP is automatically started when JES3 is started or restarted. At every JES3 restart, the MONITOR DSP is called automatically if it was not previously active.

DM759 New Reason Code

The failsoft DM759 code includes a new reasons code, X'0E', which indicates that the routine SSDSDLOC in module IATSSDS, while processing a DSQLOC call, detected that the eyecatcher in the staging area was not correct.

OS/390 Version 2 Release 9 JES3 Enhancements

Following are highlights for OS/390 Version 2 Release 9:

- NJE Enhancements
 - NJERMT initialization statement enhanced
 - *INQUIRY command updated
 - *MODIFY command updated
 - IATXHOME macro
- Configuration Enhancements

Release Summary

- NUMDEV parameter on the DEVICE initialization statement
- *ALL parameter on JUNIT/XUNIT= keywords of the DEVICE initialization statement
- Changing devices using the Hardware Configuration Dialog (HCD)
- Falling Back to Older Releases
 - Falling Back from Releases HJS6606 (or Above) to HJS6605 (or Below)

The following summaries briefly describe what is new, changed, or deleted in OS/390 Version 2 Release 9 JES3. Where appropriate, each summary briefly explains the purpose of the affected function, how the function worked before OS/390 Version 2 Release 9 JES3, how the function has changed in OS/390 Version 2 Release 9 JES3 and might also contain information to help you to perform any necessary migration actions.

NJE Enhancements

JES3's NJE is enhanced through changing the NJERMT initialization statement to allow "alias names" to define differing domains (for example, CHICAGO, and NEWYORK) that are tied to the same home node.

NJERMT Initialization Statement

JES3 provides the ability to define "aliases" for the final receiving node of a network. Through the use of the NJERMT initialization statement you can define alias names that you wish to support as receiving nodes. For example, you might have the following NJERMT initialization statement:

```
NJERMT,NAME=NEWYORK,HOME=YES
```

Now you can define an alias to this "home node" as follows.

```
NJERMT,ALIAS=BROOKLYN
```

Then if you want to define the alias, BROOKLYN, to another node, you would code.

```
NJERMT,NAME=BROOKLYN,PATH=NEWYORK
```

BROOKLYN then becomes the final receiving node (not the sending node or any intermediate store-and-forward node) in your network. BROOKLYN is thus tied to the home node (NEWYORK).

You can define alias names with differing default settings for PRTDEF, PUNDEF, PRTTSO, and PRTXWTR than the corresponding settings on the home node definition. Associating an alias with alternate default settings allows:

- Consolidation of globals.
- Defining an alias with alternate default settings allows nodes with different definitions to be consolidated, making it possible to use a node's former default settings when using that former node as an alias.

See *OS/390 JES3 Initialization and Tuning Reference* for more information on using the NJERMT and SYSOUT initialization statements.

***INQUIRY Command**

The *INQUIRY command is enhanced to allow display of ALIAS definitions. For example, *INQUIRY,NJE,NAME=xxx (where xxx is the alias name) generates the IAT8659 message having a new variable text that includes the four default classes. The example below illustrates the change.

```
*INQUIRY,NJE,NAME=BROOKLYN
IAT8659 - ALIAS BROOKLYN PRTDEF A PRTTSSO T PRTXWTR X PUNDEF B
```

Note: The default classes for the alias need not be the same as those defined for the node

See *OS/390 JES3 Commands* for more information on using the *INQUIRY command.

***MODIFY Command**

The *MODIFY command is upgraded to allow adding and deleting of an alias. The ADDAL= (or AA=) keyword indicates the alias to add. The DEL= keyword indicates the alias to delete.

When adding an alias, you can specify

- PRTDEF=, the default print class for output being received under the home node or alias.
- PRTTSSO=, the default TSO class for output being received under the home node or alias.
- PRTXWTR=, the default external writer class for output being received under the home node or alias.
- PUNDEF=, the default punch class for output being received under the home node or alias.

Note: A hot start with refresh (or a warm or cold start) is required with added NJERMT statements in order to make changes permanent; otherwise, a restart will revert to the last defined configuration and any additions or deletions are lost.

See *OS/390 JES3 Commands* for more information on using the *MODIFY command.

IATXHOME

When any unit of work (job, output, message, command) arrives at a node, JES3 must check to see if the work is for the home node. If the work is not for the home node, then JES3 must determine the work's final destination. The IATXHOME macro provides the interface to the service routine JES3 uses to determine whether the work has reached its ultimate destination.

See *OS/390 JES3 Customization* for more information about using the IATXHOME macro.

Data Areas and Message Updates

The NJE definition structure is changed with the addition of a flag that indicates that the NJE definition is an alias. The IATXHOME service routine examines this flag.

Message IAT8659 is changed only for inquiries on the home node or an alias.

The Pre-HJS6609 form of message IAT8659 is still used at the HJS6609 release level when the node is a directly or indirectly connected BSC or SNA node, and the new form of IAT8659 is used only for the home node or an alias. In the "Home Node or Alias" form of the message the word "NODE" is replaced by "HOME" if it's the home node, or "ALIAS" if it's an alias.

```
HJS6609 (BSC or SNA node)
-----

IAT8659 - NODE NEWYORK NOHOLD PATH NEWYORK

HJS6609 (Home Node or Alias)
-----

IAT8659 - NODE NEWYORK PRTDEF A PRRTSO T PRXWTR X PUNDEF B
```

The text of IAT8463 is changed.

```
IAT8463 NO CHANGES SPECIFIED. REQUEST IGNORED
```

A new output text for message, IAT8468 is provided, which indicates parameters that are not allowed.

```
IAT8468 PARAMETER errkeywd IS NOT ALLOWED FOR nodetype
```

IAT3009 is a new error message.

```
IAT3009 KEYWORD initkwd MUTUALLY EXCLUSIVE WITH ALIAS
```

IAT8109 is a new error message.

```
IAT8109 CLASS ILLEGAL, MORE THAN ONE CHARACTER SPECIFIED
```

IAT8110 is a new error message.

```
IAT8110 CLASS NOT ALLOWED WITH ADD= or DEL=
```

See *OS/390 JES3 Messages* for specific information about changed messages.

Configuration Enhancements

OS/390 Version 2 Release 9 provides the following configuration enhancements:

- The ability to define a range of devices on a single DEVICE initialization statement
- The ability to specify a main name of *ALL on the XUNIT or JUNIT parameters in order to define a device symmetrically to all mains at the same time
- The ability to omit the DEVICE,DTYPE=SYSMAIN initialization statement associated with a MAINPROC initialization statement

- The ability to place NJERMT initialization statements before the MAINPROC or SYSMAIN definitions.
- The ability to make changes to DEVICE XUNITs, SETNAMEs, and DYNALDSNs during a hot start with refresh
- The ability to use *ALL on a DEVICE initialization statement to make it easier to add MAINPROCs during a warm start.

Note: Additions, changes, and deletions of MAINPROC statements are still not supported during a hot start with refresh. You can predefine up to 32 MAINPROC statements, and the systems they represent are presumed to have access to any device defined with *ALL, provided that the device is defined to that processor's hardware configuration in MVS.

Using NUMDEV to Define a Range of Devices on a Single DEVICE Initialization Statement

OS/390 Version 2 Release 9 JES3 provides the NUMDEV parameter on the DEVICE initialization statement that allows you to define a range of devices. See the example below:

```
DEVICE,DTYPE=TA33490,JNAME=T,
JUNIT=(5B0,SY1,,ON,5B0,SY2,,ON),
XTYPE=(TAPE3,CA),
XUNIT=(5B0,SY1,,ON,5B0,SY2,,ON),
NUMDEV=16
```

This example defines 16 devices starting with device number 5B0 and ending with 5BF and prefix of T from the JNAME= keyword (that is, T5B0 through T5BF).

See *OS/390 JES3 Initialization and Tuning Reference* for a description of specifying the DEVICE initialization statement.

Using *ALL to Define Devices to All Mains

OS/390 Version 2 Release 9 JES3 allows you to specify the *ALL parameter on JUNIT/XUNIT= keywords of the DEVICE initialization statement to define devices to all mains at once in your SYSPLEX as illustrated below.

```
DEVICE,DTYPE=TA33490,JNAME=T,
JUNIT=(5B0,*ALL,,ON),XTYPE=(TAPE3,CA),
XUNIT=(5B0,*ALL,,ON),
NUMDEV=16
```

All tape devices from 5B0 through 5BF are defined to all mains (that is, T5B0 through T5BF, using the T prefix from the JNAME= keyword).

See *OS/390 JES3 Initialization and Tuning Reference* for a description of specifying the DEVICE initialization statement.

Omitting the DEVICE,DTYPE=SYSMAIN Initialization Statement Associated With a MAINPROC

OS/390 Version 2 Release 9 JES3 allows you to omit the DEVICE initialization statement that defines all CTC aspects of the SYSMAIN associated with the MAINPROC initialization statement.

Until OS/390 Version 2 Release 9, each MAINPROC statement needed a corresponding DEVICE,DTYPE=SYSMAIN statement in order to indicate online and offline status of processors to other processors. In OS/390 Version 2 Release 9,

this DEVICE statement is no longer required. If this DEVICE statement is omitted, JES3 internally constructs a default DEVICE statement that resembles one you would have supplied, one specifying JUNIT=(NONE,*ALL,,ON). This internal DEVICE statement indicates that the processor should be initially online to all other processors. If you choose, you can retain your existing SYSMAIN definitions, you can specify JUNIT=(NONE,*ALL,,ON), or you can specify JUNIT=(NONE,*ALL,,OFF).

Placing NJERMT Initialization Statements Before the MAINPROC or SYSMAIN Definitions

APAR OY26994 enforced a restriction that NJERMT statements must be placed after MAINPROC statements. In OS/390 Version 2 Release 9, this restriction is eliminated. NJERMT statements may now be placed anywhere after the ENDJSAM statement and before the ENDINISH statement regardless of the order of other statements.

Changing DEVICE JUNITs/XUNITs, SETNAMEs, and DYNALDSNs During a Hot Start With Refresh

In OS/390 Version 2 Release 9, you can add or delete the following statements during a hot start with refresh:

- DEVICE, where the XUNIT and XTYPE parameters are specified
- SETNAME
- DYNALDSN

You can change the following statements during a hot start with refresh:

- DEVICE, all parameters
- SETNAME, all parameters
- DYNALDSN, all parameters
- SETPARAM, all parameters except for the SMSSETUP parameter

Changing the DEVICE statement during a hot start with refresh can include:

- Changing the XUNIT or XTYPE parameter.
- Combining multiple DEVICE statements defining contiguous device numbers with common characteristics into a single DEVICE statement specifying the NUMDEV parameter.
- Adding the name of an existing MAINPROC to the XUNIT list.
- Combining system names within a JUNIT and XUNIT list into *ALL.

Changing Devices Using the Hardware Configuration Dialog (HCD)

You can use the hardware configuration dialog (HCD) to change devices in your JES3 installation. The implications of using this in OS/390 Version 2 Release 9 JES3 are as follows:

- You can change characteristics of devices without performing an IPL or JES3 restart even if the device is defined to JES3 as a JUNIT and/or XUNIT. Prior to OS/390 Version 2 Release 9, JES3 would not even allow the change.
- You can delete a device that is defined to JES3 without performing an IPL or JES3 restart. If you do restart JES3 without deleting the device from your

initialization stream, JES3 will tolerate the undefined device. However, you should schedule a hot start with refresh at your earliest opportunity to delete the device from JES3 cleanly.

- You can add devices to HCD. However, if you want to define these devices to JES3 you must also add them to your initialization stream and perform a hot start with refresh. You do not need to IPL.

Deleting Devices in Use by a Job

In OS/390 Version 2 Release 9 JES3, you can delete a device from JES3 while a job is using the device. However, this procedure is not recommended and IBM recommends that you exercise caution in deleting devices whenever jobs are running.

Falling Back to Older Releases

Falling Back from Releases HJS6606 (or Above) to Releases HJS6605 (or Below)

If you have migrated to a JES3 release of HJS6606 or above and want to fall back to a JES3 release below HJS6606, then you must use the following procedure:

- If PTF for APAR OW30849 is NOT applied on the lower release.
 - Install the PTF for OW38445 on the system you want to run IATUTJCT on.
 - Stop JES3.
 - Run IATUTJCT with P=FALLBCK on the higher level release. Running IATUTJCT shrinks the JCTs back to the size allowable on the lower release.
 - Perform an IPL of the system containing the lower JES3 release.
 - Start JES3 with pointers to the "shrunken" JCT and checkpoint data sets.
- PTF for APAR OW30849 is applied on the lower release..
 - You need not run IATUTJCT P=FALLBCK because this lower release can run with expanded JCTs.

You can also use the fallback function of IATUTJCT to shrink JCTs that have been expanded more than once (that is, the JCTs have been expanded to a size greater than what is required by HJS6606 and any higher release.). This situation occurs when the PTF for APAR OW37662 is NOT applied prior to:

- Running IATUTJCT with P=MIGRATE
- Adding or deleting a spool file.
- Running IATUTJCT with P=MIGRATE again.

Each time you run IATUTJCT with P=FALLBCK, the JCT shrinks by 116 bytes. A warning message is presented if falling back shrinks the JCTs below the size required by HJS6606 and above. This warning message gives the operator the opportunity to cancel the shrinking. IATUTJCT does not allow JCTs to shrink below the lowest supported level (that is, a size required by HJS6605 and below).

OS/390 Version 2 Release 8 JES3 Enhancements

In OS/390 Version 2 Release 8 (HJS6608), the installation can have JES3 or Workload Manager (WLM) or both manage initiators for batch jobs. That is, JES3 or WLM is responsible for determining when to start initiators, how many initiators to start, and on what systems to start them.

JES3 or WLM control of initiators is at the job class group level. To specify whether JES3 or WLM manages initiators for a job class group, the installation uses the MODE parameter on the GROUP initialization statement. If MODE=JES is specified or defaulted, the initiators are managed by JES3. If MODE=WLM is specified, the initiators are managed by WLM. The MODE parameter can also be changed dynamically using the *MODIFY,G command. A group must be either WLM managed or JES3 managed; it cannot be WLM managed on one system and JES3 managed on another.

There are a number of reasons why you might choose WLM initiator management over JES3 initiator management:

- Fewer, simpler externals

Less externals are needed in JES3 to control WLM-managed initiators and to perform workload balancing. Once the service administrator defines the performance goals and classification rules in the WLM policy, the system takes over the job of starting and stopping initiators.

- Externals reflect customer expectations

With JES3 initiator management, the installation determines the number of initiators to be started on each system, the correct mix of jobs, etc. The externals do not reflect an actual performance goal, such as 1 hour turnaround time for jobs in class X. How do you translate one hour turn around time into initialization statements?

With WLM initiator management, initiators will be managed by WLM according to the service classes and performance goals specified in the WLM policy. The performance goals are typically expressed in terms that are found in service level agreements (for example, one hour turn around time).

- Dynamic, goal oriented initiator management

The system will adapt to changing conditions and how well the work is meeting its performance goals. The current JES3 initiator management puts the responsibility on the system programmer/operator to manage the work. Workload balancing algorithms used by JES3 are difficult to define and static in nature. That is, they require an operator command and sometimes a JES3 hot start to change. But even if they can be changed easily, why should human intervention be needed to monitor the system and make adjustments? This is something better suited to the operating system.

- Workload balancing across a SYSPLEX will be automatic

WLM will decide how many initiators and when to start them based on performance goals and the importance of batch with respect to other work. Note that this does not necessarily imply that there will be an equal number of initiators on each system.

Second Level Destinations

Prior to HJS6608, SYSOUT data sets received from another NJE node, which appeared as NETDATA (that is, the NJE data set header contained a remote name and an external writer name that were the same) were placed on the hold queue where they could be processed by TSO RECEIVE. As a result, a job with JCL OUTPUT statements (as illustrated below) would not be processed by a JES3 writer on the receiving node.

```
//DD1 DD SYSOUT=C,DEST=(node,userid)
```

In this release, by default, JES3 places such data sets on the writer queue and these data sets will not be available to TSO RECEIVE. To implement this processing, JES3 is changed as follows:

- A new lookup routine, DESTLKUP (and macro IATXDST interface) exists to determine whether a destination is defined to JES3. This is used on the receiving node to determine whether the data set is placed on the writer queue or on the hold queue.
- This initialization statement, NJERMT, is changed by adding a new keyword parameter, NETHOLD=. This parameter allows you to indicate that all output that appears to be NETDATA is to be received by a user.
- A new initialization statement, DESTDEF, allows you to specify how inbound SYSOUT data sets from other NJE nodes are to be processed at a specified node.
- The *INQUIRY NJE command is changed to display the setting of held output at a specified node.
- The *MODIFY NJE command is changed to allow you to modify a node from "being able to release output" to "being able to hold output".

See "Second Level Destinations" on page 126 for more details concerning JES3 processing of second level destinations.

Serviceability Enhancements

BDT provides the parmlib member, BDTIPCSP, that can be defined to IPCS with the name of the BDT dump data formatting routine, BDTABPR. Defining this BDT formatting routine in the IPCS parmlib member, BLSCECT, is no longer necessary.

OS/390 Version 2 Release 7 JES3 Enhancements

Following are highlights for OS/390 Version 2 Release 7 JES3:

- Support for FICON Channels
- *MODIFY,S Change
- SMF26 Support for Job Purge Record

The following summaries briefly describe what is new, changed, or deleted in OS/390 Version 2 Release 7 JES3. Where appropriate, each summary briefly explains the purpose of the affected function, how the function worked before OS/390 Version 2 Release 7 JES3, how the function has changed in OS/390

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Version 2 Release 7 JES3 and may also contain information to help you to perform any necessary migration actions.

Although there was not an OS/390 Version 2 Release 7 for JES3, significant enhancements and changes to externals were made to JES3; these changes were delivered through PTFs and are explained here.

Support for FICON Channels

JES3 is changed to support FICON channels. The only change to JES3 is the macro JESEXCP. A new keyword IOBE= is added to allow JES3 to utilize the IOB extension when doing I/O. You get this FICON support in JES3 by applying the PTF for the APAR OW31828.

*MODIFY,S Change

A new keyword, IVERMSG= is available for use on the *MODIFY,S command to indicate whether IAT5918 messages received during main connect processing are to be written to the hard-copy message log (MLOG). This keyword has two possible values: SUMMARY or ALL. SUMMARY is the default and indicates that summary message IAT5919 is to be written for every 100 verify response messages and at the end of the initial verify processing. ALL indicates that all verify response messages are to be written. This change can be applied as a PTF for APAR OW32272.

SMF26 Support for Job Purge Record

JES3 will now use the SMF26IND bit in the SMF26 record to record a job's accounting data as specified on the JOB JCL statement. This bit indicates when the triplet section of SMF26 is being used. PTF for APAR OW26297 supports JES3's use of this bit.

OS/390 Version 2 Release 6 JES3 Enhancements

The following descriptions highlight OS/390 Version 2 Release 6, what is new, changed, or deleted in the JES3 component of OS/390 Version 2 Release 6. Where appropriate, each summary briefly explains the purpose of the affected function, how the function worked before OS/390 Version 2 Release 6, how the function has changed in OS/390 Version 2 Release 6, as well as containing information that helps you perform any necessary migration actions.

The following list itemizes the major functional changes included in OS/390 Version 2 Release 6:

- JCT Utility
- Dump Job Enhancements
- JES3 Resource Affinity
- Dynamic LPA Support

JCT Utility

For various reasons, you might need to replace an existing JCT data set. To use a new, empty JCT data set in JES3, you need to cold start JES3. In order to allow a JCT data set to be copied without a cold start, JES3 provides a program called the JCT utility, or IATUTJCT. IATUTJCT can be used to satisfy the following requirements:

- You need to allocate a larger JCT data set in order to provide capacity for more jobs in the JES3 job queue.
- You need to move your JCT data set to a new volume. The new volume can be the same device type as the one where your JCT data set currently resides, or it can be a different one.
- You are at a JES3 release prior to HJS6606 and are migrating to a JES3 release at the HJS6606 level or higher (see below).

IATUTJCT runs as a started task under the MSTR subsystem and copies JCT entries from one JCT data set to another while updating the device dependent information at the same time. IATUTJCT also copies the JCT information that is kept in the checkpoint data set.

IATUTJCT can be run as a test while JES3 is up to ensure that the utility will be successful when it is run. When the JCT is successfully expanded, the JES3 installation can put the new JCT into production.

Specific details about using the JCT Utility and setting it up in your JES3 system is contained in *OS/390 JES3 Initialization and Tuning Guide*. Below is a description of using IATUTJCT to migrate from a lower release of JES3 to JES3 Version 2 Release 6 (HJS6606) or above.

- The lower JES3 release can be any JES3 release from HJS4421 to HJS6605. For releases prior to HJS4421, IATUTJCT is not available and a cold start is required to install OS/390 JES3 Version 2 Release 6.
- For releases HJS4421 and HJS5511, a warm start is required, and the higher JES3 release must be installed on all processors in the JES3 complex simultaneously.
- For HJS6604 or HJS6605, a hot start with refresh is allowed, and the installation can be staged across the local processors.
- For HJS5521 or higher, a hot start is allowed, and the installation can be staged across the local processors.
- IATUTJCT is automatically available in OS/390 Version 2 Release 6 JES3 or higher. On lower releases, the JES3 installation needs to install the PTF for APAR OW30849 to use IATUTJCT.

You can migrate to a higher JES3 release without the migration PTF by performing an IPL of the system containing the higher release (leaving JES3 inactive), starting IATUTJCT with P=MIGRATE, and then starting JES3 with pointers to the JCT and checkpoint data sets that were changed to the new ones. If the installation decides to "fall back" to the lower JES3 release, it must either cold start or install the migration PTF on that lower release.

Note: IATUTJCT does not migrate from a higher JCT version to a lower one. However, if IATUTJCT was previously run with P=MIGRATE and the lower JES3 release had the migration PTF installed, then this "lower"

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release can be established as the operational one. If the migration PTF is not installed on the lower release, a cold is required to fall back to the lower release.

- If you run IATUTJCT on a lower release with P=MIGRATE and perform a cold start, the migration information is lost (that is, the JCT data set reverts to the lower version). You must run IATUTJCT again using P=MIGRATE if you want a JCT at the higher version.
- You can choose to cold start a HJS6606 release of JES3 instead of run IATUTJCT. However, if you plan to save and restore jobs using the Dump Job dynamic support program (DJ DSP), do not use the TRANS=YES parameter. Also, if you cold start to fall back to the lower JES3 release you will need to run the Dump Job DSP to restore jobs without using the TRANS=YES parameter. The dump job DSP tolerates the different versions of the JCT record provided that the JES3 release is at least HJS6606, or at least HJS4421 (with the migration PTF installed).

If the lower JES3 release does not have the migration PTF installed, the installation cannot use the Dump Job DSP on that release to restore jobs that were dumped with the higher JCT version.

- You need to run IATUTJCT only once in a JES3 complex. You can run it on the global or any local processor.
- Member IATUTJCS of the OS/390 SIATSAMP data set contains a sample JCL procedure for running IATUTJCT.

Dump Job Enhancements

Server versus Non-Server Mode

Dump job can be run in either server or non-server mode. When dump job is run in server mode, a dump job server address space is started to allocate the tape device. All tape related functions such as reading or writing to the tape are done from the dump job server address space. When dump job is run in non-server mode, the tape device is allocated by JES3, and all tape related functions such as reading or writing to the tape are done from the JES3 global address space. Dump job tapes created by non-server mode can be restored in server mode and vice versa.

Note: A selective restore (that is, *S DJ J=nnnnnn (OLD)) from a multiple volume dump tape may fail during end of volume processing if the dump was created before the server mode support was installed.

The following table compares running Dump Job in server and non-server mode:

<i>Figure 15. Dump Job Characteristics</i>	
Server Mode	Non-Server Mode
All access to the tape data set is done in the Dump Job server address space.	All access to the tape data set is done in the JES3 global address space.
For standard label tapes, a unique data set name is generated and cataloged. As a result, the operator does not have to remember the list of volumes when restoring the jobs from tape.	No unique data set name is generated or cataloged. The operator must know which volumes need to be mounted when restoring jobs from tape.
Standard data management services (OPEN, CLOSE, EOVS) are used to process the tape data set	Standard data management interfaces are not used to process the tape data set.
Tape devices in the IBM 3494 and 3495 tape library data server can be used.	Tape devices in the IBM 3494 and 3495 tape library data server cannot be used.
Dump Job supports 9-track tapes but does not support 7-track tapes	Dump Job supports 7 and 9-track tapes
Dump Job supports standard label and non-labeled tapes.	Dump Job supports standard label and non-labeled tapes.
<p>The device used by Dump Job does not have to be defined to JES3, but you may do so. Also, a generic device name (e.g. 3490) or an esoteric device name (e.g. TAPE) may be specified on the *CALL command.</p> <p>If you have tape DEVICE statements in your initialization stream for use only by Dump Job, these statements can be removed once you decide only to run Dump Job in server mode. To remove tape DEVICE and SETNAME statements from the initialization stream requires a JES3 warm start.</p> <p>If you want JES3 to continue to manage tape devices for jobs in execution but no longer need them for Dump Job, you can remove the DTYPE, JNAME, and JUNIT parameters from the tape DEVICE statements and perform a hot start with refresh. If you change your mind and want to add them back, this can also be accomplished by performing a hot start with refresh.</p>	<p>The device used by Dump Job must be defined to JES3 via a DEVICE statement and must be defined as a shared device. It must be defined as a JES3 global device via the DTYPE, JNAME, and JUNIT parameters, and as an execution device via the XTYPE and XUNIT parameters.</p>
<p>Dump job can be cancelled by doing one of the following:</p> <ul style="list-style-type: none"> • Issue a *CANCEL,DJ command (if there is only one DJ DSP active) • Issue a *CANCEL,J=jobno command (if there are multiple DJ DSP's active) • Issue an MVS CANCEL command to cancel the server address space • You cannot cancel the Dump Job DSP by device number. 	<p>Dump job can be cancelled by doing one of the following:</p> <ul style="list-style-type: none"> • Issue a *CANCEL,DJ command (if there is only one DJ DSP active) • Issue a *CANCEL,J=jobno command (if there are multiple DJ DSP's active) • Issue a *CANCEL,devno command
<p>If the device is defined to JES3, it must be varied online as an execution device on the JES3 global. For example, suppose you want to use device 560 for Dump Job and SY1 is the global. To vary the device online, the following command must be issued:</p> <pre>*V,560,ON,SY1</pre> <p>If the device is not defined to JES3, then an MVS VARY command must be issued:</p> <pre>VARY,560,ONLINE</pre>	<p>The device must be varied online as a global device. For example, suppose you want to use device 560 for Dump Job. To vary the device online, the following command must be issued:</p> <pre>*V,560,0N</pre>
The OLD parameter is not supported on the *CALL command when restoring jobs from tapes. The tape will always be rewound prior to being processed.	The OLD parameter is supported on the *CALL command when restoring jobs from tapes. This allows you bypass the initial rewind that normally precedes the restore process.

Example - Dumping Jobs to Tape in Server Mode: The following is an example of dumping jobs to tape when dump job is in server mode.

The steps needed to start the process using a standard label tape on device 560 are as follows:

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1. Create a standard label tape on device 560.
2. Vary device 560 online as an execution device.
3. *CALL the Dump Job DSP.

Device device 560 is defined as a JES3 managed device. It must be varied online as an execution device to the global processor (SY1):

```
*V,560,ON,SY1
```

```
IAT8180 0560      VARIED ONLINE  TO JES3 ON SY1
```

```
*X,DJ,OUT=560,LABEL=SL,SERVER=YES
```

Instead of using a specific device, a generic or esoteric device name could have been specified on the *CALL command. In this case, the device name must be specified in parenthesis:

```
*X,DJ,OUT=(3490),LABEL=SL,SERVER=YES
```

...or...

```
*X,DJ,OUT=(LDE10435),SERVER=YES
```

The *CALL command causes a dump job server address space to be started. The dump job server address space initializes and allocates the tape device. The tape device is allocated with deferred mounting so you will not see any IAT5210 messages asking the operator to mount the tape. A mount message (IEC501A) will be issued when a *START,DJ command is issued, and the tape data set is opened.

```
IAT6306 JOB (JOB00033) IS DJ      , CALLED BY 01
IAT6100 ( DEMSEL ) JOB IEESYSAS (JOB00034), PRTY=15, ID=*UNKNOWN
SY1 IEESYSAS IEF403I IEESYSAS - STARTED - TIME=16.11.04
IAT5110 JOB IEESYSAS (JOB00034) GET 255 T SCRTCH ,SL JES3.DJ.D1998091.T163039
```

Figure 16. Dump Job Started

The job name of the dump job server address space is the characters "DJ" followed by the job number of the DJ DSP that started the server address space. To display information about the dump job server address space, issue one of the following commands:

- D A,DJ*
- *I J=34

```

D A,DJ* ...or... D A,DJ000033

SY1          IEE115I 16.12.03 1998.049 ACTIVITY 351
JOBS        M/S    TS USERS   SYSAS   INITS   ACTIVE/MAX VTAM   OAS
00000      00006   00001     00026   00003   00001/00300      00001
DJ000033 DJ000033 IEFPROC  NSW  *   A=0024 PER=NO   SMC=000
                               PGN=N/A  DMN=N/A  AFF=NONE
                               CT=000.093S ET=058.661S
                               WUID=JOB00034 USERID=+++++++
                               WKL=SYSTEM  SCL=SYSTEM  P=1
                               RGP=N/A    SRVR=NO   QSC=NO
                               ADDR SPACE ASTE=034BC900

*I J=34

IAT8674 JOB IEESYSAS (JOB00034) P=15 CL=A R=(512K,512K), MAIN(EXECUTING-SY1)

```

Figure 17. Display Status of the Dump Job Address Space

After the dump job server address space has successfully initialized, dump job issues messages to show that it is ready to begin dumping jobs to tape. Message IAT7272 contains the name of the tape data set that will contain the jobs that are dumped to tape. This data set name must be specified on the *CALL,DJ command when you restore the jobs from tape.

```

IAT7272 DJ0560 (JOB00033): OUTDSN=JES3.DJ.D1998091.T163039

IAT7213 DJ0560 (JOB00033): UP AND RUNNING; OUTPUT ON UNIT 0560, DEVICE MVS 0560

*IAT7228 ISSUE START OR CANCEL FOR DJ (JOB00033) (0560)

```

Figure 18. Dump Job Successfully Initialized

The data set name for standard label tapes versus non-labeled tapes is different. For standard label tapes, the data set name has the following format:

```
jesn.DJ.Dyyyyddd.Thhmmss
```

where *jesn* is the JES3 subsystem name. For non-labeled tapes, the data set name is not unique and has the following format:

```
jesn.DJOUT
```

where *jesn* is the JES3 subsystem name.

To dump jobs to tape, issue the *START,DJ command and specify which jobs you want dumped. In this example, jobs in priority 4 will be dumped to tape:

```
*S,DJ,P=4
```

As a result of the *START command, dump, the requested jobs are dumped to tape:

Release Summary

```
*IEC501A M 0560,TAPVOL,SL,,IEESYSAS,DJ000034

...tape now mounted...

IAT7229 DJ0560 (JOB00033): SUCCESSFULLY DUMPED JOB JOB51      (JOB33436)
IAT7450 JOB JOB51      (JOB33436) PURGED
IAT7229 DJ0560 (JOB00033): SUCCESSFULLY DUMPED JOB JOB33      (JOB33435)
IAT7450 JOB JOB33      (JOB33435) PURGED
IAT7229 DJ0560 (JOB00033): SUCCESSFULLY DUMPED JOB JOB24      (JOB33434)
IAT7450 JOB JOB24      (JOB33434) PURGED
.
.
.
IAT7229 DJ0560 (JOB00033): SUCCESSFULLY DUMPED JOB JOB24      (JOB33434)
IAT7450 JOB JOB25      (JOB33433) PURGED
IAT7230 DJ0560 (JOB00033): DUMP PROCESSING COMPLETE FOR PRIORITY LEVEL 04
IAT7253 DJ0560 (JOB00033): 0000038 JOBS SUCCESSFULLY DUMPED TO TAPE
IAT7220 DJ0560 (JOB00033): FUNCTION COMPLETE ON UNIT 0560
*IAT7228 ISSUE START OR CANCEL FOR DJ (JOB00033) (0560)
```

You can now issue additional *START,DJ commands to dump other jobs to tape. When you are finished dumping jobs to tape, you can cancel the DJ DSP. As a result, the dump job server address space closes the tape data set and ends.

When you are finished dumping jobs, you cancel Dump Job by issuing the *C,DJ command.

```
*C,DJ

IEF234E R 0560,TAPVOL,PVT,IEESYSAS,DJ000034
IEF471E FOLLOWING VOLUMES NO LONGER NEEDED BY IEESYSAS
      TAPVOL.
IEF404I IEESYSAS - ENDED - TIME=16.37.00
IAT7200 DJ0560 (JOB00033): DUMP JOB DSP TERMINATING
IAT7450 JOB DJ      (JOB00033) PURGED
```

The dump job log is as follows:

```
*X DJ,SERVER=YES OUT=560
> OUT DSN=JES3.DJ.D1998091.T163039 - TAPVOL
*S DJ P=4
IAT7226 DJ0560 (JOB00033): JOB JOB999 (JOB32766) CANNOT BE DUMPED - IS ACTIVE
IAT7229 DJ0560 (JOB00033): SUCCESSFULLY DUMPED JOB JOB21      (JOB33414)
IAT7229 DJ0560 (JOB00033): SUCCESSFULLY DUMPED JOB JOB12      (JOB33413)
IAT7229 DJ0560 (JOB00033): SUCCESSFULLY DUMPED JOB JOB30      (JOB33418)
IAT7229 DJ0560 (JOB00033): SUCCESSFULLY DUMPED JOB JOB3      (JOB33420)
IAT7229 DJ0560 (JOB00033): SUCCESSFULLY DUMPED JOB JOB6      (JOB33438)
.
.
.
IAT7229 DJ0560 (JOB00033): SUCCESSFULLY DUMPED JOB JOB24      (JOB33434)
IAT7230 DJ0560 (JOB00033): DUMP PROCESSING COMPLETE FOR PRIORITY LEVEL 04
IAT7230 DJ0560 (JOB00033): DUMP PROCESSING COMPLETE FOR JOBS REQUEST
IAT7253 DJ0560 (JOB00033): 0000038 JOBS SUCCESSFULLY DUMPED TO TAPE
IAT7220 DJ0560 (JOB00033): FUNCTION COMPLETE ON UNIT 0560

*S DJ P=1
IAT7230 DJ0560 (JOB00033): DUMP PROCESSING COMPLETE FOR PRIORITY LEVEL 01
IAT7253 DJ0560 (JOB00033): NO JOBS SUCCESSFULLY DUMPED TO TAPE
IAT7220 DJ0560 (JOB00033): FUNCTION COMPLETE ON UNIT 0560
*C DJ
IAT7200 DJ0560 (JOB00033): DUMP JOB DSP TERMINATING
```

Figure 19. Dump Job Log, Server Mode, Dumping Jobs to Tape

Example - Restoring Jobs from Tape in Server Mode: The following is an example of restoring jobs from tape when dump job is in server mode. The *CALL to the Dump Job DSP occurs first. For standard label server mode requests, the DSN= parameter must specify the name of the data set that was created when the jobs were dumped to tape:

```
*X DJ IN=560 SERVER=YES DSN=JES3.DJ.D1998091.T163039
```

If a non-labeled tape was created when the jobs were dumped to tape, the VOL= parameter must be specified in addition to the DSN= parameter. You specify the VOL= parameter because non-labeled tapes are always created and cataloged with the data set name *jesn.DJOUT*. If you create multiple non-labeled tapes, JES3 needs to know the volume serial numbers (VOLSERs) to determine which instance of *jesn.DJOUT* you want to restore. For standard labeled tapes, the data set name that is generated and cataloged is unique.

```
*X DJ IN=560 SERVER=YES DSN=JES3.DJOUT,VOL=(TAPVOL,TAPVL2,TAPVL3)
```

After the *CALL command, a dump job server address space starts. The dump job server address space initializes and allocates the tape device.

```
IAT6306 JOB (JOB33530) IS DJ          , CALLED BY 01
IAT6100 ( DEMSEL ) JOB IEESYSAS (JOB33531), PRTY=15, ID=*UNKNOWN
IEF4031 IEESYSAS - STARTED - TIME=16.51.54
IAT5110 JOB IEESYSAS (JOB33531) USES      T TAPVOL ,SL JES3.DJ.D1998091.T163039
```

After the dump job server address space has successfully initialized, dump job issues the following messages to show that it is ready to begin restoring jobs from tape.

```
IAT7213 DJ0560 (JOB33530): UP AND RUNNING; INPUT ON UNIT 0560, DEVICE MVS 0560
*IAT7228 ISSUE START OR CANCEL FOR DJ (JOB33530) (0560)
```

To restore dump jobs from tape, issue the *START,DJ command and specify which jobs you want dumped. For example, assume restoring jobs in priority 4:

```
*S,DJ,P=4
```

As a result of the *START command, dump job restores the requested jobs from the tape:

```
*IEC501A M 0560,TAPVOL,SL,,IEESYSAS,DJ033530

...tape now mounted...

IAT7255 DJ0560 (JOB33530): JOB JOB21 (JOB33414) ENTERED INTO PRIORITY 04 AS JOB (JOB33414)
IAT7255 DJ0560 (JOB33530): JOB JOB12 (JOB33413) ENTERED INTO PRIORITY 04 AS JOB (JOB33413)
IAT7255 DJ0560 (JOB33530): JOB JOB30 (JOB33418) ENTERED INTO PRIORITY 04 AS JOB (JOB33418)
IAT7255 DJ0560 (JOB33530): JOB JOB3 (JOB33420) ENTERED INTO PRIORITY 04 AS JOB (JOB33420)
IAT7255 DJ0560 (JOB33530): JOB JOB6 (JOB33438) ENTERED INTO PRIORITY 04 AS JOB (JOB33438)
.
.
IAT7255 DJ0560 (JOB33530): JOB LABL560 (JOB33525) ENTERED INTO PRIORITY 02 AS JOB (JOB33525)
IAT7245 DJ0560 (JOB33530): END-OF-TAPE WHILE READING PRIORITY LEVEL 02
IAT7281 DJ0560 (JOB33530): RESTORE PROCESSING COMPLETED FOR PRIORITY LEVEL 02
IAT7386 DJ0560 (JOB33530): 0000038 JOBS SUCCESSFULLY RESTORED FROM TAPE
IAT7220 DJ0560 (JOB33530): FUNCTION COMPLETE ON UNIT 0560
*IAT7228 ISSUE START OR CANCEL FOR DJ (JOB33530) (0560)
```

Figure 20. Restoring Jobs from Tape in Server Mode

You can now issue additional *START,DJ commands to restore other jobs from tape.

When you are finished restoring jobs from tape, you use the *C,DJ command to cancel the DJ DSP; the dump job server address space closes the tape data set and ends.

```
*C,DJ

IEF234E R 0560,TAPVOL,PVT,IEESYSAS,DJ033530
IAT5410 KEEP T TAPVOL ON 0560,SY1
IEF471E FOLLOWING VOLUMES NO LONGER NEEDED BY IEESYSAS
TAPVOL.
IEF404I IEESYSAS - ENDED - TIME=17.08.34
IAT7200 DJ0560 (JOB33530): DUMP JOB DSP TERMINATING
IAT7450 JOB DJ (JOB33530) PURGED
```

The following shows the dump job log that was created

```
*X DJ,IN=560 SERVER=YES DSN=JES3.DJ.D1998091.T163039
> OUT DSN=JES3.DJ.D1998091.T163039 - TAPVOL
*S DJ P=4
IAT7255 DJ0560 (JOB33530): JOB JOB21 (JOB33414) ENTERED INTO PRIORITY 04 AS JOB (JOB33518)
IAT7255 DJ0560 (JOB33530): JOB JOB12 (JOB33413) ENTERED INTO PRIORITY 04 AS JOB (JOB33521)
IAT7255 DJ0560 (JOB33530): JOB JOB30 (JOB33418) ENTERED INTO PRIORITY 04 AS JOB (JOB33523)
IAT7255 DJ0560 (JOB33530): JOB JOB3 (JOB33420) ENTERED INTO PRIORITY 04 AS JOB (JOB33414)
IAT7255 DJ0560 (JOB33530): JOB JOB6 (JOB33438) ENTERED INTO PRIORITY 04 AS JOB (JOB33413)
.
.
IAT7255 DJ0560 (JOB33530): JOB LABL560 (JOB33525) ENTERED INTO PRIORITY 04
IAT7264 DJ0560 (JOB33530): END-OF-TAPE WHILE READING PRIORITY LEVEL 04
IAT7281 DJ0560 (JOB33530): RESTORE PROCESSING COMPLETED FOR PRIORITY LEVEL 04
IAT7386 DJ0560 (JOB33530): 0000038 JOBS SUCCESSFULLY RESTORED FROM TAPE
IAT7220 DJ0560 (JOB33530): FUNCTION COMPLETE ON UNIT 0560
*C DJ
IAT7200 DJ0560 (JOB33530): DUMP JOB DSP TERMINATING
```

Figure 21. Dump Job Log, Server Mode, Restoring Jobs from Tape

Example - Dumping Jobs to Tape in Non-Server Mode: The following is an example of dumping jobs to tape when dump job is in non-server mode. The *CALL to the Dump Job DSP creates a standard label tape on device 560. Device 560 must be varied online as a JES3 global device.

```
*V,560,ON
```

```
IAT5510 0560 VARIED ONLINE ON GLOBAL
```

```
*X,DJ,OUT=560,LABEL=SL,SERVER=NO
```

From the *CALL command, the Dump Job DSP allocates the tape device and issues the following messages. Unlike server mode, a data set is not created and cataloged in non-server mode.

```
IAT6306 JOB (JOB33568) IS DJ      , CALLED BY 01
IAT7213 DJ0560 (JOB33568): UP AND RUNNING; OUTPUT ON UNIT 0560, DEVICE T560
*IAT7214 DJ0560 (JOB33568): MOUNT TAPE ON UNIT 0560 FOR DJ OUTPUT
```

To dump jobs to tape, issue the *START,DJ command and specify which jobs you want dumped. For this example, assume jobs in priority 2 will be dumped to tape:

```
*S,DJ,P=2
```

When the *START,DJ command is issued, Dump Job issued message IAT7218 to ask you to mount a tape, if required:

```
IAT7218 DJ0560 (JOB33568): READY UNIT 0560, OR ISSUE '*START' OR '*CANCEL'
```

After the tape has been mounted, jobs are dumped to tape:

```
IAT7229 DJ0560 (JOB33568): SUCCESSFULLY DUMPED JOB JOB21      (JOB33414)
IAT7450 JOB JOB21      (JOB33414) PURGED
IAT7229 DJ0560 (JOB33568): SUCCESSFULLY DUMPED JOB JOB12      (JOB33413)
IAT7450 JOB JOB12      (JOB33413) PURGED
IAT7229 DJ0560 (JOB33568): SUCCESSFULLY DUMPED JOB JOB21      (JOB33532)
IAT7450 JOB JOB21      (JOB33532) PURGED
IAT7229 DJ0560 (JOB33568): SUCCESSFULLY DUMPED JOB JOB12      (JOB33533)
IAT7450 JOB JOB12      (JOB33533) PURGED
.
.
.
IAT7229 DJ0560 (JOB33568): SUCCESSFULLY DUMPED JOB LABL560    (JOB33525)
IAT7450 JOB LABL560    (JOB33525) PURGED
IAT7229 DJ0560 (JOB33568): SUCCESSFULLY DUMPED JOB LABL560    (JOB33566)
IAT7230 DJ0560 (JOB33568): DUMP PROCESSING COMPLETE FOR PRIORITY LEVEL 02
IAT7450 JOB LABL560    (JOB33566) PURGED
IAT7253 DJ0560 (JOB33568): 0000070 JOBS SUCCESSFULLY DUMPED TO TAPE
IAT7220 DJ0560 (JOB33568): FUNCTION COMPLETE ON UNIT 0560
*IAT7228 ISSUE START OR CANCEL FOR DJ (JOB33568) (0560)
```

Figure 22. Dumping Jobs to Tape in Non-Server Mode

You can now issue additional *START,DJ commands to dump other jobs to tape.

When you are finished dumping jobs to tape, you use the *C,DJ command to cancel the DJ DSP.

```
*C,DJ

IAT7200 DJ0560 (JOB33568): DUMP JOB DSP TERMINATING
IAT7450 JOB DJ      (JOB33568) PURGED
```

The following shows the dump job log that was created:

```

*X DJ,OUT=560 SERVER=NO
*S DJ P=2
IAT7229 DJ0560 (JOB33568): SUCCESSFULLY DUMPED JOB JOB21 (JOB33414)
IAT7229 DJ0560 (JOB33568): SUCCESSFULLY DUMPED JOB JOB12 (JOB33413)
IAT7229 DJ0560 (JOB33568): SUCCESSFULLY DUMPED JOB JOB21 (JOB33532)
IAT7229 DJ0560 (JOB33568): SUCCESSFULLY DUMPED JOB JOB12 (JOB33533)
IAT7229 DJ0560 (JOB33568): SUCCESSFULLY DUMPED JOB JOB30 (JOB33418)
IAT7229 DJ0560 (JOB33568): SUCCESSFULLY DUMPED JOB JOB30 (JOB33534)
IAT7229 DJ0560 (JOB33568): SUCCESSFULLY DUMPED JOB JOB3 (JOB33420)
IAT7229 DJ0560 (JOB33568): SUCCESSFULLY DUMPED JOB JOB3 (JOB33535)
.
.
IAT7229 DJ0560 (JOB33568): SUCCESSFULLY DUMPED JOB LABL560 (JOB33566)
IAT7230 DJ0560 (JOB33568): DUMP PROCESSING COMPLETE FOR PRIORITY LEVEL 02
IAT7253 DJ0560 (JOB33568): 0000070 JOBS SUCCESSFULLY DUMPED TO TAPE
IAT7220 DJ0560 (JOB33568): FUNCTION COMPLETE ON UNIT 0560
*C DJ
IAT7200 DJ0560 (JOB33568): DUMP JOB DSP TERMINATING
    
```

Figure 23. Dump Job Log, Non-Server Mode, Dumping Jobs To Tape

Example - Restoring Jobs from Tape in Non-Server Mode: The following is an example of restoring jobs from tape when dump job is in non-server mode. The process starts with issuing *CALL for the Dump Job DSP

```

*X DJ IN=560,SERVER=NO
    
```

As a result of the *CALL command, the Dump Job DSP allocates the tape device and issues the following messages. Unlike server mode, the operator must remember the volumes that need to be used and the order that they need to be mounted.

```

IAT6306 JOB (JOB33568) IS DJ , CALLED BY 01
IAT7213 DJ0560 (JOB33568): UP AND RUNNING; OUTPUT ON UNIT 0560, DEVICE T560
*IAT7214 DJ0560 (JOB33568): MOUNT TAPE ON UNIT 0560 FOR DJ OUTPUT
    
```

To restore dump jobs from tape, issue the *START,DJ command and specify which jobs you want dumped. For this example, assume restoring jobs in priority 2:

```

*S,DJ,P=2
    
```

As a result of the *START command, dump job restores the requested jobs from the tape:

```

IAT7255 DJ0560 (JOB33575): JOB JOB21 (JOB33414) ENTERED INTO PRIORITY 02 AS JOB (JOB33414)
IAT7255 DJ0560 (JOB33575): JOB JOB12 (JOB33413) ENTERED INTO PRIORITY 02 AS JOB (JOB33413)
IAT7255 DJ0560 (JOB33575): JOB JOB21 (JOB33532) ENTERED INTO PRIORITY 02 AS JOB (JOB33532)
IAT7255 DJ0560 (JOB33575): JOB JOB12 (JOB33533) ENTERED INTO PRIORITY 02 AS JOB (JOB33533)
.
.
IAT7255 DJ0560 (JOB33575): JOB LABL560 (JOB33566) ENTERED INTO PRIORITY 02 AS JOB (JOB33566)
IAT7245 DJ0560 (JOB33575): END-OF-TAPE WHILE READING PRIORITY LEVEL 02
IAT7281 DJ0560 (JOB33575): RESTORE PROCESSING COMPLETED FOR PRIORITY LEVEL 02
IAT7386 DJ0560 (JOB33575): 0000070 JOBS SUCCESSFULLY RESTORED FROM TAPE
IAT7220 DJ0560 (JOB33575): FUNCTION COMPLETE ON UNIT 0560
*IAT7228 ISSUE START OR CANCEL FOR DJ (JOB33575) (0560)
    
```

Figure 24. Restoring Jobs from Tape in Non-Server Mode

You can now issue additional *START,DJ commands to restore other jobs from tape. When you are finished restoring jobs from tape, you use the *C,DJ command to cancel the DJ DSP.

```
*C,DJ
```

```
IAT7200 DJ0560 (JOB33575): DUMP JOB DSP TERMINATING
IAT7450 JOB DJ          (JOB33575) PURGED
```

The following shows the dump job log that was created:

```
*X DJ,IN=560
*S DJ P=2
IAT7255 DJ0560 (JOB33575): JOB JOB21      (JOB33414) ENTERED INTO PRIORITY 02 AS JOB (JOB33414)
IAT7255 DJ0560 (JOB33575): JOB JOB12      (JOB33413) ENTERED INTO PRIORITY 02 AS JOB (JOB33413)
IAT7255 DJ0560 (JOB33575): JOB JOB21      (JOB33532) ENTERED INTO PRIORITY 02 AS JOB (JOB33532)
IAT7255 DJ0560 (JOB33575): JOB JOB12      (JOB33533) ENTERED INTO PRIORITY 02 AS JOB (JOB33533)
IAT7255 DJ0560 (JOB33575): JOB JOB30      (JOB33418) ENTERED INTO PRIORITY 02 AS JOB (JOB33418)
.
.
.
IAT7255 DJ0560 (JOB33575): JOB LABL560    (JOB33566) ENTERED INTO PRIORITY 02 AS JOB (JOB33566)
IAT7245 DJ0560 (JOB33575): END-OF-TAPE WHILE READING PRIORITY LEVEL 02
IAT7281 DJ0560 (JOB33575): RESTORE PROCESSING COMPLETED FOR PRIORITY LEVEL 02
IAT7386 DJ0560 (JOB33575): 0000070 JOBS SUCCESSFULLY RESTORED FROM TAPE
IAT7220 DJ0560 (JOB33575): FUNCTION COMPLETE ON UNIT 0560
*C DJ
IAT7200 DJ0560 (JOB33575): DUMP JOB DSP TERMINATING
```

Figure 25. Dump Job Log, Non-Server Mode, Restoring Jobs from Tape

JES3 Resource Affinity

JES3 processing is enhanced to exploit the resource affinity function provided by the workload manager function of OS/390 Version 2 Release 4. The resource affinity function allows the routing of batch jobs to systems for execution based on the availability of installation defined resources. For example,

- A job needs to run where DB2 or IMS is available.
- A job must run on systems where a particular product is licensed.
- A job is only allowed to run during third shift.
- A job needs to run on a system with specific hardware feature (vector facility, compression, cryptography).

Note: Resource affinity processing is not applicable to demand select jobs (TSO logons and started tasks).

To use the resource affinity function, the installation must first define scheduling environments and resources to WLM. A scheduling environment is a collection of resources and their required states. In order for a scheduling environment to be available on a particular system, all of its resources must be in their required states

In the following example, a scheduling environment called DB2LATE is defined to consist of two resources: DB2A and PRIMETIME. DB2LATE will be available on a particular system when resource DB2A is in the "ON" state and resource PRIMETIME is in the "OFF" state. See "MVS Planning: Workload Management" for more information on how to define scheduling environments and resources.

<i>Figure 26. DB2LATE Scheduling Environment (Offshift DB2 Processing)</i>		
Resource Name	Required State	Resource Description
DB2A	ON	DB2 Subsystem
PRIMETIME	OFF	Peak Business Hours

In order for a job to use a scheduling environment, the user must specify the SCHENV parameter on the JOB statement. For example:

```
//DB2JOB JOB (C003,6363), 'Joe User',
//          MSGLEVEL=(1,1),
//          CLASS=A,
//          SCHENV=DB2LATE
```

Note: The scheduling environment name is specified, not the list of resources.

A scheduling environment can also be assigned by a JES3 exit. Examples of exits that you can use to assign a scheduling environment to a job include:

- IATUX28 - Input service JOB statement exit
- IATUX29 - End of input service exit
- IATUX03 - C/I text exit
- IATUX09 - End of C/I exit

JES3 checks when the job's scheduling environment is available after a job has been scheduled for main service. The job will be selected for execution only if the job's scheduling environment is available on at least one system that is eligible to run the job. If the job's scheduling environment is not available on any systems, the job will wait in one of the following places:

- MDS allocation - If the scheduling environment is unavailable when resource allocation is performed.
- GMS select - If the scheduling environment is unavailable when JES3 attempts to select a job for execution.

JES3 listens for changes in the scheduling environment state and for WLM policy changes, then automatically requeues jobs or allows them to be selected for execution depending on the state of the scheduling environment.

Dynamic LPA Facility

In OS/390 Version 2 Release 6, JES3 allows LPA modules to be changed through a hot or local start without IPL and CLPA. This allows the installation to avoid an IPL when making changes to JES3 LPA modules.

To change JES3 LPA modules dynamically, you first use the SETPROG LPA command. For example, to change module IATSICA, you would issue the following command on your global and/or local processors:

```
SETPROG LPA,ADD,MODNAME=IATSICA,DSN=LNKLST
```

When the command completes, you then perform a hot or local start of JES3 without an IPL. JES3 picks up the new versions of the LPA modules during initialization.

JES3 APARs and PTFs include installation and activation information that define the type of JES3 and MVS restarts required to properly install the changes made by the APAR or PTF.

In the following example, an LPA module is being changed so a rolling IPL is required to apply the maintenance.

Change with Rolling IPL

Installation

- On (all processors)
- Order (Any)

Activation

- Order (Any)
- Type/JES3 restart (Hot)
- Type/IPL (Rolling)
- CLPA (Yes)

APARs which are eligible to be activated using the Dynamic LPA facility will have "DynLPA" included in the installation and activation information. For example:

Change with Rolling IPL/DynLPA

Installation

- On (all processors)
- Order (Any)

Activation

- Order (Any)
- Type/JES3 restart (Hot)
- Type/IPL (Rolling/DynLPA)
- CLPA (Yes)

Below are the eligible JES3 LPA modules that can be changed with the Dynamic LPA Facility:

JES3 Eligible LPA Modules for Dynamic LPA Facility

IATABIP	IATSENF	IATSIPJ	IATCNDS	IATSIAD	IATSIPT	IATDMBS	IATSI AI
IATSISA	IATDMDK	IATSIBD	IATSISO	IATDMDM	IATSIBS	IATSIST	IATDMDS
IATSICA	IATSITS	IATDMEB	IATSICC	IATSIVI	IATDMEN	IATSICD	IATSIVL
IATDMFR	IATSICF	IATSIVR	IATDMGR	IATSICN	IATSIWO	IATDMIT	IATSIDD
IATSI34	IATDMUB	IATSIEM	IATSSCM	IATGRAS	IATSIES	IATSSRE	IATGRRL
IATSIJS	IATUX32	IATGRSC	IATSINQ	IATUX57	IATIIII	IATSINU	IATUX58
IATMDEN	IATSIOD	IATUX59	IATMSEWL	IATSIOP	IATOSDI	IATSIOR	IATUX26

OS/390 Version 2 Release 5 JES3 Enhancements

Following are highlights for OS/390 Version 2 Release 5 to briefly describe what is new, changed, or deleted in the JES3 component of OS/390 Version 2 Release 5. Where appropriate, each summary briefly explains the purpose of the affected function, how the function worked before OS/390 Version 2 Release 5, how the function has changed in OS/390 Version 2 Release 5, as well as containing information that helps you perform any necessary migration actions.

The following list is the major functional changes included in OS/390 Version 2 Release 5:

1. JES3 Support of OS/390 Print Server
2. JES3 Support of IP Printway
3. Output Service Command Enhancements
4. Diagnostic Enhancements

JES3 Support of OS/390 Print Server

JES3 has changed to support allocation of and access to SYSOUT data sets by the OS/390 Print Server on behalf of clients. During dynamic allocation of a SYSOUT data set, the OS/390 Print Server requests JES3 to assign a client token (CTOKEN) to the data set. OS/390 Print Server later uses this token as a selection filter when it performs a subsystem interface (SSI) call to SAPI or Extended Status.

JES3 Support of IP Printway

JES3 output services is enhanced to support IP Printway, a feature of OS/390 Version 1 Release 3. Specifically, JES3 supports the specification of an IP address on the DEST= keyword in the //OUTPUT JCL statement and the OUTDES statement. JES3 support for the IP address includes FSS and system application printer interface support, command changes, networking support, output service writer and PSO implications.

Command Changes

*INQUIRY U, Q=WTR or Q=HOLD processing is enhanced to handle the IP address, FORMDEF and PAGEDEF.

- New IP= keyword allows for the display of SYSOUT containing the specified IP address. Specifying IP=? displays the IP address (if one exists) for all SYSOUT.
- New FD= keyword allows for the display of SYSOUT containing the specified FORMDEF. Specifying FD=? displays the FORMDEF (if one exists) for all SYSOUT.
- New PD= keyword allows for the displays of SYSOUT containing the specified PAGEDEF. Specifying PD=? displays the PAGEDEF (if one exists) for all SYSOUT.

*I U J=35 DD=? IP='KOLA@myhouse'

produces those output data sets containing the specified IP address and the IP address.

Note: You can use mixed case characters in the JCL for an IP address. But to properly select SYSOUT containing a specific IP address using the IP= keyword, you must enclose the IP address in quotes. If quotes are not used, error message IAT8143 is displayed.

```
*I U J=35 DD=? IP=KOLA@myhouse
```

produces:

IAT8143 SPECIFIC IP PARAMETER IS CASE SENSITIVE AND MUST BE ENCLOSED IN QUOTES

Note: Using IP=?, IP=ipaddr, FD=, and PD= causes JES3 to perform extra I/O. This processing will affect performance. If possible, use the J= keyword to limit the search to one job or the N=keyword to limit the number of jobs processed. For IP=?, the display is truncated after 84 characters.

In an OS/390 Release 5 JES3 system, the *INQUIRY U command with IP=? returns:

```
*I U J=? IP=? ID=? D=? N=ALL

IAT8131 JOB MARIOA (JOB00052), D=SAPI, T=PRT, ID=*, L=9, PG=0,
IAT8131 JOB MARIOA (JOB00052), SR=9, BY=4084, IP=N,
IAT8131 JOB MARIOA (JOB00052), D=PRT002, T=PRT, ID=*, L=18, PG=0,
IAT8131 JOB MARIOA (JOB00052), SR=18, BY=8168, IP=KOLA@myhouse.
IAT8131 JOB MARIOA (JOB00052), D=BRONX, T=PRT, ID=*, L=9, PG=0,
IAT8131 JOB MARIOA (JOB00052), SR=9, BY 4084, IP=THURMAN@also@myhouse.
IAT8131 JOB MARIOA (JOB00052), D=RI, T=PRT, ID=*, L=9, PG=0, SR=9,
IAT8131 JOB MARIOA (JOB00052), BY=4084, IP=MINNIE@ORIGIN.
IAT8131 JOB MARIOA (JOB00052), D=MARIO678, T=PRT, ID=*, L=9, PG=0,
IAT8131 JOB MARIOA (JOB00052), SR=9, BY=4084, IP=N,
IAT8131 JOB MARIOA (JOB00052), D=M, T=PRT, ID=*, L=9, PG=0, SR=9,
IAT8131 JOB MARIOA (JOB00052), BY=4084, IP=N.
IAT8119 NUMBER OF JOBS FOUND : 1
```

Figure 27. Information Provided by Inquiry Command (IP=?) with OS/390 Release 5

With OS/390 Release 5 JES3, the *INQUIRY command with IP=ipaddr returns:

```
*I U J=35 DD=? IP='KOLA@myhouse'

IAT8131 JOB MARIOA (JOB00052), T=PRT, L=9, PG=0,SR=9, BY=4084,
IAT8131 JOB MARIOA (JOB00052), COPIES=1, IP=KOLA@myhouse,
IAT8131 JOB MARIOA (JOB00052), DD=.STEP1.SYSUT2(1),
IAT8131 JOB MARIOA (JOB00052), DSN=+++++++.MARIOA.JOB00052.D0000008.?.
IAT8131 JOB MARIOA (JOB00052), T=PRT, L=9, PG=0, SR=9, BY=4084,
IAT8131 JOB MARIOA (JOB00052), COPIES=1, IP=KOLA@myhouse,
IAT8131 JOB MARIOA (JOB00052), DD=.STEP1.SYSUT2(1),
IAT8131 JOB MARIOA (JOB00052), DSN=+++++++.MARIOA.JOB00052.D0000008.?.
IAT8119 NUMBER OF JOBS FOUND : 1
```

Figure 28. Information Provided by Inquiry Command (IP=ipaddr) with OS/390 Release 5

With OS/390 Release 5 JES3, the *INQUIRY command with IP=N returns:

```
*I U J=? D=? ID=? IP=N

IAT8131 JOB MARIOA (JOB00052), D=SAPI, T=PRT, ID=*, L=9, PG=0,
IAT8131 JOB MARIOA (JOB00052), SR=9, BY=4084, IP=N,
IAT8131 JOB MARIOA (JOB00052), D=MARIO878, T=PRT, ID=*, L=9, PG=0,
IAT8131 JOB MARIOA (JOB00052), SR=9, BY=4084, IP=N,
IAT8131 JOB MARIOA (JOB00052), D=M, T=PRT, ID=*, L=9, PG=0, SR=9,
IAT8131 JOB MARIOA (JOB00052), BY=4084, IP=N
IAT8119 NUMBER OF JOBS FOUND : 1
```

Figure 29. Information Provided by Inquiry Command (IP=N) with OS/390 Release 5

With OS/390 Release 5 JES3, the *INQUIRY command with IP=Y returns:

```
*I U J=? D=? ID=? IP=Y

IAT8131 JOB MARIOA (JOB00052), D=PRT002, T=PRT, ID=*, L=18, PG=0,
IAT8131 JOB MARIOA (JOB00052), SR=18, BY=4084, IP=Y,
IAT8131 JOB MARIOA (JOB00052), D=BRONX, T=PRT, ID=*, L=9, PG=0,
IAT8131 JOB MARIOA (JOB00052), SR=9, BY=4084, IP=Y,
IAT8131 JOB MARIOA (JOB00052), D=RI, T=PRT, ID=*, L=9, PG=0, SR=9,
IAT8131 JOB MARIOA (JOB00052), BY=4084, IP=N
IAT8119 NUMBER OF JOBS FOUND : 1
```

Figure 30. Information Provided by Inquiry Command (IP=Y) with OS/390 Release 5

*MODIFY U, Q=WTR or Q=HOLD processing is enhanced to handle the IP address, FORMDEF, and PAGEDEF.

- The new IP= keyword allows for the selection of SYSOUT containing the specified IP address.
- The new NIP= keyword allows for the modification of the IP address to the specified IP address. If NIP=NONE is specified, the IP address is deleted.
- The new FD= keyword allows for the selection of SYSOUT containing the specified FORMDEF.
- The new NFD= keyword allows for the modification of the FORMDEF to the specified FORMDEF.
- The PD= keyword allows for the selection of SYSOUT containing the specified PAGEDEF.
- The new NPD= keyword allow for the modification of the PAGEDEF to the specified PAGEDEF .

Support for the IP address includes the use of mixed case characters in the JCL. To properly select SYSOUT containing a specific IP address using the IP= keyword, you must specify the IP address in quotes. If quotes are not used, error message IAT8143 is displayed. To properly modify the SYSOUT's IP address to a specific IP address, you use the NIP= keyword with the IP address specified in quotes. If quotes are not used, error message IAT8143 is displayed. Error message IAT8144 is displayed when you specify the NIP= and ND= keywords for a secondary destination. Examples of these conditions are below.

EXAMPLE

```
*F U,J=119,NIP=new.ipaddr

IAT8143 SPECIFIC NIP PARAMETER IS CASE SENSITIVE AND MUST BE
ENCLOSED IN QUOTES

*f U,J=119,NIP='new ipaddr',ND=Rome.Mario

IAT8144 INCORRECT COMBINATION OF USERID AND NIP=
```

With OS/390 JES3 Release 5, the results of using the *MODIFY U command to change SYSOUT without an IP address to SYSOUT containing an IP address is show in the example below.

EXAMPLE

```
*I U,J=119,REQ=all

IAT8131 JOB MARIOA (JOB00119), P=2, D=0002, SL=(NAVAIL), T=PRT,
IAT8131 JOB MARIOA (JOB00119), F=1PRT, C=6, U=PN, CH=GS10, FL=NONE,
IAT8131 JOB MARIOA (JOB00119), CM=(NONE,0), SS=C, CL=A, ID=*,
IAT8131 JOB MARIOA (JOB00119), OB=NONE, H=N, PM=LINE, L=44, PG=0
IAT8131 JOB MARIOA (JOB00119), SR=44, BY=20420, IP=N.
IAT8119 NUMBER OF JOBS FOUND : 1

*f U,J=119,NIP='This is the NEW IPADDR'

IAT8122 CHANGED JOB MARIOA (JOB00119)
IAT8119 NUMBER OF JOBS FOUND : 1

*I U,J=119,REQ=ALL

IAT8131 JOB MARIOA (JOB00119), P=2, D=0002, SL=(NAVAIL), T=PRT,
IAT8131 JOB MARIOA (JOB00119), F=1PRT, C=6, U=PN, CH=GS10, FL=NONE,
IAT8131 JOB MARIOA (JOB00119), CM=(NONE,0), SS=C, CL=A, ID=*,
IAT8131 JOB MARIOA (JOB00119), OB=NONE, H=N, PM=LINE, L=44, PG=0
IAT8131 JOB MARIOA (JOB00119), SR=44, BY=20420, IP=Y.

*I U,J=119,IP=?

IAT8131 JOB MARIOA (JOB00119), T=PRT, L=20, PG=0, SR=20, BY=20420
IAT8131 JOB MARIOA (JOB00119), IP=This is the NEW IPADDR.
IAT8119 NUMBER OF JOBS FOUND : 1

*I U,J=119,IP='This is the NEW IPADDR'

IAT8131 JOB MARIOA (JOB00119), T=PRT, L=20, PG=0, SR=20, BY=20420
IAT8131 JOB MARIOA (JOB00119), IP=This is the NEW IPADDR.
IAT8119 NUMBER OF JOBS FOUND : 1

*I U,J=119,IP='This is the New IPADDR'

IAT8121 NO OUTPUT FOR SELECTED OPTIONS, JOB NOT FOUND
```

With OS/390 JES3 Release 5, the *MODIFY U command to change SYSOUT with an IP address to one without an IP address is shown below:

EXAMPLE

```
*I U,J=132,IP=?  
  
IAT8131 JOB MARIOA (JOB00132), T=PRT, L=20, PG=0, SR=20, BY=20420  
IAT8131 JOB MARIOA (JOB00132), IP=MARIOA@VATICAN.CITY.  
IAT8119 NUMBER OF JOBS FOUND : 1  
  
*F U,J=132,NIP=NONE  
  
IAT8122 CHANGED JOB MARIOA (JOB00132)  
IAT8119 NUMBER OF JOBS FOUND : 1  
  
*I U,J=132,IP=?  
  
IAT8131 JOB MARIOA (JOB00132), T=PRT, L=20, PG=0, SR=20, BY=20420  
IAT8131 JOB MARIOA (JOB00132), IP=N.  
IAT8119 NUMBER OF JOBS FOUND : 1
```

FORMDEF and PAGEDEF characteristics can be displayed with the *INQUIRY,U command and can be changed with the *MODIFY,U command. This eliminates the need to rerun jobs when the FORMDEF and PAGEDEF are incorrect.

*CALL NJEROUT and *START NJEROUT processing is enhanced to handle the IP address.

The new NIP= keyword allows you to modify the IP address to a specified IP address. If NIP=NONE is specified, the IP address is deleted.

Support for IP address includes using mixed case characters in the JCL. To properly change the IP address, the IP address must be specified in quotes. If quotes are omitted, error message IAT8143 is displayed. The use of the NIP= and ID= keywords will result in the display of error message IAT8144. The example below illustrates the use of *S NJEROUT with the NIP= keyword.

EXAMPLE

```
*S NJEROUT,J=74,NIP=new,nje.IPADDR.without.quotes  
  
IAT8143 SPECIFIC NIP PARAMETER IS CASE SENSITIVE AND MUST BE ENCLOSED IN QUOTES  
  
*S NJEROUT,J=74,NIP='new nje IPADDR' to=rome id=mario  
  
IAT8144 INCORRECT COMBINATION OF USERID AND NIP=
```

With OS/390 JES3 Release 5, the example below illustrates the use of the *START NJEROUT command to change SYSOUT without an IP address to SYSOUT with an IP address.

EXAMPLE

```

*I U,J=?,Q=BDT

IAT8131 JOB MARIOA (JOB00122), D=NODDES, L=13, PG=0, SR=13, BY=8168
IAT8131 JOB MARIOA (JOB00122), BG=BDT000000.
IAT8119 NUMBER OF JOBS FOUND : 1
IAT8141 NUMBER OF BDT JOBS FOUND : 1
(NOTE: This SYSOUT was created without an IP address

*S NJEROUT,JG=(122,BDT00000),NIP='NJEROUT changed IPADDR',TO=*

IAT9201 JOB MARIOA (JOB00122), GROUPID (BDT00000) REROUTED TO
      (NODES) NEW JOB (JOB00122)
IAT9219 NJEROUT (RRT123 ) WAITING FOR START/RESTART/CANCEL REQUEST
IAT7450 JOB MARIOA (JOB00122) PURGED

*S NJEROUT,JG=(124,BDT00000),TO=home

IAT9201 JOB MARIOA (JOB00124) GOUPID (BDT00000) REROUTED TO
      (NODE1) NEW JOB (JOB00124)
IAT9219 NJEROUT (RRT123 ) WAITING FOR START/RESTART/CANCEL REQUEST
IAT7450 JOB MARIOA (JOB00124) PURGED

*I U,J=122,IP=?

IAT8131 JOB MARIOA (JOB00122), T=PRT, L=8, PG=0, SR=8, BY=8168
IAT8131 JOB MARIOA (JOB00122), IP=NJEROUT changed IPADDR.
IAT8119 NUMBER OF JOBS FOUND : 1

```

With OS/390 JES3 Release 5, the example below illustrates the use of the *START NJEROUT command to change SYSOUT having an IP address to SYSOUT without an IP address.

EXAMPLE

```

*I Q

IAT8674 JOB RACF      (JOB00003) P=15 CL=A   MAIN(EXECUTING-SY1
IAT8674 JOB SYSLOG   (JOB00001) P=15 CL=A   MAIN(EXECUTING-SY1
IAT8674 JOB DC       (JOB00011) P=15 DC(ACTIVE)
IAT8674 JOB NJEROUT  (JOB00129) P=15 NJEROUT(ACTIVE)
IAT8674 JOB MARIOA   (JOB00128) P=02 NJESND(SPEC RESCHED)
IAT8595 INQUIRY ON JOB QUEUE STATUS COMPLETE,      5 JOB DISPLAYED
(NOTE: This SYSOUT was created with an IPADDR.)

*S NJEROUT,J=128,NIP=none,TO=home

IAT9201 JOB MARIOA (NOB00128) REROUTED TO (NODE1 ), NEW JOB (JOB00127)
IAT9219 NJEROUT (RRT129 ) WAITING FOR START/RESTART/CANCEL REQUEST
IAT7450 JOB MARIOA (JOB00128) PURGED

*I U,J=127,IP=?

IAT8131 JOB MARIOA (JOB00127), T=PRT, L=8, PG=0, SR=8, BY=8168, IP=N.
IAT8119 NUMBER OF JOBS FOUND : 1

```

Networking Consideration

Scheduler work block (SWB) information is passed in the networking data set header. The IP address is passed in NJE processing as part of the SWB. JES3 is enhanced to process the IP address (if one exists) in the SWB passed in the networking data set header.

Process SYSOUT (PSO) Considerations

Any application using PSO will NOT be able to process IP addresses; the exception is a TSO user. JES3 is changed to ensure that a TSO user can process any SYSOUT, which is displayed to the user from the TSO STATUS command, by using the TSO OUTPUT command. The SYSOUT returned to the TSO user from the TSO OUTPUT command can contain an IP address. The TSO user is not informed that the SYSOUT contains an IP address and cannot select by using an IP address.

SAPI Changes

JES3 ensures that IP addresses are correctly processed by SAPI applications that can process IP addresses. See "Using the SSI Interface" for detailed information on how to process IP addresses.

FSS managed devices can inform JES3 of their ability to process IP addresses. For those FSS devices that do so, JES3 schedules SYSOUT containing an IP address to the device. For those devices that cannot do so, JES3 does not schedule SYSOUT an IP address to that device.

OS/390 Version 2 Release 4 JES3 Enhancements Enhancements

Following are highlights for OS/390 Release 4 to briefly describe what is new, changed, or deleted in the JES3 component of OS/390 Release 4. Where appropriate, each summary briefly explains the purpose of the affected function, how the function worked before OS/390 Release 4, how the function has changed in OS/390 Release 4, as well as containing information that helps you perform any necessary migration actions.

The following list is the major functional changes included in OS/390 Release 4:

1. Hot Start with Refresh
2. Segmented Initialization Stream
3. Faster JES3 Restart
4. JES3 Statistics
5. JES 64K Job Number Support
6. MVS COMMAND JCL Statement Support
7. Dynamic Configuration Change Support
8. Deletion of JES3LIB Support
9. Deletion of Initialization Stream Support from Card Readers

Hot Start with Refresh

A key item for OS/390 and Sysplex is to minimize the outages required to operate JES3. JES3, prior to OS/390 Release 4, requires at least a JES3 warm start (which implies a JES3 complex-wide restart with IPL of all processors) to change any keyword or parameter in the JES3 initialization stream. Beginning with this release, JES3 is changed to read the initialization stream during a hotstart without IPL to allow many of the parameters to be changed. A new start type called **hot start with refresh** is added to read the initialization stream and process certain initialization statements (for example, FSSDEF, RJPWS, non-execution DEVICE).

JES3 syntax checks initialization statements that are not processed. JES3 uses the last set of values from the last warm or cold start. If a statement is processed during a hot start with refresh, limited checking is performed for those parameters that are not processed during a hot start with refresh.

If a hot start with refresh fails, any changes that were made to the initialization stream will not be in effect. That is, a subsequent hot start obtains the configuration specifications from the **last** successful cold, warm, or hot start with refresh.

See “Hot Start With Refresh” on page 77 for further details.

Segmented Initialization Stream

Prior to this release of JES3 for OS/390 Release 4, the initialization stream must be contained as a single member of a partitioned data set, or must be specified as a single input stream by the operator when JES3 is started.

Beginning with OS/390 Release 4, JES3 provides support to allow the initialization stream to be segmented. That is, different sections of the initialization stream can be put into different members and included in the primary initialization stream member. For example, all RJPWS definitions can be put into a member “RJPWS” and included in the primary member.

You can now use a new initialization statement, **INCLUDE**, to specify a member whose contents are to be included in the initialization stream. The statement specifies a member in the data set specified on the JES3IN DD statement in JES3 procedure.

See “Segmented Initialization Stream” on page 83 for further details on the **INCLUDE** initialization stream statement.

Faster JES3 Restart

OS/390 Release 4 helps to minimize the delay that jobs in execution experience by reducing the amount of time necessary to restart the JES3 global processor. This performance enhancement is for global hot starts and warm starts.

This reduction is accomplished by initiating I/O in parallel during the phase of JES3 initialization which is responsible for validating job control blocks and reallocating the spool space assigned to jobs.

Depending on the amount and complexity of the job structure in your installation at the time of the JES3 global initialization, you might see an improvement in the restart time over previous releases of JES3 with this support.

JES3 Statistics

Beginning with OS/390 Release 4, statistics are collected about different JES3 functions such as initialization, connect/restart, and output service. The statistics are collected using a new macro **IATXSTAT**. Dump Core can be used to dump the statistics for JES3 diagnostic and problem determination purposes.

Dump Core has been enhanced to produce a mapping of the statistics data area for JES3 diagnostics and problem determination functions.

See “Dumping the Statistics Data Area (IATYSDA)” on page 100 for further details on the diagnostic facilities that can be used to view and process this data.

JES 64K Job Number Support

Prior to this release of JES3 for OS/390 Release 4, the maximum number of jobs in the JES3 complex was limited to 32,767 (32K) job numbers.

With OS/390 Release 4, JES3 allows up to 65,534 (64K) job numbers. Changes that result with this support occur in messages, the **OPTIONS JOBNO=** JES3 initialization statement, the **GROUP JSPAN=** JES3 initialization statement, various JES3 commands, and so on. See “JES 64K Job Number Support” on page 85 for additional information concerning the expansion of the allowable JES3 job number range.

MVS COMMAND JCL Statement Support

Prior to this release of JES3 for OS/390 Release 4, JES3 did not support the use of the MVS **COMMAND** JCL statement. If you attempted to use the statement in a JCL stream, it would be ignored by the system and no error message would be issued.

With OS/390 Release 4, JES3 supports the use of the MVS **COMMAND** JCL statement in a JCL stream.

See “MVS COMMAND JCL Statement Support” on page 85 for additional information concerning the use of the MVS **COMMAND** JCL statement.

Dynamic Configuration Change Support

***MODIFY,CONFIG** Command Addition

Prior to this release of JES3 for OS/390 Release 4, a limited amount of dynamic configuration change was allowed through the use of operator commands. An example of such a change is the use of the ***MODIFY,NJE,ADD=** nodename command that could be used to modify the NJE configuration in your installation.

With OS/390 Release 4, JES3 increases the amount of configuration changes, previously requiring a JES3 warm start, that are allowed to be made through an operator command. This new operator command is a new type of **MODIFY**, the ***MODIFY,CONFIG** command.

Note that with ***MODIFY,NJE,ADD=** operator command, all the parameters being processed are contained within the actual command itself. Unlike the NJE example, however, ***MODIFY,CONFIG** allows a subset of the JES3 initialization stream that resides in a member of the JES3 initialization data set, to be read in and added

dynamically. JES3 then makes the appropriate changes to its configuration without requiring a hot start with refresh or a warm start. Only certain types of initialization statements can be dynamically added using this new command.

See “Syntax of *MODIFY,CONFIG” on page 93 for further details on the use of the new *MODIFY,CONFIG operator command.

***MODIFY,T and *MODIFY W Command Changes**

Beginning with OS/390 Release 4, JES3 allows, through the use of the operator commands *MODIFY,T and *MODIFY,W, the ability to modify various SNA and RJP workstation configuration information. For the particulars, see “Dynamic Configuration Change Support - *MODIFY,T and *MODIFY,W” on page 94 for additional information on these command changes.

Deletion of JES3LIB Support

Prior to this release of JES3 for OS/390 Release 4, the use of the **JES3LIB** initialization stream statement can be used to dynamically allocate a private JES3 step library. The concatenation specified through these JES3LIB statements completely replaced any STEPLIB definition defined in the JES3 and JES3CI procedures.

With OS/390 Release 4, JES3 no longer supports the JES3LIB initialization stream statement.

See “Deletion of JES3LIB Support” on page 86 for further details on the removal of JES3LIB support.

Deletion of Initialization Stream Support from Card Readers

With OS/390 Release 4, the support to allow the initialization stream to be read from a card reader (“U=” in message IAT3012) is deleted.

See “Deletion of Initialization Stream Support from Card Readers” on page 85 for further details on the removal of JES3 initialization stream support from a card reader.

OS/390 Version 1 Release 3 Enhancements

Following are highlights for OS/390 Version 1 Release 3 JES3 to briefly describe what is new, changed, or deleted in OS/390 Version 1 Release 3 JES3. Where appropriate, each summary briefly explains the purpose of the affected function, how the function worked before OS/390 Version 1 Release 3 JES3, how the function has changed in OS/390 Version 1 Release 3 JES3 and might also contain information to help you to perform any necessary migration actions.

JES FSS Interface Example

Beginning with this release, a Functional Subsystem (FSS) Interface example is provided as a working illustration of how you might implement FSI functions. This example is meant as a starting point for applications programmers to develop their own FSS applications, that can include functions such as driving output devices, for example, plotters and microfiche writers, or other devices.

This FSS Interface Example is provided in SYS1.SAMPLIB and consists of several members. For more information about the FSS Interface Example, see *OS/390 MVS Using the Functional Subsystem Interface*.

SYSOUT Application Program Interface Enhancements (SAPI)

JES controls all SYSOUT processing. SYSOUT is system-produced output; that is, all output produced by or for a job. This output includes system messages that must be printed, as well as data sets requested by the user that must be printed or punched. After a job finishes, JES analyzes the characteristics of the job's output in terms of its output class and device setup requirements. JES then groups data sets with similar characteristics and queues the output for print or punch processing, or to be viewed or sent across the network.

Process SYSOUT (PSO) is an interface used to process the output on the writer and hold queues. The PSO interface allows applications to view output on the JES spool data sets before a device prints the output allowing the end user to eliminate any unwanted output.

The Process SYSOUT interface (PSO) is enhanced through a new SSI interface (new subsystem function code 79 is used) to process SYSOUT data sets from JES. This new general-use programming interface (GUPI) interface, system application printer interface (SAPI), provides a platform for application development for on-demand SYSOUT viewing, printing and modification to compliment the traditional role of JES printing. Many PSO requirements have been addressed with this SAPI support. SAPI provides applications the following enhancements:

- Supports multiple SAPI 'sessions' between an application and JES, allowing for processing of multiple concurrent requests of SYSOUT data sets
- Supports three types of processing:
 - PUT/GET (Normal PSO processing)
 - COUNT (Return the number of data sets, including line, page, record and byte counts, matching the selection criteria)
 - BULK MODIFY (Modify data set attributes of all data sets matching selection criteria)
- Supports selection of SYSOUT data sets through an expanded selection criteria (27 selection fields in SAPI compared to 8 in PSO).
- Supports the use of wild cards for selection through jobname, form numbers, external writer name, destination, creator userid, and prmode.
- Supports a greater number of SYSOUT data set characteristics/information to be returned to the application (59 for SAPI compared to 16 for PSO).
- Supports scheduler work block (SWB) processing by returning a SWB token for SJFREQ processing and/or returning a SWBTU block address for SWBTUREQ processing by the application.
- Support is identical for held and non-held SYSOUT.
- Support is through a common JES2/3 interface - with minor exceptions, the application need not be concerned with the JES with which it is interfacing

For more information about SSI function code 79, see *OS/390 MVS Using the Subsystem Interface*.

Modifying Applications to Begin Using System Application Printer Interface

There is **no** need to migrate existing applications that currently use PSO (SSI function code 1). If you choose to exploit the new facilities of System Application Printer Interface, you must follow these guidelines in converting your applications from using PSO to System Application Printer Interface :

1. Specify the IAZSS2 (SSS2) mapping macro wherever the IEFSSO (SSSO) mapping macro was previously specified.
2. Ensure GETMAIN/FREEMAIN processing obtains enough storage for the IAZSS2 macro included in the SSOB extension.
3. Initialize the entire IAZSS2 mapping macro with zeros. Fill in eye catcher, length, version, and type fields.
4. Change all references of SSSO to SSS2.

In many cases, the names of the fields from the IEFSSO to the IAZSS2 have the **SSSO** prefix changed to the **SSS2** prefix. However, fields in the SSSO that are both input and output fields have been separated into two, distinct, fields in the new SSS2. Examine all references to the SSSO making sure that the appropriate fields in the SSS2 are being used to provide the same function that your application expects.

5. Before allocating the returned data set from an IEFSSREQ request, create a DALBRTKN text unit for the allocation request and move the contents of field SSS2BTOK into the text unit pointer for DALBRTKN.
6. Provide a pointer, in field SSS2ECBP, to the ECB to be posted when EOD is returned to the application if you need to be posted when new work becomes available that satisfies the current selection criteria.
7. Set field SSS2TYPE to SSS2PUGE for normal data set processing. If the application use PSO to dispose of multiple data sets (for example, when flag SSSOUFLG is updated), field SSS2TYPE must be updated with SSS2BULK and SSS2UFLG updated with the proper modification flag.
8. Handle the 'true' data set returned copy count.
9. Data set disposition is no longer performed by unallocation. The data set disposition section of the SSS2 must be updated with disposition information prior to issuing the IEFSSREQ macro for the next data set. The fields in the disposition section are used to determine what is to be done with the data set that was last returned to the application and that is now being disposed.

Output Service Database Changes

SYSOUT characteristics for data sets on the HOLD queue are created with default characteristics that are identical to those of the data sets on the writer queue. No changes have been made to `/*FORMAT` statement processing. That is, they will **not** be applied to SYSOUT created on the HOLD queue but will continue to be applied to data sets moved from the HOLD queue to the writer queue.

When JES3 receives a SYSIN/SYSOUT data set via SNA/NJE, and the writer name is "NJERDR," there is a need to maintain output characteristics that are compatible with BDT. JES3 ensures that OSEs created for routed BDT SYSOUT and SYSIN, identified by a writer name of "NJERDR" will not incorporate characteristics from the SYSOUT Class Table (SCT). All other output on the HOLD queue continues to merge SCT characteristics into the OSEs.

JES3 creates SYSOUT on the HOLD queue in a similar way as it does for the WTR queue. JES3 does this by incorporating characteristics from the SYSOUT class table for OSEs that are created on the HOLD queue. When specifying COPIES=0 for SYSOUT, JES3 does not create any SYSOUT on the HOLD queue. For COPIES greater than zero, JES3 does incorporate characteristics from the SYSOUT class table for OSEs created on the HOLD queue. Those data sets created by SNA/NJE with a writer name of "NJERDR" are always created by ensuring that the copy count in the OSE is "1". For any other data set that has a copy count of zero, you can use exit 19 (IATUX19) to ensure that the data set is also not deleted.

Output Service Inquiry Command Changes

INQUIRY command processing for data sets on the HOLD queue now includes additional characteristic information that is returned to the issuer of the command. For example, assume the JCL that is shown in Figure 31 has been executed, and view the results of the *INQUIRY,U command in both OS/390 Version 1 Release 1 (Figure 32) and OS/390 Version 1 Release 3 (Figure 33).

```
//OUT1      OUTPUT  OUTBIN=2,PRMODE=PAGE
//SYSPRINT DD   SYSOUT=Z,FCB=STD3,
//          UCS=QNC,CHARS=GU12,FLASH=ABCD
//SYSUT2   DD   SYSOUT=Z,COPIES=3,
//          BURST=YES,OUTPUT=(*.OUT1)
```

Figure 31. JCL Used for Demonstrating Changes in INQUIRY Command Processing

In an OS/390 Release 1 JES3 system, the *INQUIRY command returns:

```
*I U J=27 Q=HOLD REQ=ALL

IAT8131 JOB HOLDQ1 (JOB00027), P=2, D=ANYLOCAL, DSID=*,
IAT8131 JOB HOLDQ1 (JOB00027), SL=(NAVAIL), W=*, F=1PRT, CL=Z,
IAT8131 JOB HOLDQ1 (JOB00027), ID=*, L=4, PG=0, SR=4.
IAT8131 JOB HOLDQ1 (JOB00027), P=2, D=ANYLOCAL, DSID=*,
IAT8131 JOB HOLDQ1 (JOB00027), SL=(NAVAIL), W=*, F=1PRT, CL=Z,
IAT8131 JOB HOLDQ1 (JOB00027), ID=*, PM=PAGE, L=27, PG=0, SR=27.
IAT8119 NUMBER OF JOBS FOUND : 1
```

Figure 32. Information Provided by Inquiry Command with OS/390 Release 1

With OS/390 Release 3 JES3, the *INQUIRY command returns:

```
*I U J=52 Q=HOLD REQ=ALL

IAT8131 JOB HOLDQ1 (JOB00052), P=2, D=ANYLOCAL, DSID=*,
IAT8131 JOB HOLDQ1 (JOB00052), SL=(NAVAIL), W=*, F=1PRT, C=STD3,
IAT8131 JOB HOLDQ1 (JOB00052), U=QNC, CH=GU12, FL=ABCD,
IAT8131 JOB HOLDQ1 (JOB00052), CM=(NONE,0), SS=C, CL=Z, ID=*,
IAT8131 JOB HOLDQ1 (JOB00052), OB=NONE, H=N, PM=LINE, L=4, PG=0,
IAT8131 JOB HOLDQ1 (JOB00052), SR=4, BY=4084.
IAT8131 JOB HOLDQ1 (JOB00052), P=2, D=ANYLOCAL, DSID=*,
IAT8131 JOB HOLDQ1 (JOB00052), SL=(NAVAIL), W=*, F=1PRT, C=6,
IAT8131 JOB HOLDQ1 (JOB00052), U=PN, CH=GS10, FL=NONE,
IAT8131 JOB HOLDQ1 (JOB00052), CM=(NONE,0), SS=S, CL=Z, ID=*,
IAT8131 JOB HOLDQ1 (JOB00052), OB=2, H=N, PM=PAGE, L=27, PG=0,
IAT8131 JOB HOLDQ1 (JOB00052), SR=27, BY=4084.
IAT8119 NUMBER OF JOBS FOUND : 1
```

Figure 33. Information Provided by Inquiry Command with OS/390 Release 3

INQUIRY command processing now allows you to select work by data set byte count using a new parameter, **BY=**. This new parameter is applicable to the writer (**WTR**), **HOLD**, and **BDT** queues. A **minus sign (-)** can be used to select data sets that have a specified maximum byte count. Excluding the minus sign indicates data set selection has a specified minimum byte count. The ability to specify a minus sign has also been added to selection processing for the line (the **L=** parameter) and page counts (the **PG=** parameter). See Figure 34 where The byte count is displayed in the message.

```
*I U,J=55

IAT8131 JOB SAPIWK (JOB00055), T=PRT, L=154, PG=0, SR=154, BY=24504.
IAT8119 NUMBER OF JOBS FOUND : 1

*I U,J=55 DD=?

IAT8131 JOB SAPIWK (JOB00055), T=PRT, L=4, PG=0, SR=4, BY=4084,
IAT8131 JOB SAPIWK (JOB00055), COPIES=1, DD=..JESMSG LG(1),
IAT8131 JOB SAPIWK (JOB00055),
DSN=+++++ .SAPIWK.JOB00055.D0000002.JESMSG LG.
IAT8131 JOB SAPIWK (JOB00055), T=PRT, L=51, PG=0, SR=51, BY=4084,
IAT8131 JOB SAPIWK (JOB00055), COPIES=1, DD=..JESJCL(1),
IAT8131 JOB SAPIWK (JOB00055),
DSN=+++++ .SAPIWK.JOB00055.D0000003.JESJCL.
IAT8131 JOB SAPIWK (JOB00055), T=PRT, L=46, PG=0, SR=46, BY=4084,
IAT8131 JOB SAPIWK (JOB00055), COPIES=1, DD=..JESYSMSG(1),
IAT8131 JOB SAPIWK (JOB00055),
DSN=+++++ .SAPIWK.JOB00055.D0000004.JESYSMSG.
IAT8131 JOB SAPIWK (JOB00055), T=PRT, L=4, PG=0, SR=4, BY=4084,
IAT8131 JOB SAPIWK (JOB00055), COPIES=1, DD=.STEP1.SYS PRINT(1),
IAT8131 JOB SAPIWK (JOB00055), DSN=+++++ .SAPIWK.JOB00055.D000000D
IAT8131 JOB SAPIWK (JOB00055), T=PRT, L=4, PG=0, SR=4, BY=4084,
IAT8131 JOB SAPIWK (JOB00055), COPIES=1, DD=.STEP2.SYS PRINT(1),
IAT8131 JOB SAPIWK (JOB00055), DSN=+++++ .SAPIWK.JOB00055.D000000F
IAT8131 JOB SAPIWK (JOB00055), T=PRT, L=9, PG=0, SR=9, BY=4084,
IAT8131 JOB SAPIWK (JOB00055), COPIES=5, DD=.STEP2.SYSUT2(1),
IAT8131 JOB SAPIWK (JOB00055), DSN=+++++ .SAPIWK.JOB00055.D0000010
IAT8119 NUMBER OF JOBS FOUND : 1
```

Figure 34. *INQUIRY Example Showing Byte Count. Note when using the data set ddname option (DD=), the sum of the individual data set counts (BY=) equals the total sum shown for the job without the DD= operand.

New HOLD Queue Parameters: The following parameters can now be used to select work on the **HOLD** queue (refer to for additional details concerning the *INQUIRY U,Q=HOLD command):

BY= Number of bytes
C= Carriage (FCB)
CH= Character table
CM= Copy modification
FL= Flash
H= Hold status
OB= Printer output bin id
PM= Process mode
SS= Burster-Trimmed-Stacker (BTS)
U= UCS (Train)

New BDT Queue Parameters: The following parameters can now be used to select work on the **BDT** queue (refer to *OS/390 JES3 Commands* for additional details concerning the *INQUIRY U,Q=BDT command):

BY= Number of bytes
L= Number of lines
PG= Number of pages

New WTR Queue Parameters: The following parameters can now be used to select work on the **WTR** queue (refer to *OS/390 JES3 Commands* for additional details concerning the *INQUIRY U,Q=WTR command):

BY= Number of bytes

Output Service Modify Command Changes

MODIFY command processing for data sets on the **HOLD** queue includes additional selection characteristics. You can now select work by data set byte count using a new parameter, **BY=**. This new parameter is applicable to the writer (**WTR**), **HOLD**, and **BDT** queues. A **minus sign (-)** can be used to select data sets having a specified maximum byte count. Excluding the minus sign indicates data set selection has a specified minimum byte count. The minus sign option has also been added to selection processing using the line (the **L=** parameter) and page counts (the **PG=** parameter).

Additional MODIFY command changes include the **NCL=** parameter, and the **NQ=** keyword on the writer queue. Using the **NQ=HOLD** parameter on the writer queue does not undo any **//*FORMAT** merge that might have occurred.

Modification of data sets on the **HOLD** queue does **not** cause the data set to be reprocessed by Output Service as a result of a ***MODIFY U** command unless one or more of the following conditions exist:

- Format parameter buffer (FRPs) exist
- The SYSOUT class is being changed (NCL= is specified)
- The external writer name is being changed (NW= is specified) and the existing JDS does not have a writer name already associated with it
- The data set id for the 3540 is being changed (NDSID= is specified) and the existing JDS does not have a data set id already associated with it

New HOLD Queue Parameters: The following parameters can now be used to select/modify work on the **HOLD** queue (refer to *OS/390 JES3 Commands* for additional details concerning the *MODIFY U,Q=HOLD command):

BY= Number of bytes
C= Carriage (FCB)
CH= Character Table
CM= New Copy Modification
FL= Flash
H= Hold Status
OB= Printer output bin id
PM= Process Mode
SS= Burster-Trimmed-Stacker (BTS)
U= UCS (Train)
NC= New Carriage (FCB)
NCH= New Character Table

NCM= New Copy Modification
NFL= New Flash
NH= New Hold
NOB= New printer output bin id
NPM= New Process Mode
NSS= New Burster-Trimmed-Stacker (BTS)
NU= Change UCS

New BDT Queue Parameters: The following parameters can now be used to select work on the **BDT** queue (refer to *OS/390 JES3 Commands* for additional information concerning the *MODIFY U,Q=BDT command):

BY= Number of bytes
L= Number of Lines
PG= Number of Pages

New WTR Queue Parameters: The following keywords can now be used to select/modify work on the **WTR** queue (refer to *OS/390 JES3 Commands* for additional details concerning the *MODIFY U,Q=WTR command):

BY= Number of bytes
NCL= New SYSOUT class
NQ= New queue

Output Service BDT Changes

BDT MOSEs are now anchored on a separate chain from regular SYSOUT. This will facilitate SNA/NJE, JES managed device and external writer selection of work.

BDT MOSE will now contain only the destination of the SYSIN/SYSOUT. The GROUPID has been moved into the OSS entry. The line count, page count, record count, and byte count are returned in response to an *I U Q=BDT request. Deletion of BDT work that can be performed through the *F U Q=BDT command can now include selection by line, page, and byte count. The byte count is provided as input to installation exit IATUX66 to assist in setting the BDT transmission priority.

SSI Function Code 54 Enhancements

Servers need to know which SYSOUT classes have the HOLD characteristic so they can supply a default MSGCLASS for work submitted on behalf of their clients. JES3 now supplies information about classes for the writer queue, HOLD for TSO queue, and HOLD for external writer queue through the SSI 54 function. Information is not supplied for:

- Classes defined with a copy count of 0
- Classes defined as HOLD for TSO **and** HOLD for external writer
- Classes defined with NJE destination.

SSI function code 54 has been updated with the following new keywords:

SAPI=YES	Indicates that system application printer interface is supported by this JES.
SAPI_PRTY_SELECT=NO	Indicates that selection, based on priority, is not supported.

SAPI_VOL_SELECT=NO	Indicates that selection, based on the volume serial, is not supported.
SAPI_IP_SELECT=NO	Indicates that selection, based on internet protocol, is not supported.
WTR_SYSOUT_CLASS='class(es)'	Indicates the SYSOUT class(es) for which output is placed on the JES3 writer queue.
TSO_SYSOUT_CLASS='class(es)'	Indicates the SYSOUT class(es) for which output is placed on the HOLD queue, and is held for TSO/E.
EXW_SYSOUT_CLASS='class(es)'	Indicates the SYSOUT class(es) for which output is placed on the HOLD queue and is held for external writers.

SSI function code 54 has also been updated with additional keywords that JES3 does not return, but JES2 does, such as SAPI_CHARS=NO.

For more information about SSI function code 54, see *OS/390 MVS Using the Subsystem Interface*.

Serviceability Enhancements

JES3 IPCS dump formatting modules have been changed to recognize two new options on the IPCS VERBEXIT (VERBX) JES3 command. Specifying VERBX JES3,OPTION=SAPI allows JES3 to format the data relating to the system application printer interface SSI function. Specifying VERBX JES3,OPTION=COW allows JES3 to format the IATYCOW (Client Output Work Area) control blocks that exist in the JES3SAPI data space.

To support the IPCS changes, the following existing parts have been updated:

- JCLIN HJS6603 is updated to identify the new modules
- Parmlib member IATIPCSP is updated to define structure names for all the new models
- Table IATIPCSC is updated to define the new models to IATJIPCS
- Table IATIPCSS is updated to define the new option on the VERBX JES3 command to IATJIPCS

Year 2000 Support for JES3

JES3 as OS/390 Version 1 Release 2 is "Year 2000 Compliant." For OS/390 Version 1 Release 3 — JES3 there is one additional APAR, OW24107 that applies to JES3.

All JES3 dates previously stored using the executable macro IATXTOD were returned in the format 00YYDDDDF. This format is changed to 0CYDDDDF, similar to the output of the TIME LINKAGE=SVC macro, and the format of field CVTDATE has a "01" in the high-order byte for years beyond 2000 up to 2099.

This change is upward compatible and preserves the current storage in the for 00YYDDDDF for the years between 1900 and 1999. Also, this change applies to items such as, SMF record date fields (for example, SMF6DTE), JMRDATE, WTRDATE, and the date passe to the external writer from SSSOWTRC

OS/390 Version 1 Release 2 JES3 Enhancements

Following are highlights for OS/390 Version 1 Release 2 JES3 to briefly describe what is new, changed, or deleted in OS/390 Version 1 Release 2 JES3. Where appropriate, each summary briefly explains the purpose of the affected function, how the function worked before OS/390 Version 1 Release 2 JES3, how the function has changed in OS/390 Version 1 Release 2 JES3 and might also contain information to help you to perform any necessary migration actions.

Year 2000 Support for JES3

JES3 supports dates beyond the year, 1999. JES3 displays dates in several places, including output listings, messages, job separator pages, and records.

In previous releases of JES3, some date fields displayed only the last two digits of the year, not allowing for a century indicator. For example, the IAT3100 message displayed the date in the form of yy.ddd (in 1996, IAT3100 displays 96.ddd). However, in the year 2000, the message would display 00.ddd, without indicating the century. These dates were stored in the format of 00YYDDDF, using the executable macro IATXTOD.

Beginning with OS/390 Release 2 JES3, with APARs OW16161 and OW18724, the format of dates stored using IATXTOD is changed to 0CYDDDF. These APARs provide a downward compatible change, through Version 5, and preserves the current storage in the form 00YYDDDF for years between 1900 and 1999. This includes SMF record fields, JMREDATE, WTRDATE, the date passed to the external writer from SSSOWTRC, and so forth.

Other changes include:

- The date in the JES3 hardcopy log (DLOG) format has also been changed to be consistent with the date format in SYSLOG.

Old Format	New Format
YYDDD	YYDDD or YYYYDDD

- The DEADLINE= keyword of the `//*MAIN JECL` statement now supports 4-digit years.

Old Format	New Format
MMDDYY	MMDDYY or MM/DD/YYYY

- IATUX20 (Job Separator Exit) has been changed to format the 4-digit date on the separator page.

Old Format	New Format
DD MMM YY	DD MMM YYYY

- The JES3 messages in the figure below are changed to support 4-digit years:

<i>Figure 35. Messages Enabled for Dates Beyond 1999</i>		
Message	Old Format	New Format
IAT3100	YY.DDD	YYYY.DDD
IAT3123	YY.DDD	YYYY.DDD
IAT7945	month day year	(See note)
IAT8517	DDD YY	DDD YYYY
Note: The format of the message remains the same, however the value '19' is no longer hard-coded in the message text to denote the century.		

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

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

- *MVS/ESA SP V5 Planning: Installation and Migration JES2.*
- *MVS/ESA SP V5 Planning: Installation and Migration JES3.*
- *Conversion Notebook for System Product Version 5.*
- *Conversion Notebook for System Product Version 4.*
- *Conversion Notebook for System Product Version 3.*
- *Conversion Notebook for System Product Version 2.*

OS/390 Version 1 Release 1 JES3 Enhancements

Following are highlights for OS/390 Version 1 Release 1 JES3:

- Support to enable JES3 as an optional element in OS/390
- Library Restructure
- New Exit IATUX68 (Modify Local NJE Job Trailers)
- New Exit IATUX71 (Modify a Tape Request Setup Message)
- Tape utilities are deleted.

The following summaries briefly describe what is new, changed, or deleted in OS/390 Version 1 Release 1 JES3. Where appropriate, each summary briefly explains the purpose of the affected function, how the function worked before OS/390 Version 1 Release 1 JES3, how the function has changed in OS/390 Version 1 Release 1 JES3 and might also contain information to help you to perform any necessary migration actions.

OS/390 Enablement

Beginning with this release, OS/390 provides the ability to enable or disable the JES3 product as part of a combination of elements in OS/390.

MVS provides a service which communicates the enable/disable status, current execution status and level of 'registered' products to other products. You can enable the feature through the Product Enablement Policy parmlib member IFAPRDxx. In this member, you provide:

- The product owner, which is "IBM_CORP"

- The product name, which is "OS/390"
- The feature number, which is "5645-001".

See *OS/390 Planning for Installation* for more information about enabling JES3.

Library Restructure

Beginning with this release, JES3 has updated the names of the JES3 libraries, and their associated DD names, to conform to OS/390 standards. IBM recommends that data sets be named: SYS1.V1R1M0.dddef-name. You can use sample JCL in members, IATJALC, for allocating and cataloging target and distribution libraries; and you can use IATJDDEF for creating target and distribution DDDEFs. For more information about using sample JCL, see *MVS/ESA Program Directory: JES3*.

Support To Modify Local NJE Job Trailers

Beginning with this release, OS/390 Version 1 Release 1 JES3 now supports the modification of local NJE job trailers through the use of the new installation exit IATUX68. This installation exit allows you to view and modify a job trailers (mapped by IATYNJT) for a network SYSOUT stream after JES3 or MVS/BDT receives the network stream to be processed at this node.

See *OS/390 JES3 Customization* for more information about this exit.

Support To Modify a Tape Request Setup Message

Beginning with this release, OS/390 Version 1 Release 1 JES3 now supports the modification of tape request setup messages through the use of the new installation exit IATUX71. This exit is a main device scheduler (MDS) routine that can be used to modify one of the following JES3 tape request setup messages: IAT5110, IAT5210, IAT5410, or IAT5420.

See *OS/390 JES3 Customization* for more information about this exit.

Tape Utilities Deleted

Beginning with this release, OS/390 Version 1 Release 1 JES3 no longer supports the following tape utilities:

- TL - tape label
- TP - tape-to-print
- TT - tape-to-tape
- TD - tape dump

These utilities are obsoleted. IBM recommends using *DITTO/ESA* (5655-103). Refer to *DITTO/ESA User's Guide and Reference* for detailed information on using this product for tape functions. Some messages are also deleted in combination with this change. See *OS/390 JES3 Messages* for a list of the deleted messages.

Release Summary

Chapter 4. Migration Actions: JES3 SP5.2.1 to JES3 V1R1

Coexistence, Migration, and Fallback

For all JES3 migrations, review the information APAR II11768 for any APARs that must be applied to allow coexistence with other JES3 releases, migration to particular JES3 releases, and fallback to JES3 releases.

Initialization

Considerations for Enabling the JES3 Feature of OS/390

JES3 can be enabled as an feature of OS/390.

Migration Actions

You must set up the IFAPRDxx member in SYS1.PARMLIB correctly to enable JES3. For more information on enabling JES3, see *OS/390 Planning for Installation*.

Also, OS/390 JES3 must be installed on the global processor. If you are migrating from JES3 SP5.2.1, an IPL, hot start on the global processor is required; however it is not necessary to migrate the local processors at the same time.

If your release of JES3 is lower than JES3 SP5.2.1, you must migrate the global, as well as all local processors, and perform a complex-wide IPL with a warm start.

Installation Modifications

Considerations for Changed Library Names and Associated DD Names

Beginning with OS/390 Version 1 Release 1 JES3, JES3 libraries conform to the standard MVS naming conventions. Following are the previous library names and their new names.

Figure 36 (Page 1 of 2). OS/390 Version 1 Release 1 JES3 Library Name Summary

Old Library Name	New Library Name
ABLSCLI0	AIATCLI0
ABLMSG0	AIATMSG0
ABLSTBL0	AIATTBL0
AJES3MAC	AIATMAC
AJES3SRC	AIATSRC
AOSBA	AIATMOD
APARMLIB	AIATPARM
ASAMPLIB	AIATSAMP
JES3LIB	SIATLIB

Figure 36 (Page 2 of 2). OS/390 Version 1 Release 1 JES3 Library Name Summary

Old Library Name	New Library Name
JES3MAC	SIATMAC
LINKLIB	SIATLINK
LPALIB	SIATLPA
MIGLIB	SIATMIG
PARMLIB	SIATPARM
SAMPLIB	SIATSAMP
SBLSCLI0	SIATCLI0
SBLMSG0	SIATMSG0
SBLSTBL0	SIATTBL0
SMPSTS	SIATSRC

Migration Actions

- If you have JCL that is used to assemble JES3 parts outside of SMP/E, you must change the DD names and data set names.
- If you wish to keep the previous release of JES3, it must remain in SYS1.LINKLIB.

Use sample JCL in members IATJALC and IATJDDEF to correctly change your library and DD names. For more information about using sample JCL, see *OS/390 MVS Program Directory: JES3*.

Considerations for Global Variables

JES3 provides several global variables that you can use in your installation modifications. Some programs might use some of these global variables to determine the release level of JES3. Figure 37 lists JES3-provided new and changed global variables, and the contents they will contain beginning with this release.

Figure 37. JES3-Provided Global Assembler Variables

Variable Name	Contents
&J3VRSN	JES3 version: 'SP 5.3.0' (version.release.modification level set) in macro IATYEQU. Note: The value in this field will never change.
&J3LEVEL	JES3 version: 'OS 1.1.0' (version.release.modification level set)
&J3PLVL	A numeric value that will be incremented for each new product release level. Note: This is set to a value of 6 for OS/390 Version 1 Release 1 JES3 (FMID HJS6601).
&J3SLVL	A service level within the product level updated for significant JES3 updates. Note: This value will never decrease within a specific value of &J3PLVL.

Migration Actions

If you use a program that is sensitive to the release of JES3 and the program previously accessed the &J3VRSN field for this information, make sure your program examines these new fields.

See *OS/390 JES3 Customization* for additional information about using these fields.

Considerations When Using High Level Assembler Version 1 Release 2

Version 1 Release 2.0 of High Level Assembler (HLASM R2) changes the defaults for some assembly options, which results in more thorough error checking. A new option, FLAG(CONT), is added to check for incorrect continuation statements. In addition, the default for USING changed from USING(NOWARN) to USING(WARN(15)). Both changes result in these assembler warning messages and a return code of 4 (RC04) from the assembler.

Migration Actions

If you have HLASM R2 installed, you must also have APAR OW15030 installed on your system, and use the USING (WARN(2)) assembly option to obtain a clean assembly and to suppress warning messages. For more information about using HLASM, see *HLASM MVS & VM Programmer's Guide*.

Operations**Tape Utilities Support**

Beginning with this release, OS/390 Version 1 Release 1 JES3 no longer supports the following tape utilities:

- TL - tape label
- TP - tape-to-print
- TT - tape-to-tape
- TD - tape dump

These utilities are obsoleted. IBM recommends using *DITTO/ESA* (5655-103) for tape functions. See *DITTO/ESA User's Guide and Reference* for more information.

Migration Actions

Update any automation programs and operator procedures that use these utilities. Also, inspect your automation programs for references to message text of deleted messages.

Applications

There are no application migration actions.

| **Problem Determination and Diagnosis**

There are no problem determination and diagnosis migration actions.

| **Accounting**

| There are no JES3 installation modifications migration actions.

Chapter 5. Migration Actions: JES3 V1R1 to JES3 V1R2

Coexistence, Migration, and Fallback

For all JES3 migrations, review the information APAR II11768 for any APARs that must be applied to allow coexistence with other JES3 releases, migration to particular JES3 releases, and fallback to JES3 releases.

Initialization

Considerations for Dates Beyond 1999

Beginning with OS/390 Version 1 Release 2 JES3, with APARs OW16161 and OW18724, you can choose to display either a 2-digit or 4-digit date on the JES3 hardcopy log. By specifying the HCFORMAT keyword on the CONSOLxx member in SYS1.PARMLIB, you can choose the type of date format you prefer.

The DEADLINE= keyword of the `//*MAIN JECL` statement now supports 4-digit years, although existing 2-digit-year specifications will be accepted.

Migration Actions

Determine whether you wish to display a 2-digit or 4-digit date on the hardcopy log, and set up SYS1.PARMLIB accordingly. Note that if you choose to display a 4-digit date, there will be no blank space between the CONSOLE field and the date field in the log if the console name is eight characters.

Determine whether to continue using existing 2-digit-year specifications on the DEADLINE= keyword of the `//*MAIN JECL` statement. Understand that '19' is the prefixed century indicator in all cases. Thus, the job will not execute correctly unless the 4-digit format is used past 2000.

Installation Modifications

Considerations for Dates Beyond 1999

Beginning with OS/390 Version 1 Release 2 JES3, with APARs OW16161 and OW18724, if you are producing the default separator page on a programmable remote work station, and your program at that remote depends on the format of the date, you can either:

- Update the program at the remote to accommodate the new date format, or,
- Implement installation exit 20 to generate separator pages using the date format.

See *OS/390 JES3 Customization* for information about using installation exit 20.

Considerations for Global Variables

OS/390 provides several global variables that you can use in your installation modifications. Some programs might use some of these global variables to determine the release level of JES3. Figure 38 lists global variables that have been changed for OS/390 Version 1 Release 2, and the contents they will contain beginning with this release.

<i>Figure 38. OS/390 Assembler Global Variables</i>	
Variable Name	Contents
CVTPRODN	Version: 'SP6.0.2' (version.release.modification level set). The value '602' corresponds to the last three characters of the FMID (for example, JBB6602).
SPLEVEL	A numeric value that will be incremented for each new product release level. This is set to a value of 6 for OS/390 Version 1 Release 2 JES3 (FMID JBB6602). In future releases, this value might not correspond to the CVTPRODN value.

Migration Actions

If you use a program that is sensitive to the release of JES3 and the program previously accessed one of the above fields for this information, make sure your program examines these new fields.

For additional information about the values in these fields, see *OS/390 JES3 Customization*.

Operations

There are no operations migration actions.

Applications

There are no application migration actions.

Problem Determination and Diagnosis

There are no problem determination and diagnosis migration actions.

Accounting

There are no accounting migration actions.

Chapter 6. Migration Actions: JES3 V1R2 to JES3 V1R3

Coexistence, Migration, and Fallback

For all JES3 migrations, review the information APAR II11768 for any APARs that must be applied to allow coexistence with other JES3 releases, migration to particular JES3 releases, and fallback to JES3 releases.

Initialization

There are no initialization migration actions.

Installation Modifications

Considerations When Using Installation Exit 19

For OS/390 Version 1 Release 3, JES3 *MODIFY U command processing of SYSOUT data sets on the HOLD queue reduces the recycling of SYSOUT data sets through the JES3 Output Service function. Prior to OS/390 Version 1 Release 3, JES3 recycled SYSOUT data sets through the JES3 Output Service function for those data sets moved from the HOLD queue to the WTR queue via the *MODIFY U command. Output Service created a new OSE from the updated JDS (and updated the JDS for *F U processing). During the creation of the new OSE, user exit IATUX19 was given control to allow changes to be made to the OSE prior to JES3 writing it to the spool.

Now JES3 *MODIFY U processing reduces this recycling of the SYSOUT data sets on the HOLD queue when the following conditions exist:

- FRPs (//*FORMAT statements used) exist for the data set
- A class change is requested with the NCL= keyword.
- Using the NW=keyword, a writer name change is requested and the JDS does not have a writer name.
- Using the NDSID= keyword, a DSID request is made and the JDS does not have a DSID.

Migration Actions

The reduction in the amount of recycling of SYSOUT data sets through JES3's Output Service function affects how often your exit 19 processes these data sets. The reduction in the recycling occurs because JES3 applies the default OSE characteristics to the OSE created on the HOLD queue.

This exit, if used by the installation, must be coded to use the new parameter list, reassembled, and re-installed. See *OS/390 JES3 Customization* for information about using installation exit 19.

Considerations When Using Installation Exit 30

Beginning with OS/390 Version 1 Release 3 JES3, the input parameter list of installation exit 30 has changed.

Register 1 formerly pointed to a parameter list that was mapped by mapping macro IATYTSWK (IATYTSWK MOD=UX30). Beginning with OS/390 Version 1 Release 3 JES3, IATUX30's parameter list is mapped with new macro IATYUX30.

IATYUX30 provides a definition of input fields and return codes.

Migration Actions

This exit, if used by the installation, must be coded to use the new parameter list, reassembled, and re-installed. See *OS/390 JES3 Customization* for information about using installation exit 30.

Considerations When Using Installation Exit 45

Beginning with OS/390 Version 1 Release 3 JES3, the parameter list of installation exit 45 now includes a pointer to the IATYOSE control block. The parameter list includes pointers to the OSE variable entry and data set entry, that represent the output being processed.

Migration Actions

This exit, if used by the installation, must be coded to use the new parameter list, reassembled, and re-installed. See *OS/390 JES3 Customization* for information about using installation exit 45.

Considerations When Using Installation Exit 66

Beginning with OS/390 Version 1 Release 3 JES3, new field YUX66BYC can be used to determine the approximate byte count of the transmission stream.

Migration Actions

This exit can determine the approximate byte count of the transmission stream. Installation Exit 66, if used by the installation, must multiply the number of spool buffers of the transmission stream (contained in new field YUX66BYC) by the JES3 spool buffer size (SIZEBUF) to obtain the approximate byte count.

See *OS/390 JES3 Customization* for information about using installation exit 45.

Considerations When Using SSI Function Code 1 (PSO)

Beginning with OS/390 Version 1 Release 3 JES3, a new method of retrieving and modifying SYSOUT stored on the JES spool is available. This new function is called system application printer interface (SAPI), and is made available through the new SSI function code 79.

Migration Actions

Although existing programs that use the Process SYSOUT (PSO) SSI function code 1 **need not** change, new SSI function code 79 can be used to obtain similar results, while taking advantage of the additional features and capabilities of SAPI.

Refer to "SYSOUT Application Program Interface Enhancements (SAPI)" on page 54 for information concerning the new SSI function code 79 support that is provided in this release.

Considerations When Writing Dynamic Support Programs (DSPs)

Beginning with OS/390 Version 1 Release 3 JES3, JES3 has reserved a number of slots in the Destination Routing Table control block (IATYDSQ) for user-defined entries. Using these entries will allow an installation to add a IATYDSQ entry without the need to reassemble many JES3 modules that make reference to the IATYDSQ. These user-defined slots are at labels DSQRSD6, DSQRSD7, DSQRSD8, and DSQRSD9.

Migration Actions

Installations that make use of the IATYDSQ data area for user-written code must review the slots currently being used. You **must** move your existing modifications to avoid conflicts with newly-created JES3 positions in OS/390 Version 1 Release 3 JES3. The slots that are being used were at labels DSQRSD1 and DSQRSD2 prior to OS/390 Version 1 Release 3 JES3. Use of the new user-reserved slots will ensure that future JES3-provided modifications to the IATYDSQ macro will not conflict with user-written code.

Operations

OS/390 Version 1 Release 3 JES3 provides enhancements to the *INQUIRY and *MODIFY Output Service commands.

Refer to “Output Service Inquiry Command Changes” on page 56 and “Output Service Modify Command Changes” on page 58 for a description of the changed *INQUIRY and *MODIFY output service commands.

Applications

There are no application migration actions.

Problem Determination and Diagnosis

OS/390 Release 3 provides additional aids for problem determination and diagnosis. Refer to *OS/390 JES3 Diagnosis Reference* for additional details about these diagnostic aids.

New IPCS Models

New IPCS models provided are:

- IATIPCOW for the System Application Printer Interface Client Output Work Area (IATYCOW)
- IATIPSDE for the System Application Printer Interface Dynamic Support Program Entry (IATYSDE)
- IATIPSDW for the System Application Printer Interface DSP Work Area (IATYSDW)
- IATIPSFW for the System Application Printer Interface FCT Work Area (IATYSFW)
- IATIPSWE for the System Application Printer Interface Wait For Work Element (IATYSWE)

New IPCS Abend Formatters

OS/390 Version 1 Release 3 JES3 provides new IPCS abend formatters:

- IATABSAP for data areas relating to the System Application Printer Interface function
- IATABCOW for the Client Output Work Area (IATYCOW) data area

New JES3 IPCS VERBEXIT Command Options

OS/390 Version 1 Release 3 JES3 provides new VERBEXIT (VERBX) subcommand options:

- VERBX JES3 'OPTION=COW'
This option provides Client Output Work Area (COW) data space information
- VERBX JES3 'OPTION=SAPI'
This option provides information concerning the system application printer interface (SAPI) data areas:
 - SAPI Dynamic Support Program Entries (IATYSDE)
 - SAPI DSP Work Areas (IATYSDW)
 - SAPI FCT Work Areas (IATYSFW)
 - SAPI Wait For Work Elements (IATYSWE)

New JES3 IPCS CBFORMAT Routines

OS/390 Version 1 Release 3 JES3 provides additional specific data areas that can be formatted with the IPCS CBFORMAT subcommand:

- SAPI Dynamic Support Program Entry (IATYSDE)
- SAPI DSP Work Area (IATYSDW)
- SAPI FCT Work Area (IATYSFW)
- SAPI Wait For Work Element (IATYSWE)

New IATXTRC Trace ID 83

OS/390 Version 1 Release 3 JES3 provides a new trace id as a result of the IATXTRC macro being issued from the JES3 global main when processing SAPI requests in module IATOSSD. The following information is contained in this new trace id element:

- The address of the checkpoint resqueue (RQ) being used for data set disposition
- The address of the IEFSSOB being used for the SSI request
This IEFSSOB is a copy of the thread's input IEFSSOB
- The address of the IATYCOW being used for the SAPI thread
- The address of the staging area passed to the global

New Dump Core Utility OSE Diagnostic Information

OS/390 Version 1 Release 3 JES3 provides a new **DIAG** keyword applicable with the `OPTION=(SNP=OSE)` option for JES3's dump core utility. The use of **DIAG** provides a formatted OSE with indication of the data set's attributes such as SYSOUT class, form number, destination, and so on.

| Accounting

| There are no accounting migration actions.

Chapter 7. Migration Actions: JES3 V1R3 to JES3 V2R4

Coexistence, Migration, and Fallback

For all JES3 migrations, review the information APAR II11768 for any APARs that must be applied to allow coexistence with other JES3 releases, migration to particular JES3 releases, and fallback to JES3 releases.

Initialization

Hot Start With Refresh

This release of JES3, OS/390 Release 4, allows for a new type of JES3 start, **hot start with refresh**. This allows JES3, on a hot start, to reread the initialization stream to allow many, but not all, of the parameters to be changed without an IPL. Previously, a JES3 warm start was required to perform this function. A JES3 warm start requires all the MVS images in the JES3 complex to be IPLed. A JES3 hot start, on the other hand, only requires JES3 to restart on the global. Jobs currently in execution either on the global or on any local processors in the JES3 complex continue to execute.

Not all initialization statements and parameters on initialization statements are processed during a hot start with refresh. Those statements and parameters which are not processed will be syntax checked only.

If a hot start with refresh fails, any changes that were made to the initialization stream will not be in effect. That is, a subsequent hot start obtains the information from the **last** successful cold, warm, or hot start with refresh.

When you change the initialization stream, remember that some initialization statements are processed and some are ignored during a hot start with refresh. For example, if you add a new SPART statement to define a spool partition, and add or change a SYSOUT statement to reference that spool partition, JES3 issues message IAT3222 indicating that you specified an non-valid spool partition. This is because during a hot start with refresh, the SPART statements are ignored and the SYSOUT statements are processed. Such dependencies are shown in Figure 39 on page 78 and the accompanying notes that follow.

A hot start with refresh will override most previously issued *MODIFY commands relating to initialization statements. See *OS/390 JES3 Commands* for the list of commands that remain in affect over a warm, hot, or hot start with refresh.

Message IAT3011 has new **HR** and **HAR** options that the JES3 system operator can use in reply. These are for hot start with refresh and hot start with refresh with analysis, respectively.

See "Special Migration Considerations" on page 198 for a description of the configurations allowed and the JES3 start types needed for migration to OS/390 Release 4 from your current level of JES3.

Initialization Statement Summary

The following is a summary of the initialization statements and whether they can be changed, added, or, deleted during a hot start with refresh. Dependencies on some of these statements are listed if there are other initialization statements or keywords that intersect with hot start with refresh processing. See *OS/390 JES3 Initialization and Tuning Reference* for the specific statements and the restrictions in place concerning these dependencies.

Figure 39 (Page 1 of 2). Initialization Statement Summary

Statement	Changed	Added	Deleted	Note(s)
ACCOUNT	Yes	Yes	Yes	
BADTRACK	No	No	No	
BUFFER	Yes	Yes	Yes	See 12 on page 82
CIPARM	Yes	Yes	Yes	See 1 on page 79
CLASS	Yes	Yes	Yes	See 2 on page 79
COMMDEFN	Yes	Yes	Yes	
COMPACT	Yes	Yes	Yes	
CONSOLE	Yes	Yes	No	
CONSTD	No	No	No	
DEADLINE	Yes	Yes	Yes	See 9 on page 81
DEVICE	Yes	Yes	Yes	See 3 on page 79
DYNALDSN	No	No	No	
DYNALLOC	Yes	Yes	Yes	See 13 on page 82
FORMAT	No	No	No	
FSSDEF	Yes	Yes	Yes	See 5 on page 80
GROUP	Yes	Yes	Yes	See 14 on page 82
HWSNAME	Yes	Yes	Yes	See 1 on page 79
INTDEBUG	Yes	Yes	Yes	
JES3LIB	No	No	No	See 10 on page 81
MAINPROC	No	No	No	See 8 on page 81
MSGROUTE	Yes	Yes	Yes	See 6 on page 81
NJECONS	Yes	Yes	Yes	
NJERMT	Yes	Yes	Yes	
OPTIONS	Yes	Yes	Yes	See 4 on page 80
OUTSERV	Yes	Yes	Yes	See 11 on page 81
RESCTLBK	Yes	Yes	Yes	
RESDSN	Yes	Yes	Yes	See 1 on page 79
RJPLINE	Yes	Yes	Yes	
RJPTERM	Yes	Yes	Yes	
RJPWS	Yes	Yes	Yes	
SELECT	Yes	Yes	Yes	See 8 on page 81

Figure 39 (Page 2 of 2). Initialization Statement Summary

Statement	Changed	Added	Deleted	Note(s)
SETACC	Yes	Yes	Yes	
SETNAME	No	No	No	
SETPARAM	No	No	No	
SETRES	Yes	Yes	Yes	
SPART	No	No	No	
STANDARDS	Yes	Yes	Yes	See 7 on page 81
SYSID	Yes	Yes	Yes	
SYSOUT	Yes	Yes	Yes	
TRACK	No	No	No	

Notes:

1. If you change the HWSNAME, CIPARM, or RESDSN statements, you must restart any C/I FSSs that are active in order to make sure that JES3 honors any changes. If you perform an orderly shutdown of JES3, you can restart the C/I FSSs by specifying TERM=YES on the C/I FSSs' FSSDEF statements.

2. CLASS, SPART, MLIMIT, MDEPTH parameters

- If you delete a class, JES3 issues existing message IAT3414:

```
CLASS class UNDEFINED OVER RESTART
```

- If you delete a class that is still referenced by jobs, the jobs will be put into operator hold status at one of the following times:
 - During initialization if the job was active in main service.
 - When the job is scheduled for main service.

You can use the *MODIFY,J command to change the job's class and to release it from operator hold.

Do not delete a job class if is referenced by jobs that are in execution. This will cause JES3 failures.

- The SPART parameter has a dependency on the SPART statement which is not processed during a hot start with refresh.
- The MLIMIT, MDEPTH, SYSTEM parameters have dependencies on the MAINPROC statement which is not processed during a hot start with refresh.

3. DEVICE Statement

a. DEVICE Statement - Main Processors

Do not add or delete a device statement that is associated with a main processor; that is, it contains the DTYPE=SYSMAIN parameter.

b. DEVICE Statement - I/O Devices

- You cannot add or delete devices that are defined as execution devices (that is, XTYPE and XUNIT parameters are specified on the DEVICE statement)
 - You cannot add or delete a device number and system name from the XUNIT parameter of an existing DEVICE statement.

- You cannot switch device numbers in the XUNIT parameter of two or more DEVICE statements.
- You can, however, change any of the non-execution device-related parameters on the DEVICE statement such as JNAME, FORMS, FLASH, and WS.
- You can only add or delete non-execution devices (that is, the XTYPE and XUNIT parameters are not specified). For example, non channel-attached printers and NJE lines.

JES3 is not sensitive to the order of the DEVICE statements. That is, new devices can be inserted anywhere and existing devices can be deleted.

- You cannot add or delete a DEVICE statement for an FSS-managed printer if the FSS is active at the time you perform the hot start with refresh. You can do this if the FSS is active on the global and the global was IPLed prior to performing the hot start with refresh.

You cannot change or delete the device number and/or system name from the JUNIT parameter if the FSS is active and a writer is using the device. This only applies to the device number and system where the FSS is active.

If you change the DEVICE statement for an FSS-managed printer and the FSS is active, the following checkpointed information will override the information on the DEVICE statement:

- MODE=COMP/FSS
- Message destination (JUNIT)
- Online/offline status (JUNIT)
- CKPNT/CKPNTPG/CKPNTSEC
- NPRO
- SETUPMSG

All other information from the DEVICE statement will take affect. Note that if the FSS was active on the global and the global was IPLed prior to performing the hot start with refresh, the above parameters from the DEVICE statement will be used.

4. Only the DUMP, DUMPLINS, JOBNO, INTRDR, MT, and WANTDUMP parameters on the OPTIONS statement can be changed. All other parameters are syntax checked only.

You can decrease the low job number or increase the high job number over a JES3 hot start with refresh through the JOBNO parameter.

You cannot delete job numbers from the job number range specified on the JOBNO parameter during a hot start with refresh. That is, you cannot raise the low job number value or lower the high job number value. This requires a warm start to do this.

5. FSSDEF Statement

- You cannot delete an FSSDEF statement for an active FSS, unless the FSS was active on the global and the global was IPLed prior to performing the hot start with refresh.

- If an FSS is active, changes to the parameters on the FSSDEF statement are ignored. However, if the FSS was active on the global and the global was IPLed prior to performing the hot start with refresh, then the changes will take place.
 - See DEVICE statement for restrictions on adding, changing, and deleting devices associated with an FSS.
 - The SYSTEM parameter has a dependency on the NAME parameter of the MAINPROC statement. During a hot start with refresh, the MAINPROC statements are not processed; the MAINPROC statements from the last warm or cold start are used. Therefore, if you add a MAINPROC statement during a hot start with refresh, it will be ignored. This will cause error messages to be issued if the SYSTEM parameter of the FSSDEF statement references the MAINPROC statement that you attempted to add during a hot start with refresh.
6. Changes made to the global's MSGROUTE statement will take affect immediately. Changes made to the local's MSGROUTE statement will not take affect until you restart the JES3 local address space.
7. BYTES, CARDS, LINES, PAGES Parameters
- If you change the third subparameter of the BYTES, CARDS, LINES, and PAGES parameter, or you change the SYSLINES keyword, the change will take affect immediately on the global processor. The change will not take affect on the local processor until you restart the JES3 local address space.
 - JES3 ignores any changes made to the SETUP and THWSSEP keywords.
8. Select Mode
- A select mode is associated with a main processor as follows:
 - through the SELECT parameter of the MAINPROC statement
 - through the *MODIFY,G,main,SELECT,MODE,mode command

During a hot start with refresh, the main processors will be reassigned the select mode that was in affect prior to the restart. JES3 ignores any changes to the SELECT parameter on the MAINPROC statement. Therefore, do not delete the SELECT statements for any select modes that were in affect prior to the hot start with refresh.
 - During a hot start with refresh, only the select mode name that was in affect prior to the hot start with refresh will reassigned to the main processors. The actual select mode values are taken from the parameters on the SELECT statements in the initialization stream.
9. DEADLINE statements can be deleted. But if you delete a DEADLINE statement that is referenced by a job, JES3 issues message IAT7415 when deadline processing begins. Any job that references the deleted DEADLINE statement uses the deadline algorithm information that was last defined for this DEADLINE statement.
10. The JES3LIB statement is deleted in OS/390 Release 4. Use STEPLIB in the JES3 procedure instead.
11. OUTLIM Parameter

If you change the OUTLIM parameter of the OUTSERV statement, the change takes affect immediately on the global processor. The change will not take affect on the local processor until you restart the JES3 local address space.

12. FD, MINBUF, TRUNC Parameters

- You can only change the FD, MINBUF, and TRUNC parameters on the BUFFER statement; all other parameters on the BUFFER statement are syntax checked only.
- Changes to the FD and MINBUF parameters do not take affect immediately for C/I FSS if it is active, and therefore you must restart the C/I FSSs if you want its values changed.

13. DYNALLOC Statement

- Do not add, change, or delete DYNALLOC statements for the spool data sets or the JCT data set
- On local processors, only a subset of the DYNALLOC statements are allocated:
 - Spool data sets
 - JES3JCT
 - JES3OUT
 - JESABEND
 - SYSABEND
 - SYSUDUMP
- If a local processor becomes the global as a result of dynamic system interchange (DSI) processing, the remaining DYNALLOC statements will be allocated:
 - IATPLBxx
 - JES3DRDS
 - JES3SNAP
 - Any user data sets

14. GROUP Statement

- Do not delete a GROUP statement or delete an EXRESC parameter from the GROUP statement that has active initiators, unless you IPL the processors where the initiators are running.
- Device fences that were active prior to the hot start with refresh will be reallocated unless the definition of the device fence in the EXRESC or DEVPOOL parameters was changed. If the device fence definition was changed, the fence will be reallocated after JES3 initialization completes.
- The EXRESC parameter has a dependency on the MAINPROC and SETNAME statements which are not processed during a hot start with refresh.
- The DEVPOOL parameter has a dependency on the SETNAME statement which is not processed during a hot start with refresh.

Serialization of the Configuration

The following information is of concern to your installation if you monitor or modify enqueue processing information in various exits or program products.

Additional programming has been added to JES3 to allow correct processing of the configuration information during a hot start with refresh and *MODIFY,CONFIG. This configuration information is the information stored by JES3 on spool and checkpoint data set(s) from the initialization stream. Prior to this release, this serialization was not needed because during an update of information in the configuration information, all other systems besides the global must have been non-operational, because either a cold start or warm start was in progress.

Beginning with this release, the global JES3 processor serializes against the configuration data sets to prevent the JES3 local and C/I FSS address spaces to read the configuration information during update/modify attempts. Also, the local and C/I FSS address spaces serialize against the configuration information to prevent the global from changing the configuration while it is being processed.

Therefore, JES3 now issues a **SYSTEMS ENQ** to allow for serialization against the JES3 configuration information. A major name of **SYSZIAT**, and a minor name of **CONFIG.CHANGE.checkpointvolser.checkpointdsname** is used for this ENQ, where:

- **checkpointvolser** is the volume serial number of the primary JES3 checkpoint data set.
- **checkpointdsname** is the name of the primary JES3 checkpoint data set.

Depending on the type of processing, one of two types of ENQ is issued:

SHARED

For Cold, Warm, DSI, Hot, Local Starts, and C/I FSS starts

EXCLUSIVE

For Hot Starts with Refresh and *MODIFY,CONFIG

Note: **RNL=NO** is used on the ENQ/DEQ macros to prevent a SYSTEMS ENQ from being converted to a SYSTEM ENQ by use of the SYSTEMS exclusion RNL facility.

Segmented Initialization Stream

OS/390 Release 4 provides support to allow initialization stream segmentation. That is, different sections of the initialization stream can be put into different members and included in the primary initialization stream member. For example, all RJPWS definitions can be put into a member "RJPWS" and included in the primary member.

A new initialization statement, **INCLUDE**, is used to include a member in the initialization stream. The syntax of the **INCLUDE** statement:

```
INCLUDE, MEMBER=member
```

Where "member" is the name of the member in the data set specified on the JES3IN DD statement in the JES3 procedure to be included. Up to 4 member levels are supported (the primary initialization stream member and up to 3 **INCLUDE** levels). You can add the **INCLUDE** statement anywhere after the **DYNALLOC** statements.

Note: INCLUDE is not supported if the JES3IN DD statement is concatenated and the members to be included are in a data set other than the first in the concatenation.

The INCLUDE statement is supported during *MODIFY,CONFIG processing.

The included member name will appear in columns 73 through 80 in the JES3OUT data set as an aid in determining where the particular statements came from.

If the INCLUDE member is not found, messages IEC141I and IAT3094 are issued, and JES3 initialization, without the missing member, will continue.

Example of Use

Although supported, the INCLUDE statement will not typically be used within the member specified on the *MODIFY,CONFIG command. However, the INCLUDE statement is useful when it comes to *MODIFY,CONFIG processing. For example, suppose your installation has all of the RJPWS statements in a member "RJPWS." Furthermore, suppose your IATUX15 supports conditional logic. For example, IATUX15 is set up to interrogate the "P=xxxx" value and skip around initialization statements depending on the parameter value. To add new RJPWS statements to the initialization stream, all you would have to do is the following:

- Add the new RJPWS definitions to the existing "RJPWS" member.
- Add conditional logic in the RJPWS member to just process the new statements when a *MODIFY,CONFIG command is issued. For example:

```
*IF PARM.(1,3) = NEW NEWSTUFF  Skip over old definitions if *F,CONFIG
```

```
** old RJPWS definitions **
```

```
RJPWS,.....
RJPWS,.....
RJPWS,.....
RJPWS,.....
RJPWS,.....
```

```
*LBL NEWSTUFF
```

```
** new RJPWS definitions **
```

```
RJPWS,.....
RJPWS,.....
```

- Issue the following *MODIFY,CONFIG command:

```
*MODIFY,CONFIG,ADD=RJPWS,P=NEW
```

As a result of specifying "P=NEW," JES3 skips the old RJPWS definitions, and processes only the new RJPWS definitions.

Because the RJPWS definitions were included in your member that is included in the initialization stream, the new RJPWS definitions will automatically be included the next time you perform a cold, warm, or hot start with refresh.

MVS COMMAND JCL Statement Support

Beginning with OS/390 Release 4, JES3 now supports the specification of the MVS **COMMAND** JCL statement in a job stream. The **COMMAND** statement allows MVS or JES3 operator commands to be specified in a job stream. This release of JES3 allows you to use the **COMMAND** JCL statement by adding new keywords to the CIPARM initialization statement specifying the command groups allowed and their disposition. The new keywords allowed are **AUTH=** and **COMMAND=**. **AUTH=** specifies which command groups are accepted through **COMMAND** JCL statements in a job stream. **COMMAND=** specifies the disposition of commands entered through **COMMAND** JCL statements in the job stream.

See *OS/390 JES3 Initialization and Tuning Reference* for other details concerning the CIPARM statement syntax.

JES 64K Job Number Support

Beginning with OS/390 Release 4, JES3 is increasing the maximum number of job numbers allowed in the JES3 complex from 32,767 (32K) to 65,534 (64K).

The **JOBNO** parameter on the **OPTIONS** initialization statement has been changed to allow a specification up to 65,534. The **GROUP JSPAN=** initialization statement parameter maximum has been changed to allow up to 65,534.

Note that this change of job number range affects JES3 only. MVS/BDT's job number range is not affected as part of this support.

JCT Data Set Sizing

The JCT data set must be allocated as a single extent data set on cylinder boundaries. If your installation has not modified the length of the JCT by changes to **IATYJCT**, **IATYCNDB**, or **IATYFDB** and takes the default number of SE entries (10), then the standard JCT entry is 620 bytes long (X'26C').

- For a 3380 device, this translates to 42 entries per track or 630 entries per cylinder.
- For a 3390 device, this translates to 45 entries per track or 675 entries per cylinder.

Thus, you can determine the number of jobs that you wish to allow in the JES3 complex concurrently by dividing the number of jobs desired by the appropriate number of entries per cylinder and rounding up to obtain the number of cylinders that you require for the JCT data set. See *OS/390 JES3 Initialization and Tuning Guide* for specific information on calculating the size of a JCT entry and determining the size of the JCT data set.

Deletion of Initialization Stream Support from Card Readers

The support to allow the initialization stream to be read from a card reader ("U=" in message IAT3012) is being deleted in OS/390 Release 4.

The existing JES3 message IAT3012 is changed to:

```
IAT3012 SELECT JES3 INISH ORIGIN (N OR M=), AND OPTIONAL EXIT PARM (,P=)
```

Deletion of JES3LIB Support

JES3's use of the JES3LIB Initialization stream statement is being deleted in OS/390 Release 4.

If JES3 encounters this statement in the initialization stream, JES3 issues warning message IAT3263, but initialization continues. IAT3263 text is as follows:

```
IAT3263 THE JES3LIB INITIALIZATION STATEMENT IS NO LONGER SUPPORTED
```

IBM recommends the use of STEPLIB in the JES3 initialization procedure as a replacement facility for JES3's JES3LIB support.

Installation Modifications

Considerations When Using JES 64K Job Number Support

JES3 has stored and manipulated job numbers in several formats. They are

- 2-byte binary job numbers (for example, JCTJOB, RQJOBNO)
- 4-byte binary job numbers (for example, LETJOBNO)
- 4-byte mixed job numbers (for example, JDABJNUM).

The 2-byte field has been treated as a 15-bit signed integer in the range of -32767 to 32767, that normally only contains values in the range 0 to 32767. Beginning with OS/390 JES3 Release 4, all 2-byte fields containing job numbers are 16-bit unsigned integers in the range 0 to 65535. In representation terms, prior to OS/390 JES3 Release 4, a job number was in the range X'0000' to X'7FFF' and is now in the range X'0000' to X'FFFF'.

The change from 15-bit signed to 16-bit unsigned integers for 2-byte job numbers must be properly handled to prevent undesired results. For example, transferring a value from a 2-byte job number field to a 4-byte job number field can be accomplished using the following sequence of instructions in prior releases:

```
LABEL    DS    0H
          LH    Rx,2_byte_field Load 2-byte value
          ST    Rx,4_byte_field Save as 4-byte value
```

As long as the 2-byte value is in the range of 0-32767, the expected/desired result is obtained. For example, if the 2-byte value is X'0654' then the 4-byte value will contain X'00000654'. However, once the 2-byte value assumes values in the range 32768 to 65534 (in addition to values in the 0 to 32767 range) unexpected results occur if using the above operation. For example, if the 2-byte field value is X'A654' then the 4-byte field will contain X'FFFA654'. If the 4-byte field is passed to a routine that expects a 4-byte mixed value or 4-byte binary value with bytes 0,1 being zero, then unexpected results will occur.

To prevent unexpected results from occurring, 2-byte job numbers must be handled as if they contain 16-bit signed integers. This necessitates the conversion of 2-byte binary job numbers to 4-byte binary job numbers and the comparison of these two types of entities for equivalence or relative magnitude.

Conversion from 2-byte Binary to 4-byte Binary Techniques

There are several techniques you can employ:

```
Techn_1 DS 0H
XR    Rx,Rx                Clear Rx
ICM   Rx,B'0011',2_byte_field Load 2-byte value in bytes
*     2,3 or Rx
ST    Rx,4_byte_field Store value in 4-byte field
```

- or -

```
Techn_2 DS 0H
ICM   Rx,B'0011',2_byte_field Load 2-byte value in bytes
*     2,3 of Rx
N     Rx,=AL4(MAXIMUM_JOB_NUMBER_MAX) Clear unused bytes
ST    Rx,4_byte_field Store value in 4-byte field
```

- or -

```
Techn_3 DS 0H
ICM   Rx,B'1100',2_byte_field Load 2-byte value in bytes
*     0,1 of Rx
SRL   Rx,JOB_NUMBER_SHIFT Shift bytes 0,1 to 2,3 of Rx
ST    Rx,4_byte_field Store value in 4-byte field
```

- or -

```
Techn_4 DS 0H
LH    Rx,2_byte_field Load 2-byte value in bytes 3,4 of Rx
N     Rx,=AL4(MAXIMUM_JOB_NUMBER_MAX) Clear unused bytes
ST    Rx,4_byte_field Store value in 4-byte field
```

You can employ any of the above techniques, depending on register usage. For example, if the data area named: 2_byte_field is being referenced using Rx then the first technique will obviously not work and one of the other techniques must be used. Whenever a 2-byte job number is loaded into a register, use an appropriate technique to be certain that the register contains a non-negative value in the range 0 to 65534. JES3 uses all of the above techniques, but predominantly techniques 1 and 2.

You can store a binary job number into a 2-byte field by either:

```
Techn_1 DS 0H
STH   Rx,2_byte_field Store value in 2-byte field
```

- or -

```
Techn_2 DS 0H
STCM  Rx,B'0011',2_byte_field Store value in 2-byte field
```

Either technique is acceptable; however, use the second technique as a self-documenting reminder that the 2-byte job number field is a 16-bit unsigned integer.

Similarly comparison of binary job numbers must be handled differently when 16-bit unsigned integers are used. Prior to OS/390 JES3 Release 4 the following sequence of instructions would be used:

```

Compare DS  0H
          L   Rx,4_byte_field Load compare value
          ...
          CH  Rx,2_byte_field Check for equivalence.
          BC  EQ,label_same_number
    
```

With 16-bit unsigned job numbers, the above technique will not work when the job number is greater than 32767. This is because CH treats the 2_byte_field as a 15-bit signed number and propagates the sign in forming a 4-byte value for comparison. The above technique must be changed to:

```

Compar_1 DS  0H
          L   Rx,4_byte_field Load compare value
          ...
          CLM Rx,B'0011',2_byte_field Check for equivalence.
          BC  EQ,label_same_number
              - or -
Compar_2 DS  0H
          L   Rx,4_byte_field Load compare value
          ...
          ICM Ry,B'0011',2_byte_field Load 2_byte value
          N   Ry,=AL4(MAXIMUM_JOB_NUMBER_MAX) Normalize to 0 - 65534
          CR  Rx,Ry      Check for equivalence.
          BC  EQ,label_same_number
    
```

Using CLM allows the contents in bytes 2 and 3 of the register and the 2-byte field to be compared as unsigned values in the range of 0 to 65534. Obviously, converting the 16-bit integer to a non-negative 4-byte integer allows for proper comparison, at the expense of using an additional register.

Counters

JES3 uses a number of halfword counters that are increased/decreased by some value (usually one) and managed in such a way as to be non-negative. When job numbers were restricted to the range of 0 to 32767, 2-byte or halfword counters could be used with the following techniques:

```

INCREMENT DS  0H
          LH  Rx,2_byte_counter Load counter value
          AH  R1,=H'1'          Increment by one
          STH R1,2_byte_counter Save counter value
          ...
Decrment  DS  0H
          LH  Rx,2_byte_counter Load counter value
          SH  R1,=H'1'          Decrement by one
          BC  MINUS,error_routine Handle negative value ** error **
          STH R1,2_byte_counter Save counter value
    
```

Once more than 32767 jobs are allowed in the system, the above technique cannot be used for running 2-byte counters. Essentially, the counters themselves must be

treated as 16-bit unsigned integers and not 15-bit signed integers. Thus the following technique (or variations thereon) must be used.

```

Increment DS  0H
            XR  Rx,Rx          Clear register
            ICM Rx,B'0011',2_byte_counter Load counter value
            A   Rx,TVTONE      Increment by one
            STCM Rx,B'0011',2_byte_counter Save counter value

...

Decrment DS  0H
            XR  Rx,Rx          Clear register
            ICM Rx,B'0011',2_byte_counter Load counter value
            S   Rx,TVTONE      Decrement by one
            BC  MINUS,error_routine Handle negative value ** error **
            STCM Rx,B'0011',2_byte_counter Save counter value

```

Migration Considerations

Handling 2-byte job numbers internally as 16-bit unsigned integers prevents the need to change a large number of control blocks, many of that are spool resident. This technique allows JES3 to support more than 32K jobs in a JES3 complex without a required cold start involving migration just to the new release. Additionally, this allows compatibility of OS/390 JES3 Release 4 in a JES3 complex with prior releases of JES3. As long as the job number range is contained between 1 and 32767, there is no restriction on that processor in the JES3 complex (global or local) that OS/390 JES3 Release 4 reside. However, when job numbers in the range 32768 to 65534 are used, all JES3 instances in the complex must be at the OS/390 JES3 Release 4 level.

Installations must change their code to handle 2-byte job number fields as 16-bit unsigned number whether or not they plan to use job numbers greater than 32767.

Examine all JES3 exits and other user modifications for occurrences of macros:

- AJOBNUM (Job Number Macro)
- IATXJCT (JCT Access Services)
- IATXJOB (Convert Job Number and Job ID)
- IATXJQE (Obtain the address of a JQE)
- IATXSDM (Invoke Spool Initialization Routine)
- NCBTAFND (Find NCB by Jobname or JOB ID)

These macros call services with job numbers as input and thus are usually referencing fields with job number changes in them.

User Initialization Statements

During JES3 initialization, many initialization statements are converted into internal form and written to a file on spool. Each spool file is assigned a file identification (ID) through the IATYSPL macro, that contains a file identification to locate information on a subsequent hot start. Prior to this release, JES3 assigns these file ids based on location of IATYSPL within the IATYINT macro. Remember that the IATYSPL macro is used on the ITREADs and ITWRITEs to access intermediate spool text files.

Beginning with this release, a new ID= parameter on IATYSPL is used to assign a file id. These file ids are defined in IATYITXT, and 10 are reserved for user file ids.

User Exit 15 Considerations

User Exit 15 (IATUX15), “Examine an Initialization Statement,” is now called in two additional environments within JES3 than in previous releases. The first new exit point is when a *MODIFY,CONFIG command is being executed. The second is when a hot start with refresh is being executed. Exit 15 can perform the same processing in these two cases as in the prior releases of JES3. The statement can be allowed or discarded to be processed by JES3 when control is returned from the user exit.

IWASPOUT Macro

The IWASPOUT JES3 macro, used to write messages during JES3 initialization, has been changed to allow a new COMPRESS=YIN parameter specification. This can be used to compress blanks in initialization messages. The default is COMPRESS=N. JES3 has added COMPRESS=Y in many of its uses of IWASPOUT for initialization messages.

AWAIT Macro

The AWAIT JES3 macro, used to wait for completion of one or more events in JES3, has been modified by adding the DATA= parameter on the invocation of the macro. This allows up to 16 bytes of data to be associated with a particular AWAIT request. Through a combination of the existing REASON= parameter and the new DATA= parameter, you can more easily determine the AWAIT event that the FCT is waiting to occur.

This information is used by:

- Spool services to specify the name of control block being read or written (for example, JDAB, JDS, OSE)
- IATXCSF service to put the name of the function being invoked as a subtask (for example, ALOAD-modname, VERIFY-UNLOAD)
- AENQ service to put the name of the resource being serialized

This AWAIT data is formatted in VERBX JES3 ‘OPTION=FCT’ output along with the AWAIT reason code.

IATXCSF Macro

The IATXCSF macro, used to call a JES3 subtask function, has a new DESC= keyword added to it. The DESC= keyword allows a description of the function being invoked as a subtask to be described. The data can be 16 bytes in length.

ACALL Macro

The ACALL macro, used to call another section of executable code, has two additional changes to it in this release.

- A new subparameter on the EP parameter to generate an ADCON during the in-line expansion. For example, without the ‘A’ subparameter:

```

        ACALL ENTER=DMREADIO
+       LA      R15,DMREADIO
+       L       R14,ASAVE
+       BALR   R14,R14

```

With the new 'A' subparameter, an inline ADCON is generated:

```

        ACALL ENTER=(DMREADIO,A)
+       L       R15,=A(DMREADIO)
+       L       R14,ASAVE
+       BALR   R14,R14

```

- A new EPLOC parameter specifies the field that contains the address of the target routine:

```

        VIWRDRTN   DC   A(0)      Read routine address

        ACALL EPLOC=VIWRDRTN
+       L       R15,VIWRDRTN
+       L       R14,ASAVE
+       BALR   R14,R14

```

IATYGLOB Macro

The IATYGLOB mapping macro, new as of OS/390 Release 4, contains constants that identify a variety of product levels, maintenance levels, and so on. Many of these fields existed in prior releases of JES3 in macro IATYEQU, but they have now been moved to IATYGLOB. The following fields have been changed to reflect OS/390 Release 4:

Field Name	Variable Type	Value	Definition
&J3LEVEL	Character	OS 2.4.0	Current release
&J3REL	Character	OS240	JES3 release
&J3PLVL	Arithmetic	8	Product level for HJS6604
&J3FMID	Character	HJS6604	FMID of current release
&J3_OS390_PROGNO	Character	5647-A01	Program number
&J3_REL_YEAR	Character	1997	Year release is available

Operations

Hot Start With Refresh

Note the following operational changes in OS/390 Release 4.

Certain Commands Remaining in Effect

Various JES3 commands that remain in effect over a hot start of JES3 do not do so over a hot start with refresh. See *OS/390 JES3 Commands* for a list of the commands whose operands remain in effect after performing a JES3 warm start, hot start, or hot start with refresh.

Configuration Serialization

Due to the new serialization against the JES3 configuration information, additional operator procedures are required when JES3 can not obtain the serialization. Information concerning this serialization can be found in “Serialization of the Configuration” on page 83. The serialization can fail either from the global or the local. The following describes various recovery procedures that might be used depending on the ENQ circumstances.

1. ENQ fails from the global

If the global cannot obtain the ENQ during a hot start with refresh, JES3 issues the following two messages:

- IAT3072 mainname WAITING FOR EXCLUSIVE USE OF THE CONFIGURATION
- IAT3073 ISSUE “CANCEL” TO CANCEL WAIT FOR mainname

These messages remain highlighted, and are issued after waiting 15 seconds for the ENQ. CANCEL is allowed so that the JES3 operator can cancel the hot start with refresh and perform a JES3 hot start.

2. ENQ fails from the local JES3 or C/I FSS address space

If the local or C/I FSS cannot obtain the ENQ during a local or C/I FSS start, JES3 will issue the following message:

- IAT3072 xxxx WAITING FOR SHARED USE OF THE CONFIGURATION

This message is not highlighted, but retrievable through the D R,L command. It is issued after waiting 60 seconds for the ENQ. There is no CANCEL allowed because there is no alternative.

Depending on the specific situations, the following procedures can help in determining the correct response for the situation:

- To find out who has the ENQ, issue either:
 - D GRS,RES=(SYSZIAT,*)
 - D GRS,RES=(SYSZIAT,CONFIG.CHANGE*)

The reasons why the global might not be able to get the ENQ:

- The JES3 local is in the process of being started

For this case, make sure no IAT3011 messages for locals are outstanding. If you have previously replied to message IAT3011, then the local might be initializing or hung.

Reply “CANCEL” and perform a hot start of the JES3 global or issue FORCE command to cancel JES3 on the local.

- C/I FSS is in process of being started

The FSS might be attempting to request a JES3 global service (for example, dynamic allocation or SYSOUT allocation). This can occur if the FSS is just starting when JES3 is terminated. In this case, reply “CANCEL” and perform a hot start or issue the CANCEL command to cancel the C/I FSS address space.

Dynamic Configuration Change Support - *MODIFY,CONFIG Command

As of OS/390 Release 4, JES3 allows you to add SNA/RJP workstations, non-channel-attached FSS printers, and so on dynamically (in other words, without having to restart JES3). To add new definitions, you code initialization statements, just like you would if you were restarting JES3, and specify the member containing the initialization statements on the *MODIFY,CONFIG command. The member must be in the data set specified on the JES3IN DD statement that was used to start JES3.

The following initialization statements are supported during *MODIFY,CONFIG processing:

- RJPWS - Define SNA/RJP workstation characteristics.
- CONSOLE - Define SNA/RJP console
- DEVICE - Define SNA/RJP devices and non-channel-attached FSS-managed printers.
- FSSDEF - Define writer FSS.
- INTDEBUG - Initialization debugging facility
- INCLUDE - Include another initialization stream member

Note: If the JES3IN DD data set is concatenated, only the members in the first data set of the concatenation are used in processing the INCLUDE statement.

These changes are checkpointed so that they will remain in effect if you perform a hot start. If you perform a hot start with refresh, the changes are lost. Therefore, make sure you update your initialization stream before performing a hot start with refresh, warm, or cold start.

Syntax of *MODIFY,CONFIG

A new command has been added to this release of JES3 to dynamically invoke JES3 initialization services to add additional configuration information without the need to perform any type of JES3 restarts. Figure 40 shows the command syntax:

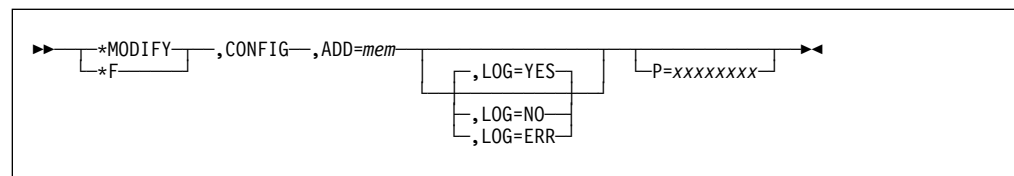


Figure 40. The Syntax of Command *MODIFY,CONFIG

ADD=mem

Specifies the 8-byte member name to be read from the data set allocated to the JES3IN DDNAME in the JES3 procedure. This member contains all initialization statements that you want to add.

LOG=YES|NO|ERR

Optionally specifies whether you want to record each statement processed and any error message generated in a spinoff data set named "MODIFY CONFIG LOG." The LOG=ERR option allows a log data set to be generated only if an error occurs. The default is YES.

P=xxxxxxx

Optionally specifies a parameter string that is passed to IATUX15 as the statements are processed. This is similar to the P= parameter that can be specified in response to message IAT3012 (specify inish deck origin...).

Dynamic Configuration Change Support - *MODIFY,T and *MODIFY,W

In OS/390 Release 4, JES3 adds command support to modify various SNA RJP RJPWS and DEVICE information. In particular, the *MODIFY,T command is enhanced to provide the function of modifying G=, PL=, and TRACE=; and the *MODIFY,W command is enhanced to provide the function of modifying DYNAMIC= (DYN=), DGRPONLY (DGRPY=), PDIR, and XLATE for a SNA RJP DEVICE statement.

The following commands are affected:

- *MODIFY,T,T=wsname | ALL,G=grpname
- *MODIFY,T,T=wsname | ALL,PL=n
- *MODIFY,T,T=wsname | ALL,TRACE=ON | OFF
- *MODIFY,W,devname,DYN=YES | Y | NO | N (or DYNAMIC=...)
- *MODIFY,W,devname,DGRPY=YES | Y | NO | N (or DGRPONLY=...)
- *MODIFY,W,devname,PDIR=ALL | BDS
- *MODIFY,W,devname,XLATE=YES | Y | NO | N

Additionally, the following enhancements are made to other areas of JES3 operations to support the above commands:

- *INQUIRY,D,D= now displays XLATE and PDIR information
- *INQUIRY,D,D= can be used to display non-logged-on RJP workstations
- *INQUIRY,D,T= is enhanced to display PL information
- Completion messages for *INQUIRY,D,D= and *INQUIRY,D,T= are provided

The following are some restrictions on the use of these commands:

- *MODIFY,T,...,G= is not allowed if the workstation is logged on
- *MODIFY,T=ALL with G= is not allowed
- *MODIFY,T,...,G=LOCAL | ANYLOCAL is not allowed
- *MODIFY,W is not allowed if the workstation is signed on
- Information on these commands are **not** preserved over a hotstart.

JES 64K Job Number Support

In this release, JES3 supports a job number range beyond 32K (from 32,767 to 65,534). JES3 commands that use a job number have been changed to allow a number up to 65,534. In addition, *MODIFY,X,MC= keyword has been changed as follows:

MC =nn or NL

nn specifies the maximum number of active DSPs specified by the D= parameter (nn=zero to 65534) or no limit (NL), that can be started concurrently.

Note that the maximum number of jobs in a dependent job control (DJC) network is still 32,767.

*INQUIRY,X and *MODIFY,X Enhancements

Enhancements to the *INQUIRY and *MODIFY module (*INQUIRY,X,M= and *MODIFY,X,M=) commands have been made in OS/390 Release 4.

1. *INQUIRY X Enhancements

- Additional Information is now available:
 - APAR number
 - PTF number
 - Compile date and time
 - Previous location if module no longer loaded
 - Module size
 - AMODE/RMODE
- An example of use:

```
*INQUIRY,X,M=IATINRN
IAT8476 IATINRN - RES=00005 USE=00000 LOADS=00001 EP=00000000 DELETE=Y
IAT8476 REL=HJS6604 DATE=03/14/97 TIME=15:39 APAR=NONE PTF=OS240
IAT8476 AMODE=31 RMODE=24 PREV=00020000
```

Figure 41. Example of Use *INQUIRY,X

- *INQUIRY,X now allows a generic name to be specified (through the ‘*’ symbol)

```
INQUIRY,X,M=IATMD*
IAT8476 IATMDJV - RES=00005 USE=00000 LOADS=00001 EP=00000000 DELETE=Y
IAT8476 REL=HJS6604 DATE=03/14/97 TIME=15:50 APAR=NONE PTF=OS240
IAT8476 AMODE=31 RMODE=ANY PREV=050D7000
IAT8476 IATMDDA - RES=00005 USE=00001 LOADS=00001 EP=05115000 DELETE=Y
IAT8476 REL=HJS6604 DATE=03/14/97 TIME=15:50 APAR=NONE PTF=OS240
IAT8476 SIZE=00002398 AMODE=31 RMODE=ANY
:
:
```

Figure 42. *INQUIRY,X With Generic Name

- *INQUIRY,X now can specify an address within a module loaded using the JES3 ALOAD macro. If you specify an address, *INQUIRY,X will display the module name and offset within the module at that address:

```
*INQUIRY,X,M=5129186
IAT8476 IATMDDR - RES=00005 USE=00001 LOADS=00001 EP=05129000 DELETE=Y
IAT8476 REL=HJS6604 DATE=03/28/97 TIME=04:41 APAR=NONE PTF=OS240
IAT8476 OFFSET=00000186 SIZE=00001EE0 AMODE=31 RMODE=ANY
```

Figure 43. *INQUIRY,X With Address Within a Module

- *INQUIRY,X can now specify the name of JES3 LPA or CSA resident module or CSECT within the JES3 nucleus, IATNUC.

```

*INQUIRY,X,M=IATSICA

IAT8476 IATSICA - EP=041A2000 REL=HJS6604 DATE=03/14/97 TIME=15:59
IAT8476 APAR=NONE PTF=OS240 SIZE=00002690 AMODE=31 RMODE=ANY LOC=MLPA

*INQUIRY,X,M=IATMFSI

IAT8476 IATMFSI - EP=045D4000 REL=HJS6604 DATE=03/14/97 TIME=15:52
IAT8476 APAR=NONE PTF=OS240 SIZE=00000320 AMODE=31 RMODE=ANY LOC=CSA

*INQUIRY,X,M=IATDMNC

IAT8476 IATDMNC - EP=04C1D578 LOADMOD=IATNUC REL=HJS6604 DATE=03/14/9
IAT8476 TIME=15:30 APAR=NONE PTF=OS240 SIZE=00004680 AMODE=31 RMODE=ANY

```

Figure 44. *INQUIRY,X Using JES3 LPA or CSA Resident Module

2. *MODIFY,X Enhancements

Enhancements to the *MODIFY,X include:

- Allows a new copy of the module to be loaded next time an ALOAD request is issued
- A new REFRESH parameter, which allows a copy of the module loaded after making changes
- Only works for modules that are not permanently loaded or constantly in use
- If module is not in use when command is issued:
 - Module storage is freed
 - ALOAD count is set to zero so module will not become resident right away
 - If DELETE=N specified, module becomes resident when loaded

```

*INQUIRY,X,M=IATIIDR

IAT8476 IATIIDR - RES=00005 USE=00000 LOADS=00116 EP=0518F000 DELETE=Y
IAT8476 REL=HJS6604 DATE=03/14/97 TIME=15:35 APAR=NONE PTF=OS240
IAT8476 SIZE=00002F10 AMODE=31 RMODE=ANY

*MODIFY,X,M=IATIIDR REFRESH

IAT8489 (MODX) - MODULE IATIIDR HAS BEEN REFRESHED

*INQUIRY,X,M=IATIIDR

IAT8476 IATIIDR - RES=00005 USE=00000 LOADS=00000 EP=00000000 DELETE=Y
IAT8476 REL=HJS6604 DATE=03/14/97 TIME=15:35 APAR=NONE PTF=OS240
IAT8476 AMODE=31 RMODE=ANY PREV=0518F000

```

Figure 45. *MODIFY,X When Module Not in Use

- If the module is in use when the command is issued:
 - Refresh pending message issued (appears in *INQUIRY,X,M=modname command response)
 - When module is no longer being used, storage freed and the ALOAD count is set to zero

```

*MODIFY,X,M=IATUTDC REFRESH

IAT8489 (MODX) - MODULE IATUTDC REFRESH IS PENDING

*INQUIRY,X,M=IATUTDC

IAT8476 IATUTDC - RES=00005 USE=00001 LOADS=00001 EP=051EE000 DELETE=Y
IAT8476 REL=HJS6604 DATE=03/28/97 TIME=04:42 APAR=NONE PTF=0S240
IAT8476 SIZE=000008A0 AMODE=31 RMODE=ANY REFRESH PENDING REUSE=YES

```

Figure 46. *MODIFY,X When Module in Use

Statistics Collection

A new executable macro, **IATXSTAT**, has been created to collect statistics concerning JES3. These statistics are contained in control blocks called the statistics data area (SDA).

This release of JES3 uses this IATXSTAT macro to collect statistics concerning JES3:

- Initialization
 - Total initialization time
 - Times for different phases of initialization (job validation, consoles initialization, RJP initialization)
 - Number of jobs in queue (total, DJC, in output service)
 - I/O counts performed during job validation
- Restart/Connect Processing
 - MDS restart time and number of jobs
 - Total connect time for each system
 - Times for different phases of connect for each system
- Output Service
 - Output service restart time

By using Dump Core, the SDA may be dumped. See “Dumping the Statistics Data Area (IATYSDA)” on page 100 for an example.

Considerations for Automation Monitoring

You might need to define automation to monitor messages issued by JES3's console services warning of WTO buffer shortages. The process for controlling WTO traffic in a JES3 sysplex environment has been moved from JES3 to MVS as of JES3 SP 5.1.1. As of JES3 5.1.1, JES3 no longer transports WTO traffic through staging areas except for the JESMSGGLG data set and messages tagged by the IATUX69/IATUX70 user exits. Support added in APAR OY57835 gives the installation a method to suppress WTO messages from the JESMSGGLG if desired, thereby reducing WTO traffic through JES3 staging areas. You might also want to enlarge WTO buffer size; reference the text of APAR OW07895 for a discussion of MVS's reactions in a WTO buffer shortage. Pertinent messages to have automation monitor are:

```
IEA405E WTO BUFFER SHORTAGE - 80% FULL
IEA404A SEVERE WTO BUFFER SHORTAGE - 100% FULL
IEA653I JOBNAME= jobname ASID= asid has reached nn% OF THE WTO BUFFER LIMIT
```

Figure 47. Automation Monitoring Messages

When the IEA405E message is issued, the system will also issue the following command to assist in determining the cause of the shortage:

```
DISPLAY CONSOLES,BACKLOG (D C,B)
```

Refer to APAR OW13951 for an explanation of the IEA653I message.

Applications

There are no application migration actions.

Problem Determination and Diagnosis

*MODIFY,CONFIG LOG Dataset

In this release, the *MODIFY,CONFIG command (new to OS/390 Release 4) contains an option (LOG=) that can generate a spin-off data set containing statements processed and potential error messages.

See “Dynamic Configuration Change Support - *MODIFY,CONFIG Command” on page 93 for additional information concerning this command and keyword.

Dump Core Enhancements

Dump Core has been enhanced in this release to view information contained in the spool or checkpoint data sets relating to JES3 initialization.

Dumping Intermediate Text Files

A new option **ITX=** has been added to the *START DC command to view this information completely, or for a particular initialization statement or sub-statement. Because of the volume of data that might be generated, directing the output to a specific printer (OUT=) is recommended on the Dump Core command.

You can specify the following on the DC command:

- CIPARM
- CLASS
- COMPACT
- CONSTD
- DEADLINE
- DESTDEF
- DYNALDSN
- FENCE
- FSSDEF
- HWSNAME
- MAINPROC
- MSGROUTE
- NJERMT
- RESDSN

- RJPLINE
- RJPTERM
- RJPWS
- RMTCONS
- SETACC
- SETNAME
- SETPARAM
- SETRES
- SETUNITS
- SUPUNITS
- SYSOUT
- USER1
- USER2
- USER3
- USER4
- USER5
- USER6
- USER7
- USER8
- USER9
- USER10
- WSB

```

*S,DC,OPTION=(ITX=CIPARM),OUT=0002

*** INTERMEDIATE TEXT - CIPARM

RECORD NUMBER = 0000001 - CIPARM
00000000-F0F1F4F0 F0F0F0F3 F5F0F0F5 F1F2F3F1 *0140000350051231*
00000010-C5F0F0F0 F1F1C1F0 F5F1F2D2 00000000 *E00011A0512K *
00000020-000000 * *

RECORD NUMBER = 0000002 - CIPARM
00000000-C9F1F4F0 F0F0F0F3 F5F0F0F5 F1F2F3F1 *I140000350051231*
00000010-C5F0F0F0 F1F1E3F0 F5F1F2D2 00000000 *E00011T0512K *
00000020-000000 * *

```

Figure 48. Dump of Intermediate Text

Dumping Initialization Checkpoint Record

To dump the Initialization Checkpoint Record that contains the checkpointed portions of various control blocks such as the TVT, SVT, and so on, use the following command:

```

*S,DC,OPTION=ICP

*** INITIALIZATION CHECKPOINT RECORD (ICP) ***

INITIALIZATION CHECKPOINT RECORD HEADER
00000000-C9C3D740 00000000 000018C2 AE7B5676 *ICP      B # *
00000010-8E5E9E84 00000000 00000000 00000000 * ; d      *
00000020-0097097F 16414879 0000003C 000004D0 * p "      *
00000030-00000DE6 00001122 000011C2          * W      B *

INITIALIZATION CHECKPOINT RECORD DATA - IATYTVT
00000000-0000048C E3E5E340 0097097F 16414879 * TVT p " *
00000010-0097098F 15115436 00000002 00000000 * p      *
00000020-00000000 00000000 00000000 00000000 *          *

:
INITIALIZATION CHECKPOINT RECORD DATA - IATYTVTC
00000000-0000090E E3E5E3C3 C9C1E3C7 D9E5E3C3 * <TVTCIATGRVTC*
00000010-C8D1E2F6 F6F0F440 F0F361F1 F461F9F7 *HJS6604 03/14/97*

:

```

Figure 49. Dump of Initialization Checkpoint Record

Dumping the Statistics Data Area (IATYSDA)

The statistics data area (SDA), created by using the new IATXSTAT macro, can be dumped using Dump Core:

```

*S DC OPTION=SDA

*** STATISTICS DATA AREA ENTRIES ***

SDA ENTRY - 04C00460 - INITIALIZATION
00000000-E2C4C1C5 00010000 00000170 C9D5C9E3 *SDAE      INIT*
00000010-C9C1D3C9 E9C1E3C9 D6D54040 40404040 *IALIZATION *
00000020-40404040 40404040 40404040 00000000 *          *
00000030-00000000 00000000 00000000 00000000 *          *
00000040-22010000 00000000 AE7B565C 8271A683 *          # *b wc*
00000050-AE7B5677 01B77D01 AE7B565E FE6E8800 * # ' # ; >h *
00000060-AE7B565F DCA77387 AE7B565F DEE57E80 * # ~ x g # ~ V= *

:
SDA ENTRY - 04C005D0 - RESTART (CONNECT)
00000000-E2C4C1C5 00010000 000008E0 D9C5E2E3 *SDAE      REST*
00000010-C1D9E340 4DC3D6D5 D5C5C3E3 5D404040 *ART (CONNECT) *
00000020-40404040 40404040 40404040 00000000 *          *
00000030-00000000 00000000 00000000 00000000 *          *

:
SDA ENTRY - 04C00EB0 - OUTPUT SERVICE
00000000-E2C4C1C5 00010000 00000050 D6E4E3D7 *SDAE      &OUTP*
00000010-E4E340E2 C5D9E5C9 C3C54040 40404040 *UT SERVICE *
00000020-40404040 40404040 40404040 00000000 *          *
00000030-00000000 00000000 00000000 00000000 *          *

```

Figure 50. Dump of Statistics Data Area (IATYSDA)

JES3 Monitoring Facility (JMF) Enhancements

FCT I/O Statistics Display

JMF has been changed to report I/O information that is collected for each FCT. This information is:

- Number of multi-record file read I/Os
- Number of multi-record file write I/Os
- Number of single-record file read I/Os
- Number of single-record file buffers read
- Number of single-record file write I/Os
- Number of single-record file buffers written

JES3 formats only those statistics that have a non-zero value. JMF also adds a dashed line between the FCT displays to make it easier to read.

AWAIT Analysis

JMF now uses the AWAIT reason codes specified on the AWAIT macro to determine on what event the FCT is waiting. The specific code to determine AWAITS has been removed, and AWAIT reason codes have been added to many AWAITS. As a result, the AWAIT report has a more detailed explanation of why JES3 is AWAITing. This AWAIT data is formatted in VERBX JES3 'OPTION=FCT' output along with the AWAIT reason code.

The default AWAIT= value on *CALL JMF has been changed from 15 to 45.

Bottleneck Report

The same bottlenecks are reported as in prior releases of JES3. However, the description text is reformatted to allow for the longer AWAIT descriptions. The AWAIT reason codes themselves are used to identify bottlenecks; JMF no longer has specific code to identify which AWAITS are bottlenecks. The AWAIT reason codes that are considered to be bottleneck code types are:

AWAIT Reason Code (Hex)	AWAIT Reason Code Name (in IATYAWR)	Description
0003	AWRAENQS	Waiting for shared use of an AENQ resource
0004	AWRAENQE	Waiting for exclusive use of an AENQ resource
000A	AWRLOCAT	Waiting for a catalog locate request to complete
0011	AWRJOBNM	Waiting for job numbers to become available for an AJOBNUM request (TVTJNMSK) Note: The bottleneck is new for OS/390 Release 4 JES3.
001B	AWRCPOOL	Waiting for a cell within a cellpool to become available
001C	AWRFILDR	Waiting for file directory entries to become available
001D	AWRJSAMB	Waiting for JSAM buffers to become available
0074	AWRJNCHL	Waiting for another FCT to finish using the JNCB for a JNCBHLDR request Note: The bottleneck is new for OS/390 Release 4 JES3.

SMF Record Changes

SMF 43 Record Changes

This release of JES3 includes changes to the SMF 84 record type (**JES SMF SUBSYSTEM START RECORD**). New bit **SMF43REF** in byte **SMF43RST** (Start Record Flags) has been added to indicate a hot start with refresh was requested.

SMF 84 Record Changes

In this release of JES3, changes to the SMF 84 record type (**JES Monitor Facility**) produced by JMF are compatible with previous releases; the size did not change in any of the record types. A new version number (3), however, is being used because of the changes being made. The following describes the changed SMF 84 sections.

FCT Section: The FCT section exists between the FCT section and the AWAIT section that follows. This section contains:

- FCT I/O statistics
- A field containing an offset to FCT extension (R84FCXOF)

AWAIT Section: AWAIT sections that do not have reason codes are unchanged. AWAITS that do have reason codes are mapped in the following format:

- Flag R84AWFL2 = R84AWRCD - indicates reason code present
- Field R84AWRSN (2) - contains AWAIT reason code
- Field R84AWDLN (1) - contains AWAIT data length or zero
- Field R84AWDAT (16) - contains AWAIT data

Flags that identify the type of AWAIT are no longer set.

AWAIT Bottleneck Section: The format of the AWAIT bottleneck section has been changed to contain the following information:

- Contains AWAIT reason code (2) - R84BARSN
- AWAIT data length or zero (1) - R84BADLN
- AWAIT data (up to 8 bytes) - R84BADAT
 - Overlays R84BEQNM
 - No room for 16 bytes of data
 - Longest bottleneck data is 8 bytes
- New flag to indicate that await reason code present (R84BRSN=R84BAWRC)
- Flags that indicate the type of bottleneck are no longer set; you can identify the bottleneck from the AWAIT reason code

New JES3 IPCS CBFORMAT Routines

New IPCS models provided are:

- IATIPCFS for the IATYCFGS (Configuration Data Area)
- IATIPNCF for the IATYNCF (New Configuration Data Entry)
- IATIPOCF for the IATYOCF (Old Configuration Data Entry)

- IATIPVIO for the IATYVIO (Job Validation I/O Element)
- IATIPVIT for the IATYVITR (Job Validation I/O Trace Entry)
- IATIPVIW for the IATYVIW (Job Validation I/O Work Area)
- IATIPVI2 (used internally with IATIPVIO and IATIPVIR to format common fields)

New JES3 IPCS VERBEXIT Command Options

OS/390 Version 2 Release 4 JES3 provides new VERBEXIT (BERBX) subcommand options:

- VERBX JES3 'OPTION=FCT'

The new AWAIT data (new DATA= parameter on the AWAIT macro) is now formatted in the VERBX JES3 'OPTION=FCT' output, along with the AWAIT reason code.

- VERBX JES3 'OPTION=MPC'

OPTION=MPC now displays the hot start with refresh and *MODIFY,CONFIG date and time.

| Accounting

| There are no accounting migration actions.

Chapter 8. Migration Actions: JES3 V2R4 to JES3 V2R5

Coexistence, Migration, and Fallback

For all JES3 migrations, review the information APAR II11768 for any APARs that must be applied to allow coexistence with other JES3 releases, migration to particular JES3 releases, and fallback to JES3 releases.

Initialization

There are no initialization migration actions.

Installation Modifications

Considerations When Using OS/390 Client Server

None.

Considerations When Using Exit 19

With OS/390 Version 2 Release 5, JES3 *MODIFY U command processing of SYSOUT data sets on the HOLD queue reduces the amount of recycling of SYSOUT that takes place through the JES3's Output Service function. Changes to JES3 processing of SYSOUT on the HOLD queue causes data sets to be recycled through Output Service in both of the following instances:

- FRPs (because of // *FORMAT statements) exist for the SYSOUT data set
- *MODIFY U,NQ=WTR was requested in the command.

I/O Considerations because of IP Printway

JES3 I/O processing for SWBs occurs in the following instances:

- Use of the IP=ipaddr, FD=formdef and PD=pagedef on the *INQUIRY U command. Whenever a specific match is to occur, the spooled data must be read for a compare.
- Use of the IP=?, FD=?, and PD=? on the *INQUIRY U command. If the SYSOUT contains an IP address, FORMDEF or PAGEDEF, the spooled data must be read.
- Use of the IP=ipaddr, FD=formdef, and PD=pagedef on the *MODIFY U command. Whenever a specific match is to occur, the spooled data must be read for a compare.
- Use of the NIP=ipaddr, NFD=formdef, and NPD=pagedef on the *MODIFY U command.
- Use of the NIP=ipaddr on the *CALL NJEROUT or *START NJEROUT command.

Operations

OS/390 Print Server

OS/390 Version 2 Release 5 JES3 introduces no new or changed operations.

IP Printway

OS/390 Version 2 Release 5 JES3 introduces no new or changed operations. The use of quotes for a specific IP address is critical for proper command processing of this SYSOUT attribute. The *INQUIRY U, *MODIFY U, *CALL NJEROUT, and *START NJEROUT commands are now sensitive to the use of quotes. JES3 no longer translates any of these commands to upper case (whereas the MVS base control program translates all parameters not in quotes to upper case). Quotes should be used in these command ONLY for specific IP addresses. Use of quotes in other parameters for these commands may produce unexpected results. The example below illustrates this:

EXAMPLE

```
*I U,J=140,F=1prt

IAT8131 JOB MARIOA (JB000140), T=PRT, F=1PRT, L=26, PG=0, SR=26
IAT8131 JOB MARIOA (JOB00140), BY=12252.
IAT8119 NUMBER OF JOBS FOUND : 1

*I U,J=140,F='1prt'

IAT8121 NO OUTPUT FOR SELECTED OPTIONS, JOB NOT FOUND
```

Applications

There are no application migration actions.

Problem Determination and Diagnosis

OS/390 Print Server

OS/390 Version 2 Release 5 JES3 introduces no new information or changes to problem determination and diagnosis.

IP Printway

The operator command, Start Dump Core, *S DC,OPTION=(SNP=0SE),DIAG is changed to identify the absence or presence of an IPADDR. The display for the DIAG option contains additional information, including the DDNAME for each non-complete data set under the OSE variable section.

An example follows:

EXAMPLE

```
*S DC,OPTION=(SNP=0SE),J=140,DIAG

***** TIME=97290.11065026
***** JOB=JOB00140 MARIOA
OSE BUFFER NO. 1 INFORMATION.
-----
VAR SEC HAS 5 DATASETS; 0 MARKED DONE
Q=WTR CMPLT=N SCHD=N PRTY=2 CLASS=A OUTST=N
DEST=0002 FORM=1PRT CARR=6 FRMT=N
TPID=none PRMD=LINE USID=+++++++
OTBN=none UCS=PN FLASH=NONE MODID=NONE
STCK=C MODRC=0 IPAD=Y XTKW=N FMDF=Y PGDF=Y
L=44 PG=0 SR=44 BY=20420
DD=..JESMSGGLG
DSN=+++++++MARIOA.JOB00140.D0000002.JESMSGGLG
DD=..JESJCL
DSN=+++++++MARIOA.JOB00140.D0000003.JESJCL
DD=..JESYSMSG
DSN=+++++++MARIOA.JOB00140.D0000004.JESYSMSG
DD=.STEP1.SYSPRINT
DSN=+++++++MARIOA.JOB00140.D000000C.?
DD=.STEP1.SYSUT2
DSN=+++++++MARIOA.JOB00140.D000000D.?
*****
IAT7921 ISSUE START/CANCEL/RESTART DC REQUEST
```

The response to the *S DC,OPTION=(SNP=0SE) option has been changed to display the SWB information for each OSE data set section (if one exists). An example follows:

Dump Core, SWB Information

```
OUTPUT 00000000 E2D1D7C6 021C011F D6E4E3D7 E4E34040
D6E4E3F1 40404040 00000000 001D0001 *SJPF...OUTPUT OUT1 .....*
SWBTU 00000020 0006C6C4 C5C64040 001F0001 0006D7C4
C5C64040 000C0001 007FC1D5 E8D3D6C3 *..FDEF .....PDEF .....ANYLOC*
00000001 00000040 C1D34040 40404040 40404040 40404040
40404040 40404040 40404040 40404040 *AL *
00000060 40404040 40404040 40404040 40404040
40404040 40404040 40404040 40404040 *
00000080 40404040 40404040 40404040 40404040
40404040 40404040 40404040 40404040 *
000000A0 40404040 40404040 40404040 40404040
40404040 40404040 40800500 01007CC9 * .....I*
000000C0 D7C1C4C4 D9408699 969440D6 E4E3D7E4
E340D1C3 D340A2A3 81A38594 8595A340 *PADDR from OUTPUT JCL statement *
000000E0 40404040 40404040 40404040 40404040
40404040 40404040 40404040 40404040 *
00000100 40404040 40404040 40404040 40404040
40404040 40404040 40404040 40404040 *
00000120 40404040 40404040 40404040 40404040
40404040 40404040 404040 * *
```

Additional support for the Dump Core command displays the STT and spool record through an **mmmm.rrrrrrr** address. The mmmm portion of the spool address is the spool extent address, the number (module) where the record resides. The rrrrrrr portion of the spool address is the spool record number within the spool extent

- *S DC,OPTION=STT displays the records in the STT.
- *S DC,OPTION=(STT=nnnn) displays "nnnn" hex bytes of each of the records in the STT.
- *S DC,OPTION=(STT=ALL) displays the contents of all records in the STT.

- *S DC,OPTION=(STT='id') displays those STT records that have the specified control block 'id'.
- *S DC,SPADDR=MMMM.RRRRRRRR displays the contents of the spool record that has a spool address of mmmm.rrrrrrr.

| **Accounting**

| There are no accounting migration actions.

Chapter 9. Migration Actions: JES3 V2R5 to JES3 V2R6

Coexistence, Migration, and Fallback

For all JES3 migrations, review the information APAR II11768 for any APARs that must be applied to allow coexistence with other JES3 releases, migration to particular JES3 releases, and fallback to JES3 releases.

Initialization

JCT Utility

The JCT Utility, IATUTJCT, introduces some initialization considerations that require the attention of the JES3 installation. See *OS/390 JES3 Initialization and Tuning Guide* for a detailed descriptions of the setup, initialization, and use of the JCT utility. This information includes:

- A sample JCL procedure to help you install your procedure to run IATUTJCT.
- How to define IATUTJCT to the system.
- Establishing the proper libraries, initialization statements, and DD statements that are needed to run IATUTJCT.
- Establishing an IATUTJCT procedure in PROCLIB.
- Ensuring that the IATUTJCT module and supporting modules are properly placed in the appropriate libraries.
- Changing profiles and startup procedures so IATUTJCT can be used.
- Migrating to HJS6606 (JES3 Version 2 Release 6)
 - You can migrate to a higher JES3 release by performing an IPL of the system containing the higher JES3 release, starting IATUTJCT with P=MIGRATE, and then starting JES3 with pointers to the JCT and checkpoint data sets changed to the new ones.
 - You can cold start to a higher JES3 release rather than run the IATUTJCT utility. You should plan to save and restore jobs using the dump job DSP without the TRANS=YES parameter.
- Migrating Up to HJS6606
 - On a lower release than OS/390 Version 2 Release 6 you need to install PTF for APAR OW30849 in order to run the JCT utility, IATUTJCT. With this PTF on the lower release, you run IATUTJCT and start JES3 using the new JCT and checkpoint data sets. The higher JES3 release can be installed subsequently on the global processor by an IPL and a hot start, if the lower release is HJS5521 or higher. If the lower release is HJS4421 or HJS5511, a warm start is required in order to migrate to HJS6606.
- Falling Back to a Lower Release
 - You accomplish a "fallback" to a lower release from a JES3 release (of HJS5521 or higher) with an IPL and hot start provided that APAR OW30849 is installed on the lower release. Without APAR OW30849, a

fallback requires a cold start. Also, any local processor cannot contain HJS6606 if the global processor is to fall back to a lower release. A local processor can fall back to a lower release with the global at the HJS6606 level provided that the lower release is HJS5521 or higher and the PTF for APAR OW30849 is applied on the local.

JCT Data Set Sizing

If your installation has not modified the length of the JCT by changes to IATYJCT, IATYCNDDB, or IATYFDB, and you take the default number of SE entries (10), then the standard JCT entry is 620 bytes long (X'26C'). For expanded entries, each JCT entry would be 736 bytes long (X'2E0') or 116 bytes larger than the standard ones. For these expanded entries, the device-related sizes would be as follows:

- 3380: This translates to 38 entries/track or 570 entries/cylinder.
- 3390: This translates to 41 entries/track or 615 entries/cylinder.

See *OS/390 JES3 Initialization and Tuning Guide* for additional information on calculating the size of a JCT entry, determining the size of the JCT data set, and picking device-related sizes.

Dump Job Enhancements

If you plan on running dump job in server mode only, the device used by dump job does not have to be defined to JES3.

If you have tape DEVICE statements and SETNAME statements in your initialization stream for use only by dump job, these statements can be removed once you decide only to run dump job in server mode. To remove tape DEVICE and SETNAME statements from the initialization stream requires a JES3 warm start.

If you want JES3 to continue to manage tape devices for jobs in execution but no longer need them for dump job, you can remove the DTYPE, JNAME, and JUNIT parameters from the tape DEVICE statements and perform a hot start with refresh. If you change your mind and want to add them back, this can also be accomplished by performing a hot start with refresh.

Installation Modifications

JCT Utility

There are no specific customization details for the JCT Utility; however, since the size of the JCT is changed in this release, there are some coding considerations you need to consider if you have code that accesses the JCT. See *OS/390 JES3 Customization* (in particular the IATXJCT macro) for details concerning these considerations.

JES3 Resource Affinity

An installation may assign a scheduling environment to a job using a JES3 exit. Use the exits to assign a scheduling environment to a batch job. Do not use these exits to assign a scheduling environment to a demand select job (TSO logon or started task).

- IATUX03 (Converter/Interpreter)
- IATUX04 (Converter/Interpreter)
- IATUX05 (Converter/Interpreter)
- IATUX06 (Converter/Interpreter)
- IATUX08 (Converter/Interpreter)
- IATUX09 (Converter/Interpreter)
- IATUX28 (Input Service)
- IATUX29 (Input Service)
- IATUX33 (Input Service)
- IATUX34 (Input Service)
- IATUX44 (Input Service)

See *OS/390 JES3 Customization* for more information on coding these exits.

The scheduling environment that is specified in an exit overrides the SCHENV parameter on the JOB statement.

The scheduling environment is extracted from the JOB statement by JES3 during the JCL conversion phase of C/I. This portion of JES3 C/I processing can run in a C/I FSS address space if you have C/I FSSs defined. If the job is converted in a C/I FSS address space which is running on a system that is not at the OS/390 Version 2 Release 6 level of JES3, the scheduling environment will not be extracted from the JOB statement and used for scheduling the job for execution.

If you assign a scheduling environment with a JES3 exit, and you are running C/I FSS address spaces on systems that are not at the version level, you should use an exit which runs in the JES3 global address space (for example, IATUX09, IATUX29), not one that runs in a C/I FSS address space (for example, IATUX03, IATUX04). Otherwise, the scheduling environment assigned by the exit will be ignored.

Operations

JCT Utility

You need to be aware of the following operational characteristics when using the JCT Utility, IATUTJCT. Also, see *OS/390 JES3 Initialization and Tuning Guide* for additional information about the JCT Utility.

Migrating to a Higher Release of JES3

IATUTJCT can be used to migrate from a lower release of JES3 to HJS6606. IATUTJCT is automatically available in OS/390 Version 2 Release 6 JES3 and higher. On lower releases of JES3, the installation must first install PTF for APAR OW30849. With this PTF, you can run IATUTJCT on the lower release and start JES3 using the JCT and checkpoint data sets.

The installation can migrate to a higher JES3 release without the migration PTF by performing an IPL of the system containing the higher JES3 release, starting IATUTJCT with P=MIGRATE, and then starting JES3 with pointers to the new JCT and checkpoint data sets. The installation must install the higher JES3 release on all processors in the JES3 complex simultaneously.

Falling Back to a Lower Release of JES3

IATUTJCT does not allow the JES3 installation to migrate "down" from a higher JCT version to a lower one; however, if IATUTJCT was previously run with P=MIGRATE and the lower JES3 release has the migration PTF for APAR OW30849 installed, a fallback to that "lower" release is possible using the higher version of the JCT data sets. If the migration PTF is not installed on the lower release, a cold start is required if you need to fall back to the lower release.

Dump Job Enhancements

The dump job utility allows you to dump jobs from the JES3 job queue to tape and then later restore them. In OS/390 Version 2 Release 6, the operator has the option of running dump job in server mode or nonserver mode.

In server mode, the tape I/O portion of dump job is performed in a dump job server address space that is started by JES3. In nonserver mode, the tape I/O portion of dump job is performed in the JES3 address space.

To support server mode, the syntax of the *CALL,DJ command has been changed:

- SERVER=YES/NO - Specifies whether dump job should be run in server or nonserver mode. The default is SERVER=NO.
- DSN=dsname - For input mode requests when SERVER=YES is specified, specifies the name of the data set that was created when the jobs were dumped to tape.
- VOL=vollist - For input mode requests when SERVER=YES and LABEL=NL is specified, specifies the list of volume serial numbers that contain the information for the jobs that were dumped to tape. The VOL= parameter can also be used when LABEL=SL is specified to start restoring jobs from a volume other than the first volume.

For more information about dump job processing and the dump job server address space, see *OS/390 JES3 Commands*.

JES3 Resource Affinity

JES3 checks when the job's scheduling environment is available after a job has been scheduled for main service. The job is selected for execution only if the job's scheduling environment is available on at least one system that is eligible to run the job. If the job's scheduling environment is not available on any systems, the job waits in one of the following places :

- MDS allocation - If the scheduling environment is unavailable when resource allocation is performed.
- GMS select - If the scheduling environment is unavailable when JES3 attempts to select a job for execution.

To determine why a particular job is not being selected for execution, you can issue the *I,Q, *I,P, or *I,J=*jobno* command with the "W" parameter. As an example,

suppose a job DB2JOB was submitted and specified a scheduling environment. To determine why the job is not being selected for execution, issue the following command:

```
*I,J=DB2JOB,W

IAT8674 JOB DB2JOB (JOB32787) P=02 CL=Z      MAIN(ALLOCATE)
IAT8685 SY1      - SCHEDULING ENVIRONMENT NOT AVAILABLE
IAT8685 SY2      - REQUIRED RESOURCES NOT AVAILABLE
IAT8685 SY3      - MAIN OFFLINE/NOT CONNECTED
IAT8685 SY4      - GROUP/CLASS DISABLED
IAT8685 SY5      - GROUP/CLASS DISABLED
IAT8685 SY6      - MAIN OFFLINE/NOT CONNECTED
IAT8685 SY7      - MAIN OFFLINE/NOT CONNECTED
IAT8685 SYLOCAL8 - MAIN OFFLINE/NOT CONNECTED
IAT8687 JOB WAITING/ACTIVE 00001 HOURS 29 MINUTES 05 SECONDS
```

Figure 51. Checking Job Selection Status

In this case, one of the reasons why the job is waiting is because the scheduling environment is not available on system SY1. To determine what scheduling environment, the job is using, the new `*I,J=jobno,X` command can be used to display extended information for the job. For example:

```
*I,J=DB2JOB,X,W

IAT8674 JOB DB2JOB (JOB32787) P=02 CL=Z      MAIN(ALLOCATE)
IAT8564 SCHENV=DB2LATE
IAT8685 SY1      - SCHEDULING ENVIRONMENT NOT AVAILABLE
IAT8685 SY2      - REQUIRED RESOURCES NOT AVAILABLE
IAT8685 SY3      - MAIN OFFLINE/NOT CONNECTED
IAT8685 SY4      - GROUP/CLASS DISABLED
IAT8685 SY5      - GROUP/CLASS DISABLED
IAT8685 SY6      - MAIN OFFLINE/NOT CONNECTED
IAT8685 SY7      - MAIN OFFLINE/NOT CONNECTED
IAT8685 SYLOCAL8 - MAIN OFFLINE/NOT CONNECTED
IAT8687 JOB WAITING/ACTIVE 00001 HOURS 29 MINUTES 05 SECONDS
```

Figure 52. Displaying Extended Job Information

The above results indicate that the job is using scheduling environment DB2LATE. To display the status of this scheduling environment and its resources, issue the `DISPLAY WLM` command. The following command displays the status of the scheduling environment and its resources on SY1:

DISPLAY WLM,SCHENV=DB2LATE,SYSTEM=SY1

```
IWM037I 12.21.05 WLM DISPLAY 181
SCHEDULING ENVIRONMENT: DB2LATE
DESCRIPTION:           Offshift DB2 Processing
SYSTEM:                SY1
STATUS:                NOT AVAILABLE

                REQUIRED   CURRENT
RESOURCE NAME  STATE     STATE
DB2A          ON        ON
*PRIMETIME    OFF        ON
```

In this example, the scheduling environment is not available on system SY1 because the resource PRIMETIME is not in its required state. To allow the job to run, the operator, automation, or a program must change the state of the resources to make the scheduling environment available. Note that changing the state of one

resource can change the status of more than one scheduling environment when the resource names are shared between scheduling environments.

You use the MODIFY WLM command to change the resource PRIMETIME to the "OFF" state and cause the scheduling environment to become available.

Changing the Scheduling Environment

```
F WLM,RESOURCE=PRIMETIME,OFF
IWM039I  RESOURCE PRIMETIME IS NOW IN THE OFF STATE
```

JES3 listens for scheduling environment state changes and WLM policy changes and automatically requeues jobs or allows them to continue depending on the state of the scheduling environment. In this example, since the scheduling environment is now available, the job is selected for execution if there is an available initiator:

```
IAT2000 JOB DB2JOB  (JOB32787) SELECTED SY1      GRP=JES3TEST  SY1 DB2JOB
IEF403I DB2JOB  -  STARTED - TIME=10.22.49
```

If a scheduling environment becomes unavailable, the processing that is performed depends on the location of the job on the queue and whether the job requires JES3 setup processing or not.

- If the job does not require JES3 setup processing, the job remains on the GMS select queue until the scheduling environment becomes available.
- If the job requires setup and MDS has allocated its resources (e.g. the job is on the GMS select queue waiting for an initiator to select it), then one of the following occurs:
 - If there is at least one other system where the scheduling environment is available and the system is eligible to run the job, the job remains on the queue it is on.
 - If there are no other systems where the scheduling environment is available and the system is eligible to run the job, the job is restarted through setup and wait in MDS allocation processing until the scheduling environment becomes available. This allows the job's resources to be freed and used by other jobs while it is waiting for the scheduling environment to become available.

Displaying a Summary of the Jobs in MDS Allocation

The *I,S command has been enhanced to display a summary of the jobs in MDS allocation. The information that is displayed includes:

- The name of the resource that is required and the number of jobs that require that resource.
- The specific job or number of jobs that have the particular resource (if applicable).
- The priority of the job that reserved the resource (if applicable).
- A list of jobs that require the resource.

The information is ordered by the number of jobs that require the resource. That is, the resources that are needed most are displayed first.

Assume 10 jobs require a 3490 tape device, 4 jobs are waiting for a particular data set, 2 jobs are waiting for scheduling environment DB2LATE to become available on SY1.

In the *I,S command output below there are 3 jobs waiting for 3490 devices, and there is one job waiting for specific device F0B1.

```
IAT5030 00003 REQUESTS NEED DEVICE 3490
IAT5033 JOB TAPE1 (JOB32810),14 - NEEDS 00004 DEVICES
IAT5033 JOB TAPE2 (JOB32804),02 - NEEDS 00001 DEVICE
IAT5033 JOB TAPE3 (JOB32804),02 - NEEDS 00002 DEVICES
IAT5033
IAT5030 00001 REQUESTS NEED SPECIFIC DEVICE F0B1
IAT5031 00001 REQUESTS HAVE EXCLUSIVE USE OF THE RESOURCE
IAT5033 JOB DEMAND (JOB32812),03 - NEEDS DEVICE F0B1
IAT5033
```

In the *I,S command output below there are 2 jobs waiting for exclusive use of a tape volume, and there is one job waiting for the device associated with a DASD volume to be varied online.

```
IAT5030 00002 REQUESTS NEED VOLUME TAPVL1
IAT5031 JOB GOTTAPE (JOB27842) HAS EXCLUSIVE USE OF THE RESOURCE
IAT5032 RESOURCE HAS BEEN RESERVED EXCLUSIVE BY A JOB IN PRIORITY 14
IAT5033 JOB WANTTAP1 (JOB34000),14 - NEEDS EXCLUSIVE USE OF VOLUME
IAT5033 JOB WANTTAP2 (JOB34009),06 - NEEDS EXCLUSIVE USE OF VOLUME
IAT5033
IAT5030 00001 REQUESTS NEED THE DEVICE FOR VOLUME VSAM01
IAT5033 JOB DASDVOL1 (JOB35000),12 - NEEDS SHARED USE OF VOLUME
IAT5033
```

In the *I,S command output below there is 1 job waiting for shared use of a non-SMS data set and one job waiting for exclusive use of an SMS-managed data set.

```
IAT5030 00001 REQUESTS NEED DATA SET RIEDY.LINKLPA ON VOLUME D75902
IAT5031 JOB LINKNUC (JOB27881) HAS EXCLUSIVE USE OF THE RESOURCE
IAT5032 RESOURCE HAS BEEN RESERVED EXCLUSIVE BY A JOB IN PRIORITY 12
IAT5033 JOB LISTMEM (JOB34011),12 - NEEDS SHARED USE OF DATA SET
IAT5033
IAT5030 00001 REQUESTS NEED SMS DATA SET D75JES3.COMMON.DECKS
IAT5031 00002 REQUESTS HAVE SHARED USE OF THE RESOURCE
IAT5033 JOB INITCHEK (JOB35123),11 - NEEDS EXCLUSIVE USE OF DATA SET
IAT5033
```

In the *I,S command output below there is 1 job waiting for a device fence to become available, 2 jobs waiting for a job class to become available on SY2, 1 job waiting for a scheduling environment to become available on SY1 and 2 jobs waiting for a scheduling environment to become available on SY2. Note that the device fence condition does not have a system name associated with it since it is not associated with a particular system.

```

IAT5030 00002 REQUESTS - CLASS OR GROUP DISABLED ON SY2
IAT5033     JOB CLASSZ1 (JOB12012), 02
IAT5033     JOB CLASSZ2 (JOB12013), 02
IAT5033
IAT5033     JOB CLASSZ1 (JOB12012), 02
IAT5033     JOB CLASSZ2 (JOB12013), 02
IAT5033
IAT5030 00002 REQUESTS - SCHENV UNAVAILABLE ON SY2
IAT5033     JOB IMSDB1 (JOB11936), 02 - IMS_PRIME_TIME
IAT5033     JOB VECTOR (JOB11950), 02 - VECTOR_FACILITY
IAT5033
IAT5030 00001 REQUESTS - DEVICE FENCE PENDING
IAT5033     JOB DJCFENCE (JOB12012), 02
IAT5033
IAT5030 00001 REQUESTS - SCHENV UNAVAILABLE ON SY1
IAT5033     JOB IMSDB1 (JOB11936), 02 - IMS_PRIME_TIME
IAT5033

```

Dynamic LPA

In OS/390 Version 2 Release 6 JES3 is changed to allow JES3 LPA modules to be changed via a hot or local start without IPL and CLPA. This allows installation to avoid an IPL when making changes to JES3 LPA modules.

Below is an example of changing a JES3 LPA module. First, the SETPROG command is issued to dynamically add the module to LPA. The old versions of the module are not deleted so any address spaces that are using the old versions of the module are not affected.

Example

```

SETPROG LPA,ADD,MODNAME=IATSICA,DSN=
LNKLST

CSV551I 19.16.14 LPA ADD 868
SUCCESSFUL: 1 UNSUCCESSFUL: 0 NOT PROCESSED: 0
MODULE      RESULT
IATSICA     SUCCESSFUL

```

After the SETPROG command completes, you can restart JES3 without an IPL to pick up the new version of the LPA modules. JES3 does not recognize that the LPA module has been changed until it is restarted. So you can back out the change with another SETPROG command.

If one or more LPA modules are changed, JES3 issues message IAT3085 to show which modules changed since the last time JES3 was restarted. On the global processor, the message appears in the JES3OUT data set. On the local processors, the message appears on the console.

```
IAT3085 LPA MODULE CHANGED: IATSICA
```

Applications

There are no application migration actions.

Problem Determination and Diagnosis

JCT Utility

OS/390 Version 2 Release 6 JES3 introduces no new information or changes to problem determination and diagnosis. A trace entry is created when certain functions are performed by the dump job server address space.

Dump Job Enhancements

OS/390 Version 2 Release 6 JES3 provides a trace entry when certain functions are performed by the Dump Job server address space. For details about this trace entry, see *OS/390 JES3 Diagnosis*.

*TRACE Enhancements

OS/390 Version 2 Release 6 JES3 introduces expanded *TRACE options to monitor JES3 Workload Manager Policies and Scheduling Environments.

The *TRACE command is changed to allow additional events to be traced via the Generalized Trace Facility (GTF). The following new GTF traces have been added:

- WLMENF - Issued when a WLM ENF signal is processed by JES3.
- WLMGMSFCT - Issued when GMS (MAIN FCT) processes a WLM related event (e.g. such as a scheduling environment becoming available).
- WLMGMSJOB - Issued when GMS changes information for a job as a result of a WLM related event.
- WLMMDSFCT - Issued when MDS (SETUP FCT) processes a WLM related event (e.g. such as a scheduling environment becoming available).
- WLMMDSJOB - Issued when MDS changes information for a job as a result of a WLM related event.
- SAPI - Issued on entry and on exit from the System Application Printer Interface subsystem interface.

See *OS/390 JES3 Diagnosis* for more information about these new events. For syntax of the *TRACE command, see *OS/390 JES3 Commands*.

The output of the *TRACE command has also changed in OS/390 Version 2 Release 6 to include the trace name as well as the trace number. The following shows an example of the output of the *TRACE command:

```
*TRACE,INQ

IAT7136 JES3 GTF TRACE STATUS
TRACE ID  TRACE NAME    STATUS  TRACE ID  TRACE NAME    ...  STATUS
-----
      1  WTOSSI      INACTIVE    2  WTOSSI      ...  INACTIVE
      3  WTOSSI      INACTIVE    5  WTLSSI      ...  INACTIVE
      6  WTLSSI      INACTIVE    8  WTOSSI      ...  INACTIVE
      9  WTOSSI      INACTIVE   11  WTOSSI      ...  INACTIVE
     12  WTOSSI      INACTIVE   14  WLMENF      ...  INACTIVE
     15  WLMMSFCT    ACTIVE    16  WLMMSJOB    ...  ACTIVE
     17  WLMGMSFCT  INACTIVE   18  WLMGMSJOB    ...  INACTIVE
     19  SAPI        INACTIVE
```

Figure 53. *TRACE Output

| Accounting

| There are no accounting migration actions.

Chapter 10. Migration Actions: JES3 V2R6 to JES3 V2R7

Coexistence, Migration, and Fallback

For all JES3 migrations, review the information APAR II11768 for any APARs that must be applied to allow coexistence with other JES3 releases, migration to particular JES3 releases, and fallback to JES3 releases.

Initialization

There are no initialization migration actions.

Installation Modifications

Support for FICON Channels

JES3 is changed to support FICON channels. The only change to JES3 is the macro JESEXCP. A new keyword IOBE= is added to allow JES3 to utilize the IOB extension when doing I/O. You get this FICON support in JES3 by applying the PTF for the APAR OW31828.

Operations

*MODIFY,S Change

A new keyword, IVERMSG= is available for use on the *MODIFY,S command to indicate whether IAT5918 messages received during main connect processing are to be written to the hard-copy message log (MLOG). This keyword has two possible values: SUMMARY or ALL. SUMMARY is the default and indicates that summary message IAT5919 is to be written for every 100 verify response messages and at the end of the initial verify processing. ALL indicates that all verify response messages are to be written. This change can be applied as a PTF for APAR OW32272.

Applications

There are no application migration actions.

Problem Determination and Diagnosis

There are no problem determination and diagnosis migration actions.

| Accounting

SMF26 Support for Job Purge Record

JES3 uses the SMF26IND bit in the SMF26 record to record a job's accounting data as specified on the JOB JCL statement. This bit indicates when the triplet section of SMF26 is being used. PTF for APAR OW26297 supports JES3's use of this bit.

Chapter 11. Migration Actions: JES3 V2R7 to JES3 V2R8

Coexistence, Migration, and Fallback

For all JES3 migrations, review the information APAR II11768 for any APARs that must be applied to allow coexistence with other JES3 releases, migration to particular JES3 releases, and fallback to JES3 releases.

Initialization

Initialization Statement Changes

GROUP

- A new MODE parameter was added to the GROUP statement. The MODE parameter specifies whether jobs in that group run under JES3-managed initiators (MODE=JES) or WLM-managed initiators (MODE=WLM). MODE=JES is the default.
- When MODE=WLM is specified for a GROUP, the initiator count, initiator allocation option, and initiator deallocation option on the GROUP statement can be specified but they are ignored. If the group is switched to JES3 management using the *MODIFY,G command, the initiator options will be in effect.
- When MODE=WLM is specified for a group, the JSPAN and BAR parameters are ignored when selecting a job for execution.
- If MODE=WLM is specified for a group, and you fall back to a release prior to OS/390 Version 2 Release 8 and perform a hot start, the job class group will revert to JES3 management without requiring any special action. The same thing is true if you perform a DSI to a local that is not at the OS/390 Version 2 Release 8 level.

However, if you perform a cold, warm, or hot start with refresh, you must first remove the MODE= parameter from the GROUP statement. Otherwise, JES3 initialization will fail.

- For WLM-managed groups, the EXRESC parameter must still be specified in order to tell JES3 on which systems the group can run. Note that a group can be either JES3 managed or WLM managed; it cannot be JES3 managed on one system and WLM managed on another.
- If the options on the EXRESC parameter are the same for all systems, then *ALL can be specified as the system name. When *ALL is specified as the system name, it is treated as if an EXRESC parameter was specified for each system defined using a MAINPROC statement in your initialization stream.
If *ALL is specified as a system name, EXRESC parameters containing system names cannot be specified on that GROUP statement and vice versa.
- If *ALL is specified as a system name on the EXRESC parameter and you fall back to an release prior to OS/390 Version 2 Release 8, you must modify your initialization stream to specify system names on the EXRESC parameter, and then perform a cold, warm, or hot start with refresh. If you attempt to perform a hot start without changing your initialization stream, JES3 initialization will fail

because the down-level JES3 does not recognize the use of *ALL as a system name.

The same thing is true if you perform a DSI to a local processor that is not at the OS/390 Version 2 Release 8 level.

CLASS

- The IORATE and LSTRR parameters are ignored during job selection if the group associated with the class is WLM managed.
- Class limits (TDEPTH, MDEPTH, TLIMIT, and MLIMIT) are used during job selection for jobs in WLM-managed groups. If class limits are used, it is recommended that all jobs in class be assigned the same service class.
- The SDEPTH, TDEPTH, MDEPTH, TLIMIT, MLIMIT and GROUP can be modified using the *MODIFY,C=c/s command.

SELECT

- The CHOICE, LSTOR, and JOBMIX parameters are ignored during job selection for WLM-managed groups.
- The MAGER and MAGEL parameters are ignored for jobs in WLM-managed groups. Jobs that are waiting to be selected by a WLM-managed initiator are not aged.
- The MAGER and MAGEL parameters are ignored for jobs in WLM-managed groups. Jobs that are waiting to be selected by a WLM-managed initiator are not aged.
- If GROUP=(group,initcnt,...) is specified on the SELECT statement, the initiator count is ignored if the group is WLM managed. If the group is switched to JES3 management using the *MODIFY,G command, the initiator count that was specified will be in effect.

The initiator count can now be omitted by coding a null parameter. If the initiator count is omitted and the group is JES3 managed, a value of zero will be assumed. For more details on setting the initiator count in the SELECT initialization statement, see *OS/390 JES3 Initialization and Tuning Reference*.

DESTDEF

- A new initialization statement that specifies how inbound SYSOUT data sets from other NJE nodes are to be processed at this node.
- The DEVICE= parameter specifies device(s), whose data is to be placed on the writer queue (that is made unavailable to TSO RECEIVE).
- The USERID= parameter specifies the user names, whose are to receive data from inbound NJE SYSOUT. This data is to be place on the hold queue and made available for TSO RECEIVE by the named users.

NJERMT

- The NJERMT initialization statement that is used to define a node in the JES3 job entry network has a new parameter, NETHOLD.
- NETHOLD= specifies whether incoming NJE SYSOUT data sets that appear to be NETDATA output should always be held for a TSO user or should be made available for JES3 writers.

Hot/Warm Start with Analysis

When a hot or warm start with analysis is performed, JES3 issues message IAT3146 to prompt the operator for the jobs to be deleted. Prior to OS/390 Version 2 Release 8, the job numbers of the jobs to be deleted had to be specified. If a large number of similarly named jobs were submitted, this made it difficult to delete them since the operator had to determine the job numbers associated with the jobs.

In OS/390 Version 2 Release 8, a list of job names or numbers can be specified in response to IAT3146. If a job name is specified and there is more than one job with that name, all jobs with that name are deleted.

Installation Modifications

Jobs that Update Initiators and Proclibs

The proclib update facility is used to disable the procedure libraries used by JES3 while a job, which is updating the proclib, is running. The user specifies the names of the proclib data sets to be updated on the UPDATE= parameter of the `//*MAIN` statement, and JES3 closes and deallocates all proclibs that have those data sets. After the proclibs have been disabled, jobs that use those proclibs are not scheduled for C/I. When the job completes execution, the proclibs are reallocated and jobs are allowed to be scheduled for C/I again.

Prior to OS/390 Version 2 Release 8, before submitting a proclib update job that updated the procedure library used to start JES3 initiators, it was necessary to ensure that at least one initiator was started in the job class group associated with the job. If this was not done, a deadlock would occur; the procedure library used to start the initiator is disabled, the job is waiting for an initiator, and the initiator is waiting for the procedure library to be enabled. The only course of action was to cancel the job and resubmit it after the initiator started.

In OS/390 Version 2 Release 8, the deadlock is still possible if the job is submitted with a job class associated with a JES-managed job class group. If the job is submitted with a job class associated with a WLM-managed job class group, the deadlock is no longer possible since WLM initiators are not started under JES3, and therefore do not need access to the JES3 procedure libraries in order to start.

With using only JES-managed initiators in releases prior to HJS6608 installations have the following operational problems:

- If there are no initiators or not enough initiators started in the group that the proclib update job belongs to, and the proclib update job is updating the proclib that is used for started tasks, JES3 is not able to start an initiator for the job.
- When the proclib update job arrives on the GMS select queue, JES3 issues a START command for an initiator.
- The START command causes an initiator job to be created, but the initiator never starts because it cannot be scheduled for C/I since the proclib used to start the initiator has been disabled by the proclib update job.
- You can overcome this situation by canceling the proclib update job, ensure that there is an initiator available, and then resubmit the proclib update job.

HJS6608 solves this problem with WLM-managed initiators. WLM-managed initiators are started under the master subsystem and not JES3. Therefore, a JES3 job is not created, and the job doesn't have to go through JES3's C/I processing.

IATXJQE Macro

The IATXJQE macro is changed as follows:

- The JOBNUM parameter on the IATXJQE macro now allows a halfword or fullword field to be specified.
- A new IATXJQE search service is provided to allow a module to scan the JQE's for jobs that match certain selection criteria. Prior to OS/390 Version 2 Release 8, the caller had to repeatedly issue IATXJQE PRTY= requests for each priority and then examine each JQE that was returned to see if it was the one to process. This was expensive in terms of system overhead. The IATXJQE search service allows the caller to specify one or more attributes that must match before a JQE is returned.

For example, the caller can specify that only JQE's with JQEFLG2 set to JQEDSEL and with a job name that starts with the character string "INIT" be returned.

- Prior to OS/390 Version 2 Release 8, when an IATXJQE by priority request was issued, the priority was locked until the FCT processed the last job in the priority was processed. If another FCT wanted to access jobs in the priority, it would have to wait for the other FCT to finish.

For example, when an *I,Q,SP=spart,U command is issued, the command processor scans the job queue and displays spool space usage for each job. Since spool I/O must be performed to get this information, each priority can be locked for a long period of time. As a result, commands such as *I,Q,N=nn and *I,P=prty, which also need access the jobs in each priority, are delayed until the *I,Q,SP=spart,U command is finished with the priority.

In OS/390 Version 2 Release 8, a new parameter, ACCESS=, can now be specified to indicate whether the priority should be accessed shared (ACCESS=SHR) or exclusive (ACCESS=EXCL). If ACCESS=SHR is specified, more than one FCT can access the jobs in the priority at the same time. JES3 commands which display job information, such as *I,Q and *I,Q,SP=ALL,U are changed to specify ACCESS=SHR when scanning the JQE's by priority. This reduces the amount of delay for other commands when an *I,Q,SP=spart,U command is being processed.

For more information about the IATXJQE macro, see *OS/390 JES3 Customization*.

ACALL Macro

The ACALL macro now allows ENTER=(R0) to be specified. This allows you to ALOAD a module and call it without having to copy the module entry point from R0 to R15.

AWAIT Macro

When the AWAIT macro was coded, the TYPE= parameter had to be specified to indicate whether you were waiting for one of the bits to be turned on in the ECF (TYPE=ON), or all of the bits to be turned off in the ECF (TYPE=OFF). Since TYPE=ON is used for a majority of the AWAIT macro calls, it has been made the default.

IATXGFC Macro

The DSP parameter in this macro allows you to specify the name of the DSP to be used when creating the FCT. This allows you to create an FCT without first having to search the DSP dictionary entries for the specified DSP. In addition, new parameters were added to make it easier to initialize the FCT.

IATXMPC Macro

IATXMPC is a new macro that is used to perform Main Processor Control Table (MPC) functions, such as:

- Finding the MPC with the specified system name, sequence number, or main mask.
- Scanning the MPCs and setting flags in selected or all MPCs.
- Creating a main mask from a list of systems and vice versa.

IATXGENF Macro

IATXGENF is a new macro that is used to offload a piece of work to a general purpose FCT.

For example, suppose you have to read spool control blocks for all jobs in the queue. If this were performed by just one FCT, it could take a long time. If multiple FCTs could be set up and dispatched to do the work, it would be accomplished faster. The IATXGENF macro allows you to do this. The caller specifies the address of an appendage routine to be invoked, a description of the function to be performed, and optionally ECFs to be posted. A general purpose FCT is attached to the FCT chain to invoke the appendage routine. The general purpose FCT runs asynchronously to the calling FCT.

Messages Affecting Automation

The following message changes were made which may affect your installation's use of MPF, automation, or user exits that examine messages:

IAT2000

IAT2000 is issued when a job is selected for execution. This message identifies the job, the system, and the job class group associated with the initiator that selected the job. In OS/390 Version 2 Release 8,

- If the job is selected by a WLM-managed initiator, the service class name appears in the message instead of the job class group name.
- Prior to OS/390 Version 2 Release 8, message IAT2000 was always issued by the JES3 address space on the global processor. The message is also logged in the job's JESMSGLG data set at the same time.

In OS/390 Version 2 Release 8, if the job is selected for execution by a system that is at the OS/390 Version 2 Release 8 level, IAT2000 is issued by JES3 job selection code running in the user address space. This message is issued after the job is selected, but before the job actually begins execution. IAT2000 is logged in the job's JESMSGLG data set as part of the normal message logging that occurs for messages issued during execution.

If the job is selected for execution by a system that is not at the OS/390 Version 2 Release 8 level, IAT2000 is issued by the JES3 global address space on the global processor as before.

IAT8674

Message IAT8674 is issued in response to an *I,Q, *I,P, or *I,J= command. Prior to OS/390 Version 2 Release 8, the job region information is displayed in the message in response to the *I,J= command. This is no longer true in OS/390 Version 2 Release 8.

Second Level Destinations

OS/390 Version 2 Release 8 JES3 now checks whether the remote name is a known destination if it is identical to the writer name. If the remote name specifies a device that is known to JES3, the SYSOUT is placed on the writer queue and is not available to TSO RECEIVE. IATUX42, which processes NETDATA, is not invoked in this case. This is the default JES3 processing. You can override this processing by using the NETHOLD= keyword parameter on the NJERMT initialization or by using the new initialization statement, DESTDEF, to override the default processing for a single destination.

The DESTDEF initialization statement allows you to specify individual destinations to be explicitly named as either devices or as userids. When specified as devices, JES3 directs the SYSOUT to the destination on the writer queue. When specified as userids, JES3 directs the NETDATA to the hold queue even if the userid is the same name as a destination known to JES3.

The NETHOLD= keyword parameter on the NJERMT statement for the home node controls whether JES3 is to perform a destination lookup. NETHOLD=YES causes JES3 to process NETDATA as it does in pre-HJS6608 releases (that is, all NETDATA SYSOUT is placed on the hold queue for processing by TSO RECEIVE.

Note: If a TSO userid has the same name as a device or remote workstation, inbound NJE SYSOUT data sets that are destined for that user are placed on the writer queue by default, and the TSO user is not able to receive them. You can define this userid on a DESTDEF initialization statement to ensure that the TSO user can receive inbound NJE SYSOUT.

| Operations

Changing a Job Class Group's Mode

The *MODIFY,G command is used to change a job class group from JES managed to WLM managed and vice versa. When the MODE parameter is specified, ALL must be specified as the system name; a job class group cannot be JES managed on one system and WLM managed on another.

It is not necessary to wait for all jobs to complete execution when switching a group from JES to WLM mode or vice versa. Jobs that are currently in execution are not affected. JES3 initiators will be stopped when a job class group's mode is changed from JES to WLM mode. JES3 initiators that are in use by executing jobs will stop when the job using the initiator ends.

If a job class group is changed to be WLM managed and there are one or more local processors that are not at the OS/390 Version 2 Release 8 level, WLM-managed initiators will not start on that system. In this case, a warning message is issued in response to the *MODIFY,G command. For example, assume that system SY2 is not at the OS/390 Version 2 Release 8:

```
*F,G,ALL,G,WLMGRP,MODE,WLM
IAT8103 MODE CHANGED TO WLM FOR GROUP WLMGRP
IAT8104 WARNING, SYSTEM SY2 DOES NOT SUPPORT GROUP WLMGRP IN WLM MODE
```

Enabling a Job Class Group

The *MODIFY,G,system,G,grp,ON command is used to enable a job class on a particular system or all systems. If a group is WLM managed and the system being enabled is not at the OS/390 Version 2 Release 8 level, then WLM-managed initiators will not start on that system. In this case, a warning message is issued in response to the *MODIFY,G command. For example, assume that system SY2 is not at OS/390 Version 2 Release 8:

```
*F,G,SY2,G,WLMGRP,ON
IAT8104 WARNING, SYSTEM SY2 DOES NOT SUPPORT GROUP WLMGRP IN WLM MODE
IAT8456 GMS MODIFY - COMPLETE NO ERRORS      - SY2
```

Changing Initiator Options for a Group

The *MODIFY,G command can be used to change the initiator options for a group. This includes the number of initiators, the initiator allocation option, and the initiator deallocation option. If the group is WLM managed, the initiator options cannot be changed since they are not used to control the number of initiators. If you try to change the initiator options, an error message is issued. For example:

```
*F,G,SY2,G,WLMGRP,INIT,25
IAT8100 GMS MODIFY REJECTED FOR SY2 - GROUP WLMGRP IS WLM MANAGED
```

If the reason you need to change the initiator options is because you want to switch from WLM to JES mode, keep in mind that the initiator options that were specified on the EXRESC parameter of the GROUP statement will be in effect when you change the mode. If you still need to modify the initiator options after the mode is changed to JES managed but before any jobs are selected for execution, do the following:

```
*F,G,ALL,G,group,OFF      - Disable group to prevent job selection
*F,G,ALL,G,group,MODE,JES - Change to JES mode
*F,G,system,G,group,options - Change initiator options
*F,G,system,G,group,ON    - Enable group on appropriate systems
```

Changing BAR and JSPAN for a GROUP

The *MODIFY,G command can be used to change the JSPAN and BAR parameters for a group. These parameters are used during job selection to control the number of jobs that are examined before either selecting a job or stopping the job selection process. If the group is WLM managed, the JSPAN and BAR parameters are ignored during job selection; they cannot be changed via the *MODIFY,G command. If you try to change the initiator options, an error message is issued. For example:

```
*F,G,SY2,G,WLMGRP,BAR,10
IAT8100 GMS MODIFY REJECTED FOR SY2 - GROUP WLMGRP IS WLM MANAGED
```

Changing Selection Mode Parameters

The *MODIFY,G,system,SELECT,selopt command is used to change the job selection mode options for a system. The following options are not used during the job selection process for WLM-managed groups; modifying them will have no effect on which job gets selected for a WLM-managed group:

- CHOICE
- LSTOR

Note: The JOBMIX parameter on the SELECT statement is also ignored during job selection for WLM-managed groups, but this can't be changed via a *MODIFY command.

*INQUIRY,G Command

The *INQUIRY,G,system,G,grp command is used to display information for a job class group. There are few changes to the information that is displayed for a group:

- The job class group MODE is now displayed.
- For WLM-managed groups, the initiator options, JSPAN parameter, and BAR parameter are not displayed since they are not applicable to WLM-managed groups.

For example:

```
*I,G,SY1,G,JES3TEST

IAT8932 GROUP - JES3TEST - STATUS=ON DI=0009 AI=0000 UI=0000 ALLOC=DEMM
UNAL=DYN BAR=NO JSPAN=ALL MODE=JES - SY1

*I,G,SY1,G,WLM1

IAT8932 GROUP - WLM1 - STATUS=ON MODE=WLM - SY1
```

When a WLM managed group is displayed, if the system that is displayed is not at the OS/390 Version 2 Release 8, WLM initiators will not start on that system and this will be indicated in the message that is displayed. In the following example, assume that SY2 is not at the OS/390 Version 2 Release 8:

```
*I,G,ALL,G,JES3TEST

IAT8932 GROUP - JES3TEST - STATUS=ON MODE=WLM - SY1
IAT8932 GROUP - JES3TEST - STATUS=ON MODE=WLM - SY2 (NOT SUPPORTED)
IAT8932 GROUP - JES3TEST - STATUS=ON MODE=WLM - SY3
```

Main Connect

When JES3 is ready to begin processing work on a particular system, that system connects to the JES3 global. This is called main connect. If there is at least one WLM-managed group enabled on the connecting system and the system is not at the OS/390 Version 2 Release 8, then WLM-managed initiators will not start on that system. In this case, a warning message is issued during connect processing. For example, assume that system SY2 is connecting to the global and is not at the OS/390 Version 2 Release 8:

```
IAT2017 WARNING, SYSTEM SY2 DOES NOT SUPPORT GROUPS IN WLM MODE
IAT2645 ***** SY2 CONNECT COMPLETE *****
```

Installing a New WLM Service Definition

When a new WLM service definition is installed and activated, all jobs that have completed C/I but have not completed execution must be reclassified. This is necessary because the classification rules can be changed and service classes can be added or deleted only when a new service definition is installed. As a result of the changes, the service class and report class assigned to jobs may change.

Note: A WLM policy change without a service definition change will not cause jobs to be reclassified since the classification rules and service classes have not changed.

While JES3 is in the process of reclassifying jobs, job selection is suspended for both JES and WLM-managed groups. Message IAT2011 is issued to indicate that reclassification is in progress and job selection is suspended.

```
IAT2011 WLM RECLASSIFICATION IS IN PROGRESS
```

If an `*INQUIRY,J=job,W` command is issued for a job when reclassification is in progress, the following will be displayed:

```
*I,J=32772,W
IAT8674 JOB DASD      (JOB32772) P=02 CL=A      MAIN(GMS SELECT)
IAT8685     SY1      - WLM RECLASSIFICATION IN PROGRESS
IAT8685     SY2      - WLM RECLASSIFICATION IN PROGRESS
```

When reclassification is complete, job selection is resumed and message IAT2016 is issued:

```
IAT2016 WLM RECLASSIFICATION HAS COMPLETED
```

Notes:

1. If a job's service class was set using a `*MODIFY,J=job,SRVCLASS=svclass` or `MVS RESET jobname,SRVCLASS=svclass`, that service class will be reassigned to the job if it is still defined in the WLM policy.
2. Jobs that were in the job queue prior to migrating to OS/390 Version 2 Release 8 that have not completed execution will be classified after OS/390 Version 2 Release 8 is brought up for the first time. Job selection will be suspended only for those jobs that have not been classified. An `*INQUIRY,J=job,W` command for these jobs will show that WLM reclassification is in progress.

Changing a Job's Class or Priority

If a job's class or priority is changed using the `*MODIFY,J=job` command, the job will be reclassified, which means that the job may be assigned a new service class and report class; this is necessary since class and priority are input to the WLM classification rules.

A job will also be reclassified if the job's priority is changed due to deadline scheduling. A job will not be reclassified if a job's priority is changed due to aging (that is, as influenced by `MAGER`, `MAGEL`, `INCR`, `INCL`, `SAGER`, `SAGEL`) since aging represents a temporary change to the job's priority.

Note: Only jobs that are waiting to be scheduled for main service or are active in main service but not executing are reclassified. In addition, a job will not be reclassified if it's service class was set using `*MODIFY,J=job,SRVCLASS=svclass` or `MVS RESET jobname,SRVCLASS=svclass` command.

Dynamic System Interchange

Performing a dynamic system interchange on a down level system results in a warning message.

CLASS Setup Depth

The SDEPTH parameter on the CLASS statement is used to specify the number of jobs requiring volume mounts that can be setup for a class at one time. If SDEPTH is set to zero, no jobs requiring volume mounts can be set up.

Prior to OS/390 Version 2 Release 8, if a SDEPTH=0 was specified and a job in that class required volume mounts, the job was put on the MDS error queue. This was necessary because the class SDEPTH could not be changed with a *MODIFY command. The installation could then use IATUX61 to cancel the job automatically.

In OS/390 Version 2 Release 8, if a SDEPTH=0 is specified and a job in that class requires volume mounts, the job is left on the MDS allocation queue, because the class SDEPTH can now be modified with the *MODIFY,C=c/s command. If an INQUIRY command is issued for the job, the results will show that the job is waiting as a result of the class setup depth:

```
*I,J=TAPEE,W
IAT8674 JOB TAPEE (JOB32802) P=02 CL=A MAIN(ALLOCATE)
IAT8685 SY1 - CLASS SETUP DEPTH EXCEEDED

*I,S,A,J=32802
IAT5642 MDS ALLOCATION NOT YET ATTEMPTED FOR JOB TAPEE (JOB32802) ON SY1 JOBCLASS DEPTH
```

*INQUIRY,B Command

The *I,B command allows the operator to display a summary of the jobs in the queue. Typically, the *I,B command is issued without any other operands to display a list of jobs that have been scheduled or are active in each JES3 function. For example:

```
*I B

IAT8688 0000000(W) 0000007(A) MAIN
IAT8688 0000010(W) 0000001(A) CI
IAT8688 0000000(W) 0000002(A) INTRDR
```

The following changes have been made to the *I,B command output:

- A heading line has been added instead of specifying "(W)" and "(A)" in the message.
- The number of active jobs is displayed first, followed by the number of jobs waiting.
- An end of display message is added to indicate that there is no more backlog information to be displayed.

The new format looks like this:

```
*I B
```

```
IAT8688 FUNCTION ACTIVE WAITING
IAT8688 MAIN 00000007 00000007
IAT8688 CI 00000001 00000010
IAT8688 INTRDR 00000002 00000002
IAT8619 INQUIRY ON BACKLOG COMPLETE
```

*INQUIRY,B,G=grp Command

The *INQUIRY,B,G=grp command is used to display the backlog of jobs by job class group. The G= parameter is not a new parameter for OS/390 Version 2 Release 8. Prior to this release, the G= parameter was used to display jobs from the specified origin (e.g. device group). This had the same effect as specifying the T= parameter. In order to allow the operator to display the backlog of jobs by job class group and to be consistent with other inquiry commands that allow job class group as a selection criteria, the G= parameter is changed to mean job class group. If you want to display the backlog of jobs by origin, use the T= parameter.

WLM Compatibility mode

WLM must be in goal mode before WLM-managed initiators will start on a particular system. JES3 does not check whether WLM is in goal mode before allowing a group to become WLM managed. The only indication that you will have that initiators will not start on the systems that are in compatibility mode. JES3 inquiry commands for the jobs that are waiting to be selected for execution will just show that the job is waiting for an available initiator. Issuing a DISPLAY WLM,SYSTEMS command will display whether systems are in goal or compatibility mode.

*MODIFY,J=nnn,RUN Command

The *MODIFY,J=nnn,RUN command is new for OS/390 Version 2 Release 8 and only for WLM-managed job class groups. Sometimes it is necessary to force a particular job into execution to accommodate special end user needs or to bypass existing JES3 scheduling mechanisms. Prior to OS/390 Version 2 Release 8, this could be accomplished by using a series of operator commands.

For example, you change the job's priority so that it is higher than any of the other jobs, or to hold other jobs or move the job to a job class that is not being used right now. These commands may be accompanied by an *MODIFY,G command to start an additional initiator for the job.

For WLM-managed job class groups, this level of control is not possible. For example, if you change the priority or class of the job, it may result in the job being assigned to a different service class, which may affect where it is eligible to be scheduled. In addition, it may not help the job get selected for execution since jobs are selected for execution based on arrival time, not priority. Another problem is that the operator does not have any direct control over WLM managed initiators and cannot just start one up for a particular job that needs to run.

In OS/390 Version 2 Release 8, the *MODIFY,J=nnn,RUN command can be used to force a job, in a WLM-managed group, into execution. The job must be on the GMS select queue when the command is issued. When this command is issued, a

system is selected and a WLM-managed initiator is started specifically for the job. This command should be used sparingly since it defeats the purpose of WLM's initiator management algorithms.

Note: The *MODIFY,J=*job*,RUN command is lost over a JES3 restart.

When the *MODIFY,J=*job*,RUN command is issued, JES3 determines which systems are eligible to run the job and passes them to WLM. WLM then selects the best system and starts an initiator on that system. When JES3 selects a job for execution, there are a number of things that JES3 checks before allowing a job to run. When a RUN command is issued, some of these selection criteria are ignored. The following selection criteria, which normally prevent a job from being selected for execution, are ignored:

- Operator hold
- Priority hold
- TDEPTH, TLIMIT, MDEPTH, MLIMIT exceeded

The following selection criteria are not ignored:

- Class disabled - The job will run if the class is enabled on at least one system.
- Group disabled - The job will run if the group is enabled on at least one system.
- Spool space not available.
- Scheduling environment not available - The job will run if the scheduling environment is available on at least one system.
- Job is in DJC hold.
- All eligible system offline/not connected.

A *MODIFY,J=*job*,H command will undo the *MODIFY,J=*job*,RUN command and put the job in hold. The job can then be release from hold, and it will be scheduled for execution just like any other job.

If the RUN request is rejected because the job is not eligible to be selected for execution, message IAT8037 is issued, and message IAT8095 is issued for each system in the job's eligibility mask. IAT8095 tells why the job is not eligible to execute on that particular system.

```
*F,J=JOB101,RUN
IAT8037 JOB JOB101 (JOB32901) RUN REQUEST REJECTED, JOB NOT ELIGIBLE TO RUN
IAT8095 SY1 - SCHEDULING ENVIRONMENT NOT AVAILABLE
IAT8095 SY2 - JOB CLASS DISABLED
IAT8095 SY3 - MAIN OFFLINE/NOT CONNECTED
```

If the RUN request is accepted, message IAT8033 is issued. IAT8033 contains the system name that was chosen for the RUN request and where the WLM-managed initiator will be started.

```
IAT8033 JOB JOB101 (JOB32901) RUN REQUEST ACCEPTED - SY2
```

See *OS/390 JES3 Commands* for the syntax of this command and additional examples of its use.

Applications

There are no application migration actions.

Problem Determination and Diagnosis

OS/390 Version 2 Release 8 JES3 includes the following problem determination and diagnosis changes:

- The `*MODIFY,J=nnn,CIDEBUG` command allows the operator activate C/I debug processing for a job while it is in the job queue.
- `*TRACE` command is used to activate, deactivate, and display traces.
- `*MODIFY,X,M=module,LOAD` command.
- New Statistics Data Area for WLM information.
- A new WLM section has been added to the JMF report.
- New JES3 IPCS VERBEXIT Command Options.
- Changed JES3 IPCS VERBEXIT Command Options.

***MODIFY,J=nnn,CIDEBUG Command**

Converter/Interpreter (C/I) processing is responsible for creating the control blocks (for example, JST and JVT) that are used by JES3 setup processing to allocate the job's resources. When problems occur in JES3 setup processing or MVS allocation processing for a job, you can rerun the job with a `//*PROCESS JES3` control statement specifying `DEBUG=ALL` to help in debugging the problem, but there are circumstances where this method is not helpful. One such instance is for a demand select job where the use of JECL statements is not allowed.

OS/390 Version 2 Release 8 helps this situation with a new `*MODIFY` command that allows the operator to turn C/I debug processing on for a job while it is in the job queue. The command is issued as follows:

```
*MODIFY,J=nnnn,CIDEBUG
```

If a job name is specified and there is more than one job with that name, the command is rejected. You get the following message if the command is successful:

```
IAT8029 JOB jobname (jobid) C/I DEBUG FACILITY ENABLED
```

Once the command completes successfully for a job, the C/I debug output is generated when the job is scheduled for the converter/interpreter. If the job is in MDS or GMS processing, you can issue a `*RESTART,SETUP,jobno,CI` command to restart the job through C/I processing, which then generates the C/I debug output.

If the job is not in the system or has already completed execution, you need to resubmit the job. When resubmitted, the job may go through C/I processing before the operator has the chance to enable C/I debug for the job. To prevent this from happening, you issue the following commands to temporarily stop jobs from being scheduled for C/I until the operator has time to enable the C/I debug facility for the job.

```
*F,X,D=CI,HOLD          - Prevent jobs from being scheduled for C/I

---Resubmit the job or reissue START command---

*F,J=jobno,CIDEBUG      - When job enters the system, enable C/I debug

IAT8029 JOB jobname (jobid) C/I DEBUG FACILITY ENABLED

*F,X,D=CI,RELEASE      - Allow jobs to be scheduled for C/I
```

*TRACE Command

The *TRACE command is changed to allow additional events to be traced using the Generalized Trace Facility (GTF). The following new GTF traces have been added:

- WLMWLMFCT - Issued when the WLM FCT on the global or local processes a WLM-related event, such as a job's service class being changed using a RESET jobname command.
- WLMWLMJOB - Issued when the WLM FCT processes jobs as the result of some event (for example, a job has been reclassified and the service class and service class token has changed).
- WLMINTEVT - Issued by IATSIJS when a WLM initiator event occurs (for example, when the initiator is posted for unbind processing and sends an unbind request to the global).
- WLMINTGMS - Issued by IATMSMS when it processes the WLM initiator termination request.
- WLMMSAMPSC - Issued when the WLM subtask on the global or the local passes sampling data to WLM. This record contains the service class information that is passed to WLM.
- WLMMSAMPRC - Issued when the WLM subtask on the global or the local passes sampling data to WLM. This record contains the report class information that is passed to WLM.
- JOBDELAY - Issued when a delay change occurs for the job.

The *TRACE command has also been changed to allow a trace prefix to be specified when displaying, activating, or deactivating traces. For example, if *TRACE,ON,WLM* is issued, all traces that start with "WLM" are activated. The following example illustrates the use of this generic trace name:

```
*TRACE,ON,WLMGMS*      Turn on all WLM events for the GMS FCT

*TRACE,ON,WLM*         Turn on all WLM events
```

See *OS/390 JES3 Commands* for the complete syntax of the *TRACE command.

***MODIFY,X,M=module,LOAD**

Sometimes it is necessary to cause a module to be loaded before it is normally loaded. For example, normally module, IATMSR2 is loaded during main connect processing. If there is a problem in this module, and you want to set a SLIP trap at some location in the code, it is very difficult to do so. The

*MODIFY,X,M=*module*,LOAD command allow you to load a module before it normally would be loaded. For example, you could issued the

*MODIFY,X,M=*module*,LOAD command before the *START,JSS command, set the SLIP trap, and then issue *START,JSS.

When the load command is issued, an ALOAD request is issued to bring the module into storage, the module is marked non-deletable (as if a *MODIFY,X,M=*module*,DELETE=N command was issued), and then a ADELETE request is issued to cause the module's use count to go to zero. The module is not deleted from storage since it is marked non-deletable. You can cause the module to be deleted from storage by issuing *MODIFY,X,M=*module*,DELETE=Y or *MODIFY,X,M=*module*,REFRESH command.

Statistics Collection

A new statics data area (SDA) entry has been added in OS/390 Version 2 Release 8 to collect WLM-related statistics. These statistics include:

- Number of sampling passes that were performed.
- Number of samples passed to WLM.
- Number of samples sent to local processors (global).
- Number of WLM service definition changes that occurred.
- Number of jobs reclassified as a result of a WLM service definition change.

The new statistics can be displayed (along with the other statistics) by issuing a *START,DC,OPTION=SDA command.

JES3 Monitoring Facility (JMF) Enhancements

FCT Analysis

In OS/390 Version 2 Release 8, JES3 introduces a new FCT, called the general purpose FCT, to offload work from other FCTs. For example, the WLM FCT uses general purpose FCTs to offload work that requires I/O. The general purpose FCT has a DSP name of "GENERALP". When a general purpose FCT is formatted in the FCT analysis portion of the JMF report, the DSP name as well as the description of the function is formatted. Even through all general purpose FCTs have the same DSP name (GENERALP), if they have different function descriptions, they are treated as separate FCTs.

The following is an example of the FCT Analysis report with a general purpose FCT.

```

04F960F8 PROGRAM NAME IS WLM
          ECF OF X'62' AT 049DE320 IS NOT POSTED          AWAIT RETURN IS 850DF05E

          AWAIT REASON CODE IS: X'0001'
          EXPLANATION: WAIT FOR WORK OR STANDARD FCT AWAIT
          CDE           SAVCH           SESEQ-RQAD       PRTY-DSPDC   CSECT
          00000000      00000000      00 00000000    35 04F3FD50 00000000
          .
          .
          .

04F99CF8 DSP NAME IS GENERALP - DELAY-CHECKPOINT
          JOB ID IS *****          JOB PRIORITY IS **          DSP PRIORITY IS 050
          ECF OF X'10' AT 08A00127 IS NOT POSTED          AWAIT RETURN IS 8620F104
          AWAIT REASON CODE IS: X'0049'
          EXPLANATION: WAITING FOR AWRITE I/O COMPLETION
          CDE           SAVCH           SESEQ-RQAD       PRTY-DSPDC   CSECT
          00000000      00000000      00 00000000    35 04F3FD50 00000000
          .
          .
          .

```

WLM Analysis

JMF is enhanced to report WLM-related information, such as information about the backlog of jobs in each service class. This provides an easy way of determining the number of jobs that are eligible to run, ineligible to run, and executing in a service class. This information is not available through RMF reports or SMF records.

The following information is displayed for each service class:

- Number of jobs waiting to be scheduled for main service
- Number of jobs in MDS/setup
- Number of jobs waiting to be selected for execution (GMS select)
- Reasons why jobs are not eligible to be selected for execution
- Number of jobs eligible/ineligible/executing in the entire SYSPLEX and by system

Only jobs in WLM-managed groups are included in the report.

A new option, WLM, on the *CALL,JMF command has been added to allow you to specify whether or not you want the WLM information reported. WLM=Y is the default on the global processor. WLM=N is the default on a local processor. If you attempt to specify WLM=Y on a local, the command will be rejected.

An example of the WLM Analysis JMF report follows.

```

*****
*
*           Workload Manager Information
*
*****

```

Service Class Name: VEL50

	Minimum	Maximum	Average
Main Service Wait	0	1	0
MDS/Setup	0	10	2.5
GMS Select	1	21	10.2
Main Offline/Not Conn	0	1	0
Group Disabled	0	4	2.1
Job Held	0	2	1.0
Class Disabled	0	1	0
Spool Space Shortage	0	1	0
TDEPTH Resched	0	9	5.2
TLIMIT Exceeded	0	1	0
MDEPTH Reached	0	2	0
MLIMIT Exceeded	0	3	0
SCHENV Not Available	0	10	6.4
SYSPLEX			
Eligible	0	11	5.2
Ineligible	0	7	3.1
Limited	0	4	2.1
Executing	1	22	10.5
System SY1			
Eligible	0	11	5.2
Ineligible	0	7	1.1
Executing	1	15	3.2
System SY2			
Eligible	0	3	1.9
Ineligible	0	16	10.4
Executing	1	7	5.3
-			
-			
-			

New JES3 IPCS CBFORMAT Routines

OS/390 Version 2 Release 8 provides new JES3 IPCS CBFORMAT Routines.

- IATIPCKP for the IATYCKP (JES3 Checkpoint Data Area)
- IATIPGPW for the IATYGPW (General Purpose FCT Work Area)
- IATIPGSD for the IATYGSD (Generalized Subtask Directory)
- IATIPJSA for the IATYJSA (Job Select Work Area)
- IATIPMCC for the IATYMCL (Class Constraints Table)
- IATIPMCL for the IATYMCL (Class Table)
- IATIPMGP for the IATYMGP (Group Table)
- IATIPMGX for the IATYMGX (Execution Resource Table)
- IATIPSPL for the IATYSPL (Intermediate Text Spool Parameter List)
- IATIPSRS for the IATYSRS (MDSRS Data Area)

- IATIPSRV for the IATYSRVC (Service Class Table)
- IATIPWB1 for the IATYWBQS (Sampling Matrix Prefix)
- IATIPWB2 for the IATYWBQS (SYSPLEX Service Class Entry)
- IATIPWB3 for the IATYWBQS (SYSPLEX Report Class Entry)
- IATIPWB4 for the IATYWBQS (System Service Class Entry)
- IATIPWJ1 for the IATYWJS (WLM Job Sampling Element for jobs waiting to be selected for execution)
- IATIPWJ2 for the IATYWJS (WLM Job Sampling Element for jobs in MDS)
- IATIPWJ3 for the IATYWJS (WLM Job Sampling Element for jobs waiting to be scheduled for main service)
- IATIPWLM for the IATYWLM (Workload Manager Data Area)

New JES3 IPCS VERBEXIT Command Options

OS/390 Version 2 Release 8 provides new VERBEXIT (VERBX) subcommand options:

- VERBX JES3 'OPTION=C/I'
This option displays Converter/Interpreter information, such as:
 - C/I related fields from the TVT
 - Interpreter Control Tables (ICTs)
 - Interpreter Data Area (IDA)
 - C/I FSS Tables (CFTs)
- VERBX JES3 'OPTION=DFC'
This option displays device information from the device fence control blocks (DFCBs).
- VERBX JES3 'OPTION=DLY'
This option displays delay information for jobs from the Job Queue Element Extension (JQEX). This includes:
 - Conversion delay time
 - Resource delay time
 - JES scheduling delay time
 - Operational delay time
 - Current delay time stamp
 - Current delay type and reason
- VERBX JES3 'OPTION=DSP'
This option displays information from the DSP dictionary.
- VERBX JES3 'OPTION=ENQ'
This option displays AENQ-related information, such as:
 - AENQ control information
 - FCTs that are holding AENQ resources

- FCT AENQ element (FENQ) free queue
- VERBX JES3 'OPTION=GST'

This option displays generalized subtask information, such as:

 - Generalized subtask global data area (GSG)
 - Generalized subtask directories (GSDs)
 - Subtask queue description (SQD) free pool
- VERBX JES3 'OPTION=LOC'

This option displays LOCATE-related information, such as:

 - Locate data area (LDA)
 - Master locate control table (MLCT)
 - Locate control tables (LCTs)
- VERBX JES3 'OPTION=MOD'

This option displays module information from the JES3 directory elements (JDEs).
- VERBX JES3 'OPTION=SCT'

This options displays SYSOUT class table (SCT) information.
- VERBX JES3 'OPTION=SRS'

This options displays MDSSRS-related information, such as:

 - MDSSRS data area (SRS)
 - Master MDS control table (MMCT)
 - MDS control tables (MCTs)
- VERBX JES3 'OPTION=WLM'

This option displays workload manager information, such as:

 - WLM data area
 - Service class tables (SRVCs)
 - Sampling statistics for each service class
 - WLM job sampling elements (WJSs)
 - WLM event control blocks (WEVs)

This information can also be displayed using the *START,DC,OPTION= command.

Changed JES3 IPCS VERBEXIT Command Options

OS/390 Version 2 Release 8 changes the following JES3 IPCS VERBEXIT command options:

- VERBX JES3 'OPTION=FCT'

If a general purpose (GENERALP) FCT is formatted, the description of the function being performed is also displayed.
- VERBX JES3 'OPTION=GMS'
 - The mode (WLM or JES), group enable main mask, and DFEB is displayed when a group is formatted.

- The service class, indication of whether an initiator is JES or WLM managed, and WLM initiator sequence number is displayed in the JSQ portion of the output.
- The RQINDEX function name is displayed in the RQ portion of the output.
 - GMS bypass reasons from RQJSTAT are no longer displayed in HEX. Instead, a description of each bypass reason and its associated system is formatted.
 - Additional information, such as new flags, the service class name, and WLM classification token is also formatted.
- LSTOR related information was deleted from the MPC portion of the output
- VERBX JES3 'OPTION=JQE'
 - JQEFLG3 and JQEXADDR are formatted.
- VERBX JES3 'OPTION=MDS'
 - The MDS bypass reasons from RQJSTAT are no longer formatted as four byte values six to a line. Instead, each bypass reason and its associated system is formatted on a separate line.
- VERBX JES3 'OPTION=MPC'
 - The product and service levels are formatted in the MPC portion of the output.
 - The service class name and WLM classification token appear in the MEMDATA portion of the output.

| Accounting

| There are no accounting migration actions.

Chapter 12. Migration Actions: JES3 V2R8 to JES3 V2R9

Coexistence, Migration, and Fallback

For all JES3 migrations, review the information APAR II11768 for any APARs that must be applied to allow coexistence with other JES3 releases, migration to particular JES3 releases, and fallback to JES3 releases.

Initialization

OS/390 Version 2 Release 9 JES3 changes some initialization statements.

NJERMT Initialization Statement

The NJERMT initialization has a new parameter, ALIAS=. You use this parameter to define alias node names. The alias name is an alternate name by which incoming work is recognized as being for the home node.

When defining the home node, you can specify SYSOUT defaults for the home node using the PRTDEF, PRITSO, PRTXWTR, and PUNDEF parameters.

Notes:

1. Names of LOCAL, ANYLOCAL, or ALL are reserved for JES3 use.
2. The NAME= parameter and the ALIAS= parameter on the NJERMT initialization statement are mutually exclusive.

DEVICE Initialization Statement

You can define a range of devices by using the new parameter NUMDEV on DEVICE initialization statements. You can define a device to all mains by using the *ALL parameter on the XUNIT and/or JUNIT parameter. The illustration below indicates the long way of defining device ranges and the way you make the definition in OS/390 Version 2 Release 9.

```

LONG WAY
-----

DEVICE,DTYPE=TA33490,JNAME=T05B0,JUNIT=(5B0,SY1,,ON,5B0,SY2,,ON),
XTYPE=(TAPE3,CA),XUNIT=(5B0,SY1,,ON,5B0,SY2,,ON)
*
DEVICE,DTYPE=TA33490,JNAME=T05B1,JUNIT=(5B1,SY1,,ON,5B1,SY2,,ON),
XTYPE=(TAPE3,CA),XUNIT=(5B1,SY1,,ON,5B1,SY2,,ON)
*
DEVICE,DTYPE=TA33490,JNAME=T05B2,JUNIT=(5B2,SY1,,ON,5B2,SY2,,ON),
XTYPE=(TAPE3,CA),XUNIT=(5B2,SY1,,ON,5B2,SY2,,ON)
*
.
.
.
DEVICE,DTYPE=TA33490,JNAME=T05BF,JUNIT=(5BF,SY1,,ON,5BF,SY2,,ON),
XTYPE=(TAPE3,CA),XUNIT=(5BF,SY1,,ON,5BF,SY2,,ON)
*
DEVICE,XTYPE=(DA90,DA,PR),XUNIT=(980,SY1,,ON,980,SY2,,ON)
*
DEVICE,XTYPE=(DA90,DA,PR),XUNIT=(981,SY1,,ON,981,SY2,,ON)
*
DEVICE,XTYPE=(DA90,DA,PR),XUNIT=(982,SY1,,ON,982,SY2,,ON)
*
.
.
.
DEVICE,XTYPE=(DA90,DA,PR),XUNIT=(98F,SY1,,ON,98F,SY2,,ON)

SHORT WAY
-----

DEVICE,DTYPE=TA33490,JNAME=T,JUNIT=(5B0,SY1,,ON,5B0,SY2,,ON),
XTYPE=(TAPE3,CA),XUNIT=(5B0,SY1,ON,5B0,SY2,ON),
NUMDEV=16
*
DEVICE,XTYPE=(DA90,DA,PR),XUNIT=(980,SY1,,ON,980,SY2,,ON),
NUMDEV=16

```

In OS/390 Version 2 Release 9 JES3, you use the *ALL parameter to define devices to all mains in the SYSPLEX. The example below illustrates the use of *ALL.

LONG WAY

```
DEVICE,DTYPE=TA33490,JNAME=T05B0,JUNIT=(5B0,SY1,,ON,5B0,SY2,,ON),
XTYPE=(TAPE3,CA),XUNIT=(5B0,SY1,,ON,5B0,SY2,,ON)
```

*

```
DEVICE,XTYPE=(DA90,DA,PR),XUNIT=(980,SY1,,ON,980,SY2,,ON)
```

SHORT WAY

```
DEVICE,DTYPE=TA33490,JNAME=T,JUNIT=(5B0,*ALL,,ON),
XTYPE=(TAPE3,CA),XUNIT=(5B0,*ALL,,ON)
```

*

```
DEVICE,XTYPE=(DA90,DA,PR),XUNIT=(980,*ALL,,ON),
```

When you combine the use of NUMDEV= and *ALL, you can define a range of devices that are defined to all mains as illustrated below.

LONG WAY

```
DEVICE,DTYPE=TA33490,JNAME=T05B0,JUNIT=(5B0,SY1,,ON,5B0,SY2,,ON),
XTYPE=(TAPE3,CA),XUNIT=(5B0,SY1,,ON,5B0,SY2,,ON)
```

*

```
DEVICE,DTYPE=TA33490,JNAME=T05B1,JUNIT=(5B1,SY1,,ON,5B1,SY2,,ON),
XTYPE=(TAPE3,CA),XUNIT=(5B1,SY1,,ON,5B1,SY2,,ON)
```

*

```
DEVICE,DTYPE=TA33490,JNAME=T05B2,JUNIT=(5B2,SY1,,ON,5B2,SY2,,ON),
XTYPE=(TAPE3,CA),XUNIT=(5B2,SY1,,ON,5B2,SY2,,ON)
```

*

.

.

.

```
DEVICE,DTYPE=TA33490,JNAME=T05BF,JUNIT=(5BF,SY1,,ON,5BF,SY2,,ON),
XTYPE=(TAPE3,CA),XUNIT=(5BF,SY1,,ON,5BF,SY2,,ON)
```

*

```
DEVICE,XTYPE=(DA90,DA,PR),XUNIT=(980,SY1,,ON,980,SY2,,ON)
```

*

```
DEVICE,XTYPE=(DA90,DA,PR),XUNIT=(981,SY1,,ON,981,SY2,,ON)
```

*

```
DEVICE,XTYPE=(DA90,DA,PR),XUNIT=(982,SY1,,ON,982,SY2,,ON)
```

*

.

.

.

```
DEVICE,XTYPE=(DA90,DA,PR),XUNIT=(98F,SY1,,ON,98F,SY2,,ON)
```

SHORT WAY

```
DEVICE,DTYPE=TA33490,JNAME=T,JUNIT=(5B0,*ALL,,ON),
XTYPE=(TAPE3,CA),XUNIT=(5B0,*ALL,,ON),
```

```
NUMDEV=16
```

*

```
DEVICE,XTYPE=(DA90,DA,PR),XUNIT=(980,*ALL,,ON),
```

```
NUMDEV=16
```

Notes:

1. JUNIT/XUNIT values are specified in hex. The NUMDEV value is specified in decimal.
2. When *ALL is used, all the XUNIT/JUNIT values you specify are applied identically to all processors. You cannot assign processors different message destinations for the device. You cannot define one device initially as online to SY1 and another device as offline to SY2.
3. If *ALL is specified, only one group of subparameters (dev,*ALL,msgdest,ON/OFF) is allowed for the XUNIT and JUNIT parameters.
4. JUNIT=(NONE,*ALL,...) is only valid for SYSMAN and RJP devices.
5. The NUMDEV parameter value you specify must not exceed 65535. It must not be specified as 0 and cannot cause a device range to exceed FFFF.
6. When NUMDEV is specified on a device that has a JUNIT, the JNAME parameter you specify is a prefix. The actual JNAMEs for the devices defined by the range are constructed from the prefix concatenated to the device number. This prefix must not exceed "4" characters in length. If the prefix is greater than 4 characters in length, then it is truncated to 4 characters and an error message is produced.
IAT3086 NUMDEV USED AND JNAME EXCEEDS FOUR CHARACTERS,SHORTENED TO name
7. For an FSS capable device, if the FSSNAME= keyword is not specified and the NUMDEV= keyword is specified, the default FSSNAME for each device in the range is the JNAME constructed from the prefix and the device number. When FSSNAME= and NUMDEV= are used, all devices that are generated for the NUMDEV range are multi-FSA devices under that FSS.
8. The main cannot be omitted from XUNIT. However, the main name, ALL, can be used on just the XUNIT, or both the XUNIT and the JUNIT. You cannot list XUNIT systems and use *ALL on the JUNIT.
9. You cannot specify A>(*ALL,dddd) on the RJPLINE statement; however, you can specify A=dddd and this definition causes dddd to apply to all systems.
10. If a range includes a device that was previously defined, the device that appeared first takes precedence. However, the rest of the range is accepted if there are no other conflicts.

Refer to *OS/390 JES3 Initialization and Tuning Reference* which provides examples of the NJERMT and DEVICE statements.

Installation Modifications

User Exits

If you have any JES3 user exit code that compares a character field directly to HOMENODE, check whether you need to use the IATXHOME macro to take into account the possibility that the field is an alias. The rule of thumb is: if you want your code to work for an alias the same way as it does for the home node, you should use IATXHOME. If you want your code to work for an alias differently from the way it works for the home node, you should continue to compare the field directly to HOMENODE.

If you have any JES3 user exit code that runs in an address space other than JES3, and it uses the fields SVTSETUN, MPUNITS, MPSETTRE, SVTSETNM, or SVTDYD to access the SETUNITS, SETNAMES, or DYNALDSN table, you need to obtain serialized access to these tables using the IATXMVDA macro.

If your code runs in a C/I FSS address space and accesses the SETNAMES table using the SETNAMES pointer in IATYTVTF, you can continue to use the SETNAMES pointer. If your code runs in a C/I FSS address space and access the SETUNITS table using MPUNITS or MPSETTRE, you can use the symbol TVTX_MPUNITS or TVTX_MPSETTRE, which are lists and must be indexed by the MPC sequence number (minus one for zero origin) of the system whose table you are looking at.

If your code uses the FINDSETU macro and runs in either a user address space or a C/I FSS address space, you must obtain MPSETTRE by the appropriate method described above, and then use the new parameter ANCHOR= on the FINDSETU macro.

If you obtain access to a table using IATXMVDA, you must IATXMVDA FUNC=RELEASE when you no longer need access to the table.

Refer to *OS/390 JES3 Customization* for more information on the IATXMVDA macro.

The interface to installation exit, IATUX42 has been changed; see *OS/390 JES3 Customization*. The STRNFLG bit has been deleted from the IATYNFD data area. If you have code in IATUX42 that modifies this byte directly, you should change the code to get the address of the output flag byte from YUX42OFA instead.

If you are migrating to release HJS6609 from release HJS6606 or earlier, you will see no changes in the frequency with which IATUX42 is called. If you are migrating to release HJS6609 from release HJS6608, be aware that IATUX42 will be called for all inbound NJE SYSOUT files that appear to be in NETDATA format, even if JES3's default action would be to put the file on the writer queue for processing by a JES3 or FSS writer. In release HJS6608, IATUX42 was not called for files that were placed on the writer queue. If you have code in IATUX42, in order to achieve the same results in HJS6609 as in HJS6608, you can test the YUX42J3W bit and return immediately if the bit is on.

Operations

OS/390 Version 2 Release 9 JES3 has the following operational changes:

- When performing a hot start with refresh, the JES3 on all locals that are OS/390 Version 2 Release 9 will be automatically restarted. The following message appears on the local:
IAT3098 JES3 LOCAL ON sysname IS RESTARTING DUE TO CONFIGURATION CHANGE
- *INQUIRY command is updated to allow you to display alias definitions for your NJE structure.
- *MODIFY command is updated to allow you to modify the alias definitions for your NJE structure.

*INQUIRY Command

The *INQUIRY,NJE command is enhanced to allow display of ALIAS definitions. For example, *INQUIRY,NJE,NAME=xxx (where xxx is the alias name) generates the IAT8659 message having a new variable text that includes the four default classes. The example below illustrates the change.

```
*INQUIRY,NJE,NAME=BROOKLYN
IAT8659 - ALIAS BROOKLYN  PRTDEF A  PRTTSO T  PRTXWTR X  PUNDEF B
```

Note: The default class for the alias need not be the same as those defined for the node

An example of an inquiry on the home node name of BROOKLYN follows:

```
*INQUIRY,NJE,NAME=BROOKLYN
IAT8659 - HOME BROOKLYN  PRTDEF A  PRTTSO T  PRTXWTR X  PUNDEF B
```

Note: The message is unchanged for directly or indirectly connected BSC or SNA nodes.

See *OS/390 JES3 Commands* for more information on using the *INQUIRY command.

*MODIFY Command

The *MODIFY,NJE command can be used to add or delete an alias. The ADDAL= (or AA=) keyword indicates the alias to add. Use the DEL= keyword to delete an alias in addition to deleting a node name in previous JES3 releases.

When adding an alias, you can specify

- PRTDEF=, the default print class for output being received under the alias.
- PRTTSO=, the default TSO class for output being received under the alias.
- PRTXWTR=, the default external writer class for output being received under the alias.
- PUNDEF=, the default punch class for output being received under the alias.

Note: A hot start with refresh (or a warm or cold start) is required with added NJERMT statements in order to make changes permanent; otherwise, a restart will revert to the last defined configuration and any additions or deletions are lost.

For example, node A and node B exist in a JES3 complex. Node B sends jobs to another node using the name Z. The installation wants these jobs to actually be sent to node A. In this example, node Z is called the "alias" of A. In addition, external wrtier output that is received on node A when the alias Z is used should be assigned SYSOUT class of M by default. The installation can use the *MODIFY command to make the adjustments as follows:

- *MODIFY,NJE,ADDAL=Z,PRTXWTR=M is issued on node A.
- *MODIFY,NJE,ADD=Z,PATH=A is issued on node B
- *MODIFY,NJE can be used to modify the default classes for the home node or an alias.

See *OS/390 JES3 Commands* for more information on using the *MODIFY command.

| Applications

| There are no application migration actions.

| Problem Determination and Diagnosis

IPCS VERBEXIT

OS/390 Version 2 Release 9 JES3 provides a new IPCS VERBEXIT (VERBX) subcommand option:

```
VERBX JES3 'OPTION=MVD'
```

This option displays the multi-version data access control blocks. This information can also be displayed using the *START,DC,OPTION=MVD command.

| Accounting

| There are no accounting migration actions.

Chapter 13. Migration Actions: JES3 V2R9 to JES3 V2R10

Coexistence, Migration, and Fallback

For all JES3 migrations, review the information APAR II11768 for any APARs that must be applied to allow coexistence with other JES3 releases, migration to particular JES3 releases, and fallback to JES3 releases.

Initialization

There are no initialization migration actions.

Installation Modifications

There are no installation modification migration actions.

Operations

There are no operations migration actions.

Applications

There are no application migration actions.

Problem Determination and Diagnosis

There are no problem determination and diagnosis migration actions.

Accounting

There are no accounting migration actions.

Chapter 14. Version Summary Tables

This section provides an overview of OS/390 Version 2 Release 10 JES3 JES3. It summarizes user group requirements that this version satisfies or partially satisfies and provides tables that summarize changed interfaces.

Any new, changed, or deleted end-user and programming interfaces for this release are summarized in the following tables of changed interfaces. A summary table may be included for the following interfaces:

- User Group requirements
- APARs closed as FIN (Fixed in Next Release of JES3)
- Changed Initialization Statements
- Changed Commands
- Changed Executable Macros
- Changed Data Areas
- Changed Installation Exits
- Changed Messages
- Changed Codes
- Changed SMF Records
- Changed SSI Function Codes

Summary of User Group Requirements

The table below lists customer requirements that have been satisfied or partially satisfied by this release.

Figure 54. Customer Requirements Satisfied or Partially Satisfied by OS/390 Version 2 Release 10 JES3

Customer Requirement	Summary of Requirement
None	

Figure 55. Customer Requirements Satisfied or Partially Satisfied by OS/390 Version 2 Release 9 JES3

Customer Requirement	Summary of Requirement
GGMVJ395001	Allow JES3 to recognize multiple node names in a complex.
GO1JS391001	Provide configuration enhancements.

Figure 56 (Page 1 of 2). Customer Requirements Satisfied or Partially Satisfied by OS/390 Version 2 Release 8 JES3

Customer Requirement	Summary of Requirement
GO1JS387016	JES3 Support for ASM Limits (obsolete).
GO1JS385005	Provide Ability to Force a Job to Schedule.
GO1JS382008	Inquire and Modify GMS Class Scheduling Parameters.
GO1JS380015	Inquiry Command for Backlogged Jobs by Group or Class.
GO1JS379015	Provide OP or Scheduler with Better Control of Jobs (partial).
SBJES379306	Provide a GMS/SRM Interface.

Version Summary Tables

Figure 56 (Page 2 of 2). Customer Requirements Satisfied or Partially Satisfied by OS/390 Version 2 Release 8 JES3

Customer Requirement	Summary of Requirement
SOJES36303	Provide User Input in GMS Scheduling.
SOJES386362	Provide Ability to Inquire and Modify MDEPTH, TDEPTH, and SDEPTH.
SOJES386363	Enhance the Inquire Backlog Command.
SOJES388313	Provide JES3 Scheduling of Auxiliary Storage (obsolete).
REQ00007703_1	Provide a Command to Control SDEPTH.
REQ00045544	Provide JES3 PROCLIB Disabling Logic.

Figure 57. Customer Requirements Satisfied or Partially Satisfied by OS/390 Version 2 Release 7 JES3

Customer Requirement	Summary of Requirement
None	

Figure 58. Customer Requirements Satisfied or Partially Satisfied by OS/390 Version 2 Release 6 JES3

Customer Requirement	Summary of Requirement
REQ00050693	Tape Library Support for JES3 Dump Job Facility
REQ00031148 (SBJES378029)	Support Artificial Resources
REQ00031136 (SBJES378003)	MDS Awareness of Product Licenses
REQ00031443 (SOJES386301)	Full JES3 Support for 3090 Vector Facility
REQ00032308 (G01JS388008)	*I S A - Allocation Failure Reason
REQ00032308 (G01JS385017)	JES3 provides job routing based on logical resource names
REQ00059527	JES3 dump job (DJ) to unmanaged device
REQ00031430	Utility DSPs for Tape Processing Use Normal OS

Figure 59. Customer Requirements Satisfied or Partially Satisfied by OS/390 Version 2 Release 5 JES3

Customer Requirement	Summary of Requirement
REQ00066885	Support for IP Printway (full)
REQ0006683	Support the Schedule Facility Services SSI Call (partial)
R63438	Enhance the JES SSI Status Interface (partial)
R60383	JES3/AFP Output Modification/Display Enhancements
R48775	Displaying Contents of Drained Spool Volume (partial)
REQ00031478 (SOJES388357)	Modify text of message IAT8135 to include rejected command
REQ00023960 (G01JS393007)	JES3 responsible for processing any number of *F U commands

Figure 60 (Page 1 of 2). Customer Requirements Satisfied or Partially Satisfied by OS/390 Version 2 Release 4 JES3

Customer Requirement	Summary of Requirement
REQ00023839 (GO1JS393004)	Expand the JES3 job numbers
REQ00023840 (GO1JS393005)	IAT8562 Information for SNA/RJP and BSC/RJP I/O Devices
REQ00024812 (SOJES393301)	Support of dynamic reconfiguration and continuous operations
REQ00030998 (ESMVS187004)	No IPL in front of every JES3 init-deck modification
REQ00031176 (SBJES381355)	JES3 initialization enhancements
REQ00031186 (SBJES382308)	Dynamic configuration of RJP/NJE without restart
REQ00032198 (GO1JS379035)	Change JES3 To Allow INISH Deck Options
REQ00032257 (GO1JS384005)	Provide the Capability to Cause a New Copy of JES3 Module
REQ00032315 (GO1JS391001)	Provide dynamic device support in JES3
REQ00042891	JES3 support of MVS dynamic I/O reconfiguration
REQ00049006 (CSMVS194011)	JES3 initialization deck refresh

Figure 61. Customer Requirements Satisfied or Partially Satisfied by OS/390 Version 1 Release 3 JES3

Customer Requirement	Summary of Requirement
REQ00031431	Partial support to allow change of SYSOUT on writer queue & requeue to the hold queue.
REQ00031475	Support user entries on the destination routing queue (IATYDSQ).
REQ00031491	JES3 inquiry for size of jobs in BDT queue.
REQ00032204	Compatible *MODIFY,U command for hold and writer queues.
REQ00054427	Sysout class change.
REQ00029917	External writer interface improvements.
REQ00030484	Provide complete access to information in JES PSO.
REQ00032279	Partial support for expanded external writer subsystem interface.
REQ00060590	Avoid loop in external writer processing. Applications using the new SSI function code 79 (SAPI) will not encounter this problem.

Figure 62. Customer Requirements Satisfied or Partially Satisfied by OS/390 Version 1 Release 1 JES3

Customer Requirement	Summary of Requirement
REQ00032283	NJE received SYSOUT priority setting. New user exit IATUX68 was created that allows the user to modify the job's priority.

Summary of APARs Fixed in the Next Release of JES3

The following table identifies those APARs that were fixed and the OS/390 JES3 Release into which the "fix" was integrated.

Version Summary Tables

Figure 63 (Page 1 of 2). APARS Fixed in OS/390 Version 2 Release 10 JES3

APAR Number	General Description
OW31919	Modules IATISCD, IAISDV, and IATISEN and macros IATYISD and IATYJDS are changed to identify the submitter of a job when message IAT6100 is issued. Message IAT6100 has new variable text, ID= <i>id</i>
OW32840	Module IATSICD is changed to attach to JESXCF using the new parameter WHICHJES=J3CIFSS. Module IATMSDR is changed to inform JESXCF with the IXZXIXCL macro when it has detected and cleaned up a failed SYSPLEX member.
OW39288	Module IATDMJA, IATGRJA, IATISJL, and IATISLG and macros IATYISD and JDSGET are changed to add and support a step name in a SYSIN JDS control block. APAR OW42745 is required if fallback to HJS5511, HJS5521, HJS6603, HJS6604, HJS6605, HJS6606, HJS6608, or HJS6609 is performed, even if fallback is performed by a warm start, because of the change to IATYJDS, which is a spooled control block.
OW40578	Module IATMSJT is changed to issue a new message IAT2018 if a job, while registered with Automatic Restart Manager, is cancelled with the ARMR parameter or the system on which it is running fails.
OW40630	The INTERCOM macro is changed to correctly manipulate the register that indicates whether the CNDB= parameter was specified on the macro call.
OW41481	The password parameter is removed from the *RETURN and *DUMP commands. If the password parameter is used, JES3 rejects the command and issues message IAT7130.
OW42199	Module IATMDOP is changed to reject a *RESTART,SETUP command on a job for which breakdown is in progress.

Figure 64. APARS Fixed in OS/390 Version 2 Release 9 JES3

APAR Number	General Description
OW36766	Module IATIIST is changed to check for an undefined user id. If the undefined user id exists, then the user id for NOTIFY is nullified.
OW37309	Module IATSICA checks the next DD in a concatenation before it sends the current request to the JES3 global. If the DD should be bypassed for any reason (for example, DSN=NULLFILE,DD DUMMY), the current DD is marked as the last one in the request and IATSICA returns to its caller after processing it.
OW37525	Module IATMODV is changed to set up register 4 prior to using it to delete a module.
OW39288	JES3 uses the supplied SYSIN DD name, step name and procedure step name (when applicable) to create the SYSIN JDS (IATYJDS) entry.
OW39647	Module IATIIPR is changed to bypass calling the data set stacking routine when the job is marked to be flushed (for any reason).
OW39810	Module IATOSSO is changed to preserve register 2 before issuing JDSREL.

Figure 65 (Page 1 of 2). APARS Fixed in OS/390 Version 2 Release 8 JES3

APAR Number	General Description
OW31885	JES3 now recognizes second level destinations on JCL output statements //DD1 DD SYSOUT=C,DEST=(node,userid) and places the output on the appropriate queue instead of the JES3 hold queue.
OW33135	Modules IATISDV and IATISJB and macro IATYISD are change so that message IAT6133 has a new reason code informing the user that the name of jobclass is too long. Message IAT6131 can handle a jobclass name of only 1 character.

<i>Figure 65 (Page 2 of 2). APARS Fixed in OS/390 Version 2 Release 8 JES3</i>	
OW33214	Modules IATGRWM is changed to check whether a job is IPL'd off. If it was, IATGRWM checks if the job is ARM held and then calls module IATGRAS to deregister the job with ARM.
OW33927	JES3 FSS's now handle nested JCL procedures.
OW34377	Module IATIIPR is changed to set the "skip data set stacking" flag (IDDSKDSK in IATYIDD) when it detects an invalid volume sequence number.
OW32340	JES3 handles invalid unit for an affinity request.
OW32477	Half-word logic in JES3 corrected when processing VOL=REF=*.dsname. references.
OW32634	Correction to JES3 in processing job inheritance for submitted started tasks.
OW25320	Confirm SYSLOG is started before issuing VARY SYSLOG,HARDCOPY command.
OW32548	Correct DAE dump suppression.
OW34009	Correct IAT5918 message processing.
OW34875	Correct contents of message IAT8190.
OW36500	Bypass validating HWSNAME statements when SETUP=NONE.
OW37067	When JS3BATCH is in the initialization stream, ensure that defaults are used.

<i>Figure 66. APARS Fixed in OS/390 Version 2 Release 7 JES3</i>	
APAR Number	General Description
None	

<i>Figure 67. APARS Fixed in OS/390 Version 2 Release 6 JES3</i>	
APAR Number	General Description
OW27011	Module IATISRI is changed to set JDABRDAC when processing the call command. This will prevent re-execution of the command member following a hot start.
OW29187	Module IATBDCI is changed to bypass the internal command checking loop if the derived command length is not positive.
OW28634	Module, IATSNLS is modified to issue a message to the operator at the MCS console when a workstation ID greater than "5" characters is received on a SNARJP logon attempt.
OW31346	Module IATMDOP is changed to check for the end of the parameter area prior to storing into the parameter area.
OW31021	The JCL in IATJDEL is changed so that it uncatalogs as well as deletes the unneeded data sets.
OW30115	Module IATINGP is changed to check for an alphabetic first character in the group name and to ensure that the remaining characters are valid.
OW31916	When a CIFSS is added during *MODIFY,CONFIG processing, module IATINFS is changed to cause all continuation statements to be ignored if an error occurs because of an FSSDEF statement.
OW31195	Module IATCNIN is changed to queue commands to FCTs in FIFO order.
OW30589	Module IATISJB is changed to check that a comment card is being processed before clearing out the new password field in the JDAB.

Version Summary Tables

Figure 68. APARS Fixed in OS/390 Version 2 Release 5 JES3

APAR Number	General Description
OW26866	Module IATOSMP is changed to set up addressability to field WTRDMSGI in IATYWTR before the call to the command analysis routine.
OW26870	Field BSIDMTXT is changed in macro IATYBSID so that the first byte is not truncated in the message.
OW24594	Module IATGRJA is changed to ensure that I/O is not occurring for a JDA buffer until the buffer is read into storage. User written code needs to serialize JDS access. See OS/390 JES3 Customization
OW25556	Module, IATOSPC is changed to derive and specify the TATPTR on all of its AWRITE macro invocations.
OW26331	The ESTAE recovery routine in module IATSIAl is changed to ensure that an ABEND130 is avoided.
OW26234	Module IATOSMP is changed so that JES3 properly validates the WC= keyword for JES3 writer commands, Call (*X), Start (*S), and Restart (*R). JES3 issues message, IAT7014 to the operator to indicate when the WC= keyword is incorrect and then issues message IAT7072 to request the operator to enter a correct command.
OW25436	The ORDER routine in module IATOSFD is changed to avoid an ABEND, DM656 when processing multiple commands.
OW26606	Module IATOSOR is changed to derive and specify the TATPTR when it issues the AWRITE macro for a job's JMR. This change avoids the ABEND, DM760 RC=20.
OW26724	The end-of-task routine in module IATSIJS is changed to check for waiting tasks that need posting. Tasks that own the DSBOCTCB lock word and terminate will cause other jobs that need to lock word to hang. This hang condition is corrected.
OW26640	Module IATNTHT is changed to hold the JDS before calling module IATUX43. This avoids a deadlock between the MAIN FCT and the writer FCT.
OW24871	Module IATINM2 is changed to clear the storage used for the Inquiry/Modify parameter list (IATYPRM) that is passed to IATMOGM. Module IATINM2 also initializes the CNDB in this parameter list to ensure that when IATMOGM issues messages, they are displayed on a console and written to SYSLOG. An ABEND, DM132 is avoided by this fix.

Figure 69 (Page 1 of 2). APARS Fixed in OS/390 Version 2 Release 4 JES3

APAR Number	General Description
OW12400	JES3 is changed to ensure that a user region does not hang due to a wait in IATDMEB when JES3 is processing INTRDR requests.
OW24672	JES3 is changed to ensure that local processors do not allocate PROCLIB data sets during local starts if they are defined to JES3 by the DYNALLOC initialization statement. If the PROCLIB data sets are defined to JES3 through the JES3 start-up procedure, then these PROCLIB data sets continue to be allocated by, and remain allocated to local processors.
OW23644	Modules, IATOSDO and IATOSBP are changed to properly process the COPIES value in the networking environment
OW23226	JES3 specifies PASSCHK=NO when performing the RACF verify call for a SNA RJP workstation auto logon. The external specification of the RACF password is eliminated. PASSCHK=NO indicates that password validation is not necessary. A system initiated access to a device controlled by the system programmer's use of the RJPWS initialization statement should not require an external specification of the RACF password.

<i>Figure 69 (Page 2 of 2). APARS Fixed in OS/390 Version 2 Release 4 JES3</i>	
APAR Number	General Description
OW24680	Mismatch of TATPTR's when JES3 is processing job's output caused an ABEND, DM760, RC=20. The WRITEOSE macro routine in module IATOSOR is changed to derive the TATPTR from the input RESQUEUE when the TATPTR is not specified on the WRITEOSE macro.

Summary of Changed Initialization Statements

The following tables identify new, changed, or deleted JES3 initialization statements or parameters for OS/390 JES3. For complete description of each statement, see *OS/390 JES3 Initialization and Tuning Reference*.

<i>Figure 70. Initialization Stream Changes for OS/390 Version 2 Release 10 JES3</i>	
Statement	Short Description of Change
CLASS	The CIBATCH= and CIDEMAND= keywords have been added to the CLASS initialization statement.
STANDARDS	The CIBATCH= and CIDEMAND= keywords have been added to the STANDARDS initialization statement.

<i>Figure 71. Initialization Stream Changes for OS/390 Version 2 Release 9 JES3</i>	
Statement	Short Description of Change
NJERMT	NJE Structure Support <ul style="list-style-type: none"> • New ALIAS= keyword to specify an alias for the receiving node. • Specifying default SYSOUT definitions for the alias node in new parameters, PRTDEF, PRTTSO, PRTXWTR, PUNDEF
DEVICE	Configuration Enhancements <ul style="list-style-type: none"> • New *ALL value allowed with XUNIT or JUNIT keyword that is used to define a device symmetrically to all mains • New NUMDEV keyword to specify a range of device definitions. • The XTYPE and XUNIT parameters can be changed during a hot start with refresh, and DEVICE statements containing the XTYPE and XUNIT parameters can be added or deleted during a hot start with refresh.
DYNALDSN	Configuration Enhancements <ul style="list-style-type: none"> • Syntax and use remains unchanged; however the statement can be added, deleted, or changed during hot start with refresh.
SETNAME	Configuration Enhancements <ul style="list-style-type: none"> • Syntax and use remains unchanged; however the statement can be added, deleted, or changed during hot start with refresh.
SETPARAM	Configuration Enhancements <ul style="list-style-type: none"> • Syntax and use remains unchanged; however the statement can be added, deleted, or changed (except the SMSSETUP parameter, which cannot be added, deleted or changed) during hot start with refresh.

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Figure 72. Initialization Stream Changes for OS/390 Version 2 Release 8 JES3

Statement	Short Description of Change
CLASS	The LSTRR and IORATE parameters are ignored for WLM-managed job class groups.
DESTDEF	A new initialization statement is available to specify how inbound SYSOUT data sets from other NJE nodes are to be processed at this node.
DEVICE	Changes to recommend that userids not conflict with devices.
GROUP	<p>JES3 - WLM Batch Initiator Support</p> <ul style="list-style-type: none"> • New MODE parameter is added to allow the installation to specify whether JES3 or WLM initiator management should be used for this group. • Initiator options for WLM-managed groups can be specified but they are ignored. • EXRESC parameter allows *ALL to be specified as a system name. • SBAR and JSPAN are ignored for WLM-managed groups.
NJERMT	A new parameter, NETHOLD=, is added to define how NJE SYSOUT is to be processed.
RJPTERM	Changes to recommend that userids not conflict with devices.
SELECT	The CHOICE, JOBMIX, LSTOR, MAGEL, and MAGER parameters are ignored for WLM-managed job class groups.

Figure 73. Initialization Stream Changes for OS/390 Version 2 Release 7 JES3

Statement	Short Description of Change
None	

Figure 74. Initialization Stream Changes for OS/390 Version 2 Release 6 JES3

Statement	Short Description of Change
DEVICE, SETNAME	<p>Dump Job Enhancements</p> <p>The installation has the option to either use JES3 tape support units or execution tape devices available to the JES3 global main processor.</p> <ul style="list-style-type: none"> • The syntax of these statements has not changed. However, because of the Dump Job Enhancements support, you no longer have to define tape devices to JES3 for use by Dump Job.
DYNALLOC	The syntax of the DYNALLOC statement has not changed. However, if you dynamically allocate your JES3JCT data set via a DYNALLOC statement, and you run the IATUTJCT utility to copy or migrate your existing JCT, you must remember to update the DYNALLOC statement for JES3JCT in your initialization stream.

Figure 75. Initialization Stream Changes for OS/390 Version 2 Release 5 JES3

Statement	Short Description of Change
None	

<i>Figure 76. Initialization Stream Changes for OS/390 Version 2 Release 4 JES3</i>	
Statement	Short Description of Change
DEVICE	For DTYPE=RMTPRINT statements, you can use a null parameter indicated by a comma instead of the word "NONE." For example, you can code "DEVICE,DTYPE=RMTPRINT...JUNIT=(NONE,SY1,,OFF,NONE,SY2,,OFF,..." as "DEVICE,DTYPE=RMTPRINT...JUNIT=(,SY1,,OFF,,SY2,,OFF,..."
GROUP	You can now specify up to 64K job numbers on the JSPAN= keyword
INCLUDE	New - Allows JES3 to use Segmented Initialization Stream Processing
OPTIONS	You can now specify up to 64K job numbers on the JOBNO= keyword
JES3LIB	Deleted - The JES3LIB initialization statement support is deleted in this release
(many)	Many initialization statements, although their syntax and use have not changed, are affected by this release in the manner in which they are processed during the hot start with refresh. See Figure 39 on page 78 for a description of the dependencies and other information concerning the initialization stream statements.

<i>Figure 77. Initialization Stream Changes for OS/390 Version 1 Release 3 JES3</i>	
Statement	Short Description of Change
DEVICE (I/O)	Added new parameter PDEFAULT= (through APAR OW13672)

<i>Figure 78. Initialization Stream Changes for OS/390 Version 1 Release 2 JES3</i>	
Statement	Short Description of Change
None	

<i>Figure 79. Initialization Stream Changes for OS/390 Version 1 Release 1 JES3</i>	
Statement	Short Description of Change
None	

Summary of Changed Commands

The following tables identify JES3 commands that have new, deleted, or enhanced parameters for OS/390 JES3. For a complete description of each command, see *OS/390 JES3 Commands*.

<i>Figure 80 (Page 1 of 2). Command Changes for OS/390 Version 2 Release 10 JES3</i>	
Command	Short Description of Change
*DUMP	The password parameter on this command has been deleted. If you specify the password, the command is rejected with the message: IAT7130 '*DUMP,PASSW' REJECTED, INVALID COMMAND

Version Summary Tables

Figure 80 (Page 2 of 2). Command Changes for OS/390 Version 2 Release 10 JES3

Command	Short Description of Change
*RETURN	The password parameter on this command has been deleted. If you specify the password, the command is rejected with the message: IAT7130 '*RETURN,PASSW' REJECTED, INVALID COMMAND
*CALL,MONITOR	The MONITOR DSP is now called automatically after every JES3 restart, if it was not previously active. If you cancel MONITOR and restart the JES3 global without issuing a new *CALL,MONITOR command, JES3 will issue a *CALL MONITOR command automatically. The MONITOR DSP is shipped with all resource and queues being monitored except for ALLOCQ and VERIFYQ.
*START,MONITOR	Changes have been made in display the default parameter settings.
*MODIFY,X	Allows the operator to refresh a CSECT in the JES3 load module (IATNUC) or JES3 exit.
*INQUIRY,U	Allows the operator to display job output using new parameters CJ, CJNM, and CJID.
*MODIFY,U	Allows the operator to select job output using new parameters CJ, CJNM, and CJID.
*MODIFY,W	Allows the operator to establish an elapsed time (delay), which must expire before a JES3 writer is stopped. The DYNAMIC parameter is updated with a <i>timeout</i> value that gives an elapse time before stopping an idle JES3 writer.

Figure 81. Command Changes for OS/390 Version 2 Release 9 JES3

Command	Short Description of Change
*INQUIRY,NJE,NAME=alias	To display NJE definitions for alias node names
*MODIFY,NJE,...	To modify NJE definitions. The ADDAL= (or AA=) keyword adds an alias node. The PRTDEF, PRTTSO, PRTXWTR, and PUNDEF parameters change default SYSOUT classes for the home node or an alias.

Figure 82 (Page 1 of 3). Command Changes for OS/390 Version 2 Release 8 JES3

Command	Short Description of Change
*CALL,DISPLAY	Allows the operator to display the job's service class.
*CALL,JMF	Allows the operator to display WLM information related to jobs. A new WLM= parameter is added that allows the operator to specify whether WLM-related information should be reported.
*INQUIRY,A,SRVCLASS=	Displays jobs that are in execution for the specified service class.
*INQUIRY,B,SRVCLASS=	Allows the operator to display the backlog of jobs and is changed as follows: <ul style="list-style-type: none"> New C=<i>cls</i> parameter is added to display the backlog of jobs by job class. G=<i>grp</i> parameter is changed to display the backlog of jobs by job class group. Previously, G=<i>grp</i> displayed the backlog of jobs by device group/origin. Use the T= parameter to display jobs by device group/origin. New SRVCLASS=<i>svclass</i> parameter is added to display the backlog of jobs by service class. The *INQUIRY,B command message format has changed. When an *INQUIRY,B command is issued, a header message (IAT8xxx) is displayed first followed by message (IAT8yyy) for each DSP with backlogged jobs.

Figure 82 (Page 2 of 3). Command Changes for OS/390 Version 2 Release 8 JES3

Command	Short Description of Change
*INQUIRY,C	Allows the operator to display job class information that includes MLIMIT, TLIMIT, MDEPTH, TDEPTH, SDEPTH.
*INQUIRY,G	Allows the operator to display job class group information, such as: <ul style="list-style-type: none"> Whether the job class group is JES or WLM managed. For WLM-managed job class groups, the initiator-related options, JSPAN and BAR are NOT displayed.
*INQUIRY,J,...	Allows the operator to display job information: <ul style="list-style-type: none"> Wildcard characters can be used when a job name is specified. The job's service class, job class group, and indication of whether a *MODIFY,J=job,RUN command was issued is now displayed when the "X" parameter is specified. New reasons why a job is waiting are displayed when the "W" parameter is specified.
*INQUIRY,NJE,...	Allows the operator to use a new parameter, NETHOLD, to display the option for processing of inbound NJE SYSOUT in NETDATA format.
*INQUIRY,Q,SRVCLASS=	Allows the operator to display jobs with a specified service class.
*INQUIRY,X,M=	Allows the operator to: <ul style="list-style-type: none"> Display new information for IATNUC modules. Use the *INQUIRY,X,M=address command for modules that were not loaded via the ALOAD macro. Specify a system name to display modules on the JES3 local processors.
*MODIFY,C=cls	Allows the operator to modify information for a job class. This information includes group name, SDEPTH, TDEPTH, TLIMIT, MDEPTH, and MLIMIT. Note: A job will be reclassified when the job's priority is changed.
*MODIFY,G	Allows the operator to change the mode for a job class group to either WLM or JES. Note: Initiator-related options, JSPAN, and BAR, cannot be changed for WLM-managed groups.
*MODIFY,J=nnn,CIDEBUG	Allows the operator to activate converter/interpreter debug processing.
*MODIFY,J=nnn,CLASS=	Allows the operator to change a job's priority. There are no syntax changes to this command, however the processing of the command is different because of WLM classification.
*MODIFY,J=nnn,P=pp	Allows the operator to change a job's priority. There are no syntax changes to this command. Note: A job will be reclassified when the job's priority is changed.
*MODIFY,J=nnn,RUN	Allows the operator to force a job to be selected for execution.
*MODIFY,J=nnn,SRVCLASS=	Allows the operator to change the service class for a job. Initiator-related options JSPAN and BAR cannot be changed for WLM-managed groups.
*MODIFY,NJE,...	Allows the operator to use the NETHOLD= parameter to modify the option for processing inbound NJE SYSOUT in NETDATA format.

Version Summary Tables

<i>Figure 82 (Page 3 of 3). Command Changes for OS/390 Version 2 Release 8 JES3</i>	
Command	Short Description of Change
*MODIFY,X,M=,....,REFRESH	The REFRESH allows new copies of certain IATNUC modules to be loaded into storage and used. The old copies are NOT deleted. A LOAD parameter is added to allow a copy of a module to be loaded into storage before it is normally loaded.
*START,DC	Adds a new OPTION= parameter.
*TRACE	Allows the operator to activate, deactivate, and display the GTF traces that are in effect for JES3. Additional trace options have been added. Also, a trace prefix can be used when displaying, activating, and deactivating traces. For example, *TRACE,ON,WLM* can be specified to activate all traces that start with "WLM".

<i>Figure 83. Command Changes for OS/390 Version 2 Release 7 JES3</i>	
Command	Short Description of Change
None	

<i>Figure 84. Command Changes for OS/390 Version 2 Release 6 JES3</i>	
Command	Short Description of Change
*CALL,DISPLAY	Displays the job's scheduling environment, if any.
*CALL,DJ	SERVER= identifies whether Dump Job is to run in server mode or not. In server mode, the tape I/O portion of Dump Job runs in its own address space. DSN= specifies, when in server mode for input requests, the data set name that contains the jobs to be restored. VOL= specifies, when in server mode for input requests, the volume serial numbers of the tapes that contain the jobs to be restored.
*INQUIRY,WTO	Allows the operator to display WTO pace-monitoring parameters.
*INQUIRY,J=job,X	Displays extended information for a job such as the job's scheduling environment.
*INQUIRY,Q,SCHENV=schenv	Display all jobs that reference the specified scheduling environment that are either waiting to be scheduled for or have been scheduled for main service.
*INQUIRY,S,A,SUMM=	Displays a summary of the jobs in MDS allocation including the resources that the jobs require.
*MODIFY,J=job,LOG NOLOG	Allows the operator to change a job's JESMSGLOG logging status.
*MODIFY,WTO	Allows the operator to change WTO pace-monitoring parameters.
*TRACE	Additional trace options have been added.

<i>Figure 85 (Page 1 of 2). Command Changes for OS/390 Version 2 Release 5 JES3</i>	
Command	Short Description of Change
*CALL,NJEROUT	NIP= allows the IP address to be modified or deleted.

Figure 85 (Page 2 of 2). Command Changes for OS/390 Version 2 Release 5 JES3

Command	Short Description of Change
*INQUIRY,U	<p>FD=</p> <p>A selection parameter that allows you to display the data sets that have the specified FORMDEF.</p> <p>IP=</p> <p>A selection parameter that allows you to display the data sets that have the specified IP address.</p> <p>PD=</p> <p>A selection parameter that allows you to display the data sets that have the specified PAGEDEF.</p>
*MODIFY,U	<p>FD=</p> <p>A selection parameter that allows you to modify the FORMDEF of selected output data sets.</p> <p>IP=</p> <p>A selection parameter that allows you to modify the IP address of selected output data sets.</p> <p>NFD=</p> <p>A selection parameter that allows you to change the existing FORMDEF for selected data sets to a new FORMDEF.</p> <p>NIP=</p> <p>A selection parameter that allows you to change the existing IP address for selected data sets to a new IP address. NIP=none deletes the IP address for the selected data sets.</p> <p>NPD=</p> <p>A selection parameter that allows you to change the existing PAGEDEF for a selected data sets to a new PAGEDEF.</p> <p>PD=</p> <p>A selection parameter that allows you to modify the PAGEDEF of selected output data sets.</p>
*START,NJEROUT	<p>NIP=</p> <p>A selection parameter that allows you to change the IP address of selected data sets to a new IP address.</p>
*START,DC	<p>OPTION=STT</p> <p>A parameter that allows you to display the spool records in the single track table.</p> <p>SPADDR=</p> <p>A parameter that allows you to display a spool record.</p>

Figure 86 (Page 1 of 2). Command Changes for OS/390 Version 2 Release 4 JES3

Command	Short Description of Change
*INQUIRY,D	Enhanced to allow the specification of D= for a device within a SNA or BSC RJP workstation that is not signed on.

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Figure 86 (Page 2 of 2). Command Changes for OS/390 Version 2 Release 4 JES3

Command	Short Description of Change
*INQUIRY,D,D=	Now displays XLATE and PDIR information. Completion messages are now provided.
*INQUIRY,D,T=	Enhanced to display PL information. Completion messages are now provided.
*INQUIRY,X,M=	Enhanced as follows: <ul style="list-style-type: none"> • Additional information is now displayed such as APAR number, compile date and time, module size, and so on. • A generic module name can now be specified • An address within an ALOAded module can be specified • An LPA or CSA resident module or CSECT within the JES3 IATNUC module can be displayed.
*MODIFY,CONFIG	New command to allow dynamic configuration changes to the JES3 system. Certain types of initialization statements can be added to the current JES3 configuration.
*MODIFY,T	Allows modification of SNA RJP workstation parameters.
*MODIFY,W	Enhanced to allow modification of parameters for the devices for SNA and BSC workstations.
*MODIFY,X	New parameter REFRESH can be used to cause a new copy of the module to be loaded.
*START,DC	New OPTION= parameter values were added.

Figure 87. Command Changes for OS/390 Version 1 Release 3 JES3

Command	Short Description of Change
*INQUIRY,U	The selection and processing characteristics for the WTR, HOLD, and BDT queue commands has been increased. For example, BY= allows selection by the data set byte count on all three Output Service queues (HOLD, WTR, and BDT).
*MODIFY,U	The selection and processing characteristics for the WTR, HOLD, and BDT queue commands has been increased. For example, BY= allows specification by the data set byte count on all three Output Service queues (HOLD, WTR, and BDT) as selection criteria for the data set(s) being modified. Two additional enhancements have been made to the *MODIFY,U,Q=WTR command: <ul style="list-style-type: none"> • NQ=HOLD allows SYSOUT to be moved from the WTR Q to the HOLD Q. • NCL=class allows for SYSOUT class modification on the WTR Q.
*START,DC	A new keyword, DIAG, has been added to the OPTION parameter to allow you to display a formatted OSE.

<i>Figure 88. Command Changes for OS/390 Version 1 Release 2 JES3</i>	
Command	Short Description of Change
*MODIFY,W	Added new parameter PDEFAULT=.

<i>Figure 89. Command Changes for OS/390 Version 1 Release 1 JES3</i>	
Command	Short Description of Change
*CALL,WTR	Updated the WS= parameter.
*RESTART,devname	Updated the WS= parameter.
*START,devname	Updated the WS= parameter.
*START,DC	The command has been changed to accept a value specified on the volume (VLM) option.

Summary of Changed Executable Macros

The following tables identify all the JES3 executable macros that require your examination before migrating to a new JES3 release. For a complete description of each executable macro, see *OS/390 JES3 Customization*.

<i>Figure 90. Executable Macro Changes for OS/390 Version 2 Release 10 JES3</i>	
Macro	Short Description of Change
None	

<i>Figure 91. Executable Macro Changes for OS/390 Version 2 Release 9 JES3</i>	
Macro	Short Description of Change
IATXHOME	New macro to determine if a destination represents the home node (whether literally or as an alias).
IATXIHDV	Macro is deleted.
IATXIDVS	New macro to encapsulate device definitions during all types of restarts.
IATXMVDA	New macro to serialize access to JES3 tables in common storage.

<i>Figure 92 (Page 1 of 2). Executable Macro Changes for OS/390 Version 2 Release 8 JES3</i>	
Macro	Short Description of Change
ACALL	Allows ENTER=(R0) to be specified.
AWAIT	TYPE=ON is the default when not coded on the macro.
IATXCVD	New macro used to convert a binary value to decimal.
IATXDST	New macro to check whether a destination is defined to JES3 as a writer queue destination when processing inbound NJE SYSOUT data.
IATXGENF	New macro used to initialize and set up an FCT to offload work from another FCT.
IATXGFC	Additional parameters have been added to the macro to make it easier for the caller to create FCTs.

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Figure 92 (Page 2 of 2). Executable Macro Changes for OS/390 Version 2 Release 8 JES3

Macro	Short Description of Change
IATXJCT	The JOBNUM parameter can now specify a halfword field.
IATXJQE	Expanded syntax and function as follows: <ul style="list-style-type: none"> • New SEARCH function is added to allow the caller to specify selection criteria for searching the JQEs. • Use of IATXJQE by priority is changed to allow the caller to specify whether the priority should be enqueued exclusive or shared. • The JOBNUM parameter can now be specified as a halfword or fullword field. Enables the user to pass a set of search arguments that identify which JQE's should be returned.
IATXMGET	A LENGTH=(reg) parameter can now be specified.
IATXMPC	New macro used to perform MPC-related functions, such as searching the MPCs by system name and creating main masks.
IATZMEXC	New macro used by other macros to check for mutually exclusive parameters.
IATZPCHK	Changed to allow the caller to check whether valid registers were specified for a parameter and to check whether the correct number of subparameters were specified.

Figure 93. Executable Macro Changes for OS/390 Version 2 Release 7 JES3

Macro	Short Description of Change
JESEXCP	New keyword, IOBE= is added to support FICON channels.

Figure 94. Executable Macro Changes for OS/390 Version 2 Release 6 JES3

Macro	Short Description of Change
ACALL	New TRACE parameter is added which allows the caller to specify whether they want a trace entry created.
ARETURN	New TRACE parameter is added which allows the caller to specify whether they want a trace entry created.
IATZCALL	New TRACE parameter is added which allows the caller to specify whether they want a trace entry created.

Figure 95. Executable Macro Changes for OS/390 Version 2 Release 5 JES3

Macro	Short Description of Change
IATZLOAD	New keyword option, LLA=, which generates a load instruction if the input parameter is an address constant and a load address instruction if the input parameter is a label.
IATXPRT	New TYPE=LINE parameter allows you to write a line to the output data set without translation or indenting.

Figure 96. Changed Macros for OS/390 Version 2 Release 4 JES3

Macro	Short Description of Change
ACALL	New subparameter on EP parameter to allow an ADCON to be generated. New EPLOC parameter to allow the name of a field which contains the address of the routine to be invoked to be specified.
AWAIT	New DATA parameter added which allows data to be associated with a particular AWAIT.
IATXCPYF	Used to copy a multi-record file (MRF) to another MRF. This is a new macro for this release of JES3.
IATXCSF	New DESC parameter added which allows the caller to specify a description of the function being invoked as a subtask.
IATXRDC	Used to read a chained single record file (SRF) into storage. This is a new macro for this release of JES3.
IATXSTAT	Used to access information in the JES3 Statistics Data Area (SDA). The SDA is used to collect JES3 statistics such as the amount of time spent in a particular phase of JES3 initialization. This is a new macro for this release of JES3.
IATXSYSU	Used to perform functions against the SYSUNITs control block chain, such as accessing each SYSUNITs entry. This is a new macro for this release of JES3.
IATZPCHK	A new macro that is used by other macros to perform parameter checking.
IWASPOUT	New COMPRESS parameter added which allows duplicate blanks in a message to be suppressed.

Figure 97. Executable Macro Changes for OS/390 Version 1 Release 3 JES3

Macro	Short Description of Change
IATXISMG	A new field, ISJMSBBC, is updated by a value of 1 if a new buffer is obtained through ALOCATE/ABLOCK processing. (New flag FCTNBUFF in mapping macro IATYFDB is set on during the macro expansion.)
IATXFDB	A new flag, FCTNBUFF in mapping macro IATYFCT, is reset (initialized off) during the macro expansion for TYPE=ADDFDB,ROUTINE=ALOCATE requests. The flag is to be used when a new buffer is obtained.
WRITEOSE	The service routine that WRITEOSE invokes has been moved from module IATOSGR to new module IATOSOR.

Figure 98. Executable Macro Changes for OS/390 Version 1 Release 2 JES3

Macro	Short Description of Change
IATXTOD	In order to process dates beyond 1999, this macro now returns a century indicator in the format of CCYYDDDF. For example, if the value of CCYY is 0095, it represents the year 1995; 0105 represents the year 2005, and so on.

Figure 99. Executable Macro Changes for OS/390 Version 1 Release 1 JES3

Macro	Short Description of Change
None	

Summary of Changed Data Areas

The following tables identify all the JES3 data areas that are new or changed.

<i>Figure 100. Changed Data Areas for OS/390 Version 2 Release 10 JES3</i>	
Data Area	Description of Change
IATYCOW	New scheduling information is added.
IATYDDL	New unit affinity information is added.
IATYFSL	JES3 release information in a dump title is changed.
IATYFSLA	JES3 release information in a dumpt title is change.
IATYIDD	New unit affinity information is added.
IATYIJS	New unit affinity information is added.
IATYISD	New step name information for the JDS is added.
IATYJCT	New WLM information is added.
IATYJDS	New submitor information is added for INTRDR entries.
IATYJMF	JES3 release infromation for reports and SMF records is changed.
IATYJSQ	New unit affinity and WLM information is added.
IATYJST	New unit affinity information is added.
IATYJS3	JES3 release information for messages is changed.
IATYMEM	New WLM information is added.
IATYMNTR	Several monitor queues are changed to be active by default.
IATYRSQ	New unit affinity and WLM information is added.
IATYSDW	New scheduling information is added.
IATYWCD	New WLM information is added.
IATYWCH	New WLM information is added.
IATYWCWA	New WLM information is added.

<i>Figure 101 (Page 1 of 3). Changed Data Areas for OS/390 Version 2 Release 9 JES3</i>	
Data Area	Description of Change
IATYNRS	Changed Added field to contain the saved node name.
IATYNJY	Changed Added flag to indicate that the NJE node is an alias.
IATYDVDE	New Areas within a data space describing a device's intermediate text.
IATYINT	Changed Added information for devices defined with *ALL, a pointer to an initialization device services work area, and a range counter for the NUMDEV parameter.
IATYISET	New Maps the intermediate text of a SETUNIT.

Figure 101 (Page 2 of 3). Changed Data Areas for OS/390 Version 2 Release 9 JES3

Data Area	Description of Change
IATYISPR	New Maps the intermediate text containing information from the SETPARAM statement.
IATYISTN	New Maps the intermediate text of a SETNAME.
IATYSET	Changed Added an ANCHOR= parameter to the internal FINDSETU macro.
IATYSUP	Changed Added a flag for the DTYPE=SYSMAIN device indicating that it is a default SYSMAIN.
IATYSVT	Changed Added pointers to the Multi-Versoin Data Area service module and the master control area list.
IATYABL	Changed Added formatting module.
IATYAWA	Changed Added CSA table pointers and access tokens.
IATYCFW	Changed Added JDE and residence flag for IATINDVS.
IATYCKI	Changed Added IATXCKPT TYPE=FREE function code.
IATYCSR	Changed Added flag indicating XUNIT deleted from a main.
IATYDDR	Changed Added pointer to local work area.
IATYDFM	Changed Allowed a field name to be formatted by its full name or by the position of its name following a prefix.
IATYDUM	Changed Added user abend code, U0020.
IATYEQU	Changed Added shared subpool equate.
IATYITK	Changed Added flags and information for auto-restart.
IATYMPC	Changed Added logic to expand the macro only once when used multiple times.
IATYTVT	Changed Added a flag for auto-restart.
IATYVTX	Changed Added SETUNITs pointer arrays.

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Figure 101 (Page 3 of 3). Changed Data Areas for OS/390 Version 2 Release 9 JES3

Data Area	Description of Change
IATYUTDA	Changed Added formatting module.
IATYUVR	Changed Added a flag for inconsistently defined devices.

Figure 102 (Page 1 of 5). Changed Data Areas for OS/390 Version 2 Release 8 JES3

Data Area	Description of Change
IATYABL	Changed Added new formatting modules.
IATYAWR	Changed Added new AWAIT reason codes.
IATYCKP	Changed Added WLM service definition id.
IATYDDF	New
IATYDFM	New
IATYDSB	Changed
IATYDSQ	Changed Added destination queue entry for WLM.
IATYDST	Changed Added destination code for WLM.
IATYFCD	Changed
IATYFCD	Changed Changed AENQ related fields.
IATYGMS	Changed Changed, resequenced, and added additional GMS checkpoint record subtypes.
IATYGPW	New
IATYGSD	Changed Added a field that points to a chain of available GSDs.
IATYGSG	Changed Added a field that points to a chain of available GSDs. The specific subtask number "7" is reserved for the WLM subtask.
IATYGTRC	Changed Added new GTF record subtypes.
IATYG014	Changed Added information for RESET <i>jobname</i> ,SRVCLASS= <i>event</i> .
IATYG020	New
IATYG024	New
IATYG025	New

Figure 102 (Page 2 of 5). Changed Data Areas for OS/390 Version 2 Release 8 JES3

Data Area	Description of Change
IATYG026	New
IATYIDD	Changed <ul style="list-style-type: none"> Added field for DESTDEF initialization statement processing. Added field for the number of EXRESC parameters with a system name of *ALL. Added DSECT to map the job number and the name to be deleted using analysis.
IATYINT	Changed Added support for DESTDEF initialization statement in support of OW31885.
IATYISD	Changed
IATYITXT	Changed Added support for DESTDEF initialization statement in support of OW31885.
IATYJCT	Changed Added: <ul style="list-style-type: none"> PERFORM parameter from the JOB statement. Service class name. WLM classification token. Input service ending time. Main service arrival time. Job delay times.
IATYJDA	Changed <ul style="list-style-type: none"> Flag to indicate the job was selected for execution by a WLM-managed initiator. WLM initiator sequence number. JDABPERF is still defined in the macro, but it is no longer filled in with the PERFORM parameter from the JOB statement.
IATYJDE	Changed <ul style="list-style-type: none"> Added flag to indicate a refreshed IATNUC module. Changed order of date fields from day,month,year to month,day,year.
IATYJDS	Changed Added a flag to distinguish writer name from secondary destination in support of OW31885.
IATYJMF	Changed <ul style="list-style-type: none"> Added information for WLM portion of JMF support. Added field for the amount of static storage needed by JMF. Added flag to indicate that sampling modules are being called for cleanup processing.
IATYJMR	Changed Added the current and old service class names and the *MODIFY,J=job,RUN indicator to the WLM JMRX.
IATYJPSE	New

Version Summary Tables

Figure 102 (Page 3 of 5). Changed Data Areas for OS/390 Version 2 Release 8 JES3

Data Area	Description of Change
IATYJQE	<p>Changed</p> <p>Added:</p> <ul style="list-style-type: none"> • New flag (JQEFLG3). • Pointer to JQE extension (JQEXADDR).
IATYJQEX	New
IATYJQX	<p>Changed</p> <ul style="list-style-type: none"> • Replaced the priority scan related fields to allow JQE priorities to be accessed either shared or exclusive. • Added pointers to new JQE related service routines.
IATYJSA	Changed
IATYJSQ	<p>Changed</p> <p>Added</p> <ul style="list-style-type: none"> • Flags and fields for WLM batch management (that is, service class). • Job delay times. • DJC network name.
IATYJVW	Changed
IATYMCL	<p>Changed</p> <ul style="list-style-type: none"> • Restructured the data area and fields used for class limit processing (TDEPTH, MDEPTH, TLIMIT, and MLIMIT). • Added class shadow fields for WLM sampling. • CLASS initialization statement intermediate text is no longer mapped by IATYMCL. It is mapped by IATYIMCL.
IATYMDS	<p>Changed</p> <p>MDS record format is changed when a job is bypassed during MDS allocation.</p>
IATYMEM	<p>Changed</p> <p>Added flags and fields for WLM batch management (that is, service class, WLM).</p>
IATYMGP	<p>Changed</p> <ul style="list-style-type: none"> • Flag added to indicate WLM-managed group. • Added a group enabled main mask. • Execution resource entries for a particular group are now chained (MGSGRPNX) instead of access using an offset (MGXNMAIN).
IATYMLWO	Changed
IATYMOOS	Changed
IATYMPC	<p>Changed</p> <p>Added:</p> <ul style="list-style-type: none"> • Flags and fields for WLM batch management. • Fields for product and service levels.
IATYNFD	<p>Changed</p> <p>Added a flag to support DESTDEF processing in support of OW31885. Added a flag to support DESTDEF processing in support of OW31885.</p>

Figure 102 (Page 4 of 5). Changed Data Areas for OS/390 Version 2 Release 8 JES3

Data Area	Description of Change
IATYNJY	Changed Added a flag to support DESTDEF processing in support of OW31885.
IATYNUCM	New
IATYODP	New
IATYOPT	Changed Added the option to indicate whether a sampling module should be called for cleanup processing.
IATYOSD	Changed Added a flag to distinguish writer name from secondary destination in support of OW31885.
IATYOSE	Changed Added a flag to distinguish writer name from secondary destination in support of OW31885.
IATYPRM	Changed
IATYRQJS	New
IATYRSQ	Changed <ul style="list-style-type: none"> • JQE address (RQJQEADD) added to fixed section. • Added service class name and WLM classification token to MDS section. • RQJSTAT equates are now generated by macro IATYRQJS. • Renamed field, RQIFLAG to RQMSFL1. • Added flags and fields for WLM batch management to GMS section. • Added the PERFORM parameter from the JOB statement to the C/I section.
IATYRSR	Changed Added fields for product and service levels.
IATYSCHT	New
IATYSDA	Changed Added a pointer to the SDA entry for WLM information.
IATYSDAD	Changed
IATYSDA1	Changed Added WLM initialization start and end times.
IATYSDA4	New
IATYSDW	Changed
IATYSQD	Changed
IATYSRS	Changed
IATYSRVC	New
IATYSSCX	Changed Added priority field.
IATYSTA	Changed
IATYSVT	Changed
IATYTVT	Changed Added new AENQ resource names.

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Figure 102 (Page 5 of 5). Changed Data Areas for OS/390 Version 2 Release 8 JES3

Data Area	Description of Change
IATYTVTX	Changed Added: <ul style="list-style-type: none"> • Pointer to the WLM data area. • New service routine entry points.
IATYUTDA	Changed Added new *S,DC,OPTION= values.
IATYWBQS	New
IATYWCD	New
IATYWCH	New
IATYWCWA	New
IATYWEV	Changed Added new WLM event types.
IATYWJS	New
IATYWLM	New
IATYWSTB	New
IATYWTD	Changed <ul style="list-style-type: none"> • Added new inquiry and modify function codes. • Renumbered modify function codes to start at 51.
IATY8FB	Changed Added new reason codes.

Figure 103. Changed Data Areas for OS/390 Version 2 Release 7 JES3

Data Area	Description of Change
None	

Figure 104 (Page 1 of 3). Changed Data Areas for OS/390 Version 2 Release 6 JES3

Data Area	Description of Change
IATYAWR	Changed Added new AWAIT reason codes.
IATYCCB	Changed Added scheduling environment.
IATYCKI	Changed Added indicators for JCT utility.
IATYCOW	Changed
IATYDJB	Changed Added fields for DJ server support. Moved message services to module IATDJMGS.
IATYDXE	Changed

<i>Figure 104 (Page 2 of 3). Changed Data Areas for OS/390 Version 2 Release 6 JES3</i>	
IATYGTRC	Changed Added support to expand new JES3 GTF records.
IATYG014	New New - GTF trace record for WLMENF event.
IATYG015	New New - GTF trace record for WLMMSDFCT event.
IATYG016	New New - GTF trace record for WLMMSJOB event.
IATYG017	New New - GTF trace record for WLMGMSFCT event.
IATYG018	New New - GTF trace record for WLMGMSJOB event.
IATYG019	New New - GTF trace record for SAPI event.
IATYITK	Changed Added scheduling environment and additional reserved space.
IATYJCT	Changed Added scheduling environment and additional reserved space. Fields JCTFSIZE and JCTFEND should no longer be used to address the variable (scheduler element) portion of the JCT. Instead, use JCTFIXL.
IATYJMR	Changed Added a new WLM JMRX section.
IATYJQE	Changed Added a flag to indicate that the job has a scheduling environment.
IATYJQX	Changed Added a field that contains the size of the fixed JCT for this release.
IATYJSQ	Changed Added a scheduling environment.
IATYMDS	Changed Added flags and fields for resource affinity support.
IATYMOOS	Changed
IATYMPD	Changed Added flags and fields for resource affinity support. Changed many unused fields to reserved fields.
IATYOSA	Changed
IATYOSD	Changed
IATYPRM	Changed
IATYRSQ	Changed Added MDS and GMS bypass reasons to field RQJSTAT. Added scheduling environment and main mask to MDS section of the RQ.

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Figure 104 (Page 3 of 3). Changed Data Areas for OS/390 Version 2 Release 6 JES3

IATYSDA1	Changed Added the number of LPA modules changed during hot or local start without IPL.
IATYSRD	Changed
IATYSRL	Changed
IATYSVT	Changed Added JES3's STOKEN and new GTF trace flags.
IATYTSWK	Changed
IATYTVT	Changed Added ACALL (TRACE=NO) and ARETURN (TRACE=NO) entry points.
IATYUJDA	New New - JCT Utility data set information area.
IATYUJGD	New New - JCT Utility global data area.
IATYUJLD	New New - JCT Utility module local data area.
IATYVOL	Changed Added the version number of the JCT.
IATYWEV	New New - WLM event control block.
IATYWTD	Changed Changed field WTDLENGTH from a one byte field to a two byte field.

Figure 105 (Page 1 of 2). Changed Data Areas for OS/390 Version 2 Release 5 JES3

Data Area	Description of Change
IATYCBT	Changed
IATYCKSB	Changed
IATYCNC	Changed
IATYDUM	Changed Changed for new dump code DM671.
IATYD671	New New - DM671 reason codes.
IATYFSS	Changed
IATYIDD	Changed
IATYIQOS	Changed
IATYJDSO	Changed
IATYKEY	Changed
IATYMOOS	Changed
IATYNRS	Changed
IATYOSA	Changed

<i>Figure 105 (Page 2 of 2). Changed Data Areas for OS/390 Version 2 Release 5 JES3</i>	
Data Area	Description of Change
IATYOSD	Changed
IATYOSE	Changed
IATYPRM	Changed
IATYRSQ	Changed
IATYSRL	Changed
IATYSTBL	Changed
IATYSWBR	New
IATYSWBU	Changed Changed (rewritten and resequenced).
IATYXPR	Changed Changed for TYPE=LINE parameter on IATXPRT.

<i>Figure 106 (Page 1 of 4). Changed Data Areas for OS/390 Version 2 Release 4 JES3</i>	
Data Area	Description of Change
IATYAWR	Changed Additional AWAIT reason codes added. AWAIT reason codes can now be identified as potential bottlenecks in this macro for use by JMF.
IATYCFGS	New
IATYCFW	New
IATYCKP	Changed Deleted field CKVCKFDB.
IATYCPB	Changed Added equate for new maximum number of extents (CPBEXTN2 = 700).
IATYCTX	Changed
IATYDFC	Changed New flags added for hot start and hot start with refresh.
IATYDSD	Changed DSP and JQE count fields have been changed to full-word values.
IATYDSK	Changed
IATYDSP	Changed DSP and JQE count fields have been changed to full-word values.
IATYDSQ	Changed Added mapping for dynamic destination queue extension.
IATYDUM	Changed New dump codes for DM037 and DM055.
IATYD037	New

Version Summary Tables

Figure 106 (Page 2 of 4). Changed Data Areas for OS/390 Version 2 Release 4 JES3

Data Area	Description of Change
IATYEQU	Changed New equates for comparing, manipulating job numbers and other counts added as well as JES3 release and version information moved to IATYGLOB.
IATYFCD	Changed See changes to IATYFCT.
IATYFCK	Changed Added version number. The FSS name is now included in the FSS portion of the FCK entry. The device JNAME is now included in the FSA portion of the FCK entry.
IATYFCT	Changed <ul style="list-style-type: none"> • Added fields for FCT I/O statistics collection. • Added fields to AWAIT data and length from DATA parameter on AWAIT macro. • Moved AWAIT reason code field (FCTAWRSN).
IATYFSA	Changed Added new in-storage flags (FSSIFLG1) and defined bits for hot start with refresh.
IATYFSS	Changed Added flags for hot start, hot start with refresh, and *MODIFY,CONFIG processing.
IATYFSW	Changed Changed field FSWDMREC to a reserved field.
IATYGLOB	New New to generate a list of global symbols so that JES3 modules can use them in character and numeric definitions without hard coding their values.
IATYGMS	Changed Changed field GMSDATA3 to a reserved field.
IATYGSG	Changed
IATYIIC	New
IATYINC	Changed
IATYINT	Changed <ul style="list-style-type: none"> • Many obsolete fields changed to reserved fields. • New flags and fields added for hot start with refresh and *MODIFY,CONFIG processing. • Changed IWASPOUT macros to specify COMPRESS=Y. • IATYSPL macros changed to specify new ID= parameter.
IATYIQOS	Changed
IATYIRA	Changed INTRDR counts have been changed to full-words.
IATYISD	Changed
IATYITK	Changed
IATYITXT	New

Figure 106 (Page 3 of 4). Changed Data Areas for OS/390 Version 2 Release 4 JES3

Data Area	Description of Change
IATYJDE	Changed <ul style="list-style-type: none"> Added flag bit to indicate a *MODIFY,X,M=modname,REFRESH command is pending. Added field to contain the previous entry point of the module.
IATYJMF	<ul style="list-style-type: none"> Deleted obsolete fields. Change default value for AWAIT parameter on IATYOPT to 45. Added fields to JMF FCT entry for collecting I/O statistics. Changed JMF AWAIT entry to contain AWAIT reason code and data. Changed
IATYJQX	Changed JQXPCHN and JQXJMAX changed from a half-word to a full-word.
IATYJST	Changed
IATYJS3	Changed Obtains JES3 release from IATYGLOB.
IATYJVD	Changed
IATYJVQ	Changed
IATYJVW	Changed
IATYMCI	New
IATYMCM	New
IATYMDS	Changed
IATYMGP	Changed
IATYMNTM	Changed
IATYMOD	Changed Obtains JES3 FMID from IATYGLOB.
IATYMPD	Changed Fields indicating hot start with refresh and *MODIFY,CONFIG date and time have been added.
IATYNCF	New
IATYOCF	New
IATYOFIN	Changed
IATYOSE	Changed
IATYRDI	New
IATYRLT	Changed <ul style="list-style-type: none"> New chain field (RTTCHAIN) added. (The IATYRLTs can no longer be assumed to be in contiguous storage.) Added fields and flags for *MODIFY,CONFIG command processing.
IATYRQC	Changed Decreased secondary extent sizes for output service and common RQ cellpools.

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Figure 106 (Page 4 of 4). Changed Data Areas for OS/390 Version 2 Release 4 JES3

Data Area	Description of Change
IATYRSR	Changed <ul style="list-style-type: none"> Added RSR prefix length field. Added hot start with refresh and *MODIFY,CONFIG dates and times.
IATYSDA	New
IATYSDAD	New
IATYSDA1	New
IATYSDA2	New
IATYSDA3	New
IATYSDW	Changed
IATYSEC	Changed
IATYSPL	Changed Added ID and DSECT parameters.
IATYSQD	Changed Added field to contain description text from DESC parameter on IATXCSF macro.
IATYSRPA	Changed Added field to point to next dynamic destination queue extension.
IATYSUP	Changed Added flags for *MODIFY,CONFIG.
IATYSTT	Changed Changed counters previously using a half-word to a full-word.
IATYSVT	Changed Added a IATYSDA pointer field.
IATYSYS	Changed Added mapping for SYSUNITS header and SYSUNITs free entry.
IATYTVT	Changed <ul style="list-style-type: none"> Moved TVRSTFLG and RJPRTerm to frozen section of TVT. Added "refresh" indicator to TVRSTFLG. Added Statistics Data Area pointer. Added hot start with refresh date, time, and count to checkpointed portion of TVT. Added *MODIFY,CONFIG date, time, and count to checkpointed portion of TVT. Added VCONS for new service routines (for example, IATXCPYF). Added new AENQ resource name: FSSCKPT.
IATYUTDA	Changed Added new OPTION= values.
IATYVIO	New
IATYVITR	New
IATYVIW	New

Figure 107 (Page 1 of 2). Changed Data Areas for OS/390 Version 1 Release 3 JES3

Data Area	Description of Change
IATYACQ	Changed
IATYAWR	Changed
IATYCBT	Changed
IATYCOW	New
IATYDFR	Changed
IATYDJB	Changed
IATYDMC	Changed
IATYDSB	Changed
IATYDSQ	Changed
IATYDSS	Changed
IATYDST	Changed
IATYDUM	Changed
IATYDXE	Changed
IATYEQU	Changed
IATYESW	New
IATYFCD	Changed
IATYFCT	Changed
IATYFSL	Changed
IATYGRES	New
IATYGRW	New
IATYIQOS	Changed
IATYISD	Changed
IATYJAD	Changed
IATYJCT	Changed
IATYJDS	Changed
IATYJIB	Changed
IATYJMF	Changed
IATYJS3	Changed
IATYMEM	Changed
IATYMOOS	Changed
IATYMPG	Changed
IATYNFD	Changed
IATYNRD	Changed
IATYNRS	Changed
IATYOFIN	Changed
IATYOSA	Changed
IATYOSD	Changed
IATYOSE	Changed

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<i>Figure 107 (Page 2 of 2). Changed Data Areas for OS/390 Version 1 Release 3 JES3</i>	
Data Area	Description of Change
IATYOSR	Changed
IATYOSS	Changed
IATYOSUP	Changed
IATYOSW	Changed
IATYPDA	Changed
IATYRSQ	Changed
IATYSAT	New
IATYSDE	New
IATYSDW	New
IATYSFW	New
IATYSRD	Changed
IATYSSX	Changed
IATYSVT	Changed
IATYSWE	New
IATYTSWK	Changed
IATYTVT	Changed
IATYUTDA	Changed
IATYUX30	New
IATYUX45	Changed
IATYUX66	Changed
IATYWSP	Changed
IATYWTR	Changed
IATYXPR	Changed

<i>Figure 108. Changed Data Areas for OS/390 Version 1 Release 2 JES3</i>	
Data Area	Description of Change
None	

<i>Figure 109. Changed Data Areas for OS/390 Version 1 Release 1 JES3</i>	
Data Area	Description of Change
IATYEQU	Changed New global variables for version determination.

Summary of Changed Installation Exits

The following tables identify all the JES3 installation exits that require your examination before migrating to a new JES3 release. For a complete description of each installation exit, see *OS/390 JES3 Customization*.

Figure 110. Changed Installation Exits OS/390 Version 2 Release 10 JES3

Installation Exit	Short Description of Change
Exit 46	The return code from this exit (in register 15) has expanded meaning in the context of the CIDEMAND and CIBATCH parameters on the CLASS and STANDARDS initialization statements.
Exit 66	Parameter list, IATYUX66 has additional information at label, YUX66JSI. YUX66JSI contains the job id from the JSAB (for SYSOUT created with spinoff job names only). Flag bit, YUX66JSB, of YUX66FL1 identifies that the transmission stream contains SYSOUT created with spinoff job names.

Figure 111. Changed Installation Exits OS/390 Version 2 Release 9 JES3

Installation Exit	Short Description of Change
None	

Figure 112. Changed Installation Exits OS/390 Version 2 Release 8 JES3

Installation Exit	Short Description of Change
Exit 42	IATUX42 was not changed. However, IATUX42 is only shown output that is not being routed to the writer queue. You should not define a userid to have the same name as a destination. This is to support OW31885.

Figure 113. Changed Installation Exits OS/390 Version 2 Release 7 JES3

Installation Exit	Short Description of Change
None	

Figure 114. Changed Installation Exits OS/390 Version 2 Release 6 JES3

Installation Exit	Short Description of Change
Exits for <ul style="list-style-type: none"> • Input Service • Converter/Interpreter 	These exits have not changed. However, you can use any input service exit (Exit 28, 29, and so on) or any converter/interpreter exit (Exit 3, 4, 5, 6, 7, 8, 9, and so on) to assign a scheduling environment to a job. If a scheduling environment is assigned by an input service exit or by the converter/interpreter exit 3, JES3 ignores the scheduling environment that was specified in the SCHENV parameter of the JOB statement.

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Figure 115. Changed Installation Exits OS/390 Version 2 Release 5 JES3

Installation Exit	Short Description of Change
Exit 48	IATUX48 was not changed. However, additional information associated with the new *F,U parameters is now passed to this exit. The value of FD=, PD=, IP=, NFD=, NPD=, and NIP= parameters on *F,U are passed to this exit.

Figure 116. Changed Installation Exits OS/390 Version 2 Release 4 JES3

Installation Exit	Short Description of Change
Exit 15 Examine Initialization Statement	This exit is now also called during a hot start with refresh and when the *MODIFY,CONFIG command is issued. If the statement was read from a member associated with an INCLUDE statement, the member name appears in columns 73 through 80 of the record. The input and output parameters to this exit have not changed, nor has its function.

Figure 117. Changed Installation Exits OS/390 Version 1 Release 3 JES3

Installation Exit	Short Description of Change
Exit 45	The parameter list has been expanded to include pointers to the variable entry and data set entry fields of the IATYOSE control block.
Exit 30	A new parameter list, IATYUX30, is used by IATUX30 for UX30 STATUS/CANCEL/OUTPUT processing.
Exit 66	A new field in IATYUX66, YUX66BYC, contains the byte count of the unit of work destined for SNA/NJE processing.

Figure 118. Changed Installation Exits OS/390 Version 1 Release 2 JES3

Installation Exit	Short Description of Change
None	

Figure 119. Changed Installation Exits OS/390 Version 1 Release 1 JES3

Installation Exit	Short Description of Change
Exit 20	Exit 20 has been changed to provide a 4-digit year for the job separator page.
Exit 30	Programming considerations have been updated.
Exit 68	New exit you can use to modify local NJE job trailers.
Exit 71	New exit you can use to modify a tape request setup message.

Summary of Changed Messages

In previous editions, this section listed new, changed, and deleted messages. This was intended to help migrate automated operations. Because *OS/390 JES3 Messages* provides a detailed list of changes to messages in its Summary of Changes, this book will no longer describe changes to messages. Instead, see the Summary of Changes section in *OS/390 JES3 Messages*. The following MVS

books also describe new, changed, and deleted messages and associated system codes and descriptor codes in Version 5:

- *OS/390 MVS System Messages, Vol 1 (ABA-ASA)*
- *OS/390 MVS System Messages, Vol 2 (ASB-ERB)*
- *OS/390 MVS System Messages, Vol 3 (EWX-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 System Codes*
- *OS/390 MVS Routing and Descriptor Codes*
- *OS/390 Summary of Message Changes*

Summary of Changed Codes

The following tables identify all JES3 and MVS diagnostic codes that have been added, modified, or deleted in each JES3 release of OS/390. See *OS/390 JES3 Diagnosis Reference* for a complete list and explanation of JES3 dump codes. See *OS/390 MVS System Codes* for a complete list and explanation of system codes.

Figure 120. New and Modified Codes for OS/390 Version 2 Release 10 JES3

Code	Short Description of Change
DM759	New reason code, X'0E' is added to indicate an incorrect eyecatcher in a staging area.

Figure 121. New and Modified Codes for OS/390 Version 2 Release 9 JES3

Code	Short Description of Change
U0020	New abend code issued when an internal error is encountered while defining a device. There are several reason codes associated with this abend code.

Figure 122. New and Modified Codes for OS/390 Version 2 Release 8 JES3

Code	Short Description of Change
DM100	New reason codes have been added.
8FB	New reason codes have been added.

Figure 123. New and Modified Codes for OS/390 Version 2 Release 7 JES3

Code	Short Description of Change
None	

Figure 124. New and Modified Codes for OS/390 Version 2 Release 6 JES3

Code	Short Description of Change
BC3	New system ABEND code is issued when the dump job server address space detects an error. After macro issuance, R2 contains the return code, and R3 contains the reason code. R9 indicates where the problem occurred.

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Figure 125. New and Modified Codes for OS/390 Version 2 Release 5 JES3

Code	Short Description of Change
DM671	New failsoft code DM671 is issued when the IATXSWBU routine in IATOSSWB determines that an error occurred.

Figure 126. New and Modified Codes for OS/390 Version 2 Release 4 JES3

Code	Short Description of Change
DM037	New failsoft code DM037 is issued when IATXVIO service function in IATDMVIO determines there was an error.
DM055	New failsoft code DM055 is issued when IATINDEV determines an error occurred during IATXYSU processing.

Figure 127. New and Modified Codes for OS/390 Version 1 Release 3 JES3

Code	Short Description of Change
DM145	New failsoft code DM145 is issued when APUTMAIN is invoked with a size of 0.
DM656	New reason code X'1C' has been added.
DM727	New reason codes, X'04, 08, and 0C' have been added.
DM760	The system action has been updated.

Figure 128. New and Modified Codes for OS/390 Version 1 Release 2 JES3

Code	Short Description of Change
Uxxxx	All user abend codes are now listed as decimal numbers.
U0019	New user abend code issued when JES3 detects the initialization stream used to initialize the local does not match the one used during the last JES3 cold- or warmstart.
DM206	Failsoft code DM206 has been updated with additional information about the system action and programmer response.
DM670	New failsoft code DM670 is issued when JES3 encounters an error validating the SWB file associated with an output data set.
DM801	Failsoft code DM801 has been updated with new footprint information, for X'48' footprint. A new return code has also been added for this footprint.

Figure 129. New and Modified Codes for OS/390 Version 1 Release 1 JES3

Code	Short Description of Change
DFB	New reason codes have been added.

Summary of Changed SMF Records

The following tables identify all JES3 changes made to the SMF records in each JES3 release of OS/390. See *OS/390 MVS System Management Facilities (SMF)* for a complete explanation of SMF records.

Figure 130. Changes to SMF Records for OS/390 Version 2 Release 10 JES3

Record	Short Description of Change
None	

Figure 131. Changes to SMF Records for OS/390 Version 2 Release 9 JES3

Record	Short Description of Change
None	

Figure 132. Changes to SMF Records for OS/390 Version 2 Release 8 JES3

Record	Short Description of Change
26	<ul style="list-style-type: none"> Field SMF26WCL contains the current service class assigned to the job. Field SMF26WOC contains the original service class assigned to the job. It will be different from SMF26WCL if the operator changed the service class or if the job was reclassified. Field SMF26WJC contains the eight character job class name. Field SMF26WLM is set if the job was selected for execution by a WLM-managed initiator. SMF26WJB is set if the job ran as a result of a *MODIFY,J=job,RUN command.
30	<p>Job delay information is now supplied in this SMF record.</p> <ul style="list-style-type: none"> SMF30HQT - Operational/JES Scheduling Delay SMF30JQT - Conversion Delay SMF30RQT - Resource Delay <p>In addition, SMF30SQT (queue delay) no longer includes conversion, resource, and operational/JES scheduling delays.</p>
72	Service class processing delay information is provided in this SMF record.
84	A new subtype 10 section has been added to contain WLM related information.

Figure 133. Changes to SMF Records for OS/390 Version 2 Release 7 JES3

Record	Short Description of Change
26	SMF26IND contains a flag to indicate that the triplet section of a job's accounting data is used.

Figure 134. Changes to SMF Records for OS/390 Version 2 Release 6 JES3

Record	Short Description of Change
26	Field SMF26WSE contains the job's scheduling environment if one was specified on the JOB statement or if one was assigned by a user exit.

Version Summary Tables

<i>Figure 135. Changes to SMF Records for OS/390 Version 2 Release 5 JES3</i>	
Record	Short Description of Change
None	

<i>Figure 136. Changes to SMF Records for OS/390 Version 2 Release 4 JES3</i>	
Record	Short Description of Change
43	New bit SMF43REF to indicate a configuration refresh was requested. JES3 sets this bit in flag byte SMF43RST which indicates JES3's start type.
84	The SMF 84 record, produced by JES3 JES Monitoring Facility, has changes in some sections. Changes made as a result of the enhanced AWAIT diagnostic information and I/O statistics collection.

<i>Figure 137. Changes to SMF Records for OS/390 Version 1 Release 3 JES3</i>	
Record	Short Description of Change
None	

<i>Figure 138. Changes to SMF Records for OS/390 Version 1 Release 2 JES3</i>	
Record	Short Description of Change
None	

<i>Figure 139. Changes to SMF Records for OS/390 Version 1 Release 1 JES3</i>	
Record	Short Description of Change
None	

Summary of Changed SSI Function Codes

The following tables identify all JES3 changes made to the SSI function codes as a result OS/390 JES3 releases. See *OS/390 MVS Using the Subsystem Interface* for a complete explanation of SSI function codes.

<i>Figure 140. Changes to SSI Function Codes for OS/390 Version 2 Release 10 JES3</i>	
Code	Short Description of Change
None	

<i>Figure 141. Changes to SSI Function Codes for OS/390 Version 2 Release 9 JES3</i>	
Code	Short Description of Change
None	

<i>Figure 142. Changes to SSI Function Codes for OS/390 Version 2 Release 8 JES3</i>	
Code	Short Description of Change
None	

<i>Figure 143. Changes to SSI Function Codes for OS/390 Version 2 Release 7 JES3</i>	
Code	Short Description of Change
None	

<i>Figure 144. Changes to SSI Function Codes for OS/390 Version 2 Release 6 JES3</i>	
Code	Short Description of Change
None	

<i>Figure 145. Changes to SSI Function Codes for OS/390 Version 2 Release 5 JES3</i>	
Code	Short Description of Change
54	Information returned in the installation output section by the subsystem contains new text to indicate that JES3 supports the creation of a client token to support of client printing.
79	New information for client token (CTOKEN) selection.
80	New information for client token (CTOKEN) selection.

<i>Figure 146. Changes to SSI Function Codes for OS/390 Version 2 Release 4 JES3</i>	
Code	Short Description of Change
None	

<i>Figure 147. Changes to SSI Function Codes for OS/390 Version 1 Release 3 JES3</i>	
Code	Short Description of Change
54	Information returned in the Installation Variable Output section by the subsystem contains more information about JES processing.
79	New function code for system application printer interface.
80	New function code for extended status.

<i>Figure 148. Changes to SSI Function Codes for OS/390 Version 1 Release 2 JES3</i>	
Code	Short Description of Change
None	

Version Summary Tables

<i>Figure 149. Changes to SSI Function Codes for OS/390 Version 1 Release 1 JES3</i>	
Code	Short Description of Change
None	

Chapter 15. Migration Summary

This chapter provides summary information about the types of JES3 "starts" you must be prepared to perform for the various migration paths available. Specific notes about these "starts" are also included in the summary information.

Figure 150. Migration Requirements HJS7703

Coming From What Release	Type of Restart Required	Notes
HJS4421	Warm/local start with IPL/CLPA	1
HJS5511	Warm/local start with IPL/CLPA	1
HJS5521	Hot/local start with IPL/CLPA	1,2
HJS6601	Hot/local start with, IPL/CLPA	1,2
HJS6603	Hot/local start with IPL/CLPA	1,2
HJS6604	Hot/local start with IPL/CLPA	1
HJS6605	Hot/local start with IPL/CLPA	1,3
HJS6606	Hot/local start with IPL/CLPA	3
HJS6608	Hot/local start with IPL/CLPA	4
HJS6609	Hot/local start with IPL/CLPA	4

Notes:

1. Because of changes made in HJS6606, you must run the IATUTJCT utility or perform a cold start before migrating to HJS7703. You need to install APAR OW30849 on any local processor that is eligible to become the global via a DSI, if that local is at the HJS6605 level or lower.
2. Because of changes made in HJS6604, you must perform a hot, warm, or cold start before attempting to perform a hot start with refresh when migrating to HJS7703.
3. If OW35389 is installed, HJS7703 can be migrated to the local first.
4. HJS7703 can be migrated to the local first.

If APAR OW35389 is installed on the global processor, then the local can be migrated to HJS7703; first (OW35389 is only supported on HJS6605 and HJS6606). Prior to this APAR, the global always had to be migrated to the new release before the locals.

If the local is migrated to HJS7703 first, the global must be at HJS6608 in order to use the WLM batch initiator functions.

For all JES3 releases (V1R1 through V2R9), you will need to install APAR OW42745 on your current release to be able to successfully fall back from migration of the global to OS/390 Version 2 Release 10 JES3. If you do not install APAR OW42745, jobs submitted on the OS/390 Version 2 Release 10 JES3 global that use SYSIN DD */DATA files will fail.

For all JES3 releases (V1R1 through V2R9) you will need to install OW42288 on your current release to be able to successfully fall back from migration of the global to OS/390 Version 2 Release 10 JES3. If you do not install APAR OW42288, and then fall back, output created by Unix System Services clients will not print.

Any system with JES3 lower than HJS7703 that runs on the OS/390 R10 BCP (HBB7703), or any system lower than HJS7703 that is to coexist with HJS7703, requires APAR OW43086, regardless of whether that system is global or local.

Figure 151 (Page 1 of 2). Migration Requirements HJS6609

Coming From What Release	Type of Restart Required	Notes
HJS4421	Warm/local start with IPL/CLPA	1
HJS5511	Warm/local start with IPL/CLPA	1
HJS5521	Hot/local start with IPL/CLPA	1,2

If APAR OW35389 is installed on the global processor, then the local can be migrated to HJS6609; first (OW35389 is only supported on HJS6605 and HJS6606). Prior to this APAR, the global always had to be migrated to the new release before the locals.

If the local is migrated to HJS6609 first, the global must be at HJS6608 in order to use the WLM batch initiator functions.

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<i>Figure 151 (Page 2 of 2). Migration Requirements HJS6609</i>		
Coming From What Release	Type of Restart Required	Notes
HJS6601	Hot/local start with, IPL/CLPA	1,2
HJS6603	Hot/local start with IPL/CLPA	1,2
HJS6604	Hot/local start with IPL/CLPA	1
HJS6605	Hot/local start with IPL/CLPA	1,3
HJS6606	Hot/local start with IPL/CLPA	3
HJS6608	Hot/local start with IPL/CLPA	4
<p>Notes:</p> <ol style="list-style-type: none"> 1. Because of changes made in HJS6606, you must run the IATUTJCT utility or perform a cold start before migrating to HJS6608. You need to install APAR OW30849 on any local processor that is eligible to become the global via a DSI, if that local is at the HJS6605 level or lower. 2. Because of changes made in HJS6604, you must perform a hot, warm, or cold start before attempting to perform a hot start with refresh when migrating to HJS6608. 3. If OW35389 is installed, HJS6609 can be migrated to the local first. 4. HJS6609 can be migrated to the local first. <p>If APAR OW35389 is installed on the global processor, then the local can be migrated to HJS6609; first (OW35389 is only supported on HJS6605 and HJS6606). Prior to this APAR, the global always had to be migrated to the new release before the locals.</p> <p>If the local is migrated to HJS6609 first, the global must be at HJS6608 in order to use the WLM batch initiator functions.</p>		

<i>Figure 152. Migration Requirements HJS6608</i>		
Coming From What Release	Type of Restart Required	Notes
HJS4421	Warm/local start with IPL/CLPA	1
HJS5511	Warm/local start with IPL/CLPA	1
HJS5521	Hot/local start with IPL/CLPA	1,2
HJS6601	Hot/local start with, IPL/CLPA	1,2
HJS6603	Hot/local start with IPL/CLPA	1,2
HJS6604	Hot/local start with IPL/CLPA	1
HJS6605	Hot/local start with IPL/CLPA	1
HJS6606	Hot, IPL/CLPA	
<p>Notes:</p> <ol style="list-style-type: none"> 1. Because of changes made in HJS6606, you must run the IATUTJCT utility or perform a cold start before migrating to HJS6608. You need to install APAR OW30849 on any local processor that is eligible to become the global via a DSI, if that local is at the HJS6605 level or lower. 2. Because of changes made in HJS6604, you must perform a hot, warm, or cold start before attempting to perform a hot start with refresh when migrating to HJS6608. <p>If APAR OW35389 is installed on the global processor, then the local can be migrated to HJS6608 first (OW35389 is only supported on HJS6605 and HJS6606). Prior to this APAR, the global always had to be migrated to the new release before the locals.</p> <p>If the local is migrated to HJS6608 first, you cannot use the new WLM batch initiator functions. At a minimum, the global must be at the HJS6608 level in order to use the functions.</p>		

Figure 153. Migration Requirements HJS6606

Coming From What Release	Type of Restart Required	Notes
HJS4421	Warm, IPL/CLPA	1
HJS5511	Warm, IPL/CLPA	1
HJS5521	Hot, IPL/CLPA	1,2
HJS6601	Hot, IPL/CLPA	1,2
HJS6603	Hot, IPL/CLPA	1,2
HJS6604	Hot, IPL/CLPA	1
HJS6605	Hot, IPL/CLPA	1

Notes:

- You must run the IATUTJCT utility or perform a cold start before migrating to HJS6606. You need to install APAR OW30849 on any local processor that is eligible to become the global via a DSI, if that local is at the HJS6605 level or lower.
- You must perform a hot, warm, or cold start before attempting to perform a hot start with refresh when migrating to HJS6606.

If APAR OW35389 is installed on the global processor, then the local can be migrated to HJS6608 first (OW35389 is only supported on HJS6605 and HJS6606). Prior to this APAR, the global always had to be migrated to the new release before the locals.

If the local is migrated to HJS6608 first, you cannot use the new WLM batch initiator functions. At a minimum, the global must be at the HJS6608 level in order to use the functions.

Figure 154. Migration Requirements HJS6605

Coming From What Release	Type of Restart Required	Notes
HJS4421	Warm, IPL/CLPA	
HJS5511	Warm, IPL/CLPA	
HJS5521	Hot, IPL/CLPA	1
HJS6601	Hot, IPL/CLPA	1
HJS6603	Hot, IPL/CLPA	1
HJS6604	Hot, IPL/CLPA	

Notes:

- You must perform a hot, warm, or cold start before attempting to perform a hot start with refresh when migrating to HJS6606.

- If APAR OW35389 is installed on the global processor, then the local can be migrated to HJS6608 first (OW35389 is only supported on HJS6605 and HJS6606). Prior to this APAR, the global always had to be migrated to the new release before the locals.

Note: If the local is migrated to HJS6608 first, you cannot use the new WLM batch initiator functions. At a minimum, the global must be at the HJS6608 level in order to use the functions.
- If APAR OW35389 is installed on the global processor, then the local can be migrated to HJS6605 first.

If the local is migrated to HJS6605 first, you cannot use the Resource Affinity and Dump Job Server mode functions. However, you can still use the JCT utility and Dynamic LPA facility functions.

Figure 155 (Page 1 of 2). Migration Requirements HJS6604

Coming From What Release	Type of Restart Required	Notes
HJS4421	Warm, IPL/CLPA	
HJS5511	Warm, IPL/CLPA	

Notes:

- You must perform a hot, warm, or cold start before attempting to perform a hot start with refresh when migrating to HJS6606.

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<i>Figure 155 (Page 2 of 2). Migration Requirements HJS6604</i>		
Coming From What Release	Type of Restart Required	Notes
HJS5521	Hot, IPL/CLPA	1
HJS6601	Hot, IPL/CLPA	1
HJS6603	Hot, IPL/CLPA	1
Notes: 1. You must perform a hot, warm, or cold start before attempting to perform a hot start with refresh when migrating to HJS6606.		

<i>Figure 156. Migration Requirements HJS6603</i>		
Coming From What Release	Type of Restart Required	Notes
HJS4421	Warm, IPL/CLPA	
HJS5511	Warm, IPL/CLPA	
HJS5521	Hot, IPL/CLPA	1
HJS6601	Hot, IPL/CLPA	1
Notes: 1. You must perform a hot, warm, or cold start before attempting to perform a hot start with refresh when migrating to HJS6606.		

<i>Figure 157. Migration Requirements HJS6601</i>		
Coming From What Release	Type of Restart Required	Notes
HJS4421	Warm, IPL/CLPA	
HJS5511	Warm, IPL/CLPA	
HJS5521	Hot, IPL/CLPA	1
Notes: 1. You must perform a hot, warm, or cold start before attempting to perform a hot start with refresh when migrating to HJS6606.		

Coexistence

The following table shows the release level of JES3 local processors that can coexist with the JES3 global for a particular release:

Figure 158. Coexistence

JES3 GLOBAL	JES3 LOCALS
HJS7703 (Note #2)	HJS5521, HJS6601, HJS6603, HJS6604, HJS6605, HJS6606, HJS6608, HJS6609, HJS7703
HJS6609 (Note #2)	HJS5521, HJS6601, HJS6603, HJS6604, HJS6605, HJS6606, HJS6608, HJS6609, HJS7703
HJS6608	HJS5521, HJS6601, HJS6603, HJS6604, HJS6605, HJS6606, HJS6608, HJS6609, HJS7703
HJS6606 (Note #1)	HJS5521, HJS6601, HJS6603, HJS6604, HJS6605, HJS6606
HJS6605 (Note #1)	HJS5521, HJS6601, HJS6603, HJS6604, HJS6605
HJS6604	HJS5521, HJS6601, HJS6603, HJS6604
HJS6603	HJS5521, HJS6601, HJS6603
HJS6601	HJS5521, HJS6601

Notes:

- If OW35389 is installed on the global, then the local processor can be a higher level than the global. If OW35389 is not installed on the global, the local processors must be at the same level as the global or at a lower level.
- If the local is at HJS6604 through HJS6608, the APAR OW40166 is required on the local before using any of the following initialization functions.
 - Using the *ALL parameter on an XUNIT or JUNIT parameter of the DEVICE initialization statement
 - Omitting a DEVICE,DTYPE=SYSMAIN statement
 - Adding, deleting, or changing the XUNIT parameter of the DEVICE initialization statement during a hot start with refresh
 - Adding, deleting, or changing a SETNAME initialization statement during hot start with refresh
- Any system with JES3 lower than HJS7703 that runs on the OS/390 R10 BCP (HBB7703), or any system lower than HJS7703 that is to coexist with HJS7703, requires APAR OW43086, regardless of whether that system is global or local.
- For all JES3 releases (V2R1 through V2R9), you will need to install APAR OW42745 on your current release to be able to successfully fall back from migration of the global to OS/390 Version 2 Release 10 JES3. If you do not install APAR OW42745, jobs submitted on the OS/390 Version 2 Release 10 JES3 global that use SYSIN DD */DATA files will fail.
- For all JES3 releases (V1R1 through V2R9) you will need to install OW42288 on your current release to be able to successfully fall back from migration of the global to OS/390 Version 2 Release 10 JES3. If you do not install APAR OW42288, and then fall back, output created by Unix System Services clients will not print.

Fall Back

The following considerations affect your "fallback" (migration) to releases prior to OS/390 Version 2 Release 10 JES3:

- Fallback to any release of JES3 requires APAR OW42745. This is required by FIN APAR OW39288, which was fixed in HJS7703. Please note that although OW42745 is not required for migration or coexistence, it is required for fallback. In this case, fallback includes a DSI to a JES3 release lower than HJS7703. If you do not install APAR OW42745, jobs submitted on the OS/390 Version 2 Release 10 JES3 global that use SYSIN DD */ DATA files will fail.
- For all JES3 releases (V1R1 through V2R9) you will need to install OW42288 on your current release to be able to successfully fall back from migration of the global to OS/390 Version 2 Release 10 JES3. This is required by APAR OW38307. Please note that although OW42288 is not required for migration or coexistence, it is required for fallback. In this case, fallback includes a DSI to a JES3 release lower than HJS7703. If you do not install APAR OW42288, and then fall back, output created by Unix System Services clients will not print.
- Any system with JES3 lower than HJS7703 that runs on the OS/390 R10 BCP (HBB7703), or any system lower than HJS7703 that is to coexist with HJS7703, requires APAR OW43086, regardless of whether that system is global or local.

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- Fallback to HJS6606 with any local remaining at HJS6608 or HJS6609 requires OW35839 on the global.
- Fallback to HJS6605 with any local remaining at HJS6606, HJS6608, or HJS6609 requires OW35389 on the global. OW30849 is also needed on the global, unless IATUTJCT is run on HJS6609 with the P=FALLBCK parameter.
- Fallback to HJS6604, HJS6603, HJS6601, or HJS5521 requires OW30849 on the global unless IATUTJCT is run on HJS6609 with the P=FALLBCK parameter. No local can remain at a higher level than the global.
- If no DEVICE statement uses the *ALL parameter, and no DEVICE,DTYPE=SYSMAIN statements are omitted, and no NJE aliases are defined, fallback to one of the above releases can be done with a hot start if the global has APAR OW40166.
- If the *ALL parameter is used on a DEVICE statement or a SYSMAIN is omitted, and the global does not have APAR OW40166, fallback requires the initialization stream to be changed and a warm start to be performed.
- If an NJE alias is defined, and the global does not have APAR OW40166, fallback to HJS6604, HJS6605, HJS6606, or HJS6608 requires the initialization stream to be changed and a hot start with refresh to be performed. Fallback to HJS5521, HJS6601, or HJS6603 requires the initialization stream to be changed and a warm start to be performed.
- If the local is at HJS6605 through HJS6608, then APAR OW40166 is required on the local if you want to define an NJE alias and later DSI to the down level system.

Special Migration Considerations

Each release level of JES3 has its own special considerations that you must be aware of when performing a migration. The following table summarizes these special considerations for each JES3 release.

Figure 159 (Page 1 of 3). Special Migration Considerations

JES3 RELEASE	MIGRATION CONSIDERATIONS
HJS7703	Any system with JES3 lower than HJS7703 that runs on the OS/390 Version 2 Release 10 (HBB7703), or any system lower than HJS7703 that is to coexist with HJS7703, requires APAR OW43086, regardless of whether that system is global or local.
HJS6609	<p>If the local is at HJS6604 through HJS6608, the APAR OW40166 is required on the local before using any of the following initialization functions.</p> <ul style="list-style-type: none"> • Using the *ALL parameter on an XUNIT or JUNIT parameter of the DEVICE initialization statement • Omitting a DEVICE,DTYPE=SYSMAIN statement • Adding, deleting, or changing the XUNIT parameter of the DEVICE initialization statement during a hot start with refresh • Adding, deleting, or changing a SETNAME initialization statement during hot start with refresh • If the local is at HJS6605 through HJS6608, then APAR OW40166 is required on the local if you want to define an NJE alias and later DSI to the down level system.

Figure 159 (Page 2 of 3). Special Migration Considerations

JES3 RELEASE	MIGRATION CONSIDERATIONS
HJS6608	<p>The PTF for OW38134 is required if you plan to run the global at the HJS6608, HJS6606, or HJS6605 level, one or more locals at the HJS6604 level or lower, and intend to use APPC.</p> <p>If the global is at the HJS6605 or HJS6606 level with APAR OW35389 installed, then the local may be migrated to HJS6608 first. However, you will not be able to use the WLM batch initiator management function until the global is at the HJS6608 level. WLM batch initiator management requires at least the global to be at the HJS6608 level.</p> <p>If a local is at HJS6605 or HJS6606 level, you can perform a DSI to make that local a new global. However, you must first end all active jobs in all WLM-managed initiators on the complex.</p> <p>In order to use WLM batch initiator management, WLM must be in goal mode on at least the global processor, and any local processors where you want WLM-managed initiators started. If you are not already using WLM goal mode, you should first become comfortable with it before activating WLM batch initiator management. Do not underestimate the effort needed to do this. Once you are comfortable with WLM goal mode, then you can plan to use WLM batch initiator management.</p> <p>Until you are completely comfortable with WLM batch initiator management, it is recommended that you use the *MODIFY,G command to activate WLM initiator management for a group rather than coding the MODE=WLM parameter on the GROUP initialization statement. That way, if you need to fall back to an earlier release, the initialization stream will not have to be changed back. If a hot start is performed to fall back to an earlier release, all job class groups will revert to JES3 initiator management without any special action required by the installation.</p>
HJS6606	<p>If you plan on using the resource affinity function, all systems that are running C/I FSS's must be at the HJS6606 level. If a job is converted in a C/I FSS address space, which is running on a system that is not at the HJS6606 level of JES3, the scheduling environment will not be extracted from the JOB statement and used for scheduling the job for execution.</p> <p>If you assign a scheduling environment via a JES3 exit, and you are running C/I FSS address spaces on systems that are not at the HJS6606 level, you should use an exit which runs in the JES3 global address space (for example, IATUX09, IATUX29), not one that runs in a C/I FSS address space (for example, IATUX03, IATUX04). Otherwise, the scheduling environment assigned by the exit will be ignored.</p> <p>The PTF for OW30080 is needed if the JES3 global processor is at the HJS6606 level and the JES3 local processors are at the HJS6603 or HJS6604 levels.</p> <p>If the global is at the HJS6605 level with APAR OW35389 installed, then the local may be migrated to HJS6606 first.</p>
HJS6605	No special considerations.

Migration Summary

Figure 159 (Page 3 of 3). Special Migration Considerations

JES3 RELEASE	MIGRATION CONSIDERATIONS																																																				
HJS6604	<p>To activate the 64K job number support, all processors in the JES3 complex must be at the OS/390 Release 4 level.</p> <p>You should not use 64K jobs unless all local processors are at OS/390 Release 4 level, and until you are sure you will not fall back to a prior release of JES3. There is no fall back maintenance for prior JES3 releases to tolerate a higher than 64K job number range.</p> <p>A hot start with refresh can be used to increase the job number range specified on the JOBNO parameter of the OPTIONS initialization statement. However, to decrease the job number range requires a warm start.</p> <p>You cannot delete job numbers from the job number range specified on the JOBNO parameter during a hot start with refresh. That is, you cannot raise the low job number value or lower the high job number value. This requires a warm start. Therefore, at least a JES3 warm start is needed if you need to fall back to a prior release of JES3 and greater than 32K job numbers were being used.</p> <p>In order to exploit more than 32K jobs, your JCT data set must be large enough to hold more than 32K JCT entries. To make the JCT larger, you can either perform a cold start or use the IATUTJCT utility provided by APAR OW30849.</p> <p>If you migrate to HJS6604 or higher and have VSE or JES2 as nodes in your network, SYSOUT sent to a JES2 or VSE node will only print at the receiving node if you have applied the following maintenance.</p> <table border="0" data-bbox="435 823 771 1171"> <thead> <tr> <th></th> <th>Release</th> <th>APAR</th> <th>PTF</th> </tr> <tr> <th></th> <th>-----</th> <th>-----</th> <th>-----</th> </tr> </thead> <tbody> <tr> <td>VSE:</td> <td>1.3/1.4</td> <td>DY44716</td> <td>UD50646</td> </tr> <tr> <td></td> <td>2.1</td> <td>DY44667</td> <td>UD50650</td> </tr> <tr> <td></td> <td>2.3</td> <td>DY44687</td> <td>UD50651</td> </tr> <tr> <td>JES2:</td> <td>420</td> <td>OW34634</td> <td>UW51992</td> </tr> <tr> <td></td> <td>430</td> <td>OW34634</td> <td>UW51993</td> </tr> <tr> <td></td> <td>510</td> <td>OW34634</td> <td>UW51994</td> </tr> <tr> <td></td> <td>520</td> <td>OW34634</td> <td>UW51995</td> </tr> <tr> <td></td> <td>601</td> <td>OW34634</td> <td>UW51996</td> </tr> <tr> <td></td> <td>603</td> <td>OW34634</td> <td>UW51997</td> </tr> <tr> <td></td> <td>604</td> <td>OW34634</td> <td>UW51998</td> </tr> <tr> <td></td> <td>605</td> <td>OW34634</td> <td>UW51999</td> </tr> </tbody> </table> <p>Do not attempt to exploit more than 32K jobs until all of your local processors are at the OS/390 Version 2 Release 4 level.</p> <p>Do not attempt to exploit more than 32K jobs until your installation feels that a fall back prior to OS/390 Version 2 Release 4 is no longer a possibility. Otherwise, jobs with job number greater than 32,767 will not be able to be reclaimed on a fall back prior to OS/390 Version 2 Release 4.</p> <p>Typical Migration Scenario</p> <p>With both the hot start with refresh and 64K job number support in mind, a typical migration scenario from a JES3 complex currently running a level of JES3 prior to Release 4 might be:</p> <ol style="list-style-type: none"> 1. Migrate all JES3 systems in your complex to at least the SP 5.2.1 level if not already at 5.2.1 or higher global level. 2. Migrate the JES3 global processor to OS/390 Release 4 by the allowable restart type as shown in Figure 155 on page 195 according to your current JES3 global level (after step 1 above has been accomplished.) <p>At this point, you can activate the JES3 global at the Release 4 level.</p> <ol style="list-style-type: none"> 3. Migrate all JES3 locals to OS/390 Release 4 level prior to 64K job number activation. 4. Activate 64K job number support when your installation feels that a fall back prior to OS/390 Release 4 is no longer a possibility because those jobs can not be reclaimed on a fall back prior to OS/390 Release 4. 		Release	APAR	PTF		-----	-----	-----	VSE:	1.3/1.4	DY44716	UD50646		2.1	DY44667	UD50650		2.3	DY44687	UD50651	JES2:	420	OW34634	UW51992		430	OW34634	UW51993		510	OW34634	UW51994		520	OW34634	UW51995		601	OW34634	UW51996		603	OW34634	UW51997		604	OW34634	UW51998		605	OW34634	UW51999
	Release	APAR	PTF																																																		
	-----	-----	-----																																																		
VSE:	1.3/1.4	DY44716	UD50646																																																		
	2.1	DY44667	UD50650																																																		
	2.3	DY44687	UD50651																																																		
JES2:	420	OW34634	UW51992																																																		
	430	OW34634	UW51993																																																		
	510	OW34634	UW51994																																																		
	520	OW34634	UW51995																																																		
	601	OW34634	UW51996																																																		
	603	OW34634	UW51997																																																		
	604	OW34634	UW51998																																																		
	605	OW34634	UW51999																																																		
HJS6603	No special considerations.																																																				
HJS6601	No special considerations.																																																				

Appendix A. List of JES3 Macros Intended for Customer Use

The macros identified in this appendix are provided to allow a customer installation to write programs that use the services of JES3. Only those macros identified in this appendix should be used to request or receive the services of JES3.

The macros that are listed in this topic are intended programming interfaces intended for customer use. Some macros have keywords, fields, or parameters that are designed for IBM internal use only. Such information documents no programming interfaces for use by customers in writing programs that request or receive the services of JES3. Please refer to the appropriate JES3 documentation for the correct classification and use of keywords, fields, and parameters for macros.

Executable Macros

This section lists the executable macros that are intended programming interfaces for JES3.

ABACKR ABLOCK ABNCODE ABNCVDEC ABNCVHEX	ABNGET ABNPUT ABNVRFY ACALL ACLOSE	ACVX ADEBLOCK ADELETE ADEQ AENQ AGETBUF
AGETMAIN AJOBNUM ALOAD ALOCATE ANOTE	AOPEN AOPEN APOINT APURGE APUTBUF	APUTMAIN ARELEASE ARETURN ATEST ATIME
ATRACK AWAIT AWRITE CONCNVRT CONREVRT	CONSPROF DEQMSG DEVSCAN DLOCOFF DLOCON	DSQLOC FAILDSP GETUNIT IATXADD IATXAMDV
IATXARL IATXARQ IATXATDE IATXATF IATXBDSN	IATXBFM IATXBGM IATXBKIO IATXBPL IATXBQN	IATXCDVE IATXCIO IATXCKPT IATXCNDP IATXCNS
IATXCNT IATXCPYF IATXCRPL IATXCUE IATXCVB	IATXDEL IATXDEQ IATXDEV IATXDPL IATXDST	IATXDYH IATXDYT IATXELA IATXELD IATXELS
IATXENQ IATXENT IATXERCK IATXERCV IATXFLCB	IATXFRQ IATXFSS IATXFSV IATXFWSB IATXGCL	IATXGET IATXGFC IATXGFM IATXGOSE IATXGRQ
IATXGSV IATXHOME IATXICA IATXIOE IATXIOX IATXISMG	IATXIWT IATXJBTS IATXJCT IATXJDS IATXJLOK	IATXJMR IATXJOB IATXJQE IATXLOC IATXLP

IATXLPJ3 IATXLRGT IATXLRPT IATXMBFE IATXMGET	IATXMID IATXMLWO IATXMVXM IATXMVDA IATXNGRS IATXNTS	IATXOSBM IATXOSCI IATXOSCO IATXOSG IATXOSOI
IATXOSWS IATXPDQ IATXPGXM IATXPHEX IATXPJ3	IATXPOSE IATXPOST IATXPRES IATXPRMD IATXPRT	IATXPSCCL IATXPTCH IATXPTCK IATXRABC IATXRABD
IATXRABP IATXRCL IATXRCVL IATXRDCH IATXRELC	IATXRMEP IATXRST IATXRUGT IATXRUPT IATXSAS	IATXSCH IATXSCN1 IATXSCN2 IATXSDM IATXSEC
IATXSIO IATXSMF IATXSMGR IATXSNFG IATXSNFM	IATXSNFS IATXSNGM IATXSNLK IATXSNM IATXSNST	IATXSTAT IATXSTMD IATXSTTA IATXSWBU IATXYSU IATXTEST
IATXTOD IATXTRC IATXTREG IATXTRMT IATXUBAL	IATXVAL IATXVFB IATXVMSG IATXVSRE IATXVSRV	IATXWLST IATXWOPN IATXWRE IATXWSEL
IATZCALL IATZHEX IATZLOAD IATZMNOT IATZMOVE IATZPARM	IATZPCHK IATZTYPE ICARDRD ICONVBIN ICONVHEX	INITMWLE INTERCOM IPURGE ISCAN1 ISCAN2
ISORT ITREAD ITWRITE IWASPOUT JDSADD	JDSGET JDSHOLD JDSPPOINT JDSPUT JDSREL	JESCKPNT JESCLOSE JESEXCP JESMSG JESOPEN
JESREAD JESTAE JNADD JNCBHL JNCBREL	JNDEL JNGET JSERV LOGIN LOGOUT	MDSALLOC MDSDSN MDSERRQ MDSID MDSJERR
MDSJGET MDSJST MDSMSG MDSVGET MDSVLM	MESSAGE MOVEDATA MNRDEF MTBL NCBTAADD	NCBTAFND NCBTAGET NCBTAPUT NCBTAREL NCKADD
NCKDEL PURCHAIN PUTUNIT RQTAADD RQTADEL	RQTAGEN RQTAPUT SPINOFF SSISERV SUPFLAG	VIOLATE WRITEOSE WRTHAIN ZEROCORE

Mapping Macros

This section lists the mapping macros that are intended programming interfaces for JES3.

IATYASM IATYATDE IATYAWA IATYBLK IATYBSID	IATYCFT IATYCNC IATYCNS IATYCOW IATYCPB	IATYCPP IATYCTYP IATYDAT IATYDDL IATYDFC
IATYDJR IATYDJS IATYDLF IATYDOI IATYDSD	IATYDSP IATYDSQ IATYDSS IATYDST IATYDUM	IATYDVE IATYDYD IATYECF IATYELB IATYEQU
IATYESW IATYFCD IATYFCT IATYFDB IATYFRP	IATYFSA IATYFSCB IATYFSS IATYG014 IATYG015 IATYG016 IATYG017 IATYG018 IATYG019	IATYGLOB IATYICT IATYICTX IATYIDA IATYIDD IATYIIW IATYIJS
IATYINT IATYIOP IATYIQOS IATYISD IATYITK	IATYITXT IATYJBT IATYJCT IATYJDA IATYJDS	IATYJDSO IATYJMR IATYJNT IATYJOB IATYJQE IATYJSQ
IATYJST IATYJTS IATYJVD IATYJVT IATYJWV	IATYLRS IATYMDS IATYMEM IATYMOD IATYMOOS	IATYMPC IATYMWTO IATYNBF IATYNCN IATYNCQ
IATYNDH IATYNET IATYNFD IATYNJH IATYNJT	IATYNJY IATYNRD IATYNRS IATYNWR IATYOSA	IATYOSB IATYOSE IATYOSR IATYOSS IATYOSUP
IATYPCD IATYPDB IATYRAB IATYRCM IATYREG IATYRSC	IATYRSQ IATYRSR IATYSCB IATYSDAD IATYSDM	IATYSEC IATYSEL IATYSEMS IATYSNFS IATYSOR
IATYSPP IATYSRD IATYSRF IATYSRL IATYSRS	IATYSRT IATYSSCX IATYSSX IATYSTA IATYSUP	IATYSVT IATYS34 IATYTSWK IATYTVT IATYVTX
IATYUXL IATYUX07 IATYUX30 IATYUX42 IATYUX45 IATYUX57	IATYUX63 IATYUX66 IATYUX67 IATYUX69 IATYUX70	IATYVSR IATYWEV IATYWSP IATYWTR IATYXPR

Appendix B. Split/New/Deleted/Resequenced Parts for JES3

This section provides an overview of changes for modules and macros.

Any new, split, resequenced or deleted modules and macros are summarized below. A table may be included for the following changes:

- Modules
 - New
 - Split
 - Deleted
 - Resequenced
- Macros
 - New
 - Split
 - Deleted
 - Resequenced
- New Sample Members

Split/New/Deleted/Resequenced Parts for HJS7703 (OS/390 Version 2 Release 10 JES3)

```

** MODULES **
New      None
Split    None
Resequenced/Rewritten
None
** MACROS **
New      None
Split    None
Deleted
None
Resequenced/Rewritten
None
** SAMPLE MEMBERS **
None

```

Figure 160. JES3 Version 2 Release 10 Parts

Split/New/Deleted/Resequenced Parts for HJS6609 (OS/390 Version 2 Release 9 JES3)

** MODULES **		
New		
IATINDVS	IATINACC	IATINSAC
IATGRMVD	IATINDED	IATINSTN
IATABMV	IATINDYD	IATINSPR
IATMODST	IATINSRS	IATIPITK
IATIQDST		
Split		
IATINCF split into IATINCF, IATINACC, IATINDED		
IATINMD split into IATINMD, IATINDYD, IATINSPR, IATINSTN, IATINSAC, IATINSRS.		
Deleted		
IATINHDV		
Resequenced/Rewritten		
None		
** MACROS **		
New		
IATXMVDA	IATYIDVS	IATYISPR
IATXHOME	IATYISET	IATYMVDA
IATXIDVS	IATYISTN	IATYUX42
IATYDVDE		
Split None		
Deleted		
IATXIHDV		
Resequenced/Rewritten		
None		
** SAMPLE MEMBERS **		
None		

Figure 161. JES3 Version 2 Release 9 Parts

Split/New/Deleted/Resequenced Parts for HJS6608 (OS/390 Version 2 Release 8 JES3)

** MODULES **				
New				
IATABCI	IATINDST	IATIPWJ1	IATUX72	IATWLSTA
IATABDF	IATINWLM	IATIPWJ2	IATWLCLF	IATWLSTK
IATABDL	IATIPCKP	IATIPWJ3	IATWLCSM	IATWLEVT
IATABDS	IATIPGPW	IATIPWLM	IATWLDRG	IATWLFJR
IATABEN	IATIPGSD	IATIQBCT	IATWLDRV	IATWLFSM
IATABGS	IATIPJSA	IATIQCLS	IATWLEVT	IATWLGSM
IATABLC	IATIPMCC	IATMFRWL	IATWLFJR	IATWLJCK
IATABMO	IATIPMCL	IATMFWSL	IATWLFSM	IATWLLSM
IATABSC	IATIPMGP	IATMFWLM	IATWLGSM	IATWLPOL
IATABSR	IATIPMGX	IATMOCLS	IATWLJCK	IATWLRLCL
IATABWL	IATIPSPL	IATMORUN	IATWLLSM	IATWLSCS
IATGRDLY	IATIPSR5	IATMOSRV	IATWLPOL	IATWLSIN
IATGRGPF	IATIPSRV	IATMSSC	IATWLRLCL	IATWLSRR
IATGRJQS	IATIPWB1	IATMSSCR	IATWLSCS	IATWLSRV
IATGRJXS	IATIPWB2	IATMSWLD	IATWLSIN	IATWLSTA
	IATIPWB3	IATMSWLS	IATWLSRR	IATWLSTK
	IATIPWB4		IATWLSRV	
Split	None			
Deleted				
IATJDEL				
Resequenced/Rewritten				
IATGRRQ				
** MACROS **				
New				
IATXARM	IATXSRVC	IATYODP		
IATXCVD	IATXSSCR	IATYRQJS		
IATXDELY	IATXWCLF	IATYSCHT		
IATXDST	IATXWLM	IATYSDA4		
IATXGENF	IATYDDF	IATYSRVC		
IATXJQES	IATYDFM	IATYUX72		
IATXJQEX	IATYGPW	IATYWBQS		
IATXJSPC	IATYG020	IATYWCD		
IATXMPC	IATYG024	IATYWCH		
IATXNUCF	IATYG025	IATYWCWA		
IATXPDEQ	IATYG026	IATYWJS		
IATXPENQ	IATYIMCL	IATYWLM		
IATXREPT	IATYJPSE	IATYWSTB		
	IATYJQEX	IATZMEXC		
	IATYNUCM			
Split	None			
Deleted				
None				
Resequenced/Rewritten				
IATXJQE	For OW31885			
IATYGMS	IATYDSB			
RQTAGEN	IATYINT			
	IATYITXT			
	IATYJDS			
	IATYNFD			
	IATYNJY			
	IATYOSD			
	RQTAPUT			
** SAMPLE MEMBERS **				
None				

Figure 162. JES3 Version 2 Release 8 Parts

Split/New/Deleted/Resequenced Parts for HJS6606 (OS/390 Version 2 Release 7 JES3)

** MODULES **	
New	None
Split	None
Deleted	None
Resequenced/Rewritten	None
** MACROS **	
New	None
Split	None
Deleted	None
Resequenced/Rewritten	None
** SAMPLE MEMBERS **	
	None

Figure 163. JES3 Version 2 Release 7 Parts

Split/New/Deleted/Resequenced Parts for HJS6606 (OS/390 Version 2 Release 6 JES3)

** MODULES **			
New			
IATDJSV	IATUTJCC	IATUTJGT	
IATJMGS	IATUTJCI	IATUTJPT	
IATDJSVS	IATUTJCJ	IATUTJRC	
IATMDISM	IATUTJCT	IATUTJSD	
IATMDWLE	IATUTJDD	IATUTJUC	
IATMSEWL	IATUTJEE		
IATMSWLE	IATUTJEX		
Split None			
Deleted None			
Resequenced/Rewritten			
IATDCNO	IATDJSV	IATIICX	IATIPJCT
IATDJDT	IATABNX	IATIIDR	IATIPJQE
IATDJTR	IATABNY	IATIIFC	IATIPMDS
IATDJIN	IATABN4	IATIIFR	IATIPRSQ
IATDJN	IATGRJS	IATIIFS	IATIQDV
IATDJMGS	IATGRJX	IATIIOR	IATIQQU
IATJDOB	IATGRRQ	IATINMD	IATISJB
IATDJOT	IATGRWJ	IATINM3	
		IATIPDSQ	
** MACROS **			
New			
IATXJMRX	IATYG014	IATYUJEP	
IATXSCH	IATYG015	IATYUJEQ	
IATXUJEN	IATYG016	IATYUJGD	
IATXUJEX	IATYG017	IATYUJLD	
IATXUJRT	IATYG018	IATYWEV	
IATXWEV	IATYG019		
	IATYUJDA		
Split None			
Deleted None			
Resequenced/Rewritten			
IATYCCB	IATYJCT	IATYMDS	
IATYDSQ	IATYJMF	IATYRSQ	
IATYDST	IATYJQE	IATYDJB	
** SAMPLE MEMBERS **			
IATUTJCS			

Figure 164. JES3 Version 2 Release 6 Parts

Split/New/Deleted/Resequenced Parts for HJS6605 (OS/390 Version 2 Release 5 JES3)

** MODULES **		
New	IATUTSTT IATOSENF IATOSSWB	
Split	<ul style="list-style-type: none">• IATOSGR split into IATOSGR and IATOSSWB• IATOSGR split into IATOSGR and IATOSENF	
Deleted	IATGREN	
Resequenced/Rewritten	None	
** MACROS **		
New	IATXCTKN IATXOSEN IATXSSOB	IATXSWBU IATYCTKN IATYD671
		IATYSWBR
Split	None	
Deleted	None	
Resequenced/Rewritten	IATYSWBU	
** SAMPLE MEMBERS **		
None		

Figure 165. JES3 Version 2 Release 5 Parts

Split/New/Deleted/Resequenced Parts for HJS6604 (OS/390 Version 2 Release 4 JES3)

```

** MODULES **

New

      IATCFSRV          IATIPCF5          IATMOCF
      IATDMVIO          IATIPNCF          IATMOCW
      IATGRSYS          IATIPOCF          IATUTICP
      IATINDEV          IATIPVIO          IATUTITX
      IATINDF           IATIPVIT          IATUTSDA
      IATINHVD          IATIPVIW          IATMOCF
      IATINSNA          IATIPVI2

Split
      IATINGN split into IATINGN, IATINDEV, and IATINSNA

Deleted

      IATMDMS IATSATB0 IATSATB1 IATSATB2 IATSATB3 IATSATB4

Resequenced/Rewritten
      None

** MACROS **

New

      IATXCFG5          IATXSTA5          IATYOCF
      IATXCPYF          IATXSYSU          IATYRJDI
      IATXIHDV          IATXVIO           IATYSDA
      IATXRDCB          IATYCFG5          IATYSDAD
      IATXRJDI          IATYCFW           IATYSDA1
      IATXSTAT          IATYD037          IATYSDA2
      IATXSTA1          IATYGLOB          IATYSDA3
      IATXSTA2          IATYIIC           IATYVIO
      IATXSTA3          IATYITX           IATYVITR
      IATXSTA4          IATYMCI           IATYVIW
                        IATYMCM IATYNCF          IATZPCHK

Split None

Deleted
      None

Resequenced/Rewritten

      ACALL ITREAD

** SAMPLE MEMBERS **

      IATSMX01

```

Figure 166. JES3 Version 2 Release 4 Parts

Split/New/Deleted/Resequenced Parts for HJS6603 (OS/390 Version 1 Release 3 JES3)

** MODULES **		
New		
IATABCOW	IATIPSFW	IATOSSO
IATABSAP	IATIPSW	IATOSSR
IATIPCOW	IATOSCWS	IATPCWSV
IATIPSDE	IATOSOR	IATSIES
IATIPSDW	IATOSSD	IATSISO
Split		
IATOSGR some routines now moved to new module IATOSOR		
Deleted		
None		
Resequenced/Rewritten		
IATINIT		
** MACROS **		
New		
IATYCOW	IATYSAT	IATYSWE
IATYESW	IATYSDE	IATYUX30
IATYGRES	IATYSDW	IATXCWSV
IATYGRW	IATYSFW	IATXOSSO
Split None		
Deleted		
IATYNCT		
Resequenced/Rewritten		
IATYTSWK		
** SAMPLE MEMBERS **		
None		

Figure 167. JES3 Version 1 Release 3 Parts

Split/New/Deleted/Resequenced Parts for HJS6601 (OS/390 Version 1 Release 1 JES3)

** MODULES **	
New	None
Split	None
Deleted	None
Resequenced/Rewritten	None
** MACROS **	
New	None
Split	None
Deleted	None
Resequenced/Rewritten	None
** SAMPLE MEMBERS **	
	None

Figure 168. JES3 Version 1 Release 1 Parts

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Glossary

This glossary defines technical terms and abbreviations used in JES3 documentation. If you do not find the term you are looking for, refer to the index of the appropriate JES3 manual or view *IBM Dictionary of Computing*, located at:

<http://www.ibm.com/networking/nsg/nsgmain.htm>

This glossary includes terms and definitions from:

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A

action message. A request for operator intervention from the operating system. In JES3, action messages are typically displayed on the operator's console.

address space. The virtual storage assigned to a job, TSO user, or a task initiated by the START command. Each address space consists of the same range of addresses.

Advanced Program-to-Program Communication (APPC). A set of inter-program communication services that support distributed transaction processing in a SNA network. See also *logical unit type 6.2*.

APPC. See *Advanced Program-to-Program Communication*.

APPC/VTAM. The implementation of APPC on VTAM.

auxiliary task. A subtask under the JES3 primary task. Writer DSPs and the General Services DSP do some of their processing under this task.

auxiliary task control block (ATCB). A control block that JES3 uses to manage work done under the auxiliary task.

auxiliary task dispatching element (ATDE). A control block that JES3 uses to determine whether to dispatch a function control table (FCT) under the JES3 auxiliary task.

B

binary synchronous communication (BSC). (1) Communication using binary synchronous transmissions. (2) A uniform procedure, using a standardized set of control characters and control character sequences, for synchronous transmission of binary-coded data between stations.

binary synchronous communications remote job processing (BSC RJP). A facility that permits the input and output of jobs to and from BSC workstations.

Bulk Data Transfer (MVS/BDT). (Multiple Virtual Storage/Bulk Data Transfer) An IBM program product that uses SNA protocols to copy sequential or partitioned data sets within an SNA network.

C

call. See *communication call*.

called job. A job created by JES3 in response to a JES3 CALL command.

called DSP. A job created by JES3 in response to a JES3 *CALL command.

channel-to-channel (CTC) adapter. A device for connecting two channels on the same processor or on different processors.

cold start. For JES3, the first start after system generation and after some unrecoverable failures. Spool data sets are initialized during a cold start.

common area. In MVS, an area of virtual storage that is addressable by all address spaces.

Common Programming Interface. Provides languages, commands and calls that allow the development of applications that are more easily integrated and moved across environments supported by Systems Application Architecture.

common service area (CSA). In MVS, a part of the common area that contains data areas accessible from all address spaces.

communication call. A conversation statement that transaction programs can issue to communicate through the LU 6.2 protocol boundary. The specific calls that a transaction program can issue are determined by the program's current conversation state. See also *verb*.

configuration. The arrangement of a computer system or network as defined by the nature, number, and chief characteristics of its functional units.

console authority level. A numeric value from 0-15 assigned to RJP consoles which governs the set of commands that can be issued from the console.

console destination classes. A set of named classes used by JES3 to direct messages to certain consoles. Also used in specifying the messages to be received at an RJP console.

control section (CSECT). The part of a program specified by the programmer to be a relocatable unit, all elements of which are to be loaded into adjoining main storage locations.

console service. A DSP that performs traffic management for consoles.

control statements. Statements placed into an input stream to identify special JES3 processing options for jobs.

converter/interpreter (C/I) DSP. A DSP that uses MVS converter/interpreter subroutines to process JCL statements. The C/I DSP creates internal JCL text for jobs being readied for MVS execution.

CPI. See *Common Programming Interface*.

CPU. Central processing unit (equivalent to the term **processor**).

CTC. Channel-to-channel.

D

data link. The physical connection and the connection protocols between a host and a communication controller nodes by using the host data channel.

DC. Dump core.

DDR. Dynamic device reconfiguration.

deadline scheduling. A method of scheduling jobs by time of day, or by week, month, or year.

demand select job. A job created by MVS and passed to JES3 for processing. MVS creates demand select jobs in response to MVS START or MOUNT commands or the TSO LOGON command. (For processing of these commands, system resources are needed, hence JCL is used to define those resources. It is this JCL that JES3 processes.)

destination queue (DSQ). For JES3, a control block used by subsystem interface routines to route requests

(represented by destination codes) to the JES3 routines responsible for servicing the requests.

dependent job control (DJC). The organizing of a collection of jobs that must execute in a specific order. DJC manages jobs that are dependent upon one another.

destination codes. For JES3, numeric codes used to represent information during communication between JES3 components on different processors by using the subsystem interface.

device fencing. Reserving devices for use only by jobs within a specified job group, or jobs with a specified job network.

DJ. Dump job.

DJC. Dependent job control.

DJC network. A set of jobs that JES3 must run in a predetermined order. Success or failure of one job can cause execution, holding, or cancelation of other jobs.

DR. Disk reader.

DSI. Dynamic system interchange.

dump job (DJ). A JES3 dynamic support program, invoked by operator command to write JES3 jobs to tape and later to restore them back to JES3 by reading them from tape back into the system.

dyadic. A multiprocessor that contains two CPUs (hardware term that is not normally used in software documentation).

dynamic destination queuing. The facility that allows the separate queueing of staging areas received by the JES3 global address space from the FSS address space.

dynamic allocation. For JES3, assignment of system resources to a job while it is executing rather than before it is executed.

dynamic device reconfiguration (DDR). A facility that allows a demountable volume to be moved, and repositioned if necessary, without abnormally terminating the job or repeating the initial program load procedure.

dynamic support program (DSP). Multiprogrammed JES3 system components that are scheduled by JSS and cause the implementation of some function of JES3. DSPs can be directly related to job execution (e.g., main service, output service) or can be a background utility such as card-to-tape.

dynamic system interchange (DSI). A JES3 recovery facility that allows the operator to switch the JES3 global functions to a local processor in case of global processor failure.

dynamic writer. An output service function that controls printing or punching of data sets with characteristics that are not assigned to a specific device but are assigned by JES3 to appropriate devices as they become available.

E

early resource release. The releasing of resources (devices, volumes, and data sets) after they are no longer needed.

explicit setup. The programmer's specification, on a JES3 control statement, of precisely which devices are to be set up.

external writer. An MVS routine that directs system output to unsupported devices such as unit record printers and punches, magnetic tape devices, DASD, and plotters. External writers must be started by the operator as required. Once started, an external writer requests output data sets from the JES3 output service DSP via the subsystem interface.

F

FCB. Forms control buffer.

function codes. Numeric codes used by MVS when requesting a service or control information from JES3 by using the subsystem interface.

function control table (FCT). The master dispatching queue for JES3. Entries in the FCT are arranged in priority order and each represents a DSP to be dispatched.

functional subsystem (FSS). A functional subsystem performs JES3 functions on behalf of the JES3 global address space while residing in its own address space, which may be on any processor in the complex. The functional subsystem off-loads some of the work from the JES3 address space.

functional subsystem application (FSA). Contained within the functional subsystem address space, these routines handle a specific piece of JES3 work normally done by the JES3 global processor.

functional subsystem intercommunication (FSI). Provides formal communication between JES3 and the functional subsystem application or FSS.

G

generalized main scheduling (GMS). A set of algorithms that allow the JES3 system programmer to tailor job scheduling and selection to the specific needs of the installation.

global processor. The processor that controls job scheduling and device allocation for a complex of processors. See also **local processor**.

global main (and local mains). The **global main** controls job scheduling and device allocation for a complex of JES3 processors. Each **local main** in the complex exists under control of the JES3 global main and is connected to the global main by CTC adapters. The JES3 on the global main can perform centralized job input, job scheduling, and job output services. Only the global main performs scheduling functions, although scheduled work executes on the local mains. See also **local main**.

GMS. Generalized main scheduling.

H

high watermark setup (HWS). An attempt to allocate a minimum number of unique device types that fulfill the requirements for each job step. Devices used in one step can be released and used again in later steps.

hot start. A restart of the global processor using information obtained from the last set of initialization statements processed. Recovery is attempted for all jobs that were in execution at the time of the failure.

hot start with analysis. A special form of hot start where the JES3 job queue is examined and the operator is given the opportunity to delete any jobs that would cause another restart.

hot start with refresh. A special form of hot start where the JES3 initialization stream is read.

hot writer. An output writer that must be started and stopped by the operator. Hot writers are typically used when operator intervention is anticipated (as for changing forms, etc.).

I

initialization. In JES3, the process that reads the JES3 initialization statements and creates the tables and control blocks used throughout the JES3 program.

input service. The function that accepts and queues all jobs, entering the JES system, except those invoked via the *CALL command.

input service driver (ISDRVR) DSP. A DSP that reads batches of jobs from the spool data set and constructs a separate JCT entry for each job.

input service job. A job created by the card, tape, or disk reader DSP for each batch job written on the spool data set. An input service job is represented by a JCT containing two scheduler elements: one for the ISDRVR DSP and one for the PURGE DSP.

installation exit. A part of JES3 specifically designed for replacement by user-written routines.

internal reader. A JES3 routine that processes input streams contained in SYSOUT data sets obtained from MVS.

IPL. Initial program load.

J

JCL. See *Job Control Language*.

JECL. See *Job Entry Control Language*.

JES control table (JESCT). A control block in the MVS nucleus that contains information used by subsystem interface routines.

JES managed. The system mode of operation where JES3 batch initiators are controlled by JES3.

JES2. A subsystem that receives jobs into the MVS system and processes all output produced by the jobs. In multiple-processor complexes, the JES2 program manages independently-operating processors via a common job queue.

JES3. A subsystem that receives jobs into the MVS system, optionally schedules resources for the jobs, and processes output data produced by the jobs. In multiple-processor complexes, the JES3 program manages processors so that one processor exercises centralized control over the others and distributes jobs to the others by a common job queue.

JES3 auxiliary address space. An address space used exclusively by JES3 for data areas that would otherwise be placed into the CSA. Parameters in JES3 initialization statements specify whether a JES3 auxiliary address space is desired and, if so, the size of each data area.

JES3 devices. The devices that JES3 uses to communicate with the operator, read jobs, store jobs awaiting execution, and write job output. See also *shared devices*.

JES3-managed devices. The devices that JES3 allocates to jobs. See also *MVS-managed devices*, *jointly-managed devices*, *shared devices*.

JES3 spool access method (JSAM). Data management routines that serve JES3 address space requests such as allocation and deallocation of JES3 buffers.

job class. A named collection of JES3 job processing and scheduling rules. Use of job class names on JES3 control statements is a way of specifying what job processing and scheduling rules JES3 should use for jobs.

job class group. A named collection of resources to be associated with a job class. Use of job class names on JES3 control statements is a way of specifying what resources will be needed for jobs.

job control table (JCT). A table into which one entry is placed for each job that JES3 is to process. Entries are arranged in the JCT in job priority order to facilitate later job selection by priority.

job control table (JCT) entry. A control block into which JES3 places the description of a job to be processed, and scheduler elements representing the DSPs needed to process the job.

Job Control Language (JCL). A problem-oriented language designed to express statements in a job that identify the job or describe its requirements to an operating system.

Job Entry Control Language (JECL). A problem-oriented language designed to express statements in a job that describe its requirements to an operating system's job entry subsystem.

job ID. An 8-character identifier used by JES3 to uniquely identify any job in a JES3 complex at any moment in time. The job identifier is of the form "JOBnnnnn" where nnnnn is the job *number* with the appropriate number of leading zeroes.

job number. A unique number assigned to a job by JES3. To create a job ID, JES3 adds the letters JOB in front of the job number.

job queue element (JQE). A control block containing a summary of information from a JCT entry. JQEs remain in storage and are used by JES3 instead of JCT entries for scheduling of work.

job segment scheduler (JSS) DSP. A DSP that scans the job control table (JCT) to locate scheduler elements eligible for processing, and then builds function control table (FCT) entries so the corresponding DSPs can be dispatched. JSS itself is represented by an FCT entry.

job summary table (JST). A table into which the converter/interpreter DSP places job setup requirements.

job validation. The process during JES3 initialization where JES3 examines the job-related spool control blocks to verify their validity. If JES3 finds incorrect control blocks, JES3 gives the system operator an opportunity to take corrective action to insure that JES3 initialization completes.

job volume table (JVT). A table into which the converter/interpreter DSP places the volume information it obtains from data definition (DD) statements.

jointly-managed devices. A special case where the same device is both a JES3-managed device and an MVS-managed device. Only direct-access devices with volumes that cannot be physically removed can be jointly-managed devices.

JSAM. See *JES3 Spool Access Method*.

L

local console. Any console that is dedicated to a single main within a JES3 installation. A remote job processing console cannot be a local console.

local device. A device attached to a host processor by using a channel.

local main. In a complex of processors under control of JES3, a processor connected to the global main by a CTC adapter, for which JES3 performs centralized job input, job scheduling and job output services by the global main.

local start. A restart of a local processor. Initialization is unnecessary and user jobs are not affected.

logical storage. The amount of central storage required by a job or a job step to execute efficiently on a processor when running under JES3.

loosely-coupled multiprocessing. Two or more computing systems interconnected by an I/O channel-to-channel adapter. The processors can be of different types and have their own unique configurations.

logical unit. 1) a type of network addressable unit that enables end users to communicate with each other and gain access to network resources. 2) A port providing formatting, state synchronization, and other high-level services through which an end user communicates with another end user over an SNA network.

logical unit type 6.2. The SNA logical unit type that supports general communication between programs in a

distributed printing environment; the SNA logical unit type on which CPI communications is built.

LU. See *logical unit*.

M

main. A processor named by a JES3 MAINPROC initialization statement, on which jobs can execute; represents a single instance of MVS. The two types of mains are (1) global main, and (2) local main.

MAINPROC. A JES3 initialization statement that defines a processor to JES3.

main device scheduler (MDS). Controls the setup of I/O devices associated with job execution.

main device scheduler (MDS). A phase of JES3 that controls the setup of I/O devices associated with job execution.

main DSP. A DSP that chooses jobs and supplies them to the MVS initiator(s).

main service. A dynamic support program that schedules problem programs for execution and manages the flow of data (system input, print, and punch) across the channel-to-channel adapter to and from the global processor.

MDS. Main device scheduler.

migration. The changing over from an installation's production operating system to an upgraded or entirely new operating system.

multifunction monitor (MFM). The master dispatcher for JES3. The MFM scans the function control table (FCT) for DSPs ready to be executed, and causes execution to begin.

multiple console support (MCS). A feature of MVS that permits selective message routing of up to 99 operator's consoles.

multiple virtual storage (MVS). A virtual storage facility that allows each user a private address space.

multiprocessing system. A computing system employing two or more interconnected processing units to execute program simultaneously.

multiprocessor. A processor complex that consists of more than one CPU.

MVS. See *Multiple Virtual Storage*.

MVS/APPC. The implementation of APPC on an MVS system.

MVS-managed devices. The devices that MVS allocates to jobs. See also *JES3-managed devices*, *jointly-managed devices*.

N

network. For JES3, two or more systems and the connections over which jobs and data are distributed to the systems. One or more of the systems can be a JES3 global (and its local mains, if any). The other systems can be non-JES3 systems with compatible networking facilities. Connections can be established through communications paths using SNA or BSC protocol.

network job entry (NJE). The process in which a user at one installation can submit a job/output to be executed at or sent to a different installation (node to node). NJE is networking between installations using SNA or BSC protocol.

network job stream. A network job stream includes:

- a job header
- an MVS job comprised of JCL an/or SYSIN data
- a job trailer.

See also the definition of network SYSOUT stream.

network stream. A network stream contains either a network job stream or a network SYSOUT stream. See the respective definitions for each.

network job. Same as network stream.

network SYSOUT stream. A network SYSOUT stream includes:

- a job header
- a data set header (where there may be more than one data set header per SYSOUT data set transmitted)
- a SYSOUT data set
- a job trailer.

Note: There may be more than one SYSOUT data set-data set header pair. See also the definition of network job stream.

networking protocol. Rules for using communication lines. Protocols can identify the direction of data flow, where data begins and ends, how much data is being transmitted, and whether data or control information is being sent. The two protocols that JES3 uses to establish a networking environment are binary synchronous communication (BSC) and systems network architecture (SNA).

NJE. An installation to installation data communication network.

node. 1) An end point of a link, or a junction common to two or more links in a network. Nodes can be processors, controllers, or workstations. Nodes can vary in routing and other functional capabilities. 2) In JES3, one of the systems in a network of systems connected by communication lines. Each node defined to itself is the home node. All others are defined as remote nodes, directly or indirectly connected. The home node and the remote nodes are identified as such in the installation's initialization stream (NJERMT statement).

non-partitionable processor complex. A processor complex that cannot be partitioned.

non-standard job. A job for which JES3 defines processing from input received on `//*PROCESS` control statements.

normal job. A job received by JES3 in an input stream. Normal jobs can be standard jobs or nonstandard jobs. Contrast with "called job".

O

operating system. The software that controls the operation of a processor complex.

operator commands. Statements that system operators may use to get information, alter operations, initiate new operations, or terminate operations.

operator messages. A message from an operating system directing the operator to perform a specific function, such as mounting a tape reel; or informing the operator of specific conditions within the system, such as an error condition.

output scheduling element (OSE). A control block that describes the characteristics of one or more output data sets of the same job.

output service. The function that processes SYSOUT data sets. Processing includes printing, punching, or directing output to an external writer.

output service (OUTSERV) DSP. A DSP that schedules output writers for printers or punches, and routes output data to TSO processor, MVS external writers, and the MVS internal reader.

output writer. A JES3 routine that transcribes output data sets to the printer or punch system output devices.

P

partition. Equivalent to the term **physical partition**.

partitionable processor complex. A processor complex that can be partitioned.

partitioned mode. Equivalent to the term **physically partitioned mode**.

partitioning. The process of forming multiple physical partitions from one processor complex.

physical partition. A set of hardware resources, formed by partitioning, that can support a single operating system.

physically partitioned mode. The state of a processor complex when its hardware resources are divided into multiple configurations.

pre-execution setup. That portion of setup performed by MDS prior to a job entering execution.

primary job entry subsystem. The active job entry subsystem. The primary job entry subsystem is determined during the system generation process.

primary task. The task under which most DSPs execute.

process SYSOUT (PSO). An interface to JES3 to allow access and control of SYSOUT data sets from other address spaces. It is used primarily by TSO OUTPUT and RECEIVE commands and external writers.

processor. A hardware unit that contains software to interpret and process instructions.

processor complex. The maximum set of hardware resources that support a single operating system.

protected buffer pool (PBUF). An area in the common storage area and JES3 auxiliary address space that has been divided into buffers.

protocol. The meaning of, and the sequencing rules for, requests and responses used for managing a network, transferring data, and synchronizing the states of network components.

purge DSP. A DSP that performs post-execution removal a job from the system, writes system management facilities (SMF) records, and frees spool space used by the job.

R

RACF. Resource Access Control Facility

reader DSP. A DSP that transfers a job's control statements and SYSIN data from an input device to the spool data set. Three types of readers exist: card reader, tape reader, and disk reader.

reader job. A called job created by JES3 each time the operator issues a CALL command for a card, tape, or disk reader.

reconfiguration. The process of adding hardware units to, or removing hardware units from, a configuration.

remote device. A device attached to a host processor by using a data link.

remote job entry (RJE). A process in which a user at a remote site is connected to the host system by a data link (telecommunication lines). RJE and RJP is networking between the user and the host system.

remote job processing (RJP). A facility that permits the input, processing, and output of jobs to and from terminals remote from the JES3 installation.

RJP. Remote job processing.

remote terminal processor (RTP). A programmable remote workstation.

resident queue (RESQUEUE). A control block built in storage by the job segment scheduler to represent a scheduler element during the life of the scheduler element. It contains status information and queuing pointers.

Resource Access Control Facility (RACF). An IBM program product that provides for access control by identifying and verifying users to the system, authorizing and logging access to protected resources, and logging detected unauthorized attempts to enter the system.

RMT. Remote terminal processor program.

remote terminal processor (RMT). A self-loading object deck created as a result of an RMT generation. RTP programs allow JES3 to communicate with programmable remote workstations.

routing code. An MVS identifier that you use to route MVS messages to a specific console(s).

RTAM. Remote terminal access method.

RTP. Remote terminal processor.

S

SAA. See *Systems Application Architecture*.

scheduler element. A part of a job control table (JCT) entry. (Each JCT entry may contain multiple scheduler elements.) Each scheduler element represents one or more DSPs needed for JES3 processing of a job.

scheduling environment. A list of resource names along with their required states. If an MVS image satisfies all of the requirements in the scheduling environment associated with a given unit of work, then that unit of work can be assigned to that MVS image. If any of the requirements are not satisfied, then that unit of work cannot be assigned to that MVS image.

service class. A group of work which has the same performance goals, resource requirements, or business importance. For workload management, you assign a service goal and optionally a resource group to a service class.

server mode. A processing mode of the JES3 dump job function that runs in its own address space and can utilize any tape devices in the system.

session. A logical connection between two logical units that can be activated, tailored to provide various protocols, and deactivated as requested.

setup. The phase of JES3 processing that performs volume fetch, device, volume, and dataset allocation.

setup DSP. A DSP that performs volume fetch, job setup, high watermark setup, and explicit setup functions.

shared devices. (1) Devices that are connected to more than one processor. (2) Devices that are both JES3 devices and JES3-managed devices.

side. Equivalent to the term **physical partition**.

single-image mode. The state of a processor complex when all of its hardware resources are in a single configuration.

SNA. See *Systems Network Architecture*.

solicited message. A message that is a response to a command (also see *unsolicited message*).

spool data management. For JES3, the recording and retrieval of data on the spool data set and the management of space within the spool data set.

spool device. A direct-access device that JES3 uses for intermediate storage of control blocks and data needed for processing jobs. When JES3 is used for

multiprocessing, the spool device becomes a collection point for job input data to be distributed to local processors, and for job output data coming from local processors enroute to I/O devices attached to the global processor.

spool device. A direct-access device that JES3 uses for intermediate storage of control blocks and data needed for processing jobs. When JES3 is used for multiprocessing, the spool device becomes a collection point for job input data to be distributed to local mains, and for job output data coming from local mains enroute to I/O devices attached to the global.

spool partition. A named collection of spool data sets.

staging area. An area into which subsystem interface routines store data to be transferred between address spaces. Staging areas can be contained in the common service area (CSA), or in an optional JES3 auxiliary address space. The staging areas are accessible from all address spaces.

staging drive group. A collection of staging drives for space management and recovery. It is created by the user with the Mass Storage Control Table Create program.

standard job. A job for which JES3 defines needed processing entirely from Input Service, Converter Interpreter, MAIN service, Output Service, and PURGE service.

statistics data area (SDA). A data area used to collect JES3 processing statistics by using the IATXSTAT macro.

Storage management subsystem (SMS). An MVS subsystem responsible for managing data sets and volumes. This subsystem supports JCL constructs such as storage class and storage group.

subsystem identification block (SSIB). The control block into which MVS places the name of the subsystem to which it is directing a request over the subsystem interface.

SSI. Subsystem interface.

subsystem interface (SSI). A set of program routines that allows two-way communication between a JES3 address space and other address spaces.

subsystem options block (SSOB). The control block into which MVS places a function code when communicating with JES3 over the subsystem interface. The function code identifies a requested service.

subsystem services common services. A term used to collectively identify JES3 routines that handle communication among JES3 modules running on

separate processors. (For example, a subsystem interface service routine and a receiving DSP would be referred to as subsystem interface common services.)

system management facilities (SMF). An optional control program feature of MVS that provides the means for gathering and recording information that can be used to evaluate system usage.

systems application architecture (SAA). A set of software interfaces, conventions, and protocols that provide a framework for designing and developing applications with cross-system consistency.

systems network architecture (SNA). The total description of the logical structure, formats, protocols, and operational sequences for transmitting information units through a communication system.

systems network architecture remote job processing (SNA RJP). A facility that permits the input and output of jobs to and from SNA workstations.

systems network architecture/network job entry (SNA/NJE). A networking capability that works in combination with MVS/Bulk Data Transfer (MVS/BDT). Networking is established between nodes through MVS/BDT "sessions." Sessions can be established over telephone lines, microwave links, by satellite, or by channel-to-channel adapters.

T

TP. See *transaction program*.

transaction program. An application program that allows users to access resources in a SNA network.

U

uniprocessor. A processor complex that consists of only one CPU.

unsolicited message. A message that is not a response to a command (also see solicited message).

USAM. User spool access method.

user buffer pool (UBUF). An area in each user's address space that has been divided into buffers.

user spool access method (USAM). Data management routines that do not execute in the JES3 address space but provide the subsystem interface for

allocation, deallocation, SYSIN/SYSOUT, OPEN, and CLOSE functions of user data sets.

V

volume. That portion of a single unit of storage that is accessible to a single read/write mechanism; for example, a drum, a disk pack, or part of a disk storage module.

VTAM. Virtual telecommunications access method.

W

warm start (W). For JES3, a restart where an IPL must be performed on all processors and there is a choice of using the last set of initialization statements processed or a new set of initialization statements.

warm start with analysis (WA). For JES3, a special form of warm start where the JES3 job queue is examined and any jobs that would cause another restart are automatically deleted.

warm start to replace a spool data set (WR). For JES3, a special form of warm start where a spool data set can be replaced by another data set with the same ddname; all jobs with data on the replaced spool data set are lost.

warm start with analysis to replace a spool data set (WAR). For JES3, a special form of warm start (W) combining warm start with analysis (WA) and warm start to replace a spool data set (WR) processing.

WLM managed. The system mode of operation where JES3 batch initiators are controlled by the workload management component of MVS.

Workload Management (WLM). WLM is a component of MVS that manages system resources.

workstation. A station at which an individual can send data to or receive data from a computer for the purpose of performing a job.

writer. See *output writer*.

writer output multitasking. For JES3, a facility by which writer output processing can be performed concurrently with other JES3 functions on a multiprocessor global processor.

WTO. Write to operator.

WTO/R. Write to operator with a reply request.

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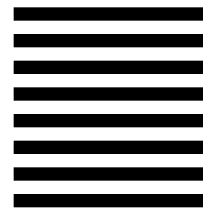
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