

z/OS



Summary of Message and Interface Changes

Version 2 Release 1

Note

Before using this information and the product it supports, read the information in "Notices" on page 401.

This edition applies to Version 2 Release 1 of z/OS (5650-ZOS) and to all subsequent releases and modifications until otherwise indicated in new editions.

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Abstract for z/OS Summary of Message and Interface Changes

This document is divided into three parts.

Part 1 contains a summary of new and changed interfaces for z/OS® V2R1 and z/OS V1R13. It is divided into sections where each section is devoted to a specific z/OS element or feature. Within each section, information is presented in tables grouped by component (where applicable), by type of interface (for example, commands, environment variables), and by the release in which the interface was added or changed.

Part 2 contains a summary of new, changed, and deleted messages for each element in z/OS V2R1. Within each section, you find information about new, changed, and deleted messages.

Part 3 contains a summary of new, changed, and deleted messages for each element in z/OS V1R13. Within each section, you find information about new, changed, and deleted messages.

For purposes of this document, “interfaces” refer to software that allows a user to interact with and perform operations on a system, program, or device.

Intended audience

z/OS Summary of Message and Interface Changes is for anyone who needs to know which messages and interfaces are new and changed for z/OS V2R1 and z/OS V1R13.

Where to find more information

This document references information in other documents, using shortened versions of the document title. For complete titles and order numbers of the documents for z/OS elements and features, see *z/OS Information Roadmap*.

This document does not contain information about new, changed, or deleted checks for IBM® Health Checker for z/OS. For check information, see *IBM Health Checker for z/OS User's Guide*. For currently available checks, see http://www.ibm.com/servers/eserver/zseries/zos/hchecker/check_table.html (IBM Health Checker for z/OS check table).

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SA23-2300-05
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Summary of changes for z/OS Summary of Message and Interface Changes as updated February 2015

The following changes are made for z/OS Version 2 Release 1 (V2R1) as updated February 2015. In this revision, all technical changes for z/OS V2R1 are indicated by a vertical line to the left of the change.

New

- BCP (MVS):
 - The HCsaByASID, HCsaNoOwner, and HCsaSysOwner options for SVC dump were added to the SDUMPX macro.
 - The REP (replace) dump mode was added to the CHNGDUMP command, as was HCsaByASID, HCsaNoOwner, and HCsaSysOwner keyword support for SDUMP.
 - The SDATA options HCAS, HCNO, and HCSY were added to the DUMP command.
 - The SDATA options HCsaByASID, HCsaNoOwner, and HCsaSysOwner were added to the SLIP command.
 - The default value of the zAAPZIIP statement of the IEASYSxx parmlib member was updated.
- Communications Server:
 - The SSLV3, APPLNAME statements were added to the FTP server configuration statements.
 - The SSLV3 statement was added to the FTP client configuration statements.
 - The SSLV3 and NOSSLV3 statement was added to the TN3270 Telnet server TELNETGLOBALS information block configuration statements and TN3270 Telnet server TELNETPARMS information block configuration statements.
 - The GetTnProfile request was added to the TCP/IP callable NMI (EZBNMIFR).
 - The Sendmail configuration file: /etc/mail/zOS.cf and Policy client configuration file were added.
 - The CCR, CCR2, VHCR, VHC2, VHC3, VHC4, and VHC5 VIT records were added to VTAM internal trace entries.
 - The following messages are new.
 - EZZ6062I
 - IST2417I
 - ISTM015I
 - ISTM016I
- Cryptographic Services Integrated Cryptographic Service Facility (ICSF)
 - See “ICSF summary of interface changes” on page 161 for the new and changed services for FMID HCR77B0.
 - See “Cryptographic Services Integrated Cryptographic Service Facility (ICSF) summary of message changes for z/OS V2R1” on page 349 for the new and changed messages.
- Language Environment
 - For the vector registers support, these messages were added:
 - CEE3235S

CEE3236S
CEE3237S
CEE3238S
CEE3239S
CEE3240S

- z/OS UNIX
 - For the vector registers support, new constant options and new parameter attributes were added to BPX1PTR,BPX4PTR callable service. New return values and return codes were added for the request options.
 - For dbx support of vector-enabled programs, a new variable, *\$novregs*, was added to the set subcommand of **dbx**. The usage note for the registers subcommand was also updated with information about displaying and assigning vector registers.
 - With APAR OA46568, a usage note was added to the **ls** command about issuing the **ls** command against a large directory structure.
 - With APAR OA46394, to comply with UNIX specifications, an addition was added to **sh** information.
 - The following messages are new.
 - FDBX0557
 - FDBX0823
 - FDBX0824
 - FDBX0826
 - The following reason codes are new.
 - 065C (JrPtInvVRNumber)
 - 065D (JrPtVRNotSupported)

Changed

- Communications Server:
 - The TCPCONFIG PROFILE.TCPIP statement was updated.
 - The CSDUMP start option was updated.
 - The MODIFY CSDUMP, DISPLAY ID, and DISPLAY TRL commands were updated.
 - The DCAS configuration file was updated.
 - The GetFTPDaemonConfig request was updated.
 - The FTP Daemon Configuration record (subtype 71) and TN3270E Telnet server profile event record (subtype 24) were updated.
 - The following messages were updated.
 - EZD1024I - Replaced by EZD1795I
 - EZA1532I
 - EZA1533I
 - EZA1545I
 - EZA1546I
 - EZA1548I
 - EZA1549I
 - EZA1555I
 - EZA1556I
 - EZZ6238I

- EZZ7453I
- EZZ7839I
- EZZ8128I
- EZZ9675E
- IST1884I
- IST2361I
- IST2362I
- IST2389I
- IST2396I
- IST2397I
- IST2398I
- IST2406I
- Language Environment:
 - For the vector registers support, the following interfaces were updated.
 - Compiler-writer interfaces (CWI)
 - CEEGOTO
 - CEEYPPAF
 - __far_jump()
 - Data areas
 - CEEMCH
 - CEEPCB
 - Macros
 - CEEPPA

Summary of changes for z/OS V2R1 as updated September 2014

The following changes are made for z/OS Version 2 Release 1 (V2R1) as updated September 2014. In this revision, all technical changes for z/OS V2R1 are indicated by a vertical line to the left of the change.

New

- BCP (MVS):
 - For the DEVSUP xx parmlib member, a restriction was added to the TAPEPBLKSZLIM= parameter to indicate that DFSMSdss only supports BLKSZLIM of 65,520 and higher.
 - With APAR OA44049, diagnostic CTRACE data was added to VSAM RLS BMF GET/FREE requests. With the new parameter CSRPOOLDIAG in the DIAG xx parmlib member, the get and free services of the CSR cellpool return diagnostic data.
 - With APAR OA41968, a new keyword, INCLUDE1MAFC, was added to the LFAREA parameter in the IEASYS xx parmlib member. It specifies that the 1 MB pages are to be included in the available frame count (RCEAFC), and improves paging.
 - The following messages are new:
 - ADR530I
 - ADR531E
 - ADR532E
 - ADR533I

Changed

- BCP (MVS):
 - The BPXPRMxx parmlib member was updated to clarify that the value of the SHRLIBRGNSIZE parameter must be evenly divisible by 1048576.
 - Clarification was added to the TIMEZONE parameter of the CLOCK parmlib member about applications that are required to run with local time equal to UTC.
 - An explanation was added to the CONFIGxx parmlib section that the deprecated ESTOR parameter is tolerated.
 - With APAR OA44526, the lower limit for the IEAOPTxx keyword BLWLINTHD was changed.
 - The documentation for the BreakPointValue parameter for the IGDSMSxx parmlib member was clarified and made more complete.
 - The IBM-supplied program properties table (PPT) in the SCHEDxx parmlib had several updates.
 - With APAR OA42165, the PPT table was updated to include CRITICALPAGING for the BCPii address space program, HWIAMIN2.
 - With APAR OA43256, additional support of zEDC Express update and fixes for z/OS PCIE support were included. IQPINIT for PCIE services was added to the PPT table.
 - With APAR OA44695, support was added for IOSVROUT and programs attached to it to obtain 64-bit virtual storage. The “No honor IEFUSI region settings” value was added to IOSVROUT in the PPT table.
 - The following messages are changed:
 - ADR285E - New return code 16
 - ADR439E - New return code 146
 - ADR707E - New ZCOMPRESS keyword
 - ADR778E - New return code 22
 - ADRY501I - Updated explanation
 - ADRY503E - Updated explanation
 - ADRY3501I - Updated explanation
 - ARC0216I - New return code 48
 - ARC0336I - Mention of new ZCOMPRESS parameter
 - ARC0340I - New ZCOMPRESS options

Summary of changes for z/OS V2R1 as updated June 2014

The following changes are made for z/OS Version 2 Release 1 (V2R1) as updated June 2014. In this revision, all technical changes for z/OS V2R1 are indicated by a vertical line to the left of the change.

Changed

- Communications Server:
 - The following PROFILE.TCPIP statements are updated:
ATMARPSV, ATMLIS, ATMPVC
DEVICE and LINK
- DFSORT:
 - The following messages were changed in V2R1, but not included in the prior version of this information:

ICE000I

ICE118I

- The following interfaces were changed in V2R1, but not included in the prior version of this information:

The following are new DFSORT/ICETOOL reserved words which are no longer allowed as symbols: LC, LN, MC, MN, UC and UN.

The IBM-supplied default for the existing EXPOLD installation option has been changed to EXPOLD=50%.

The IBM-supplied default for the existing EXPRES installation option has been changed to EXPRES=10%.

The IBM-supplied default for the new TUNE installation option is TUNE=STOR.

A new TUNE installation default allows you to specify whether DFSORT should allocate storage in increments, or to allocate all storage at initialization.

Summary of changes for z/OS V2R1 as updated March 2014

The following changes are made for z/OS Version 2 Release 1 (V2R1) as updated March 2014. In this revision, all technical changes for z/OS V2R1 are indicated by a vertical line to the left of the change.

New

- DFSMSdfp:
 - The ZEDC_R (“zEDC Required”) and ZEDC_P (“zEDC Preferred”) options are added to the COMPRESS parameter in the IGDSMSxx member of SYS1.PARMLIB.
 - The ZR (“zEDC Required”) and ZP (“zEDC Preferred”) options are added to the Compaction field of the Data Class Define and Alter ISMF panels.
 - New fields to indicate zEDC compression are added to the SMF type 14 record, in the compressed format data set section.
 - New option fields are added in the FPZ4RZV and FPZ4PRB compression services.
 - The following messages are added for zEDC compression:
 - IGD17167I
 - IGD17168I
 - IGD17169I

Note: For more information on the zEDC compression enhancements, see *z/OS DFSMS Using the New Functions*.

- BCP (MVS) messages:

The following messages are new:

 - ADR984W
 - IGD17167I
 - IGD17168I
 - IGD17169I
 - ILRH0112I
 - IXC592I
 - IXC593I

IXC594I
IXCH0265E
IXCH0266I
IXCH0930I

- SDSF:
The following message is new:
ISF794W

Changed

- BCP (MVS) parmlib members:
Updates were made to the following parmlib members:
 - In the ALLOCxx member, missing keywords are added back from V1R13. In addition, for V2R1, two additional SYSTEM keywords are added:
BATCH_RCLMIGDS(SERIAL|PARALLEL)
OPTCDB_SPLIT(EXPLICIT|CATALOG)
 - BPXPRMxx is updated.
 - CEEPRM00 has changed.
 - CLOCKxx has a new parameter, ACCURACY.
 - For CNGRPxx, only HMCS is added.
 - The description of COFVLFxx includes changes to the action that VLF performs from writing a SYS1.LOGREC record to passing a return code.
 - CONFIGxx has new parameters (STANDARD, ZAAP, ZIIP, and ANY) for the CPU/CPUAD statement.
 - CONSOLxx has new parameters, SUPSBY for V2R1 and MSGFLD for V1R13.
 - For CUNUNIxx, the REPLACE FROM and REPLACE CASE statements now allow VOLSER. REPLACE CASE now allows a value of UNI600. ADD CASE and DELETE CASE now add a value of ACA600.
 - DEVSUPxx has new statements for MEDIA11, MEDIA12, and MEDIA13.
 - DIAGxx is updated to include additional information about HyperSwap environments.
 - GRSCNFxx has a new MONITOR statement.
 - HZSPRMxx is not new for V2R1 but has two new statements for V2R1, HZSPDATA and SET,OPTION.
 - For IEAFIXxx, the VOLUME keyword is added to allow uncataloged data sets.
 - For IEALPAXx, VOLUME is defined.
 - For IEAOPTxx, the parameter STORAGESERVERMGT with a default of NO was added in V1R13.
 - In IEASVCxx, a new value EPNAME specifies the entry point name of the SVC and forces an abend if a specific SVC is issued.
 - IECIOSxx has a new RECOVERY option of DCCF=MESSAGE or DCCF=WAIT_STATE.
- BCP (MVS) messages:
 - BHI0001I was changed in V2R1, but not included in the prior version of this information.
 - IOS450E was mistakenly added as a changed message, but the message did not change in V2R1.

- BPXTF107I replaces BPXTF007I. The F was missing from BPXTF007I in the prior version of this information.

The following messages are changed:

IEA383I
 IEA911E
 IEC143I
 IEE399I
 IEE459I (form 1 of 3)
 IEE459I (form 2 of 3)
 IXC531I
 IXC574I
 IXC582I
 IXC583I
 IXC584I
 IXG3101I
 IXL015I

- Communications Server:

EZY1387E, EZZ8139I were deleted in z/OS Version 1
 IST1371I was replaced by IST1797I

- DFSMSdfp:

- The following messages are changed for zEDC compression (new reason codes):

ADR285E
 ADR439E
 ADR778E
 IEC036I
 IEC143I
 IEC214I

- The new PS_EXT_VERSION parameter of the IGDSMSxx member of PARMLIB was incorrectly listed as PS_EXT_FORMAT and attributed to the BCP in Chapter 2, “Summary of changes to SYS1.PARMLIB,” on page 5. The information has been corrected.

- TSO

- The LINK command has been updated with a new PRIV parameter of the STRIPSEC option replacing the incorrectly listed OPERAND command which does not exist. See “Commands” on page 309.

Summary of changes for z/OS V2R1 as updated December 2013

This information summarizes the interface and message changes for z/OS V2R1 as updated December 2013.

New

DFSMS:

- The following message for storage management subsystem (SMS) continues to be issued by z/OS. In the prior edition of this publication, the message was listed as deleted.

IGW702I

- The DFSMS table of “Utilities” on page 202 now identifies an addition change to IEBCOPY not mentioned in the prior release of this information.

Communications Server: The following Communications Server message is new for V2R1, but missing from the SA23-2300-00 edition of this publication:

EZD2029I

HCD: The following HCD messages are new for V2R1:

Table 1. New HCD messages

CBDA691I	CBDG579I	CBDG599I
CBDA901I	CBDG580I	CBDG609I
CBDA902I	CBDG581I	CBDG740I
CBDA903I	CBDG582I	CBDG741I
CBDA904I	CBDG583I	CBDG742I
CBDC096I	CBDG584I	CBDG925I
CBDC097I	CBDG585I	CBDG926I
CBDG375I	CBDG586I	CBDG970I
CBDG347I	CBDG587I	CBDG971I
CBDG348I	CBDG588I	CBDG972I
CBDG376I	CBDG589I	
CBDG422I	CBDG590I	
CBDG547I	CBDG591I	
CBDG548I	CBDG592I	
CBDG573I	CBDG593I	
CBDG574I	CBDG594I	
CBDG575I	CBDG595I	
CBDG576I	CBDG596I	
CBDG577I	CBDG597I	
CBDG578I	CBDG598I	

Changed

BCP (MVS):

- The following new parameters are added to SMFPRMxx in Chapter 2, “Summary of changes to SYS1.PARMLIB,” on page 5:
 - **AUTHSETSMF:** Authorize changes to the SMF parameter options using the **SETSMF** command.
 - **COMPRESS(PERMFIX):** Compression of SMF records before writing to the log stream.
 - **PERMFIX:** Specify the default amount of storage that SMF can keep permanently fixed.
 - **NOAUTHSETSMF, NOSMF30COUNT, SMF30COUNT** are added to enable counter sets.
 - **SWT** specifies the maximum amount of time that a started task is address space is allowed to wait continuously, in hours and minutes.
 - **TWT** specifies the maximum amount of time that a TSO/E user address space is allowed to wait continuously, in hours and minutes.
- For the SYS1.PARMLIB members:

The DIAGxx information incorrect listed the **CBLOC** parameter as CBCLOC.
The correct parameter is **CBLOC**.

The COFVLFxx member has a new parameter, **ALERTAGE**, that was previously listed as changed.

Communications Server: Multiple changes in Chapter 7, “Communications Server summary of interface changes,” on page 45 are made to the following elements:

- “General updates for the non-PROFILE.TCPIP IP configuration files” on page 55
- “SNMP MIB modules” on page 124
- “z/OS UNIX /etc files” on page 143.

GRS: The following new parameter is added to SMFPRMxx in Chapter 2, “Summary of changes to SYS1.PARMLIB,” on page 5:

- **MONITOR:** Turns GRS monitoring on or off.

HCD: The following HCD messages are changed in V2R1, but missing from the prior edition of this publication:

Table 2. Changed V2R1 HCD messages

CBDA099I	CBDC099I	CBDG735I
CBDA121I	CBDD793I	CBDG753I
CBDA159I	CBDD814I	CBDG754I
CBDA196I	CBDD816I	CBDG905I
CBDA241I	CBDG180I	
CBDA270I	CBDG300I	
CBDA374I	CBDG302I	
CBDA425I	CBDG303I	
CBDA435I	CBDG304I	
CBDA449I	CBDG307I	
CBDA599I	CBDG320I	
CBDA605I	CBDG321I	
CBDA630I	CBDG338I	
CBDA698I	CBDG522I	
CBDA854I	CBDG661I	
CBDA848I	CBDG700I	
CBDA854I	CBDG701I	
CBDA880I	CBDG708I	
CBDA950I	CBDG726I	

JES2: The following JES2 messages were changed from all uppercase characters to mixed-case characters. For details, see *z/OS JES2 Messages*:

\$HASP107
\$HASP108
\$HASP110
\$HASP111
\$HASP112
\$HASP113
\$HASP114
\$HASP115

\$HASP116

\$HASP118

z/OS Version 2 Release 1 summary of changes

See the following publications for all enhancements to z/OS Version 2 Release 1 (V2R1):

- *z/OS Migration*
- *z/OS Planning for Installation*
- *z/OS Summary of Message and Interface Changes*
- *z/OS Introduction and Release Guide*

Part 1. Introduction

This section describes the new and changed interfaces for z/OS V1R13 and z/OS V2R1 elements and features.

Selected system-level data set (SYS1) interfaces are aggregated in:

- Chapter 1, “Summary of changes to SYS1.MACLIB,” on page 3
- Chapter 2, “Summary of changes to SYS1.PARMLIB,” on page 5
- Chapter 3, “Summary of changes to SYS1.PROCLIB,” on page 19
- Chapter 4, “Summary of changes to SYS1.SAMPLIB,” on page 21

Chapter 1. Summary of changes to SYS1.MACLIB

Table 3 lists the new and changed members of SYS1.MACLIB.

Table 3. SYS1.MACLIB summary of new and changed members in SYS1.MACLIB

Member	Element or feature	Release	Description	Reason for change
IFGSMF14	DFSMS	z/OS V2R1	New fields are added to the SMF type 14 record, in the compressed format data set section.	zEDC Compression
EZASMF77	Communications Server	z/OS V2R1	Changed member provides programming mappings for the new SMF 119 FTP subtype 71 record for FTP daemon configuration data.	NMI and SMF enhancements for TCP/IP applications
		z/OS V2R1	New field and new values are added to SMF 119 subtypes 2,3,49, 70, and 72 to show the four character negotiated cipher for AT-TLS secure connections and TLS v1.2 protocol level.	AT-TLS support for TLS v1.2 and related features
		z/OS V2R1	New fields are added to TCP/IP statistics SMF 119 subtype 5 record for ephemeral port usage.	User control of Ephemeral Port Ranges
		z/OS V2R1	Provides programming mappings for the new TN3270E Telnet server SMF 119 subtype 24 record. This record provides TN3270E Telnet server configuration information.	NMI and SMF enhancements for TCP/IP applications
		z/OS V2R1	New SMF119ML_CF_DateHdr field is added to CSSMTP SMF 119 subtype 48 record.	CSSMTP mail message date header handling option
		z/OS V2R1	Provides programming mappings for new SMC-R SMF 119 records of subtypes 41 - 44. SMC-R information is added to SMF 119 records of subtypes 2, 4, 5, and 6.	Shared Memory Communications over Remote Direct Memory Access
		z/OS V1R13	Changed member: New fields added to SMF 119 subtypes 4 and 6 to show the associated dynamic IQDX information.	HiperSockets optimization for intraensemble data networks

Chapter 2. Summary of changes to SYS1.PARMLIB

Table 4 lists the new and changed members of SYS1.PARMLIB.

Table 4. Summary of new and changed SYS1.PARMLIB members

Member	Element or feature	Release	Description	Reason for change
ALLOCxx	BCP	z/OS V2R1	New parameter: BATCH_RCLMIGDS specifies how migrated data sets will be recalled.	Release update
ALLOCxx	z/OS UNIX	z/OS V1R13	Changed parameters: <ul style="list-style-type: none"> The CATLG_ERR parameter has changed. The VERIFY_UNCAT parameter has a new option LOGTRACK. 	Release update
ANTMIN00	z/OS DFSMS	z/OS V1R13	New parameters: CCATTNTHROTTLE and CCREADAHEAD set tuning values for Concurrent Copy.	System Data Mover RAS
ANTXIN00	z/OS DFSMS	z/OS V2R1	New parameter: WORKLOADWRITEPACING specifies the maximum write pacing levels.	Multiple Incremental FlashCopy target support
		z/OS V1R13	New parameter: SUPPRESSTIMESTAMP controls channel program timestamping on XRC system data mover systems.Changed parameter: MAXTOTALREADERTASKS now defaults to 40 when ALLOWENHANCEDREADERS(NO) is specified. Previously, the default was 80.	System Data Mover RAS
AUTOR00	BCP	z/OS V2R1	New parameter: RATELIMIT sets the rate limit value to indicate the number of replies for a specific message ID that can be issued per second.	Release update
ALLOCxx	BCP	z/OS V2R1	Two new SYSTEM keywords are added: BATCH_RCLMIGDS(SERIAL PARALLEL) OPTCDB_SPLIT(EXPLICIT CATALOG)	Release update

SYS1.PARMLIB

Table 4. Summary of new and changed SYS1.PARMLIB members (continued)

Member	Element or feature	Release	Description	Reason for change
BPXPRMxx	z/OS UNIX	z/OS V1R13	New statements: MAXUSERMOUNTSYS specifies the maximum number of nonprivileged user mounts in the system. MAXUSERMOUNTUSER specifies the maximum number of nonprivileged user mounts allowed for each nonprivileged user. NONEMPTYMOUNTPT controls the mounting of file systems on non-empty mount point directories.	Mount granularity
		z/OS V2R1	Changed statement: AUTOCVT activates and deactivates automatic conversion of I/O data using coded character sets.	Release update
		z/OS V2R1	New parameter: The FSFULL parameter is supported by TFS, in addition to HFS and TFS.	Unicode exploitation
		z/OS V2R1	New statement: MAXIOBUFUSER specifies the user of persistent kernel storage for I/O buffers by each process when used in a Unicode conversion environment.	Unicode exploitation
		z/OS V2R1	New statement: MAXPIPEUSER specifies the maximum number of named or unnamed pipes that a user can open and use concurrently.	Pipes enhancement
		z/OS V2R1	New statement: The PWT parameter indicates whether processes that are waiting for terminal input should be timed out.	Automatically logging off inactive terminals
		z/OS V2R1	New options for the PARM parameter. Two parameter key options were added as part of the TFS configuration options: -ea <i>count</i> allows the TFS file system to automatically grow <i>count</i> times -em <i>count</i> allows the TFS file system to manually grow <i>count</i> times The parameter key options are documented in the TFS section of <i>z/OS UNIX System Services Planning</i> .	Early warning of full file systems
		z/OS V2R1	Updated information: The LOSTMSG parameter was updated with additional information.	Clarifications
		z/OS V2R1	A restriction has been added that zFS does not support DDNAME. Use the FILESYSTEM keyword instead.	Clarification
z/OS V2R1	Updated to clarify that the value of the SHRLIBRGNSIZE parameter must be evenly divisible by 1048576.	Clarification		
CBROAMxx	OAM	z/OS V2R1	<ul style="list-style-type: none"> New statement: SETTLIB statement overrides the default behavior for some of the main cartridge entry messages in a system managed tape library environment. 	File system support

Table 4. Summary of new and changed SYS1.PARMLIB members (continued)

Member	Element or feature	Release	Description	Reason for change
CBROAMxx	OAM	z/OS V1R13	<ul style="list-style-type: none"> New statement: SETDISK statement configures the file system sublevel of the disk level in the OAM storage hierarchy. New parameter: ABFSERROR on SETOAM statement specifies action when an error occurs while OAM is retrieving an object from the file system. New parameter: RECALLDISKSUBLEVEL on SETOSMC statement specifies objects will be recalled to disk sublevel 1 (DB2®) or sublevel 2 (file system). 	File system support
CEAPRMxx	BCP	z/OS V2R1	<p>New parameter: HLQLONG(CEA) specifies the high-level qualifier for all log snapshot data sets.</p>	Release update
CEEPRM00	BCP	z/OS V2R1	The IBM-supplied member has changed.	Release update
CLOCKxx	BCP	z/OS V2R1	<p>Changed member: ACCURACY is added to specify an acceptable time deviation.</p>	Release update
	BCP	z/OS V2R1	Clarification was added to the description of the TIMEZONE parameter about applications that are required to run with local time equal to UTC.	Clarification
CNGRPxx	BCP	z/OS V2R1	<p>New support: Hardware management multiple console support (HMCS) can now be members of a console.</p>	Release update
COFVLFxx	BCP	z/OS V2R1	<p>New member: ALERTAGE specifies the age, in seconds, for objects in the specified class. The description of COFVLFxx includes changes to the action that VLF performs from writing a SYS1.LOGREC record to passing a return code.</p>	Release update
COMMNDxx	BCP	z/OS V2R1	<p>Changed member: Lines that begin with an asterisk in column 1 are comments.</p>	Release update; also APAR OA38328.
CONFIGxx	BCP	z/OS V2R1	<p>Changed member: PFID specifies the configuration of the PCIE function identifiers (PFIDs). CONFIGxx has new parameters (STANDARD, ZAAP, ZIIP, and ANY) for the CPU/CPUAD statement.</p>	Release update
	BCP	z/OS V2R1	An explanation was added to the CONFIGxx parmlib section that the deprecated ESTOR parameter is tolerated.	Clarification
CONSOLxx	BCP	z/OS V2R1	<p>Changed member: DEVNUM added HMCS to support the consoles. CONSOLxx has new parameters, SUPSBY for V2R1 and MSGFLD for V1R13.</p>	Release update

SYS1.PARMLIB

Table 4. Summary of new and changed SYS1.PARMLIB members (continued)

Member	Element or feature	Release	Description	Reason for change
CSVLLAxx	BCP	z/OS V1R13	<p>Changed member:</p> <p>CSVLLA00 specifies which libraries (in addition to the LNKST concatenation) library lookaside (LLA) is to manage. A change occurs for V1R13 in the way the member behaves if you don't specify the member on the LLA=xx parameter of the LLA procedure or specify LLA=NONE. In those cases, LLA will, by default, manage only the libraries that are accessed through the LNKST concatenation.</p>	Release update
CTICBR00	OAM	z/OS V1R13	<p>New member:</p> <p>CTICBR00 defines OAM default trace options.</p>	Release update
CUNUNIxx	Unicode	z/OS V2R1	<p>Changed member:</p> <p>ADD BLDLOCALE adds locales to the Unicode environment.</p> <p>REPLACE BLDLOCALE replaces locales in the Unicode environment.</p> <p>DELETE BLDLOCALE deletes locales from the Unicode environment.</p> <p>For CUNUNIxx, the REPLACE FROM and REPLACE CASE statements now allow VOLSER.</p> <p>REPLACE CASE now allows a value of UNI600.</p> <p>ADD CASE and DELETE CASE now add a value of ACA600.</p>	Release update
DEVSUPxx	BCP	z/OS V2R1	<p>New parameter:</p> <p>JES3_ALLOC_ASSIST specifies that the allocation assist support is enabled for use with JES3.</p> <p>DEVSUPxx has new statements for MEDIA11, MEDIA12, and MEDIA13.</p>	Release update
		z/OS V2R1	A restriction was added to the TAPEPBLKSZLIM= statement to indicate that DFSMSdss only supports BLKSZLIM of 65,520 and higher.	Omitted from release it was updated in.
		z/OS V2R1	<p>New parameter:</p> <p>ENABLE DISABLE (PPRCMT) enables or disables the multi-target PPRC support.</p>	Mutli-Target Mirror support
		z/OS V2R1	<p>New parameter:</p> <p>MULTINCRFLC enables or disables Incremental FlashCopy Version 2.</p>	Multiple Incremental FlashCopy target support
DEVSUPxx	BCP	z/OS V1R13	<p>New parameter:</p> <p>OCE_ABEND_DESCRIP controls whether descriptive text is appended to certain O/C/EOV abend messages.</p>	Release update

Table 4. Summary of new and changed SYS1.PARMLIB members (continued)

Member	Element or feature	Release	Description	Reason for change
DIAGxx	BCP	z/OS V2R1	New parameter: CBLOC adds subparameter IHAASVT. IEARISGNLTRACE turns on system tracing of RISGNL. DIAGxx is updated to include additional information about HyperSwap environments.	Release update
		z/OS V2R1	New parameter: CSRPOOLDIAG enables the get and free services of the CSR cellpool to return diagnostic data.	APAR OA44049
EDGRMMxx	DFSMSrmm	z/OS V2R1	New parameter: The OPTION parameter MCATTR enables the use of DFSMS Management Class (MC) attributes for DFSMSrmm that are relevant for tape management. Changed parameter: OPTION parameter RETENTIONMETHOD updated with new EXPDT retention options LASTREF NOLASTREF, to specify the number of days that the data set will be retained after the data set was last referenced, and RETAINBY, to specify whether DFSMSrmm retains multi-volume sets as individual volumes, as a set of one or more volumes, or to base expiration information on the first file in the volume set.	
EDGRMMxx	DFSMSrmm	z/OS V1R13	New parameters: OPTION parameter RETENTIONMETHOD sets the system-wide retention method for new tape volume sets created during OCE processing, and for tape volumes added to the DFSMSrmm CDS. OPTION parameter TVEXTPURGE specifies how DFSMSrmm processes volumes to be purged by callers of EDGTVEXT or EDGDFHSM. LOCDEF parameter AUTOMOVE specifies whether a library or storage location that holds tape volumes is eligible for automated movement initiated by inventory management. Changed parameter: The maximum value of OPTION parameters MAXRETPD and RETPD is increased to 93000.	

SYS1.PARMLIB

Table 4. Summary of new and changed SYS1.PARMLIB members (continued)

Member	Element or feature	Release	Description	Reason for change
EZAIPCSP	Communications Server	z/OS V2R1	Changed member: Provides formatting support for SMC-R control blocks.	Shared Memory Communications over Remote Direct Memory Access
	Communications Server	z/OS V2R1	Changed member: Provides formatting support for the real-time application-controlled TCP/IP trace NMI.	Real-time application-controlled TCP/IP trace NMI
	Communications Server	z/OS V1R13	Changed member: Provides support for the NSPT (Name Server Polling Task) control block.	System resolver autonomic quiescing of unresponsive name servers
GRSCNFxx	GRS	z/OS V2R1	New parameter: MONITOR parameter turns GRS monitoring on or off.	Release update; also APAR OA42221.
GTFPARM	BCP	z/OS V2R1	Changed member: Lines that begin with an asterisk in column 1 are comments.	Release update; also APAR OA38328.
GTZPRMxx	BCP	z/OS V2R1	New member: The Generic Tracker parmlib members contain statements: EXCLUDE, TRACKING, CLEAR, DEBUG, DIAGNOSE.	Release update
HZSPRMxx	BCP	z/OS V2R1	Changed member: New statements HZSPDATA and SET,OPTION are added for z/OS V2R1.	Health Checker for z/OS
IEAABD00	BCP	z/OS V2R1	Changed member: Lines that begin with an asterisk in column 1 are comments.	Release update; also APAR OA38328.
IEAAPP00	BCP	z/OS V2R1	Changed member: Now allows comments, indicated by an asterisk in the first column or a combination of /* and */ between columns 1 and 71. Comments are allowed at the start of the member or interspersed throughout the member.	Release update
IEACMD00	BCP	z/OS V2R1	Changed member: Lines that begin with an asterisk in column 1 are comments.	Release update; also APAR OA38328.
IEADMP00	BCP	z/OS V2R1	Changed member: Lines that begin with an asterisk in column 1 are comments.	Release update; also APAR OA38328.
IEADMR00	BCP	z/OS V2R1	Changed member: Lines that begin with an asterisk in column 1 are comments.	Release update; also APAR OA38328.
IEAFIXxx	BCP	z/OS V2R1	New parameters: <ul style="list-style-type: none"> The VOLUME keyword is added to allow uncataloged data sets. 	Release update

Table 4. Summary of new and changed SYS1.PARMLIB members (continued)

Member	Element or feature	Release	Description	Reason for change
IEAOPTxx	BCP	z/OS V1R13	New parameters: <ul style="list-style-type: none"> The new parameter FULLPRESYSTEM allows you to specify full preemption for the system address spaces. The new parameter STORAGE_SERVER_MANAGEMENT_SUPPORT=YES NO specifies whether or not to pass importance and achievement information in the new IHAASSB and IRAENCB fields. The default is YES. 	Release update
	BCP	z/OS V2R1	The lower limit for the IEAOPTxx keyword BLWLINTHD was changed.	APAR OA44526,
IEAPAKxx	BCP	z/OS V2R1	Changed member: Lines that begin with an asterisk in column 1 are comments.	Release update; also APAR OA38328.
IEALPaxx	BCP	z/OS V2R1	New parameters: <ul style="list-style-type: none"> The VOLUME keyword is defined. 	Release update
IEAOPTxx	BCP	z/OS V1R13	New parameters: <ul style="list-style-type: none"> The STORAGESERVERMGT parameter is added with a default of NO. 	Release update
IEASVCxx	BCP	z/OS V2R1	New value: <ul style="list-style-type: none"> EPNAME specifies the entry point name of the SVC and forces an abend if a specific SVC is issued. 	Release update
IEASYSxx	BCP	z/OS V2R1	Changed member: New parameters are GTZ, HZS, HZSPROC, and IQP. Lines that begin with an asterisk in column 1 are comments.	Release update; also APAR OA38328.
IEASYSxx	BCP	z/OS V1R13	New parameter: The new parameter CATALOG identifies the IGGCATxx members to use during the current IPL.	Release update
		z/OS V2R1	New keyword: INCLUDE1MAFC was added to the LFAREA parameter. It specifies that the 1 MB pages are to be included in the available frame count (RCEAFC), and improves paging.	APAR OA41968
IECIOSxx	BCP I/O	z/OS V2R1	New parameters: <ul style="list-style-type: none"> IECIOSxx has a new RECOVERY option of DCCF=MESSAGE or DCCF=WAIT_STATE. IECIOSxx has a new HYPERWRITE parameter to enable or disable IBM zHyperWrite data replication. 	Release update and APAR OA45662

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Table 4. Summary of new and changed SYS1.PARMLIB members (continued)

Member	Element or feature	Release	Description	Reason for change
IGDSMSxx	DFSMSdfp	z/OS V1R13	New parameters: <ul style="list-style-type: none"> SAM_USE_HPF allows you to specify whether or not you want BAM to use HPF when it is available. SMA_RESERVE_STORAGE_POOL_DSN specifies the name of a PDSE that will contain reserve storage pools (RSPs). SUPPRESS_DRMSGS specifies whether you want SMS to suppress DELETE/RENAME messages issued to the hardcopy log and job log. 	Release update
	DFSMSdfp	z/OS V2R1	New parameter: HONOR_DSNTYPE_PDSE can specify that a partitioned data set be created regardless of the values for other data set attributes, such as data set organization or directory blocks.	Release update
	DFSMSdfp	z/OS V2R1	New parameter: PDSE_VERSION specifies a default version number (1 or 2) for data sets that are allocated with a DSNTYPE value of LIBRARY.	PDSE version support
	DFSMSdfp	z/OS V2R1	New parameter: SUPPRESS_SMSMSG specifies an option to suppress certain messages. The messages that you can suppress are IGD17054I, IGD17227I and IGD17395I.	Release update
	DFSMSdfp	z/OS V2R1	New parameter: MAXGENS_LIMIT specifies an upper limit for the MAXGENS parameter on the DD statement in JCL. MAXGENS specifies the number of generations for version 2 PDSEs.	PDSE member generation support
	DFSMSdfp	z/OS V2R1	New parameter: PS_EXT_VERSION indicates the format in which the system should create extended format data sets. The default is PS_EXT_VERSION(1) to denote the version 1 format.	Release update
	DFSMSdfp	z/OS V2R1	New parameter options: The ZEDC_R and ZEDC_P options are added to the COMPRESS parameter, to denote "zEDC Required" or "zEDC Preferred" compression.	zEDC Compression
	DFSMSdfp	z/OS V2R1	Description of the BreakPointValue parameter was made more complete.	Clarification

Table 4. Summary of new and changed SYS1.PARMLIB members (continued)

Member	Element or feature	Release	Description	Reason for change
IGGCATxx	DFSMSdfp	z/OS V2R1	<p>New parameters:</p> <ul style="list-style-type: none"> • AUTOADD specifies whether ECS AUTOADD is enabled. • ALIASLEVEL specifies the number of data set name qualifiers to be used in the multilevel alias facility catalog search. • DUMPON and DUMPOFF specify CAS dynamic dumping. • GDGFIFOENABLE specifies FIFO or LIFO ordering of GDG data sets. • SYS%ON and SYS%OFF specify SYS% conversion. • ALLOCLCK specifies contention detection settings for ALLOCLCK resource. • SYSIGGV2 specifies contention detection settings for SYSIGGV2 resource. • SYSZTIOT specifies contention detection settings for SYSZTIOT resource. • SYSZVADS specifies contention detection settings for SYSZVADS resource. • TAPEHLQ specifies the high level qualifier of a tape volume catalog. • TASKMIN specified the lower limit on the number of catalog service tasks that can run concurrently. • TASKTABLESIZE specifies the CAS task table size. 	Release update
IGGCATxx	DFSMSdfp	z/OS V1R13	<p>New parameters:</p> <ul style="list-style-type: none"> • CATMAX specifies the maximum number of catalogs that can be opened concurrently in CAS. • TASKMAX specifies the CAS user service task upper limit, which is the maximum number of non-CAS catalog service requests that can run concurrently. 	Release update
IKJTSOxx	Communications Server	z/OS V2R1	<p>Changed member: FTP is added to the AUTHCMD and AUTHPGM NAMES sections of IKJTSOxx to enable the z/OS FTP client to determine whether the user has installed the optional FTP client user exits EZAFCCMD and EZAFCREP.</p>	FTP client security user exits

SYS1.PARMLIB

Table 4. Summary of new and changed SYS1.PARMLIB members (continued)

Member	Element or feature	Release	Description	Reason for change
IOEPRMzz	zFS	z/OS V2R1	<p>New parameters:</p> <ul style="list-style-type: none"> • FORMAT_AGGRVERSION specifies the version of the aggregate that will be formatted when you use the zfsadm format command or the Format Aggregate API. • CHANGE_AGGRVERSION_ON_MOUNT specifies whether a version 1.4 aggregate should be changed to a version 1.5 aggregate on a primary read-write mount. • CONVERTTOV5 specifies whether a version 1.4 aggregate should be changed to a version 1.5 aggregate on a primary read-write mount and each v4 directory is converted to an extended (v5) directory as it is referenced. <p>The existing CONVERT_AUDITFID default is changed from off to on.</p>	Improved large directory performance
IQPPRMxx	BCP	z/OS V2R1	<p>New member:</p> <p>The IQPPRMxx parmlib member specifies parameters that are used for managing PCIE related devices.</p>	Release update

Table 4. Summary of new and changed SYS1.PARMLIB members (continued)

Member	Element or feature	Release	Description	Reason for change
ISFPRMxx or ISFPARMS	SDSF	z/OS V2R1	<p>Changed parameters:</p> <p>New values for the PROPERTY statement:</p> <ul style="list-style-type: none"> • Browse.Suppress.DupDS controls whether duplicate SYSOUT data sets are included when you browse or print a job • Command.FILTER.SymbolsDisabled controls the use of system symbols with filtering • Console.EMCS.ConModChars names the list of suffixes to use when modifying the console name when the console activation fails due to the console being in use • Console.EMCS.NoConMod disables modification of the console name when console activation fails due to the console being in use • Panel.CK.JESPLexScope, Panel.DA.JESPLexScope, Panel.ENC.JESPLexScope, Panel.PS.JESPLexScope and Panel.All.JESPLexScope control the scope of the CK, DA, ENC, and PS panels • Panel.DA.CPUPctBasedLPAR affects normalization of the CPU% column on the DA panel • Print.CCTL.AlwaysUseASA specifies how SDSF's print function handles carriage control. 	Release update
	SDSF	z/OS V1R13	<p>New parameters:</p> <p>New parameters of the ISGRP macro or GROUP statement define customized lists of columns on new SDSF panels: J0FLDS and J0FLD2 (J0 panel), NCFLDS and NCFLD2 (NC panel), NSFLDS and NSFLD2 (NS panel).</p> <p>Changed parameters:</p> <p>A new value for CONNECT, XCFSRVNM, defines the XCF server name, or requests that XCF should not be used to provide sysplex data.</p> <p>New values for the PROPERTY statement:</p> <ul style="list-style-type: none"> • Comm.Release.Mode sets the mode that SDSF uses for communication to provide sysplex-wide data on SDSF panels • Command.SLASH.Name specifies a character to use for system commands, instead of the slash (/) • Panel.PUN.DevNameAlwaysShort and Panel.RDR.DevNameAlwaysShort control how device names are formatted on the PUN and RDR panels. <p>Changed member:</p> <p>New CKHFLDS and CKHFLD2 parameters of the ISGRP macro or GROUP statement define customized lists of columns on the CK history panel.</p>	Release update
IXGCNFxx	BCP	z/OS V2R1	<p>Changed member:</p> <p>LSPRIMARY and CONSUMPTIONALERT statements are added.</p>	Release update

SYS1.PARMLIB

Table 4. Summary of new and changed SYS1.PARMLIB members (continued)

Member	Element or feature	Release	Description	Reason for change
LOADxx	BCP	z/OS V2R1	Changed member: DYNCPADD is updated.	Release update
LPALSTxx	BCP	z/OS V2R1	Changed member: Lines that begin with an asterisk in column 1 are comments.	Release update; also APAR OA38328.
MSGFLDxx	Consoles	z/OS V1R13	New parameters: The DEFAULTCMD statement in MSGFLDxx parmlib member has a new ASID substitution character.	Release update
PROGxx	BCP	z/OS V2R1	New parameters: TRACKDIRLOAD and NOTRACKDIRLOAD are added to enable or disable system-wide tracking of directed load modules.	Release update
SCHED	BCP	z/OS V2R1	New parameter: DSI is added and specifies data set integrity.	Release update
	BCP	z/OS V2R1	The IBM-supplied Program Properties Table (PPT) values are updated with BHII1TPC, Basic Hyperswap BHIHSRV address space.	Release update
	BCP	z/OS V2R1	The PPT table was updated to include CRITICALPAGING for the BCPii address space program, HWIAMIN2.	APAR OA42165
	BCP	z/OS V2R1	IQPINIT for PCIE services was added to the PPT table because additional support of zEDC Express update and fixes for z/OS PCIE support were included.	APAR OA43256
BCP	z/OS V2R1	The “No honor IEFUSI region settings” value was added to IOSVROUT in the PPT table because support was added for IOSVROUT and programs attached to it to obtain 64-bit virtual storage.	APAR OA44695	

Table 4. Summary of new and changed SYS1.PARMLIB members (continued)

Member	Element or feature	Release	Description	Reason for change
SMFPRMxx	System Management Facilities (SMF)	z/OS V2R1	<p>New parameters:</p> <ul style="list-style-type: none"> • AUTHSETSMF specifies whether changes are authorized to be made to the SMF parameter options using the SETSMF command. • COMPRESS(PERMFIX) specifies compression of SMF records before writing to the log stream. PERMFIX specifies the default amount of storage that SMF can keep permanently fixed. • NOAUTHSETSMF • NOSMF30COUNT • SMF30COUNT is added to enable counter sets. • SWT specifies the maximum amount of time that a started task is address space is allowed to wait continuously, in hours and minutes. • TWT specifies the maximum amount of time that a TSO/E user address space is allowed to wait continuously, in hours and minutes. 	Release update
SMFPRMxx	System Management Facilities (SMF)	z/OS V1R13	<p>Default clarification:</p> <p>On the LSNAMES parameter, there is no default for the TYPE option.</p>	Release update
VATLSTxx	BCP	z/OS V2R1	<p>Changed member:</p> <p>Lines that begin with an asterisk in column 1 are comments.</p>	Release update; also APAR OA38328.

Chapter 3. Summary of changes to SYS1.PROCLIB

Table 5 lists the new and changed members of SYS1.PROCLIB and SYS1.IBM.PROCLIB.

Table 5. Summary of new and changed SYS1.PROCLIB and SYS1.IBM.PROCLIB members

Member	Element or feature	Release	Description	Reason for change
AOPSTART	Infoprint Server	z/OS V1R13	Changed member: Added the REGION=512M parameter to the EXEC statement of AOPSTART.	Release enhancements
HZSPROC	BCP	z/OS V2R1	New member: Added to optionally specify the name of the procedure to be used for the automatic start.	IBM Health Checker for z/OS

Chapter 4. Summary of changes to SYS1.SAMPLIB

Table 6 lists the new and changed members of SYS1.SAMPLIB.

Table 6. Summary of new and changed SYS1.SAMPLIB members

Member	Element or feature	Release	Description	Reason for change
BPXMKDIR	z/OS UNIX	z/OS V1R13	Updated: BPXMKDIR was updated to redirect the usr/spool, usr/mail, and usr/lib/cron directories to /var directories if setup work has not already been done.	Symbolic link support
CBRSR1D	OAM	z/OS V1R13	New: Required migration job.	File system support.
EDGCMM01	DFSMrmm	z/OS V1R13	Updated: Information added for RMTAB and VXTAB tables.	Selection of the retention method and VRSEL exclusion.
HZSPROC	BCP	z/OS V2R1	Deleted: Moved to SYS1.PROCLIB.	Health Checker for z/OS
IKJTSO00	TSO/E	z/OS V2R1	Updated: The FTP entry is added in the AUTHCMD and AUTHPGM NAMES section.	TSO/E enhancement
IKYCDB2	Cryptographic Services	z/OS V2R1	Updated: Remove the grant for the DBADM privilege on the database, and remove the grant for EXECUTE privilege on the package.	DB2 enhancements
IKYCDB2	Cryptographic Services	z/OS V1R13	New: Creates DB2 objects for the object store and issued certificate list (ICL).	DB2 repository for object store and issued certificate list (ICL)
IKYCVSAM	Cryptographic Services	z/OS V1R13	Updated: Changed the CISZ values on DEFINE CLUSTER statements to minimize contention.	Release update
IKYSBIND	Cryptographic Services	z/OS V2R1	Updated: Removed the BIND PLAN statement.	DB2 enhancements
IKYSBIND	Cryptographic Services	z/OS V1R13	New: A sample job to create the DB2 package and plan for the object store and issued certificate list (ICL).	DB2 repository for object store and issued certificate list (ICL)
IKYGRNT	Cryptographic Services	z/OS V2R1	New: A sample job to grant execute privilege on the DB2 package for PKI Services to the PKI Services daemon user ID.	DB2 enhancements

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Table 6. Summary of new and changed SYS1.SAMPLIB members (continued)

Member	Element or feature	Release	Description	Reason for change
IKYSETUP	Cryptographic Services	z/OS V2R1	Updated: Includes setup for granular control of administrative functions.	Granular control of administrative functions
		z/OS V2R1	Updated: The variable that determines the key type of the private key generated for the PKI CA certificate supports additional values for secure keys in the token data set (TKDS)	Enterprise PKCS #11 secure key support
		z/OS V1R13	Updated: Allow hardware-generated elliptic curve cryptography (ECC) keys for the CA's private key.	Support for hardware-genera
		z/OS V1R13	Updated: Authorize PKI Services daemon to use DB2 Resource Recovery Services Access Facility (RRSAF).	DB2 repository for object store and issued certificate list (ICL)ted ECC keys
RACDBULD	RACF®	z/OS V2R1	Updated: Information added for DB2 Load Utility statements to process new general resource certificate information (1560) records.	Database Unload of Certificate DNs support
		z/OS V2R1	Updated: Added information for GENREQ certificate deletion.	RACDCERT GENREQ certificate deletion support
RACDBUTB	RACF	z/OS V2R1	Updated: Added information for DB2 CREATE INDEX / CREATE TABLE statements.	Database Unload of Certificate DNs support
		z/OS V2R1	Updated: Added information for GENREQ certificate deletion.	RACDCERT GENREQ certificate deletion support
SPPPACK	BCP	Every release	Changed member: Maintenance.	Release update

Chapter 5. BCP (MVS) summary of interface changes

In addition to the interface changes included in this topic, updates to the BCP resulted in SYS1.PARMLIB and SYS1.SAMPLIB member changes. See Chapter 2, “Summary of changes to SYS1.PARMLIB,” on page 5 and Chapter 4, “Summary of changes to SYS1.SAMPLIB,” on page 21 for those changes.

The BCP interfaces described in this topic are:

- “Callable services for high-level languages”
- “Installation exits”
- “Control blocks” on page 24
- “IPCS Subcommands” on page 25
- “Services and macros” on page 27
- “Messages” on page 26
- “SMF records” on page 34
- “MVS (BCP) system commands” on page 37

Callable services for high-level languages

Table 7 lists the new and changed statements.

There are many documents in the z/OS library that contain callable services. For details about callable services for high-level languages (HLL), see *z/OS MVS Programming: Callable Services for High-Level Languages*.

Table 7. Summary of new and changed BCPii statements

Statement	Release	Description	Reason for change
HWICMD	z/OS V1R13	Changed: Updated parameters	Release update
HWICONN	z/OS V1R13	Changed: Updated parameters	Release update
HWIDISC	z/OS V1R13	Changed: Updated parameters	Release update
HWILIST	z/OS V1R13	Changed: Updated parameters	Release update
HWIQUERY	z/OS V1R13	Changed: Updated parameters	Release update
HWISET	z/OS V1R13	Changed: Updated parameters	Release update

Installation exits

Table 8 lists the new and changed installation exits. You can find detailed information for a particular installation exit in *z/OS MVS Installation Exits*.

Table 8. Summary of new and changed BCP installation exits

Installation exit	Release	Description	Reason for change
CNZ_MSIEXIT	z/OS V1R12	New: New installation exit	Release update

Table 8. Summary of new and changed BCP installation exits (continued)

Installation exit	Release	Description	Reason for change
CSVLLIX1	z/OS V1R12	Changed: <ul style="list-style-type: none"> Updated to include a description of controlling the exit routine through the dynamic exits facility Added recovery routine 	Release update
	z/OS V1R12	Deleted: Removed information about replacing an exit.	
CSVLLIX2	z/OS V1R12	Changed: <ul style="list-style-type: none"> Updated to include a description of controlling the exit routine through the dynamic exits facility Added recovery routine 	Release update
	z/OS V1R12	Deleted: Removed information about replacing an exit.	
IEF_ALLC_EVENT	z/OS V1R12	New: New installation exit	Release update
IEFUJV	z/OS V1R12	Changed: Updated parameter descriptions	Release update
IEFUSI	z/OS V1R12	Changed: Updated parameter descriptions	Release update

Control blocks

There have been no new or changed control blocks.

- For information about new and deleted BCP control blocks, see the Data Areas Web site.

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

Possible actions resulting from changed control blocks

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

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

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

A method for finding changes to MVS control blocks

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

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

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

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

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

IPCS Subcommands

Table 9 lists the new and updated IPCS subcommands. See *z/OS MVS IPCS Commands* and *z/OS MVS System Commands* for more information.

Table 9. Summary of new and changed MVS IPCS subcommands

IPCS subcommand	Release	Description	Reason for change
COPYDUMP	z/OS V2R1	New option: The COPYDUMP subcommand contains a new option for appending dump directories to the dump data set.	Service aids enhancements
DOCPU	z/OS V1R13	New subcommand: A new IPCS subcommand, DOCPU, allows you to obtain processor-related diagnostic data from a stand-alone dump with one command rather than repeating a command for each processor.	Service aids enhancements
RSMDATA	z/OS V1R13	New option: The RSMDATA subcommand contains a new option for specifying high virtual common.	Service aids enhancements
SYSTRACE	z/OS V2R1	New option: The SYSTRACE subcommand contains a new data selection parameter.	Service aids enhancements
	z/OS V1R13	New option: The SYSTRACE subcommand contains new options for specifying CPUMASK(cpu-hexadecimal-mask) and CPUTYPE(ZAAP ZIIP STANDARD).	Service aids enhancements

JCL parameters

You can find complete information about JCL in the following publications:

- *z/OS MVS JCL User's Guide*
- *z/OS MVS JCL Reference*

Beginning in z/OS V2R1:

- Use the DDNAME parameter on the OUTPUT JCL statement to specify the DD statements to apply the specifications on the OUTPUT statement to.
- Use the DSNTYPE parameter on the DD statement to specify a new partitioned data set extended (PDSE), or *library*, and an optional version level for the new PDSE.
- Use the GDGORDER parameter on the DD statement to specify an order in which the generation data sets are processed.

- Use the MAXGENS parameter on the DD statement to specify the maximum number of generations for members in a version 2 PDSE. This requires APAR OA42358.
- Use the MERGE parameter on the OUTPUT JCL statement to specify whether to merge OUTPUT JCL statement parameters with the job output statement.
- Use the REFDD parameter on the DD statement to specify a DSNTYPE for a new data set.
- Use the RLSE subparameter on the SPACE parameter, with a multi-volume sequential data set, to release both unused space on the current volume and allocated space for the data set on subsequent volumes.
- Use the SYMBOLS parameter on the DD statement to request for JES to perform symbol substitution within in-stream data.
- Use the SYMLIST parameter on the DD statement to list the symbols to pass to the internal reader (INTRDR).
- Use the SYMLIST parameter on the EXPORT statement to make specific JCL symbols available to the job step program.
- Use the SYSAFF parameter on the JOB statement to indicate the JES2 members and JES3 systems that are eligible to process the job.
- Use the SYSTEM parameter on the JOB statement to indicate the systems that are eligible to process the job.

Beginning in z/OS V1R13, you can use the FREEVOL parameter to allow different systems in the sysplex to read multivolume tape files more efficiently. The FREEVOL parameter lets you specify whether to allow other jobs to read freed volumes of a multivolume tape file as the volume is dismounted by the job.

Messages

Information on new, changed and deleted messages is necessary to migrate automated operations. Information about new, changed, and deleted BCP messages can be found in Part 3, “Summary of message and code changes for z/OS V1R13,” on page 371.

A method for finding changes to MVS and TSO/E message texts

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

- Part 3, “Summary of message and code changes for z/OS V1R13,” on page 371. This topic is useful during migration.
- Data set SYS1.MSGENU contains information to help you identify changes to message texts more accurately. Using the method described in “Find message text changes with SYS1.MSGENU,” you can find message text changes in one or more releases.

Find message text changes with SYS1.MSGENU

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

This method cannot show changes to the following message types:

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

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

After you install the data set, you can compare the new data set with the data set on the prior system. Depending on how you do the comparison, you can get output like the following.

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

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

For messages text changes, the output might show both I and a D, indicating the replacement of a record in the message.

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

The example denotes that, in message IEE1621, (DEL=R, RD) was replaced by (DEL=R OR RD).

Using this information, you can decide whether to change your automation routines.

Services and macros

Table 10 lists the new and updated macros. See the following books for more detailed information:

- *z/OS MVS Programming: Authorized Assembler Services Reference ALE-DYN*
- *z/OS MVS Programming: Authorized Assembler Services Reference EDT-IXG*
- *z/OS MVS Programming: Authorized Assembler Services Reference LLA-SDU*
- *z/OS MVS Programming: Authorized Assembler Services Reference SET-WTO*
- *z/OS MVS Programming: Assembler Services Reference ABE-HSP*
- *z/OS MVS Programming: Assembler Services Reference IAR-XCT*
- *z/OS MVS Programming: Sysplex Services Reference*
- *z/OS MVS Programming: Workload Management Services*
- *z/OS MVS Programming: Resource Recovery*

Table 10. Summary of new and changed MVS macros

Macro	Release	Description	Reason for change
ATTACHX	z/OS V1R12	The description of the PARAM and PLIST8ARALETs parameters under the ATTACHX macro is updated.	Release update
BLSQMFLD	z/OS V2R1	Update: The BLSQMFLD macro is updated.	Release update
BPXEKDA	z/OS V2R1	Update: The BPXEKDA macro is updated.	Release update

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Table 10. Summary of new and changed MVS macros (continued)

Macro	Release	Description	Reason for change
CALL	z/OS V2R1	Update: The CALL macro is updated.	Release update
CALLRTM	z/OS V2R1	Update: The TYPE=SRBTERM parameter is added.	Release update
CNZCONV	z/OS V2R1	Update: The CNZCONV macro is updated.	Release update
CNZQUERY	z/OS V1R12	Updated reason codes: <ul style="list-style-type: none"> • Reason codes 0804 • Reason codes 0807 	Release update
CSVDYLPA	z/OS V1R12	New option parameters: <ul style="list-style-type: none"> • REQUEST contains new parameters New reason codes: <ul style="list-style-type: none"> • 0841 • 0842 • 0843 • 0848 	Release update
CSVDYNEX	z/OS V1R12	New options: <ul style="list-style-type: none"> • REPLACE • Dynamic Exits Services <ul style="list-style-type: none"> – Add an Exit Routine to an Exit: MESSAGE=FOUNDBUTERROR, PARAM – Define an Exit: EXITTYPE Updated reason codes: <ul style="list-style-type: none"> • 0402 • 080F • 0819 • 081C • 0822 • 0823 • 0827 • 0829 • 082A • 082E 	Release update
CSVDYNL	z/OS V1R12	Updated reason codes: <ul style="list-style-type: none"> • 0806 • 080D • 0820 • 0821 • 083B • 0842 	Release update
CSVINFO	z/OS V2R1	Update: The CSVINFO macro is updated.	Release update

Table 10. Summary of new and changed MVS macros (continued)

Macro	Release	Description	Reason for change
CSVRTLS	z/OS V1R12	Deleted function: <ul style="list-style-type: none"> The RTLS function is withdrawn. References to RTLS and "Using CSVRTLS to Request Run-Time Library Services (RTLS)" are deleted. 	Release update
CTRACE	z/OS V2R1	Update: The CTRACE macro is updated.	Release update
DSPSERV	z/OS V2R1	Update: The DSPSERV macro is updated.	Release update
DYNALLOC	z/OS V2R1	Update: Support for fields DALMAXG and DINRMAXG in the SVC99 parameter list that is input to DYNALLOC will be provided with APAR OA42358.	Release update
ENFREQ	z/OS V2R1	Update: ENF event code 33 is now also issued to signal a change in device monitoring.	APAR OA45662
ESPIE	z/OS V2R1	Update: The ESPIE macro is updated.	Release update
ESPIE	z/OS V1R13	The minimum authorization of the ESPIE macro is updated.	Release update
ESTAEX	z/OS V1R12	New parameter: <ul style="list-style-type: none"> SPIEVERRIDE 	Release update
ETDEF	z/OS V2R1	Update: The ETDEF macro is updated to the architectural limit of 256 entries in an entry table.	Release update
GQSCAN	z/OS V1R12	Performance implications: Using an RNAME provides better performance than using a generic prefix.	Release update
HISSERV	z/OS V2R1	New: <ul style="list-style-type: none"> The HISSERV macro is introduced to configure and retrieve system instrumentation data. 	Release update
HISMT	z/OS V2R1	New: <ul style="list-style-type: none"> The HISMT service is added to retrieve multithreading (MT) metrics. 	Release update
IDENTIFY	z/OS V2R1	Updated: <ul style="list-style-type: none"> The IDENTIFY service is updated. 	Release update
IEAMSCHD	z/OS V2R1	New parameter: <ul style="list-style-type: none"> SRBIDTOKEN=token 	Release update
IEAN4CR	z/OS V2R1	New: <ul style="list-style-type: none"> The IEAN4CR service is added. 	Release update

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Table 10. Summary of new and changed MVS macros (continued)

Macro	Release	Description	Reason for change
IEAN4DL	z/OS V2R1	New: • The IEAN4DL service is added.	Release update
IEAN4NT	z/OS V2R1	New: • The IEAN4NT service is added.	Release update
IEARST64	z/OS V2R1	Updated: • The IEARST64 service is updated to indicate that the maximum size is 128K bytes.	Release update
IARST64	z/OS V1R13	New: LOCALSYSAREA parameter.	Release update
IARVSERV	z/OS V1R12	Updated options: • The source area must not contain pages in the nucleus (read-only, extended read-only, read-write and extended read-write areas).	Release update
IARV64	z/OS V1R13	Updated: • Provided IARV64 REQUEST=LIST options for returning common owner diagnostic data. • Removed the restriction that the IARV64 services cannot be issued in subspace mode.	Release update
IEATDUMP	z/OS V2R1	Updated: • The IEATDUMP service is updated.	
IEATEDS	z/OS V1R13	The IEATEDS macro has been updated for clarification.	Release update
	z/OS V1R12	New: Provides Timed Event Data Services.	
IEATXDC	z/OS V2R1	New: • The IEATXDC service is added.	Release update
IEAVAPE2	z/OS V1R12	New: The support of the Version 2 IEAVAPE callable service.	Release update
IEAVDPE2	z/OS V1R12	New: The support of the Version 2 IEAVDPE callable service.	Release update
IEAVPSE2	z/OS V1R12	New: The support of the Version 2 IEAVPSE callable service.	Release update
IEAVRLS2	z/OS V1R12	New: The support of the Version 2 IEAVRLS callable service.	Release update
IEAVRPI2	z/OS V2R1	Changed: The IEAVRPI2 macro is updated.	Release update
IEAVTPE2	z/OS V1R12	New: The support of the Version 2 IEAVTPE callable service.	Release update
IEAVXFR	z/OS V2R1	Updated: • The IEAVXFR service is updated.	Release update
IEAVXFR2	z/OS V1R12	New: The support of the Version 2 IEAVXFR callable service.	Release update
IEA4APE2	z/OS V1R12	New: The support of the Version 2 IEA4APE callable service.	Release update
IEA4DPE2	z/OS V1R12	New: The support of the Version 2 IEA4DPE callable service.	Release update

Table 10. Summary of new and changed MVS macros (continued)

Macro	Release	Description	Reason for change
IEA4PSE2	z/OS V1R12	New: The support of the Version 2 IEA4PSE callable service.	Release update
IEA4RLS2	z/OS V1R12	New: The support of the Version 2 IEA4RLS callable service.	Release update
IEA4RPI2	z/OS V2R1	New: The IEA4RPI2 macro is updated.	Release update
IEA4TPE2	z/OS V1R12	New: The support of the Version 2 IEA4TPE callable service.	Release update
IEA4XFR	z/OS V2R1	Updated: • The IEA4XFR service is updated.	Release update
IEA4XFR2	z/OS V1R12	New: The support of the Version 2 IEA4XFR callable service.	Release update
IEFDDSRV	z/OS V2R1	Updated: The IEFDDSRV service is updated; see restrictions.	Release update
IEFPRMLB	z/OS V2R1	Updated: The IEFPRMLB service is updated.	Release update
IEFSJSYM	z/OS V2R1	New: • The IEFSJSYM service is added.	Release update
IOSCDR	z/OS V1R12	New parameter: • Worldwide Port Name (WWPN) parameter	Release update
IOSCHPD	z/OS V2R1	New parameter: • ND=xnd (node descriptor) parameter	Release update
IOSCHPD	z/OS V1R12	New parameter: • WWPN parameter	Release update
IOSCUINF	z/OS V2R1	New parameter: • PATHINFO parameter	Release update
IOSFSDSDP	z/OS V1R12	New function: Use to obtain information about configuration and device characteristics for storage devices for the HyperSwap [®] configuration.	Release update
IOSSPOF	z/OS V2R1	• The IOSSPOF service is updated.	Release update
IOSZHPF	z/OS V2R1	Updated: The IOSZHPF macro is updated.	Release update
IQPINFO	z/OS V2R1	New macro: The IQPINFO macro provides PCIe-related information, including any performance statistics.	Release update
ISGLREL	z/OS V1R13	The ISGLREL_UNCOND and ISGLREL_COND parameters have been updated.	Release update
ISGQUERY	z/OS V1R12	Performance implications: RNAME gives better performance than using generic prefix.	Release update
IWMEJOIN	z/OS V1R13	New parameter: The IWMEJOIN macro supports the new SUBTASKS=NO YES parameter. It specifies whether subtasks of the joining task are to be processed. The default is NO.	Release update

Table 10. Summary of new and changed MVS macros (continued)

Macro	Release	Description	Reason for change
IWM4STBG	z/OS V1R13	New parameter: The IWM4STBG macro supports the new SUBTASKS=NO YES parameter. It specifies whether subtasks of the requesting task are to be processed. The default is NO.	Release update
IXCJOIN	z/OS V1R12	New parameters: The IXCJOIN macro supports the following new parameters: <ul style="list-style-type: none"> • CRITICAL • FUNCTION • LOCALCLEANUP • RECOVERYMANAGER • TERMLEVEL 	Release update
IXCMSGC	z/OS V1R13	The CLIENTSRVRTKN parameter is new. The REQUEST parameter includes a new option RELEASEMSG.	Release update
IXCMSGIX	z/OS V1R12	New: The IXCMSGIX macro is the successor of IXCMSGL.	Release update
IXCMSGOX	z/OS V1R12	New: The IXCMSGOX macro is the successor of IXCMSGO.	Release update
IXCQUERY	z/OS V1R13	The parameter SERVERNAME is new. The REQINFO parameter has a new request option SERVERS.	Release update
IXCRECV	z/OS V1R13	The IXCRECV macro is new. It allows you to use XCF signalling and messaging services to help an XCF client receive communications from a server in a sysplex.	Release update
IXCSEND	z/OS V1R13	The IXCSEND macro is new. It allows you to use XCF signalling and messaging services to help an XCF server send data to one or more clients in a sysplex.	Release update
IXCSRVR	z/OS V1R13	The IXCSRVR macro is new. It allows you to use XCF signalling and messaging services to allow an authorized caller to start or stop an instance of a server for communication with clients in a sysplex.	Release update
IXGCONN	z/OS V2R1	Update: Connecting to and disconnecting from a log stream is updated.	Release update
IXGINVNT	z/OS V2R1	Update: The IXGINVNT service is updated.	Release update
IXGINVNT	z/OS V1R12	New option: When updating an existing log stream configuration, the GROUP attribute must be taken into account.	Release update

Table 10. Summary of new and changed MVS macros (continued)

Macro	Release	Description	Reason for change
IXGQUERY	z/OS V2R1	Update: Getting information about a log stream or system logger is updated.	Release update
IXGWRITE	z/OS V1R12	Updated reason code: • 0867 for return code X' 08'	Release update
IXLCONN	z/OS V1R12	New parameters: The IXLCONN macro supports the following new parameters: • CRITICAL • FUNCTION • TERMLEVEL	Release update
IXLCSP	z/OS V1R12	Changed: For the IXLCSP service, neither ELEMENTRATIO nor ELEMENTCOUNT can be specified as zero with LISTCNTLTYPE=ELEMENT.	Release update
IXLLOCK	z/OS V1R13	The IXLLOCK macro has the following new parameters: • HOLDTIME on the OBTAIN or ALTER request • PENDINGWAITTIME on the OBTAIN, ALTER, RELEASE, or PROCESSMULT requests.	Release update
IXLREBLD	z/OS V1R12	Changed: The documentation for the behavior related to DUPLEX(ENABLED) is updated.	Release update
LOAD	z/OS V1R12	Update: Register information is updated.	Release update
LXRES	z/OS V2R1	Update: The LXRES service is updated.	Release update
MCSOPER	z/OS V1R12	Updated parameter: • REQUEST	Release update
MGCRE	z/OS V2R1	The MGCRE service is updated.	Release update
POST	z/OS V2R1	The POST service changed. The SERRET keyword is no longer documented. Use the ERRET keyword instead.	Release update
SDUMP and SDUMPX	z/OS V2R1	The macros have been updated. New options: • HCSAByASID • HCSANoOwner • HCSASysOwner	Release update
	z/OS V1R13	The macros have been updated for clarity.	
	z/OS V1R12	Updated parameter: • PSWREGS	

BCP

Table 10. Summary of new and changed MVS macros (continued)

Macro	Release	Description	Reason for change
SJFREQ	z/OS V2R1	Update: The SJFREQ service is updated.	Release update
STATUS	z/OS V2R1	Update: The STATUS service is updated.	Release update
STCKSYNC	z/OS V2R1	Update: The STCKSYNC service is updated.	Release update
SUSPEND	z/OS V1R13	The example has been updated.	Release update
SVCUPDTE	z/OS V2R1	Update: The SVCUPDTE service is updated.	Release update
SYSEVENT	z/OS V1R12	Updated parameter: • TYPE Changed statements: • SYSEVENT Mnemonics	Release update
SYSSTATE	z/OS V2R1	Update: The SYSSTATE service is updated.	Release update
TIMEUSED	z/OS V2R1	Update: The TIMEUSED service is updated.	Release update
TIMEUSED	z/OS V1R12	Performance implications: Guidance for using TIMEUSED LINKAGE=SYSTEM without the CPU and VECTOR parameters.	Release update
VSMLIST	z/OS V1R13	New parameter: REALPGFMSZ.	Release update
WTO	z/OS V2R1	Update: The WTO service is updated.	Release update
WTOR	z/OS V2R1	Update: The WTOR service is updated.	Release update

SMF records

Updates to *z/OS MVS System Management Facilities (SMF)* include topics in the following list:

- The topic about “SMF record general information and best practices” contains more guidance information that is useful when building an SMF record. Also, multiple tables are updated to show you must build a continuation record instead of a spanned record.
- Specifying parameters for the SMF log stream dump program.
- Best practices for designing SMF records.

Table 11 on page 35 lists the new and updated SMF records. See *z/OS MVS System Management Facilities (SMF)* for more detailed information.

Table 11. Summary of new and changed BCP SMF records

SMF record	Release	Description	Reason for change
Type 6	z/OS V1R13	Updates to File Transfer Section for PSF	Release update
Type 7	z/OS V1R12	Multiple updates	Release update
Type 14	z/OS V2R1	New offset SMF14DSTYPE for Additional data set Characteristics Section (Type 5), new field SMF14CMPTYPE (Type 1).	Release update
	z/OS V1R13	<ul style="list-style-type: none"> • Updates to File Transfer Section for PSF • RAS Section (Type 8) 	Release update
Type 21	z/OS V1R13	Multiple updates	Release update
Type 22	z/OS V2R1	New and changed fields in the Storage Control Section	APAR OA43664
Type 23	z/OS V2R1	Updated for log stream statistics.	Release update
	z/OS V1R13	Multiple updates	Release update
Type 30	z/OS V2R1	<ul style="list-style-type: none"> • Fields updated in the Counter section. New fields include: SMF30_RMCTADJN_Nominal, SMF30_Highest_Task_CPU_Percent, and SMF30_Highest_Task_CPU_Program. • The zEDC usage statistics section has been added. 	Release update and APAR OA45767
	z/OS V1R13	<ul style="list-style-type: none"> • Correction of offset values for Processor Accounting Section • Updates to the description for fields SMF30OST and SMF30OSC • Multiple other updates 	Release update
	z/OS V1R12	Multiple updates	Release update
Type 41	z/OS V2R1	Updated subtype information in Record Environment.	Release update
Type 42	z/OS V2R1	<ul style="list-style-type: none"> • Multiple updates, including new fields added for subtypes 15 and 16 • For subtype 5, new fields added to the following sections: <ul style="list-style-type: none"> – Storage class response time – Volume header section - VTOC data component I/O statistics – Volume header section - VTOC index component I/O statistics – Volume header section - VVDS component I/O statistics • For subtype 6, new fields added to the Data set I/O statistics section 	Release update and APAR OA45662
Type 42	z/OS V1R13	Multiple updates	Release update
	z/OS V1R12	Multiple updates	Release update
Type 60	z/OS V2R1	Multiple updates	Release update
Type 62	z/OS V2R1	Multiple updates	Release update
Type 64	z/OS V2R1	Multiple updates	Release update
	z/OS V1R13	Multiple updates	Release update
	z/OS V1R12	Multiple updates	Release update

BCP

Table 11. Summary of new and changed BCP SMF records (continued)

SMF record	Release	Description	Reason for change
Type 70	z/OS V2R1	Multiple updates; see the “Summary of changes” topic in <i>z/OS MVS System Management Facilities (SMF)</i> for details.	Release update
	z/OS V1R13	Multiple updates	Release update
Type 71	z/OS V2R1	Multiple updates	Release update
	z/OS V1R13	Multiple updates	Release update
Type 72	z/OS V2R1	Multiple updates; see the “Summary of changes” topic in <i>z/OS MVS System Management Facilities (SMF)</i> for details.	Release update
	z/OS V1R13	Multiple updates	Release update
Type 73	z/OS V2R1	Multiple updates	Release update
Type 74	z/OS V2R1	Multiple updates	Release update
Type 75	z/OS V2R1	Multiple updates	Release update
	z/OS V1R13	Multiple updates	Release update
Type 78		Multiple updates; see the “Summary of changes” topic in <i>z/OS MVS System Management Facilities (SMF)</i> for details.	Release update
Type 79	z/OS V2R1	Multiple updates	Release update
	z/OS V1R13	Multiple updates	Release update
Type 82	z/OS V1R13	Multiple updates	Release update
	z/OS V1R12	Multiple updates	Release update
Type 87	z/OS V2R1	Added	Release update
Type 89	z/OS V1R13	Multiple updates	Release update
	z/OS V1R12	Multiple updates	Release update
Type 90	z/OS V2R1	Multiple updates, including new fields: SMF90T34_RMCTADJN_Nominal, SMF90TSS, SMF90NSS, SMF90ESWT, SMF90ETWT, and SMF90 bit for SMF30COUNT, and new subtype 35.	Release update
	z/OS V1R13	New subtypes: 33 and 34	Release update
Type 91	z/OS V2R1	Multiple updates	Release update
Type 99	z/OS V2R1	Multiple updates, including new subtypes 12 and 14.	Release update
	z/OS V1R13	Multiple updates.	Release update
	z/OS V1R12	New offsets: Period data section 1A0 - 1B0 of subtype 2	Release update
Type 104	z/OS V2R1	Multiple updates	Release update
Type 109	z/OS V1R13	References for more information about TCP/IP Statistics and this record are in: <i>z/OS Communications Server: IP Configuration Reference</i>	Consolidation
Type 111	z/OS V2R1	Multiple updates	Release update
Type 113	z/OS V2R1	Multiple updates; see the “Summary of changes” topic in <i>z/OS MVS System Management Facilities (SMF)</i> for details.	Release update
	z/OS V1R13	New subtype	Release update

Table 11. Summary of new and changed BCP SMF records (continued)

SMF record	Release	Description	Reason for change
Type 118	z/OS V1R13	New reference information	Release update
Type 119	z/OS V1R13	New reference information	Release update

MVS (BCP) system commands

Table 12 lists the new and updated MVS system commands. See *z/OS MVS System Commands* for more detailed information.

Table 12. Summary of new and changed MVS System Commands

System Command	Release	Description	Reason for change
ACTIVATE	z/OS V2R1	New option: FORCE	Channel path/PCIe function
	z/OS V1R13	New option: TEST	Release update
CHNGDUMP	z/OS V2R1	New dump mode: REP (replace) New SDUMP keywords: <ul style="list-style-type: none"> • HCSAByASID • HCSANoOwner • HCSASysOwner 	Release update
CMDS	z/OS V1R13	New option: FORCE	Release update
CONFIG	z/OS V2R1	New option: <ul style="list-style-type: none"> • ONLINE and OFFLINE parameters validate and bring resources online and offline. 	Release update
CONTROL	z/OS V2R1	Updated statement for the CONTROL V,USE command: <ul style="list-style-type: none"> • You cannot change the operating mode for HMCS, SMCS, or extended MCS consoles. 	Release update

Table 12. Summary of new and changed MVS System Commands (continued)

System Command	Release	Description	Reason for change
DISPLAY	z/OS V2R1	<p>New commands and options:</p> <ul style="list-style-type: none"> The PIPES option was updated to include display summary about z/OS UNIX pipe usage. ALL displays all UIDs with a pipe create count. The CONSOLES option displays the new HMCS console. For GRS, the SYSTEM option is added. The GTZ option is added, which displays Generic Tracker. The HIS option is added, which displays hardware event data. For IOS, the HYPERWRITE option is added to enable or disable IBM zHyperWrite data replication. The DISPLAY HS,CONFIG command has a new NAME parameter to specify a configuration name for HyperSwap. The IQP option is added, which display IQP information. The PCIE option is added, which display PCIE device information. The PPT option is added to display program properties table (PPT) information. The TRACKDIRLOAD parameter is added to DISPLAY,PROG to display the status of the TRACKDIRLOAD option. For SLIP, the PER parameter is added to display status of PER traps. For SMS, the PDSE VSTOR parameter is added to display PDSE virtual storage usage. <p>Deleted commands:</p> <ul style="list-style-type: none"> DISPLAY OPDATA,TRACKING SETCON TRACKING SET CNIDTR 	<p>Release update and APARs:</p> <ul style="list-style-type: none"> OA44240 OA45662
	z/OS V1R13	<p>New options:</p> <ul style="list-style-type: none"> DISPLAY MSGFLD supports the MSGRATE[,m] option. DISPLAY GRS supports the CONTENTION option. DISPLAY SMS supports SMSMOD and SMSVSAM,QUIESCE options. DISPLAY VIRTSTOR supports LFAREA option. DISPLAY XCF supports CONNECT and SERVERS options. 	Release update
DUMP	z/OS V2R1	<p>New SDATA options:</p> <ul style="list-style-type: none"> HCAS HCNO HCSY 	Release update

Table 12. Summary of new and changed MVS System Commands (continued)

System Command	Release	Description	Reason for change
DUMPDS	z/OS V2R1	New options for dump data set allocation: <ul style="list-style-type: none"> • ADD,DSN • ADD,VOL 	Release update
FORCE	z/OS V2R1	New option: <ul style="list-style-type: none"> • The TCB option is added for TCB address support. 	Release update
MODIFY	z/OS V2R1	New option: <ul style="list-style-type: none"> • Hardware event data collection support is added. 	Release update
RESET	z/OS V2R1	New options: <ul style="list-style-type: none"> • HMCS console options are added to support the new HMCS console. 	Release update
SET	z/OS V2R1	New option: <ul style="list-style-type: none"> • Generic Tracker (GTZ) parameters are added to support GTZ parmlib members. • IQP parameter is added. 	Release update
SET	z/OS V1R13	New option: <ul style="list-style-type: none"> • IXGCNF 	Release update
SETALLOC	z/OS V2R1	New option: <ul style="list-style-type: none"> • The UNITAFF option is added to specify SYSTEMDEFAULT. 	Release update
	z/OS V1R13	New option: LOGTRACK	Release update
SETCEE	z/OS V2R1	New option: <ul style="list-style-type: none"> • Specifies a Language Environment® runtime option. 	Release update
SETCON	z/OS V2R1	New option: <ul style="list-style-type: none"> • Specifies new HMCS console options. 	Release update
SETGRS	z/OS V2R1	New parameter: A new MONITOR parameter that indicates whether to write SMF 87 monitoring records.	Release update
SETGTZ	z/OS V2R1	New command: Use this command for Generic Tracker settings.	Release update
SETSMS	z/OS V2R1	New option: <ul style="list-style-type: none"> • PDSE_SYSEVENT_DONTSWAP 	Release update
SETHS	z/OS V2R1	New options: <ul style="list-style-type: none"> • Specifies security for console authority support. • The SETHS SWAP command has a new NAME parameter to specify a configuration name for HyperSwap. 	Release update and APAR OA44240
SETIOS	z/OS V2R1	New option: The RECOVERY,DCCF parameter supports MESSAGE and WAIT_STATE options. New parameter: The HYPERWRITE parameter enables or disables IBM zHyperWrite data replication.	Release update and APAR OA45662
	z/OS V1R13	Guidance: <ul style="list-style-type: none"> • Supports recovery for a channel path at the CU or device level. 	Release update

Table 12. Summary of new and changed MVS System Commands (continued)

System Command	Release	Description	Reason for change
SETLOAD	z/OS V2R1	New option: <ul style="list-style-type: none"> The IEASM option supports static system symbol definitions. 	Release update
SETLOGR	z/OS V2R1	New option: <ul style="list-style-type: none"> The TRACE CT and DISPLAY LOGGER options support SAF authority. 	Release update
SETLOGR	z/OS V1R13	New commands: <ul style="list-style-type: none"> CTRACE command MONITOR command 	New function
SETOMVS	z/OS V2R1	New option: <ul style="list-style-type: none"> The AUTOCVT and MAXIOBUFUSER options provide Unicode Services updates. 	Release update
	z/OS V1R13	New options: <ul style="list-style-type: none"> LOSTMSG MAXUSERMOUNTSYS MAXUSERMOUNTUSER NONEMPTYMOUNTPT 	Release update
SETPROG	z/OS V2R1	New option: <ul style="list-style-type: none"> The TRACKDIRLOAD option enables tracking of directed load modules. 	Release update
SETPROG	z/OS V1R13	New guidance: <ul style="list-style-type: none"> SVCNUMDEC=svcnunm 	Release update
SETSMS	z/OS V2R1	New options: <ul style="list-style-type: none"> HONOR_DSNTYPE_PDSE can specify that a partitioned data set be created regardless of the values for other data set attributes, such as data set organization or directory blocks. PDSE_SYSEVENT_DONTSWAP specifies that a task in the SMS PDSE or SMS PDSE1 address space must be prevented from getting swapped out while its holding internal PDSE latches or locks. SUPPRESS_SMSMSG specifies whether SMS suppresses IGD17054I, IGD17227I, or IGD17395I messages. 	Release updates
	z/OS V1R13	New option: <ul style="list-style-type: none"> New SUPPRESS_DRMSGS option to specify whether SMS suppresses DELETE/RENAME messages that are issued to the hardcopy log and job log. 	Release update
SETUNI	z/OS V2R1	New options: <ul style="list-style-type: none"> New Unicode 6.0 options support the new Unicode standard 6.0. 	Release update
SETXCF	z/OS V2R1	New option: <ul style="list-style-type: none"> The STOP REBUILD parameter is updated to stop structure duplexing. 	Release update

Table 12. Summary of new and changed MVS System Commands (continued)

System Command	Release	Description	Reason for change
SLIP	z/OS V2R1	New options: <ul style="list-style-type: none"> • For security FACILITY class entity IEASLIP.REFRESH, UPDATE access is added. • For SDATA; HCSAByASID, HCSANoOwner, and HCSASysOwner 	Release update
START	z/OS V2R1	New option: <ul style="list-style-type: none"> • The LLA option is added to specify the CSVLLAnn parmlib member. • Consider not using the SYSTEM or SYSAFF keywords. 	Release update
TRACE	z/OS V2R1	New option: <ul style="list-style-type: none"> • A SYSTRACE_MODE check is added to ensure that your installation does not run with MODE=ON for longer than appropriate. 	Release update
VARY	z/OS V2R1	New option and parameter: <ul style="list-style-type: none"> • With the SPACE option, you can update space statistics in the ACDS for a pool storage group or a DASD volume. • The STANDBY parameter is added for the HMCS console. 	Release update

Chapter 6. CIM summary of interface changes

This topic describes the Common Information Model (CIM) interface changes.

For more detailed information, see *z/OS Common Information Model User's Guide*.

Command-line utilities

Table 13 lists the new CIM command-line utilities that you can use to control or change the CIM server environment.

Table 13. Summary of new CIM command-line utilities

Command name	Release	Description	Reason for change
cimcli	V1R12	Modification: <ul style="list-style-type: none">• The new function <i>modifyInstance</i> allows the modification of an instance residing in the repository.• The new function <i>testInstance</i> allows value testing of an instance.• The function <i>createInstance</i> now allows to specify array values.• A new syntax for instance names for <i>enumerateInstances</i> allows the specification of array values.• New options have been implemented:<ul style="list-style-type: none">-ic sets the includeClassOrigin parameter to true-sort sorts the output• The option -ip for the function <i>invokeMethod</i> has become obsolete.	Release update

Supported profiles

Table 14 lists the new profiles supported by CIM.

Table 14. Summary of new CIM-supported profiles

Property	Release	Description	Reason for change
Host Discovered Resources (HDR) profile	V1R12	The SMI-S profile Host Discovered Resources (HDR) defines the model for the storage devices presented to z/OS.	Release update
Storage Host Bus Adapter (HBA) profile	V1R12	The SMI-S profile Storage Host-Bus-Adapter (HBA) represents the manageable elements of an HBA and optionally, the storage connected to it.	Release update

CIM classes

Table 15 lists the new CIM classes.

Table 15. Summary of new CIM classes

Property	Release	Description	Reason for change
IBMzOS_FCPort	V1R12	Defines the capabilities and management of a Fiber Channel Port device on z/OS.	Release update
IBMzOS_FCPortStatistics	V1R12	Defines the statistics for the FCPort on z/OS.	Release update
IBMzOS_PortController	V1R12	Represents a logical device corresponding to a hardware network port controller on z/OS.	Release update
IBMzOS_Product	V1R12	Aggregates PhysicalElements, software, services or other products on z/OS.	Release update
IBMzOS_SBProtocolEndpoint	V1R12	Represents initiator and target protocol endpoints.	Release update
IBMzOS_SoftwareIdentity	V1R12	Provides descriptive information about a software component.	Release update
Association IBMzOS_ControlledBy	V1R12	Indicates which devices such as IBMzOS_FCPort are controlled by a CIM_Controller such as IBMzOS_PortController on z/OS.	Release update
Association IBMzOS_CSFCPort	V1R12	Associates an IBMzOS_ComputerSystem with an IBMzOS_FCPort .	Release update
Association IBMzOS_CSFCPortController	V1R12	Associates an IBMzOS_ComputerSystem with an IBMzOS_FCPort .	Release update
Association IBMzOS_ElementSoftwareIdentity	V1R12	Allows a Managed Element such as an IBMzOS_PortController to report its software related asset information on z/OS.	Release update
Association IBMzOS_FCPortStatisticalData	V1R12	Associates an IBMzOS_FCPort with IBMzOS_FCPortStatistics .	Release update
Association IBMzOS_InstalledSoftwareIdentity	V1R12	Identifies the system on which a SoftwareIdentity is installed.	Release update
Association IBMzOS_ProductElementComponent	V1R12	Associates an IBMzOS_Product with IBMzOS_PortController .	Release update
Association IBMzOS_SBDeviceSAPImplementation	V1R12	Describes an association between a ServiceAccessPoint (SAP) and how it is implemented.	Release update
Association IBMzOS_SBHostedAccessPoint	V1R12	Associates a Service Access Point and the System on which it is provided.	Release update
Association IBMzOS_SBInitiatorTargetLogicalUnitPath	V1R12	Models a host driver path to a logical unit on z/OS. Associates a logical disk with the protocol endpoints on a storage controller and zCEC.	Release update

Chapter 7. Communications Server summary of interface changes

In addition to the interface changes included in this topic, updates to Communications Server resulted in SYS1.PARMLIB member changes. Refer to Chapter 2, "Summary of changes to SYS1.PARMLIB," on page 5 for more detailed information.

The Communications Server interface changes described in this topic are:

- "Communications Server IP summary of interface changes"
- "Communications Server SNA summary of interface changes" on page 149

The tables in this topic contain a "Reason for change" column that provides the name of the topic in *z/OS Communications Server: New Function Summary* that describes the related functional enhancement.

Communications Server IP summary of interface changes

This topic describes the updates to the following Communications Server IP interfaces:

- "PROFILE.TCPIP configuration file" on page 46
 - "PROFILE.TCPIP statement and parameter changes" on page 46
- Configuration Files (other than PROFILE.TCPIP)
 - "FTP client configuration statements" on page 53
 - "FTP server configuration statements" on page 53
 - "TN3270E Telnet server PROFILE configuration file" on page 53
 - "BEGINVTAM information block" on page 53
 - "TELNETGLOBALS information block" on page 54
 - "TELNETPARMS information block" on page 55
 - "General updates for the non-PROFILE.TCPIP IP configuration files" on page 55
- "RACF interfaces" on page 62
- "Operator commands" on page 63
 - "Netstat operator commands (DISPLAY TCPIP,,NETSTAT)" on page 63
 - "TN3270E Telnet server operator commands" on page 72
 - "General updates of IP operator commands" on page 73
- "TSO commands" on page 77
 - "NETSTAT TSO commands" on page 78
 - "FTP TSO and z/OS UNIX commands" on page 83
 - "FTP subcommands" on page 83
 - "General updates of TSO commands" on page 84
- "z/OS UNIX commands" on page 84
 - "Netstat UNIX commands" on page 85
 - "General updates of z/OS UNIX commands" on page 90
- "Application programming interfaces and network management interfaces" on page 97
 - "FTP client API FCAI control block" on page 97
 - "FTP client API for REXX predefined variables" on page 97
 - "Local IPsec NMI" on page 98
 - "Network security services NMI" on page 100
 - "Real-time application-controlled TCP/IP trace NMI (EZBRCIFR)" on page 102

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- “Real-time network monitoring TCP/IP NMI” on page 103
- “Resolver callable NMI (EZBREIFR)” on page 105
- “SNMP manager API” on page 105
- “Syslog daemon name/token pair” on page 106
- “TCP/IP callable NMI (EZBNMIFR)” on page 106
- “Trace formatting NMI (EZBCTAPI)” on page 117
- “Trusted TCP connections API for Java” on page 117
- “Environment variables” on page 117
- “Socket APIs” on page 118
 - “General updates of socket APIs” on page 118
- “IPCS subcommands” on page 120
 - “CTRACE COMP(SYSTCPDA) subcommand” on page 121
 - “CTRACE COMP(SYSTCPIS) subcommand” on page 121
 - “CTRACE COMP(SYSTCPOT) subcommand” on page 121
 - “TCPIPCS subcommand” on page 121
 - “General updates to IPCS subcommands” on page 124
- “SNMP MIB modules” on page 124
- “User exits” on page 127
- “Application data” on page 128
- “FTP client error codes” on page 129
- “SMF record type 119 enhancements” on page 130
 - “CSSMTP records” on page 130
 - “FTP records” on page 132
 - “IPSec records” on page 133
 - “SMC-R records” on page 135
 - “TCP connection records” on page 135
 - “TCP/IP stack records” on page 136
 - “TN3270E Telnet server records” on page 143
- “z/OS UNIX /etc files” on page 143
- “General updates of IP interfaces” on page 144
- “Samples provided in MVS data set SEZAINST” on page 144
- “Samples provided in z/OS UNIX TCPIP directory” on page 148

PROFILE.TCPIP configuration file

This topic contains the PROFILE.TCPIP statement and parameter changes. The TN3270E Telnet server profile statements are accepted but ignored by the TCP/IP stack. The statements must be specified in a data set configured to the TN3270E Telnet server running in its own address space. Therefore, the Telnet configuration statements are moved from this PROFILE.TCPIP configuration file topic to a general IP configuration file topic: see “TN3270E Telnet server PROFILE configuration file” on page 53.

PROFILE.TCPIP statement and parameter changes

Table 16 lists the new and updated Communications Server PROFILE.TCPIP configuration statements and parameters. See *z/OS Communications Server: IP Configuration Reference* for more detailed information.

Table 16. Summary of new and changed Communications Server PROFILE.TCPIP configuration statements and parameters

Statement	Release	Description	Reason for change
ATMARPSV, ATMLIS, ATMPVC	V2R1	Because support for the ATM device type will be dropped in a future release, these profile statements will no longer be supported then.	IBM Health Checker for legacy device types

Table 16. Summary of new and changed Communications Server PROFILE.TCPIP configuration statements and parameters (continued)

Statement	Release	Description	Reason for change
AUTOLOG	V2R1	Message EZZ0621I or EZZ0622I will be issued on the first cancel of an autologged procedure.	Release update
DEFADDRTABLE	V1R12	New profile statement used to configure the default address selection policy table.	Configurable default address selection policy table
DELETE PORT DELETE PORTRANGE	V2R1	For TCP ports, if no reservation is found for the port or the reservation was deleted in the current profile processing, error message EZZ0328I is issued instead of message EZZ0395I. Message EZZ0395I will continue to be issued for other errors. Update your message automation for this change.	Release update
DEVICE and LINK	V2R1	Support for the DEVICE and LINK profile statements for the following TCP/IP legacy device types will be dropped in a future release: <ul style="list-style-type: none"> • ATM • CDLC • CLAW • HYPERchannel • SNALINK (LU0 and LU6.2) • X.25 	IBM Health Checker for legacy device types
GATEWAY	V2R1	Support for this profile statement will be dropped in a future release. Use the BEGINROUTES/ENDROUTES configuration block to replace your GATEWAY statements. To assist in converting your GATEWAY statements to BEGINROUTES statements, you can take a dump of the TCP/IP stack address space and use the CONVERT parameter on the IPCS TCPIP PROFILE subcommand. The TCPIP command output will contain the information that is specified on the GATEWAY statements converted to the equivalent BEGINROUTES/ENDROUTES statements. See "TCPIP PROFILE" in the IP Diagnosis Guide for more information.	IBM Health Checker for z/OS GATEWAY statement check

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Table 16. Summary of new and changed Communications Server PROFILE.TCPIP configuration statements and parameters (continued)

Statement	Release	Description	Reason for change
GLOBALCONFIG	V2R1	The SMCR parameter is defined to enable and configure Shared Memory Communications over Remote Direct Memory Access (SMC-R) function. The SMCR parameter includes the PFID, PORTNUM, MTU, FIXEDMEMORY, and TCPKEEPMININTERVAL sub-parameters. The NOSMCR parameter is defined to disable SMC-R function.	Shared Memory Communications over Remote Direct Memory Access
	V1R13	Deprecated the SEGMENTATIONOFFLOAD and NOSEGMENTATIONOFFLOAD parameters.	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	V1R13	Added the AUTOIQDX and NOAUTOIQDX parameters. The AUTOIQDX parameter includes the ALLTRAFFIC and NOLARGEDATA sub-parameters.	HiperSockets optimization for intraensemble data networks
	V1R12	A new NOJOIN subparameter is added on the SYSPLEXMONITOR parameter. If NOJOIN is configured in the initial profile, the TCP/IP stack does not join the sysplex group when the stack is started.	Control joining the sysplex XCF group
INTERFACE	V2R1	Can be used to configure IPv4 HiperSockets interfaces (IPAQIDIO) instead of the DEVICE, LINK, and HOME statements.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	V2R1	Can be used to configure IPv4 static VIPA interfaces (VIRTUAL) instead of the DEVICE, LINK, and HOME statements.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	V2R1	For IPAQENET interface types, added new TEMPIP parameter to allow an interface to activate without an IP address assigned. Applications which implement DHCP client support can communicate over the interface to obtain an IP address.	Enable DHCP clients on OSA Interfaces
	V2R1	The SMCR parameter is defined to enable Shared Memory Communications - RDMA (SMC-R) function for IPAQENET and IPAQENET6 statements. The SMCR parameter is valid only for CHPIDTYPE OSD definitions. The NOSMCR parameter is defined to disable SMC-R function.	Shared Memory Communications over Remote Direct Memory Access
	V1R12	For IPAQENET and IPAQENET6 interface types, added new WORKLOADQ and NOWORKLOADQ subparameters to the INBPERF parameter value DYNAMIC to enable or disable the QDIO inbound workload queueing function.	Performance improvements for sysplex distributor connection routing
	V1R12	For IPAQENET and IPAQENET6 interface types, added CHPIDTYPE and CHPID parameters to define interfaces onto the intraensemble data network.	z/OS Communications Server in an ensemble

Table 16. Summary of new and changed Communications Server PROFILE.TCPIP configuration statements and parameters (continued)

Statement	Release	Description	Reason for change
IPCONFIG	V2R1	You can enable QDIOACCELERATOR when IPSECURITY is enabled.	QDIO acceleration coexistence with IP filtering
	V2R1	The SOURCEVIPINTERFACE parameter is added for IPv4 DYNAMICXCF interfaces.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	V1R13	Added CHECKSUMOFFLOAD and NOCHECKSUMOFFLOAD and SEGMENTATIONOFFLOAD and NOSEGMENTATIONOFFLOAD parameters.	OSA-Express4S QDIO IPv6 checksum and segmentation offload
IPCONFIG6	V1R13	Added CHECKSUMOFFLOAD and NOCHECKSUMOFFLOAD and SEGMENTATIONOFFLOAD and NOSEGMENTATIONOFFLOAD parameters.	OSA-Express4S QDIO IPv6 checksum and segmentation offload
IPCONFIG6 (continued)	V1R13	If you do not specify the IGNOREREDIRECT parameter and you are using Intrusion Detection Services (IDS) policy to detect and discard Redirect packets, ICMPv6 Redirect packets are discarded while the policy is active.	Expanded Intrusion Detection Services
	V1R12	Added OSMSECCLASS parameter to define a security class for IP filtering for OSM interfaces.	z/OS Communications Server in an ensemble
IPSEC	V2R1	The DVIPSEC parameter enables the support for Sysplex-Wide Security Associations (SWSA) for IPv6 on a stack that also has the IPSECURITY parameter specified on the IPCONFIG6 statement.	Sysplex-Wide Security Associations for IPv6
NETACCESS	V2R1	The CACHEALL, CACHEPERMIT, and CACHESAME parameters are added to control the level of caching that is used for the results of network access control checks.	Improve auditing of NetAccess rules
NETMONITOR	V2R1	The PROFILE and NOPROFILE subparameters control the creation of both the TCP/IP stack SMF 119 profile record (subtype 4) and the new TN3270E Telnet server SMF 119 profile record (subtype 24).	NMI and SMF enhancements for TCP/IP applications
	V1R12	New CSMAIL, NOCSMAIL, CSSMTP and NOCSSMTP subparameters added for the SMFSERVICE parameter to enable applications to receive the new SMF 119 subtype 48, 49, 50, 51, and 52 records for CSSMTP events.	Management data for CSSMTP
	V1R12	New DVIPA and NODVIPA subparameters added for the SMFSERVICE parameter to enable applications to receive the new SMF 119 records (subtypes 32 - 37) for DVIPA events.	SMF event records for sysplex events
PORT	V2R1	The NOSMCR parameter is defined to disable SMC-R function for the specified port.	Shared Memory Communications over Remote Direct Memory Access

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Table 16. Summary of new and changed Communications Server PROFILE.TCPIP configuration statements and parameters (continued)

Statement	Release	Description	Reason for change
PORTRANGE	V2R1	The NOSMCR parameter is defined to disable SMC-R function for the specified port range.	Shared Memory Communications over Remote Direct Memory Access
	V1R13	The <i>jobname</i> parameter can now include a 1-7 character prefix followed by a wildcard character (*), enabling all job names that match the prefix to access the ports in the range.	Wildcard support for the PORTRANGE statement
SMFCONFIG	V2R1	The SMCRGROUPSTATISTICS and the NOSMCRGROUPSTATISTICS parameters are defined to create SMF 119 subtype 41 interval records for SMC-R link group and link statistics.	Shared Memory Communications over Remote Direct Memory Access
	V2R1	The SMCRLINKEVENT and the NOSMCRLINKEVENT parameters are defined to create SMF 119 subtype 42 and subtype 43 event records for SMC-R link start and end events.	Shared Memory Communications over Remote Direct Memory Access
	V2R1	The IFSTATISTICS and the NOIFSTATISTICS parameters is updated to control the creation of the SMF 119 subtype 44 interval records for IBM 10GbE RoCE Express interface statistics.	Shared Memory Communications over Remote Direct Memory Access
	V1R12	New DVIPA and NODVIPA parameters added to create new SMF 119 records (subtypes 32 - 37) for DVIPA events.	SMF event records for sysplex events
SOMAXCONN	V2R1	Default changed from 10 to 1024.	Enhanced TCP protocol configuration options and default settings
SRCIP	V1R12	The source for a JOBNAME entry can be configured as PUBLICADDRS to control the use of IPv6 public addresses.	Configurable default address selection policy table

Table 16. Summary of new and changed Communications Server PROFILE.TCPIP configuration statements and parameters (continued)

Statement	Release	Description	Reason for change
TCPCONFIG	V2R1	The PFID operand on the SMCR statement is changed to accept a range of values between X'0000' and X'0FFF'.	Shared Memory Communications over RDMA adapter (RoCE) virtualization
	V2R1	Added the following new parameters: <ul style="list-style-type: none"> • CONNECTTIMEOUT • CONNECTINITINTERVAL • FRRTHRESHOLD • KEEPALIVEPROBES • KEEPALIVEPROBEINTERVAL • MAXIMUMRETRANSMITTIME • NAGLE and NONAGLE • QUEUEDRTT • RETRANSMITATTEMPTS • TCPMAXSENDBUFRSIZE • TIMEWAITINTERVAL 	Enhanced TCP protocol configuration options and default settings
	V2R1	SELECTIVEACK and NOSELECTIVEACK parameters are added.	TCP support for selective acknowledgements
	V2R1	The EPHEMERALPORTS parameter is added.	User control of Ephemeral Port Ranges
UDPCONFIG	V2R1	The EPHEMERALPORTS parameter is added.	User control of Ephemeral Port Ranges
VIPABACKUP	V1R12	A new prefix length value is added that can be specified with an IPv6 address to enable the definition of an IPv6 subnet.	Extend sysplex distributor support for DataPower for IPv6
VIPADEFINE	V1R12	A new prefix length value is added that can be specified with an IPv6 address to enable the definition of an IPv6 subnet.	Extend sysplex distributor support for DataPower for IPv6

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Table 16. Summary of new and changed Communications Server PROFILE.TCPIP configuration statements and parameters (continued)

Statement	Release	Description	Reason for change
VIPADISTRIBUTE	V1R12	The following new keywords are added to support the new HotStandby distribution method: <ul style="list-style-type: none"> HOTSTANDBY option on the DISTMETHOD parameter. It indicates the hot standby distribution method. PREFERRED or BACKUP option on the DESTIP parameter. It indicates the server type and a rank value after BACKUP, which shows the rank of a backup target. AUTOSWITCHBACK and NOAUTOSWITCHBACK options for HOTSTANDBY on the DISTMETHOD parameter. They indicate whether the distributor should switch back to the preferred target when it becomes available. HEALTHSWITCH and NOHEALTHSWITCH options for HOTSTANDBY on the DISTMETHOD parameter. They indicate whether the distributor should switch to a backup target when the active target has health problems. 	Sysplex distributor support for hot-standby server
	V1R12	A new keyword ENCAP is added to support distribution to non-z/OS IPv6 targets.	Extend sysplex distributor support for DataPower for IPv6
VIPARANGE	V1R13	A new SAF parameter and its associated <i>resname</i> value are supported. You can use the SAF parameter to restrict the creation of a dynamic VIPA in the specified VIPARANGE subnet to permitted applications. The maximum number of VIPARANGE statements for one stack is now 1024; prior to V1R13, the maximum number was 256.	Improved security granularity for VIPARANGE DVIPAs

Configuration files

This topic includes information about the following configuration statements and files:

- Table 18 on page 53, "FTP server configuration statements"
- Table 17 on page 53, "FTP client configuration statements"
- "TN3270E Telnet server PROFILE configuration file" on page 53
- "General updates for the non-PROFILE.TCPIP IP configuration files" on page 55

The Communications Server PROFILE.TCPIP configuration file updates are in a separate topic; see "PROFILE.TCPIP configuration file" on page 46.

See *z/OS Communications Server: IP Configuration Reference* for more detailed information about all of the Communications Server IP configuration files and statements.

FTP client configuration statements

Table 17 lists the new and updated FTP client configuration statements. See *z/OS Communications Server: IP Configuration Reference* for more detailed information.

Table 17. Summary of new and changed Communications Server FTP client configuration statements

Statement	Release	Description	Reason for change
DSNTYPE	V1R13	Specifies whether newly created physical sequential data sets in the client file system are large or basic format.	FTP support for large-format data sets
EATTR	V1R13	Specifies whether newly created data sets can have extended attributes.	Enhanced FTP support for extended address volumes
SSLV3	V2R1	Controls whether SSLV3 is enabled for connections that are secured using TLS implemented by FTP.	Release update

FTP server configuration statements

Table 18 lists the new and updated FTP server configuration statements. See *z/OS Communications Server: IP Configuration Reference* for more detailed information.

Table 18. Summary of new and changed Communications Server FTP server configuration statements

Statement	Release	Description	Reason for change
APPLNAME	V2R1	New statement that can be used to specify the FTP server application name (applname).	Release update
DSNTYPE	V1R13	Specifies whether newly created physical sequential data sets in the server file system are large or basic format.	FTP support for large-format data sets
EATTR	V1R13	Specifies whether newly created data sets can have extended attributes.	Enhanced FTP support for extended address volumes
SMFDCFG	V2R1	Specifies whether an SMF 119 record for FTP daemon configuration data should be created when starting of the FTP daemon.	NMI and SMF enhancements for TCP/IP applications
SSLV3	V2R1	Controls whether SSLV3 is enabled for connections that are secured using TLS implemented by FTP.	Release update

TN3270E Telnet server PROFILE configuration file

During initialization of the TN3270E Telnet server (Telnet) address space, configuration parameters are read from a configuration PROFILE data set. The PROFILE data set is used to configure Telnet to accept or reject connection requests. You can update the PROFILE data set to change or add statements to support new functions, or to change or add usage rules.

This topic includes tables with the descriptions of the new and changed Telnet PROFILE configuration statements. Refer to *z/OS Communications Server: IP Configuration Reference* for complete information on configuration statements and the PROFILE statement.

BEGINVTAM information block: Table 19 on page 54 includes the PROFILE.TCPIP statements for the BEGINVTAM information block.

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Table 19. Summary of new and changed Communications Server Telnet configuration file - BEGINVTAM block

Statement	Release	Description	Reason for change
MAXTCPSENDQ	V2R1	The new MAXTCPSENDQ parameter is introduced to the PARMSGROUP to allow the customer the ability to limit the amount of storage consumed by a single non-responsive telnet client.	TN3270 client-bound data queueing limit
PASSWORDPHRASE and NOPASSWORDPHRASE as a statement in the PARMSGROUP block.	V1R13	New PASSWORDPHRASE statement provides additional entry space on the solicitor screen for end users to enter either a password or a password phrase. If NOPASSWORDPHRASE is specified, the solicitor screen continues to provide space for a password only.	Enhancements to the TN3270E server
TKOSPECLURECON and TKOGENLURECON statement in the PARMSGROUP block	V1R12	SAMECONNTYPE is a new parameter that is used to ensure that the taker has the same basic or secure connection type as the target.	Enhancements to the TN3270E server

TELNETGLOBALS information block: The TELNETGLOBALS information block is a Telnet configuration block used to provide definitions that apply to all Telnet ports.

Table 20. Summary of new and changed Communications Server Telnet configuration file - TELNETGLOBALS block

Statement	Release	Description	Reason for change
MAXTCPSENDQ	V2R1	The new MAXTCPSENDQ parameter is introduced to allow the customer the ability to limit the amount of storage consumed by a single non-responsive telnet client.	TN3270 client-bound data queueing limit
PASSWORDPHRASE and NOPASSWORDPHRASE	V1R13	New PASSWORDPHRASE statement provides additional entry space on the solicitor screen for end users to enter either a password or a password phrase. If NOPASSWORDPHRASE is specified, the solicitor screen continues to provide space for a password only.	Enhancements to the TN3270E server
SHAREACB and NOSHAREACB	V1R12	New parameter statement to enable ACB sharing for Telnet LUs. You can use ACB sharing to reduce ECSA storage usage for Telnet server configurations that are using model application program definitions to represent Telnet LUs.	Common storage reduction for TN3270E server
SMFPROFILE and NOSMFPROFILE	V2R1	New SMFPROFILE and NOSMFPROFILE parameter statements control the creation of the Telnet SMF 119 configuration record (subtype 24).	NMI and SMF enhancements for TCP/IP applications
SSLV3 and NOSSLV3	V2R1	New SSLV3 and NOSSLV3 parameter statements control the enablement and disablement of the SSLV3 protocol to be used on SECUREPORT connections.	APAR PI28679

Table 20. Summary of new and changed Communications Server Telnet configuration file - TELNETGLOBALS block (continued)

Statement	Release	Description	Reason for change
TKOSPECLURECON and TKOGENLURECON	V1R12	SAMECONNTYPE is a new parameter that is used to ensure that the taker has the same basic or secure connection type as the target.	Enhancements to the TN3270E server

TELNETPARMS information block:

Table 21. Summary of new and changed Communications Server Telnet configuration file - TELNETPARMS block

Statement	Release	Description	Reason for change
MAXTCPSENDQ	V2R1	The new MAXTCPSENDQ parameter is introduced to allow the customer the ability to limit the amount of storage consumed by a single non-responsive telnet client.	TN3270 client-bound data queueing limit
PASSWORDPHRASE and NOPASSWORDPHRASE	V1R13	New PASSWORDPHRASE statement provides additional entry space on the solicitor screen for end users to enter either a password or a password phrase. If NOPASSWORDPHRASE is specified, the solicitor screen continues to provide space for a password only.	Enhancements to the TN3270E server
SSLV3 and NOSSLV3	V2R1	New SSLV3 and NOSSLV3 parameter statements control the enablement and disablement of the SSLV3 protocol to be used on SECUREPORT connections.	APAR PI28679
TKOSPECLURECON and TKOGENLURECON	V1R12	SAMECONNTYPE is a new parameter that is used to ensure that the taker has the same basic or secure connection type as the target.	Enhancements to the TN3270E server

General updates for the non-PROFILE.TCPIP IP configuration files

Table 22 lists the general updates for the Communications Server IP configuration files.

Table 22. Summary of new and changed non-PROFILE.TCPIP configuration files

File	Statement / Entry	Release	Description	Reason for change
certificate bundle specification file	CertBundleOptions	V1R12	New file to identify the location of certificates and certificate revocation that is to be included in a certificate bundle.	<ul style="list-style-type: none"> IPSec support for certificate trust chains and certificate revocation lists IKE version 2 support

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Table 22. Summary of new and changed non-PROFILE.TCPIP configuration files (continued)

File	Statement / Entry	Release	Description	Reason for change
Communications Server SMTP (CSSMTP) configuration file	ExtendedRetry	V1R13	New statement to describe the extended retry function.	CSSMTP extended retry
	Header	V2R1	Use the Header statement to change the behavior of CSSMTP when creating RFC 2822 Mail headers.	CSSMTP mail message date header handling option
	JESSyntaxErrLimit	V1R13	New statement to set the maximum number of syntax errors to be tolerated in a JES spool file.	CSSMTP enhancements
	SMF119	V1R12	New statement to activate the creation of new SMF 119 records, as shown by the ezamlnf.sample.	Management data for CSSMTP
dcas.conf	KEYRING	V2R1	The existing KEYRING keyword is used to define the z/OS UNIX file containing the certificate to be used during the SSL handshake. This keyword is ignored if TLSMECHANISM is ATTLS.	AT-TLS enablement for DCAS
	LDAPPORT	V2R1	The existing LDAPPORT keyword is used to allow authentication of the client certificate by an X.500 host. LDAPPORT is used in combination with LDAPSERVER. This keyword is ignored if TLSMECHANISM is ATTLS.	AT-TLS enablement for DCAS
	LDAPSERVER	V2R1	The existing LDAPSERVER keyword is used to allow authentication of the client certificate by an X.500 host. LDAPSERVER is used in combination with LDAPPORT. This keyword is ignored if TLSMECHANISM is ATTLS.	AT-TLS enablement for DCAS
	SAFKEYRING	V2R1	The existing SAFKEYRING keyword is used to define the RACF-defined key ring containing the certificate to be used during the SSL handshake. This keyword is ignored if TLSMECHANISM is ATTLS.	AT-TLS enablement for DCAS
	STASHFILE	V2R1	The existing STASHFILE keyword is used to specify the key ring password file to the associated key ring file. This password file contains the encrypted password. This keyword is ignored if TLSMECHANISM is ATTLS.	AT-TLS enablement for DCAS
	TLSMECHANISM	V2R1	This new keyword can be used to select whether to use AT-TLS policies or call IBM System SSL directly. See <i>Customizing DCAS for TLS/SSL in z/OS Communications Server: IP Configuration Guide</i> to use either AT-TLS policies (ATTLS) or IBM System SSL. (DCAS). The default is DCAS.	AT-TLS enablement for DCAS
	TLSV1ONLY	V2R1	New parameter to control whether the supported SSL version is limited to TLSv1.0 for connections that are secured using SSL implemented by DCAS.	Release update
	V3CIPHER	V2R1	The existing V3CIPHER keyword is used to specify a subset of the supported SSL V3 cipher algorithms. This keyword is ignored if TLSMECHANISM is ATTLS.	AT-TLS enablement for DCAS
DMD configuration file	DmStackConfig	V2R1	New parameter that can be used to limit the number of filter-match log messages generated for a defensive filter.	Real-time application-controlled TCP/IP trace NMI
IKED configuration file	IkeConfig	V1R12	New FIPS140 parameter.	IPSec support for FIPS 140 cryptographic mode
inetd configuration file	otelnetd	V1R13	The z/OS UNIX Telnet server (otelnetd) supports a new parameter, -g. If it is specified, it will not issue gethostbyaddr or getnameinfo for the client IP address.	Support for bypassing host name lookup in otelnetd

Table 22. Summary of new and changed non-PROFILE.TCPIP configuration files (continued)

File	Statement / Entry	Release	Description	Reason for change
Network security services (NSS) server configuration file /etc/security/nssd	IPSecDisciplineConfig	V1R12	New statement used to specify parameters for the IPSec Discipline.	<ul style="list-style-type: none"> IPSec support for certificate trust chains and certificate revocation lists IKE version 2 support IPSec support for FIPS 140 cryptographic mode
NETRC	N/A	V1R13	Single quotation marks to enclose a password phrase of more than one token are now allowed.	FTP support for password phrases
OSNMP.CONF	N/A	V2R1	New privacy protocol value AESCFB128 can be specified in the privProto field of a statement for an SNMPv3 user, to request AES 128-bit encryption.	Network security enhancements for SNMP
pagent.conf	ServerConnection/ ServerSSLV3CipherSuites	V2R1	z/OS V2R1 Communications Server Policy Agent, centralized Policy Agent now supports TLSv1.1 and TLSv1.2 2-byte ciphers. For detailed information, see the <i>ServerSSLV3CipherSuites</i> parameter of the <i>ServerConnection</i> statement in <i>z/OS Communications Server: IP Configuration Reference</i> .	TLS security enhancements for Policy Agent
	ServicesConnection/Security Basic	V2R1	In z/OS V2R1 Communications Server, the import services between Policy Agent and IBM Configuration Assistant for z/OS Communications Server can have user defined AT-TLS policies to create a secure SSL connection.	TLS security enhancements for Policy Agent
Policy Agent configuration files	IDSAttackCondition	V2R1	You can configure attack detection by using the IP_FRAGMENT value on the AttackType parameter. It detects suspicious fragmented packets for both IPv4 and IPv6, such as fragments that overlay and change the data in the packet, including changes to the length of the packet.	Enhanced IDS IP fragment attack detection
	RouteTable	V2R1	Changed to allow the specification of IPv6 routes and IPv6 dynamic routing parameters. Three parameters are added: <ul style="list-style-type: none"> Multipath6 can be used to indicate whether the multipath routing selection algorithm is enabled for outbound IPv6 traffic by using the policy-based route table. DynamicXCFRoutes6 can be used to indicate whether direct routes to IPv6 dynamic XCF addresses on other TCP/IP stacks should be added to the route table. IgnorePathMtuUpdate6 can be used to indicate whether IPv6 ICMP Packet Too Big messages should be ignored for this route table. 	IPv6 support for policy-based routing
	RoutingRule	V2R1	Changed to allow IPv6 addresses.	IPv6 support for policy-based routing

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Table 22. Summary of new and changed non-PROFILE.TCPIP configuration files (continued)

File	Statement / Entry	Release	Description	Reason for change
Policy Agent configuration files (continued)	IDSAction	V1R13	The following new values are provided on the ActionType Attack parameter: <ul style="list-style-type: none"> ResetConn NoResetConn 	Expanded Intrusion Detection Services
	IDSAttackCondition	V1R13	New attack detection can be configured using the following new values on the ActionType parameter: <ul style="list-style-type: none"> DATA_HIDING GLOBAL_TCP_STALL OUTBOUND_RAW_IPV6 RESTRICTED_IPV6_DST_OPTIONS RESTRICTED_IPV6_HOP_OPTIONS RESTRICTED_IPV6_NEXT_HDR TCP_QUEUE_SIZE <p>The following new parameters can be configured for the new attack detection:</p> <ul style="list-style-type: none"> OptionPadChk and IcmpEmbedPktChk - for the DATA_HIDING attack type RestrictedIPv6OptionRange, RestrictedIPv6OptionRangeRef, and RestrictedIPv6OptionGroupRef - for the RESTRICTED_IPV6_DST_OPTIONS and the RESTRICTED_IPV6_HOP_OPTIONS attack types IPv6NextHdrRange, IPv6NextHdrRangeRef, and IPv6NextHdrGroupRef - for the RESTRICTED_IPV6_NEXT_HDR attack type TcpQueueSize - for the TCP_QUEUE_SIZE attack type IDSExclusion and IDSExclusionRef - for the TCP_QUEUE_SIZE attack type 	Expanded Intrusion Detection Services
		V1R13	New attack detection can be configured using the following new values on the ActionType parameter: <ul style="list-style-type: none"> EE_MALFORMED_PACKET EE_PORT_CHECK EE_LDLC_CHECK EE_XID_FLOOD <p>The following new parameters can be configured for the new attack detection:</p> <ul style="list-style-type: none"> EEXIDTimeout - for the EE_XID_FLOOD attack type IDSExclusion and IDSExclusionRef - for the EE_MALFORMED_PACKET, EE_PORT_CHECK, EE_LDLC_CHECK, and EE_XID_FLOOD attack types 	Intrusion Detection Services support for Enterprise Extender
	IDSExclusion	V1R13	IDSExclusion is a new statement that can be used to exclude remote peers from attack detection.	Expanded Intrusion Detection Services

Table 22. Summary of new and changed non-PROFILE.TCPIP configuration files (continued)

File	Statement / Entry	Release	Description	Reason for change	
Policy Agent configuration files (continued)	IDSScanEventcondition	V1R13	Scan detection for ICMPv6 events can be configured using the new Icmpv6 value on the protocol parameter. IPv6 addresses can be configured for the LocalHostAddr parameter.	Expanded Intrusion Detection Services	
	IDSScanExclusion	V1R13	IPv6 addresses can be configured for the ExcludedAddrPort parameter, allowing remote peers using those addresses to be excluded from scan detection.	Expanded Intrusion Detection Services	
	IDSTRCondition	V1R13	IPv6 addresses can be configured for the LocalHostAddr parameter.	Expanded Intrusion Detection Services	
	IpAddr and IpAddrSet	V1R13	IPv6 addresses can be configured.	Expanded Intrusion Detection Services	
	IpDataOffer		V1R13	When the Integrated Cryptographic Services Facility (ICSF) is started in FIPS 140 compatibility mode and FIPS 140 is not enabled for the TCP/IP stack, the following conditions are no longer required when HowToEncrypt AES_GCM_16, HowToAuth AES_GMAC_128 or HowToAuth AES_GMAC_256 is configured: <ul style="list-style-type: none"> The CRYPTOZ class is active. A SAF profile exist for the FIPSEXEMPT.SYSTOK-SESSIONONLY resource in the CRYPTOZ class. All users of the tunnel have READ access to the SAF resource FIPSEXEMPT.SYSTOK-SESSION-ONLY. Also for HowToEncrypt AES_GCM_16 and HowToAuth AES_GMAC_128 and AES_GMAC_256, the restriction for tunnel traffic is removed. As of V1R13, when FIPS 140 mode is enabled for TCP/IP, tunnels that use the AES-GCM or AES-GMAC combined-mode algorithm are eligible for distribution of traffic using sysplex-wide security associations (SWSA).	Enhanced IPsec support for FIPS 140 cryptographic mode
			V1R12	The following parameters are changed: <ul style="list-style-type: none"> HowToEncap - no longer a required parameter. Default is Tunnel. HowToEncrypt - changed to include new values of AES_CBC and AES_GCM_16. Value of AES is deprecated and treated as a synonym for AES_CBC KeyLength 128. HowToAuth - changed to include new values of Null, AES128_XCBC_96, AES_GMAC_128, AES_GMAC_256, HMAC_SHA1, HMAC_SHA2_256_128, HMAC_SHA2_384_192, and HMAC_SHA2_512_256. HMAC_SHA is deprecated and treated as a synonym for HMAC_SHA1. 	<ul style="list-style-type: none"> IKE version 2 support IPSec support for cryptographic currency
	IpDynVpnAction	V1R12	The HowToEncapIKEv2 parameter is new. <p>The following parameters are changed to allow groups of 19, 20, 21, and 24:</p> <ul style="list-style-type: none"> InitiateWithPfs AcceptablePfs 	IKE version 2 support	
	IpFilterPolicy		V1R12	The RFC4301Compliance parameter is deprecated for V1R12 and later releases.	Release update
V1R12			The FIPS140 parameter is new.	IPSec support for FIPS 140 cryptographic mode	

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Table 22. Summary of new and changed non-PROFILE.TCPIP configuration files (continued)

File	Statement / Entry	Release	Description	Reason for change
Policy Agent configuration files (continued)	IpLocalStartAction	V1R12	The following parameters are new: <ul style="list-style-type: none"> • ICMPCodeGranularity • ICMPTypeGranularity • ICMPv6CodeGranularity • ICMPv6TypeGranularity • MIPv6TypeGranularity 	IKE version 2 support
	IpManVpnAction	V1R12	<ul style="list-style-type: none"> • AuthInboundSa and AuthOutboundSa parameters are changed in that new values are required for the key length for the new algorithms added to the HowToAuth parameter. • EncryptInboundSa and EncryptOutboundSa parameters are changed in that new values are required for the key length for the new algorithms added to the HowToEncrypt parameter. • HowToAuth parameter is changed to include values of AES128_XCBC_96, HMAC_SHA1, HMAC_SHA2_256_128, HMAC_SHA2_384_192, and HMAC_SHA2_512_256. HMAC_SHA is deprecated and treated as a synonym for HMAC_SHA1. • HowToEncrypt parameter is changed to include a new value of AES_CBC. AES is deprecated and treated as a synonym for AES_CBC KeyLength 128. 	<ul style="list-style-type: none"> • IKE version 2 support • IPsec support for cryptographic currency
	IPv6NextHdrGroup and IPv6NextHdrRange	V1R13	IPv6NextHdrGroup and IPv6NextHdrRange are new statements that can be referenced by the RESTRICTED_IPV6_NEXT_HDR attack type to restrict certain next header values in an inbound packet.	Expanded Intrusion Detection Services
	KeyExchangeAction	V1R13	Removed the restriction for AllowNAT that stated that AllowNat is ignored when the IKE version 2 protocol is being used.	Network address translation traversal support for IKE version 2
		V1R12	<p>The following parameters are new:</p> <ul style="list-style-type: none"> • BypassIpValidation • CertificateURLLookupPreference • HowToAuthMe • HowToRespondIKEv1 - introduced as a synonym for the deprecated HowToRespond parameter. • ReauthInterval • RevocationChecking <p>The HowToInitiate parameter is changed. It has a new value of IKEv2.</p> <p>The HowToInitiate parameter is also changed in that the default value is obtained from the HowToInitiate parameter on the KeyExchangePolicy statement.</p>	<ul style="list-style-type: none"> • IKE version 2 support • IPsec support for cryptographic currency

Table 22. Summary of new and changed non-PROFILE.TCPIP configuration files (continued)

File	Statement / Entry	Release	Description	Reason for change
Policy Agent configuration files (continued)	KeyExchangeOffer	V1R12	The following parameters are new: <ul style="list-style-type: none"> HowToVerifyMsgs PseudoRandomFunction The following parameters are changed: <ul style="list-style-type: none"> DHGroup - allows new groups of 19, 20, 21, and 24 HowToAuthMsgs - has new values of SHA2_256, SHA2_384, and SHA2_512 HowToEncrypt - has new value of AES_CBC. AES is deprecated and treated as a synonym for AES_CBC KeyLength 128. 	<ul style="list-style-type: none"> IKE version 2 support IPSec support for cryptographic currency
	KeyExchangePolicy	V1R13	Removed the restriction for AllowNAT that stated that AllowNat is ignored when the IKE version 2 protocol is being used.	Network address translation traversal support for IKE version 2
		V1R12	The following parameters are new: <ul style="list-style-type: none"> ByPassIpValidation CertificateURLLookupPreference HowToInitiate LivenessInterval RevocationChecking The following parameters are changed: <ul style="list-style-type: none"> DHGroup - allows new groups of 19, 20, 21, and 24 HowToAuthMsgs - has new values of SHA2_256, SHA2_384, and SHA2_512 HowToEncrypt - has new value of AES_CBC. AES is deprecated and treated as a synonym for AES_CBC KeyLength 128. 	<ul style="list-style-type: none"> IKE version 2 support IPSec support for certificate trust chains and certificate revocation lists
	LocalSecurityEndpoint	V1R12	The Identity parameter has a new value of KeyID.	IKE version 2 support
	RemoteIdentity	V1R12	The Identity parameter has a new value of KeyID.	IKE version 2 support
	RemoteSecurityEndpoint	V1R12	The Identity parameter has a new value of KeyID.	IKE version 2 support
Policy Agent TTLSConfig files	New TTLSSignatureParms statement	V2R1	New ClientECurves and SignaturePairs parameters	AT-TLS support for TLS v1.2 and related features
	TTLSCipherParms	V2R1	<ul style="list-style-type: none"> New cipher codes and cipher name constants supported on V3CipherSuites. New V3CipherSuites4Char parameter with support for new four character cipher codes. 	AT-TLS support for TLS v1.2 and related features
	TTLSEnvironmentAction	V2R1	New SuiteBProfile parameter	AT-TLS support for TLS v1.2 and related features
	TTLSEnvironmentAction and TTLSConnectionAction	V2R1	New TTLSSignatureParms or TTLSSignatureParmsRef parameter	AT-TLS support for TLS v1.2 and related features
	TTLSEnvironmentAdvancedParms	V2R1	New Renegotiation, RenegotiationCertCheck, and RenegotiationIndicator parameters	AT-TLS support for TLS v1.2 and related features
	TTLSEnvironmentAdvancedParms and TTLSConnectionAdvancedParms	V2R1	New TLSv1.2 parameter	AT-TLS support for TLS v1.2 and related features
Policy client configuration file	ServerSSLv3	V2R1	New parameter to control whether SSLv3 is enabled for the policy client that connects to the server.	Release update

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Table 22. Summary of new and changed non-PROFILE.TCPIP configuration files (continued)

File	Statement / Entry	Release	Description	Reason for change
Resolver setup file	All statements	V2R1	The resolver handles syntax errors differently depending on when the error is detected: <ul style="list-style-type: none"> If the error is detected during the resolver address space initialization, the resolver issues a warning message but continues processing the setup file. The resolver address space initialization continues despite the error. If the error is detected while processing a MODIFY RESOLVER,REFRESH,SETUP command, the resolver issues a warning message and stops processing the setup file. The MODIFY command fails. 	Resolver initialization resiliency
Resolver Setup File SEZAINST(RESSETUP)	UNRESPONSIVETHRESHOLD	V1R13	New AUTOQUIESCE operand specifies whether resolver should automatically stop forwarding DNS queries generated by an application to an unresponsive name server. You must code the GLOBALTCPIPDATA statement if using the AUTOQUIESCE operand.	System resolver autonomic quiescing of unresponsive name servers
		V1R12	New statement specifies the threshold value for when resolver should declare a name server to be unresponsive.	Improved resolver reaction to unresponsive DNS name servers
Sendmail configuration file: /etc/mail/zOS.cf	SSLV3	V2R1	New parameter to control whether SSLV3 is enabled for connections that are secured using System SSL.	Release update
SNMP Manager API configuration file	N/A	V2R1	New privacy protocol value AESCFB128 can be specified in the privProto field of a statement for an SNMPv3 user, to request AES 128-bit encryption.	Network security enhancements for SNMP
	SNMP Configuration Entry	V1R12	A new configuration parameter, authEngineID, is added to the end of the existing SNMPv3 configuration entry parameter list. This new parameter specifies the authoritative engine ID to use when sending an SNMPv2 trap with USM security.	Enhancements to SNMP manager API
SNMPD.CONF	USM_USER	V2R1	New privacy protocol value AESCFB128 can be specified in the privProto field of the statement to request AES 128-bit encryption.	Network security enhancements for SNMP
TCPIP.DATA	NAMESERVER/NSINTERADDR	V1R12	Statement to define the IP address of a name server. Changed so that the IP address can be either IPv4 or IPv6.	Resolver support for IPv6 connections to DNS name servers
	RESOLVERTIMEOUT	V1R12	Statement to define the amount of time resolver waits for a response from a name server. The default is changed from 30 seconds to 5 seconds.	Improved resolver reaction to unresponsive DNS name servers
zOS.cf	CipherLevel	V2R1	z/OS UNIX sendmail CipherLevel statement now supports TLSv1.2 2-byte ciphers. See the <i>CipherLevel</i> statement in the <i>Creating the z/OS specific file</i> topic in <i>z/OS Communications Server: IP Configuration Guide</i> .	TLS security enhancements for sendmail

RACF interfaces

Table 23 on page 63 lists the functions for which new or changed RACF support is available. Sample RACF commands to change the RACF configuration can be found in one of the following members member EZARACF of the installation data set, SEZAINST:

- EZARACF - Contains sample commands for environments where multilevel security is not configured.

- EZARACFM - Contains sample commands for environments where multilevel security is configured.

You can use the function name from the table to search EZARACF for all the commands necessary for the function. See *z/OS Communications Server: IP Configuration Guide* for more information for each function.

Table 23. Summary of new and changed Communications Server RACF interfaces

Function name	Rel.	Description	Reason for change
BINDDVIPARANGE, MODDVIPA	V1R13	<ul style="list-style-type: none"> • New resource in the SERVAUTH class, EZB.BINDDVIPARANGE.sysname.tcpname.resname, controls whether an application can issue a bind socket call to create a specific dynamic VIPA in a VIPARANGE subnet. • New resource in the SERVAUTH class, EZB.MODDVIPA.sysname.tcpname.resname, controls whether an application can do the following actions: <ul style="list-style-type: none"> – Create an application-specific DVIPA, specified by a specific VIPARANGE statement, using the SIOCSVIP A ioctl call, the SIOCSVIP A6 ioctl call, or the MODDVIPA utility – Delete a DVIPA that was created using the same profile and the SIOCSVIP A ioctl call, the SIOCSVIP A6 ioctl call, or the MODDVIPA utility 	Improved security granularity for VIPARANGE DVIPAs
named	V2R1	This application is no longer supported. Remove the application started procedure name from the RACF STARTED class. Remove it from the RACF facility class for resources BPX.SUPERUSER and BPX.STOR.SWAP. Remove it from the RACF SERVAUTH class for facility EZB.INITSTACK.sysname.tcpprocname.	Removal of BIND DNS Name Server from z/OS
Network Management Interface	V2R1	New RACF resource names added for access to the new Real-time application-controlled TCP/IP trace NMI.	Real-time application-controlled TCP/IP trace NMI
Setup Profile for VARY Commands	V2R1	New MVS.VARY.TCPIP.SYNTAXCHECK resource profile in class OPERCMDS can be used to control access to the VARY TCPIP,,SYNTAXCHECK command.	Check TCP/IP profile syntax without applying configuration changes

Operator commands

This topic includes information about the following Communications Server IP operator commands:

- “Netstat operator commands (DISPLAY TCPIP,,NETSTAT)”
- “TN3270E Telnet server operator commands” on page 72
- “General updates of IP operator commands” on page 73

See *z/OS Communications Server: IP System Administrator’s Commands* for more detailed information.

Netstat operator commands (DISPLAY TCPIP,,NETSTAT)

Table 24 on page 64 lists the new and updated Communications Server IP Netstat operator command DISPLAY TCPIP,,NETSTAT. See Table 26 on page 73 for the other Communications Server IP operator command entries.

See *z/OS Communications Server: IP System Administrator’s Commands* for more detailed information about the Communications Server IP operator commands.

All parameters in the following table are for the DISPLAY TCPIP,,NETSTAT operator command.

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Table 24. Summary of new and changed Communications Server Netstat operator commands (DISPLAY TCPIP,,NETSTAT)

Parameters	Release	Description	Reason for change
ACCESS,NETWORK	V2R1	The report displays the setting of the new CACHEALL, CACHEPERMIT, and CACHESAME parameters on the NETACCESS statement.	Improve auditing of NetAccess rules
ALL	V2R1	Added new StartDate and StartTime fields. These fields provide the date and time for the last of one of the following events: <ul style="list-style-type: none"> • UDP bind • TCP bind • TCP listen • TCP connection establishment 	Socket establishment time for Netstat ALL/-A
	V2R1	Displays the names of the routing policy rule and the policy-based routing table used by IP routing for an IPv6 connection.	IPv6 support for policy-based routing
	V2R1	<ul style="list-style-type: none"> • Displays Shared Memory Communications through Remote Direct Memory Access (SMC-R) information for TCP connections. • Accepts a new SMCID filter to display only the TCP connections associated with a specific SMC-R link group or SMC-R link identifier. 	Shared Memory Communications over Remote Direct Memory Access
	V1R13	The output line that begins with the Last Touched field is now displayed after the output lines for the Bytes, Segments, and Dgram In and Out counters	Release update
	V1R13	Report is enhanced to display the following indicators: <ul style="list-style-type: none"> • An indicator of whether a TCP connection's send data flow is stalled, SendStalled • An indicator of whether a TCP server is experiencing a potential connection flood attack, ConnectionFlood 	Expanded Intrusion Detection Services

Table 24. Summary of new and changed Communications Server Netstat operator commands (DISPLAY TCPIP,,NETSTAT) (continued)

Parameters	Release	Description	Reason for change
ALL (continued)	V1R12	Added new fields Ancillary Input Queue and BulkDataIntfName for TCP connections that are using the QDIO inbound workload queueing function.	Performance improvements for streaming bulk data
	V1R12	Displays the new TCP trusted connection flag (TcpTrustedPartner), which indicates that the partner security credentials of a partner within a sysplex or subplex have been retrieved using the SIOCGPARTNERINFO ioctl, or that the SIOCSPARTNERINFO ioctl has been successfully issued or inherited from the listener socket.	Trusted TCP connections
ALLCONN	V2R1	Accepts a new SMCID filter to display only the TCP connections that are associated with a specific SMC-R link group or SMC-R link identifier.	Shared Memory Communications over Remote Direct Memory Access
ARp	V1R13	Displays ARP cache information for an IQDX interface	HiperSockets optimization for intraensemble data networks
CONFIG	V2R1	Added the following fields to the TCP CONFIGURATION TABLE section: <ul style="list-style-type: none"> • TimeWaitInterval • RetransmitAttempt • ConnectTimeOut • ConnectInitInterval • Nagle • KeepAliveProbes • KAProbeInterval • QueuedRTT • FRRThreshold • DefltMaxSndBufSize 	Enhanced TCP protocol configuration options and default settings
	V2R1	The QDIOAccel indicator reflects "Yes" or "SD only" when IP Security is operational. IP Security introduces additional reasons that QDIOAccel might run in the "SD only" mode.	QDIO acceleration coexistence with IP filtering
	V2R1	The SELECTIVEACK field is added to the TCP CONFIGURATION TABLE section.	TCP support for selective acknowledgements

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Table 24. Summary of new and changed Communications Server Netstat operator commands (DISPLAY TCPIP,,NETSTAT) (continued)

Parameters	Release	Description	Reason for change
CONFIG (continued)	V2R1	This report displays information about the EPHEMERALPORTS parameter on TCPCONFIG and UDPCONFIG.	User control of Ephemeral Port Ranges
	V2R1	This report displays information about the SOURCEVIPAINTERFACE parameter on IPCONFIG.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	V2R1	<ul style="list-style-type: none"> Displays new SMCR parameter information in the GLOBALCONFIG section. New SmcrGrpStats field in the Type 119 portion of the SMF parameters section indicates whether SMC-R link group statistics records (SMF subtype 41) are collected. New SmcrLnkEvent field in the Type 119 portion of the SMF parameters section indicates whether the following SMF records are collected: <ul style="list-style-type: none"> SMC-R link start (SMF subtype 42) SMC-R link end (SMF subtype 43) 	Shared Memory Communications over Remote Direct Memory Access
	V1R13	New field AutoIQDX added to the Global Configuration section	HiperSockets optimization for intraensemble data networks
	V1R13	<ul style="list-style-type: none"> Displays whether checksum offload is globally enabled for IPv4 or IPv6 OSA-Express QDIO interfaces. Displays whether segmentation offload is globally enabled for IPv4 or IPv6 OSA-Express QDIO interfaces. 	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	V1R13	The IgRedirect field in the IPv6 Configuration Table section of the report is enhanced. A value of Yes can now indicate that Intrusion Detection Services (IDS) policy is in effect to detect and discard ICMP Redirects.	Expanded Intrusion Detection Services

Table 24. Summary of new and changed Communications Server Netstat operator commands (DISPLAY TCPIP,,NETSTAT) (continued)

Parameters	Release	Description	Reason for change
CONFIG (continued)	V1R12	New OSMSecClass field added to the IPv6 Configuration section to display the setting of the OSMSECCLASS parameter from the IPCONFIG6 profile statement.	z/OS Communications Server in an ensemble
	V1R12	Displays the setting of the NOJOIN subparameter from the GLOBALCONFIG SYSPLEXMONITOR profile statement, which indicates whether the TCP/IP stack joins the sysplex group during stack initialization.	Control joining the sysplex XCF group
	V1R12	<ul style="list-style-type: none"> The SMF parameters section displays the setting of the new DVIPA and NODVIPA parameters. The Network Monitor Configuration Information section displays the setting of the new DVIPA and NODVIPA subparameters for the SMFSERVICE parameter. 	SMF event records for sysplex events
	V1R12	The Network Monitor Configuration Information section displays the setting of the new CSMail, NOCSMAIL, CSSMTP and NOCSSMTP subparameters for the SMFSERVICE parameter.	Management data for CSSMTP
CONN	V2R1	Accepts a new SMCID filter to display only the TCP connections that are associated with a specific SMC-R link group or SMC-R link identifier.	Shared Memory Communications over Remote Direct Memory Access
DEFADDRT	V1R12	New report to display default address selection policy table.	Configurable default address selection policy table

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Table 24. Summary of new and changed Communications Server Netstat operator commands (DISPLAY TCPIP,,NETSTAT) (continued)

Parameters	Release	Description	Reason for change
DEvlinks	V2R1	Displays an IP address of 0.0.0.0 for IPAQENET interfaces that are defined with the TEMPIP parameter.	Enable DHCP clients on OSA Interfaces
	V2R1	<ul style="list-style-type: none"> Displays Shared Memory Communications over Remote Direct Memory Access information for OSD interfaces. Accepts a new SMCID filter to display only the devices that are associated with a specific SMC-R link group or SMC-R link identifier. Accepts a new SMC modifier to display detailed SMC-R information about active RNIC interfaces and their associated SMC-R links and link groups. 	Shared Memory Communications over Remote Direct Memory Access
	V2R1	<ul style="list-style-type: none"> This report displays information about IPv4 HiperSockets interfaces that are configured with the INTERFACE statement for IPAQIDIO. This report displays the datapath address and TRLE name for IPAQIDIO6 interfaces, and IPAQIDIO interfaces defined by the INTERFACE statement. This report displays information about IPv4 static VIPA interfaces that are configured with the INTERFACE statement for VIRTUAL. The INTFNAME/-K filter accepts a HiperSockets TRLE name that allows for the display of all interfaces for a HiperSockets TRLE. 	IPv4 INTERFACE statement for HiperSockets and Static VIPAs

Table 24. Summary of new and changed Communications Server Netstat operator commands (DISPLAY TCPIP,,NETSTAT) (continued)

Parameters	Release	Description	Reason for change
DEvlinks	V1R13	<ul style="list-style-type: none"> Displays whether checksum offload is enabled for an IPAQENET or IPAQENET6 interface. Displays whether segmentation offload is enabled for an IPAQENET or IPAQENET6 interface. 	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	V1R13	Displays information about IQDX interfaces.	HiperSockets optimization for intraensemble data networks
	V1R12	<ul style="list-style-type: none"> Added a ChpidType field for IPAQENET and IPAQENET6 interfaces. Displays information about intraensemble data network and intranode management network interfaces. 	z/OS Communications Server in an ensemble
	V1R12	<ul style="list-style-type: none"> Moved the InbPerf field from the right column to the left column on a new line. Added the WorkloadQueueing field to indicate whether inbound workload queueing is enabled for IPAQENET or IPAQENET6 interfaces. This field is only displayed when InbPerf is Dynamic. 	Performance improvements for sysplex distributor connection routing
HOMe	V2R1	Displays a flag value of I/Internal for IPAQENET interfaces that are defined with the TEMPIP parameter.	Enable DHCP clients on OSA Interfaces
	V2R1	The INTFNAME/-K filter accepts a HiperSockets TRLE name that allows for the display of all interfaces for a HiperSockets TRLE.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs

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Table 24. Summary of new and changed Communications Server Netstat operator commands (DISPLAY TCP/IP,,NETSTAT) (continued)

Parameters	Release	Description	Reason for change
IDS	V1R13	Report is enhanced to display the following items: <ul style="list-style-type: none"> • The ICMPv6 scan rule name in the Scan Detection section • Information about new attack types • The number of TCP servers under a potential connection flood attack, ServersInConnFlood • The number of TCP connections whose send data flow is stalled, TCPStalledConns • The percentage of TCP connections whose send data flow is stalled, TCPStalledConnsPct • An indicator of whether a TCP server is experiencing a potential connection flood attack, ConnFlood in the Intrusion Detection Services TCP Port List section • Both IPv4 and IPv6 addresses in the IP address fields 	Expanded Intrusion Detection Services
	V1R13	Report is enhanced to display information about new attack types.	Intrusion Detection Services support for Enterprise Extender
ND	V1R13	Displays neighbor cache information for an IQDX interface.	HiperSockets optimization for intraensemble data networks
PORTLIST	V2R1	Displays a new flag to indicate whether the port or the port range is disabled for SMC-R.	Shared Memory Communications over Remote Direct Memory Access
ROUTE	V2R1	When the PR=ALL or PR=prname modifier is used to display a policy-based routing table, IPv6 routes are included in the report.	IPv6 support for policy-based routing
	V1R12	<ul style="list-style-type: none"> • Support is added for a new modifier, RADV, to display all of the IPv6 routes created based on information received in router advertisement messages. • Default routes learned from IPv6 router advertisements are displayed with a metric of 1 when the router advertisement indicated a preference of high, 2 when the router advertisement indicated a preference of medium, or 3 when the router advertisement indicated a preference of low. In past releases, these routes were always displayed with a metric of 1. 	Enhancements to IPv6 router advertisement
SRCIP	V1R12	The report is changed to display JOBNAME entries with a source of PUBLICADDRS.	Configurable default address selection policy table

Table 24. Summary of new and changed Communications Server Netstat operator commands (DISPLAY TCPIP,,NETSTAT) (continued)

Parameters	Release	Description	Reason for change
STATS	V2R1	Displays a new SMCR statistics section. The SMC-R statistics are displayed when no PROTOCOL modifier is specified, or when PROTOCOL=TCP is specified as the modifier value.	Shared Memory Communications over Remote Direct Memory Access
	V2R1	This report displays statistics about the usage of ephemeral ports for both TCP and UDP.	User control of Ephemeral Port Ranges
	V1R13	Report is enhanced to display the following information: <ul style="list-style-type: none"> The number of TCP connections whose send data flow is stalled, Current Stalled Connections The number of TCP servers under a potential connection flood attack, Current Servers in Connection Flood 	Expanded Intrusion Detection Services
	V1R12	Added new field, Segments Received on OSA Bulk Queues, which indicates the total number of segments received for all TCP connections using the bulk data ancillary input queue of the QDIO inbound workload queueing function.	Performance improvements for streaming bulk data
TTLS	V2R1	Reports are updated to show four-character cipher code, TLSv1.2 protocol, and new policy attributes	AT-TLS support for TLS v1.2 and related features
VDPT	V1R12	The section of the report containing the Dynamic VIPA Destination Port Table for non-z/OS targets can now show IPv6 non-z/OS distribution targets.	Extend sysplex distributor support for DataPower for IPv6
	V1R12	In the display for a distributed DVIPA, the distribution method is no longer displayed in the Flg field. The distribution method is now displayed in a new DistMethod field. The DistMethod field is not included in the short format display unless the DETAIL parameter is used. The Flg field can now indicate the HotStandby target state, active (V or Active) or backup (K or Backup) depending on whether the Short or Long format display is used. If the new distribution method HotStandby is displayed, a new SrvType field indicates the server type (Preferred or Backup).	Sysplex distributor support for hot-standby server

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Table 24. Summary of new and changed Communications Server Netstat operator commands (DISPLAY TCPIP,,NETSTAT) (continued)

Parameters	Release	Description	Reason for change
VIPADCFG	V1R13	The new SAF name field is displayed if the SAF parameter is configured on the VIPARANGE statement.	Improved security granularity for VIPARANGE DVIPAs
	V1R12	The new IPv6 prefix length field is shown if it was configured. If used with DETAIL, a new value ENCAP can be displayed in the routing type (RtgType) field. ENCAP indicates that IPv6 routing encapsulation is used to forward requests.	Extend sysplex distributor support for DataPower for IPv6
	V1R12	In the display for a distributed DVIPA, the distribution method is no longer displayed in the Flg field. The distribution method is now displayed in a new DistMethod field. The DistMethod field is not included in the short format display unless the DETAIL parameter is used. If the new distribution method HotStandby is displayed, a new SrvType field indicates the server type, Preferred or Backup. If the server type is Backup, the Rank of the backup is also displayed. If the distribution method is the new HOTSTANDBY distribution method and the DETAIL parameter is specified, the settings for AUTOSWITCHBACK and HEALTHSWITCH are also displayed.	Sysplex distributor support for hot-standby server
VIPADyn	V2R1	When displaying information about DVIPAs with an origin of VIPARANGE IOCTL, an additional field indicates if the DVIPA was created with affinity.	Affinity for application-instance DIVPAs

TN3270E Telnet server operator commands

Table 25 includes the descriptions of the new and changed TN3270E Telnet server operator commands. Refer to *z/OS Communications Server: IP System Administrator's Commands* for complete information on Telnet operator commands.

Table 25. Summary of new and changed Communications Server TN3270E Telnet server operator commands

Command	Release	Description	Reason for change
DISPLAY TCPIP,tproc,CONNECTION	V2R1	Reports are updated to show four-character cipher code, TLSv1.2 protocol, and new policy attributes	AT-TLS support for TLS v1.2 and related features
DISPLAY TCPIP,tproc,CONNECTION,CONN=xx	V1R13	A new column is added to show if PASSWORDPHRASE is specified.	Enhancements to the TN3270E server

Table 25. Summary of new and changed Communications Server TN3270E Telnet server operator commands (continued)

Command	Release	Description	Reason for change
DISPLAY TCPIP, <i>tnproc</i> , PROFILE	Every release	Displays information about what profile-wide parameters are in effect for each profile, which profiles are still being used, and how many users are on each profile. Summary and Detail displays are updated with the latest parameters. See message EZZ6060I for details.	Release update
	V1R13	A new column is added to show if PASSWORDPHRASE is specified.	Enhancements to the TN3270E server
DISPLAY TCPIP,TELNET	V1R13	A summary display showing the name, version, and state of the TN3270E Telnet servers that are or were running.	Enhancements to the TN3270E server
DISPLAY TCPIP, <i>tnproc</i> , <TELNET>, PROFILE	V2R1	The value of MAXTCPSENDQ is added to the output of this command.	TN3270 client-bound data queuing limit

General updates of IP operator commands

Table 26 lists the new and updated Communications Server IP operator commands, **except** the Netstat operator command DISPLAY TCPIP,,NETSTAT and the Telnet operator commands. See the following tables for those commands:

- Table 24 on page 64, IP Netstat operator commands (DISPLAY TCPIP,,NETSTAT)
- Table 25 on page 72, Telnet operator commands

Table 26. General summary of new and changed Communications Server operator commands

Command	Parameters	Release	Description	Reason for change
DISPLAY TCPIP,,HELP	TRACE	V2R1	New parameter that provides a help message for the new DISPLAY TCPIP,,TRACE command syntax.	Real-time application-controlled TCP/IP trace NMI
	DEFADDRT	V1R12	The syntax of the new DISPLAY TCPIP,,NETSTAT,DEFADDRT command is displayed.	Configurable default address selection policy table
	N/A	V1R12	The new OSAINFO command is displayed as one of the supported DISPLAY TCPIP commands.	Operator command to query and display OSA information
	OSAINFO	V1R12	The syntax of the new OSAINFO command is displayed.	Operator command to query and display OSA information
	ROUTE	V1R12	The displayed syntax of the DISPLAY TCPIP,,NETSTAT,ROUTE command includes the new RADV command modifier.	Enhancements to IPv6 router advertisement

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Table 26. General summary of new and changed Communications Server operator commands (continued)

Command	Parameters	Release	Description	Reason for change
DISPLAY TCPIP,OMPROUTE	IPV6OSPF,IF,NAME= <i>if_name</i>	V2R1	The report is enhanced to display the number of IPv6 OSPF packets that are received on the interface that contained errors (# ERR PKTS RCVD), such as bad packet type, bad length, or bad checksum.	Fix OMPROUTE vulnerability to malformed packets
	IPV6OSPF,NBR,ID= <i>router-id</i>	V2R1	The report is enhanced to display the number of IPv6 link state advertisements received (# ERR LS RCVD) from the neighbor that were unexpected or contained errors, such as bad advertisement type, bad length, or bad checksum.	Fix OMPROUTE vulnerability to malformed packets
	OSPF,IF,NAME= <i>if_name</i>	V2R1	The report is enhanced to display the number of IPv4 OSPF packets that were received on the interface that contained errors (# ERR PKTS RCVD), such as bad packet type, bad length, or bad checksum.	Fix OMPROUTE vulnerability to malformed packets
	OSPF,NBR,IPADDR= <i>ip_addr</i>	V2R1	The report is enhanced to display the number of IPv4 link state advertisements received (# ERR LS RCVD) from the neighbor that were unexpected or contained errors, such as bad advertisement type, bad length, or bad checksum.	Fix OMPROUTE vulnerability to malformed packets
	OPTIONS	V2R1	Added new report to display the OMPROUTE GLOBAL_OPTIONS configuration information. Ignore_Undefined_Interfaces is the only one global option.	OMPROUTE adjacency preservation improvements
	RT6TABLE	V2R1	<ul style="list-style-type: none"> Added the PRTABLE=ALL parameter to display routes in all OMPROUTE IPv6 policy-based routing tables. Added the PRTABLE=tablename parameter to display routes in a single OMPROUTE IPv6 policy-based routing table 	IPv6 support for policy-based routing

Table 26. General summary of new and changed Communications Server operator commands (continued)

Command	Parameters	Release	Description	Reason for change
DISPLAY TCPIP,,OMPROUTE (continued)	IPV6OSPF,ALL	V1R13	Report includes the new RouterID configuration source definition from an OSPF configuration statement or the assigned interface name. The source is displayed after the RouterID value.	TCP/IP serviceability enhancements
	OSPE,STATISTICS	V1R13	Report includes the new RouterID configuration source definition from an OSPF configuration statement or the assigned interface name. The source is displayed after the RouterID value.	TCP/IP serviceability enhancements
	RT6TABLE	V1R12	Default routes learned from IPv6 router advertisements are displayed with a metric of 1 when the router advertisement indicated a preference of high, 2 when the router advertisement indicated a preference of medium, or 3 when the router advertisement indicated a preference of low. In past releases, these routes were always displayed with a metric of 0.	Configurable default address selection policy table
DISPLAY TCPIP,,OSAINFO	N/A	V1R12	New command that displays OSA-Express QDIO datapath device information, including registered addresses and routing variables.	Operator command to query and display OSA information
DISPLAY TCPIP,,STOR	N/A	V2R1	Displays the 64-bit storage allocated for Shared Memory Communications over Remote Direct Memory Access (SMC-R) processing.	Shared Memory Communications over Remote Direct Memory Access
	N/A	V1R13	Output display is restructured to reflect the 31-bit storage and 64-bit storage usage. See message EZZ8453I for details.	Increased CTRACE and VIT capacity
	N/A	V1R12	Dynamic LPA module storage removed from ECSA storage usage and placed in new CSA MODULES storage usage.	Enhancements to the TCP/IP storage display
DISPLAY TCPIP,,TRACE	N/A	V2R1	New command that provides information about applications that are using the Real-time application-controlled TCP/IP trace NMI.	Real-time application-controlled TCP/IP trace NMI

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Table 26. General summary of new and changed Communications Server operator commands (continued)

Command	Parameters	Release	Description	Reason for change
MODIFY CSSMTP	DISPLAY,CONFIG	V2R1	Displays the Header configuration statement	CSSMTP mail message date header handling option
	FLUSHRetry,AGE= <i>day</i>	V1R13	Flush extended retry mail over AGE= days old.	CSSMTP extended retry
	DISPLAY,CONFIG	V1R13	Displays the new JESSyntaxErrLimit statement value.	CSSMTP enhancements
	DISPLAY,CONFIG	V1R12	Command to display the SMF119 configuration parameters.	Management data for CSSMTP
MODIFY DCAS	N/A	V1R12	New command which provides the modification of DCAS debug level after the DCAS server has been started.	Digital certificate access server (DCAS) MODIFY command for debug level
MODIFY DMD	DISPLAY	V2R1	The display output includes the setting of the new DefaultLogLimit parameter.	Limit defensive filter logging
	REFRESH	V2R1	The value of the new DefaultLogLimit parameter can be changed by updating the DMD configuration file and issuing MODIFY DMD,REFRESH.	Limit defensive filter logging
MODIFY IKED	DISPLAY	V1R12	Report includes the following new field: FIPS140	IPSec support for FIPS 140 cryptographic mode
MODIFY NSSD	DISPLAY	V1R12	Report includes the following new fields: <ul style="list-style-type: none"> FIPS140 URLCacheInterval CertificateURL CertificateBundleURL 	<ul style="list-style-type: none"> IPSec support for certificate trust chains and certificate revocation lists IPSec support for FIPS 140 cryptographic mode
	REFRESH	V1R12	Updated to indicate whether cached certificate URL data should be flushed.	<ul style="list-style-type: none"> IPSec support for certificate trust chains and certificate revocation lists IKE version 2 support
MODIFY OMPROUTE	IPV6OSPF,ALL	V1R13	Report includes the new RouterID configuration source definition from an OSPF configuration statement or the assigned interface name. The source is displayed after the RouterID value.	TCP/IP serviceability enhancements
	OSPF,STATISTICS	V1R13	Report includes the new RouterID configuration source definition from an OSPF configuration statement or the assigned interface name. The source is displayed after the RouterID value.	TCP/IP serviceability enhancements

Table 26. General summary of new and changed Communications Server operator commands (continued)

Command	Parameters	Release	Description	Reason for change
MODIFY omproute_procname	RT6TABLE	V2R1	<ul style="list-style-type: none"> Added the PRTABLE=ALL parameter to display routes in all OMPROUTE IPv6 policy-based routing tables. Added the PRTABLE=tablename parameter to display routes in a single OMPROUTE IPv6 policy-based routing table 	IPv6 support for policy-based routing
MODIFY RESOLVER	DISPLAY	V1R13	When the autonomic quiesce of unresponsive name servers function is active, message EZD2035I is displayed for each name server in the global TCPIP.DATA file.	System resolver autonomic quiescing of unresponsive name servers
	REFRESH[,SETUP=]	V1R13	When the autonomic quiesce of unresponsive name servers function is active after completion of the MODIFY command processing, message EZD2035I is displayed for each name server in the global TCPIP.DATA file.	System resolver autonomic quiescing of unresponsive name servers
VARY TCPIP,, DATTRACE	N/A	V1R12	Data trace will automatically create new start and end records for TCP and UDP sockets.	Data trace records for socket data flow start and end
VARY TCPIP,,DROP	PORT=, JOBNAME=, ASID=	V1R12	The command is enhanced to drop all TCP connections associated with server applications. The new parameters are used as filters to identify the server or servers whose TCP connections should be dropped	Command to drop all connections for a server
VARY TCPIP,,SYNTAXCHECK	N/A	V2R1	New command that can be used to check the syntax of TCP/IP profile configuration statements without affecting the system operation or network configuration.	Check TCP/IP profile syntax without applying configuration changes

TSO commands

This topic includes information about the following TSO commands:

- “NETSTAT TSO commands” on page 78
- “FTP TSO and z/OS UNIX commands” on page 83
- “General updates of IP operator commands” on page 73

See *z/OS Communications Server: IP System Administrator’s Commands* for more detailed information about the Communications Server TSO commands.

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NETSTAT TSO commands

Table 27 lists the new and updated Communications Server NETSTAT TSO command.

See *z/OS Communications Server: IP System Administrator's Commands* for more detailed information about the Communications Server TSO commands.

Table 27. Summary of new and changed Communications Server NETSTAT TSO commands

Parameter	Release	Description	Reason for change
ALL	V2R1	Added new StartDate and StartTime fields. These fields provide the date and time for the last of one of the following events: <ul style="list-style-type: none"> • UDP bind time • TCP bind time • TCP listen time • TCP connection establishment time 	Socket establishment time for Netstat ALL/-A
	V2R1	Displays the names of the routing policy rule and the policy-based routing table used by IP routing for an IPv6 connection	IPv6 support for policy-based routing
	V2R1	<ul style="list-style-type: none"> • Displays Shared Memory Communications over Remote Direct Memory Access (SMC-R) information for TCP connections. • Accepts a new SMCLID filter to display only the TCP connections associated with a specific SMC-R link group or SMC-R link identifier. 	Shared Memory Communications over Remote Direct Memory Access
	V1R13	The output line that begins with the Last Touched field is now displayed after the output lines for the Bytes, Segments, and Dgram In and Out counters	Release update
	V1R13	Report is enhanced to display the following indicators: <ul style="list-style-type: none"> • The number of TCP connections whose send data flow is stalled, Current Stalled Connections • The number of TCP servers under a potential connection flood attack, Current Servers in Connection Flood 	Expanded Intrusion Detection Services
	V1R12	Added new fields Ancillary Input Queue and BulkDataIntfName for TCP connections that are using the QDIO inbound workload queueing function.	Performance improvements for streaming bulk data
	V1R12	Displays the new TCP trusted connection flag (TcpTrustedPartner), which indicates that the partner security credentials of a partner within a sysplex or subplex have been retrieved using the SIOCGPARTNERINFO ioctl, or that the SIOCSPARTNERINFO ioctl has been successfully issued or inherited from the listener socket.	Trusted TCP connections
ALLCONN	V2R1	Accepts a new SMCID filter to display only the TCP connections associated with a specific SMC-R link group or SMC-R link identifier.	Shared Memory Communications over Remote Direct Memory Access
ARp	V1R13	Displays ARP cache information for an IQDX interface.	HiperSockets optimization for intraensemble data networks

Table 27. Summary of new and changed Communications Server NETSTAT TSO commands (continued)

Parameter	Release	Description	Reason for change
CONFIG	V2R1	Added the following fields to the TCP CONFIGURATION TABLE section: <ul style="list-style-type: none"> • TimeWaitInterval • RetransmitAttempt • ConnectTimeOut • ConnectInitInterval • Nagle • KeepAliveProbes • KAProbeInterval • QueuedRTT • FRRThreshold • DefltMaxSndBufSize 	Enhanced TCP protocol configuration options and default settings
	V2R1	<ul style="list-style-type: none"> • Displays new SMCR parameter information in the GLOBALCONFIG section. • New SmcrGrpStats field in the Type 119 portion of the SMF parameters section indicates whether SMC-R link group statistics records (SMF subtype 41) are collected. • New SmcrLnkEvent field in the Type 119 portion of the SMF parameters section indicates whether the following SMF records are collected: <ul style="list-style-type: none"> – SMC-R link start (SMF subtype 42) – SMC-R link end (SMF subtype 43) 	Shared Memory Communications over Remote Direct Memory Access
	V2R1	The QDIOAccel indicator reflects "Yes" or "SD only" when IP Security is operational. IP Security introduces additional reasons that QDIOAccel might run in the "SD only" mode.	QDIO acceleration coexistence with IP filtering
	V2R1	The SELECTIVEACK field is added to the TCP Configuration Table section.	TCP support for selective acknowledgements
	V2R1	This report displays information about the EPHEMERALPORTS parameter on TCPCONFIG and UDPCONFIG.	User control of Ephemeral Port Ranges
	V2R1	This report displays information about the SOURCEVIPAINTERFACE parameter on IPCONFIG.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	V1R13	New field AutoIQDX added to the Global Configuration section.	HiperSockets optimization for intraensemble data networks
	V1R13	<ul style="list-style-type: none"> • Displays whether checksum offload is globally enabled for IPv4 or IPv6 OSA-Express QDIO interfaces. • Displays whether segmentation offload is globally enabled for IPv4 or IPv6 OSA-Express QDIO interfaces. 	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	V1R13	The IgRedirect field in the IPv6 Configuration Table section of the report is enhanced. A value of Yes can now indicate that Intrusion Detection Services (IDS) policy is in effect to detect and discard ICMP Redirects.	Expanded Intrusion Detection Services

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Table 27. Summary of new and changed Communications Server NETSTAT TSO commands (continued)

Parameter	Release	Description	Reason for change
CONFIG (continued)	V1R12	New OSMSecClass field added to the IPv6 Configuration section to display the setting of the OSMSECCLASS parameter from the IPCONFIG6 profile statement.	z/OS Communications Server in an ensemble
	V1R12	Displays the setting of the NOJOIN subparameter from the GLOBALCONFIG SYSPLEXMONITOR profile statement, which indicates whether the TCP/IP stack joins the sysplex group during stack initialization.	Control joining the sysplex XCF group
	V1R12	<ul style="list-style-type: none"> The SMF parameters section displays the setting of the new DVIPA and NODVIPA parameters. The Network Monitor Configuration Information section displays the setting of the new DVIPA and NODVIPA subparameters for the SMFSERVICE parameter. 	SMF event records for sysplex events
	V1R12	The Network Monitor Configuration Information section displays the setting of the new CSMAIL, NOCSMAIL, CSSMTP and NOCSSMTP subparameters for the SMFSERVICE parameter.	Management data for CSSMTP
CONN	V2R1	Accepts a new SMCID filter to display only the TCP connections associated with a specific SMC-R link group or SMC-R link identifier.	Shared Memory Communications over Remote Direct Memory Access
DEFADDRT	V1R12	New report to display default address selection policy table.	Configurable default address selection policy table
DEvlinks	V2R1	Displays an IP address of 0.0.0.0 for IPAQENET interfaces that are defined with the TEMPIP parameter.	Enable DHCP clients on OSA Interfaces
	V2R1	<ul style="list-style-type: none"> This report displays information about IPv4 HiperSockets interfaces that are configured with the INTERFACE statement for IPAQIDIO. This report displays information about IPv4 static VIPA interfaces that are configured with the INTERFACE statement for VIRTUAL. The INTFNAME/-K filter accepts a HiperSockets TRLE name that allows for the display of all interfaces for a HiperSockets TRLE. 	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	V2R1	<ul style="list-style-type: none"> Displays Shared Memory Communications over Remote Direct Memory Access (SMC-R) information for OSD interfaces. Accepts a new SMCID filter to display only the devices that are associated with a specific SMC-R link group or SMC-R link identifier. Accepts a new SMC modifier to display detailed SMC-R information about active RNIC interfaces and their associated SMC-R links and link groups. 	Shared Memory Communications over Remote Direct Memory Access

Table 27. Summary of new and changed Communications Server NETSTAT TSO commands (continued)

Parameter	Release	Description	Reason for change
DEvlinks (continued)	V1R13	Displays information about IQDX interfaces.	HiperSockets optimization for intraensemble data networks
	V1R13	<ul style="list-style-type: none"> Displays whether checksum offload is enabled for an IPAQENET or IPAQENET6 interface. Displays whether segmentation offload is enabled for an IPAQENET or IPAQENET6 interface. 	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	V1R12	<ul style="list-style-type: none"> Added a ChpidType field for IPAQENET and IPAQENET6 interfaces. Displays information about intraensemble data network and intranode management network interfaces. 	z/OS Communications Server in an ensemble
	V1R12	<ul style="list-style-type: none"> Moved the InbPerf field from the right column to the left column on a new line. Added the WorkloadQueueing field to indicate whether inbound workload queueing is enabled for IPAQENET or IPAQENET6 interfaces. This field is only displayed when InbPerf is Dynamic. 	Performance improvements for sysplex distributor connection routing
HOMe	V2R1	Displays a flag value of I/Internal for IPAQENET interfaces that are defined with the TEMPIP parameter.	Enable DHCP clients on OSA Interfaces
	V2R1	The INTFNAME/-K filter accepts a HiperSockets TRLE name that allows for the display of all interfaces for a HiperSockets TRLE.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
IDS	V1R13	Report is enhanced to display the following information: <ul style="list-style-type: none"> The ICMPv6 scan rule name in the Scan Detection section Information about new attack types The number of TCP servers under a potential connection flood attack, ServersInConnFlood The number of TCP connections whose send data flow is stalled, TCPStalledConns The percentage of TCP connections whose send data flow is stalled, TCPStalledConnsPct An indicator of whether a TCP server is experiencing a potential connection flood attack, ConnFlood in the Intrusion Detection Services TCP Port List section Both IPv4 and IPv6 addresses in the IP address fields 	Expanded Intrusion Detection Services
	V1R13	Report is enhanced to display information about new attack types.	Intrusion Detection Services support for Enterprise Extender
ND	V1R13	Displays Neighbor cache information for an IQDX interface.	HiperSockets optimization for intraensemble data networks
PORTLIST	V2R1	Displays a new flag to indicate whether the port or the port range is disabled for SMC-R.	Shared Memory Communications over Remote Direct Memory Access

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Table 27. Summary of new and changed Communications Server NETSTAT TSO commands (continued)

Parameter	Release	Description	Reason for change
ROUTE	V2R1	When the PR=ALL or PR=pname modifier is used to display a policy-based routing table, IPv6 routes are included in the report.	IPv6 support for policy-based routing
	V1R12	<ul style="list-style-type: none"> Support is added for a new modifier, RADV, to display all of the IPv6 routes created based on information received in router advertisement messages. Default routes learned from IPv6 router advertisements are displayed with a metric of 1 when the router advertisement indicated a preference of high, 2 when the router advertisement indicated a preference of medium, or 3 when the router advertisement indicated a preference of low. In past releases, these routes were always displayed with a metric of 1. 	Configurable default address selection policy table
SRCIP	V1R12	The report is changed to display JOBNAME entries with a source of PUBLICADDRS.	Configurable default address selection policy table
STATS	V2R1	Displays a new SMCR statistics section. The SMC-R statistics are displayed when no PROTOCOL modifier is specified, or when PROTOCOL=TCP is specified as the modifier value.	Shared Memory Communications over Remote Direct Memory Access
	V2R1	This report displays statistics about the usage of ephemeral ports for both TCP and UDP.	User control of Ephemeral Port Ranges
	V1R13	Report is enhanced to display the following information: <ul style="list-style-type: none"> The number of TCP connections whose send data flow is stalled, Current Stalled Connections The number of TCP servers under a potential connection flood attack, Current Servers in Connection Flood 	Expanded Intrusion Detection Services
	V1R12	Added new field, Segments Received on OSA Bulk Queues, which indicates the total number of segments received for all TCP connections using the bulk data ancillary input queue of the QDIO inbound workload queueing function.	Performance improvements for streaming bulk data
TTLS	V2R1	Reports are updated to show four-character cipher code, TLSv1.2 protocol, and new policy attributes	AT-TLS support for TLS v1.2 and related features
VDPT	V1R12	The section of the report containing the Dynamic VIPA Destination Port Table for non-z/OS targets can now show IPv6 non-z/OS distribution targets.	Extend sysplex distributor support for DataPower for IPv6
	V1R12	<p>In the display for a distributed DVIPA, the distribution method is no longer displayed in the Flg field. The distribution method is now displayed in a new DistMethod field. The DistMethod field is not included in the short format display unless the DETAIL parameter is used.</p> <p>The Flg field can now indicate the HotStandby target state, active (V or Active) or backup (K or Backup) depending on whether the Short or Long format display is used.</p> <p>If the new distribution method HotStandby is displayed, a new SrvType field indicates the server type (Preferred or Backup).</p>	Sysplex distributor support for hot-standby server

Table 27. Summary of new and changed Communications Server NETSTAT TSO commands (continued)

Parameter	Release	Description	Reason for change
VIPADCFG	V1R13	The new SAF name field is displayed if the SAF parameter is configured on the VIPARANGE statement.	Improved security granularity for VIPARANGE DVIPAs
	V1R12	The new IPv6 prefix length field is shown if it was configured. If used with DETAIL, a new value ENCAP can be displayed in the routing type (RtgType) field. ENCAP indicates that IPv6 routing encapsulation is used to forward requests.	Extend sysplex distributor support for DataPower for IPv6
	V1R12	In the display for a distributed DVIPA, the distribution method is no longer displayed in the Flg field. The distribution method is now displayed in a new DistMethod field. The DistMethod field is not included in the short format display unless the DETAIL parameter is used. If the new distribution method HotStandby is displayed, a new SrvType field indicates the server type, Preferred or Backup. If the server type is Backup, the Rank of the backup is also displayed. If the distribution method is the new HOTSTANDBY distribution method and the DETAIL parameter is specified, the settings for AUTOSWITCHBACK and HEALTHSWITCH are also displayed.	Sysplex distributor support for hot-standby server
VIPADyn	V2R1	When displaying information about DVIPAs with an origin of VIPARANGE IOCTL, an additional field indicates if the DVIPA was created with affinity.	Affinity for application-instance DIVPAs

FTP TSO and z/OS UNIX commands

This topic describes changes to the FTP TSO and z/OS UNIX commands. For more information about these commands, see *z/OS Communications Server: IP User's Guide and Commands*.

FTP subcommands: Table 28 lists the changes made to the FTP subcommands. For more information, see the *z/OS Communications Server: IP User's Guide and Commands*.

Table 28. Summary of new and changed Communications Server FTP subcommands

Subcommand	Release	Description	Reason for change
LOCStt	V1R13	The LOCStt subcommand now supports the DSNTYPE option.	FTP support for large-format data sets
	V1R13	The LOCStt subcommand now supports the EATTR option.	Enhanced FTP support for extended address volumes
LOCStat	V1R13	The LOCStat subcommand now supports the DSNTYPE option.	FTP support for large-format data sets
	V1R13	The LOCStat subcommand now supports the EATTR option.	Enhanced FTP support for extended address volumes
MVSGet	V2R1	The new MVSGet subcommand now supports getting MVS data sets from z/OS FTP server to z/OS FTP client without knowing the detail information of the MVS data set. The MVS data set can be a physical sequential data set, a PDS or library, or a generation data set reference.	Simplify FTP transfer of data sets between z/OS systems

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Table 28. Summary of new and changed Communications Server FTP subcommands (continued)

Subcommand	Release	Description	Reason for change
MVSPut	V2R1	The new MVSPut subcommand now supports sending MVS data sets from z/OS FTP client to z/OS FTP server without knowing the detail information of the MVS data sets. The MVS data set can be a physical sequential data set, a PDS or library, or a generation data set reference.	Simplify FTP transfer of data sets between z/OS systems
PAss	V1R13	You can now specify a password phrase instead of a password on the PAss subcommand. When you are logged into a V1R13 or later z/OS FTP server, you can specify a password phrase instead of a password.	FTP support for password phrases
SIte	V1R13	The SIte subcommand now supports the DSNTYPE option.	FTP support for large-format data sets
	V1R13	The SIte subcommand now supports the EATTR option.	Enhanced FTP support for extended address volumes
STATus	V1R13	The STATus subcommand now supports the DSNTYPE option.	FTP support for large-format data sets
	V1R13	The STATus subcommand now supports the EATTR option.	Enhanced FTP support for extended address volumes
User	V1R13	You can now specify a password phrase instead of a password on the User subcommand. When you are logged into a V1R13 or later z/OS FTP server, you can specify a password phrase instead of a password.	FTP support for password phrases

General updates of TSO commands

Table 29 lists the new and updated Communications Server TSO commands, **except** the NETSTAT TSO commands and the FTP subcommands. See the following tables for information about the updates to those TSO commands:

- Table 27 on page 78, Netstat TSO commands
- Table 28 on page 83, FTP z/OS UNIX and TSO commands

Table 29. Summary of new and changed Communications Server TSO commands

Command	Parameter	Release	Description	Reason for change
rpcinfo	-p	V1R13	The program version column is wider than in prior releases. The offsets of all columns following the first column are different.	Release update

z/OS UNIX commands

Table 31 on page 90 lists the new and updated z/OS UNIX commands, except the z/OS UNIX FTP commands, and the z/OS UNIX netstat commands. See the following tables for those commands:

- Table 28 on page 83, FTP TSO and z/OS UNIX commands
- Table 30 on page 85, z/OS UNIX netstat commands

See *z/OS Communications Server: IP System Administrator's Commands* for more detailed information about the Communications Server UNIX commands.

Netstat UNIX commands

Table 30 lists the new and updated Communications Server z/OS UNIX netstat command. See Table 31 on page 90 for the other (the non-netstat) z/OS UNIX command entries.

See *z/OS Communications Server: IP System Administrator's Commands* for more detailed information about the z/OS UNIX commands.

All parameters in the following table are for the z/OS UNIX netstat command.

Table 30. Summary of new and changed Communications Server z/OS UNIX netstat commands

Parameter	Release	Description	Reason for change
-A	V2R1	Added new StartDate and StartTime fields. These fields provide the date and time for the last of one of the following events: <ul style="list-style-type: none"> • UDP bind time • TCP bind time • TCP listen time • TCP connection establishment time 	Socket establishment time for Netstat ALL/-A
	V2R1	Displays the names of the routing policy rule and the policy-based routing table used by IP routing for an IPv6 connection	IPv6 support for policy-based routing
	V2R1	<ul style="list-style-type: none"> • Displays Shared Memory Communications over Remote Direct Memory Access (SMC-R) information for TCP connections. • Accepts a new -U filter to display only the TCP connections associated with a specific SMC-R link group or SMC-R link identifier. 	Shared Memory Communications over Remote Direct Memory Access
	V1R13	The output line that begins with the Last Touched field is now displayed after the output lines for the Bytes, Segments, and Dgram In and Out counters	Release update
	V1R13	Report is enhanced to display the following indicators: <ul style="list-style-type: none"> • An indicator of whether a TCP connection's send data flow is stalled, SendStalled • An indicator of whether a TCP server is experiencing a potential connection flood attack, ConnectionFlood 	Expanded Intrusion Detection Services
	V1R12	Added new fields Ancillary Input Queue and BulkDataIntfName for TCP connections that are using the QDIO inbound workload queueing function.	Performance improvements for streaming bulk data
	V1R12	Displays the new TCP trusted connection flag (TcpTrustedPartner), which indicates that the partner security credentials of a partner within a sysplex or subplex have been retrieved using the SIOCGPARTNERINFO ioctl, or that the SIOCSPARTNERINFO ioctl has been successfully issued or inherited from the listener socket.	Trusted TCP connections
-a	V2R1	Accepts a new -U filter to display only the TCP connections associated with a specific SMC-R link group or SMC-R link identifier.	Shared Memory Communications over Remote Direct Memory Access
-c	V2R1	Accepts a new -U filter to display only the TCP connections associated with a specific SMC-R link group or SMC-R link identifier.	Shared Memory Communications over Remote Direct Memory Access

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Table 30. Summary of new and changed Communications Server z/OS UNIX netstat commands (continued)

Parameter	Release	Description	Reason for change
-d	V2R1	Displays an IP address of 0.0.0.0 for IPAQENET interfaces that are defined with the TEMPIP parameter.	Enable DHCP clients on OSA Interfaces
	V2R1	<ul style="list-style-type: none"> Displays Shared Memory Communications over Remote Direct Memory Access information for OSD interfaces. Accepts a new -U filter to display only the devices associated with a specific SMC-R link group or SMC-R link identifier. Accepts a new SMC modifier to display detailed SMC-R information about active RNIC interfaces and their associated SMC-R links and link groups. 	Shared Memory Communications over Remote Direct Memory Access
	V2R1	<ul style="list-style-type: none"> This report displays information about IPv4 HiperSockets interfaces that are configured with the INTERFACE statement for IPAQIDIO. This report displays the datapath address and TRLE name for IPAQIDIO6 interfaces, and IPAQIDIO interfaces defined by the INTERFACE statement. This report displays information about IPv4 static VIPA interfaces that are configured with the INTERFACE statement for VIRTUAL. The INTFNAME/-K filter accepts a HiperSockets TRLE name that allows for the display of all interfaces for a HiperSockets TRLE. 	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	V1R13	<ul style="list-style-type: none"> Displays whether checksum offload is globally enabled for IPv4 or IPv6 OSA-Express QDIO interfaces. Displays whether segmentation offload is globally enabled for IPv4 or IPv6 OSA-Express QDIO interfaces. 	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	V1R13	Displays information about IQDX interfaces	HiperSockets optimization for intraensemble data networks
	V1R12	<ul style="list-style-type: none"> Moved the InbPerf field from the right column to the left column on a new line. Added the WorkloadQueueing field to indicate whether inbound workload queueing is enabled for IPAQENET or IPAQENET6 interfaces. This field is only displayed when InbPerf is Dynamic. 	Configurable default address selection policy table
	V1R12	<ul style="list-style-type: none"> Added a ChpidType field for IPAQENET and IPAQENET6 interfaces. Displays information about intraensemble data network and intranode management network interfaces. 	z/OS Communications Server in an ensemble

Table 30. Summary of new and changed Communications Server z/OS UNIX netstat commands (continued)

Parameter	Release	Description	Reason for change
-F	V1R13	The new SAF name field is displayed if the SAF parameter is configured on the VIPARANGE statement.	Improved security granularity for VIPARANGE DVIPAs
	V1R12	The new IPv6 prefix length field is shown if it was configured. If used with DETAIL, a new value ENCAP can be displayed in the routing type (RtgType) field. ENCAP indicates that IPv6 routing encapsulation is used to forward requests.	Extend sysplex distributor support for DataPower for IPv6
	V1R12	In the display for a distributed DVIPA, the distribution method is no longer displayed in the Flg field. The distribution method is now displayed in a new DistMethod field. The DistMethod field is not included in the short format display unless the DETAIL parameter is used. If the new distribution method HotStandby is displayed, a new SrvType field indicates the server type, Preferred or Backup. If the server type is Backup, the Rank of the backup is also displayed. If the distribution method is the new HOTSTANDBY distribution method and the DETAIL parameter is specified, the settings for AUTOSWITCHBACK and HEALTHSWITCH are also displayed.	Sysplex distributor support for hot-standby server
-f	V2R1	Added the following fields to the TCP CONFIGURATION TABLE section: <ul style="list-style-type: none"> • TimeWaitInterval • RetransmitAttempt • ConnectTimeOut • ConnectInitInterval • Nagle • KeepAliveProbes • KAProbeInterval • QueuedRTT • FRRThreshold • DefltMaxSndBufSize 	Enhanced TCP protocol configuration options and default settings
	V2R1	<ul style="list-style-type: none"> • Displays new SMCR parameter information in the GLOBALCONFIG section. • New SmcrGrpStats field in the Type 119 portion of the SMF parameters section indicates whether SMC-R link group statistics records (SMF subtype 41) are collected. • New SmcrLnkEvent field in the Type 119 portion of the SMF parameters section indicates whether the following SMF records are collected: <ul style="list-style-type: none"> – SMC-R link start (SMF subtype 42) – SMC-R link end (SMF subtype 43) 	Shared Memory Communications over Remote Direct Memory Access

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Table 30. Summary of new and changed Communications Server z/OS UNIX netstat commands (continued)

Parameter	Release	Description	Reason for change
-f (continued)	V2R1	The QDIOAccel indicator reflects "Yes" or "SD only" when IP Security is operational. IP Security introduces additional reasons that QDIOAccel might run in the "SD only" mode.	QDIO acceleration coexistence with IP filtering
	V2R1	This report displays information about the EPHEMERALPORTS parameter on TCPCONFIG and UDPCONFIG.	User control of Ephemeral Port Ranges
	V2R1	The SELECTIVEACK field is added to the TCP Configuration Table section.	TCP support for selective acknowledgements
	V2R1	This report displays information about the SOURCEVIPAINTERFACE parameter on IPCONFIG.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	V1R13	<ul style="list-style-type: none"> Displays whether checksum offload is globally enabled for IPv4 or IPv6 OSA-Express QDIO interfaces. Displays whether segmentation offload is globally enabled for IPv4 or IPv6 OSA-Express QDIO interfaces. 	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	V1R13	New field AutoIQDX added to the Global Configuration section.	HiperSockets optimization for intraensemble data networks
	V1R13	The IgRedirect field in the IPv6 Configuration Table section of the report is enhanced. A value of Yes can now indicate that Intrusion Detection Services (IDS) policy is in effect to detect and discard ICMP Redirects.	Expanded Intrusion Detection Services
	V1R12	New OSMClass field added to the IPv6 Configuration section to display the setting of the OSMSECCLASS parameter from the IPCONFIG6 profile statement.	z/OS Communications Server in an ensemble
	V1R12	Displays the setting of the NOJOIN subparameter from the GLOBALCONFIG SYSPLEXMONITOR profile statement, which indicates whether the TCP/IP stack joins the sysplex group during stack initialization.	Control joining the sysplex XCF group
	V1R12	<ul style="list-style-type: none"> The SMF parameters section displays the setting of the new DVIPA and NODVIPA parameters. The Network Monitor Configuration Information section displays the setting of the new DVIPA and NODVIPA subparameters for the SMFSERVICE parameter. 	SMF event records for sysplex events
V1R12	The Network Monitor Configuration Information section displays the setting of the new CSMail, NOCSMAIL, CSSMTP and NOCSSMTP subparameters for the SMFSERVICE parameter.	Management data for CSSMTP	
-h	V2R1	Displays a flag value of I/Internal for IPAQENET interfaces that are defined with the TEMPIP parameter.	Enable DHCP clients on OSA Interfaces
	V2R1	The INTFNAME/-K filter accepts a HiperSockets TRLE name that allows for the display of all interfaces for a HiperSockets T-RLE.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
-J	V1R12	The report is changed to display JOBNAME entries with a source of PUBLICADDRS.	Configurable default address selection policy table

Table 30. Summary of new and changed Communications Server z/OS UNIX netstat commands (continued)

Parameter	Release	Description	Reason for change
-k	V1R13	Report is enhanced to display the following information: <ul style="list-style-type: none"> • The ICMPv6 scan rule name in the Scan Detection section • Information about new attack types • The number of TCP servers under a potential connection flood attack, ServersInConnFlood • The number of TCP connections whose send data flow is stalled, TCPStalledConns • The percentage of TCP connections whose send data flow is stalled, TCPStalledConnsPct • An indicator of whether a TCP server is experiencing a potential connection flood attack, ConnFlood in the Intrusion Detection Services TCP Port List section • Both IPv4 and IPv6 addresses in the IP address fields 	Expanded Intrusion Detection Services
	V1R13	Report is enhanced to display information about new attack types.	Intrusion Detection Services support for Enterprise Extender
-l	V1R12	New report to display default address selection policy table.	Configurable default address selection policy table
-n	V1R13	Displays neighbor cache information for an IQDX interface.	HiperSockets optimization for intraensemble data networks
-O	V1R12	The section of the report containing the Dynamic VIPA Destination Port Table for non-z/OS targets can now show IPv6 non-z/OS distribution targets.	Extend sysplex distributor support for DataPower for IPv6
	V1R12	In the display for a distributed DVIPA, the distribution method is no longer displayed in the Flg field. The distribution method is now displayed in a new DistMethod field. The DistMethod field is not included in the short format display unless the DETAIL parameter is used. The Flg field can now indicate the HotStandby target state, active (V or Active) or backup (K or Backup) depending on whether the Short or Long format display is used. If the new distribution method HotStandby is displayed, a new SrvType field indicates the server type (Preferred or Backup).	Sysplex distributor support for hot-standby server
-o	V2R1	Displays a new flag to indicate whether the port or the port range is disabled for SMC-R.	Shared Memory Communications over Remote Direct Memory Access

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Table 30. Summary of new and changed Communications Server z/OS UNIX netstat commands (continued)

Parameter	Release	Description	Reason for change
-r	V2R1	When the PR=ALL or PR=pname modifier is used to display a policy-based routing table, IPv6 routes are included in the report.	IPv6 support for policy-based routing
	V1R13	Displays ARP cache information for an IQDX interface.	HiperSockets optimization for intraensemble data networks
	V1R12	<ul style="list-style-type: none"> Support is added for a new modifier, RADV, to display all of the IPv6 routes created based on information received in router advertisement messages. Default routes learned from IPv6 router advertisements are displayed with a metric of 1 when the router advertisement indicated a preference of high, 2 when the router advertisement indicated a preference of medium, or 3 when the router advertisement indicated a preference of low. In past releases, these routes were always displayed with a metric of 1. 	Enhancements to IPv6 router advertisement
-S	V2R1	Displays a new SMCR statistics section. The SMC-R statistics are displayed when no PROTOCOL modifier is specified, or when PROTOCOL=TCP is specified as the modifier value.	Shared Memory Communications over Remote Direct Memory Access
	V2R1	This report displays statistics about the usage of ephemeral ports for both TCP and UDP.	User control of Ephemeral Port Ranges
	V1R13	Report is enhanced to display the following information: <ul style="list-style-type: none"> The number of TCP connections whose send data flow is stalled, Current Stalled Connections The number of TCP servers under a potential connection flood attack, Current Servers in Connection Flood 	Expanded Intrusion Detection Services
	V1R12	Added new field, Segments Received on OSA Bulk Queues, which indicates the total number of segments received for all TCP connections using the bulk data ancillary input queue of the QDIO inbound workload queueing function.	Performance improvements for streaming bulk data
-v	V2R1	When displaying information about DVIPAs with an origin of VIPARANGE IOCTL, an additional field indicates if the DVIPA was created with affinity.	Affinity for application-instance DIVPAs
-x	V2R1	Reports are updated to show four-character cipher code, TLSv1.2 protocol, and new policy attributes	AT-TLS support for TLS v1.2 and related features

General updates of z/OS UNIX commands

Table 31. Summary of new and changed Communications Server z/OS UNIX commands

Command	Parm	Release	Description	Reason for change
certbundle	N/A	V1R12	New command to create a certificate bundle file.	IKE version 2 support
dig	@server	V1R12	This parameter is no longer required for a name server which exists on an IPv6-only host.	Resolver support for IPv6 connections to DNS name servers
dnsmigrate		V2R1	This command is no longer supported.	Removal of BIND DNS Name Server from z/OS

Table 31. Summary of new and changed Communications Server z/OS UNIX commands (continued)

Command	Parm	Release	Description	Reason for change
dnssec-keygen		V2R1	This command is no longer supported.	Removal of BIND DNS Name Server from z/OS
dnssec-makekeyset		V2R1	This command is no longer supported.	Removal of BIND DNS Name Server from z/OS
dnssec-signkey		V2R1	This command is no longer supported.	Removal of BIND DNS Name Server from z/OS
dnssec-signzone		V2R1	This command is no longer supported.	Removal of BIND DNS Name Server from z/OS
ipsec	-F add	V2R1	The loglimit keyword is a new keyword that you can use to limit the number of filter-match log messages generated for the defensive filter being added.	Limit defensive filter logging
	-F update	V2R1	The loglimit keyword is a new keyword that you can use to limit the number of filter-match log messages generated for the defensive filter being added.	Limit defensive filter logging
	-F display -f display -t	V2R1	A new field, LogLimit, is included in filters displayed with the ipsec command. For defensive filters, it indicates whether filter-match messages are being limited. For all other filter types, it has a value of N/A.	Limit defensive filter logging
	-k display	V1R13	The NATSupportLevel field is changed to support two additional values: IKEv2 and IKEv2_zOS. The following fields previously reported N/A for all IKEv2 tunnels because NAT traversal was not supported for IKEv2. They are now populated appropriately when an IKEv2 tunnel traverses one or more NAT devices: <ul style="list-style-type: none"> • NATInFrntLclScEndPt • NATInFrntRmtScEndPt • zOSCanInitiateP1SA • AllowNAT • RmtNAPTDetected • RmtUdpEncapPort 	Network address translation traversal support for IKE version 2

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Table 31. Summary of new and changed Communications Server z/OS UNIX commands (continued)

Command	Parm	Release	Description	Reason for change
ipsec (continued)	-y display -b	V1R13	The following fields previously reported N/A for all IKEv2 tunnels because NAT traversal was not supported for IKEv2. They are now populated appropriately when an IKEv2 tunnel traverses one or more NAT devices: <ul style="list-style-type: none"> • RmtIsGw • RmtIsZOS • zOSCanInitP2SA • RmtUdpEncapPort • SrcNATOARcvd • DstNATOARcvd • LclIpSpecExIDPayload • RmtIpSpecExIDPayload 	Network address translation traversal support for IKE version 2
	-y display	V1R13	The following fields previously reported N/A for all IKEv2 tunnels because NAT traversal was not supported for IKEv2. They are now populated appropriately when an IKEv2 tunnel traverses one or more NAT devices: <ul style="list-style-type: none"> • RmtIsGw • RmtIsZOS • zOSCanInitP2SA • RmtUdpEncapPort • SrcNATOARcvd • DstNATOARcvd 	Network address translation traversal support for IKE version 2
	-y display	V1R12	The report is changed as follows: <ul style="list-style-type: none"> • The IKEVersion field includes a new value of 2.x to indicate IKE version 2. • The AssociatedFiltSrcPort, AssociatedFiltType, Code, LocalPort and Type fields changed to include values of All, Opaque, and n/a. • The HowToEncrypt field has a new value of KeyLength. • The HowToAuth field has new values for AuthAlgorithm: NULL, AES-GMAC-128, AES-XCBC-MAC-96, HMAC-SHA-256-128, HMAC-SHA-384-192, and HMAC-SHA-512-256. • The possible values for the HowToEncrypt field are changed to DoNot, AES-CBC, AES-GCM-16, DES-CBC, and 3DES-CBC 	<ul style="list-style-type: none"> • IKE version 2 support • IPSec support for cryptographic currency

Table 31. Summary of new and changed Communications Server z/OS UNIX commands (continued)

Command	Parm	Release	Description	Reason for change
ipsec (continued)	-k display (continued)	V1R12	<p>Report is changed as follows:</p> <ul style="list-style-type: none"> The possible AuthenticationAlgorithm values for IKEv1 tunnels are changed from HMAC-MD5 and HMAC-SHA1 to HMAC-MD5, HMAC-SHA1, HMAC-SHA2-256-128, HMAC-SHA2-384-192, and HMAC-SHA2-512-256. The possible values for IKEv2 tunnels are: AES128-XCBC-96, HMAC-MD5-96, HMAC-SHA1-96, HMAC-SHA2-256-128, HMAC-SHA2-384-192, and HMAC-SHA2-512-256. The ExchangeMode field is always set to n/a for IKEv2 because only IKEv1 supports this field The IKEVersion field includes a new value of 2.x to indicate IKE version 2. The LocalIDType and RemoteIDType fields include a KEYID value. The LocalAuthenticationMethod and RemoteAuthenticationMethod fields include new values of ECDSA-256, ECDSA-384 and ECDSA-521. The State fields that existed prior to V1R12 are applicable to IKEv1. State values that are applicable to IKEv2 are INIT, WAIT KE, WAITAUTH, DONE, HALF-CLOSED, and EXPIRED. The EncryptionAlgorithm value of TripleDES-CBC changed to 3DES-CBC. The EncryptionAlgorithm field has a new value of KeyLength. The PseudoRandomFunction, LocalAuthenticationMethod, and RemoteAuthenticationMethod field values are processed differently depending on if you are using IKEv1 or IKEv2. For IKEv2, the PseudoRandomFunction field has the new values of AES-XCBC-128, HMAC-MD5, HMAC-SHA1, HMAC-SHA-256, HMAC-SHA-384, and HMAC-SHA-512. The NAT traversal fields are not supported for IKEv2. 	IKE version 2 support

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Table 31. Summary of new and changed Communications Server z/OS UNIX commands (continued)

Command	Parm	Release	Description	Reason for change
ipsec (continued)	-m display	V1R12	The report is changed as follows: <ul style="list-style-type: none"> Report output includes new value for KeyLength on the HowToEncrypt field. The HowToAuth field has the following new values for AuthAlgorithm: NULL, AES-GMAC-128, AES-XCBC-MAC-96, HMAC-SHA-256-128, HMAC-SHA-384-192, and HMAC-SHA-512-256. The possible values for the HowToEncrypt field are changed to DoNot, AES-CBC, AES-GCM-16, DES-CBC, and 3DES-CBC. 	<ul style="list-style-type: none"> IKE version 2 support IPSec support for cryptographic currency
	-f display	V1R12	Report output includes new field for FIPS140. The following fields are changed: <ul style="list-style-type: none"> DestPort, ICMPCode, ICMPType, MIPv6Type, and SourcePort - fields changed to include values of All, Opaque, and n/a. ICMPTypeGranularity, ICMPCodeGranularity, and MIPv6TypeGranularity - fields changed to include values of Rule, Packet, and n/a. OSPFTYPE - field changed to include values of All and n/a. RemoteIdentityType - field changed to include a KEYID value to indicate an opaque byte stream. TypeRange, CodeRange, and SourcePortRange - fields changed to include a value of n/a. 	IPSec support for FIPS 140 cryptographic mode
named		V2R1	This command is no longer supported.	Removal of BIND DNS Name Server from z/OS
nslookup	<ul style="list-style-type: none"> -server_name -server_address 	V1R12	These parameters are no longer required to specify a name server that exists on an IPv6-only host.	Resolver support for IPv6 connections to DNS name servers
orpcinfo or rpcinfo ¹	-p	V1R13	The program version column is wider than in prior releases. The offsets of all columns following the first column are different.	Release update

Table 31. Summary of new and changed Communications Server z/OS UNIX commands (continued)

Command	Parm	Release	Description	Reason for change
pasearch	-i	V1R13	The display is changed to include the settings for new IDS configuration fields.	Expanded Intrusion Detection Services
		V1R13	The display is changed to include the settings for new IDS configuration fields.	Intrusion Detection Services support for Enterprise Extender
	-R	V2R1	IPv6 policy is included in the display of all Routing policy entries that match the input options for pasearch.	IPv6 support for policy-based routing
	-T	V2R1	IPv6 routes and dynamic routing parameters are included in the display of all Routing tables that match the input options for pasearch.	IPv6 support for policy-based routing
	-t	V2R1	Displays new parameters on AT-TLS configuration statements.	AT-TLS support for TLS v1.2 and related features
rndc		V2R1	This command is no longer supported.	Removal of BIND DNS Name Server from z/OS
rndc-confgen		V2R1	This command is no longer supported.	Removal of BIND DNS Name Server from z/OS

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Table 31. Summary of new and changed Communications Server z/OS UNIX commands (continued)

Command	Parm	Release	Description	Reason for change
trmdstat	All of report options	V1R13	The following changes were made: <ul style="list-style-type: none"> All reports are updated to support IPv6 addresses The heading of all reports is updated to display the trmdstat command that was entered and to remove fields that displayed filters that were entered on the command. The default report (if there is no report option specified) is changed to IDS summary (-I) report 	Expanded Intrusion Detection Services
	-A	V1R13	The summary (-A), detail (-A -D), and statistics (-A -S) displays are changed to include information for the following new attack types: DATA_HIDING, OUTBOUND_RAW_IPV6, RESTRICTED_IPV6_DST_OPTIONS, RESTRICTED_IPV6_HOP_OPTIONS, and RESTRICTED_IPV6_NEXT_HDR. The statistics display (-A -S) is changed to also include information for the GLOBAL_TCP_STALL and TCP_QUEUE_SIZE attack types.	Expanded Intrusion Detection Services
		V1R13	The summary (-A), detail (-A -D), and statistics (-A -S) displays are changed to include information for the following new attack types: EE_MALFORMED_PACKET, EE_PORT_CHECK, and EE_LDLC_CHECK. The statistics display (-A -S) is changed to also include information for the EE_XID_FLOOD attack type.	Intrusion Detection Services support for Enterprise Extender
	-F	V1R13	The summary (-F), detail (-F -D), and statistics (-F -S) displays are changed to include information for the new EE_XID_FLOOD attack type.	Intrusion Detection Services support for Enterprise Extender
	-I	V1R13	This report is changed to include information for the GLOBAL_TCP_STALL and TCP_QUEUE_SIZE attack types.	Expanded Intrusion Detection Services
	-G	V1R13	This new option can be used to display summary (-G) or detail (-G -D) information for the new Global TCP Stall attack type.	Expanded Intrusion Detection Services
	-Q	V1R13	This new option can be used to display summary (-Q) or detail (-Q -D) information for the new TCP Queue Size attack type.	Expanded Intrusion Detection Services

Note:

1. In the z/OS UNIX shell, rpcinfo is a synonym for the orpcinfo command.

Application programming interfaces and network management interfaces

This topic includes updates made to the application programming interfaces (APIs) and network management interfaces (NMIs) documented in *z/OS Communications Server: IP Programmer's Guide and Reference*. The following programming interfaces were updated:

- "Local IPSec NMI" on page 98
- "Network security services NMI" on page 100
- "Real-time network monitoring TCP/IP NMI" on page 103
- "TCP/IP callable NMI (EZBNMIFR)" on page 106
- "SNMP manager API" on page 105
- "Resolver callable NMI (EZBREIFR)" on page 105
- "Trusted TCP connections API for Java" on page 117

See *z/OS Communications Server: IP Programmer's Guide and Reference* for more detailed API information.

FTP client API FCAI control block

Table 32 lists the FCAI control block updates to the Communications Server application interface for FTP Client Application Programming Interface.

Table 32. Summary of new Communications Server FTP client API FCAI control block

Name	Rel.	Description	Reason for change
ezaftpka.macro-FTP Client Application Interfaces (FCAI) control block	V2R1	FCAI_SCMD_MVSGET and FCAI_SCMD_MVSPUT are added to the list of equates defining possible values for the FCAI control block field FCAI_SCMD.	Simplify FTP transfer of data sets between z/OS systems
EZAFTP KC-Cobol Map for FACI-Map (FACI Client API)	V2R1	FCAI_SCMD_MVSGET and FCAI_SCMD_MVSPUT are added to the list of constants defining possible values for the control block field FCAI_SCMD.	Simplify FTP transfer of data sets between z/OS systems
EZAFTP KP-PL/I Map for FACI-Map	V2R1	FCAI_SCMD_MVSGET and FCAI_SCMD_MVSPUT are added to the list of subcommand codes for the FACI control block field FCAI_SCMD.	Simplify FTP transfer of data sets between z/OS systems
EZAFTP KR-REXX function package	V2R1	FCAI_SCMD_MVSGET and FCAI_SCMD_MVSPUT are added to the predefined variables to represent the MVSGET and MVSPUT subcommands respectively.	Simplify FTP transfer of data sets between z/OS systems
ftpcapi.h	V2R1	FCAI_SCMD_MVSGET and FCAI_SCMD_MVSPUT are added to the list of FCAI_RequestCompletionValue FCAI_SCMD (subcommand) values.	Simplify FTP transfer of data sets between z/OS systems
FTPClientErrorException.java	V2R1	The fields SUBCOMMAND_MVSGET and SUBCOMMAND_MVSPUT are added to FTPClientErrorException.	Simplify FTP transfer of data sets between z/OS systems

FTP client API for REXX predefined variables

Table 33 on page 98 lists the updates to the Communications Server application interface for FTP Client Application Programming Interface for REXX.

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Table 33. Summary of new Communications Server predefined REXX variables

Request / Response	Rel.	Description	Reason for change
<ul style="list-style-type: none"> • FCAL_CEC_EXIT_EZAFCCMD_WRONG_RC • FCAL_CEC_EXIT_EZAFCCMD_TERM • FCAL_CEC_EXIT_EZAFCREP_WRONG_RC • FCAL_CEC_EXIT_EZAFCREP_RC • FCAL_CEC_EXIT_EZAFCREP_TERM 	V2R1	New predefined REXX variables for FTP client error codes	FTP client security user exits

Local IPsec NMI

Table 34 lists the updates to the Communications Server application interface for local IPsec network management interface (NMI).

Table 34. Summary of new Communications Server IP Local IPsec NMI

Request / Response	Rel.	Description	Reason for change
<ul style="list-style-type: none"> • NMsec_GET_IKETUN • NMsec_GET_IKETUNCASCADE 	V1R13	<p>The NMsecIKETunNATTLevel field is changed to support two additional values: NMsec_IKETUN_NATTV2 (6) and NMsec_IKETUN_NATTV2ZOS (7).</p> <p>The following fields previously reported 0 for all IKEv2 tunnels because NAT traversal was not supported for IKEv2. They are now set appropriately when an IKEv2 tunnel traverses one or more NAT devices:</p> <ul style="list-style-type: none"> • NMsecIKETunLclNAT • NMsecIKETunRmtNAT • NMsecIKETunRmtNAPT • NMsecIKETunCanInitP1 • NMsecIKETunRmtUDPPort 	Network address translation traversal support for IKE version 2

Table 34. Summary of new Communications Server IP Local IPSec NMI (continued)

Request / Response	Rel.	Description	Reason for change
NMsec_GET_IKETUN	V1R12	<p>The NMsecIKETunnel structure has the following updates:</p> <ul style="list-style-type: none"> • New fields: <ul style="list-style-type: none"> – NMsecIKETunFIPS140 – NMsecIKETunEncryptKeyLength • The NMsecIKETunExchangeMode field is changed in that it is not applicable for IKEv2 SAs. • The NMsecIKETunState field has a new value: <ul style="list-style-type: none"> – NMsec_SASTATE_HALF_CLOSED (6) • The NMsecIKETunExtState has new values: <ul style="list-style-type: none"> – NMsec_P1STATE_WAIT_AUTH (6) – NMsec_P1STATE_HALF_CLOSED (7) • The NMsecIKETunAuthAlg field has the following new values: <ul style="list-style-type: none"> – NMsec_AUTH_HMAC_SHA2_256_128 (7) – NMsec_AUTH_HMAC_SHA2_384_192 (13) – NMsec_AUTH_HMAC_SHA2_512_256 (14) – NMsec_AUTH_AES128_XCBC_96 (9) <p>The NMsecIKETunAuthAlg field also has existing values that have changed descriptions. Those values with changed descriptions are:</p> <ul style="list-style-type: none"> – NMsec_AUTH_HMAC_MD5 (38) – NMsec_AUTH_HMAC_SHA1 (39) – NMsec_AUTH_HMAC_SHA1_96 (41) • The NMsecIKETunEncryptAlg field has a changed value: <ul style="list-style-type: none"> – NMsec_ENCR_AES (12) was changed to NMsec_ENCR_AES_CBC (12) • The NMsecIKETunLocalAuthMethod field has the following new values: <ul style="list-style-type: none"> – NMsec_IKETUN_ECDSA_256 (4) – NMsec_IKETUN_ECDSA_384 (5) – NMsec_IKETUN_ECDSA_521 (6) • The NMsecIKETunPeerAuthMethod field has the following new values: <ul style="list-style-type: none"> – NMsec_AUTH_HMAC_SHA2_256 (15) – NMsec_AUTH_HMAC_SHA2_384 (16) – NMsec_AUTH_HMAC_SHA2_512 (17) – NMsec_AUTH_AES128_XCBC (18) • The NMsecIKETunPseudoRandomFunc field has the following new values: <ul style="list-style-type: none"> – NMsec_IKETUN_ECDSA_256 (4) – NMsec_IKETUN_ECDSA_384 (5) – NMsec_IKETUN_ECDSA_521 (6) 	IKE version 2 support
<ul style="list-style-type: none"> • NMsec_GET_IKETUN • NMsec_GET_IKETUNCASCADE • NMsec_GET_IPTUNMANUAL • NMsec_GET_IPTUNDYNAMIC • NMsec_GET_IPTUNDYNIKE 	V1R12	<p>The NMsecInFilter structure has a new value for the NMsecFltSAState field:</p> <ul style="list-style-type: none"> • NMsec_SASTATE_HALF_CLOSED (6) 	IKE version 2 support

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Table 34. Summary of new Communications Server IP Local IPsec NMI (continued)

Request / Response	Rel.	Description	Reason for change
<ul style="list-style-type: none"> NMsec_GET_IKETUNCASCADE NMsec_GET_IPTUNDYNSTACK NMsec_GET_IPTUNDYNIKE 	V1R13	<p>The following fields previously reported 0 for all IKEv2 tunnels because NAT traversal was not supported for IKEv2. They are now set appropriately when an IKEv2 tunnel traverses one or more NAT devices:</p> <ul style="list-style-type: none"> NMsIPDynLclNAT NMsIPDynRmtNAT NMsIPDynRmtNAPT NMsIPDynRmtGW NMsIPDynRmtZOS NMsIPDynCanInitP2 NMsIPDynRmtUDPPort NMsIPDynSrcNATOA NMsIPDynDstNATOA 	Network address translation traversal support for IKE version 2
<ul style="list-style-type: none"> NMsec_GET_IPFLTCURR NMsec_GET_IPFLTDEFAULT NMsec_GET_IPFLTPOLICY 	V2R1	A new field. NMsIPFltLogLimit, is defined. For defensive filters it indicates whether filter-match messages are being limited. For all other filter types, it has a value of 0.	Limit defensive filter logging
NMsec_GET_IPTUNDYNIKE	V1R12	<p>The NMsecIPDynamicIKE structure has a new value for the NMsIPDynKEExtState field:</p> <ul style="list-style-type: none"> NMsec_P2STATE_HALF_CLOSED (5) 	IKE version 2 support
NMsec_GET_IPTUNMANUAL	V1R12	<p>The NMsecIPTunnel structure includes the following updates:</p> <ul style="list-style-type: none"> New fields: <ul style="list-style-type: none"> NMsIPTunFIPS140 NMsIPTunEncryptKeyLength The NMsIPTunState field has a new value: <ul style="list-style-type: none"> NMsec_SASTATE_HALF_CLOSED (6) The NMsIPTunAuthAlg field has the following new values: <ul style="list-style-type: none"> NMsec_AUTH_NULL (0) NMsec_AUTH_AES_GMAC_128 (4) NMsec_AUTH_AES_GMAC_256 (6) NMsec_AUTH_HMAC_SHA2_256_128 (7) NMsec_AUTH_AES128_XCBC_96 (9) NMsec_AUTH_HMAC_SHA2_384_192 (13) NMsec_AUTH_HMAC_SHA2_512_256 (14) <p>The NMsIPTunAuthAlg field also has existing values that have changed descriptions. Those values are:</p> <ul style="list-style-type: none"> NMsec_AUTH_HMAC_MD5 (38) NMsec_AUTH_HMAC_SHA1 (39) The NMsIPTunEncryptAlg field has a new value and a changed value. The new value is NMsec_ENCR_AES_GCM_16 (20) The NMsec_ENCR_AES (12) value was changed to NMsec_ENCR_AES_CBC (12). 	IKE version 2 support
NMsec_GET_STACKINFO	V1R12	<p>The NMsecStack structure has a new field:</p> <ul style="list-style-type: none"> NMsStackFIPS140 	IPsec support for FIPS 140 cryptographic mode

Network security services NMI

Table 35 on page 101 lists the updates to the Communications Server application interface for network security services (NSS) network management interface (NMI).

Table 35. Summary of new Communications Server NSS NMI

Request / Response	Rel.	Description	Reason for change
<ul style="list-style-type: none"> • NMsec_GET_IKETUN • NMsec_GET_IKETUNCASCADE 	V1R13	<p>The NMsiKETunNATTLevel field is changed to support two additional values: NMsec_IKETUN_NATTV2 (6) and NMsec_IKETUN_NATTV2ZOS (7).</p> <p>The following fields previously reported 0 for all IKEv2 tunnels because NAT traversal was not supported for IKEv2. They are now set appropriately when an IKEv2 tunnel traverses one or more NAT devices:</p> <ul style="list-style-type: none"> • NMsiKETunLclNAT • NMsiKETunRmtNAT • NMsiKETunRmtNAPT • NMsiKETunCanInitP1 • NMsiKETunRmtUDPPort 	Network address translation traversal support for IKE version 2
NMsec_GET_IKETUN	V1R12	<p>The NMsecIKETunnel structure has the following updates:</p> <ul style="list-style-type: none"> • New fields: <ul style="list-style-type: none"> – NMsiKETunFIPS140 – NMsiKETunEncryptKeyLength • The NMsiKETunExchangeMode field is changed in that it is not applicable for IKEv2 SAs. • The NMsiKETunState field has a new value: <ul style="list-style-type: none"> – NMsec_SASTATE_HALF_CLOSED (6) • The NMsiKETunExtState has new values: <ul style="list-style-type: none"> – NMsec_P1STATE_WAIT_AUTH (6) – NMsec_P1STATE_HALF_CLOSED (7) • The NMsiKETunAuthAlg field has the following new values: <ul style="list-style-type: none"> – NMsec_AUTH_HMAC_SHA2_256_128 (7) – NMsec_AUTH_HMAC_SHA2_384_192 (13) – NMsec_AUTH_HMAC_SHA2_512_256 (14) – NMsec_AUTH_AES128_XCBC_96 (9) <p>The NMsiKETunAuthAlg field also has existing values that have changed descriptions. Those values with changed descriptions are:</p> <ul style="list-style-type: none"> – NMsec_AUTH_HMAC_MD5 (38) – NMsec_AUTH_HMAC_SHA1 (39) – NMsec_AUTH_HMAC_SHA1_96 (41) • The NMsiKETunEncryptAlg field has a changed value: <ul style="list-style-type: none"> – NMsec_ENCR_AES (12) was changed to NMsec_ENCR_AES_CBC (12) • The NMsiKETunLocalAuthMethod field has the following new values: <ul style="list-style-type: none"> – NMsec_IKETUN_ECDSA_256 (4) – NMsec_IKETUN_ECDSA_384 (5) – NMsec_IKETUN_ECDSA_521 (6) • The NMsiKETunPeerAuthMethod field has the following new values: <ul style="list-style-type: none"> – NMsec_AUTH_HMAC_SHA2_256 (15) – NMsec_AUTH_HMAC_SHA2_384 (16) – NMsec_AUTH_HMAC_SHA2_512 (17) – NMsec_AUTH_AES128_XCBC (18) • The NMsiKETunPseudoRandomFunc field has the following new values: <ul style="list-style-type: none"> – NMsec_IKETUN_ECDSA_256 (4) – NMsec_IKETUN_ECDSA_384 (5) – NMsec_IKETUN_ECDSA_521 (6) 	IKE version 2 support

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Table 35. Summary of new Communications Server NSS NMI (continued)

Request / Response	Rel.	Description	Reason for change
<ul style="list-style-type: none"> NMsec_GET_IKETUN NMsec_GET_IKETUNCASCADE NMsec_GET_IPTUNMANUAL NMsec_GET_IPTUNDYNAMIC NMsec_GET_IPTUNDYNIKE 	V1R12	<p>The NMsecInFilter structure has a new value for the NMsecFltSAState field:</p> <ul style="list-style-type: none"> NMsec_SASTATE_HALF_CLOSED (6) 	IKE version 2 support
<ul style="list-style-type: none"> NMsec_GET_IKETUNCASCADE NMsec_GET_IPTUNDYNSTACK NMsec_GET_IPTUNDYNIKE 	V1R13	<p>The following fields previously reported 0 for all IKEv2 tunnels because NAT traversal was not supported for IKEv2. They are now set appropriately when an IKEv2 tunnel traverses one or more NAT devices:</p> <ul style="list-style-type: none"> NMsIPDynLclNAT NMsIPDynRmtNAT NMsIPDynRmtNAPT NMsIPDynRmtGW NMsIPDynRmtZOS NMsIPDynCanInitP2 NMsIPDynRmtUDPPort NMsIPDynSrcNATOA NMsIPDynDstNATOA 	Network address translation traversal support for IKE version 2
<ul style="list-style-type: none"> NMsec_GET_IPFLTCURR NMsec_GET_IPFLTDEFAULT NMsec_GET_IPFLTPOLICY 	V2R1	<p>A new field, NMsIPFltLogLimit, is defined. For defensive filters it indicates whether filter-match messages are being limited. For all other filter types, it has a value of 0.</p>	Limit defensive filter logging
NMsec_GET_IPTUNDYNIKE	V1R12	<p>The NMsecIPDynamicIKE structure has a new value for the NMsIPDynKEExtState field:</p> <ul style="list-style-type: none"> NMsec_P2STATE_HALF_CLOSED (5) 	IKE version 2 support
NMsec_GET_IPTUNMANUAL	V1R12	<p>The NMsecIPTunnel structure includes the following updates:</p> <ul style="list-style-type: none"> New fields: <ul style="list-style-type: none"> NMsIPTunFIPS140 NMsIPTunEncryptKeyLength The NMsIPTunState field has a new value: <ul style="list-style-type: none"> NMsec_SASTATE_HALF_CLOSED (6) The NMsIPTunAuthAlg field has the following new values: <ul style="list-style-type: none"> NMsec_AUTH_NULL (0) NMsec_AUTH_AES_GMAC_128 (4) NMsec_AUTH_AES_GMAC_256 (6) NMsec_AUTH_HMAC_SHA2_256_128 (7) NMsec_AUTH_AES128_XCBC_96 (9) NMsec_AUTH_HMAC_SHA2_384_192 (13) NMsec_AUTH_HMAC_SHA2_512_256 (14) <p>The NMsIPTunAuthAlg field also has existing values that have changed descriptions. Those values are:</p> <ul style="list-style-type: none"> NMsec_AUTH_HMAC_MD5 (38) NMsec_AUTH_HMAC_SHA1 (39) <ul style="list-style-type: none"> The NMsIPTunEncryptAlg field has a new value and a changed value. The new value is NMsec_ENCR_AES_GCM_16 (20) The NMsec_ENCR_AES (12) value was changed to NMsec_ENCR_AES_CBC (12). 	IKE version 2 support

Real-time application-controlled TCP/IP trace NMI (EZBRCIFR)

Table 36 on page 103 lists the updates to the Communications Server Real-time application-controlled TCP/IP trace NMI.

Table 36. Summary of new Real-time application-controlled TCP/IP trace NMI (EZBRCIFR)

Request	Release	Description	Reason of change
N/A	V2R1	New callable NMI that can be used to obtain packet and data trace data in the form of trace records.	Real-time application-controlled TCP/IP trace NMI

Real-time network monitoring TCP/IP NMI

Table 37 lists the updates to the Communications Server real-time TCP/IP management interface (NMI).

Table 37. Summary of new Communications Server real-time TCP/IP NMI

NMI	Request/response	Rel.	Description	Reason for change
Real-time packet and data trace NMI (SYSTCPDA)	PTHDR_T packet trace header	V2R1	A #pragma pack() directive was added to EZBYPTHH, the C header file that defines the packet trace header. This directive ensures that the structure mappings will not be padded.	Release update
	PTHDR_T packet trace header	V2R1	The following changes were made for SMC-R packets: <ul style="list-style-type: none"> • New SMC trace section was added to the packet trace header for SMC-R packets. • New PTHIdSmc constant was added for SMC-R packets. This value sets in the CTEFMTID field of the trace record. 	Shared Memory Communications over Remote Direct Memory Access
	PTHDR_T packet trace header	V1R13	The following two new types are added for Pth_devty to indicate IPv4 and IPv6 IQDX interfaces: <ul style="list-style-type: none"> • Pth_IQDX • Pth_IQDX6 	HiperSockets optimization for intraensemble data networks
	PTHDR_T packet trace header	V1R13	A new Pth_IQDX field is added to indicate a packet was received over an IQDX interface.	HiperSockets optimization for intraensemble data networks
	PTHDR_T packet trace header	V1R12	A new Pth_DtState field is added. It applies only to the new start and end data trace records.	Data trace records for socket data flow start and end
	A new Pth_NxtHopAddr field is added. It provides the next hop interface IP address for the packet.		Packet trace filtering for encapsulated packets	

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Table 37. Summary of new Communications Server real-time TCP/IP NMI (continued)

NMI	Request/response	Rel.	Description	Reason for change
Real-time SMF data NMI (SYSTCPSM)	N/A	V2R1	A new FTP SMF 119 record with subtype 71.	NMI and SMF enhancements for TCP/IP applications
	FTP server transfer initialization record	V2R1	<ul style="list-style-type: none"> A new value, SMF119FT_FxProtoLevelTV1_2, might be returned in SMF119FT_FSPProtoLevel to indicate that the SSL protocol is TLSV1.2. A new value, SMF119FT_FxCipher4X, might be returned in SMF119FT_FSCipher to indicate that the cipher can be represented only in 4 bytes. The four-byte cipher can be obtained from SMF119FT_FSCipher4. A new field, SMF119FT_FSCipher4, is returned to indicate the four-byte cipher value in use. 	AT-TLS support for TLS v1.2 and related features
	FTP server session record	V2R1	<ul style="list-style-type: none"> A new value, SMF119FT_FxProtoLevelTV1_2, might be returned in SMF119FT_FSNProtoLevel to indicate that the SSL protocol is TLSV1.2. A new value, SMF119FT_FxCipher4X, might be returned in SMF119FT_FSNCipher to indicate that the cipher can be represented only in 4 bytes. The four-byte cipher can be obtained from SMF119FT_FSNCipher4. A new field, SMF119FT_FSNCipher4, is returned to indicate the four-byte cipher value in use. 	AT-TLS support for TLS v1.2 and related features
	FTP client transfer initialization record	V2R1	<ul style="list-style-type: none"> A new value, SMF119FT_FxProtoLevelTV1_2, might be returned in SMF119FT_FCProtoLevel to indicate that the SSL protocol is TLSV1.2. A new value, SMF119FT_FxCipher4X, might be returned in SMF119FT_FCCipher to indicate that the cipher can be represented only in 4 bytes. The four-byte cipher can be obtained from SMF119FT_FCCipher4. A new field, SMF119FT_FCCipher4, is returned to indicate the four-byte cipher value in use. 	AT-TLS support for TLS v1.2 and related features

Table 37. Summary of new Communications Server real-time TCP/IP NMI (continued)

NMI	Request/response	Rel.	Description	Reason for change
Real-time SMF data NMI (SYSTCPSM)	FTP client login failure record	V2R1	<ul style="list-style-type: none"> A new value, SMF119FT_FxProtoLevelTV1_2, might be returned in SMF119FT_FCLProtoLevel to indicate that the SSL protocol is TLSV1.2. A new value, SMF119FT_FxCipher4X, might be returned in SMF119FT_FCLCipher to indicate that the cipher can only be represented in 4 bytes. The four-byte cipher can be obtained from SMF119FT_FCLCipher4. A new field, SMF119FT_FCLCipher4, is returned to indicate the four byte cipher value in use. 	AT-TLS support for TLS v1.2 and related features
	FTP client session record	V2R1	<ul style="list-style-type: none"> A new value, SMF119FT_FxProtoLevelTV1_2, might be returned in SMF119FT_FCNProtoLevel to indicate that the SSL protocol is TLSV1.2. A new value, SMF119FT_FxCipher4X, might be returned in SMF119FT_FCNCipher to indicate that the cipher can only be represented in 4 bytes. The four-byte cipher can be obtained from SMF119FT_FCNCipher4. A new field, SMF119FT_FCNCipher4, is returned to indicate the four-byte cipher value in use. 	AT-TLS support for TLS v1.2 and related features
	N/A	V1R12	Provides new CSSMTP SMF 119 records with subtypes 48-52.	Management data for CSSMTP
		V1R12	Provides new DVIPA SMF 119 records with subtypes 32-37.	SMF event records for sysplex events
TMI copy buffer interfaces (EZBTMIC1, EZBTMIC4, and TMI_Copybuffer())	N/A	V1R13	An application no longer needs to be APF authorized to invoke the interface. Instead, for applications that are not APF-authorized, the security product profile must be defined for the real-time service interface and the user ID that is associated with the application must be permitted for READ access to the profile.	Simplified authorization requirements for real-time TCP/IP network monitoring NMI

Resolver callable NMI (EZBREIFR)

The Communications Server resolver callable NMI (EZBREIFR) is new V1R13; see Table 38.

Table 38. Summary of new Communications Server resolver callable NMI (EZBREIFR)

Request	Rel.	Description	Reason for change
N/A	V1R13	New callable NMI that enables network management applications to obtain resolver configuration information.	NMI for retrieving system resolver configuration information

SNMP manager API

Table 39 on page 106 lists the updates to the Communications Server SNMP manager network management interface (NMI).

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Table 39. Summary of new Communications Server IP SNMP manager API

Function	Parameters	Release	Description	Reason for change
snmpBuildSession	SnmpConfigEntry	V1R12	The input SnmpConfigEntry structure can be used to pass an engineID value to be used when sending an SNMPv2 trap with USM security.	Enhancements to SNMP manager API
snmpInitialize	functionsRequested	V1R12	A value of 1 is now allowed for this parameter. This indicates a manager application's use of updated V1R12 data structures. Previously, 0 was the only allowed value.	Enhancements to SNMP manager API
snmpSetLogLevel()	logLevel	V1R13	The input parameter logLevel, as defined in snmpmgr.h, is changed to include a new value, SNMP_LOG_INTERNAL(8). Specification of this value, alone or in combination with any of the existing values, will trigger the logging of the SNMP packet processing traces under the SNMP Manager API.	TCP/IP serviceability enhancements
snmpValueCreateUnsigned32	N/A	V1R12	This new function creates an smiValue structure, of type UNSIGNED32, that is used in the creation of an SNMP VarBind.	Enhancements to SNMP manager API

Syslog daemon name/token pair

Table 40 lists the updates to the Communications Server application interface for syslog daemon name/token pair.

Table 40. Summary of new syslog daemon name/token pair

Parameter	Release	Description	Reason of change
Syslog daemon name/token pair	V2R1	During the initialization, the syslog daemon (syslogd) creates a name/token pair that provides the syslogd configuration file location and related information.	API to locate SYSLOGD configuration file

TCP/IP callable NMI (EZBNMIFR)

Table 41 on page 107 lists the updates to the Communications Server TCP/IP callable NMI.

Table 41. Summary of new Communications Server TCP/IP callable NMI (EZBNMIFR)

Request	Parameter/output	Rel.	Description	Reason for change
GetConnectionDetail	NWMCConnLclSMCLinkId	V2R1	New NWMCConnLclSMCLinkId field that indicates the local stack link ID for the SMC-R link that this connection traverses.	Shared Memory Communications over Remote Direct Memory Access
	NWMCConnRmtSMCLinkId	V2R1	New NWMCConnRmtSMCLinkId field that indicates the remote stack link ID for the SMC-R link that this connection traverses.	Shared Memory Communications over Remote Direct Memory Access
	NWMCConnSMCRCfg	V2R1	New flag bit NWMCConnSMCRCfg is set in the NWMCConnFlag01 field to indicate whether the SMCR parameter is configured on the GLOBALCONFIG statement.	Shared Memory Communications over Remote Direct Memory Access
	NWMCConnSMReason	V2R1	New NWMCConnSMReason field that indicates why a connection is not using an SMC-R link.	Shared Memory Communications over Remote Direct Memory Access
	NWMCConnSMCStatus	V2R1	New NWMCConnSMCStatus field that indicates whether this connection is traversing an SMC-R link.	Shared Memory Communications over Remote Direct Memory Access
	NWMCConnTTLSSLProt	V2R1	New NWMTTLSPROTTLV1_2 value (X'0303')	AT-TLS support for TLS v1.2 and related features
	NWMCConnTTLSSLNegCiph	V2R1	New NWMTTLSSNEGCIPIH4X value (X'4X') is added to indicate four-character cipher	AT-TLS support for TLS v1.2 and related features
	NWMCConnTTLSSLNegCiph4	V2R1	New field containing four-character negotiated cipher code	AT-TLS support for TLS v1.2 and related features
	NWMCConnStall	V1R13	New bit defined to indicate whether the connection's send data flow is stalled.	Expanded Intrusion Detection Services
	NWMCConnAncInputQ flag NWMCConnBulkDataIntfName	V1R12	For TCP connections that are using the QDIO inbound workload queueing function, the new flag indicates if a connection is using the bulk-data queue and the field provides the inbound interface name.	Performance improvements for streaming bulk data
	NWMCConnTcpTrustedPartner	V1R12	This flag indicates whether the partner security credentials of a partner within a sysplex or subplex have been retrieved using the SIOCGPARTNERINFO ioctl, or that the SIOCPARTNERINFO ioctl has been successfully issued or inherited from the listener socket.	Trusted TCP connections
GetDVIPAList	NWMDvListFlags	V2R1	A new flag, NWMDVLISTFLAGS_DVRAFFINITY (0x04), is added. The flag means that an application instance DVIPA was created with affinity. Applications are permitted to dynamically create DVIPAs that are within the range defined by a VIPARANGE statement.	Affinity for application-instance DIVPAs
	NWMDvListPrefix	V1R12	This existing field is used to return the configured IPv4 prefix length of an IPv4 DVIPA. It is now also used to return the configured IPv6 prefix length of an IPv6 DVIPA.	Extend sysplex distributor support for DataPower for IPv6

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Table 41. Summary of new Communications Server TCP/IP callable NMI (EZBNMIFR) (continued)

Request	Parameter/output	Rel.	Description	Reason for change
GetDVIPAPortDist	NWMDvPortDistGRE	V1R12	This existing field is used to indicate that generic routing encapsulation (GRE) is used to distribute requests to IPv4 non-z/OS targets. It can now also indicate that IPv6 routing encapsulation is used to distribute requests to IPv6 non-z/OS targets.	Extend sysplex distributor support for DataPower for IPv6
	NWMDvPortDistFlags output field	V1R12	New flag added to indicate whether the HotStandby target state is active or backup.	Sysplex distributor support for hot-standby server
	NWMDvPortDistFlags2 output field	V1R12	New flags field containing HotStandby flags that indicate whether the server type is preferred or backup.	Sysplex distributor support for hot-standby server
	NWMDvPortDistMethod output field	V1R12	New NWMDvPortDistMethod_HotStandby value added to field to indicate the new HotStandby distribution method.	Sysplex distributor support for hot-standby server
GetFTPDaemonConfig	SMF119FT_FDCFApplname	V2R1	New SMF119FT_FDCFApplname field contains 8-character FTP server application name from the APPLNAME statement.	Release update
	SMF119FT_FDCFSslv3	V2R1	New field to enable or disable SSLV3	APAR PI28679
	N/A	V2R1	New poll-type request to provide FTP daemon configuration information.	NMI and SMF enhancements for TCP/IP applications
GetGlobalStats	NWMTCPSTCfgEphemDef	V2R1	Contains the number of configured ephemeral ports to be assigned for TCP applications.	User control of Ephemeral Port Ranges
	NWMTCPSTEphemInUse	V2R1	Contains the current number of configured ephemeral ports in use by TCP applications.	User control of Ephemeral Port Ranges
	NWMTCPSTEphemHiWater	V2R1	Contains the highest number of configured ephemeral ports in use by TCP applications at any time.	User control of Ephemeral Port Ranges
	NWMTCPSTEphemExhaust	V2R1	Contains the number of bind() requests that failed because no TCP ephemeral port was available.	User control of Ephemeral Port Ranges
	NWMUDPSTCfgEphemDef	V2R1	Contains the number of configured ephemeral ports to be assigned for UDP applications.	User control of Ephemeral Port Ranges
	NWMUDPSTEphemInUse	V2R1	Contains the current number of configured ephemeral ports in use by UDP applications.	User control of Ephemeral Port Ranges
	NWMUDPSTEphemHiWater	V2R1	Contains the highest number of configured ephemeral ports in use by UDP applications at any time.	User control of Ephemeral Port Ranges
	NWMUDPSTEphemExhaust	V2R1	Contains the number of bind() requests that failed because no UDP ephemeral port was available.	User control of Ephemeral Port Ranges

Table 41. Summary of new Communications Server TCP/IP callable NMI (EZBNMIFR) (continued)

Request	Parameter/output	Rel.	Description	Reason for change			
GetGlobalStats (continued)	NWMTCPSTSMCRCfg	V2R1	<ul style="list-style-type: none"> New flag bit NWMTCPSTSMCRCfg is set in the NWMTCPSTFlags field to indicate whether the SMCR parameter is configured on the GLOBALCONFIG statement. When the SMCR parameter is configured on the GLOBALCONFIG statement, the listed TCP counters reflect all TCP connections, including connections over SMC-R links. The listed SMC-R statistics are added. 	Shared Memory Communications over Remote Direct Memory Access			
	Existing TCP stats changed: NWMTCPSTCurrEstab NWMTCPSTActiveOpened NWMTCPSTPassiveOpened NWMTCPSTConnClosed NWMTCPSTInSegs NWMTCPSTOutSegs NWMTCPSTOutRsts NWMTCPSTEstabResets NWMTCPSTAcceptCount NWMTCPSTKeepAliveProbes NWMTCPSTKeepAliveDrop NWMTCPSTFinwait2Drops						
	New SMC-R stats: NWMTCPSTSMCRCurrEstabLnks NWMTCPSTSMCRLnkActTimeOut NWMTCPSTSMCRActLnkOpened NWMTCPSTSMCRPasLnkOpened NWMTCPSTSMCRLnksClosed NWMTCPSTSMCRCurrEstab NWMTCPSTSMCRActiveOpened NWMTCPSTSMCRPassiveOpened NWMTCPSTSMCRConnClosed NWMTCPSTSMCRInSegs NWMTCPSTSMCROutSegs NWMTCPSTSMCRInRsts NWMTCPSTSMCROutRsts						
	NWMTCPSTConnFloods				V1R13	New field defined - The number of TCP servers under a potential connection flood attack.	Expanded Intrusion Detection Services
	NWMTCPSTConnStalls				V1R13	New field defined -The number of TCP connections whose send data flow is stalled.	Expanded Intrusion Detection Services
NWMTCPSTInBulkQSegs	V1R12	For TCP connections that are using the QDIO inbound workload queueing function, this field indicates the number of TCP segments that are received over the BulkData ancillary input queue (AIQ).	Performance improvements for streaming bulk data				
N/A		V1R12	New poll-type request to provide TCP/IP stack global statistics.	Enhancements to TCP/IP callable NMI (EZBNMIFR) - network interface and TCP/IP statistics			

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Table 41. Summary of new Communications Server TCP/IP callable NMI (EZBNMIFR) (continued)

Request	Parameter/output	Rel.	Description	Reason for change
Getlfs	NWMIfflags	V2R1	<ul style="list-style-type: none"> The NWMIffDefIntf flag bit is set in the NWMIfflags field for IPv4 IPAQIDIO and VIRTUAL interfaces that are defined by the INTERFACE statement. The NWMIffBcast flag bit is set in the NWMIfflags field for IPv4 IPAQIDIO interfaces defined by the INTERFACE statement with the IPBCAST parameter specified. 	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	NWMIffRouteMask	V2R1	The NWMIffRouteMask provides the configured subnet mask for IPv4 IPAQIDIO interfaces defined by the INTERFACE statement.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	NWMIffChpID	V2R1	The NWMIffChpID provides the CHPID value for IPv4 IPAQIDIO interfaces defined by the INTERFACE statement.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	NWMIffCfgMtu	V2R1	The NWMIffCfgMtu provides the configured MTU value for IPv4 IPAQIDIO interfaces defined by the INTERFACE statement.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	NWMIffDatapathNum	V2R1	The NWMIffDatapathNum provides the datapath address for IPv4 IPAQIDIO interfaces defined by the INTERFACE statement, and for IPv6 IPAQIDIO6 interfaces.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	NWMIffAssocName	V2R1	The NWMIffAssocName provides the TRLE name for IPv4 IPAQIDIO interfaces defined by the INTERFACE statement, and for IPv6 IPAQIDIO6 interfaces.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	NWMIffSrcVipaIntfName	V2R1	The NWMIffSrcVipaIntfName provides the SOURCEVIPAINTERFACE name for IPv4 IPAQIDIO interfaces defined by the INTERFACE statement.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	NWMIffpadAddr	V2R1	The NWMIffpadAddr provides the IP address for IPv4 IPAQIDIO and VIRTUAL interfaces defined by the INTERFACE statement.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	NWMIffFlags	V2R1	<ul style="list-style-type: none"> The NWMIffSMCRFlg flag bit is set in the NWMIffFlags field for OSD interfaces that have SMCR specified on the INTERFACE statement The NWMIffPNetIDFlg flag bit is set in the NWMIffFlags field for OSD, OSX and RNIC interfaces to indicate the NWMIffPNetID field contains the Physical network ID. 	Shared Memory Communications over Remote Direct Memory Access
	NWMIffType	V2R1	The NWMIffType field can have a new NWMIFTRNIC type for 10GbE RoCE Express interfaces, which are represented as RNIC interfaces.	Shared Memory Communications over Remote Direct Memory Access
	NWMIffMacAddr	V2R1	The NWMIffMacAddr field contains the VMAC address generated by the VTAM DLC layer for 10GbE RoCE Express interfaces.	Shared Memory Communications over Remote Direct Memory Access
	NWMIffAssocName	V2R1	The NWMIffAssocName field contains the TRLE name for 10GbE RoCE Express interfaces.	Shared Memory Communications over Remote Direct Memory Access

Table 41. Summary of new Communications Server TCP/IP callable NMI (EZBNMIFR) (continued)

Request	Parameter/output	Rel.	Description	Reason for change
GetIfs (continued)	NWMIfPFID	V2R1	The new NWMIfPFID field contains the PFID for 10GbE RoCE Express interfaces.	Shared Memory Communications over Remote Direct Memory Access
	NWMIfGID	V2R1	The new NWMIfGID field contains the GID for 10GbE RoCE Express interfaces.	Shared Memory Communications over Remote Direct Memory Access
	NWMIfSMCRStatus	V2R1	The new NWMIfSMCRStatus field contains the SMCR status for OSD interfaces.	Shared Memory Communications over Remote Direct Memory Access
	NWMIfPNetID	V2R1	The new NWMIfPNetID field contains the Physical network ID for active OSD, OSX and 10GbE RoCE Express interfaces.	Shared Memory Communications over Remote Direct Memory Access
	NWMIfFlags2	V2R1	The NWMIfRnicAssoc is set in the NWMIfFlags2 field to indicate that this 10GbE RoCE Express interface is associated with an OSD interface.	Shared Memory Communications over Remote Direct Memory Access
	NWMIfChksumOffload and NWMIfTcpSegOffload parameters	V1R13	These flags are now valid for IPAQENET6 interfaces.	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	NWMIfTHIPERIQDX	V1R13	New interface type for IQDX (for interface types of either IPAQIQX or IPAQIQX6).	HiperSockets optimization for intraensemble data networks
	NWMIfIQDXFlg	V1R13	For an OSX interface, an indicator if an associated dynamic IQDX interface name field is provided.	HiperSockets optimization for intraensemble data networks
	NWMIfIQDXName	V1R13	For an OSX interface, the associated dynamic IQDX interface name.	HiperSockets optimization for intraensemble data networks
	N/A	V1R12	New poll-type request to provide TCP/IP interface attribute and IP address information.	Enhancements to TCP/IP callable NMI (EZBNMIFR) - network interface and TCP/IP statistics
GetIfStats	NWMIfTHIPERIQDX	V1R13	New interface type for IQDX (for interface types of either IPAQIQX or IPAQIQX6).	HiperSockets optimization for intraensemble data networks
	NWMIfStIQDXFlg	V1R13	For an OSX interface, an indicator if statistics for an associated dynamic IQDX interface exists.	HiperSockets optimization for intraensemble data networks
	NWMIfStInIQDXBytes NWMIfStInIQDXUcastPkts NWMIfStOutIQDXBytes NWMIfStOutIQDXUcastPkts	V1R13	For an OSX interface, statistics for bytes and unicast packets sent and received over the associated dynamic IQDX interface.	HiperSockets optimization for intraensemble data networks
	N/A	V1R12	New poll-type request to provide TCP/IP stack interface counters.	Enhancements to TCP/IP callable NMI (EZBNMIFR) - network interface and TCP/IP statistics
GetIfStatsExtended	NWMIfTHIPERIQDX	V1R13	New interface type for IQDX (for interface types of either IPAQIQDX or IPAQIQDX6)	HiperSockets optimization for intraensemble data networks
	N/A	V1R12	New poll-type request to provide DLC interface counters.	Enhancements to TCP/IP callable NMI (EZBNMIFR) - network interface and TCP/IP statistics
GetProfile	NMTP_PIDSEye	V2R1	In the C header file, EZBNMMP, eyecatcher constant, NMTP_PIDSEYEC has been corrected.	Release update
	NMTP_V6CFDynXcfAddr	V2R1	In the C header file, EZBNMMP, this IPv6 address field has been redefined from char to struct in6_addr.	Release update
	NMTP_IPA6Addr	V2R1	In the C header file, EZBNMMP, this IPv6 address field has been redefined from char to struct in6_addr.	Release update

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Table 41. Summary of new Communications Server TCP/IP callable NMI (EZBNMIFR) (continued)

Request	Parameter/output	Rel.	Description	Reason for change
GetProfile (continued)	NMTP_INTFFlags	V2R1	New flag NMTP_INTFTempIP in field NMTP_INTFFlags that indicates the Interface is configured with the TEMPIP parameter.	Enable DHCP clients on OSA Interfaces
	NMTP_TCCFConnectTimeOut NMTP_TCCFConnectInitInterval NMTP_TCCFFRRThreshold NMTP_TCCFKeepAliveProbes NMTP_TCCFKAPProbeInterval NMTP_TCCFMaxRetransmit NMTP_TCCFNagle NMTP_TCCFQueuedRTT NMTP_TCCFRetransmitAttempts NMTP_TCCFMaxSndBufSize NMTP_TCCFTimeWaitInterval	V2R1	New fields to indicate the setting of new TCPCONFIG parameters: <ul style="list-style-type: none"> • CONNECTTIMEOUT • CONNECTINITINTERVAL • FRRTHRESHOLD • KEEPALIVEPROBES • KEEPALIVEPROBEINTERVAL • MAXIMUMRETRANSMITTIME • NAGLE and NONAGLE • QUEUEDRTT • RETRANSMITATTEMPTS • TCPMAXSENBUFFERSIZE • TIMEWAITINTERVAL 	Enhanced TCP protocol configuration options and default settings
	NMTP_GBCFFlags NMTP_GBCFPFidCnt NMTP_GBCFFixedMemory NMTP_GBCFTcpKeepMinInt NMTP_GBCFPFs array	V2R1	<ul style="list-style-type: none"> • The new NMTP_GBCFSMCR flag bit is set in the NMTP_GBCFFlags field to indicate that the SMCR operand was specified on the GLOBALCONFIG statement. • The new NMTP_GBCFPFidCnt field indicates the current number of configured PCI-function ID (PFID) and Port number entries in the NMTP_GBCFPFs array. • The new NMTP_GBCFFixedMemory field specifies the SMCR FIXEDMEMORY value. FIXEDMEMORY is specified in megabyte increments. • The new NMTP_GBCFTcpKeepMinInt field specifies the SMCR TCPKEEPMININTERVAL value. • The new NMTP_GBCFPFs array contains a maximum of 16 PFID and port number paired entries: <ul style="list-style-type: none"> – NMTP_GBCFPFid is the 2-byte hexadecimal PFID value. – NMTP-GBCFPFport is the 1-byte decimal port number. – NMTP_GBCFPFmtu is a 2-byte decimal maximum transmission unit (MTU) value. 	Shared Memory Communications over Remote Direct Memory Access

Table 41. Summary of new Communications Server TCP/IP callable NMI (EZBNMIFR) (continued)

Request	Parameter/output	Rel.	Description	Reason for change
GetProfile (continued)	NMTP_PORTFlags	V2R1	The NMTP_PORTNOSMCR flag bit is set in the NMTP_PORTFlags field to indicate this port or port range is disabled for SMC-R.	Shared Memory Communications over Remote Direct Memory Access
	NMTP_INTFFlags	V2R1	The NMTP_INTFSMCR flag bit is set in the NMTP_INTFFlags field for OSA interfaces that have SMCR specified or that take the SMCR default on the INTERFACE statement.	Shared Memory Communications over Remote Direct Memory Access
	NMTP_MGMTSmf119Types	V2R1	<ul style="list-style-type: none"> The new NMTP_MGMT119SmcrGrpStats flag bit is set in the NMTP_MGMTSmf119Type field to indicate that the new SMC-R link group statistics records were requested on the SMFCONFIG profile statement. The new NMTP_MGMT119SmcrLnkEvent flag bit is set in the NMTP_MGMTSmf119Type field to indicate that the new SMC-R link state start and end records were requested on the SMFCONFIG profile statement. 	Shared Memory Communications over Remote Direct Memory Access
	NMTP_V4CFFlags	V2R1	The description of flag NMTP_V4CFQDIOAcc is updated. The restriction of the QDIO Accelerator to sysplex distributor traffic is no longer determined only by whether IP datagram forwarding is enabled.	QDIO acceleration coexistence with IP filtering
	NMTP_TCCFSelectiveACK	V2R1	New flag is added to indicate the setting of TCPCONFIG SELECTIVEACK.	TCP support for selective acknowledgements
	NMTP_NETACache	V2R1	New field is added to indicate the setting of the CACHEALL, CACHEPERMIT, and CACHESAME parameters on the NETACCESS statement.	Improve auditing of NetAccess rules
	NMTP_TCCFEphemPortLow	V2R1	New field is added to indicate the low and high port values for TCP ephemeral ports.	User control of Ephemeral Port Ranges
	NMTP_TCCFEphemPortHighNum	V2R1	New fields is added to indicate the low and high port values for TCP ephemeral ports.	User control of Ephemeral Port Ranges
	NMTP_UDCFEphemPortLow	V2R1	New fields is added to indicate the low and high port values for UDP ephemeral ports	User control of Ephemeral Port Ranges
NMTP_UDCFEphemPortHighNum	V2R1	New fields is added to indicate the low and high port values for UDP ephemeral ports	User control of Ephemeral Port Ranges	

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Table 41. Summary of new Communications Server TCP/IP callable NMI (EZBNMIFR) (continued)

Request	Parameter/output	Rel.	Description	Reason for change
GetProfile (continued)	NMTP_V4CFDynXcfSrcVipaIfNameFlg	V2R1	New flag is added to indicate if the dynamic XCF source VIPA interface name is specified.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	NMTP_V4CFDynXcfSrcVipaIfName	V2R1	New field is added to indicate the configured dynamic XCF source VIPA interface name.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	NMTP_INTFDefIntf NMTP_INTFFlags	V2R1	The NMTP_INTFDefIntf flag bit is set in the NMTP_INTFFlags field for IPv4 IPAQIDIO and VIRTUAL interfaces that are defined by the INTERFACE statement.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	NMTP_INTFIPbcast	V2R1	The NMTP_INTFIPbcast flag bit is set in the NMTP_INTFFlags field for IPv4 IPAQIDIO interfaces that are defined by the INTERFACE statement with the IPBCAST parameter specified.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	NMTP_INTFChpID	V2R1	The NMTP_INTFChpID provides the CHPID value for IPv4 IPAQIDIO interfaces that are defined by the INTERFACE statement.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	NMTP_INTFIPv4Mask	V2R1	The NMTP_INTFIPv4Mask provides the configured subnet mask for IPv4 IPAQIDIO interfaces that are defined by the INTERFACE statement.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	NMTP_INTFMtu	V2R1	The NMTP_INTFMtu provides the configured MTU value for IPv4 IPAQIDIO interfaces that are defined by the INTERFACE statement.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	NMTP_INTFIPv4Addr	V2R1	The NMTP_INTFIPv4Addr provides the IP address for IPv4 IPAQIDIO and VIRTUAL interfaces that are defined by the INTERFACE statement.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	NMTP_INTFSrcVipaIntfName	V2R1	The NMTP_INTFSrcVipaIntfName provides the SOURCEVIPAINTERFACE name for IPv4 IPAQIDIO interfaces that are defined by the INTERFACE statement.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	NMTP_GBCFSegOffload	V1R13	Use of this flag is deprecated. Use NMTP_V4CFSegOffload.	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	NMTP_V4CFChkOffload	V1R13	New flag to indicate setting of IPCONFIG CHECKSUMOFFLOAD.	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	NMTP_V4CFSegOffload	V1R13	New flag to indicate setting of IPCONFIG SEGMENTATIONOFFLOAD.	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	NMTP_V6CFChkOffload	V1R13	New flag to indicate setting of IPCONFIG6 CHECKSUMOFFLOAD.	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	NMTP_V6CFSegOffload	V1R13	New flag to indicate setting of IPCONFIG6 SEGMENTATIONOFFLOAD.	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	NMTP_GBCFAutoIQDX	V1R13	New flags to indicate setting of GLOBALCONFIG AUTOIQDX	HiperSockets optimization for intraensemble data networks

Table 41. Summary of new Communications Server TCP/IP callable NMI (EZBNMIFR) (continued)

Request	Parameter/output	Rel.	Description	Reason for change
GetProfile (continued)	NMTP_DVCFSAFNameSet	V1R13	New flag in field NMTP_DVCFFlags to indicate if the SAF parameter is specified on the VIPARANGE statement.	Improved security granularity for VIPARANGE DVIPAs
	NMTP_DVCFSAFName	V1R13	New field to indicate the name that is specified on the SAF parameter of the VIPARANGE statement.	Improved security granularity for VIPARANGE DVIPAs
	NMTP_PORTJobName	V1R13	This field can now contain a job name consisting of a 1-7 character prefix followed by an asterisk.	Wildcard support for the PORTRANGE statement
	NMTP_INTFChpIDFlg NMTP_INTFChpIDType NMTP_V6CFOSMSecClass	V1R12	<ul style="list-style-type: none"> New field that provides the IPSECURITY OSMSECCLASS value from the IPCONFIG6 profile statement. New flag in field NMTP_INTFFlags that indicates whether an optional CHPID value was specified in field NMTP_INTFChpID. New field that provides the CHPID type for OSA-Express interfaces defined by the INTERFACE statement. 	z/OS Communications Server in an ensemble
	NMTP_INTFDynTypes	V1R12	<p>Updated to return the NMTP_INTFDynTypes field which indicates the dynamic inbound performance types. This field is only set when field NMTP_INTFInbPerfType is set to NMTP_INTFIPDYN and the interface was defined by an INTERFACE statement.</p> <p>The record field is x'80', NMTP_INTFDYNWRKLDQ. If set, DYNAMIC WORKLOADQ is configured.</p>	Performance improvements for sysplex distributor connection routing
	NMTP_DVCFPfxLen NMTP_DDVSTier1Gre	V1R12	<ul style="list-style-type: none"> This existing field is used to return the configured IPv4 prefix length of an IPv4 DVIPA. It is now also used to return the configured IPv6 prefix length of an IPv6 DVIPA. This existing field is used to indicate that generic routing encapsulation (GRE) is used to distribute requests to IPv4 non-z/OS targets. It can now also indicate that IPv6 routing encapsulation is used to distribute requests to IPv6 non-z/OS targets. 	Extend sysplex distributor support for DataPower for IPv6
NMTP_MGMT119DVIPA NMTP_MGMTNMSmfDVIPA	V1R12	<ul style="list-style-type: none"> New flag added to the NMTP_MGMTSmf119Types field to indicate whether the new DVIPA SMF 119 records were requested on the SMFCONFIG profile statement. New flag added to the NMTP_MGMTNetMonSmfRecs field to indicate whether the new DVIPA SMF 119 records were requested on the NETMONITOR profile statement. 	SMF event records for sysplex events	

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Table 41. Summary of new Communications Server TCP/IP callable NMI (EZBNMIFR) (continued)

Request	Parameter/output	Rel.	Description	Reason for change
GetProfile (continued)	NMTP_DDVSDistMethod output field	V1R12	New NMTP_DDVSHotStandby value added to field to indicate the new HotStandby distribution method.	Sysplex distributor support for hot-standby server
	NMTP_DDVSFlags output field	V1R12	New HotStandby flags are added: <ul style="list-style-type: none"> NMTP_DDVSrvTypePreferred is set if the server type is Preferred. NMTP_DDVSrvTypeBackup is set if the server type is Backup. NMTP_DDVSAutoSwitchBack is set if AUTOSWITCHBACK is configured. NMTP_DDVSHealthSwitch is set if HEALTHSWITCH is configured. 	Sysplex distributor support for hot-standby server
	NMTP_DDVSBackupRank output field	V1R12	New field that indicates the rank if this is a HotStandby backup server.	Sysplex distributor support for hot-standby server
	NMTP_DASP section NMTP_PICOsecChanged NMTP_SRCIFlags	V1R12	<ul style="list-style-type: none"> This new section provides information from the new DEFADDRTABLE TCP/IP profile statement. New flag defined for the new DEFADDRTABLE profile statement. New flag added to this flags field to support the new PUBLICADDRS parameter on the SRCIP TCP/IP profile statement. 	Configurable default address selection policy table
	NMTP_MGMTNetMonSmfRecs field	V1R12	New flag bits, NMTP_MGMTNMSmfCSMAIL and NMTP_MGMTNMSmfCSSMTP, added to field NMTP_MGMTNetMonSmfRecs to indicate if CSSMTP SMF 119 records were requested.	Management data for CSSMTP
	New flag NMTP_GBCFSysMonNoJoin added to NMTP_GBCFSysMonOptions field	V1R12	Indicates whether GLOBALCONFIG SYSPLEXMONITOR NOJOIN is configured.	Control joining the sysplex XCF group
GetRnics	N/A	V2R1	New poll-type request to obtain information for SMC-R link groups and the SMC-R links in each group.	Shared Memory Communications over Remote Direct Memory Access
GetSmcLinks	N/A	V2R1	New poll-type request to obtain information for 10GbE RoCE Express interfaces.	Shared Memory Communications over Remote Direct Memory Access
GetStorageStatistics	NWMStgSMCRCfg	V2R1	<ul style="list-style-type: none"> New flag bit NWMStgSMCRCfg is set in the NWMStgFlags field to indicate whether the SMCR parameter is configured on the GLOBALCONFIG statement. The SMC-R storage utilization information is added when the SMCR parameter is configured on the GLOBALCONFIG statement. 	Shared Memory Communications over Remote Direct Memory Access
	New SMC-R storage utilization: NWMStg64SMCRFixedCurrent NWMStg64SMCRFixedMax NWMStg64SMCRFixedLimit NWMStg64SMCRSendCurrent NWMStg64SMCRSendMax NWMStg64SMCRRecvCurrent NWMStg64SMCRRecvMax			
	NWMStg64PrivateCurrent NWMStg64PrivateMax NWMStg64PrivateFree NWMStg64PrivateTrace NWMStg64ComTrace	V1R13	New parameters to return the storage usage information for 64-bit private storage and 64-bit storage used for tracing.	Increased CTRACE and VIT capacity
	NWMStgLPACurrent	V1R12	New parameter to return the storage used for dynamic LPA modules.	Enhancements to the TCP/IP storage display
GetTCPListeners	NWMTCPConnFlood	V1R13	New bit defined to indicate whether the server is under a potential connection flood attack.	Expanded Intrusion Detection Services
GetInProfile	SMF119TN_TPSSLV3	V2R1	New field to enable or disable SSLV3	APAR PI28679

Trace formatting NMI (EZBCTAPI)

Table 42 lists the updates to the Communications Server the updates to the Communications Server trace formatting network management interface (NMI).

Table 42. Summary of new Communications Server trace formatting NMI (EZBCTAPI)

Request / Response	Release	Description	Reason of change
COMP	V2R1	The NMI supports formatting trace records that are obtained from the new real-time application-controlled TCP/IP trace NMI. For these trace records, this parameter is ignored.	Real-time application-controlled TCP/IP trace NMI
OPTIONS	V1R13	New HPRDIAG option can be specified to format statistics on HPR traffic.	HPR packet trace analyzer for Enterprise Extender
TABLE	V2R1	The NMI supports formatting trace records that are obtained from the new real-time application-controlled TCP/IP trace NMI. For these trace records, you must specify the new EZBRCFMT table name.	Real-time application-controlled TCP/IP trace NMI

Trusted TCP connections API for Java

Table 43 lists the updates to the Communications Server trusted TCP connections API for Java.

Table 43. Summary of new Communications Server trusted TCP connections API for Java

Name	Release	Description	Reason for change
Trusted TCP connections API for Java	V1R12	Provides a Java package that enables a Java programmer to issue the SIOCSPARTNERINFO ioctl and the SIOCGPARTNERINFO ioctl to retrieve sysplex-specific connection routing information and security credentials for a partner.	Trusted TCP connections

Environment variables

Table 44 lists the new and updated Communications Server environment variables. See *z/OS Communications Server: IP Configuration Reference* for more detailed information.

Table 44. Summary of new and changed Communications Server environment variables

Environment Variables	Appl	Release	Description	Reason for change
OMPROUTE_OPTIONS	OMPROUTE	V2R1	The OMPROUTE_OPTIONS variable is ignored	OMPROUTE adjacency preservation improvements

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Table 44. Summary of new and changed Communications Server environment variables (continued)

Environment Variables	Appl	Release	Description	Reason for change
SNMP_MGR_LOG_LEVEL	SNMP Manager API	V1R13	Add the value SNMP_LOG_INTERNAL (8) to the list of valid values for this environment variable.	TCP/IP serviceability enhancements

Socket APIs

This topic includes information about Communications Server socket APIs.

Refer to the following documents for more information about socket APIs:

- For complete documentation of the z/OS UNIX C sockets APIs, refer to *z/OS XL C/C++ Runtime Library Reference*
- For information about z/OS UNIX Assembler Callable Services, refer to *z/OS UNIX System Services Programming: Assembler Callable Services Reference*
- For information about TCP/IP socket APIs, refer to *z/OS Communications Server: IP Sockets Application Programming Interface Guide and Reference*
- For information about TCP/IP CICS® sockets, refer to *z/OS Communications Server: IP CICS Sockets Guide*

General updates of socket APIs

Table 45 lists the general updates made to the IP socket APIs.

Table 45. Summary of new and changed Communications Server socket APIs

Socket API	Function call/Parameter	Rel.	Description	Reason for change
<ul style="list-style-type: none"> • Call instruction • CICS C socket calls • CICS call instruction • IMS call instruction • Language Environment C/C++ socket • Macro • REXX socket • UNIX System Services Assembler Callable Service 	New SIOCGPARTNERINF O ioctl	V1R12	Provides an interface for an application to retrieve security information about its partner.	Trusted TCP connections
	New SIOCSPARTNERINFO ioctl	V1R12	Enables an application to avoid suspending while retrieving the partner security credentials with the SIOCGPARTNERINFO ioctl.	Trusted TCP connections

Table 45. Summary of new and changed Communications Server socket APIs (continued)

Socket API	Function call/Parameter	Rel.	Description	Reason for change
<ul style="list-style-type: none"> • Call instruction • CICS C • CICS sockets extended • MACRO • REXX socket • UNIX assembler callable services • XL C/C++ 	bind2addrsel()	V1R12	<p>These APIs support the bind2addrsel() call defined in RFC 5014. This function is only supported for AF_INET6 sockets.</p> <p>The bind2addrsel() call binds the input socket to the source IP address TCP/IP would select for the input destination IPv6 address.</p> <p>The bind2addrsel function is supported in USS Assembler Callable Services with the new BPX1BAS and BPX4BAS entry points.</p>	Configurable default address selection policy table
	getsockopt, setsockopt	V1R12	<p>These APIs support a new socket option at the IPPROTO_IPV6 level: IPV6_ADDR_PREFERENCES as defined in RFC 5014. This socket option is only available for AF_INET6 sockets.</p> <p>Use this option to set and get the source IP address selection preferences affecting all packets sent by a given socket.</p>	Configurable default address selection policy table
	inet6_is_srcaddr()	V1R12	<p>These APIs support the inet6_is_srcaddr() call defined in RFC 5014.</p> <p>The inet6_is_srcaddr() API call tests whether the input IPv6 address conforms to the input address selection preference flags.</p> <p>The inet6_is_srcaddr function is supported in USS Assembler Callable Services as a PFS control function, BPX1PCT (PC#IsSrcAddr) or BPX4PCT (PC#IsSrcAddr).</p>	Configurable default address selection policy table
	SIOCTLCTL ioctl - TTLS_STOP_CONNECTION request	V2R1	<p>The TTLS_STOP_CONNECTION request returns errno Eproto in these conditions:</p> <ul style="list-style-type: none"> • If the application has not read all the data received on the secure connection, the request fails with return code of -1, errno of Eproto, and errno junior of JrTTLSStopReadDataPending. • If the application has outstanding write requests on the connection, the request fails with return code of -1, errno of Eproto, and errno junior of JrTTLSStopWriteDataPending. 	Data security issue with AT-TLS stopped connection

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Table 45. Summary of new and changed Communications Server socket APIs (continued)

Socket API	Function call/Parameter	Rel.	Description	Reason for change
<ul style="list-style-type: none"> • Call instruction • CICS C • CICS sockets extended • MACRO • REXX socket • XL C/C++ 	getaddrinfo()	V1R12	The addrinfo structure is enhanced to comply with RFC 5014. You can use the enhanced structure to pass source IP source address preference flags in the hints parameter of getaddrinfo().	Configurable default address selection policy table
<ul style="list-style-type: none"> • Call instruction • CICS C socket calls • CICS call instruction • Language Environment C/C++ socket • Macro • UNIX System Services Assembler Callable Service 	SIOCTLSSLCTL ioctl	V2R1	TTLSi_SSL_Prot New value TTLSi_SSL_Prot_TLSV1_2 (X'0303') TTLSi_Neg_Cipher New value TTLSi_Neg_Cipher_4CHAR_CIPHER (X'4X') TTLSi_Neg_Cipher4 New field containing four character negotiated cipher	AT-TLS support for TLS v1.2 and related features
REXX Socket	SIOCTLSSLCTL	V2R1	A new four byte cipher field is returned. The existing two character cipher contains "4X" if the cipher cannot be represented with two bytes. A new value of X'0303' can be returned to identify the SSL protocol that is in use as TLS v1.2.	AT-TLS support for TLS v1.2 and related features
LE C/C++	Recv(), recvfrom(), recvmsg()	V2R1	Add new MSG_CONNTERM value in msg_flags of sys/socket.h to indicate the receive request completes only when a TCP connection is terminated.	Enhanced Fast Path socket support
<ul style="list-style-type: none"> • TCP/IP C • UNIX assembler callable services 	getsockopt()	V1R12	When invoked with the SO_CLUSTERCONNTYPE option, this socket API returns an internal indicator for OSA-Express QDIO interfaces with CHPID type OSX or OSM.	z/OS Communications Server in an ensemble
UNIX assembler callable services	recv (BPX1RCV, BPX4RCV), recvfrom (BPX1RFM, BPX4RFM), recvmsg (BPX2RMS, BPX4RMS) Asyncio(BPX1AIO or BPX4AIO): AioCmd=Aio#Recv, AioCmd=Aio#RecvFrom, AioCmd=Aio#RecvMsg)	V2R1	Add new MSG_CONNTERM value in msg_flags of BPXYMSGF macro to indicate the receive request completes only when a TCP connection is terminated.	Enhanced Fast Path socket support
<ul style="list-style-type: none"> • XL C/C++ • UNIX assembler callable services 	SIOCSVIPA, SIOCSVIPA6	V2R1	New option: DVR_DEFINE_AFFINITY - Create DVIPA with affinity	Affinity for application-instance DIVPAs

IPCS subcommands

This topic includes information about the following IPCS subcommands:

- "CTRACE COMP(SYSTCPDA) subcommand" on page 121
- "CTRACE COMP(SYSTCPIS) subcommand" on page 121
- "CTRACE COMP(SYSTCPOT) subcommand" on page 121
- "TCPIPCS subcommand" on page 121
- "General updates to IPCS subcommands" on page 124

See *z/OS Communications Server: IP Diagnosis Guide* for more detailed IPCS subcommands information.

CTRACE COMP(SYSTCPDA) subcommand

The CTRACE COMP(SYSTCPDA) subcommand is the component name for packet data traces. Table 46 lists the CTRACE COMP(SYSTCPDA) subcommand options.

Table 46. Summary of new and changed Communications Server CTRACE COMP(SYSTCPDA) subcommand options

Option	Release	Description	Reason for change
HPRDIAG	V1R13	New option to show a summary view of HPR statistics in the packet trace.	HPR packet trace analyzer for Enterprise Extender
OPTIONS	V1R12	Added a new QID option to filter packet trace records based on the input queue number.	Performance improvements for sysplex distributor connection routing

CTRACE COMP(SYSTCPIS) subcommand

Table 47 lists the CTRACE COMP(SYSTCPIS) subcommand options.

Table 47. Summary of new and changed Communications Server CTRACE COMP(SYSTCPIS) subcommand options

Option	Release	Description	Reason for change
N/A	V1R13	Updated to support tracing and formatting IPv6 packets.	Expanded Intrusion Detection Services

CTRACE COMP(SYSTCPOT) subcommand

Table 48 lists the CTRACE COMP(SYSTCPOT) subcommand options.

Table 48. Summary of new and changed Communications Server CTRACE COMP(SYSTCPOT) subcommand options

Option	Release	Description	Reason for change
OPTIONS	V1R12	Added a new QID option to filter OSA-Express Network Traffic Analyzer (OSAENTA) trace records based on the input queue number.	Performance improvements for sysplex distributor connection routing

TCPIPES subcommand

Table 49 lists the TCPIPES subcommand options.

The TCPIPES command contains the OPTLOCAL specification in some displays.

Table 49. Summary of new and changed Communications Server TCPIPES subcommand

Option	Release	Description	Reason for change
CONFIG	V2R1	Supports new RNIC interface type.	Shared Memory Communications over Remote Direct Memory Access
	V1R13	Supports new IPAQIQDX and IPAQIQDX6 interface types.	HiperSockets optimization for intraensemble data networks
HASH	V2R1	Displays information about the structure of IPv6 dynamic VIPA shadow tunnel hash tables.	Sysplex-Wide Security Associations for IPv6

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Table 49. Summary of new and changed Communications Server TCPIP CS subcommand (continued)

Option	Release	Description	Reason for change
IPSEC	V2R1	Displays information about IPv6 IP security shadow tunnels.	Sysplex-Wide Security Associations for IPv6
	V2R1	Includes log limit value of the filter in the formatted information.	Limit defensive filter logging
MAP	V2R1	Includes the storage that is used for the IPv6 policy-based route tables.	IPv6 support for policy-based routing
	V2R1	Displays storage usage information for IPv6 dynamic VIPA shadow tunnel hash tables.	Sysplex-Wide Security Associations for IPv6
POLICY	V2R1	IPv6 policy is included in the display of policy-based routing rules and actions.	IPv6 support for policy-based routing
PROFILE	Every release	Displays the current TCP/IP stack configuration from information in the dump by creating the profile statements that represent the configuration. In every release, some profile statements change and some new statements are added. See "PROFILE.TCPIP statement and parameter changes" on page 46 for information about the profile statement changes for a specific release.	Release update
	V2R1	Displays the GLOBALCONFIG SMCR parameters and the new SMFCONFIG SMCRLINKEVENT and SMCRGROUPSTATISTICS subparameters.	Shared Memory Communications over Remote Direct Memory Access
	V2R1	Updates the CONVERT function to also convert IPv4 DEVICE/LINK/HOME definitions for HiperSockets and static VIPA into INTERFACE statements.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	V1R13	Displays the new IPCONFIG and IPCONFIG6 parameters.	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	V1R13	Displays the setting of the new GLOBALCONFIG NOAUTOIQDX and AUTOIQDX parameters.	HiperSockets optimization for intraensemble data networks
	V1R13	Displays the new SAF parameter if it is configured on the VIPARANGE statement.	Improved security granularity for VIPARANGE DVIPAs
	V1R12	Added support to display the new CHPIDTYPE and CHPID parameters on the INTERFACE statements for IPAQENET and IPAQENET6, and the new IPSECURITY OSMSECCLASS subparameter on the IPCONFIG6 statement.	z/OS Communications Server in an ensemble
	V1R12	The output is changed to include the new keywords and values that can be specified on the VIPADEFINE, VIPABACKUP, and VIPADISTRIBUTE statements.	Extend sysplex distributor support for DataPower for IPv6
	V1R12	Added WORKLOADQ and NOWORKLOADQ to indicate whether inbound workload queueing is enabled for IPAQENET or IPAQENET6 interfaces. This value is only displayed when INBPERF is DYNAMIC. A new CONVERT parameter was also added.	Performance improvements for sysplex distributor connection routing

Table 49. Summary of new and changed Communications Server TCIPCS subcommand (continued)

Option	Release	Description	Reason for change
PROFILE (continued)	V1R12	<ul style="list-style-type: none"> Displays the new DEFADDRTABLE TCP/IP profile statement. For the SRCIP statement, displays the setting of the new PUBLICADDRS parameter for JOBNAME entries. 	Configurable default address selection policy table
	V1R12	Displays the setting of the new NOJOIN subparameter for the GLOBALCONFIG SYSPLEXMONITOR statement.	Control joining the sysplex XCF group
	V1R12	<ul style="list-style-type: none"> Displays the setting of the new DVIPA and NODVIPA parameters for the SMFCONFIG statement. Displays the setting of the new DVIPA and NODVIPA subparameters for the SMFSERVICE parameter of the NETMONITOR statement. 	SMF event records for sysplex events
	V1R12	Displays the new keywords that can be specified on a VIPADISTRIBUTE statement.	Sysplex distributor support for hot-standby server
	V1R12	Displays the setting of the new CSMAIL, NOCSMAIL, CSSMTP and NOCSSMTP subparameters for the SMFSERVICE parameter of the NETMONITOR statement.	Management data for CSSMTP
ROUTE	V2R1	<ul style="list-style-type: none"> When the PR parameter is used to display all search tree and update tree routes for all active policy-based route tables, IPv6 routes are included in the report. When the PD parameter is used to display all search tree and update tree routes for all policy-based route tables that have been marked for deletion , IPv6 routes are included in the report. 	IPv6 support for policy-based routing
	V1R12	Support is added for a new parameter, RADV, to display all of the IPv6 routes created based on information received in router advertisement messages.	Enhancements to IPv6 router advertisement
STATE	V2R1	Supports new RNIC interface type.	Shared Memory Communications over Remote Direct Memory Access
	V1R13	Supports new IPAQIQDX and IPAQIQDX6 interface types.	HiperSockets optimization for intraensemble data networks
TIMER	V2R1	For timers that are configured to do a cross-memory post, the target address space ASCB and ASID values are displayed.	Real-time application-controlled TCP/IP trace NMI
TRACE	V2R1	Displays each CTE header in a CTRACE buffer	Support for additional diagnostic information about Ctrace
	V2R1	New ALL and RCC subparameters are added. The RCC subparameter formats information about applications using the Real-time application-controlled TCP/IP trace NMI.	Real-time application-controlled TCP/IP trace NMI
TREE	V2R1	Includes the search and update trees for IPv6 policy-based route tables.	IPv6 support for policy-based routing
TTLS	V2R1	Displays new parameters on AT-TLS configuration statements.	AT-TLS support for TLS v1.2 and related features

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Table 49. Summary of new and changed Communications Server TCPIPSC subcommand (continued)

Option	Release	Description	Reason for change
XCF	V1R13	Displays the dynamic VIPA that was created using the bind socket call, the SIOCSVIPA or SIOCSVIPA6 ioctl call, or the MODDVIPA utility, including the new SAF resource name if it is configured.	Improved security granularity for VIPARANGE DVIPAs
	V1R12	Displays information pertaining to the new HOTSTANDBY distribution method.	Sysplex distributor support for hot-standby server

General updates to IPCS subcommands

Table 50 lists the general IPCS subcommand updates.

Table 50. Summary of new and changed Communications Server IP - General updates to IPCS subcommands

Subcommand	Release	Description	Reason for change
RESOLVER	V1R13	Displays information about the Name Server Polling Table (NSPT) used for monitoring unresponsive name servers.	System resolver autonomic quiescing of unresponsive name servers
	V1R12	Displays information about IPv6 addresses used to communicate with DNS name servers.	Resolver support for IPv6 connections to DNS name servers

SNMP MIB modules

This topic lists updates to Communications Server's support for SNMP MIB modules. For a complete list of supported SNMP MIB objects, refer to *z/OS Communications Server: IP System Administrator's Commands*.

Table 51 lists the changes to the SNMP MIB module support.

Table 51. Summary of new and changed Communications Server SNMP MIB module support

MIB module name	Rel.	Description	Reason for change
IBMTCPMVS-MIB	V2R1	For IPv6 routes, the MIB object <code>ibmMvsRouteFlags</code> reflects the route source, main or PBR route table.	IPv6 support for policy-based routing

Table 51. Summary of new and changed Communications Server SNMP MIB module support (continued)

MIB module name	Rel.	Description	Reason for change
IBMTCPIPMVS-MIB (continued)	V2R1	<ul style="list-style-type: none"> • The flag definedByInterface(14), in the <code>ibmMvsIfFlag</code> MIB object, is set for IPv4 IPAQIDIO and VIRTUAL interfaces that are defined by the INTERFACE statement. • The <code>ibmMvsIfSrcVipaIntfName</code> MIB object provides the SOURCEVIPAINTERFACE name for IPv4 IPAQIDIO interfaces that are defined by the INTERFACE statement. • The <code>ibmMvsIfChpid</code> MIB object provides the CHPID value for IPv4 IPAQIDIO interfaces that are defined by the INTERFACE statement. • The <code>ibmMvsIfDatapath</code> MIB object provides the datapath address for IPv4 IPAQIDIO interfaces that are defined by the INTERFACE statement, and for IPv6 IPAQIDIO6 interfaces. • The <code>ibmMvsIfConfigMtu</code> MIB object provides the configured MTU value for IPv4 IPAQIDIO interfaces that are defined by the INTERFACE statement. • The <code>ibmMvsIfTrleName</code> MIB object provides the TRLE name for IPv4 IPAQIDIO interfaces that are defined by the INTERFACE statement, and for IPv6 IPAQIDIO6 interfaces. • The <code>ipAdEntNetMask</code> provides the configured subnet mask for IPv4 IPAQIDIO interfaces that are defined by the INTERFACE statement. 	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	V2R1	<ul style="list-style-type: none"> • Support added for new scalar MIB objects for new TCPCONFIG profile statement parameters: <ul style="list-style-type: none"> – <code>ibmMvsTcpConnectInitInterval</code> – <code>ibmMvsTcpConnectTimeout</code> – <code>ibmMvsTcpFrrThreshold</code> – <code>ibmMvsTcpKeepAliveProbeInterval</code> – <code>ibmMvsTcpKeepAliveProbesNum</code> – <code>ibmMvsTcpNagle</code> – <code>ibmMvsTcpQueuedRtt</code> – <code>ibmMvsTcpRetransmitAttempts</code> – <code>ibmMvsTcpMaxSendBufferSize</code> – <code>ibmMvsTcpTimewaitInterval</code> • The existing <code>ibmMvsMaximumRetransmitTime</code> MIB object's value is now configurable via a new parameter on the TCPCONFIG profile statement. 	Enhanced TCP protocol configuration options and default settings

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Table 51. Summary of new and changed Communications Server SNMP MIB module support (continued)

MIB module name	Rel.	Description	Reason for change
IBMTCPiPMVS-MIB (continued)	V2R1	<ul style="list-style-type: none"> The <code>ibmMvsIfType</code> MIB object supports a new value, <code>rnice(39)</code>, to indicate an entry in the table is a 10GbE RoCE Express interface, which is represented as an RNIC interface. The <code>ibmMvsIfFlag</code> MIB object supports a new flag bit, <code>smcr(17)</code>, to indicate that the SMCR parameter is in effect for the interface. The <code>ibmMvsIfTrleName</code> MIB object is now supported for RNIC interfaces. The new <code>ibmMvsIfPNetID</code> MIB object provide the physical network (PNet) ID for active OSD and OSX interfaces. The new <code>ibmMvsPortNoSmcr</code> MIB object indicates whether the NOSMCR parameter is in effect for the port or port range. 	Shared Memory Communications over Remote Direct Memory Access
	V2R1	The new scalar MIB object <code>ibmMvsTcpSelectiveAck</code> is added to provide the setting of the SELECTIVEACK and NOSELECTIVEACK parameters from the TCPCONFIG profile statement.	TCP support for selective acknowledgements
	V2R1	<ul style="list-style-type: none"> The <code>ibmMvsTcpEphemeralPortsLow</code> MIB object provides the low port range value for TCP ephemeral ports. The <code>ibmMvsTcpEphemeralPortsHigh</code> MIB object provides the high port range value for TCP ephemeral ports. The <code>ibmMvsUdpEphemeralPortsLow</code> MIB object will provide the low port range value for UDP ephemeral ports. The <code>ibmMvsUdpEphemeralPortsHigh</code> MIB object provides the high port range value for UDP ephemeral ports. 	User control of Ephemeral Port Ranges
	V2R1	<ul style="list-style-type: none"> Added the <code>v2r1</code> value to the <code>ibmMvsTcpipSubagentVersion</code> object Added the <code>tlsVer1Dot2(6)</code> value to the <code>ibmMvsTcpConnectionTtlsSslProt</code> MIB object Changed the description of the <code>ibmMvsTcpConnectionTtlsNegCipher</code> MIB object Added <code>ibmTCPiPMvsTcpGroup11</code> to support the new <code>ibmMvsTcpConnectionTtlsNegCipher4</code> MIB object in the <code>ibmTcpipMvsTcpConnectionTable</code> 	AT-TLS support for TLS v1.2 and related features

Table 51. Summary of new and changed Communications Server SNMP MIB module support (continued)

MIB module name	Rel.	Description	Reason for change
IBMTCPIPMVS-MIB (continued)	V1R13	The following values of the <code>ibmMvslfIfflagType</code> MIB object now apply to <code>IPAQENET6</code> interfaces: <ul style="list-style-type: none"> <code>checksumOffloadEnabled(4)</code> <code>tcpSegOffloadEnabled(6)</code> 	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	V1R13	The <code>ibmMvslfIfflagType</code> MIB object supports the following new values to indicate IQDX interfaces: <ul style="list-style-type: none"> <code>ipaqiqdx(37)</code> <code>ipaqiqdx6(38)</code> 	HiperSockets optimization for intraensemble data networks
	V1R12	The <code>ibmMvslfIfflagType</code> MIB object supports the following new values to indicate OSA-Express QDIO ethernet interfaces of CHPID type OSM and OSX: <ul style="list-style-type: none"> <code>ipaqenetOSX(34)</code> <code>ipaqenet6OSX(35)</code> <code>ipaqenet6OSM(36)</code> The <code>ibmMvslfChpid</code> MIB object supports the configured CHPID number for OSA-Express QDIO ethernet interfaces of CHPID type OSX.	z/OS Communications Server in an ensemble
IF-MIB	V1R12	The <code>ifDescr</code> MIB object supports new descriptions for OSA-Express QDIO ethernet interfaces of CHPID type OSM and OSX.	z/OS Communications Server in an ensemble
	V1R12	For IPv6 default routes which were created because of a router advertisement, the value of the <code>ipDefaultRouterPreference</code> MIB object will be set according to the preference value from the router advertisement.	Enhancements to IPv6 router advertisement
IP-FORWARD-MIB	V1R12	For IPv6 indirect routes which were created because of a router advertisement, the value of the <code>inetCidrRouteMetric1</code> MIB object will indicate the preference value from the router advertisement.	Enhancements to IPv6 router advertisement
SNMP-USM-AES-MIB	V2R1	Added support for this MIB module from RFC3826 for SNMPv3 AES 128-bit encryption support.	Network security enhancements for SNMP

User exits

This topic lists updates to Communications Server user exits. For a complete list of supported user exits, refer to *z/OS Communications Server: IP Configuration Reference*.

Table 52 on page 128 lists the updates made to the user exits.

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Table 52. Summary of new and changed Communications Server user exits

Exit	Release	Description	Reason for change
EZAFCCMD user exit	V2R1	The FTP client calls this user exit before the FTP command is sent to the FTP server.	FTP client security user exits
EZAFCREP user exit	V2R1	The FTP client calls this user exit when the client receives a reply from the FTP server. For server replies that are comprised of more than one line, this user exit is called once for each line of the reply.	FTP client security user exits
FTP server user exit FTCHKPWD	V1R13	An additional parameter is passed to this user exit interface. The parameter represents the password or password phrase used to log into the FTP server.	FTP support for password phrases

Application data

Application data is data that is associated with a connection through the use of the SIOCSAPPLDATA ioctl socket command. The SIOCSAPPLDATA IOCTL enables applications to associate 40 bytes of application-specific information with TCP sockets the applications own. This application data can also be used to identify socket endpoints in interfaces such as Netstat, SMF, or network management applications. See the Application data appendix in *z/OS Communications Server: IP Programmer's Guide and Reference* for detailed information about all supported application data.

Table 53 lists new and changed application data.

Table 53. Summary of new and changed application data

Record type	Record field	Release	Description	Reason for change
FTP client application data for the control connection	Bytes 24-25: Security level	V2R1	A new value, 12, indicates the TLS protocol is TLSV1.2.	AT-TLS support for TLS v1.2 and related features
	Bytes 26-27: Cipher	V2R1	A new cipher value of 4X indicates that the cipher is four bytes and must be obtained from offset 30.	AT-TLS support for TLS v1.2 and related features
	Bytes 26-27: Cipher	V2R1	A new cipher value of 4X indicates that the cipher is four bytes and must be obtained from offset 35.	AT-TLS support for TLS v1.2 and related features
	Bytes 30-33: Four byte cipher	V2R1	The four byte cipher value.	AT-TLS support for TLS v1.2 and related features
	Bytes 35-38: Four byte cipher	V2R1	The four byte cipher value.	AT-TLS support for TLS v1.2 and related features

Table 53. Summary of new and changed application data (continued)

Record type	Record field	Release	Description	Reason for change
FTP server application data for the control connection	Bytes 24-25: Security level	V2R1	A new value, 12, indicates that the TLS protocol is TLSV1.2.	AT-TLS support for TLS v1.2 and related features
	Bytes 26-27: Cipher	V2R1	A new cipher value of 4X indicates that the cipher is four bytes and must be obtained from offset 29.	AT-TLS support for TLS v1.2 and related features
	Bytes 26-27: Cipher	V2R1	A new cipher value of 4X indicates that the cipher is four bytes and must be obtained from offset 33.	AT-TLS support for TLS v1.2 and related features
	Bytes 29-33: Four byte cipher	V2R1	The four byte cipher value.	AT-TLS support for TLS v1.2 and related features
	Bytes 33-36: Four byte cipher	V2R1	The four byte cipher value.	AT-TLS support for TLS v1.2 and related features
Application data format for Telnet	Bytes 32-33: Security level	V2R1	A new value, 12, indicates that the TLS protocol is TLSV1.2.	AT-TLS support for TLS v1.2 and related features
	Bytes 34-35: Cipher	V2R1	A new cipher value of 4X indicates that the cipher is four bytes and must be obtained from offset 33.	AT-TLS support for TLS v1.2 and related features
	Bytes 37-40: Four byte cipher	V2R1	The four byte cipher value.	AT-TLS support for TLS v1.2 and related features
Application data format for CSSMTP	Bytes 21-22: Security level	V2R1	A new value, 12, indicates that the TLS protocol is TLSV1.2.	AT-TLS support for TLS v1.2 and related features
	Bytes 23-24: Cipher	V2R1	A new cipher value of 4X indicates that the cipher is four bytes and must be obtained from offset 33.	AT-TLS support for TLS v1.2 and related features
	Bytes 26-29: Four byte cipher	V2R1	The four byte cipher value.	AT-TLS support for TLS v1.2 and related features

FTP client error codes

This section describes new client error codes for the FTP client. For more information about FTP client error codes, see FTP client error codes in *z/OS Communications Server: IP User's Guide and Commands*.

Table 54 lists the changes made to the FTP client error codes.

Table 54. Summary of new and changed FTP client error codes

Error code	Release	Description	Reason of change
27	V2R1	New error code indicates that user exit EZAFCCMD rejected the command.	FTP client security user exits
28	V2R1	New error code indicates that user exit EZAFCCMD ended the client.	FTP client security user exits

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Table 54. Summary of new and changed FTP client error codes (continued)

Error code	Release	Description	Reason of change
29	V2R1	New error code indicates that the FTP client ended because the user exit EZAFCCMD returned a return code that was not valid.	FTP client security user exits
30	V2R1	New error code indicates that user exit EZAFCREP ended the client.	FTP client security user exits
31	V2R1	New error code indicates that the FTP client ended because the user exit EZAFCREP returned a return code that was not valid.	FTP client security user exits

SMF record type 119 enhancements

This topic describes the following SMF record type 119 enhancements:

- “CSSMTP records”
- “FTP records” on page 132
- “IPSec records” on page 133
- “SMC-R records” on page 135
- “TCP connection records” on page 135
- “TCP/IP stack records” on page 136
- “TN3270E Telnet server records” on page 143

The following references contain more information:

- For SMF records written to the MVS SMF data sets, see the SMF type 119 records in *z/OS Communications Server: IP Configuration Reference*.
- For SMF records which are only available from one of the Network Management Interfaces, see Network Management Interfaces (NMIs) in *z/OS Communications Server: IP Programmer's Guide and Reference*.

CSSMTP records

Table 55 lists the changes made to the CSSMTP SMF type 119 records.

Table 55. Summary of new and changed Communications Server SMF type 119 record - CSSMTP records

Record type	Record field	Rel.	Description	Reason for change
CSSMTP connection identification (subtype 49)	SMF119ML_CN_TLSSSP	V2R1	New value SMF119ML_CN_TTLSSPTV1_2 (X'0303')	AT-TLS support for TLS v1.2 and related features
	SMF119ML_CN_TLSSNC	V2R1	New value SMF119ML_CN_TTLSNC4X (X'4X')	AT-TLS support for TLS v1.2 and related features
	SMF119ML_CN_TLSSNC4	V2R1	New field containing four character negotiated cipher code	AT-TLS support for TLS v1.2 and related features

Table 55. Summary of new and changed Communications Server SMF type 119 record - CSSMTP records (continued)

Record type	Record field	Rel.	Description	Reason for change
CSSMTP configuration change (subtype 48)	Subtype 48 event record has a new field: • SMF119ML_CF_DateHdr	V2R1	The Header configuration statement	CSSMTP mail message date header handling option
	Subtype 48 event record has following new fields: • SMF119ML_CF_ErtAge • SMF119ML_CF_ErtIntvl • SMF119ML_CD_MailDir	V1R13	<ul style="list-style-type: none"> Extended retry age Extended retry interval Extended retry mail directory 	CSSMTP extended retry
	Subtype 48 event record has a new field, SMF119ML_CF_JESSynMax.	V1R13	New field that provides the maximum number of syntax errors to be tolerated in a JES spool file from the JESSyntaxErrLimit statement.	CSSMTP enhancements
	N/A	V1R12	New SMF 119 subtype 48 event record for CSSMTP configuration change.	Management data for CSSMTP
CSSMTP connection ended	N/A	V1R12	New SMF 119 subtype 49 event record for CSSMTP target server connection ended.	Management data for CSSMTP
CSSMTP interval statistics	Subtype 52 event record has following new fields: • SMF119ML_ST_ErtCount • SMF119ML_ST_ErtQCount • SMF119ML_ST_ErtUndvl • SMF119ML_ST_ErtError • SMF119ML_JS_EMail • SMF119ML_JS_ERcpt • SMF119ML_HC_MDirPFree • SMF119ML_HC_MDirPUsed	V1R13	<ul style="list-style-type: none"> Current number of mail message for extended retry Cumulative total number of mails message for extended retry Number of mail messages made undeliverable by extended retry Number of mail messages dropped by extended retry due to file system errors Number of mail messages saved for extended retry Number of recipients to be retried in mail messages saved for extended retry System wide FS percent free which can be used to store extended retry mail messages System wide FS percent used 	CSSMTP extended retry
	N/A	V1R12	New SMF 119 subtype 52 event record for CSSMTP statistics interval ended.	Management data for CSSMTP
CSSMTP mail message ended	Subtype 50 event record has new field: SMF119ML_MI_ERetry	V1R13	Mail saved for extended retry.	CSSMTP extended retry
	N/A	V1R12	New SMF 119 subtype 50 event record for CSSMTP mail message completed.	Management data for CSSMTP

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Table 55. Summary of new and changed Communications Server SMF type 119 record - CSSMTP records (continued)

Record type	Record field	Rel.	Description	Reason for change
CSSMTP spool file ended	Subtype 51 event record has following new fields: <ul style="list-style-type: none"> SMF119ML_SS_EMail SMF119ML_SS_ERcpt 	V1R13	<ul style="list-style-type: none"> Number of mail messages saved for extended retry. Number of recipients to be retried in mail messages for extended retry. 	CSSMTP extended retry
	N/A	V1R12	New SMF 119 subtype 51 event record for CSSMTP spool record completed.	Management data for CSSMTP

FTP records

Table 56 lists the changes made to the FTP records of SMF type 119.

Table 56. Summary of new and changed Communications Server SMF record type 119 - FTP records

Record type	Record field	Release	Description	Reason for change
FTP Client Transfer Complete record (subtype 3)	<ul style="list-style-type: none"> SMF119FT_FCProtoLevel SMF119FT_FSProtoLevel SMF119FT_FFPProtoLevel 	V2R1	New value SMF119FT_FxProtoLevelTV1_2 ('TLSV1.2')	AT-TLS support for TLS v1.2 and related features
FTP Daemon Configuration record (subtype 71) (see Note 1)	SMF119FT_FDCFApplname	V2R1	New SMF119FT_FDCApplname field that contains 8-character FTP server application name from the APPLNAME statement	Release update
	SMF119FT_FDCFSSLv3	V2R1	New field to enable or disable SSLV3	APAR PI28679
	N/A	V2R1	New SMF 119 subtype 71 record that collects FTP daemon configuration data when the z/OS FTP daemon successfully listens on the listening port for the first time.	NMI and SMF enhancements for TCP/IP applications
FTP Server Login Failure record (subtype 72)	<ul style="list-style-type: none"> SMF119FT_FCCipher4 SMF119FT_FSCipher4 SMF119FT_FFCipher4 	V2R1	Contains four character cipher code	AT-TLS support for TLS v1.2 and related features
FTP Server Transfer Complete record (subtype 70)	<ul style="list-style-type: none"> SMF119FT_FCCipher SMF119FT_FSCipher SMF119FT_FFCipher 	V2R1	New value SMF119FT_FxCipher4X ('4X')	AT-TLS support for TLS v1.2 and related features

Table 56. Summary of new and changed Communications Server SMF record type 119 - FTP records (continued)

Record type	Record field	Release	Description	Reason for change
Note:				
1. Record is available in the MVS SMF data sets and from the NMI.				

IPSec records

Table 57 lists the changes made to the IPSec SMF record type 119 in z/OS V1R13.

Table 58 on page 134 lists the changes made to the IPSec SMF record type 119 in z/OS V1R12.

Table 57. Summary of new and changed Communications Server SMF record type 119 - IPSec records in z/OS V1R13

Record type	Record field	Release	Description	Reason for change
IPSec IKE tunnel activation and refresh, IPSec IKE tunnel deactivation and expire	IPSec common IKE tunnel specific section	V1R13	<p>Subtype 73 is updated; offset 206('CE') for the field SMF119IS_IKETunNATLevel supports two additional values:</p> <ul style="list-style-type: none"> SMF119IS_IKETUN_NATTV2 (6) SMF119IS_IKETUN_NATTV2ZOS (7) <p>The following fields previously reported 0 for all IKEv2 tunnels because NAT traversal was not supported for IKEv2. They are now set appropriately when an IKEv2 tunnel traverses one or more NAT devices:</p> <ul style="list-style-type: none"> SMF119IS_IKETunLclNAT SMF119IS_IKETunRmtNAT SMF119IS_IKETunRmtNAPT SMF119IS_IKETunCanInitP1 SMF119IS_IKETunRmtUDPPort 	Network address translation traversal support for IKE version 2
IPSec dynamic tunnel activation and refresh, IPSec dynamic tunnel deactivation, IPSec dynamic tunnel added, and IPSec dynamic tunnel removed	Dynamic tunnel section	V1R13	<p>The following fields previously reported 0 for all IKEv2 tunnels because NAT traversal was not supported for IKEv2. They are now set appropriately when an IKEv2 tunnel traverses one or more NAT devices:</p> <ul style="list-style-type: none"> SMF119IS_IPDynLclNAT SMF119IS_IPDynRmtNAT SMF119IS_IPDynRmtNAPT SMF119IS_IPDynRmtGW SMF119IS_IPDynRmtZOS SMF119IS_IPDynCanInitP2 SMF119IS_IKETunRmtUDPPort SMF119IS_IPDynSrcNATOA SMF119IS_IPDynDstNATOA 	Network address translation traversal support for IKE version 2

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Table 58. Summary of new and changed Communications Server SMF record type 119 - IPSec records in z/OS V1R12

Record type	Record field	Release	Description	Reason for change
IPSec IKE tunnel activation and refresh, IPSec IKE tunnel deactivation and expire	IPSec common IKE tunnel specific section	V1R12	<p>Subtype 73 has the following updates:</p> <ul style="list-style-type: none"> • Offset 0 (x'0') has a new bit for FIPS mode: <ul style="list-style-type: none"> - x'02000000', SMF119IS_IKETunFIPS140. • Offset 198(x'C6') for the SMF119IS_IKETunAuthAlg record has new values and also changed descriptions of existing values. The new values are: <ul style="list-style-type: none"> - SMF119IS_AUTH_HMAC_SHA2_256_128 (7) - SMF119IS_AUTH_AES128_XCBC (9) - SMF119IS_AUTH_HMAC_SHA2_384_192 (13) - SMF119IS_AUTH_HMAC_SHA2_512_256 (14) <p>The following existing values have changed descriptions:</p> <ul style="list-style-type: none"> - SMF119IS_AUTH_HMAC_MD5 (38) - SMF119IS_AUTH_HMAC_SHA1 (39) - SMF119IS_AUTH_HMAC_MD5_96 (40) - SMF119IS_AUTH_HMAC_SHA1_96 (41) <ul style="list-style-type: none"> • Offset 199(x'C7') for the SMF119IS_IKETunEncryptAlg record has a changed possible value. The old value was SMF119IS_ENCR_AES(12) and the new value is SMF119IS_ENCR_AES_CBC (12). • Offset 204(x'CC') for record SMF119IS_IKETunPeerAuthMethod has the following new values: <ul style="list-style-type: none"> - SMF119IS_IKETUN_ECDSA_256 (4) - SMF119IS_IKETUN_ECDSA_384 (5) - SMF119IS_IKETUN_ECDSA_521 (6) • Offset 238(x'EE') for the SMF119IS_IKETunPseudoRandomFunc record has the following new values: <ul style="list-style-type: none"> - SMF119IS_AUTH_HMAC_SHA2_256 (15) - SMF119IS_AUTH_HMAC_SHA2_384 (16) - SMF119IS_AUTH_HMAC_SHA2_512 (17) - SMF119IS_AUTH_AES128_XCBC (18) • Offset 239(x'EF') for record SMF119IS_IKETunLocalAuthMethod has the following new values: <ul style="list-style-type: none"> - SMF119IS_IKETUN_ECDSA_256 (4) - SMF119IS_IKETUN_ECDSA_384 (5) - SMF119IS_IKETUN_ECDSA_521 (6) • 252(x'FC') offset has a new record for SMF119IS_IKETunEncryptKeyLength. 	IKE version 2 support

Table 58. Summary of new and changed Communications Server SMF record type 119 - IPSec records in z/OS V1R12 (continued)

Record type	Record field	Release	Description	Reason for change
IPSec IKE tunnel activation and refresh, IPSec IKE tunnel deactivation and expire (continued)	IPSec common IKE tunnel specific section (continued)	V1R12	<p>Subtype 75 has the following updates:</p> <ul style="list-style-type: none"> • Offset 96(x'60') has a new bit for FIPS mode: x'40000000', SMF119IS_IPTunFIPS140 • Offset 138(x'8A') for the SMF119IS_IPTunAuthAlg record has new values and also changed descriptions of existing values. The new values are: <ul style="list-style-type: none"> - SMF119IS_AUTH_NULL (0) - SMF119IS_AUTH_AES_GMAC_128 (4) - SMF119IS_AUTH_AES_GMAC_256 (6) - SMF119IS_AUTH_HMAC_SHA2_256_128 (7) - SMF119IS_AUTH_AES128_XCBC_96 (9) - SMF119IS_AUTH_HMAC_SHA2_384_192 (13) - SMF119IS_AUTH_HMAC_SHA2_512_256 (14) <p>The following existing values have changed descriptions:</p> <ul style="list-style-type: none"> - SMF119IS_AUTH_HMAC_MD5 (38) - SMF119IS_AUTH_HMAC_SHA1 (39) <ul style="list-style-type: none"> • Offset 139(x'8B') for the SMF119IS_IPTunEncryptAlg record has a new value: <ul style="list-style-type: none"> - SMF119IS_ENCR_AES_GCM_16 (20) <p>It also has a changed value; the value SMF119IS_ENCR_AES (12) changed to SMF119IS_ENCR_AES_CBC (12).</p> <ul style="list-style-type: none"> • Offset 160(x'A0') has a new record for SMF119IS_IPTunEncryptKeyLength. 	IKE version 2 support

SMC-R records

Table 59 lists the new records created for Shared Memory Communications - RDMA (SMC-R) processing.

Table 59. Summary of new and changed Communications Server SMF record type 119 - SMC-R records

Record type	Record field	Release	Description	Reason for change
SMC-R link group statistics (subtype 41)	N/A	V2R1	New SMF 119 subtype 41 interval record that provides statistics about SMC-R link groups and the SMC-R links within each SMC-R link group.	Shared Memory Communications over Remote Direct Memory Access
SMC-R link state start (subtype 42)	N/A	V2R1	New SMF 119 subtype 42 event record that provides statistics for an SMC-R link at the time that the link is started.	
SMC-R link state end (subtype 43)	N/A	V2R1	New SMF 119 subtype 43 event record that provides statistics for an SMC-R link at the time that the link is ended.	
RDMA network interface card (RNIC) interface statistics ((subtype 44)	N/A	V2R1	New SMF 119 subtype 44 interval record that provides statistics about 10GbE RoCE Express interfaces.	

TCP connection records

Table 60 on page 136 lists the changes made to the TCP connection termination SMF record type 119 records.

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Table 60. Summary of new and changed Communications Server SMF record type 119 - TCP connection termination records

Record type	Record field	Release	Description	Reason for change
TCP connection termination record (subtype 2)	SMF119AP_TTTTLSSP	V2R1	New value SMF119AP_TTTTLSSPTV1_2 (X'0303')	AT-TLS support for TLS v1.2 and related features
	SMF119AP_TTTTLSNC	V2R1	New value SMF119AP_TTTTLSNC4X (X'4X')	AT-TLS support for TLS v1.2 and related features
	SMF119AP_TTTTLSNC4	V2R1	New field containing four character negotiated cipher code	AT-TLS support for TLS v1.2 and related features
	<ul style="list-style-type: none"> SMF119AP_TTSMCStatus SMF119AP_TTLclSMCLinkId SMF119AP_TTRmtSMCLinkId SMF119AP_TTSMCReason 	V2R1	<ul style="list-style-type: none"> New SMF119AP_TTSMCStatus field that indicates whether an SMC-R link established for this connection is active or inactive. If SMF119AP_TTSMCReason is also X'0000', then SMC-R link establishment has not been attempted. New SMF119AP_TTLclSMCLinkId field that indicates the local stack link ID for the SMC-R link that this connection traverses. New SMF119AP_TTRmtSMCLinkId field that indicates the remote stack link ID for the SMC-R link that this connection traverses. New SMF119AP_TTSMCReason field that indicates why the connection is not using an SMC-R link. 	Shared Memory Communications over Remote Direct Memory Access
	SMF119AP_TTTermCode	V1R13	The following new values are defined for the connection termination reason code: <ul style="list-style-type: none"> SMF119AP_TTTermCode_GlobalStall SMF119AP_TTTermCode_QueueSize 	Expanded Intrusion Detection Services

TCP/IP stack records

Table 61 lists the changes made to the TCP/IP stack SMF type 119 records.

Table 61. Summary of new and changed Communications Server SMF type 119 record - TCP/IP stack records

Record type	Record field	Release	Description	Reason for change
DVIPA status change	N/A	V1R12	New record, subtype 32	SMF event records for sysplex events
DVIPA removed	N/A	V1R12	New record, subtype 33	SMF event records for sysplex events
DVIPA target added	N/A	V1R12	New record, subtype 34	SMF event records for sysplex events
DVIPA target removed	N/A	V1R12	New record, subtype 35	SMF event records for sysplex events
DVIPA target server started	N/A	V1R12	New record, subtype 36	SMF event records for sysplex events
DVIPA target server ended	N/A	V1R12	New record, subtype 37	SMF event records for sysplex events

Table 61. Summary of new and changed Communications Server SMF type 119 record - TCP/IP stack records (continued)

Record type	Record field	Release	Description	Reason for change
Interface statistics (subtype 6)	SMF119IS_IFDesc SMF119IS_IFFlags SMF119IS_IFPNetID	V2R1	<ul style="list-style-type: none"> The SMF119IS_IFDesc field can have a new SMF119IS_IFLink_RNIC type for 10GbE RoCE Express interfaces, which are represented as RNIC interfaces. New SMF119IS_IFFlags field contains information, related to the SMC-R characteristics, if any, for the reported interface. New SMF119IS_IFPNetID field contains the Physical network ID for active OSD, OSX and RNIC interfaces. 	Shared Memory Communications over Remote Direct Memory Access
	SMF119IS_IFLink_IPQIQDX SMF119IS_IFLink_IPQIQX6	V1R13	New interface types IPAQIQDX and IPAQIQX6	HiperSockets optimization for intraensemble data networks
	SMF119IS_IfiQDXName SMF119IS_IflnIQDXBytes SMF119IS_IflnIQDXUniC SMF119IS_IfoOutIQDXBytes SMF119IS_IfoOutInIQDXUniC	V1R13	New fields to show the associated dynamic IQDX for an OSX interface and the number of bytes and unicast packets that traversed it.	HiperSockets optimization for intraensemble data networks
TCP/IP profile record (subtype 4)	NMTP_INTFFlags	V2R1	New flag NMTP_INTFTempIP in field NMTP_INTFFlags that indicates the Interface is configured with the TEMPIP parameter.	Enable DHCP clients on OSA Interfaces
	NMTP_TCCFTimeWaitInterval	V2R1	New field that provides the setting of the TCPCONFIG TIMEWAITINTERVAL value.	Enhanced TCP protocol configuration options and default settings
	NMTP_TCCFRetransmitAttempts	V2R1	New field that provides the setting of the TCPCONFIG RETRANSMITATTEMPTS value.	Enhanced TCP protocol configuration options and default settings
	NMTP_TCCFConnectTimeOut	V2R1	New field that provides the setting of the TCPCONFIG CONNECTTIMEOUT value.	Enhanced TCP protocol configuration options and default settings
	NMTP_TCCFConnectInitInterval	V2R1	New field that provides the setting of the TCPCONFIG CONNECTINITINTERVAL value.	Enhanced TCP protocol configuration options and default settings
	NMTP_TCCFNagle	V2R1	New field that provides the setting of the TCPCONFIG NAGLE value.	Enhanced TCP protocol configuration options and default settings
	NMTP_TCCFKeepAliveProbes	V2R1	New field that provides the setting of the TCPCONFIG KEEPALIVEPROBES value.	Enhanced TCP protocol configuration options and default settings
	NMTP_TCCFKAProbeInterval	V2R1	New field that provides the setting of the TCPCONFIG KEEPALIVEPROBEINTERVAL value.	Enhanced TCP protocol configuration options and default settings
	NMTP_TCCFQueuedRTT	V2R1	New field that provides the setting of the TCPCONFIG QUEUEDRTT value.	Enhanced TCP protocol configuration options and default settings
	NMTP_TCCFFRRThreshold	V2R1	New field that provides the setting of the TCPCONFIG FRRTHRESHOLD value.	Enhanced TCP protocol configuration options and default settings
NMTP_TCCFDefltMaxSndBufSize	V2R1	New field that provides the setting of the TCPCONFIG TCPMAXSENDBUFRSIZE value.	Enhanced TCP protocol configuration options and default settings	

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Table 61. Summary of new and changed Communications Server SMF type 119 record - TCP/IP stack records (continued)

Record type	Record field	Release	Description	Reason for change
TCP/IP profile record (subtype 4) (continued)	NMTP_TCCFEphemPortBegNum	V2R1	The NMTP_TCCFEphemPortBegNum field contains the beginning port range value for TCP ephemeral ports.	User control of Ephemeral Port Ranges
	NMTP_TCCFEphemPortEndNum	V2R1	The NMTP_TCCFEphemPortEndNum field contains the ending port range value for TCP ephemeral ports.	User control of Ephemeral Port Ranges
	NMTP_UDCFEphemPortBegNum	V2R1	The NMTP_UDCFEphemPortBegNum field contains the beginning port range value for UDP ephemeral ports.	User control of Ephemeral Port Ranges
	NMTP_UDCFEphemPortEndNum	V2R1	The NMTP_UDCFEphemPortEndNum field contains the ending port range value for UDP ephemeral ports.	User control of Ephemeral Port Ranges
	NMTP_V4CFDynXcfSrcVipalfNameFlg	V2R1	New flag is added to indicate if the dynamic XCF source VIPA interface name is specified.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	NMTP_V4CFDynXcfSrcVipalfName	V2R1	New field is added to provide the configured dynamic XCF source VIPA interface name	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	<ul style="list-style-type: none"> • NMTP_INTFFlags • NMTP_INTFChpID • NMTP_INTFIPv4MaskNMTP_INTFMtu • NMTP_INTFSrcVipaIntfName 	V2R1	<ul style="list-style-type: none"> • The NMTP_INTFDefIntf bit is set in the NMTP_INTFFlags field for IPv4 IPAQIDIO and VIRTUAL interfaces that are defined by the INTERFACE statement. • The NMTP_INTFIPbCast is set in the NMTP_INTFFlags field for IPv4 IPAQIDIO interfaces that are defined by the INTERFACE statement with the IPBCAST parameter specified. • The NMTP_INTFChpID provides the CHIPID value for IPv4 IPAQIDIO interfaces that are defined by the INTERFACE statement. • The NMTP_INTFIPv4Mask provides the configured subnet mask for IPv4 IPAQIDIO interfaces that are defined by the INTERFACE statement. • The NMTP_INTFMtu provides the configured MTU value for IPv4 IPAQIDIO interfaces that are defined by the INTERFACE statement. • The NMTP_INTFSrcVipaIntfName provides the SOURCEVIPAINTERFACE name for IPv4 IPAQIDIO interfaces that are defined by the INTERFACE statement. 	IPv4 INTERFACE statement for HiperSockets and Static VIPAs

Table 61. Summary of new and changed Communications Server SMF type 119 record - TCP/IP stack records (continued)

Record type	Record field	Release	Description	Reason for change
TCP/IP profile record (subtype 4) (continued)	NMTP_NETACache	V2R1	New field is added to indicate the setting of the CACHEALL, CACHEPERMIT, and CACHESAME parameters on the NETACCESS statement.	Improve auditing of NetAccess rules
	NMTP_TCCFSelectiveACK	V2R1	New flag is added to indicate the setting of SELECTIVEACK/NOSELECTIVEACK.	TCP support for selective acknowledgements
	NMTP_V4CFFlags	V2R1	The description of flag NMTP_V4CFQDIOAcc is updated. The restriction of QDIO Accelerator to sysplex distributor traffic is no longer determined only by whether IP datagram forwarding is enabled.	QDIO acceleration coexistence with IP filtering
	NMTP_GBCFFlags NMTP_GBCFPFidCnt NMTP_GBCFFixedMemory NMTP_GBCFTcpKeepMinInt NMTP_GBCFPFs array	V2R1	<ul style="list-style-type: none"> The new NMTP_GBCFSMCR flag bit is set in the NMTP_GBCFFlags field to indicate that the SMCR operand was specified on the GLOBALCONFIG statement. The new NMTP_GBCFPFidCnt field indicates the current number of configured PCI-function ID (PFID) and Port number entries in the NMTP_GBCFPFs array. The new NMTP_GBCFFixedMemory field specifies the SMCR FIXEDMEMORY value. FIXEDMEMORY is specified in megabyte increments. The new NMTP_GBCFTcpKeepMinInt field specifies the SMCR TCPKEEPMININTERVAL value. The new NMTP_GBCFPFs array contains a maximum of 16 PFID and port number paired entries: <ul style="list-style-type: none"> NMTP_GBCFPFid is the 2-byte hexadecimal PFID. NMTP_GBCFPFport is the 1-byte decimal port number. NMTP_GBCFPFmtu is a 2-byte maximum transmission unit (MTU) decimal value. 	Shared Memory Communications over Remote Direct Memory Access
	NMTP_PORTFlags	V2R1	The NMTP_PORTNOSMCR flag bit is set in the NMTP_PORTFlags field to indicate this port or port range is disabled for SMC-R.	Shared Memory Communications over Remote Direct Memory Access
	NMTP_INTFFlags	V2R1	The NMTP_INTFSMCR flag bit is set in the NMTP_INTFFlags field for OSA interfaces that have SMCR specified or that take the SMCR default on the INTERFACE statement.	Shared Memory Communications over Remote Direct Memory Access
	NMTP_MGMTSmf119Types	V2R1	<ul style="list-style-type: none"> The new NMTP_MGMT119SmcrGrpStats flag bit is set in the NMTP_MGMTSmf119Type field to indicate that the new SMC-R link group statistics records were requested on the SMFCONFIG profile statement. The new NMTP_MGMT119SmcrLnkEvent flag bit is set in the NMTP_MGMTSmf119Type field to indicate that the new SMC-R link state start and end records were requested on the SMFCONFIG profile statement. 	Shared Memory Communications over Remote Direct Memory Access

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Table 61. Summary of new and changed Communications Server SMF type 119 record - TCP/IP stack records (continued)

Record type	Record field	Release	Description	Reason for change
TCP/IP profile record (subtype 4) (continued)	NMTP_PIDSEye	V2R1	In the C header file, EZBNMMPC, eyecatcher constant, NMTP_PIDSEYEC has been corrected.	Release update
	NMTP_V6CFDynXcfAddr	V2R1	In the C header file, EZBNMMPC, this IPv6 address field has been redefined from char to struct in6_addr.	Release update
	NMTP_IPA6Addr	V2R1	In the C header file, EZBNMMPC, this IPv6 address field has been redefined from char to struct in6_addr.	Release update
	NMTP_GBCFAutoIQDX	V1R13	Subtype 4. New flags to indicate setting of GLOBALCONFIG AUTOIQDX.	HiperSockets optimization for intraensemble data networks
	NMTP_GBCFSegOffload	V1R13	Use of this flag is deprecated. See NMTP_V4CFSegOffload.	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	NMTP_V4CFChkOffload	V1R13	New flag to indicate setting of IPCONFIG CHECKSUMOFFLOAD.	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	NMTP_V4CFSegOffload	V1R13	New flag to indicate setting of IPCONFIG SEGMENTATIONOFFLOAD.	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	NMTP_V6CFChkOffload	V1R13	New flag to indicate setting of IPCONFIG6 CHECKSUMOFFLOAD.	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	NMTP_V6CFSegOffload	V1R13	New flag to indicate setting of IPCONFIG6 SEGMENTATIONOFFLOAD.	OSA-Express4S QDIO IPv6 checksum and segmentation offload
	NMTP_DVCFSAFNameSet	V1R13	New flag in field NMTP_DVCFFlags to indicate if the SAF parameter is specified on the VIPARANGE statement.	Improved security granularity for VIPARANGE DVIPAs
	NMTP_DVCFSAFName	V1R13	New field to indicate the name specified on the SAF parameter of the VIPARANGE statement.	Improved security granularity for VIPARANGE DVIPAs
	NMTP_PORTJobName	V1R13	This field can now contain a job name prefix (1-7 character job name followed by an asterisk) for entries that represent a PORTRANGE profile statement.	Wildcard support for the PORTRANGE statement
	<ul style="list-style-type: none"> • NMTP_INTFChpIDFlg • NMTP_INTFChpIDType • NMTP_V6CFOSMSecClass 	V1R12	<ul style="list-style-type: none"> • New field that provides the IPSECURITY OSMSECCLASS value from the IPCONFIG6 profile statement. • New flag in field NMTP_INTFFlags that indicates whether an optional CHPID value was specified in field NMTP_INTFChpID. • New field that provides the CHPID type for OSA-Express interfaces defined by the INTERFACE statement. 	z/OS Communications Server in an ensemble

Table 61. Summary of new and changed Communications Server SMF type 119 record - TCP/IP stack records (continued)

Record type	Record field	Release	Description	Reason for change
TCP/IP profile record (subtype 4) (continued)	NMTP_DVCFPfxLen	V1R12	This existing field is used to return the configured IPv4 prefix length of an IPv4 DVIPA. It is now also used to return the configured IPv6 prefix length of an IPv6 DVIPA.	Extend sysplex distributor support for DataPower for IPv6
	NMTP_DDVS Tier1Gre	V1R12	This existing field is used to indicate that generic routing encapsulation (GRE) is used to distribute requests to IPv4 non-z/OS targets. It can now also indicate that IPv6 routing encapsulation is used to distribute requests to IPv6 non-z/OS targets.	Extend sysplex distributor support for DataPower for IPv6
	NMTP_INTFDynTypes	V1R12	Indicates the dynamic inbound performance types. This field is only set when field NMTP_INTFInbPerfType is set to NMTP_INTFIPDYN and the interface was defined by an INTERFACE statement. The record field is 'x'80', NMTP_INTFDYNWRKLDQ. If set, DYNAMIC WORKLOADQ is configured.	Performance improvements for sysplex distributor connection routing
	<ul style="list-style-type: none"> NMTP_PICO SecChanged New NMTP_DASP section NMTP_SRCIFlags 	V1R12	<ul style="list-style-type: none"> New flag defined for the new DEFADDRTABLE profile statement. This new section provides information from the new DEFADDRTABLE TCP/IP profile statement. New flag added to this flags field to support the new PUBLICADDRS parameter on the SRCIP TCP/IP profile statement. 	Configurable default address selection policy table
	<ul style="list-style-type: none"> NMTP_MGMTNMSMFCSSMTP NMTP_MGMTNMSMFCMAIL 	V1R12	New flags added to field NMTP_MGMTNetMonSmfRecs to indicate if new CSSMTP SMF 119 records were requested on the NETMONITOR profile statement.	Management data for CSSMTP
	<ul style="list-style-type: none"> NMTP_MGMT119DVIPA NMTP_MGMTNMSmfDVIPA 	V1R12	<ul style="list-style-type: none"> New flag added to the NMTP_MGMTSmf119Types field to indicate whether the new DVIPA SMF 119 records were requested on the SMFCONFIG profile statement. New flag added to the NMTP_MGMTNetMonSmfRecs field to indicate whether the new DVIPA SMF 119 records were requested on the NETMONITOR profile statement. 	SMF event records for sysplex events
	New flag NMTP_GBCFSysMonNoJoin added to NMTP_GBCFSysMonOptions field	V1R12	Indicates whether GLOBALCONFIG SYSPLEXMONITOR NOJOIN is configured.	Control joining the sysplex XCF group
	For the DVIPA section, NMTP_DDVS DistMethod output field	V1R12	New NMTP_DDVSHotStandby value added to field to indicate the new HotStandby distribution method.	Sysplex distributor support for hot-standby server
	For the DVIPA section, NMTP_DDVSFlags output field	V1R12	New HotStandby flags are added: <ul style="list-style-type: none"> NMTP_DDVSSrvTypePreferred is set if the server type is Preferred. NMTP_DDVSSrvTypeBackup is set if the server type is Backup. NMTP_DDVSAutoSwitchBack is set if AUTOSWITCHBACK is configured. NMTP_DDVSHHealthSwitch is set if HEALTHSWITCH is configured. 	Sysplex distributor support for hot-standby server
	For the DVIPA section, NMTP_DDVSBackupRank output field	V1R12	New field that indicates the rank if this is a HotStandby backup server.	Sysplex distributor support for hot-standby server

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Table 61. Summary of new and changed Communications Server SMF type 119 record - TCP/IP stack records (continued)

Record type	Record field	Release	Description	Reason for change
TCP/IP statistics record (subtype 5)	SMF119AP_TSTCEphPortExh	V2R1	SMF119AP_TSTCEphPortExh contains the interval count of number of bind() failures because no TCP ephemeral ports were available.	User control of Ephemeral Port Ranges
	SMF119AP_TSTCEphPortAvail	V2R1	SMF119AP_TSTCEphPortAvail contains the total number of TCP ephemeral ports that are available to use for bind() requests	User control of Ephemeral Port Ranges
	SMF119AP_TSTCEphPortInUse	V2R1	SMF119AP_TSTCEphPortInUse contains the current number of TCP ephemeral ports in use	User control of Ephemeral Port Ranges
	SMF119AP_TSTCEphPortMxUse	V2R1	SMF119AP_TSTCEphPortMxUse contains the maximum number of TCP ephemeral ports used	User control of Ephemeral Port Ranges
	SMF119AP_TSUDEphPortExh	V2R1	SMF119AP_TSUDEphPortExh contains the interval count of number of bind() failures because no UDP ephemeral ports were available.	User control of Ephemeral Port Ranges
	SMF119AP_TSUDEphPortAvail	V2R1	SMF119AP_TSUDEphPortAvail contains the total number of UDP ephemeral ports that are available to use for bind() requests.	User control of Ephemeral Port Ranges
	SMF119AP_TSUDEphPortInUse	V2R1	SMF119AP_TSUDEphPortInUse contains the current number of UDP ephemeral ports in use.	User control of Ephemeral Port Ranges
	SMF119AP_TSUDEphPortMxUse	V2R1	SMF119AP_TSUDEphPortMxUse contains the maximum number of UDP ephemeral ports used	User control of Ephemeral Port Ranges
	Existing TCP stats changed: SMF119AP_TSTCEstab SMF119AP_TSTCOpenConn SMF119AP_TSTCPassConn SMF119AP_TSTCConCls SMF119AP_TSTCInSegs SMF119AP_TSTCOSegs SMF119AP_TSTCReset SMF119AP_TSTCConReset SMF119AP_TSTCOKApr SMF119AP_TSTCDropKA SMF119AP_TSTCDropF2 New SMC-R stats: SMF119AP_TSSMCRCurrEstabLnks SMF119AP_TSSMCRLnkActTimeOut SMF119AP_TSSMCRActLnkOpened SMF119AP_TSSMCRPasLnkOpened SMF119AP_TSSMCRLnksClosed SMF119AP_TSSMCRCurrEstab SMF119AP_TSSMCRActiveOpened SMF119AP_TSSMCRPassiveOpened SMF119AP_TSSMCRConnClosed SMF119AP_TSTSMCRInSegs SMF119AP_TSTSMCROutSegs SMF119AP_TSSMCRInRsts SMF119AP_TSSMCROutRsts New SMC-R storage stats: SMF119AP_TSSTSMCRFixedCurrent SMF119AP_TSSTSMCRFixedMax SMF119AP_TSSTSMCRSendCurrent SMF119AP_TSSTSMCRSendMax SMF119AP_TSSTSMCRRecvCurrent SMF119AP_TSSTSMCRRecvMax	V2R1	<ul style="list-style-type: none"> When the SMCR parameter is configured on the GLOBALCONFIG statement, the listed TCP counters reflect all TCP connections, including connections over SMC-R links. The listed SMC-R stats are added at the end of the TCP statistics section. The listed SMC-R storage stats are added in the storage statistics section. 	Shared Memory Communications over Remote Direct Memory Access

TN3270E Telnet server records

Table 62 lists the changes made to the TN3270E Telnet server SMF type 119 records.

Table 62. Summary of new and changed Communications Server SMF type 119 record - TN3270 Telnet server records

Record type	Record field	Release	Description	Reason for change
Telnet profile record (subtype 24)	SMF119TN_TPSSLV3	V2R1	New field to enable or disable SSLV3	APAR PI28679
	N/A	V2R1	New SMF 119 subtype 24 record that provides TN3270E Telnet server configuration information.	NMI and SMF enhancements for TCP/IP applications

z/OS UNIX /etc files

Table 63 lists z/OS UNIX /etc files.

Table 63. Summary of new and changed Communications Server z/OS UNIX /etc files

Utility	Rel.	IBM-provided sample file	Target location	What changed and when	Reason for change
DCAS	V2R1	No sample provided	/etc/ dcas.conf	In z/OS V2R1 Communications Server, a new DCAS keyword, TLSMECHANISM, is provided to configure the DCAS (Digital Certificate Access Server) server to use Application Transparent Transport Layer Security (AT-TLS) to manage TLS security.	AT-TLS enablement for DCAS
				In z/OS V2R1 Communications Server, a new TLVS1ONLY keyword is provided to configure SSLV3 protocol for connections that are secured using SSL implemented by DCAS.	Release update
FTP Server and Client	V2R1	SEZAINST (FTCDATA) for the client and (FTPDATA) for the server	FTP.DATA	In z/OS V2R1 Communications Server, a new SSLV3 keyword is provided to configure SSLV3 protocol for connections that are secured using TLS implemented by FTP.	Release update
Policy Agent	V2R1	/usr/lpp/ tcpip/ samples/ pagent.conf	/etc/ pagent.conf	In z/OS V2R1 Communications Server, a new ServerSSLV3 keyword is provided to configure SSLV3 protocol for the policy client that connects to the server.	Release update
				z/OS V2R1 Communications Server Policy Agent, centralized Policy Agent now supports TLSv1.1 and TLSv1.2 2-byte ciphers. For detailed information, see the <i>ServerSSLV3CipherSuites parameter of the ServerConnection statement</i> in <i>z/OS Communications Server: IP Configuration Reference</i> . In z/OS V2R1 Communications Server, the import services between Policy Agent and IBM Configuration Assistant for z/OS Communications Server can have user defined AT-TLS policies to create a secure SSL connection.	TLS security enhancements for Policy Agent

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Table 63. Summary of new and changed Communications Server z/OS UNIX /etc files (continued)

Utility	Rel.	IBM-provided sample file	Target location	What changed and when	Reason for change
Sendmail	V2R1	/usr/lpp/tcpip/samples/sendmail/cf/zOS.cf	/etc/mail/zOS.cf	In z/OS V2R1 Communications Server, a new SSLV3 keyword is provided to configure SSLV3 protocol for connections that are secured using System SSL.	Release update
				z/OS UNIX sendmail CipherLevel statement now supports TLSv1.2 2-byte ciphers. See <i>CipherLevel</i> statement in the <i>Creating the z/OS specific file</i> topic in <i>z/OS Communications Server: IP Configuration Guide</i> .	TLS Security enhancements for sendmail
SNMP Agent	V2R1	/usr/lpp/tcpip/samples/snmpd.conf	/etc/snmpd.conf	New privacy protocol value AESCFB128 can be specified on a USM_USER statement to request AES 128-bit encryption.	Network Security enhancements for SNMP
z/OS UNIX snmp command	V2R1	/usr/lpp/tcpip/samples/snmpv2.conf	/etc/osnmp.conf	New privacy protocol value AESCFB128 can be specified on a statement for an SNMPv3 user to request AES 128-bit encryption.	Network Security enhancements for SNMP

General updates of IP interfaces

Table 64 lists the general IP interfaces updates.

Table 64. Summary of new and changed Communications Server IP - General updates to IP interfaces

Interface	Release	Description	Reason for change
ENF signal 80	V2R1	<p>Changed ENF interface to allow z/OS to signal events. The ENF signal 80 has one qualifier:</p> <ul style="list-style-type: none"> A rpcbind server event occurred <p>The rpcbind server issue the event when the server starts or stops. The EZAENF80 macro maps the ENF signal.</p> <p>Guideline: RPC applications that want awareness of the rpcbind server availability can write ENF listening user exit routines to react to Communications Server ENF signal with the rpcbind event qualifier.</p>	RPCBIND recycle notification
MODDVIPA	V2R1	New option added: -a - Create dvipa with affinity	Affinity for application-instance DIVPAs
SMF 119 subtype 4 record	V2R1	Record Type = TCP/IP Profile Record Record Field = NMTP_TCCFSelectiveACK Release = V2R1 Description = New flag to indicate the setting of SELECTIVEACK/NOSELECTIVEACK. Reason for Change = TCP support for selective acknowledgements	TCP support for selective acknowledgements

Samples provided in MVS data set SEZAINST

Table 65 on page 145 lists the changes to the samples that are provided in MVS data set SEZAINST.

Table 65. IP samples provided in MVS data set SEZAINST

Member	Rel.	Description	Reason for change
CSSMTP	V2R1	In the PARM field of the EXEC JCL statement, changed the _CEE_ENVFILE environment variable to _CEE_ENVFILE_S so that trailing blanks are removed from each record in the reference data set or file.	Release update
EZADMD	V2R1	In the PARM field of the EXEC JCL statement, changed the _CEE_ENVFILE environment variable to _CEE_ENVFILE_S so that trailing blanks are removed from each record in the reference data set or file.	Release update
EZAFCEXT	V2R1	The JCL file EZAFCEXT contains the sample client user exit routines. If the JCL is submitted, it creates four load modules. EZAFCCMD and EZAFCREP are user exit routines. EZAFCCOM and ASMTSYSL are assistant load modules that are called by the EZAFCCMD and EZAFCREP user exit routines.	FTP client security user exits
EZAFCREP	V2R1	The user exit routine of EZAFCREP controls the FTP replies that are sent from the FTP server.	FTP client security user exits
EZAFTPAC	V1R13	Sample FTP.DATA for the FTP client; includes a sample DSNTYPE statement and a sample EATTR statement.	<ul style="list-style-type: none"> • FTP support for large-format data sets • Enhanced FTP support for extended address volumes
EZAFTPAS	V1R13	Sample FTP.DATA for the FTP server; includes a sample DSNTYPE statement and a sample EATTR statement.	<ul style="list-style-type: none"> • FTP support for large-format data sets • Enhanced FTP support for extended address volumes
EZANSPR9	V2R1	This is a sample procedure for the named application, which is no longer supported.	Removal of BIND DNS Name Server from z/OS
EZANSSSI	V2R1	This is a sample procedure for the named application, which is no longer supported.	Removal of BIND DNS Name Server from z/OS
EZAPOLPR	V2R1	In the PARM field of the EXEC JCL statement, changed the _CEE_ENVFILE environment variable to _CEE_ENVFILE_S so that trailing blanks are removed from each record in the reference data set or file.	Release update

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Table 65. IP samples provided in MVS data set SEZAINST (continued)

Member	Rel.	Description	Reason for change
EZARACF	V2R1	New MVS.VARY.TCPIP.SYNTAXCHECK resource in the OPERCMD5 class is provided for the new VARY TCPIP,,SYNTAXCHECK command.	Check TCP/IP profile syntax without applying configuration changes
	V2R1	The following new resource profiles in the SERVAUTH class are provided for the real-time application-controlled TCP/IP trace NMI: <ul style="list-style-type: none"> EZB.TRCCTL.sysname.tcpname.OPEN EZB.TRCCTL.sysname.tcpname.DATTRACE EZB.TRCCTL.sysname.tcpname.PKTTRACE EZB.TRCSEC.sysname.tcpname.ATTLS EZB.TRCSEC.sysname.tcpname.IPSEC 	Real-time application-controlled TCP/IP trace NMI
	V1R13	<ul style="list-style-type: none"> New resource in the SERVAUTH class, EZB.BINDDVIPARANGE. <i>sysname.tcpname.resname</i>, controls if an application can issue a bind socket call to create a specific dynamic VIPA in a VIPARANGE subnet. New resource in the SERVAUTH class, EZB.MODDVIPA. <i>sysname.tcpname.resname</i>, controls if an application can do the following actions: <ul style="list-style-type: none"> Create an application-specific DVIPA, specified by a specific VIPARANGE statement, using the SIOCSVIPA ioctl call, the SIOCSVIPA6 ioctl call, or the MODDVIPA utility Delete a DVIPA that was created using the same profile and the SIOCSVIPA ioctl call, the SIOCSVIPA6 ioctl call, or the MODDVIPA utility 	Improved security granularity for VIPARANGE DVIPAs
EZASNPRO	V1R13	SNTP sample MVS started procedure - the Language Environment parameters no longer need to be specified on the PARM parameter of the EXEC JCL statement.	Release update
FTCHKPWD	V1R13	Now demonstrates the changed user exit interface.	FTP support for password phrases
IKED	V2R1	In the PARM field of the EXEC JCL statement, changed the _CEE_ENVFILE environment variable to _CEE_ENVFILE_S so that trailing blanks are removed from each record in the reference data set or file.	Release update
MIBDESC	V2R1	This SNMP Query Engine input sample has been updated with all the new SNMP MIB objects that are described in "SNMP MIB modules" on page 124.	Release update
NAMED9	V2R1	This is a sample procedure for the named application, which is no longer supported.	Removal of BIND DNS Name Server from z/OS

Table 65. IP samples provided in MVS data set SEZAINST (continued)

Member	Rel.	Description	Reason for change
NSSD	V2R1	In the PARM field of the EXEC JCL statement, changed the _CEE_ENVFILE environment variable to _CEE_ENVFILE_S so that trailing blanks are removed from each record in the reference data set or file.	Release update
NSSIG	V2R1	This is a sample procedure for sending signals to the named application, which is no longer supported.	Removal of BIND DNS Name Server from z/OS
OMPROUTE	V2R1	In the PARM field of the EXEC JCL statement, changed the _CEE_ENVFILE environment variable to _CEE_ENVFILE_S so that trailing blanks are removed from each record in the reference data set or file.	Release update
OSMPDPR	V2R1	In the PARM field of the EXEC JCL statement, changed the _CEE_ENVFILE environment variable to _CEE_ENVFILE_S so that trailing blanks are removed from each record in the reference data set or file.	Release update
OSNMPDPR	V2R1	The following changes were made to the sample SNMP agent cataloged procedure: <ul style="list-style-type: none"> • A sample SYSTCPD DD statement was added. This DD statement can be used to specify the TCPIP.DATA data set containing the TCP/IP stack name of the TCP/IP stack name with which the SNMP agent should associate itself. • An example of specifying the -s start parameter was added. 	Release update
PAGENT	V2R1	In the PARM field of the EXEC JCL statement, changed the _CEE_ENVFILE environment variable to _CEE_ENVFILE_S so that trailing blanks are removed from each record in the reference data set or file.	Release update
RSVPD	V2R1	In the PARM field of the EXEC JCL statement, changed the _CEE_ENVFILE environment variable to _CEE_ENVFILE_S so that trailing blanks are removed from each record in the reference data set or file.	Release update

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Table 65. IP samples provided in MVS data set SEZAINST (continued)

Member	Rel.	Description	Reason for change
SAMPPROF	V2R1	Added examples of using the INTERFACE profile statement to define IPv4 HiperSockets (IPAQIDIO) and IPV4 VIPA (VIRTUAL) interfaces.	IPv4 INTERFACE statement for HiperSockets and Static VIPAs
	V2R1	This is the sample configuration file for the TCPIP address space. Named is removed from the example AUTOLOG statement and from the example PORT statement.	Removal of BIND DNS Name Server from z/OS
	V2R1	Added information about specifying the new CACHEALL, CACHEPERMIT, and CACHESAME parameters on the NETACCESS profile statement.	Improve auditing of NetAccess rules
	V1R13	A new SAF parameter and its associated <i>rename</i> value are added to the VIPARANGE statement.	Improved security granularity for VIPARANGE DVIPAs
	V1R13	The <i>jobname</i> parameter of the PORTRANGE statement can now include a 1-7 character prefix followed by a wildcard character (*), enabling all job names that match the prefix to access the ports in the range.	Wildcard support for the PORTRANGE statement
SYSLOGD	V2R1	In the PARM field of the EXEC JCL statement, changed the _CEE_ENVFILE environment variable to _CEE_ENVFILE_S so that trailing blanks are removed from each record in the reference data set or file.	Release update
TCPDATA	V2R1	This is the sample TCPIP.DATA configuration data set. The example NSINTERADDR statements are updated to specify IP addresses that do not loop back for IPv4 and IPv6.	Removal of BIND DNS Name Server from z/OS
TRMD	V2R1	In the PARM field of the EXEC JCL statement, changed the _CEE_ENVFILE environment variable to _CEE_ENVFILE_S so that trailing blanks are removed from each record in the reference data set or file.	Release update

Samples provided in z/OS UNIX TCPIP directory

Table 66 lists the changes to the samples that are provided in z/OS UNIX directory /usr/lpp/tcpip/samples.

Table 66. IP samples provided in z/OS UNIX directory /usr/lpp/tcpip/samples

File name	Rel.	Description	Reason for change
caching.conf	V2R1	This configuration file can be deleted. It was used by the named application, which is no longer supported.	Removal of BIND DNS Name Server from z/OS
db.loopback.v9	V2R1	This configuration file can be deleted. It was used by the named application, which is no longer supported.	Removal of BIND DNS Name Server from z/OS
db.mycorp.v9	V2R1	This configuration file can be deleted. It was used by the named application, which is no longer supported.	Removal of BIND DNS Name Server from z/OS

Table 66. IP samples provided in z/OS UNIX directory /usr/lpp/tcpip/samples (continued)

File name	Rel.	Description	Reason for change
db.34.37.9.v9	V2R1	This configuration file can be deleted. It was used by the named application, which is no longer supported.	Removal of BIND DNS Name Server from z/OS
dmd.conf	V2R1	The DMD configuration sample is updated to include the new DefaultLogLimit parameter.	Limit defensive filter logging
named.conf	V2R1	This configuration file can be deleted. It was used by the named application, which is no longer supported.	Removal of BIND DNS Name Server from z/OS
pagent_IDS.conf	V1R13	Intrusion Detection Services (IDS) policy sample updated to include new attack types and IPv6 examples.	Expanded Intrusion Detection Services
	V1R13	Intrusion Detection Services (IDS) policy sample updated to include new attack types.	Intrusion Detection Services support for Enterprise Extender
pagent_TTLS.conf	V2R1	Updated for new statements, parameters and values.	AT-TLS support for TLS v1.2 and related features
slave.conf	V2R1	This configuration file can be deleted. It was used by the named application, which is no longer supported.	Removal of BIND DNS Name Server from z/OS

Communications Server SNA summary of interface changes

This topic describes the updates to the following Communications Server SNA interfaces:

- “Start options”
- “Start option behavior changes” on page 150
- “Definition statements” on page 151
- “Commands” on page 152
- “Command behavior changes” on page 153
- “SNA API macroinstruction operands” on page 156
- “VTAM internal trace entries” on page 156
- “Network monitoring interface API” on page 159
- “Vector and vector list changes” on page 159
- “Request parameter list return code feedbacks” on page 160
- “Tuning statistics reports” on page 160

Start options

Table 67 lists the new or changed SNA start options.

Refer to *z/OS Communications Server: SNA Resource Definition Reference* for more information on start options.

Table 67. Summary of new and changed Communications Server start options

Start option	Release	Description of update	Reason for change
CSDUMP	V2R1	The RNICTRLE operand is changed to accept the value MSGVALUE.	Shared Memory Communications over RDMA adapter (RoCE) virtualization
	V2R1	Changed to accept a new value RNICTRLE as part of a message trigger.	Shared Memory Communications over Remote Direct Memory Access

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Table 67. Summary of new and changed Communications Server start options (continued)

Start option	Release	Description of update	Reason for change
EEVERIFY	V1R12	New start option that specifies whether VTAM should automatically send an LDLC probe to the remote partner to determine if all ports are accessible during the activation of the Enterprise Extender (EE) connection. This option also specifies the time interval at which VTAM should send the probe on active EE connections.	Enterprise Extender connection health verification
ENSEMBLE	V1R12	New start option that specifies whether this z/OS Communications Server will permit connectivity to the intraensemble data network and the intranode management network. Access to these networks is through OSA-Express3 features configured in OSX and OSM modes.	z/OS Communications Server in an ensemble
IPADDR	V2R1	Changed to accept an IPv6 address or an IPv4 address	Enterprise Extender IPv6 address configuration
MULTPATH	V1R12	New start option that specifies whether VTAM allows multipath for IPv4 and IPv6 Enterprise Extender connections.	Multipath control for Enterprise Extender
PSRETRY	V2R1	Changed to accept a new IMMED operand value to trigger immediate path switch attempts when a TG is activated or changes status.	Enterprise Extender IPv6 address configuration
TRACE	V1R13	Existing start option. The VIT operand DSPSIZE was used to set the size of the VIT data space when TYPE=VTAM was specified; it is not supported in V1R13 and later.	Increased CTRACE and VIT capacity
	V1R13	Existing start option. The VIT operand SIZE, used when TYPE=VTAM is specified, is changed to specify the number of megabytes of HVCommon instead of the number of pages of ECSA. The new valid range of values is 4M to 2048M, inclusive.	Increased CTRACE and VIT capacity
	V1R12	Start option that is changed to accept a new SUBTRACE=DIO option when the TYPE=VTAM OPTION is specified.	Performance improvements for sysplex distributor connection routing

Start option behavior changes

Table 68 on page 151 lists the SNA start options that have changed behavior.

For complete information about all SNA start options, refer to *z/OS Communications Server: SNA Resource Definition Reference*.

Table 68. Summary of new and changed Communications Server start option behavior changes

Start option with changed behavior	Release	Description of update	Reason for change
TRACE	V1R13	The VIT operand DSPSIZE is no longer supported. Coding the DSPSIZE operand results in message IST448I DSPSIZE OPTION IGNORED - NO LONGER SUPPORTED.	Increased CTRACE and VIT capacity
	V1R13	The VIT operand SIZE specifies the number of megabytes of HVCOMMON storage to be used for the VIT table. Previously, it specified the number of pages of ECSA to be used for the VIT table. If you do not specify M (for megabyte), a default of 4M is used.	Increased CTRACE and VIT capacity

Definition statements

Table 69 lists the changes to SNA definition statements.

For complete information about all changed and new definition statements, refer to *z/OS Communications Server: SNA Resource Definition Reference*.

Table 69. Summary of new and changed Communications Server definition statements

Definition statement	Release	Description of update	Reason for change
GROUP	V2R1	In an Enterprise Extender (EE) XCA major node (MEDIUM=HPRIP), the IPADDR parameter is changed to accept an IPv6 address or an IPv4 address.	Enterprise Extender IPv6 address configuration
	V2R1	In a switched major node, the HPREEARB parameter is accepted on the GROUP definition statement. HPREEARB accepts a value of HPRARB or a value of PROGRESS for EE connections.	Simplified Configuration for Progressive Mode ARB
	V1R12	In an Enterprise Extender XCA major node (MEDIUM=HPRIP), a new keyword EEVERIFY is available. It affects the Enterprise Extender connections associated with the connection network defined by this GROUP. EEVERIFY specifies whether VTAM should automatically send an LDLC probe to the remote partner to determine if all ports are accessible during the activation of the EE connection. It also specifies the time interval at which VTAM should send the probe on active EE connections.	Enterprise Extender connection health verification
PATH	V2R1	In a switched major node for an EE connection, the IPADDR parameter is changed to accept either an IPv6 address or an IPv4 address.	Enterprise Extender IPv6 address configuration

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Table 69. Summary of new and changed Communications Server definition statements (continued)

Definition statement	Release	Description of update	Reason for change
PU	V2R1	In a switched major node, the HPREEARB parameter is accepted on the PU definition statement. HPREEARB accepts a value of HPRARB or a value of PROGRESS for EE connections.	Simplified Configuration for Progressive Mode ARB
	V1R12	A new keyword EEVERIFY is available on the model major node for Enterprise Extender (DYNTYPE=EE), and on the switched major node. It affects the EE connections with these Enterprise Extender physical units. EEVERIFY specifies whether VTAM should automatically send an LDLC probe to the remote partner to determine if all ports are accessible during the activation of the EE connection. It also specifies the time interval at which VTAM should send the probe on active EE connections.	Enterprise Extender connection health verification

Commands

Table 70 lists the new and changed SNA commands.

For complete information about SNA commands, refer to the *z/OS Communications Server: SNA Operation*.

Table 70. Summary of new and changed Communications Server commands

Command	Release	Description	Reason for change
DISPLAY EE	V2R1	Added a new CPNAME filter.	Serviceability Enhancements
	V1R12	Added a new LIST=EEVERIFY option. When this option is specified, general Enterprise Extender information and EE Health Verification information is displayed at the local IP address level.	Enterprise Extender connection health verification
DISPLAY TOPO	V1R12	A new TDUDIAG value on the LIST operand displays the following information: <ul style="list-style-type: none"> A summary of TDU diagnostic information; displayed when no other operands are specified. TDU diagnostic information that is specific to the node; displayed when the ID operand is also specified. TDU diagnostic information specific to the TG; displayed when the ORIG, DEST, and TGN operands are also specified. 	Enhancements to topology database diagnostics
DISPLAY TRLE	V2R1	If the TRLE represents an OSA-Express in QDIO mode or in Hipersockets device, the display includes an additional message (IST2386I).	QDIO outbound flood prevention
	V2R1	A new value is defined for the CONTROL parameter. Specifying CONTROL=RoCE displays all the 10GbE RoCE Express TRLEs.	Shared Memory Communications over Remote Direct Memory Access
	V2R1	A new DEVSTATS operand is accepted. Specifying DEVSTATS=YES requests that VTAM obtain and display operational statistics for a 10GbE RoCE Express TRLE.	Shared Memory Communications over Remote Direct Memory Access

Table 70. Summary of new and changed Communications Server commands (continued)

Command	Release	Description	Reason for change
MODIFY CSDUMP	V2R1	The RNICTRLE operand is changed to accept the value MSGVALUE.	Shared Memory Communications over RDMA adapter (RoCE) virtualization
	V2R1	A new RNICTRLE operand is accepted. Specifying RNICTRLE requests that VTAM take a 10GbE RoCE Express diagnostic dump of the 10GbE RoCE Express interface represented by RNICTRLE in addition to any other diagnostic information requested.	Shared Memory Communications over Remote Direct Memory Access
MODIFY NOTRACE	V1R12	A new SUBTRACE value, DIO, is accepted when TYPE=VTAM is specified.	Performance improvements for sysplex distributor connection routing
MODIFY TOPO	V1R13	A new value, FUNCTION=CLRTREES, clears APPN routing trees. You should use this function only when advised by IBM service to do so.	Improved APPN routing resilience
MODIFY TRACE	V2R1	The maximum value of the BFRNUM operand when TYPE=ROUTE is specified is increased from 100 to 500 to allow up to 500 40K buffers for the APPN route selection trace.	SNA serviceability enhancements
	V1R12	A new SUBTRACE value, DIO, is accepted when TYPE=VTAM is specified.	Performance improvements for sysplex distributor connection routing
MODIFY VTAMOPTS	V2R1	Changed to accept an IPv6 address or an IPv4 address for the IPADDR start option.	Enterprise Extender IPv6 address configuration
	V1R12	This command can be used to change the value of the ENSEMBLE start option.	z/OS Communications Server in an ensemble
	V1R12	This command can be used to change the value of the EEVERIFY start option.	Enterprise Extender connection health verification
	V1R12	This command can be used to change the value of the MULTIPATH start option.	Multipath control for Enterprise Extender

Command behavior changes

Table 71 lists the SNA commands that have changed behavior.

For complete information about SNA commands, refer to the *z/OS Communications Server: SNA Operation*.

Table 71. Summary of new and changed Communications Server commands with changed behavior

Command	Release	Description of behavior change	Reason for change
DISPLAY EE	V2R1	IST2346I is added to output that contains information about a remote IP address or a remote host name.	Serviceability Enhancements
DISPLAY EEDIAG	V1R13	When TEST=YES and LIST=SUMMARY are specified together, messages IST2137I and IST2138I now have *NA for the hop count. Previously, IST2137I and IST2138I were displayed with the actual hop count.	Enterprise Extender firewall-friendly connectivity test

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Table 71. Summary of new and changed Communications Server commands with changed behavior (continued)

Command	Release	Description of behavior change	Reason for change
DISPLAY ID	V2R1	If ID= <i>rnictrle_name</i> is specified and the 10GbE RoCE Express feature that <i>rnictrle_name</i> represents is operating in a shared RoCE environment, message IST2417I appears in the command output to display the associated virtual function number (VFN).	Shared Memory Communications over RDMA adapter (RoCE) virtualization
	V2R1	If the resource that is being displayed is a RNIC TRLE, a new message group (IST2361I) is generated to display information that is unique to the 10GbE RoCE Express interface.	Shared Memory Communications over Remote Direct Memory Access
	V2R1	When the ID represents a high performance routing (HPR) physical unit name, IST2395I is issued if the base mode adaptive rate-based (ARB) pacing algorithm is used.	Serviceability Enhancements
DISPLAY ID	V1R13	When ID= <i>trlename</i> is specified for an active QDIO TRLE, messages IST2331I, IST2332 and one or more IST2333I are issued. For messages IST2331I, IST2332I, and IST2333I, a new QUEUE STATUS column now shows the current status of each read queue.	Performance improvements for Enterprise Extender traffic
	V1R13	The command is enhanced in the following ways: <ul style="list-style-type: none"> • Displays information about IQDX TRLEs • Includes the associated interface name on message IST1717I 	HiperSockets optimization for intraensemble data networks
	V1R12	When ID= <i>trlename</i> is specified for an active QDIO TRLE, messages IST2331I, IST2332 and one or more IST2333I are issued. Previously message IST1918I was issued. Message IST924I is added to separate data device information.	Performance improvements for sysplex distributor connection routing
	V1R12	When ID= <i>trlename</i> is specified for an active QDIO TRLE, message IST2337I describing the chpid type and number is issued.	z/OS Communications Server in an ensemble
	V1R12	When the ID represents a high performance routing (HPR) physical unit name or line of the Enterprise Extender XCA major node (MEDIUM=HPRIP), the display output is enhanced to optionally include the additional messages IST2327I, IST2328I, IST2329I, IST2339I, IST2340I, IST2341I and IST2343I.	Enterprise Extender connection health verification
DISPLAY STATS	V2R1	When you specify TYPE=CFS,STRNAME=EZBDVIPA, entries can also be displayed for IPv6 addresses.	Sysplex-Wide Security Associations for IPv6
	V1R13	When TYPE=VTAM is specified, existing message IST1227I displays the VIT size in megabytes. Message IST1227I for the status value 2 displays the VIT size. IST1227I for the status value 163 is retired.	Increased CTRACE and VIT capacity

Table 71. Summary of new and changed Communications Server commands with changed behavior (continued)

Command	Release	Description of behavior change	Reason for change
DISPLAY TOPO	V1R13	When LIST=SUMMARY is specified and APPN routing trees were cleared, new message IST2360I displays the date and time of the last clear operation.	Improved APPN routing resilience
	V1R12	When ID= <i>cpname</i> ,LIST=ALL is specified, the display output is enhanced to include additional messages.	Enhancements to topology database diagnostics
	V1R12	When ORIG= <i>orig</i> ,DEST= <i>dest</i> is specified, the display output is enhanced to include additional messages.	Enhancements to topology database diagnostics
	V1R12	When LIST=TDUINFO is specified, the display output is enhanced to include, in addition to information about TDUs received, the following information: <ul style="list-style-type: none"> Information about corrupted control vectors. Information about TDUs sent. In addition, when LIST=TDUINFO,SCOPE=ACTIVITY is specified, the display output is enhanced to include information about RSN updates. <p>Also, when a new FORMAT operand is specified on LIST=TDUINFO, the output is displayed in an expanded format.</p>	Enhancements to topology database diagnostics
DISPLAY TRL	V2R1	If TRLE= <i>rnictrl_name</i> is specified and the 10GbE RoCE Express feature that <i>rnictrl_name</i> represents is operating in a shared RoCE environment, message IST2417I appears in the command output to display the associated virtual function number (VFN).	Shared Memory Communications over RDMA adapter (RoCE) virtualization
	V2R1	When the TRLE operand specifies a RNIC TRLE, a new message group (IST2361I) is generated to display information that is unique to the 10GbE RoCE Express interface.	Shared Memory Communications over Remote Direct Memory Access
	V1R13	When TRLE= <i>trlename</i> is specified for an active QDIO TRLE, messages IST2331I, IST2332 and one or more IST2333I are issued. For messages IST2331I, IST2332I, and IST2333I a new QUEUE STATUS column now shows the current status of each read queue.	Performance improvements for Enterprise Extender traffic
	V1R13	The command is enhanced in the following ways: <ul style="list-style-type: none"> Displays information about IQDX TRLEs Includes the associated interface name on message IST1717I 	HiperSockets optimization for intraensemble data networks
	V1R12	When TRLE= <i>trlename</i> is specified for an active QDIO TRLE, messages IST2331I, IST2332 and one or more IST2333I are issued. Previously message IST1918I was issued. Message IST924I is added to separate data device information.	Performance improvements for sysplex distributor connection routing
	V1R12	When TRLE= <i>trlename</i> is specified for an active QDIO TRLE, message IST2337I describing the chpid type and number is issued.	z/OS Communications Server in an ensemble

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Table 71. Summary of new and changed Communications Server commands with changed behavior (continued)

Command	Release	Description of behavior change	Reason for change
DISPLAY VTAMOPTS	V2R1	When FORMAT=CURRENT is specified and the current IPADDR start option value is larger than 17 characters, message IST1904I is displayed instead of IST1189I.	Enterprise Extender IPv6 address configuration
	V2R1	When FORMAT=COMPLETE or FORMAT=MODIFIED is specified, and the IPADDR start option value is currently larger than 17 characters or was larger than 17 characters when VTAM was started, messages IST1905I, IST1906I, IST1907I, and IST1908I are displayed instead of IST1310I.	Enterprise Extender IPv6 address configuration
MODIFY TRACE	V1R13	A SIZE specification that is not specified in the valid range of 4M - 2048M inclusive is rejected. DSPSIZE is rejected.	Increased CTRACE and VIT capacity
MODIFY VTAMOPTS	V2R1	When you specify the new PSRETRY IMMED operand value, activation of a TG or a change in the status of a TG triggers immediate path switch processing of HPR pipes.	HPR PSRETRY Enhancement

SNA API macroinstruction operands

Table 72 lists the new or changed SNA API macroinstruction operands.

For complete information about SNA API macroinstruction operands, refer to *z/OS Communications Server: SNA Programming*.

Table 72. Summary of new and changed Communications Server SNA API macroinstruction operands

Macro-instruction	Release	Description	Reason for change
SETLOGON OPTCD=START	V1R12	An application can supply a CV64 with IP characteristics information.	Enhancements to the TN3270E server - session manager sends CV64

VTAM internal trace entries

In V1R13, the VTAM internal trace (VIT) table is relocated to 64-bit common (HCOMMON) storage. As a result, the IPCS subcommand VERBEXIT VTAMMAP functions are changed. VITAL does not support the ALL and ECSA operands and VTVIT does not set the DVIT, DVITC, DVITE, DVITL, and DVITO symbols. See Increased CTRACE and VIT capacity in *z/OS Communications Server: New Function Summary* for more information.

For complete information about VIT entries, refer to *z/OS Communications Server: SNA Diagnosis Vol 2, FFST Dumps and the VIT*.

Table 73 lists the new and changed VIT entries.

Table 73. Summary of new and changed Communications Server VTAM internal trace (VIT) entries

VIT entry	Release	Description	Related support
AFSM	V2R1	Changed: VIT record, SMC-R information added.	Shared Memory Communications over Remote Direct Memory Access
CCR and CCR2	V2R1	New: VIT records to trace communication channel operations of 10GbE RoCE Express feature.	Shared Memory Communications over RDMA adapter (RoCE) virtualization

Table 73. Summary of new and changed Communications Server VTAM internal trace (VIT) entries (continued)

VIT entry	Release	Description	Related support
COPY and COP2	V1R13	Deleted: COPY and COP2 records are replaced with TOD record.	Increased CTRACE and VIT capacity
C64Q	V2R1	New: VIT record for IUTC64QM macro invocations.	Shared Memory Communications over Remote Direct Memory Access
C642	V2R1	New: VIT record, a continuation of the C64Q record.	Shared Memory Communications over Remote Direct Memory Access
DRBx	V2R1	New: VIT record for RoCE doorbell operations.	Shared Memory Communications over Remote Direct Memory Access
HCR	V2R1	New: VIT record for RoCE hardware command operations.	Shared Memory Communications over Remote Direct Memory Access
HCR2	V2R1	New: VIT record, a continuation of the HCR record.	Shared Memory Communications over Remote Direct Memory Access
HCR3	V2R1	New: VIT record, a continuation of the HCR record.	Shared Memory Communications over Remote Direct Memory Access
HCR4	V2R1	New: VIT record, a continuation of the HCR record.	Shared Memory Communications over Remote Direct Memory Access
HCR5	V2R1	New: VIT record, a continuation of the HCR record.	Shared Memory Communications over Remote Direct Memory Access
IOSP	V2R1	New: VIT record for invocations of z/OS Peripheral Component Interconnect Express (PCIe) services.	Shared Memory Communications over Remote Direct Memory Access
IOS2	V2R1	New: VIT record, a continuation of the IOSP record.	Shared Memory Communications over Remote Direct Memory Access
IOS3	V2R1	New: VIT record, a continuation of the IOSP record.	Shared Memory Communications over Remote Direct Memory Access
IUTR	V2R1	New: A variation of the IUTx VIT record, specifically for IUTIL-R invocations.	Shared Memory Communications over Remote Direct Memory Access
IUTX	V2R1	Changed: Added SMC-R information in existing VIT record.	Shared Memory Communications over Remote Direct Memory Access
ODPK	V1R12	Changed: Added an indicator of the read queue identifier for inbound packets.	Performance improvements for sysplex distributor connection routing
ODTE	V2R1	Changed: Added SMC-R information in existing VIT record.	Shared Memory Communications over Remote Direct Memory Access
PCIR	V2R1	New: A variation of the PCIx record, specifically for interrupts of the 10GbE RoCE Express feature.	Shared Memory Communications over Remote Direct Memory Access
P64Q	V2R1	New: VIT record for IUTP64QM macro invocations.	Shared Memory Communications over Remote Direct Memory Access
P642	V2R1	New: VIT record, a continuation of the P64Q record.	Shared Memory Communications over Remote Direct Memory Access
QAPL	V1R12	New: OSA-Express QDIO or HiperSockets accelerator parameter list.	Performance improvements for sysplex distributor connection routing

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Table 73. Summary of new and changed Communications Server VTAM internal trace (VIT) entries (continued)

VIT entry	Release	Description	Related support
QDIP	V1R12	Changed: Enabled using the DIO subtrace type under the CIA trace option. You must specify SUBTRACE=DIO,OPT=CIA to enable this trace entry. Previously, this trace entry was enabled under the CIA trace option.	Performance improvements for sysplex distributor connection routing
QSRB	V2R1	Changed: Added SMC-R information in existing VIT record.	Shared Memory Communications over Remote Direct Memory Access
	V1R12	New: OSA-Express QDIO or HiperSockets Service Request Block (SRB) event.	Performance improvements for sysplex distributor connection routing
QSR2	V1R12	New: OSA-Express QDIO or HiperSockets Service Request Block (SRB) event (part 2).	Performance improvements for sysplex distributor connection routing
RAPB	V2R1	New: VIT record for RoCE anchor cell operations.	Shared Memory Communications over Remote Direct Memory Access
RAP2	V2R1	New: VIT record, a continuation of the RAPB record.	Shared Memory Communications over Remote Direct Memory Access
RCPI	V2R1	New: VIT record for RoCE input parameter list information.	Shared Memory Communications over Remote Direct Memory Access
RCPO	V2R1	New: VIT record for RoCE output parameter list information.	Shared Memory Communications over Remote Direct Memory Access
RCP2	V2R1	New: VIT record, a continuation of the RCPI and RCPO records.	Shared Memory Communications over Remote Direct Memory Access
RCP3	V2R1	New: VIT record, a continuation of the RCPO record.	Shared Memory Communications over Remote Direct Memory Access
RPLx	V2R1	New: VIT record for RoCE Poll operation completion.	Shared Memory Communications over Remote Direct Memory Access
RPLA	V2R1	New: VIT record, a continuation of the RPLx record.	Shared Memory Communications over Remote Direct Memory Access
RPLI	V2R1	New: VIT record, a continuation of the RPLA record.	Shared Memory Communications over Remote Direct Memory Access
RPLP	V2R1	New: VIT record, a continuation of the RPLx record.	Shared Memory Communications over Remote Direct Memory Access
RPSA	V2R1	New: VIT record, a continuation of the RPST record.	Shared Memory Communications over Remote Direct Memory Access
RPSI	V2R1	New: VIT record, a continuation of the RPSA record.	Shared Memory Communications over Remote Direct Memory Access
RPSP	V2R1	New: VIT record, a continuation of the RPST record.	Shared Memory Communications over Remote Direct Memory Access
RPST	V2R1	New: VIT record for RoCE Post operation completion.	Shared Memory Communications over Remote Direct Memory Access
RPS2	V2R1	New: VIT record, a continuation of the RPSA record.	Shared Memory Communications over Remote Direct Memory Access
RSLK	V2R1	New: VIT record for RoCE shared lock operations.	Shared Memory Communications over Remote Direct Memory Access

Table 73. Summary of new and changed Communications Server VTAM internal trace (VIT) entries (continued)

VIT entry	Release	Description	Related support
SBAL	V1R12	Changed: Added direction indicator and write queue priority for outbound packets and added a read queue identifier for inbound packets.	Performance improvements for sysplex distributor connection routing
SLSB	V1R12	Changed: Added direction indicator and read queue identifier for inbound packets.	Performance improvements for sysplex distributor connection routing
TOD	V2R1	Changed: Added CPU ID information.	Shared Memory Communications over Remote Direct Memory Access
	V1R13	New: Time of day snapshot.	Increased CTRACE and VIT capacity
VHCR, VHC2, VHC3, VHC4 and VHC5	V2R1	New: VIT records to trace VHCR commands of 10GbE RoCE Express feature when the feature operates in a shared RoCE environment.	Shared Memory Communications over RDMA adapter (RoCE) virtualization

Network monitoring interface API

Table 74 lists the updates to the SNA network monitoring interface API.

Table 74. Summary of new Communications Server network monitoring interface API

Request / Response	Release	Description	Reason for change
HPR connection	V1R12	The following new EE connection health verification information is provided: <ul style="list-style-type: none"> EEConn_VERTriplet - EE Health Verification triplet EEConn_PBRTriplet - EE Policy Based Routing triplet EEConnS_Ver_Failed_Flag - Health of the EE connection EEConnS_HVER_TOD - TOD when EE health verification info received from the remote partner EEConn_VERData - EE Health verification section EEConn_PBRData - EE Health verification PBR data EEConnS_HVER_SUCCESS_TOD - TOD when last EE health verification was successful EEConnS_HVER_FAIL_TOD - TOD when last EE health verification failed 	Enterprise Extender connection health verification

Vector and vector list changes

Table 75 lists the changes made to the SNA vector and vector list changes.

Table 75. Summary of new and changed Communications Server vector changes

Control vector or vector list	Release	Change Description	Reason for change
Access-Method-Support Vector List (ISTAMSVL)	V1R12	AMS05B61 defined to indicate VTAM support of user control vectors on SETLOGON START.	Enhancements to the TN3270E server - session manager sends CV64

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Table 75. Summary of new and changed Communications Server vector changes (continued)

Control vector or vector list	Release	Change Description	Reason for change
ISTGLBAL	V1R12	ISTGL61 defined to indicate VTAM support of user control vectors on SETLOGON START.	Enhancements to the TN3270E server - session manager sends CV64
Application-ACB Vector List (ISTVACBV)	V1R12	VAC81UCV defined for an application to indicate that it will pass control vectors on the SETLOGON START.	Enhancements to the TN3270E server - session manager sends CV64
ISTDNIB	V1R12	NIBUCVA, NIBVECS, NIBVECL, and NIBVEC defined to support the passing of the control vector on the SETLOGON START.	Enhancements to the TN3270E server - session manager sends CV64

Request parameter list return code feedbacks

Table 76 lists the changes made to the VTAM request parameter list (RPL) return code feedbacks.

Table 76. Summary of new and changed Communications Server VTAM request parameter list (RPL) return code feedbacks

New RTNCD/FDB2 pairs returned by VTAM API	Release	Change Description	Reason for change
X'14' and X'94'	V1R12	No LU name passed.	Common storage reduction for TN3270E server
X'14' and X'95'	V1R12	No applicable RDTE found.	Common storage reduction for TN3270E server
X'14' and X'96'	V1R12	Conflict with found RDTE.	Common storage reduction for TN3270E server

Tuning statistics reports

Table 77 lists the new and changed SNA tuning statistics reports.

Table 77. Summary of new and changed Communications Server SNA tuning statistics reports

Tuning statistics report	Release	Description	Reason for change
QDIO and Hipersockets	V1R12	<ul style="list-style-type: none"> Changed READ direction label to RD/x (where x is the read queue number) and added the read queue type to message IST1233I for QDIO and Hipersockets interfaces. Multiple read groups may be reported for QDIO interfaces. Removed tuning statistics for unused data devices for QDIO and Hipersockets interfaces. 	Performance improvements for sysplex distributor connection routing
RoCE Connections	V2R1	New report providing tuning statistics for 10GbE RoCE Express interfaces.	Shared Memory Communications over Remote Direct Memory Access

Chapter 8. Cryptographic Services summary of interface changes

In addition to the interface changes included in this topic, updates to Cryptographic Services resulted in SYS1.SAMPLIB member changes. See Chapter 4, “Summary of changes to SYS1.SAMPLIB,” on page 21 for those changes.

Interface changes for the following Cryptographic Services components are included in this topic:

- “ICSF summary of interface changes”
- “PKI Services summary of interface changes” on page 167
- “System SSL summary of interface changes” on page 175

ICSF summary of interface changes

The following tables describe new and changed services for Cryptographic Support for z/OS.

Table 78. Summary of new and changed ICSF callable services (FMID HCR77B0)

Callable service	Release	Description
Field level decipher	HCR77B0	New: Decrypts payment related data base fields that have been previously encrypted using the field level encipher callable service.
Field level encipher	HCR77B0	New: Encrypts payment related data base fields, preserving the format of the fields.
FPE decipher	HCR77B0	New: Decrypts payment card data for the Visa Data Secure Platform (Visa DSP) processing.
FPE encipher	HCR77B0	New: Encrypts payment card data for the Visa Data Secure Platform (Visa DSP) processing.
FPE translate	HCR77B0	New: Translates payment data from encryption under one key to encryption under another key with a possibly different format.
ICSF Multi-Purpose Service	HCR77B0	New: Validates the keys in the active CKDS or PKDS.
ICSF Query Algorithm	HCR77B0	Changed: Usage notes have been updated.
ICSF Query Facility	HCR77B0	Changed: The <i>returned_data</i> parameter has been updated.
Key Data Set List	HCR77B0	New: Generates a list or count of CKDS and PKDS labels or TKDS object handles.
Key Data Set Metadata Read	HCR77B0	New: Use to obtain metadata of a CKDS, PKDS, or TKDS record.
Key Data Set Metadata Write	HCR77B0	New: Adds, deletes, or modifies metadata of a set of records in the active CKDS, PKDS, or TKDS.
PCI Interface callable service	HCR77B0	Changed: The <i>rule_array</i> parameter has been updated.
PKA Key Token Change	HCR77B0	Changed: Usage notes have been updated.

ICSF

I Table 79. Summary of new and changed ICSF callable services (FMID HCR77A0)

Callable service	Release	Description
Cipher Text Translate2 and Cipher Text Translate2 with alet	HCR77A0	New: Translates the user-supplied ciphertext from one key to another key.
Control Vector Generate	HCR77A0	Changed: <ul style="list-style-type: none"> • Support CIPHERXI, CIPHERXL and CIPHERXO key types. • Support DOUBLE-O rule_array keyword.
ECC Diffie-Hellman	HCR77A0	Changed: <ul style="list-style-type: none"> • Support CIPHERXI, CIPHERXL and CIPHERXO key types. • Support creation of DES keys with guaranteed unique key halves.
Key Export	HCR77A0	Changed: Support CIPHERXI, CIPHERXL and CIPHERXO key types.
Key Generate	HCR77A0	Changed: <ul style="list-style-type: none"> • Support CIPHERXI, CIPHERXL and CIPHERXO key types. • Support DOUBLE-O key_length.
Key Generate2	HCR77A0	Changed: Support generating AES CIPHER keys for use in Cipher Text Translate2 callable service.
Key Import	HCR77A0	Changed: Support CIPHERXI, CIPHERXL and CIPHERXO key types.
Key Token Build	HCR77A0	Changed: <ul style="list-style-type: none"> • Support CIPHERXI, CIPHERXL and CIPHERXO key types. • Support DOUBLE-O rule_array keyword .
Key Token Build2	HCR77A0	Changed: Support C-XLATE keyword for AES CIPHER key type.
Multiple Secure Key Import	HCR77A0	Changed: Support CIPHERXI, CIPHERXL and CIPHERXO key types
PKA Key Generate	HCR77A0	Changed: Support generating RSA keys that can be wrapped by AES keys.
PKA Key Import	HCR77A0	Changed: Support importing RSA keys that are wrapped by an AES key-encrypting key.
PKA Key Token Build	HCR77A0	Changed: Support building RSA-AESC and RSA-AESM skeleton tokens.
PKA Key Token Change	HCR77A0	Changed: Support reenciphering RSA keys wrapped by an ECC master key.
PKA Key Translate	HCR77A0	Changed: Support translating the object protection key (OPK) in a RSA private key token from a DES key to an AES key.
Restrict Key Attribute	HCR77A0	Changed: <ul style="list-style-type: none"> • Support C-XLATE rule_array keyword for AES CIPHER keys. • Support DOUBLE-O rule_array keyword for DES keys.
Secure Key Import	HCR77A0	Changed: Support CIPHERXI, CIPHERXL and CIPHERXO key types.

Table 79. Summary of new and changed ICSF callable services (FMID HCR77A0) (continued)

Callable service	Release	Description
Unique Key Derive	HCR77A0	<p>New: Use the Unique Key Derive callable service to derive a key using the Base Derivation Key and the Derivation Data . The following key types can be derived:</p> <ul style="list-style-type: none"> • CIPHER • ENCIPHER • DECIPHER • MAC • MACVER • IPINENC • OPINENC • DATA token containing a PIN Key

Table 80. Summary of new and changed ICSF callable services (FMID HCR7790)

Callable service	Release	Description
Clear PIN Generate	HCR7790	Changed: Increased X9.8 PIN block security, stored PIN decimalization tables support.
Clear PIN Generate Alternate	HCR7790	Changed: Increased X9.8 PIN block security, stored PIN decimalization tables support.
Control Vector Generate	HCR7790	Changed: ANSI TR-31 key block support.
Coordinated KDS Administration	HCR7790	New: Support for a coordinated CKDS refresh or a coordinated CKDS reencipher and master key change.
CVV Key Combine	HCR7790	New: Double-length CVV key support
Digital Signature Verify	HCR7790	Changed: 4096-bit RSA clear key hardware support.
ECC Diffie-Hellman	HCR7790	<p>New: Creation of:</p> <ul style="list-style-type: none"> • Symmetric key material from a pair of ECC keys using the Elliptic Curve Diffie-Hellman protocol using the Static Unified Model • "Z" - The "secret" material output from D-H process
Encrypted PIN Generate	HCR7790	Changed: Increased X9.8 PIN block security, stored PIN decimalization tables support.
Encrypted PIN Verify	HCR7790	Changed: Increased X9.8 PIN block security, stored PIN decimalization tables support.
ICSF Query Algorithm	HCR7790	Changed: 4096-bit RSA clear key hardware support.
ICSF Query Facility	HCR7790	<p>Changed:</p> <ul style="list-style-type: none"> • Increased X9.8 PIN block security, stored PIN decimalization tables support. • ECC Diffie-Hellman (ECCDH) and ECC key wrapping support. • 4096-bit RSA clear key hardware support.
Key Generate2	HCR7790	Changed: AES key type support
Key Part Import2	HCR7790	Changed: AES key type support
Key Test2	HCR7790	<p>Changed:</p> <ul style="list-style-type: none"> • AES key type support • ANSI TR-31 key block support.
Key Token Build	HCR7790	Changed: ANSI TR-31 key block support.

Table 80. Summary of new and changed ICSF callable services (FMID HCR7790) (continued)

Callable service	Release	Description
Key Token Build2	HCR7790	Changed: AES key type support
Key Translate2	HCR7790	Changed: AES key type support
PKA Decrypt	HCR7790	Changed: 4096-bit RSA clear key hardware support.
PKA Encrypt	HCR7790	Changed: 4096-bit RSA clear key hardware support.
PKA Key Generate	HCR7790	Changed: Support for External ECC Keys (ECC Keys encrypted by an AES KEK)
PKA Key Import	HCR7790	Changed: Support for External ECC Keys (ECC Keys encrypted by an AES KEK)
PKCS #11 Derive key	HCR7790	Changed: Support for hardware generated "z" value.
PKCS #11 Derive multiple keys	HCR7790	Changed: Support for hardware generated "z" value.
PKCS #11 Private key sign	HCR7790	Changed: 4096-bit RSA clear key hardware support.
PKCS #11 Public key verify	HCR7790	Changed: 4096-bit RSA clear key hardware support.
PKCS #11 Unwrap key	HCR7790	Changed: 4096-bit RSA clear key hardware support.
Restrict Key Attribute	HCR7790	Changed: <ul style="list-style-type: none"> • AES key type support • ANSI TR-31 key block support.
Secure Key Import2	HCR7790	Changed: AES key type support
Symmetric Algorithm Decipher	HCR7790	Changed: AES key type support
Symmetric Algorithm Encipher	HCR7790	Changed: AES key type support
Symmetric Key Export	HCR7790	Changed: <ul style="list-style-type: none"> • AES key type support • Support for PKCS#1 OAEP data block formatting with the SHA-256 hash method
Symmetric Key Generate	HCR7790	Changed: Support for PKCS#1 OAEP data block formatting with the SHA-256 hash method
Symmetric Key Import	HCR7790	Changed: Support for PKCS#1 OAEP data block formatting with the SHA-256 hash method
Symmetric Key Import2	HCR7790	Changed: AES key type support
TR-31 Export	HCR7790	New: ANSI TR-31 key block support.
TR-31 Import	HCR7790	New: ANSI TR-31 key block support.
TR-31 Optional Data Build	HCR7790	New: ANSI TR-31 key block support.
TR-31 Optional Data Read	HCR7790	New: ANSI TR-31 key block support.
TR-31 Parse	HCR7790	New: ANSI TR-31 key block support.
VISA CVV Service Verify	HCR7790	Changed: Double-length CVV key support
VISA CVV Service Generate	HCR7790	Changed: Double-length CVV key support

Table 81. Summary of new and changed ICSF callable services (FMID HCR7780)

Callable service	Release	Description
ANSI X9.17 EDC Generate	HCR7780	Changed: Support for invocation in AMODE(64).
ANSI X9.17 Key Export	HCR7780	Changed: Support for invocation in AMODE(64).
ANSI X9.17 Key Import	HCR7780	Changed: Support for invocation in AMODE(64).
ANSI X9.17 Key Translate	HCR7780	Changed: Support for invocation in AMODE(64).
ANSI X9.17 Transport Key Partial Notarize	HCR7780	Changed: Support for invocation in AMODE(64).
Ciphertext Translate	HCR7780	Changed: Support for invocation in AMODE(64).
Clear PIN Encrypt	HCR7780	Changed: Support for invocation in AMODE(64).
Clear PIN Generate	HCR7780	Changed: Support for invocation in AMODE(64).
Clear PIN Generate Alternate	HCR7780	Changed: Support for invocation in AMODE(64).
Control Vector Generate	HCR7780	Changed: Support for invocation in AMODE(64).
Control Vector Translate	HCR7780	Changed: Support for invocation in AMODE(64).
Cryptographic Variable Encipher	HCR7780	Changed: Support for invocation in AMODE(64).
Data Key Export	HCR7780	Changed: Support for invocation in AMODE(64).
Data Key Import	HCR7780	Changed: Support for invocation in AMODE(64).
Decipher	HCR7780	Changed: Support for invocation in AMODE(64).
Decode	HCR7780	Changed: Support for invocation in AMODE(64).
Digital Signature Generate	HCR7780	Changed: Elliptic Curve Cryptography (ECC) support.
Digital Signature Verify	HCR7780	Changed: Elliptic Curve Cryptography (ECC) support.
Diversified Key Generate	HCR7780	Changed: <ul style="list-style-type: none"> • Support for invocation in AMODE(64). • New rule array keywords to support enhanced key wrapping method.
Encipher	HCR7780	Changed: Support for invocation in AMODE(64).
Encode	HCR7780	Changed: Support for invocation in AMODE(64).
Encrypted PIN Generate	HCR7780	Changed: Support for invocation in AMODE(64).
Encrypted PIN Translate	HCR7780	Changed: Support for invocation in AMODE(64).
Encrypted PIN Verify	HCR7780	Changed: Support for invocation in AMODE(64).
HMAC Generate	HCR7780	New: Support for CCA key management of HMAC keys.
HMAC Verify	HCR7780	New: Support for CCA key management of HMAC keys.
Key Export	HCR7780	Changed: Support for invocation in AMODE(64).
Key Generate2	HCR7780	New: Support for CCA key management of HMAC keys.
Key Import	HCR7780	Changed: Support for invocation in AMODE(64).
Key Part Import	HCR7780	Changed: <ul style="list-style-type: none"> • Support for invocation in AMODE(64). • New rule array keywords to support enhanced key wrapping method.
Key Part Import2	HCR7780	New: Support for CCA key management of HMAC keys.
Key Record Create	HCR7780	Changed: Support for invocation in AMODE(64).

Table 81. Summary of new and changed ICSF callable services (FMID HCR7780) (continued)

Callable service	Release	Description
Key Record Create2	HCR7780	New: Support for CCA key management of HMAC keys.
Key Record Delete	HCR7780	Changed: Support for invocation in AMODE(64).
Key Record Read	HCR7780	Changed: Support for invocation in AMODE(64).
Key Record Read2	HCR7780	New: Support for CCA key management of HMAC keys.
Key Record Write	HCR7780	Changed: Support for invocation in AMODE(64).
Key Record Write2	HCR7780	New: Support for CCA key management of HMAC keys.
Key Test	HCR7780	Changed: Support for invocation in AMODE(64).
Key Test Extended	HCR7780	Changed: Support for invocation in AMODE(64).
Key Test2	HCR7780	New: Support for CCA key management of HMAC keys.
Key Token Build	HCR7780	Changed: <ul style="list-style-type: none"> • Support for invocation in AMODE(64). • New rule array keywords to support enhanced key wrapping method.
Key Token Build2	HCR7780	New: Support for CCA key management of HMAC keys.
Key Translate	HCR7780	Changed: Support for invocation in AMODE(64).
Key Translate2	HCR7780	New: Support for CCA key management of HMAC keys.
MAC Generate	HCR7780	Changed: Support for invocation in AMODE(64).
MAC Verify	HCR7780	Changed: Support for invocation in AMODE(64).
MDC Generate	HCR7780	Changed: Support for invocation in AMODE(64).
Multiple Clear Key Import	HCR7780	Changed: New rule array keywords to support enhanced key wrapping method.
Multiple Secure Key Import	HCR7780	Changed: <ul style="list-style-type: none"> • Support for invocation in AMODE(64). • New rule array keywords to support enhanced key wrapping method.
One-Way Hash Generate	HCR7780	New: Support for invocation in AMODE(64).
PIN Change/Unblock	HCR7780	Changed: Support for invocation in AMODE(64).
PKA Key Generate	HCR7780	Changed: Elliptic Curve Cryptography (ECC) support.
PKA Key Import	HCR7780	Changed: Elliptic Curve Cryptography (ECC) support.
PKA Key Token Build	HCR7780	Changed: Elliptic Curve Cryptography (ECC) support.
PKA Key Token Change	HCR7780	Changed: <ul style="list-style-type: none"> • Elliptic Curve Cryptography (ECC) support. • Support for invocation in AMODE(64).
PKA Public Key Extract	HCR7780	Changed: Elliptic Curve Cryptography (ECC) support.
PKDS Record Create	HCR7780	Changed: Elliptic Curve Cryptography (ECC) support.
PKDS Record Delete	HCR7780	Changed: Elliptic Curve Cryptography (ECC) support.
PKDS Record Read	HCR7780	Changed: <ul style="list-style-type: none"> • Elliptic Curve Cryptography (ECC) support. • Support for invocation in AMODE(64).
PKDS Record Write	HCR7780	Changed: <ul style="list-style-type: none"> • Elliptic Curve Cryptography (ECC) support. • Support for invocation in AMODE(64).

Table 81. Summary of new and changed ICSF callable services (FMID HCR7780) (continued)

Callable service	Release	Description
Prohibit Export	HCR7780	Changed: Support for invocation in AMODE(64).
Prohibit Export Extended	HCR7780	Changed: Support for invocation in AMODE(64).
Remote Key Export	HCR7780	Changed: Support for invocation in AMODE(64).
Restrict Key Attribute	HCR7780	New: Support for CCA key management of HMAC keys.
Secure Key Import	HCR7780	Changed: Support for invocation in AMODE(64).
Secure Key Import2	HCR7780	New: Support for CCA key management of HMAC keys.
Secure Messaging for Keys	HCR7780	Changed: Support for invocation in AMODE(64).
Secure Messaging for PINS	HCR7780	Changed: Support for invocation in AMODE(64).
SET Block Compose	HCR7780	Changed: Support for invocation in AMODE(64).
SET Block Decompose	HCR7780	Changed: Support for invocation in AMODE(64).
Symmetric Key Decipher	HCR7780	Changed: Additional modes of operation for protecting data.
Symmetric Key Encipher	HCR7780	Changed: Additional modes of operation for protecting data.
Symmetric Key Export	HCR7780	Changed: Support for CCA key management of HMAC keys.
Symmetric Key Generate	HCR7780	Changed: <ul style="list-style-type: none"> • Support for invocation in AMODE(64). • New rule array keywords to support enhanced key wrapping method.
Symmetric Key Import	HCR7780	Changed: New rule array keywords to support enhanced key wrapping method.
Symmetric Key Import2	HCR7780	New: Support for CCA key management of HMAC keys.
Transaction Validation	HCR7780	Changed: Support for invocation in AMODE(64).
Transform CDMF Key	HCR7780	Changed: Support for invocation in AMODE(64).
Trusted Block Create	HCR7780	Changed: Support for invocation in AMODE(64).
User Derived Key	HCR7780	Changed: Support for invocation in AMODE(64).
VISA CVV Service Generate	HCR7780	Changed: Support for invocation in AMODE(64).
VISA CVV Service Verify	HCR7780	Changed: Support for invocation in AMODE(64).

PKI Services summary of interface changes

In addition to the PKI Services interfaces described in this topic, you should also review Chapter 4, “Summary of changes to SYS1.SAMPLIB,” on page 21 for changes to SYS1.SAMPLIB.

The PKI Services interfaces described in this topic are:

- “Code samples” on page 168
- “Internet protocol standards” on page 172
- “Sample forms” on page 173
- “Substitution variables” on page 173
- “Utilities” on page 173
- “RACF security classes” on page 174
- “Web pages” on page 175

Code samples

Table 82 lists new and updated PKI Services code samples. For more detailed information, see *z/OS Cryptographic Services PKI Services Guide and Reference*.

Table 82. Summary of new and changed code samples for PKI Services.

File name	Release	Description	Reason for change
businesscat.jsp jurcountry.jsp jurlocality.jsp jurstateprov.jsp	z/OS V2R1	New: The HTML and JavaScript for defining the Businesscat, Jurcountry, Jurlocality, and Jurstateprov fields.	Support for Extended Validation (EV) certificates
altdomain.jsp, altipaddr.jsp, alturi.jsp, altemail.jsp	z/OS V1R12	Updated: Allow repeatable AltDomain, AltIPAddr, AltURI, and AltEmail fields.	Multiple instances of name forms in Subject Alternate Name extension
cagetcert.rexx, cagetcert2.rexx	z/OS V2R1	Updated: cagetcert.rexx was split in 2. The new CGI is cagetcert2.rexx, which is used to return a PKCS #12 package.	Support for HTTP Server V7.0
carecover.rexx	z/OS V2R1	New: Displays a new web page to recover a certificate.	Release update
CustomExt.jsp	z/OS V1R12	New: The HTML and JavaScript for defining custom certificate extensions.	Custom certificate extensions
httpd.conf	z/OS V2R1	New: The main configuration file for HTTP Server V7.0.	Support for HTTP Server V7.0
httpd.conf	z/OS V1R13	Updated: Added 2 new Pass statements for the PKIXEnroll and PKICEnroll ActiveX installation programs.	Ensure that renewal of certificates works with Internet Explorer on Microsoft Windows systems
httpd2.conf	z/OS V1R13	Updated: Added two new Pass and two new Protect statements for the PKIXEnroll and PKICEnroll ActiveX installation programs.	Ensure that renewal of certificates works with Internet Explorer on Microsoft Windows systems
installcert.jsp	z/OS V1R13	New: Allows a user to install an automatically renewed certificate with the Internet Explorer browser.	Ensure that renewal of certificates works with Internet Explorer on Microsoft Windows systems
pkixexit.c	z/OS V1R12	Updated: <ul style="list-style-type: none"> • Use new C/C++ runtime library functions to accurately check certificate expiration dates. • Use new 64-bit time functions for time-stamping. 	Release update

Table 82. Summary of new and changed code samples for PKI Services. (continued)

File name	Release	Description	Reason for change
pkiserv.conf	z/OS V2R1	Updated: Added new OIDs for BUSINESSCATEGORY, JURISDICTIONCOUNTRY, JURISDICTIONSTATEPROV, and JURISDICTIONLOCALITY	Support for Extended Validation (EV) certificates
	z/OS V2R1	Updated: Added a keyword SecureKey that allows PKI Services to generate secure keys in the token data set (TKDS) instead of clear keys.	Enterprise PKCS #11 secure key support
	z/OS V2R1	Updated: Added a keyword, AdminGranularControl, that determines whether granular control of administration functions is in effect	Granular control of administration functions
	z/OS V2R1	Updated: Added a keyword CRLWTONotification to specify whether a console message is issued when CRL processing is complete.	CRL notification
	z/OS V2R1	Updated: Added a keyword EnablePathLenConstraint to specify whether certificate path length constraint is enforced by the CA	Path length constraint
	z/OS V2R1	Updated: The keywords Policy10rg, Policy1Notice1, and Policy1Notice2 are now commented out, and are not created by default.	CertificatePolicies extension
	z/OS V2R1	Updated: Added a keyword PathLength to specify the path length constraint value to be included in the basic constraints extension of intermediate CA certificates that are created by the CA.	Path length constraint
	z/OS V2R1	Updated: Added a keyword UseBinaryAttr1 to specify whether the CA posts certificates and CRLs to the LDAP server with the binary attribute.	Conformance with RFC 4523
	z/OS V1R13	Updated: Added a keyword to specify whether the repository for the object store and issued certificate list (ICL) is DB2 or VSAM. Added new keywords to specify the DB2 subsystem and package name if the repository is DB2.	DB2 repository for object store and issued certificate list (ICL)
	z/OS V1R13	Updated: Renamed the SharedVSAM keyword to SharedPLEX. It now applies to both VSAM and DB2 repositories.	DB2 repository for object store and issued certificate list (ICL)
	z/OS V1R13	Updated: Added a keyword to indicate whether posting of large CRLs is enabled, and a keyword to specify the directory where CRLs are saved before they are posted to LDAP	Support for large CRLs

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Table 82. Summary of new and changed code samples for PKI Services. (continued)

File name	Release	Description	Reason for change
pkiserv.conf (continued)	z/OS V1R12	Updated: Added a keyword to indicate whether certificates generated by PKI Services are constrained within the CA certificate's life time.	Release update
	z/OS V1R12	Updated: Added a keyword that specifies the days on which the daily maintenance task is to run.	Release update
	z/OS V1R12	Updated: Added a keyword that specifies the time at which the daily maintenance task is to run.	Release update
	z/OS V1R12	Updated: Added a keyword that specifies whether the daily maintenance task runs during PKI Services startup.	Release update
	z/OS V1R12	Updated: Added new signature algorithm OIDs for elliptic curve cryptography (ECC) algorithms.	Support for elliptic curve cryptography (ECC)
	z/OS V1R12	Updated: Added new signature algorithm OIDs for SHA224, SHA384, and SHA512 with RSA encryption.	Release update
	z/OS V1R12	Updated: Changed the default signature algorithm to SHA256 with RSA encryption.	Release update
	z/OS V1R12	Updated: Added a keyword that specifies whether support for certificate management protocol (CMP) messages is enabled.	Support for certificate management protocol (CMP)
pkiserv.envars	z/OS V1R12	Updated: Changed the default for the PATH variable to /bin.	Release update

Table 82. Summary of new and changed code samples for PKI Services. (continued)

File name	Release	Description	Reason for change
pkiserv.tmp1	z/OS V2R1	Updated: Added the template "2-Year EV SSL Server Certificate".	Support for Extended Validation (EV) certificates
	z/OS V2R1	Updated: Added 4 INSERTs: BusinessCat, JurLocality, JurStateProv, and JurCountry.	Support for Extended Validation (EV) certificates
	z/OS V2R1	Updated: A new RECOVERCONTENT subsection was added to recover a previously issued certificate whose key was generated by PKI Services.	Release update
	z/OS V2R1	Updated: Points to the new cagetcert2.rexx instead of cagetcert.rexx in the action URLs for the recovery form and retrieval form that is used for returning a PKCS #12 package on the Customer Application section and the 1-Year PKI Generated Key certificate template.	Support for HTTP Server V7.0
	z/OS V1R13	Updated: In the Customers application, added a link on the Customers Certificate Generation Application web page to install the PKI Services ActiveX control, and added code to determine which ActiveX control to install. On the Customers Renew or Revoke a Browser Certificate web page, added code to prompt the user to load the ActiveX control if it is not already installed and CAPICOM is not installed.	Ensure that renewal of certificates works with Internet Explorer on Microsoft Windows systems
	z/OS V1R13	Updated: The RenewKeySetIE INSERT calls the new ActiveX control, and if it is not installed, calls CAPICOM. If neither is installed, the user is prompted to install the ActiveX control.	Ensure that renewal of certificates works with Internet Explorer on Microsoft Windows systems
	z/OS V1R13	Updated: The Two-year PKI Windows logon certificate supports requests from Mozilla-based browsers.	Allow Mozilla-based browsers to support smart cards to generate certificates
	z/OS V1R12	Updated: The KeySize INSERT was updated to combine key size and key algorithm. The 1-Year PKI Generated Key template was updated to demonstrate the use of the new INSERT.	Support for elliptic curve cryptography (ECC)
	z/OS V1R12	Updated: A new CustomExt INSERT was added for defining custom certificate extensions. The n-year PKI browser certificate was updated to demonstrate the CustomExt INSERT.	Custom certificate extensions
z/OS V1R12	Updated: Allow repeatable AltDomain, AltIPAddr, AltURI, and AltEmail INSERTs.	Multiple instances of name forms in Subject Alternate Name extension	

PKI Services

Table 82. Summary of new and changed code samples for PKI Services. (continued)

File name	Release	Description	Reason for change
PKIServ.xsd	z/OS V1R13	Updated: Added PKIXEnroll and PKICEnroll ActiveX Install Tags.	Ensure that renewal of certificates works with Internet Explorer on Microsoft Windows systems
	z/OS V1R12	Updated: Added a Custom Extension tag.	Custom certificate extensions
	z/OS V1R12	Updated: Changed the maxOccurs attribute for certificate template elements CustomExt, AltIPAddr, AltEmail, AltURI, AltDomain from "1" to "unbounded".	Release update
pkitmpl.xml	z/OS V2R1	Updated: Added the template "2-Year EV SSL Server Certificate".	Support for Extended Validation (EV) certificates
	z/OS V1R13	Updated: Added tags for the PKIXEnroll and PKICEnroll ActiveX URLs for installation programs, and updated the CA certificate URL tag to include additional URL elements.	Ensure that renewal of certificates works with Internet Explorer on Microsoft Windows systems
	z/OS V1R12	Updated: The 1-Year PKI generated key certificate request was updated to demonstrate the use of the new JSP.	Support for elliptic curve cryptography (ECC)
	z/OS V1R12	Updated: The n-year PKI browser certificate was updated to demonstrate the use of CustomExt.jsp.	Custom certificate extensions
qrecover.jsp	z/OS V2R1	New: Displays a new web page to recover a certificate.	Release update
renewheader.jsp	z/OS V1R13	Updated: Added script to determine which ActiveX control to load.	Ensure that renewal of certificates works with Internet Explorer on Microsoft Windows systems
renewkeyset.jsp	z/OS V1R13	Updated: Calls the new ActiveX control, and if it is not installed, calls CAPICOM. If neither is installed, the user is prompted to install the ActiveX control.	Ensure that renewal of certificates works with Internet Explorer on Microsoft Windows systems
vhost80.conf	z/OS V2R1	New: The configuration file for non-SSL processing for HTTP Server V7.0.	Support for HTTP Server V7.0
vhost443.conf	z/OS V2R1	New: The configuration file for server authentication in SSL processing for HTTP Server V7.0.	Support for HTTP Server V7.0
vhost1443.conf	z/OS V2R1	New: The configuration file for client authentication in SSL processing for HTTP Server V7.0,	Support for HTTP Server V7.0

Internet protocol standards

Table 83 on page 173 lists changes made to support for internet protocol standards for PKI Services. For more detailed information, see *z/OS Cryptographic Services PKI Services Guide and Reference*.

Table 83. Summary of changes to support for internet protocol standards for PKI Services

Protocol name	Release	Description	Reason for change
Certificate management protocol (CMP)	z/OS V1R13	Updated: The <code>_PKISERV_CMP_AUTHINFOACC_domain</code> environment variable has been deprecated and replaced by the <code>_PKISERV_CMP_AUTHINFOACCn_domain</code> environment variable.	Release update
	z/OS V1R13	Updated: Support is added for the 06 error code.	Release update
	z/OS V1R12	New: Support is added for the certificate management protocol (CMP). This support allows a CMP client to communicate with PKI Services to request, revoke, suspend, and resume certificates.	Support for certificate management protocol (CMP)

Sample forms

Table 84 lists changes made to sample forms for PKI Services. For more detailed information, see *z/OS Cryptographic Services PKI Services Guide and Reference*.

Table 84. Summary of new and changed sample forms for PKI Services

File name	Release	Description	Reason for change
rejectmsg.form	z/OS V1R12	Updated: Now includes the reason that the certificate request was rejected.	Release update
renewcertmsg.form	z/OS V1R13	Updated: Added a link to install an automatically renewed certificate for Internet Explorer browsers.	Ensure that renewal of certificates works with Internet Explorer on Microsoft Windows systems

Substitution variables

Table 85 lists changes made to PKI Services substitution variables. For more detailed information, see *z/OS Cryptographic Services PKI Services Guide and Reference*.

Table 85. Summary of new and changed substitution variables for PKI Services

Variable name	Release	Description	Reason for change
%%rejectreason%%	z/OS V1R12	New: The reason for the rejection of a certificate request.	Release update

Utilities

Table 86 on page 174 lists the changes made to PKI Services utilities. For more detailed information, see *z/OS Cryptographic Services PKI Services Guide and Reference*.

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Table 86. Summary of new and changed PKI Services utilities

Utility name	Release	Description	Reason for change
pkiprereg	z/OS V2R1	Updated: Accepts four new RDNs: BUSINESSCATEGORY, JURISDICTIONCOUNTRY, JURISDICTIONSTATEPROV, and JURISDICTIONLOCALITY.	Support for Extended Validation (EV) certificates
iclview	z/OS V2R1	Updated: The validity period and the location of the revocation information is displayed for each certificate.	Release update
iclview	z/OS V1R13	Updated: Added support for viewing entries in the issued certificate list (ICL) when it is implemented using DB2.	DB2 repository for object store and issued certificate list (ICL)
vosview	z/OS V2R1	Updated: Information that is not applicable to the first three records in the object store is no longer displayed.	Release update
vosview	z/OS V1R13	Updated: Added support for viewing entries in the object store when it is implemented using DB2.	DB2 repository for object store and issued certificate list (ICL)
vsam2db2	z/OS V1R13	New: Copies data from the issued certificate list (ICL) and object store VSAM data sets into DB2 tables.	DB2 repository for object store and issued certificate list (ICL)
createcrls	z/OS V1R12	New: This new utility creates LDAP posting objects for certificate revocation lists (CRLs). The PKI Services daemon later posts the CRLs to an LDAP directory. You can use this program to create a CRL immediately, instead of waiting for PKI Services to do it automatically.	Release update
postcerts	z/OS V1R12	New: This new utility creates LDAP posting objects for certificates, which the PKI Services daemon later posts to an LDAP directory. You can use this utility if you have created certificates that PKI Services did not automatically post to an LDAP directory; for example if you created certificates before you configured PKI Services to automatically post them.	Release update

RACF security classes

Table 87 lists changes to RACF security classes for PKI Services. For more detailed information, see *z/OS Cryptographic Services PKI Services Guide and Reference*.

Table 87. Summary of changes to RACF security classes for PKI Services

RACF class	Release	Description	Reason for change
PKISERV	z/OS V2R1	New: Resources in the PKISERV class control authorization to PKI Services administration functions. These resources are checked in addition to resources in the FACILITY class and provide a more granular level of control than the FACILITY class resources provide.	Granular authorization to administration functions

Web pages

Table 88 lists changes to PKI Services web pages. For more detailed information, see *z/OS Cryptographic Services PKI Services Guide and Reference*.

Table 88. Summary of changes to PKI Services web pages

Web page	Release	Description	Reason for change
Key generation	z/OS V2R1	Updated: The option for 512-bit RSA keys was removed because it is not valid for secure TKDS keys. It can be added back if needed for clear keys.	Enterprise PKCS #11 secure key support
Recover previously issued certificate	z/OS V2R1	New: A web page that is displayed when the user clicks Recover Certificate , on which the user can provide the information that is needed to recover a previously issued certificate for which PKI Services generated the key	Release update
Single Request	z/OS V2R1	Updated: The key type, key size, and signature algorithm are shown for certificate requests.	Release update
Single Issued Certificate	z/OS V2R1	Updated: The public key size, key type, and signature algorithm that is used to sign the certificate are shown.	Release update

System SSL summary of interface changes

The System SSL interfaces described in this topic are:

- “SSL/TLS APIs”
- “Certificate Management APIs” on page 178
- “ASN.1 status codes” on page 185
- “CMS status codes” on page 185
- “Environment variables” on page 187
- “Function return codes” on page 188
- “gskkyman command” on page 190

System SSL application programming interfaces

This topic includes updates made to System SSL application programming interfaces (APIs). For detailed information about these functions, see *z/OS Cryptographic Services System SSL Programming*.

SSL/TLS APIs

Table 89 on page 176 lists the updates to the System SSL application interface for SSL/TLS application programming interfaces (APIs).

System SSL

Table 89. Summary of changes to z/OS SSL/TLS APIs

API	Release	Description	Reason for change
gsk_attribute_get_buffer()	z/OS V2R1	Changed: Added support for new buffer attribute GSK_SUITE_B_CIPHERS.	Suite B for TLS
	z/OS V1R13 with APAR OA39422	Changed: Added support for new buffer attribute GSK_TLS_SIG_ALG_PAIRS. Enhanced existing buffer value, GSK_CONNECT_SEC_TYPE, to return TLSV12 when TLS V1.2 secure connection is established.	TLS V1.2
	z/OS V1R13	Changed: Added support for new buffer attributes GSK_CLIENT_ECURVE_LIST and GSK_V3_CIPHER_SPECS_EXPANDED. Enhanced existing buffer value, GSK_CONNECT_CIPHER_SPEC, to return 4-byte cipher values when 4-byte cipher support is enabled.	Elliptic Curve Cryptography for TLS
gsk_attribute_get_data()	z/OS V1R13	Changed: Enhanced GSK_DATA_ID_SUPPORTED_KEYS to return certificate list that is tailored for TLS V1.2.	TLS V1.2
gsk_attribute_get_enum()	z/OS V2R1	Changed: 1. Added support for new enum attribute GSK_CERT_VALIDATE_KEYRING_ROOT. Enhanced existing enum value, GSK_CERT_VALIDATION_MODE, to support mode setting to validate certificates according to RFC 5280. 2. Added support for new enum attribute GSK_SUITE_B_PROFILE.	1. x.509 certificate validation enhancements 2. Suite B for TLS
	z/OS V1R13 with APAR OA39422	Changed: Added support for new enum attribute GSK_PROTOCOL_TL SV1_2 and GSK_V3_CIPHERS. Existing enum GSK_PROTOCOL_USED enhanced to return TLSV1.2.	TLS V1.2
	z/OS V1R12	Changed: Added support for new enum attributes GSK_EXTENDED_RENEGOTIATION_INDICATOR, GSK_RENEGOTIATION, and GSK_RENEGOTIATION_PEER_CERT_CHECK.	RFC 5746 renegotiation
gsk_attribute_set_buffer()	z/OS V1R13 with APAR OA39422	Changed: Added support for new buffer attribute GSK_TLS_SIG_ALG_PAIRS	TLS V1.2
	z/OS V1R13	Changed: Added support for new buffer attributes GSK_CLIENT_ECURVE_LIST and GSK_V3_CIPHER_SPECS_EXPANDED.	Elliptic Curve Cryptography for TLS
gsk_attribute_set_callback()	z/OS V1R13	Changed: GSK_SESSION_RESET_CALLBACK updated for TLS V1.2.	TLS V1.2

Table 89. Summary of changes to z/OS SSL/TLS APIs (continued)

API	Release	Description	Reason for change
gsk_attribute_set_enum()	z/OS V2R1	Changed: 1. Added support for new enum attribute GSK_CERT_VALIDATE_KEYRING_ROOT. Enhanced existing enum value, GSK_CERT_VALIDATION_MODE, to support mode setting to validate certificates according to RFC 5280. 2. Added support for new enum attribute GSK_SUITE_B_PROFILE.	1. x.509 certificate validation enhancements 2. Suite B for TLS
	z/OS V1R13 with APAR OA39422	Changed: Added support for new enum attribute GSK_PROTOCOL_TLSV1_2.	TLS V1.2
	z/OS V1R13	Changed: Added support for new enum attribute GSK_V3_CIPHERS.	Elliptic Curve Cryptography for TLS
	z/OS V1R12	Changed: Added support for new enum attributes GSK_EXTENDED_RENEGOTIATION_INDICATOR, GSK_RENEGOTIATION, and GSK_RENEGOTIATION_PEER_CERT_CHECK.	RFC 5746 renegotiation
gsk_environment_open()	z/OS V2R1	Changed: During establishment of the SSL environment, support added for processing environment variable GSK_SUITE_B_PROFILE.	Suite B for TLS
	z/OS V1R13 with APAR OA39422	Changed: During establishment of the SSL environment support was added for processing environment variables GSK_PROTOCOL_TLSV1_2 and GSK_TLS_SIG_ALG_PAIRS.	TLS V1.2
	z/OS V1R13	Changed: During establishment of the SSL environment support was added for process environment variable GSK_V3_CIPHER_SPECS_EXPANDED.	Elliptic Curve Cryptography for TLS
gsk_get_all_cipher_suites()	z/OS V2R1	Changed: Updated SSL run time level.	Release update
	z/OS V1R13	New: Returns the available SSL cipher suites.	Support for returning 2-byte and 4-bytes cipher lists
gsk_get_cipher_suites()	z/OS V2R1	Changed: Updated SSL run time level.	Release update
	z/OS V1R13	Changed: Updated SSL run time level.	Release update
gsk_get_ssl_vector()	z/OS V1R13	Changed: Added GSK_SSL_LVL3 function mask.	Release update

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Table 89. Summary of changes to z/OS SSL/TLS APIs (continued)

API	Release	Description	Reason for change
gsk_secure_socket_init()	z/OS V2R1	Changed: TLS V1.2 handshake performed according to Suite B profile definition.	Suite B for TLS
	z/OS V1R13 with APAR OA39422	Changed: Updated to support TLS V1.2 secure connections.	TLS V1.2
	z/OS V1R13	Changed: Updated to support elliptic curve based TLS secure connections.	Elliptic Curve Cryptography for TLS
gsk_secure_socket_misc()	z/OS V1R13 with APAR OA39422	Changed: Updated to support TLS V1.2 secure connections.	TLS V1.2
gsk_secure_socket_read()	z/OS V1R13 with APAR OA39422	Changed: Updated to support TLS V1.2 secure connections.	TLS V1.2
gsk_secure_socket_shutdown()	z/OS V1R13 with APAR OA39422	Changed: Updated to support TLS V1.2 secure connections.	TLS V1.2
gsk_secure_socket_write()	z/OS V1R13 with APAR OA39422	Changed: Updated to support TLS V1.2 secure connections.	TLS V1.2

Certificate Management APIs

Table 90 lists the updates to the System SSL application interface for SSL/TLS APIs.

Table 90. Summary of changes to z/OS Certificate Management APIs

API	Release	Description	Reason for change
gsk_construct_certificate()	z/OS V2R1	Changed: Added support for generating signed DSA certificates with key size of 2048-bits and signed certificates with DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R13	Changed: Added support for generating signed ECDSA certificates.	ECDSA certificate support
	z/OS V1R12	Changed: Added support for generating a certificate that is signed by an ECDSA certificate.	ECDSA certificate support
gsk_construct_private_key()	z/OS V1R12	New: Constructs an RSA, DSA, or ECDSA public key from its component values.	Release update
gsk_construct_public_key()	z/OS V1R12	New: Constructs an RSA, DSA, or ECDSA public key from its component values.	Release Update

Table 90. Summary of changes to z/OS Certificate Management APIs (continued)

API	Release	Description	Reason for change
<code>gsk_construct_renewal_certificate()</code>	z/OS V2R1	Changed: Added support for generating certificate requests with DSA key size of 2048-bits and certificate requests that are signed with DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
<code>gsk_construct_renewal_request()</code>	z/OS V1R12	Changed: Added support for generating an ECDSA renewal certificate request.	ECDSA certificate support
<code>gsk_construct_self_signed_certificate()</code>	z/OS V2R1	Changed: Added support for generating self-signed DSA certificates with key size of 2048-bits and DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R13	Changed: Added support for generating self-signed ECDSA certificates.	ECDSA certificate support
<code>gsk_construct_signed_certificate()</code>	z/OS V2R1	Changed: Added support for signing certificate requests using DSA 2048-bit keys and DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R12	Changed: Added support for generating a certificate that is signed by an ECDSA certificate.	ECDSA certificate support
<code>gsk_create_certification_request()</code>	z/OS V2R1	Changed: Added support for generating certificate requests with DSA key size of 2048-bits and certificate requests that are signed with DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R13	Changed: Added support for generating ECDSA certificate requests.	ECDSA certificate support
<code>gsk_create_database_renewal_request()</code>	z/OS V2R1	Changed: Added support for generating certificate renewal requests with DSA key size of 2048-bits and certificate requests that are signed with DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R12	Changed: Added support for generating an ECDSA renewal certificate request.	ECDSA certificate support

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Table 90. Summary of changes to z/OS Certificate Management APIs (continued)

API	Release	Description	Reason for change
gsk_create_database_signed_certificate()	z/OS V2R1	Changed: Added support for signing certificate requests using DSA 2048-bit keys and certificate requests that are signed with DSA SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R13	Changed: Added support for creating a signed ECDSA certificate.	ECDSA certificate support
	z/OS V1R12	Changed: Added support for generating a certificate that is signed by an ECDSA certificate.	ECDSA certificate support
gsk_create_renewal_request()	z/OS V2R1	Changed: Added support for generating certificate requests with DSA key size of 2048-bits and certificate requests that are signed with DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R12	Changed: Added support for generating an ECDSA certificate renewal request.	ECDSA certificate support
gsk_create_self_signed_certificate()	z/OS V2R1	Changed: Added support for generating self-signed DSA certificates with key size of 2048-bits and DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R13	Changed: Added support for generating self-signed ECDSA certificates.	ECDSA certificate support
gsk_create_signed_certificate()	z/OS V1R12	Changed: Added support for generating a certificate that is signed by an ECDSA certificate.	ECDSA certificate support
gsk_create_signed_certificate_record()	z/OS V2R1	Changed: Added support for generating signed DSA certificates with key size of 2048-bits and DSA certificates with DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R12	Changed: Added support for generating a certificate that is signed by an ECDSA certificate.	ECDSA certificate support

Table 90. Summary of changes to z/OS Certificate Management APIs (continued)

API	Release	Description	Reason for change
gsk_create_signed_certificate_set()	z/OS V2R1	Changed: Added support for generating signed DSA certificates with key size of 2048-bits and signed certificates with DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R13	Changed: Added support for generating signed ECDSA certificates.	ECDSA certificate support
	z/OS V1R12	Changed: Added support for generating a certificate that is signed by an ECDSA certificate.	ECDSA certificate support
gsk_create_signed_crl()	z/OS V1R12	Changed: Added support for signing a CRL with ECDSA with SHA-1.	ECDSA certificate support
gsk_create_signed_crl_record()	z/OS V2R1	Changed: Added support for generating a signed CRL using DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R12	Changed: Added support for signing a CRL with ECDSA with SHA-1, SHA-224, SHA-256, SHA-384 or SHA-512.	ECDSA certificate support
gsk_decode_certificate_extension()	z/OS V2R1	Changed: Added support for decoding HostIDMapping extension.	Enhanced x.509 certificate support
gsk_encode_certificate_extension()	z/OS V2R1	Changed: Added support for encoding HostIDMapping extension.	Enhanced x.509 certificate support
gsk_encode_ec_parameters()	z/OS V1R13	New: Encodes the EC domain parameters for an ECC key.	ECDSA certificate support
gsk_encode_export_key()	z/OS V2R1	Changed: Added support for exporting RSA and ECDSA certificates with their private keys when the private keys are stored as extractable secure private keys in the TKDS.	Support for secure private keys in a PKCS #11 token
gsk_export_key()	z/OS V2R1	Changed: Added support for exporting RSA and ECDSA certificates with their private keys when the private keys are stored as extractable secure private keys in the TKDS.	Support for secure private keys in a PKCS #11 token
gsk_factor_private_key()	z/OS V1R12	New: Factorizes an RSA, DSA, or ECDSA private key into its component values.	Base elliptic curve support
gsk_factor_public_key()	z/OS V1R12	New: Factorizes an RSA, DSA, or ECDSA public key into its component values.	Base elliptic curve support

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Table 90. Summary of changes to z/OS Certificate Management APIs (continued)

API	Release	Description	Reason for change
<code>gsk_free_private_key()</code>	z/OS V1R12	New: Releases storage that is allocated for private key information.	Base elliptic curve support
<code>gsk_free_public_key()</code>	z/OS V1R12	New: Releases storage that is allocated for public key information.	Base elliptic curve support
<code>gsk_generate_key_pair()</code>	z/OS V2R1	Changed: Added support for generation of DSA 2048-bit key pairs.	Enhanced DSA support
	z/OS V1R13	Changed: Added support for generating ECC key pairs.	Base elliptic curve support
<code>gsk_generate_key_parameters()</code>	z/OS V1R13	Changed: Added support for generating ECC key parameters.	Base elliptic curve support
<code>gsk_get_certificate_info()</code>	z/OS V1R12	New: Returns requested certificate information for an X.509 certificate.	Release update
<code>gsk_get_cms_vector()</code>	z/OS V2R1	Changed: Added GSK_CMS_LVL9 function mask.	Release update
	z/OS V1R13	Changed: Added GSK_CMS_LVL8 function mask.	Release update
	z/OS V1R12	Changed: Added GSK_CMS_LVL7 function mask.	Release update
<code>gsk_get_ec_parameters_info()</code>	z/OS V1R12	New: Get the named curve type and key size for EC domain parameters.	Base elliptic curve support
<code>gsk_make_enveloped_data_content()</code>	z/OS V2R1	Changed: Added support for encrypting the message content using AES CBC (128-bit and 256-bit).	Enhanced PKCS#7 support
<code>gsk_make_enveloped_data_content_extended()</code>	z/OS V2R1	Changed: Added support for encrypting the message content using AES CBC (128-bit and 256-bit).	Enhanced PKCS#7 support
<code>gsk_make_enveloped_data_msg()</code>	z/OS V2R1	Changed: Added support for encrypting the message content using AES CBC (128-bit and 256-bit).	Enhanced PKCS#7 support
<code>gsk_make_enveloped_data_msg_extended()</code>	z/OS V2R1	Changed: Added support for encrypting the message content using AES CBC (128-bit and 256-bit).	Enhanced PKCS#7 support
<code>gsk_make_enveloped_private_key_msg()</code>	z/OS V2R1	New: Create a PKCS#7 EnvelopedData message containing an RSA or ECDSA private key. Private key is a secure key stored in a PKCS #11 token.	Enhanced PKCS#7 support

Table 90. Summary of changes to z/OS Certificate Management APIs (continued)

API	Release	Description	Reason for change
gsk_make_signed_data_content()	z/OS V2R1	Changed: Added support for signing using digital signatures DSA with SHA-224 and SHA-256.	Enhanced DSA support
	z/OS V1R12	Changed: Added support for signing with ECDSA digital signatures.	ECDSA certificate support
gsk_make_signed_data_content_extended()	z/OS V2R1	Changed: Added support for signing using digital signatures DSA with SHA-224 and SHA-256.	Enhanced DSA support
	z/OS V1R12	Changed: Added support for signing with ECDSA digital signatures.	ECDSA certificate support
gsk_make_signed_data_msg()	z/OS V2R1	Changed: Added support for signing using digital signatures DSA with SHA-224 and SHA-256.	Enhanced DSA support
	z/OS V1R12	Changed: Added support for signing with ECDSA digital signatures.	ECDSA certificate support
gsk_make_signed_data_msg_extended()	z/OS V2R1	Changed: Added support for signing using digital signatures DSA with SHA-224 and SHA-256.	Enhanced DSA support
	z/OS V1R12	Changed: Added support for signing with ECDSA digital signatures.	ECDSA certificate support
gsk_modify_pkcs11_key_label()	z/OS V2R1	New: Returns a gsk_buffer containing a TKDS key token label with either an "=" added or removed from the first position.	Support for secure private keys in a PKCS #11 token
gsk_perform_kat()	z/OS V1R13	Changed: Enhanced to run HMAC-SHA-256 and HMAC-SHA-384 known answer tests.	FIPS 140-2 support
gsk_query_crypto_level()	z/OS V2R1	Changed: Updated SSL run time level.	Release update
	z/OS V1R13	Changed: Updated SSL run time level.	Release update
	z/OS V1R12	Changed: Updated SSL run time level.	Release update
gsk_read_enveloped_data_content()	z/OS V2R1	Changed: Added support for decrypting the message content using AES CBC (128-bit and 256-bit).	Enhanced PKCS#7 support
gsk_read_enveloped_data_content_extended()	z/OS V2R1	Changed: Added support for decrypting the message content using AES CBC (128-bit and 256-bit).	Enhanced PKCS#7 support

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Table 90. Summary of changes to z/OS Certificate Management APIs (continued)

API	Release	Description	Reason for change
<code>gsk_read_enveloped_data_msg()</code>	z/OS V2R1	Changed: Added support for decrypting the message content using AES CBC (128-bit and 256-bit).	Enhanced PKCS#7 support
<code>gsk_read_enveloped_data_msg_extended()</code>	z/OS V2R1	Changed: Added support for decrypting the message content using AES CBC (128-bit and 256-bit).	Enhanced PKCS#7 support
<code>gsk_read_signed_data_content()</code>	z/OS V2R1	Changed: Added support for verifying DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R12	Changed: Added support for verifying ECDSA digital signatures.	ECDSA certificate support
<code>gsk_read_signed_data_content_extended()</code>	z/OS V2R1	Changed: Added support for verifying DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R12	Changed: Added support for verifying ECDSA digital signatures.	ECDSA certificate support
<code>gsk_read_signed_data_msg()</code>	z/OS V2R1	Changed: Added support for verifying DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R12	Changed: Added support for verifying ECDSA digital signatures.	ECDSA certificate support
<code>gsk_read_signed_data_msg_extended()</code>	z/OS V2R1	Changed: Added support for verifying DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R12	Changed: Added support for verifying ECDSA digital signatures.	ECDSA certificate support
<code>gsk_sign_certificate()</code>	z/OS V2R1	Changed: Added support for verifying DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R12	Changed: Added support for signing with ECDSA digital signatures.	Base elliptic curve support
<code>gsk_sign_crl()</code>	z/OS V2R1	Changed: Added support for verifying DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R12	Changed: Added support for signing with ECDSA digital signatures.	Base elliptic curve support

Table 90. Summary of changes to z/OS Certificate Management APIs (continued)

API	Release	Description	Reason for change
gsk_sign_data()	z/OS V2R1	Changed: Added support for verifying DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R12	Changed: Added support for signing with ECDSA digital signatures.	Base elliptic curve support
gsk_validate_certificate()	z/OS V1R13	Changed: Added support for gskdb_source_crl_callback.	Enhanced certificate support
gsk_validate_certificate_mode()	z/OS V2R1	Changed: Add support for validating certificates and certificate chain according to RFC 5280.	Enhanced x.509 certificate support
	z/OS V1R13	Changed: Added support for gskdb_source_crl_callback.	Enhanced certificate support
gsk_verify_certificate_signature()	z/OS V2R1	Changed: Added support for verifying DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R12	Changed: Added support for verifying with ECDSA digital signatures.	Base elliptic curve support
gsk_verify_crl_signature()	z/OS V2R1	Changed: Added support for verifying DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R12	Changed: Added support for verifying with ECDSA digital signatures.	Base elliptic curve support
gsk_verify_data_signature()	z/OS V2R1	Changed: Added support for verifying DSA with SHA-224 or SHA-256 digital signatures.	Enhanced DSA support
	z/OS V1R12	Changed: Added support for verifying with ECDSA digital signatures.	Base elliptic curve support

ASN.1 status codes

There are no new or changed status codes.

CMS status codes

Table 91 lists the new and updated status codes. See *z/OS Cryptographic Services System SSL Programming* for more detailed information.

Table 91. Summary of changes to CMS status codes

Status code	Release	Description	Reason for change
03353007	z/OS V1R13	Changed: Input/Output request failed.	Documentation clarification
03353009	z/OS V2R1	Changed: File or keyring no found.	Documentation clarification

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Table 91. Summary of changes to CMS status codes (continued)

Status code	Release	Description	Reason for change
03353014	z/OS V1R12	Changed: Record is too big.	Documentation clarification
03353016	z/OS V2R1	Changed: The password is not correct.	Support for secure private keys in a PKCS #11 token
0335301A	z/OS V2R1	Changed: No private key.	Documentation clarification
0335301C	z/OS V1R13	Changed: Record label is not unique.	Documentation clarification
0335301F	z/OS V1R12	Changed: Incorrect Base64 encoding.	Documentation clarification
03353020	z/OS V1R13	Changed: Unrecognized file or message encoding.	Documentation clarification
03353034	z/OS V2R1	Changed: Encryption key size is not supported.	Enhanced DSA support
03353058	z/OS V1R12	Changed: Modulus not supplied.	Release update
03353059	z/OS V1R12	Changed: Public exponent not supplied.	Release update
0335305A	z/OS V1R12	Changed: Private exponent not supplied.	Release update
0335305B	z/OS V1R12	Changed: First prime not supplied.	Release update
0335305C	z/OS V1R12	Changed: Second prime not supplied.	Release update
0335305D	z/OS V1R12	Changed: First prime exponent not supplied.	Release update
0335305E	z/OS V1R12	Changed: Second prime exponent not supplied.	Release update
0335305F	z/OS V1R12	Changed: CRT coefficient not supplied.	Release update
03353076	z/OS V1R12	New: Prime not supplied.	Release update
03353077	z/OS V1R12	New: Subprime not supplied.	Release update
03353078	z/OS V1R12	New: Base not supplied.	Release update
03353079	z/OS V1R12	New: Private value not supplied.	Release update
0335307A	z/OS V1R12	New: Public value not supplied.	Release update
0335307B	z/OS V1R12	New: Private key structure not supplied.	Release update
0335307C	z/OS V1R12	New: Public key structure not supplied.	Release update
0335307D	z/OS V1R12	New: Size specified for supplied structure is too small.	Release update
0335307E	z/OS V1R12	New: Elliptic Curve is not supported.	Base elliptic curve support
0335307F	z/OS V1R13	Changed: EC Parameters not supplied.	Base elliptic curve support
	z/OS V1R12	New: EC Parameters not supplied.	Base elliptic curve support
03353080	z/OS V1R12	New: Signature not supplied.	Release update
03353081	z/OS V1R12	New: Elliptic curve parameters are not valid.	Base elliptic curve support
03353082	z/OS V1R12	New: Elliptic curve not supported in FIPS mode.	Base elliptic curve support
03353083	z/OS V1R12	New: ICSF services are unavailable.	Release update
03353084	z/OS V2R1	Changed: ICSF callable service returned an error.	Documentation clarification
	z/OS V1R12	New: ICSF callable service returned an error.	Release update
03353085	z/OS V1R12	New: ICSF PKCS #11 not operating in FIPS mode.	Release update
03353086	z/OS V1R12	New: Incorrect key algorithm.	Release update
03353087	z/OS V1R12	New: Certificate revocation list is expired.	Enhanced x.509 certificate support
03353088	z/OS V1R13	New: Cryptographic hardware does not support service or algorithm.	Base elliptic curve support

Table 91. Summary of changes to CMS status codes (continued)

Status code	Release	Description	Reason for change
03353089	z/OS V2R1	New: ICSF PKCS #11 services are disabled.	Release update
0335308A	z/OS V2R1	New: Known Answer Test has failed when attempting to use ICSF.	Release update
0335308B	z/OS V2R1	New: Variable argument validate root is not valid.	Enhanced x.509 certificate support
0335308C	z/OS V2R1	New: PKCS #11 label name not valid.	Support for secure private keys in a PKCS #11 token
0335308D	z/OS V2R1	New: Incorrect key attribute.	Support for secure private keys in a PKCS #11 token
0335308E	z/OS V2R1	New: PKCS #11 object was not found.	Support for secure private keys in a PKCS #11 token
0335308F	z/OS V2R1	New: An algorithm or key size is not FIPS approved for an ICSF operation.	Release update
03353090	z/OS V2R1	New: PKCS #11 key cannot be extracted	Support for secure private keys in a PKCS #11 token
03353093	z/OS V2R1	New: Clear key support not available because of ICSF key policy.	Release update

Environment variables

Table 92 identifies changes to environment variables used by System SSL. For detailed information about these environment variables, see *z/OS Cryptographic Services System SSL Programming*.

Table 92. Summary of changes to System SSL environment variables

Environment variable	Release	Description	Reason for change
GSK_CERT_VALIDATE_KEYRING_ROOT	z/OS V2R1	New: Specifies whether validation to the root CA is required for certificates that are connected to a SAF key ring.	Enhanced certificate support
GSK_CLIENT_ECURVE_LIST	z/OS V1R13	New: Specifies the list of elliptic curves that are supported by the client. The list is used by the client to guide the server as to which elliptic curves are preferred when using ECC-based cipher suites.	Elliptic Curve Cryptography for TLS
GSK_EXTENDED_RENEGOTIATION_INDICATOR	z/OS V1R12	New: Specifies the level of enforcement of renegotiation indication as specified by RFC 5746 during the initial handshake.	RFC 5746 renegotiation
GSK_PROTOCOL_TLSV1_2	z/OS V1R13 with APAR OA39422	New: Specifies whether the TLS V1.2 protocol is supported.	TLS V1.2
GSK_RENEGOTIATION	z/OS V1R12	New: Specifies the type of session renegotiation that is allowed for an SSL environment.	RFC 5746 renegotiation
GSK_RENEGOTIATION_PEER_CERT_CHECK	z/OS V1R12	New: Specifies if the peer certificate is allowed to change during renegotiation.	RFC 5746 renegotiation

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Table 92. Summary of changes to System SSL environment variables (continued)

Environment variable	Release	Description	Reason for change
GSK_SUITE_B_PROFILE	z/OS V2R1	New: Specifies the Suite B profile to be applied to TLS sessions.	Suite B for TLS
GSK_TLS_SIG_ALG_PAIRS	z/OS V1R13 with APAR OA39422	New: Specifies the list of hash and signature algorithm pair specifications that are supported by the client and servers in order of preference.	TLS V1.2
GSK_V3_CIPHER_SPECS_EXPANDED	z/OS V1R13 with APAR OA39422	Changed: Updated to support new ciphers added for TLS V1.2.	TLS V1.2
	z/OS V1R13	New: Specifies the SSL V3 cipher specifications in order of preference as a string consisting of 1 or more 4-character values. The SSL v3 cipher specifications are used for the SSL V3, TLS V1.0, and TLS V1.1 protocols.	Elliptic Curve Cryptography for TLS

Function return codes

Table 93 lists the new and updated function return codes. See *z/OS Cryptographic Services System SSL Programming* for more detailed information.

Table 93. Summary of changes to function return codes

Function code	Release	Description	Reason for change
10	z/OS V1R12	Changed: ASN processing error.	Documentation clarification
13	z/OS V1R13	New: Size specified for supplied structure is too small.	Release update
14	z/OS V1R13	New: Required gsk_all_cipher_suites structure not supplied.	Elliptic Curve Cryptography for TLS
202	z/OS V2R1	Changed: Error detected while opening the certificate database.	Documentation clarification
402	z/OS V2R1	Changed: No SSL cipher specifications.	Documentation clarification
	z/OS V1R13	Changed: No SSL cipher specifications.	Documentation clarification
407	z/OS V2R1	Changed: Key label does not exist.	Documentation clarification
422	z/OS V1R13	Changed: SSL V3 cipher is not valid.	Elliptic Curve Cryptography for TLS
428	z/OS V1R13	Changed: Key entry does not contain a private key.	Documentation clarification
432	z/OS V1R13	Changed: Session renegotiation is not allowed.	Documentation clarification
	z/OS V1R12	Changed: Session renegotiation is not allowed.	RFC 5746 renegotiation
440	z/OS V2R1	Changed: Incorrect key usage.	gskkyman menu restructuring - updated menu titles
	z/OS V1R13	Changed: Incorrect key usage.	Elliptic Curve Cryptography for TLS
	z/OS V1R12	Changed: Incorrect key usage.	Documentation clarification
451	z/OS V1R13	New: Elliptic Curve is not supported.	Elliptic Curve Cryptography for TLS

Table 93. Summary of changes to function return codes (continued)

Function code	Release	Description	Reason for change
452	z/OS V1R13	New: EC Parameters not supplied.	Elliptic Curve Cryptography for TLS
453	z/OS V1R13	New: Signature not supplied.	Elliptic Curve Cryptography for TLS
454	z/OS V1R13	New: Elliptic curve parameters are not valid.	Elliptic Curve Cryptography for TLS
455	z/OS V2R1	Changed: ICSF services are not available.	Documentation clarification
	z/OS V1R13	New: ICSF services are not available.	Elliptic Curve Cryptography for TLS
456	z/OS V1R13	New: ICSF callable service returned an error.	Elliptic Curve Cryptography for TLS
457	z/OS V1R13	New: ICSF PKCS #11 not operating in FIPS mode.	Elliptic Curve Cryptography for TLS
458	z/OS V1R13	New: The SSL V3 expanded cipher is not valid.	Elliptic Curve Cryptography for TLS
459	z/OS V1R13	New: Elliptic Curve is not supported in FIPS mode.	Elliptic Curve Cryptography for TLS
460	z/OS V1R12	New: Required TLS Renegotiation Indication not received.	RFC 5746 renegotiation
461	z/OS V1R13	New: EC domain parameter format is not supported.	Elliptic Curve Cryptography for TLS
462	z/OS V1R13	New: Elliptic curve point format is not supported.	Elliptic Curve Cryptography for TLS
463	z/OS V1R13	New: Cryptographic hardware does not support service or algorithm.	Elliptic Curve Cryptography for TLS
464	z/OS V1R13	New: Elliptic curve list is not valid.	Elliptic Curve Cryptography for TLS
465	z/OS V2R1	New: ICSF PKCS #11 services are disabled.	FIPS 140-2 Support
466	z/OS V1R13 with APAR OA39422	New: Signature algorithm pairs list is not valid.	TLS V1.2
467	z/OS V1R13 with APAR OA39422	New: Signature algorithm not in signature algorithm pairs list.	TLS V1.2
468	z/OS V1R13 with APAR OA39422	New: Certificate key algorithm not in signature algorithm pairs list.	TLS V1.2
469	z/OS V2R1	New: Incorrect key attribute.	Support for secure private keys in a PKCS #11 token
470	z/OS V2R1	New: Certificate does not meet Suite B requirements.	Suite B for TLS
471	z/OS V2R1	New: Secure private key cannot be used with a fixed ECDH key exchange.	Support for secure private keys in a PKCS #11 token
472	z/OS V2R1	New: Clear key support not available because of ICSF key policy.	Release update
601	z/OS V1R13 with APAR OA39422	Changed: Protocol is not SSL V3, TLS V1.0, TLS V1.1, or TLS V1.2.	TLS V1.2

System SSL

Table 93. Summary of changes to function return codes (continued)

Function code	Release	Description	Reason for change
603	z/OS V1R12	New: Specified function enumerator is not valid.	Release update
604	z/OS V1R12	New: Send sequence number is near maximum value.	Release update

Deprecated function return codes

Table 94 lists the new and updated deprecated function return codes. See *z/OS Cryptographic Services System SSL Programming* for more detailed information.

Table 94. Summary of changes to deprecated function return codes

Function code	Release	Description	Reason for change
-7	z/OS V1R13	Changed: Session renegotiation is not allowed.	Documentation clarification
-27	z/OS V1R13	Changed: Key entry does not contain a private key.	Documentation clarification
-55	z/OS V2R1	Changed: Incorrect key usage.	gskkyman menu restructuring. Updated menu titles.
-107	z/OS V2R1	New: ICSF services are unavailable.	Release update
-108	z/OS V2R1	New: ICSF callable service returned an error.	Release update
-109	z/OS V2R1	New: ICSF PKCS #11 not operating in FIPS mode.	Release update
-110	z/OS V2R1	New: ICSF PKCS #11 services are disabled.	Release update
-111	z/OS V2R1	New: ICSF clear key support not available.	Release update

gskkyman command

Table 95 identifies changes to the gskkyman command used by System SSL to manage certificates in the key database file. See *z/OS Cryptographic Services System SSL Programming* for more information about the gskkyman command.

Table 95. Summary of changes to gskkyman command

Release	Description	Reason for change
z/OS V2R1	Support for creating x.509 certificates with DSA 2048-bit key sizes.	Enhanced DSA support
z/OS V2R1	Menus for creating certificates and certificate requests are refined to guide the user through the creation process.	gskkyman menu restructuring
z/OS V1R13	Support for creating X.509 ECDSA certificates and certificate requests.	ECDSA Certificate Support

Chapter 9. DFSMS summary of interface changes

In addition to the interface changes included in this topic, updates to DFSMS resulted in SYS1.PARMLIB and SYS1.SAMPLIB member changes. See Chapter 2, “Summary of changes to SYS1.PARMLIB,” on page 5 and Chapter 4, “Summary of changes to SYS1.SAMPLIB,” on page 21 for those changes. See *z/OS MVS Initialization and Tuning Reference* for more information about these members. See *z/OS DFSMS OAM Planning, Installation, and Storage Administration Guide for Object Support* for information about the changes to the CBROAMxx member of SYS1.SAMPLIB.

The DFSMS interfaces described in this topics are:

- “DFSMSdfp summary of interface changes”
- “DFSMSdss summary of interface changes” on page 202
- “DFSMSshsm summary of interface changes” on page 205
- “DFSMSrmm summary of interface changes” on page 208
- “DFSMSstvs summary of interface changes” on page 215

DFSMSdfp summary of interface changes

This topic summarizes new and changed interfaces, commands, and panels for DFSMSdfp, OAM, and Advanced Copy Services. It also includes changes resulting from service updates and small programming enhancements.

Access method services

Table 96 on page 192 lists new and changed access method services (IDCAMS) commands and report types. See *z/OS DFSMS Access Method Services Commands* for more specific information about these commands.

DFSMSdfp

Table 96. DFSMSdfp: Summary of new and changed IDCAMS commands

Command name	Release	Description	Reason for change
ALTER	z/OS V2R1	New Keywords: EXTENDEDADDRESSABLE Specifies that the non SMS VSAM LDS will be made eligible for Extended Addressability.	VSAM enhancements
	z/OS V2R1	New Keywords: FIFO Specifies the order is the oldest GDS defined to the newest GDS. LIFO Specifies the order is the newest GDS defined to the oldest GDS. This is the default value.	Release support
	z/OS V2R1	New Keywords: LOGREPLICATE Specifies that the VSAM data set is eligible for VSAM replication. NOLOGREPLICATE Specifies that the VSAM data set is not eligible for VSAM replication.	Release support
	z/OS V2R1	New Keywords: RLSQUIESCE Specifies that the cluster component will be defined in RLS QUIESCE mode. This is the default value. RLSENABLE Specifies that the cluster will be defined in RLS ENABLE mode.	RLS support for catalogs
	z/OS V2R1	New Keywords: SUSPEND Specifies that requests for this catalog will be suspended until a RESUME is issued via the F CATALOG,RECOVER,RESUME or ALTER RESUME command is issued. RESUME Specifies that requests for this catalog resume following a DEFINE ALTER or F CATALOG,RECOVER,RESUME command.	Catalog enhancements
	z/OS V1R12	New Keywords: RECLAIMCA Enables CA reclaim for the data set. When enabled, CA reclaim causes empty CA space be reclaimed automatically for key-sequenced data sets. NORECLAIMCA Disables CA reclaim for the data set.	CA reclaim support

Table 96. DFSMSdfp: Summary of new and changed IDCAMS commands (continued)

Command name	Release	Description	Reason for change
DEFINE CLUSTER	z/OS V2R1	New Keywords: LOGREPLICATE Specifies that the VSAM data set is eligible for VSAM replication. NOLOGREPLICATE Specifies that the VSAM data set is not eligible for VSAM replication.	Release support
	z/OS V2R1	New Keywords: RLSQUIESCE Specifies the cluster component is defined in RLS quiesce mode, which is the default. RLSENABLE Specifies the cluster component is defined in RLS enable mode.	RLS support for catalogs
DEFINE GENERATIONDATAGROUP	z/OS V2R1	New Keywords: FIFO Specifies the order is the oldest GDS defined to the newest GDS. LIFO .Specifies the order is the newest GDS defined to the oldest GDS. This is the default value.	Release support

Table 96. DFSMSdfp: Summary of new and changed IDCAMS commands (continued)

Command name	Release	Description	Reason for change
DEFINE USERCATALOG	z/OS V2R1	New Keywords: LOG(NONE) Specifies that the catalog is eligible to be accessed with VSAM record-level sharing (RLS) as a non-recoverable catalog.	VSAM enhancements
	z/OS V2R1	New Keywords: RLSQUIESE Specifies that the catalog will be accessed with NSR following the define of the catalog. This is the default value. RLSENABLE Specifies that the cluster will be accessed with RLS following the define of the catalog.	RLS support for catalogs
	z/OS V2R1	New Keywords: RECONNECT Specifies that the catalog being defined use existing alias information.	Release support
	z/OS V2R1	New Keywords: SUSPEND Specifies that requests for this catalog be suspended until a RESUME is issued via the F CATALOG, RECOVER, RESUME or ALTER RESUME command is issued. RESUME Specifies that requests for this catalog execute immediately. RESUME is the default.	Catalog enhancements
	z/OS V1R12	New Keywords: EATTR Specifies whether a catalog can have extended attributes (format 8 and 9 DSCBs) and optionally reside in EAS.	EAV enhancements for z/OS V1R12
DELETE	z/OS V1R13	New Keywords: MASK Specifies that the entryname is a filter key. NOMASK Specifies that the entryname can be fully qualified or a generic name. When using a generic name, the asterisk(*) will only replace one single qualifier.	Release support

Table 96. DFSMSdfp: Summary of new and changed IDCAMS commands (continued)

Command name	Release	Description	Reason for change
LISTCAT	z/OS V2R1	New Keywords: LOGREPLICATE On LISTCAT output, shows whether or not the VSAM data set is eligible for VSAM replication.	Release support
	z/OS V1R12	New Keywords: CA RECLAIM On LISTCAT output, shows the cataloged value for the CA reclaim attribute.	CA reclaim support
VERIFY	z/OS V1R12	New Keyword: RECOVER Completes previously interrupted VSAM processing. The data set cannot be opened on any system; otherwise, the command will fail with an OPEN error.	Release update

Callable services

There are no new or changed callable services for DFSMSdfp.

Commands

Table 97 lists new and changed system-level commands related to DFSMSdfp support. See *z/OS DFSMS OAM Planning, Installation, and Storage Administration Guide for Object Support* and *z/OS MVS System Commands* for more specific information about these commands.

Table 97. DFSMSdfp: Summary of new and changed system-level commands

Command name	Release	Description	Reason for change
MODIFY CATALOG,CONTENTION	z/OS V2R1	New: New parameters to specify a new wait time or action (or both) for one of the reason classes or Catalog resources for which contention detection is available.	Resource contention detection
MODIFY OAM,DISPLAY	z/OS V2R1	New: New SETTLIB parameter displays the current setting of the SETTLIB statement for the OAM address space.	Tape library support
SETALLOC	z/OS V2R1	New: New BATCH_RCLMIGDS parameter specifies how migrated data sets will be recalled.	Catalog enhancement
SETSMS	z/OS V2R1	New: New PS_EXT_VERSION(1 2) parameter allows the system to support a version number for extended format data sets.	FlashCopy support

DFSMSdfp

Table 97. DFSMSdfp: Summary of new and changed system-level commands (continued)

Command name	Release	Description	Reason for change
SETSMS CA_RECLAIM	z/OS V1R12	New: New CA_RECLAIM parameter enables or disables the CA reclaim function for the system. When enabled, CA reclaim causes empty CA space be reclaimed automatically for key-sequenced data sets.	CA reclaim support

Data areas

There are no new or changed data areas for DFSMSdfp.

Exits and mapping macros

Table 98. DADSM: Summary of new and changed exits

Exit Name	Release	Description	Reason for change
IGGPREE00_EXIT	z/OS V1R13	DADSM pre-processing dynamic exit.	DADSM/CVAF Device Support Simplification
IGGPOST0_EXIT	z/OS V1R13	DADSM post-processing dynamic exit.	DADSM/CVAF Device Support Simplification

Table 99 lists the changes to exit parameter list mapping macros for DFSMSdfp. For more exit information, see *z/OS DFSMS Installation Exits*.

Table 99. DFSMSdfp: Summary of new and changed mapping macros

Macro name	Release	Description	Reason for change
IFGTEP mapping macro for the Label Anomaly Exit	z/OS V1R13	Added: The new bits TEPAVOLLST and TEPAPREVL have been added.	Recovery for missing and out of order tape volumes
IGDACERO	z/OS V2R1	Added: Bits have been added.	Release support
IHAVDA	z/OS V1R12	Added: New bits added to DVAAMFLG.	XTIOT (extended task input/output table) enhancements

ISMF panels

Table 100 lists changes to ISMF panels for DFSMSdfp. For more information about these panels, see *z/OS DFSMSdfp Storage Administration* and *z/OS DFSMS Using the Interactive Storage Management Facility*.

Table 100. DFSMSdfp: Summary of new and changed ISMF panels

Panel and application name	Release	Description	Reason for change
Pool Storage Group Define panel	z/OS V1R13	New: Define SMA Attributes field, which controls the display of the Pool Storage Group SMA Attributes Define panel.	Support for z/OSMF.
Pool Storage Group SMA Attributes Define panel	z/OS V1R13	New: Allows you to define attributes related to adding storage to a pool storage group through z/OSMF.	Support for z/OSMF.

Table 100. DFSMSdfp: Summary of new and changed ISMF panels (continued)

Panel and application name	Release	Description	Reason for change
Storage Class Define panel	z/OS V1R13	New: Disconnect Sphere at CLOSE field controls how the record level sharing (RLS) sphere is disconnected after the data set last closed.	VSAM RLS buffer management facility enhancement.
Storage Group Application Selection panel	z/OS V1R13	New: Space in GB field, with the List option, lets you display space information in gigabytes (GB).	Release support.
Data Class Define and Alter panels	z/OS V2R1	New: Options for the Compaction field, ZR (“zEDC Required”) and ZP (“zEDC Preferred”)	zEDC Compression
	z/OS V2R1	New: Log Replicate field, to specify eligibility for VSAM replication; new values for the Record Access Bias field; new RMODE31 field.	Release support.
	z/OS V1R13	Changed: The maximum data set retention period is now 93000 days rather than 9999 days.	Release support.
	z/OS V1R12	New: CA Reclaim field, to enable or disable CA reclaim for the data class.	CA reclaim support, see <i>z/OS DFSMSdfp Storage Administration</i> .
Management Class Define panel	z/OS V1R13	Changed: The maximum data set retention period is now 93000 days rather than 9999 days.	Release support.
Data Class Display panel	z/OS V1R12	New: CA Reclaim field.	CA reclaim support, see <i>z/OS DFSMSdfp Storage Administration</i> .
Data Class List panel	z/OS V2R1	New: Log Replicate column.	Release support.
	z/OS V1R12	New: CA Reclaim column.	CA reclaim support, see <i>z/OS DFSMSdfp Storage Administration</i> .
Data Class Print panel	z/OS V2R1	New: Log Replicate field.	Release support.
	z/OS V1R12	New: CA Reclaim field.	CA reclaim support, see <i>z/OS DFSMSdfp Storage Administration</i> .
Data Class Sort Entry panel	z/OS V2R1	New: Log Replicate field.	Release support.
	z/OS V1R12	New: CA Reclaim field.	CA reclaim support, see <i>z/OS DFSMSdfp Storage Administration</i> .
Data Class View Entry panel	z/OS V2R1	New: Log Replicate field.	Release support.
	z/OS V1R12	New: CA Reclaim field.	CA reclaim support, see <i>z/OS DFSMSdfp Storage Administration</i> .
Copy Entry panel	z/OS V1R12	New: Copy Storage Group Volumes field.	Release update, see <i>z/OS DFSMSdfp Storage Administration</i> .
Pool Storage Group Define panel	z/OS V1R12	Updated: The Allocation/migration Threshold field is expanded to allow a high threshold value of 100%.	Release update, see <i>z/OS DFSMSdfp Storage Administration</i> .

Macros

Table 101 lists new and changed executable macros for DFSMSdfp.

Table 101. DFSMSdfp: Summary of new and changed executable macros

Macro name	Release	Description	Reason for change
ANTRQST	z/OS V2R1	New: REQUEST=PSETCHAR for ILK=PPRC: Set characteristics of a PPRC primary and secondary volume pair, including whether the pair is to be used for a Preserve Mirror function in a Multi-Target Mirror configuration.	Multi-Target Mirror support
ANTRQST	z/OS V2R1	New: MTFAILOVER subparameter for REQUEST=PESTPAIR.	Multi-Target Mirror support
ANTRQST	z/OS V2R1	New: MTVOLLIST and MTVOLRANGE parameters, on REQUEST=RVOLUME, for multi-target volume list and multi-target volume range.	Multi-Target Mirror support
ANTRQST	z/OS V2R1	New: XFEATURES parameter, on REQUEST=XQUERY, specifies that the requested report display the Licensed Internal Code (LIC) features available to the storage control.	Workload-based write pacing support
ANTRQST	z/OS V2R1	Updated: VOLUME PACE report is expanded when workload-based write pacing is in effect.	Workload-based write pacing support
ANTRQST	z/OS V2R1	Updated: The DVCBLOCK parameter, on REQUEST=XADD and REQUEST=XSET, is handled differently with workload-based write pacing.	Workload-based write pacing support
ANTRQST	z/OS V1R13	New: SDEVN, SWWNN and PATHS=LNK subparameters for REQUEST=PQUERY.	System Data Mover RAS
ANTRQST	z/OS V1R12	New: TERTIARY subparameter for REQUEST=XRECOVER.	Release update
DEVSERV	z/OS V2R1	New: GET_G and GET_ALL_G requests for DESERV FUNC retrieve generation information for members of a version 2 PDSE.	PDSE member generation support
FIND	z/OS V2R1	Changed: Can be used with a member generation of a version 2 PDSE.	PDSE member generation support
LSPACE	z/OS V2R1	New: ENQHELD keyword specifies whether or not the LSPACE caller's address space has already obtained the SYSVTOC resource.	Release update
STOW	z/OS V2R1	Changed: Can be used to add, replace, or delete an entry for a member generation of a version 2 PDSE.	PDSE member generation support

NaviQuest panels

Table 102 identifies new and changed NaviQuest panels. The NaviQuest panels provide sample JCL for various tasks, such as creating a copy pool report. See *z/OS DFSMSdfp Storage Administration* for more information about NaviQuest.

Table 102. DFSMSdfp: Summary of new and changed NaviQuest panels

NaviQuest panel	Release	Description	Reason for change
ACBQVAR1	z/OS V1R13	Changed: now supports sorting on a field.	NaviQuest enhancement.

Table 102. DFSMSdfp: Summary of new and changed NaviQuest panels (continued)

NaviQuest panel	Release	Description	Reason for change
ACBJBAS1	z/OS V1R13	Changed: new field, Disconnect Sphere at CLOSE.	SAM RLS buffer management facility enhancement.

Programming interfaces

Table 103 lists new and changed programming interfaces for DFSMSdfp.

Table 103. DFSMSdfp: Summary of new and changed programming interfaces

Programming Interface	Release	Description	Reason for change
ANTTREXX	z/OS V2R1	New: PSETCHAR request type: Set characteristics of a PPRC primary and secondary volume pair, including whether the pair is to be used for a Preserve Mirror function in a Multi-Target Mirror configuration.	Multi-Target Mirror support.
ANTTREXX	z/OS V2R1	New: MTFILOVER subparameter for PESTPAIR request type, to convert a cascaded configuration to a multi-target configuration.	Multi-Target Mirror support.
ANTTREXX	z/OS V2R1	New: MTVOLLIST and MTVOLRANGE parameters, on RVOLUME requests, for multi-target volume list and multi-target volume range.	Multi-Target Mirror support.
ANTTREXX	z/OS V2R1	New: XFEATURES parameter, on XQUERY requests, specifies that the requested report display the Licensed Internal Code (LIC) features available to the storage control.	Workload-based write pacing support.
ANTTREXX	z/OS V2R1	Updated: VOLUME PACE report is expanded when workload-based write pacing is in effect.	Workload-based write pacing support.
ANTTREXX	z/OS V2R1	Updated: The DVCBLOCK parameter, on XADD and XSET requests, is handled differently with workload-based write pacing.	Workload-based write pacing support.
ANTTREXX	z/OS V1R12	New: The program ANTTREXX allows a REXX exec to use the ANTRQST API.	Support for the ANTRQST macro through the REXX programming language.

RACF commands and FACILITY class profiles

There are no new or changed RACF commands and FACILITY class profiles for DFSMSdfp.

SMF and LOGREC records

Table 104 on page 200 lists changes to SMF records used by DFSMS. For more detailed SMF information, see *z/OS MVS System Management Facilities (SMF)*. For more LOGREC information, see *z/OS MVS Diagnosis: Reference*. For information about the SMF Type 85 records, see *z/OS DFSMS OAM Planning, Installation, and Storage Administration Guide for Object Support*. For information about other SMF Type records, see *z/OS MVS System Management Facilities (SMF)*.

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Table 104. DFSMSdfp: Summary of new and changed SMF records

Event code or record type	Release	Description	Reason for change
SMF Type 64	z/OS V1R12	New: SMF64DAU was added to the Statistics at OPEN Time section.	CA reclaim support

SMS ACS read-only variables

Table 105 lists new and changed ACS read-only variables for DFSMSdfp.

Table 105. DFSMSdfp: Summary of new and changed ACS read-only variables

Variable name	Release	Description	Reason for change
&EATTR	z/OS V2R1	New: Contains the value of the EATTR keyword specified with JCL, dynamic allocation, AMS DEFINE or the data class.	Release support

SMS Constructs

There are no new or changed SMS Constructs for DFSMSdfp.

Table 106 identifies changes to the SMS constructs, such as data class, management class, storage class, and storage group. See *z/OS DFSMSdfp Storage Administration* for more information about SMS constructs.

Table 106. DFSMSdfp: Summary of changes to SMS constructs

Construct	Release	Description	Reason for change
Reserve storage pool	z/OS V1R13	New: A reserve storage pool is a group of volumes that have been defined for future use. z/OSMF uses reserve storage pools to simplify adding storage to a pool storage group. In addition, reserve storage pools can make it easier to manage volumes that are defined but unused.	Support for z/OSMF.
Pool Storage Group	z/OS V1R13	New fields: Several new fields related to adding storage to a pool storage group through z/OSMF.	Support for z/OSMF.
Storage class	z/OS V1R13	New field: Disconnect Sphere at CLOSE, which controls how the record level sharing (RLS) sphere is disconnected after the data set last closed.	VSAM RLS buffer management facility enhancement.
Data Class	z/OS V1R13	Changed field: The maximum data set retention period is now 93000 days rather than 9999 days.	Release support.
Management Class	z/OS V1R13	Changed field: The maximum data set retention period is now 93000 days rather than 9999 days.	Release support.
Data class	z/OS V1R12	New field: CA Reclaim, to enable or disable CA reclaim for the data class.	CA reclaim support.
Pool Storage Group	z/OS V1R12	Changed field: Allocation/migration Threshold is expanded to allow a high threshold value of 100%.	Release update.

SYS1.NUCLEUS members

There are no new or changed SYS1.NUCLEUS members for DFSMSdfp.

TSO/E commands for Advanced Copy Services

Command name	Release	Description	Reason for change
CESTPAIR	z/OS V2R1	New: MTFILOVER parameter, to convert a cascaded configuration to a multi-target configuration.	Multi-Target Mirror support.
CQUERY	z/OS V2R1	New: The value for STATE in formatted output for CQUERY now shows MTIR to indicate Multi-Target Internal Relationship (MTIR). In addition, the output for CQUERY VOLUME and CQUERY PATHS is expanded.	Multi-Target Mirror support.
PSETCHAR	z/OS V2R1	New: Set characteristics of a PPRC primary and secondary volume pair, including whether the pair is to be used for a Preserve Mirror function in a Multi-Target Mirror configuration.	Multi-Target Mirror support.
RVOLUME	z/OS V2R1	New: MTVOLLIST and MTVOLRANGE parameters, for multi-target volume list and multi-target volume range.	Multi-Target Mirror support.
XADDPAIR	z/OS V2R1	Updated: The DVCBLOCK parameter is handled differently with workload-based write pacing.	Workload-based write pacing support.
XQUERY	z/OS V2R1	New: OFL and ONL options for the STATUS filtering parameter of the XQUERY command show offline or online volumes.	Release update.
	z/OS V2R1	New: XFEATURES with STORAGECONTROL specifies that the requested report display the Licensed Internal Code (LIC) features available to the storage controls.	Workload-based write pacing support.
	z/OS V2R1	Updated: VOLUME PACE report is expanded when workload-based write pacing is in effect.	Workload-based write pacing support.
XSET	z/OS V2R1	Updated: The DVCBLOCK parameter is handled differently if workload-based write pacing is in use.	Workload-based write pacing support.
CQUERY	z/OS V1R13	New: SDEVN, SWWNN and LINKINFO parameters on the CQUERY command display information about linkage between the primary and secondary storage controllers.	System Data Mover RAS.
XQUERY	z/OS V1R13	New: A BK2 option for the STATUS filtering parameter of the XQUERY VOLUME command shows all volumes that are contributing to high residual counts and application impact.	System Data Mover RAS.

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Command name	Release	Description	Reason for change
XQUERY	z/OS V1R13	Updated: The VOLUME_PACE report generated by the XQUERY command now uses the WrtPacingResidualCnt value in PARMLIB member ANTXIN00 when determining whether to flag a volume as blocked.	System Data Mover RAS.
XRECOVER	z/OS V1R12	Updated: New keyword TERTIARY indicates that the secondary volumes used for the recovery must not be the same as those that were in use when XRC was ended or suspended.	Release update.

Utilities

Table 107 identifies changes to the DFSMS utilities. For detailed information about DFSMS utilities, refer to *z/OS DFSMS Utilities*.

Table 107. DFSMSdfp: Summary of changes to utilities

Utility name	Release	Description	Reason for change
IEBCOPY	V2R1	Changed AMODE from 24 to ANY IEBCOPY	IEBCOPY improvements
IEBCOPY	V2R1	New COPYGROUP statement	IEBCOPY improvements
IEBCOPY	V2R1	SELECT statement supports wildcard characters	IEBCOPY improvements
IEBCOPY	V2R1	Supports user exits from calling programs, for control statements and member selection.	IEBCOPY improvements
IEBCOPY	V2R1	Provides ABEND and reason codes for certain ABENDs.	IEBCOPY improvements
IEBCOPY	V1R13	Removal of the APF-authorization requirement, other performance improvements	IEBCOPY improvements
IEBPDSE	V1R13	PDSE Validation utility	new

DFSMSdss summary of interface changes

This topic summarizes new and changed interfaces, commands, and panels for DFSMSdss.

APIs

There are no new or changed application programming interfaces for DFSMSdss.

Commands

Table 108 lists new and changed commands for DFSMSdss. For descriptions and syntax of the DFSMSdss commands, see *z/OS DFSMSdss Storage Administration*.

Table 108. DFSMSdss: Summary of changed commands

Command name	Release	Description	Reason for change
CGCREATED	z/OS V2R1	Updated: New FCCGVERIFY keyword.	Release support.
CONVERTV, COPY, RESTORE	z/OS V2R1	Updated: New DEBUG(SMSMSG) option.	Release support.

Table 108. DFSMSdss: Summary of changed commands (continued)

Command name	Release	Description	Reason for change
COPY, RESTORE	z/OS V2R1	Updated: The RENAMEUNCONDITIONAL keyword now works for VSAM data sets.	Release support.
RESTORE	z/OS V2R1	Updated: The REPLACEUNCONDITIONAL keyword now works for physical data sets.	Release support.
	z/OS V2R1	Updated: New RESET keyword for RESTORE FULL and RESTORE TRACKS.	Release support.
COPY, DUMP, PRINT and RESTORE	z/OS V1R13	Updated: Specifying X'FFFFFF' (or 268435455) as the value for high cylinder on the TRACKS parameter causes DFSMSdss to use the end of the volume for the high cylinder value.	Release support.
COPY	z/OS V1R12	Updated: New FCFASTREVERSERESTORE and FCFULLVOLUMERELATION keywords	Support for the fast reverse restore capability of the IBM System Storage® DS8000® series
COPY, COPYDUMP	z/OS V1R12	Updated: For backups to and from tape, and for backups on DASD when the backup data set is in the extended format, DFSMS now uses BSAM instead of EXCP to read from and write to DFSMSdss dump data sets during COPY processing. This allows DFSMSdss to support 256 KB blocks when writing to and reading from a tape. It also allows the subject of the COPY or COPYDUMP command to be an extended format data set. The data set also can be striped or compressed format.	Release update
DUMP	z/OS V1R12	Updated: For backups to and from tape, and for backups on DASD when the backup data set is in the extended format, DFSMS now uses BSAM instead of EXCP to read from and write to DFSMSdss dump data sets during COPY processing. This allows DFSMSdss to support 256 KB blocks when writing to and reading from a tape. It also allows the subject of the DUMP command to be an extended format data set. The data set also can be striped or compressed format.	Release update
	z/OS V1R12	Updated: For the OUTDDNAME parameter, the default block size for output records that are written to tape is determined by obtaining the optimum block size for the device. The maximum is 262 144.	Release update
RESTORE	z/OS V1R12	Updated: For backups to and from tape, and for backups on DASD when the backup data set is in the extended format, DFSMS now uses BSAM instead of EXCP to read from and write to DFSMSdss dump data sets during COPY processing. This allows DFSMSdss to support 256 KB blocks when writing to and reading from a tape. It also allows the subject of the RESTORE command to be an extended format data set. The data set also can be striped or compressed format.	Release update

Data areas

Table 109. DFSMSdss: Summary of changed data areas

Data area names	Release	Description	Reason for change
ADREID0	z/OS V2R1	Updated: Various changes.	Release support.
ADRTAPB	z/OS V1R12	Updated: Various changes.	Support for using BSAM instead of EXCP to read from and write to DFSMSdss dump data sets during DUMP, COPYDUMP, and RESTORE operations. See <i>z/OS DFSMSdss Storage Administration</i>

EXEC PARM values

Table 110. DFSMSdss: Summary of changes to EXEC PARM values

PARM name	Release	Description	Reason for change
USEEXCP=YES NO	z/OS V1R12	New: Specifies whether the access method used by DFSMSdss for DUMP output, RESTORE input and COPYDUMP operations is to be EXCP. If the backup is to or from tape, the default is NO. If the backup is to or from DASD, the default is YES, unless the backup data set is in the extended format.	Support for using BSAM instead of EXCP to read from and write to DFSMSdss dump data sets during DUMP, COPYDUMP, and RESTORE operations.

Exits

Table 111 lists new and changed exits for DFSMSdss. For descriptions of the DFSMSdss exits, see *z/OS DFSMSdss Storage Administration*.

Table 111. DFSMSdss: Summary of changed exits

Exit Name	Release	Description	Reason for change
ADRDYEXT_EXIT1	z/OS V2R1	New: New installation exit	Release update
Eioption 30	z/OS V2R1	Indicates to the UIM that allocation to the specified SMS volume failed during physical data set RESTORE or COPY.	Release support.
ADRUIXIT	z/OS V2R1	Changed: Bits are added to the ADRUFO parameter list.	Release support.
	z/OS V1R12	Changed: Bits are added to ADRUFO.	Support for the fast reverse restore capability of the IBMSystem StorageDS8000 series, and for using BSAM instead of EXCP to read from and write to DFSMSdss dump data sets during DUMP, COPYDUMP, and RESTORE operations. See <i>z/OS DFSMS Installation Exits</i> .

ISMF panels

There are no new or changed ISMF panels for DFSMSdss.

RACF FACILITY class profiles

Table 112 identifies new and changed RACF FACILITY CLASS profiles for DFSMSdss. See *z/OS Security Server RACF Security Administrator's Guide* for information about RACF.

Table 112. DFSMSdss: Summary of changes to RACF FACILITY class profiles

RACF Function	Release	Description	Reason for change
STGADMIN.ADR.COPY.FCRR	z/OS V1R12	New: This RACF FACILITY class profile controls access to the FCFASTREVERSERESTORE keyword with the COPY command.	RACF protection of fast reverse restore.

DFSMSShsm summary of interface changes

This topic summarizes new and changed interfaces for DFSMSShsm. It also includes changes resulting from service updates and small programming enhancements.

Commands

Table 113 identifies the new and changed DFSMSShsm commands. DFSMSShsm commands are documented in *z/OS DFSMSShsm Storage Administration* and *z/OS DFSMSShsm Managing Your Own Data*.

Table 113. DFSMSShsm: Summary of changed commands

Command name	Release	Description	Reason for change
BACKVOL	z/OS V1R12	New: The DUMP parameter has been updated to allow stacking up to 255 dump copies on a single dump volume.	Dump stacking enhancements
DEFINE	z/OS V2R1	New: The DUMPCLASS parameter now allows a RECOVERRESET keyword, which specifies whether or not the data-set-changed indicator in the VTOC is reset for all data sets that are restored during full-volume recover processing.	Serviceability and usability enhancements
	z/OS V1R12	New: The DUMPCLASS parameter has been updated to allow stacking up to 255 dump copies on a single dump volume.	Dump stacking enhancements
FRBACKUP	z/OS V2R1	New: ALL subparameter for FCINCREMENTAL and FCINCREMENTALLAST, to specify that an incremental copy pool version is to be created and all subsequent copy pool backup copies should also be incremental	Multiple Incremental FlashChopy target support
FRRECOV	z/OS V2R1	New: The NEWNAME(<i>newdsname</i>) parameter has been added, allowing DFSMSShsm to use a new, fully-qualified data set name for the recovered backup version or dump copy.	Fast replication enhancements
	z/OS V1R12	New: A set of new parameters have been added to the FRRECOV COPYPOOL command. The FROMDUMP parameter and DUMPCLASS subparameter allow recovery of a copy pool or volumes within a copy pool from a dump backup copy. The PARTIALOK parameter allows recovery from a partial dump version. The RESUME parameter allows control over resuming a previously failed recovery attempt.	Multi-task volume recovery from dump enhancements
		New: The FORCE parameter has been added allowing recovery from a DASD backup copy that has an incomplete dump copy.	DFSMS fast reverse restore enhancements

DFSMSHsm

Table 113. DFSMSHsm: Summary of changed commands (continued)

Command name	Release	Description	Reason for change
LIST	z/OS V2R1	New: The SELECT(RECYCLETEAKEAWAY) subparameter has been added to the LIST TAPETABLEOFCONTENTS command, to display the volumes that were not completely recycled because they were taken away by recall or another DFSMSHsm task.	Serviceability and usability enhancements
	z/OS V1R12	New: The FCFRRINCOMPLETE and INCOMPLETERECOVERY have been added to the LIST COPYPOOL SELECT command to request information about an FRBACKUP DASD copy (FCFRRINCOMPLETE) and to request information about copy pool FRBACKUP versions that have not been recovered completely (INCOMPLETERECOVERY).	DFSMS fast reverse restore enhancements
		Changed: LIST COPYPOOL(<i>cpname</i>) output includes: a new FASTREPLICATION state (FCFRRINCOMPLETE), fast reverse restore status field (FCFRR=), and recovery complete status field (RECOVERYINCOMPLETE=). This new output is displayed when OUTDATASET, SYSOUT, or TERMINAL is specified as the destination for the output.	DFSMS fast reverse restore enhancements
ONLYIF	z/OS V1R13	New: More than one hostid can be specified, each separated by a comma. Also, a group of commands can be conditionally executed when surrounded by the new BEGIN and END operators.	DFSMSHsm usability enhancements
QUERY	z/OS V2R1	Changed: The output returned from the QUERY ACTIVE(TCBADDRESS) command will now include the tape volser, device address, and task name.	Serviceability and usability enhancements
	z/OS V1R12	Changed: The QUERY COPYPOOL command output, in message ARC1820I, will display applicable “background copy percent-complete” (PCT-COMP) information for full-volume FlashCopy® pairs with an incomplete background copy.	DFSMS fast reverse restore enhancements

Table 113. DFSMSHsm: Summary of changed commands (continued)

Command name	Release	Description	Reason for change
SETSYS	z/OS V2R1	New: The CLASSTRANSTION(EVENTDRIVENMIGATION(Y N)) parameter has been added, to specify settings for class transitions during interval migration and on-demand migration windows. The additional SERIALIZATIONEXITS(Y N) subparameter indicates whether the user data set serialization error exits will be used during event driven migration.	Storage tiers support
		New: The MIGRATIONSUBTASKS(YES NO) parameter had been added, allowing DFSMSHsm to run multiple subtasks concurrently under each migration task. The additional ADDITIONALSUBTASKS(nn) subparameter allows you to dynamically change the number of additional subtasks that the system can use.	Migration subtasking support
		New: The RECYCLETAKEAWAYRETRY(YES NO) parameter has been added, allowing DFSMSHsm to automatically generate a new RECYCLE command for a tape when the original recycle must terminate due to the takeaway process, or when the tape is in use by the another DFSMSHsm task. Two additional subparameters, MAXRETRYATTEMPTS(mm) and DELAY(ssss), allow you to set the maximum number of recycle retry attempts and to set the delay interval in seconds between recycle attempts, respectively.	Serviceability and usability enhancements
		New: The (TAPECOPY RECYCLE) subparameter has been added to both the BACKUP and the MIGRATION parameters of the SETSYS DUPLEX command. It specifies whether, after an error occurs on the duplex alternate tape and the alternate tape is demounted and discarded so that DFSMSHsm can continue to write to the original tape, a tapecopy or a recycle will be immediately attempted.	Serviceability and usability enhancements
	z/OS V1R13	New: ONDEMANDMIGRATION parameter indicating that the On Demand Migration function should be used instead of Interval Migration on SMS volumes.	DFSMSHsm space management performance improvements
		New: FASTREPLICATION (VOLUMEPAIRMESSAGES(YES NO)) parameter, used to suppress or display ARC1801 messages.	An easier way to control the ARC1809I messages
		New: RELEASE RECALL(DASD) parameter, used to release recalls from DASD volumes while continuing to hold recalls on tape volumes.	Enhancement to RELEASE RECALL
		Changed: The default on FASTREPLICATION(PREFERRED REQUIRED NONE) has been changed to NONE.	DFSMSHsm usability enhancements
	z/OS V1R12	New: Five new parameters (BACKUP, CDSBACKUP, DUMP, MIGRATION, and RECOVERY) have been added to the SETSYS DSSXMMODE command to provide expanded, more granular control of the DFSMSdss cross memory interface.	Expanded control of the DFSMSdss cross memory interface
		New: The FCRELATION parameter has been added to the SETSYS FASTREPLICATION command specifying whether an extent-level or a full-volume-level FlashCopy relationship is to be established for fast replication backup and recovery of volumes.	DFSMS fast reverse restore enhancements
		New: MAXDUMPRECOVERTASKS parameter specifying the maximum number of volume recovery from dump tasks DFSMSHsm can concurrently process.	Multi-task volume recovery from dump enhancements
		New: USECYLINDERMANAGEDSPACE parameter specifying whether to allow use of cylinder managed space for migration copies and backup versions.	EAV enhancement for z/OS V1R12

Data areas

DFSMSHsm control blocks and data areas are documented in *z/OS DFSMSHsm Data Areas*, which is from the z/OS Internet library (<http://www.ibm.com/systems/z/os/zos/bkserv/>).

Event codes

Table 114 on page 208 identifies new and changed DFSMSHsm event codes, which are documented in *z/OS MVS Programming Authorized Assembler Services Reference Volume 2* and *z/OS MVS Programming Authorized Assembler Services Guide*.

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Table 114. DFSMSHsm: Summary of new and changed event codes

Event code	Release	Description	Reason for change
ENF72	z/OS V1R13	New: ENFREQ event code providing Volume Status information.	DFSMSHsm space management performance improvements

Exits

Table 115 identifies the new and changed DFSMSHsm exits. DFSMSHsm exits are documented in *z/OS DFSMS Installation Exits*.

Table 115. DFSMSHsm: Summary of changed exits

Exit name	Release	Description	Reason for change
ARCMDEXT	z/OS V2R1	Changed: Space management exit, updated to reflect the new concept of class transition.	Storage tiers support

Macros

Table 116 identifies the new and changed DFSMSHsm macros. DFSMSHsm macros are documented in *z/OS DFSMSHsm Managing Your Own Data*.

Table 116. DFSMSHsm: Summary of changed executable macros

Macro name	Release	Description	Reason for change
ARCXTRCT	z/OS V1R12	New: A new DATA=COPYPOOL flag, CPFINCMP, has been added.	DFSMS fast reverse restore enhancements

RACF FACILITY class profiles

There are no new or changed RACF FACILITY class profiles for DFSMSHsm.

DFSMSrmm summary of interface changes

Commands

Table 117 lists new and changed commands for DFSMSrmm. See *z/OS DFSMSrmm Managing and Using Removable Media* for more specific information about these commands.

Table 117. DFSMSrmm: Summary of changed commands

Command name	Release	Description	Reason for change
ADDDATASET	z/OS V2R1	New: LASTREF/NOLASTREF operands are added.	V2R1 function.
ADDVOLUME	z/OS V2R1	New: RETAINBY operand is added.	V2R1 function.
CHANGEDATASET	z/OS V2R1	New: LASTREF/NOLASTREF operands are added.	V2R1 function.
CHANGEVOLUME	z/OS V2R1	New: RETAINBY operand is added.	V2R1 function.
SEARCHVOLUME	z/OS V2R1	New: RETAINBY operand is added.	V2R1 function.
ADDDATASET	z/OS V1R13	Changed: The maximum allowable value for the BLKCOUNT parameter has increased	V1R13 function.
ADDVOLUME	z/OS V1R13	New: RETENTIONMETHOD operand is added.	Enhanced data set retention support.

Table 117. DFSMSrmm: Summary of changed commands (continued)

Command name	Release	Description	Reason for change
CHANGEDATASET	z/OS V1R13	New: VRSELEXCLUDE operand is added. Changed: The maximum allowable value for the BLKCOUNT parameter has increased	<ul style="list-style-type: none"> Enhanced data set retention support. V1R13 function.
CHANGEVOLUME	z/OS V1R13	New: RETENTIONMETHOD operand is added.	Enhanced data set retention support.
SEARCHDATASET	z/OS V1R13	New: CATALOG, CRDATE, DATACLASS, EXPDT, FORCE, LASTCHANGEDATE, LASTREFDATE, MANAGEMENTCLASS, NODATACLASS, NOMANAGEMENTCLASS, NOOEXPDT, NOSTORAGECLASS, NOSTORAGEGROUP, OEXPDT, READDATE, RETDATE, STORAGECLASS, STORAGEGROUP, VRSELEXCLUDE, and WRITEDATE operands are added.	Enhanced search capabilities.
SEARCHVOLUME	z/OS V1R13	New: EXPDT and RETENTIONMETHOD operands are added.	Enhanced data set retention support.
SEARCHVRS	z/OS V1R13	New: LASTCHANGEDATE and LASTREFDATE operands are added.	Enhanced search capabilities.
CHANGEVOLUME	z/OS V1R12	New: HOLD and NOHOLD operands are added.	Enhanced volume hold support.
LISTCONTROL	z/OS V1R12	New: STATUS operand is added.	Enhanced status display.
SEARCHVOLUME	z/OS V1R12	New: HOLD and NOHOLD operands are added.	Query volume hold attribute.

Data areas

Table 118 lists new and changed data areas. For more information about DFSMSrmm data areas, see *z/OS DFSMSrmm Reporting*.

Table 118. DFSMSrmm: Summary of new and changed data areas

Data area name	Release	Description	Reason for change
EDGACTSY	z/OS V2R1	Changed: Activity File Symbols.	Support for V2R1 function.
EDGCLREC	z/OS V2R1	Changed: Conversion Library Information.	Support for V2R1 function.
EDGLCSUP	z/OS V2R1	Changed: OAM Interface.	Support for V2R1 function.
EDGEXTSY	z/OS V2R1	Changed: Extract Data Set Symbols.	Support for V2R1 function.
EDGPL100	z/OS V2R1	Changed: Installation Exit Mapping Macro.	Support for V2R1 function.
EDGPL200	z/OS V2R1	Changed: Installation Exit Mapping Macro.	Support for V2R1 function.

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Table 118. DFSMSrmm: Summary of new and changed data areas (continued)

Data area name	Release	Description	Reason for change
EDGPL300	z/OS V2R1	Changed: Installation Exit Mapping Macro.	Support for V2R1 function.
EDGRVEXT	z/OS V2R1	Changed: Extract Data Set Volume Report Record.	Support for V2R1 function.
EDGRXEXT	z/OS V2R1	Changed: Extract Data Set Extended Data Set Name Record.	Support for V2R1 function.
EDGSLAB	z/OS V2R1	Changed: Sticky Label Data.	Support for V2R1 function.
EDGSRCSY	z/OS V2R1	Changed: Inventory Management SMF Record	Support for V2R1 function.
EDGSVREC	z/OS V2R1	Changed: SMF Volume Information.	Support for V2R1 function.
EDGACTSY	z/OS V1R13	Changed: Activity File Symbols.	Support for Release 13 function.
EDGCLREC	z/OS V1R13	Changed: Conversion Library Information.	Support for Release 13 function.
EDGLCSUP	z/OS V1R13	Changed: OAM Interface.	Support for Release 13 function.
EDGEXTSY	z/OS V1R13	Changed: Extract Data Set Symbols.	Support for Release 13 function.
EDGPL100	z/OS V1R13	Changed: Installation Exit Mapping Macro.	Support for Release 13 function.
EDGPL200	z/OS V1R13	Changed: Installation Exit Mapping Macro.	Support for Release 13 function.
EDGPL300	z/OS V1R13	Changed: Installation Exit Mapping Macro.	Support for Release 13 function.
EDGRVEXT	z/OS V1R13	Changed: Extract Data Set Volume Report Record.	Support for Release 13 function.
EDGRXEXT	z/OS V1R13	Changed: Extract Data Set Extended Data Set Name Record.	Support for Release 13 function.
EDGSLAB	z/OS V1R13	Changed: Sticky Label Data.	Support for Release 13 function.
EDGSRCSY	z/OS V1R13	Changed: Inventory Management SMF Record	Support for Release 13 function.
EDGSVREC	z/OS V1R13	Changed: SMF Volume Information.	Support for Release 13 function.
EDGACTSY	z/OS V1R12	Changed: Activity File Symbols.	Support for Release 12 function.
EDGCLREC	z/OS V1R12	Changed: Conversion Library Information.	Support for Release 12 function.
EDGLCSUP	z/OS V1R12	Changed: OAM Interface.	Support for Release 12 function.
EDGEXTSY	z/OS V1R12	Changed: Extract Data Set Symbols.	Support for Release 12 function.
EDGPL100	z/OS V1R12	Changed: Installation Exit Mapping Macro.	Support for Release 12 function.
EDGPL200	z/OS V1R12	Changed: Installation Exit Mapping Macro.	Support for Release 12 function.
EDGPL300	z/OS V1R12	Changed: Installation Exit Mapping Macro.	Support for Release 12 function.
EDGRVEXT	z/OS V1R12	Changed: Extract Data Set Volume Report Record.	Support for Release 12 function.
EDGRXEXT	z/OS V1R12	Changed: Extract Data Set Extended Data Set Name Record.	Support for Release 12 function.
EDGSLAB	z/OS V1R12	Changed: Sticky Label Data.	Support for Release 12 function.

Table 118. DFSMSrmm: Summary of new and changed data areas (continued)

Data area name	Release	Description	Reason for change
EDGSRCSY	z/OS V1R12	Changed: Inventory Management SMF Record	Support for Release 12 function.
EDGSVREC	z/OS V1R12	Changed: SMF Volume Information.	Support for Release 12 function.

ISPF panels

Table 119 lists new and changed DFSMSrmm ISPF panels.

Table 119. DFSMSrmm: Summary of new and changed ISPF panels

Panel name	Release	Description	Reason for change
EDGPT010	z/OS V2R1	Changed: RetainBy	EXPDT retention method
EDGPT020	z/OS V2R1	Changed: Ret	EXPDT retention method
EDGPT030	z/OS V2R1	Changed: LRef XDays	EXPDT retention method
EDGHT11S	z/OS V2R1	New: Retainby	EXPDT retention method
EDGHT02I	z/OS V2R1	New: Ret (6)	EXPDT retention method
EDGHD02I	z/OS V2R1	New: LASTREF Extra Days (6)	EXPDT retention method
EDGHT11H	z/OS V2R1	Changed: SET RETAINED	EXPDT retention method
EDGHT020	z/OS V2R1	Changed: LASTREF Extra Days (6)	EXPDT retention method
EDGHD030	z/OS V2R1	Changed: SET RETAINED	EXPDT retention method
EDGP@CLS	z/OS V1R12	Changed: View search results	Suppress search results list.
EDGPC200	z/OS V1R13	New: Retention method	Enhanced data set retention.
EDGPT110	z/OS V1R13	New: Retention method Set by	Enhanced data set retention.
EDGPT210	z/OS V1R13	New:	Enhanced data set retention.
EDGPT240	z/OS V1R13	New:	Add Stacked Volume
EDGPT410	z/OS V1R13	New: VRSEL exclude	Enhanced data set retention.
EDGP@CLS	z/OS V1R12	Changed: View search results	Suppress search results list.
EDGPCC00	z/OS V1R12	New: DFSMSrmm Status	CONTROL STATUS fastpath command.
EDGPT110	z/OS V1R12	Changed: HOLD	Volume hold support.
EDGPT410	z/OS V1R12	Changed: HOLD	Volume hold support.

REXX variables

Table 120 lists new and changed REXX variables that you can use when you write REXX execs to obtain information about DFSMSrmm resources. See *z/OS DFSMSrmm Managing and Using Removable Media* for more detailed information.

Table 120. DFSMSrmm TSO subcommand REXX variables

Variable name	Release	Subcommands	Contents
EDG@EXRB	z/OS V2R1	LC OPT, LV VOL	Retention method Expdt RetainBy

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Table 120. DFSMSrmm TSO subcommand REXX variables (continued)

Variable name	Release	Subcommands	Contents
EDG@LRED	z/OS V2R1	LC OPT, LD	Last reference extra days
EDG@MCAT	z/OS V2R1	LC OPT	SMS Management class attributes enabling
EDG@XDSB	z/OS V2R1	LV VOL, LD	Expiration date set by
EDG@BLK6	z/OS V1R13	LD	Total block count
EDG@BLKT	z/OS V1R13	LD	Total block count
EDG@CRAT	z/OS V1R13	LD LV	Compression ratio
EDG@CRID	z/OS V1R13	LV	Create user ID
EDG@DLR	z/OS V1R13	LD LS SS	Date data set on
EDG@DLRJ	z/OS V1R13	SS	Last reference date
EDG@DRP	z/OS V1R13	LC	Default retention period
EDG@DSEQ	z/OS V1R13	LD LV	Data set
EDG@LCDT	z/OS V1R13	LB LD LO LP LR LS LV	Last change date
EDG@LCID	z/OS V1R13	LB LD LO LP LR LS LV	Last change user ID
EDG@LCSI	z/OS V1R13	LB LD LO LP LR LS LV	Last change system ID
EDG@LCTM	z/OS V1R13	LB LD LO LP LR LS LV	Last change time
EDG@LCUD	z/OS V1R13	LB LD LO LP LR LS LV	Last user change date
EDG@LCUT	z/OS V1R13	LB LD LO LP LR LS LV	Last user change time
EDG@LDAM	z/OS V1R13	LC	Automove
EDG@MEDR	z/OS V1R13	LC LV SV	Recording technology
EDG@MEDT	z/OS V1R13	LC LV SV	Media type
EDG@MRP	z/OS V1R13	LC	Maximum retention period
EDG@OLON	z/OS V1R13	LV	Old loan location
EDG@RLPR	z/OS V1R13	LV	Required location priority
EDG@RM	z/OS V1R13	LC LV	Retention method
EDG@RMSB	z/OS V1R13	LV VOL	Retention method set by
EDG@RTDJ	z/OS V1R13	SD SV	Retention date
EDG@RTDT	z/OS V1R13	LD LV SD SV	Retention date
EDG@SEQ	z/OS V1R13	LV	Volume sequence number
EDG@TLR	z/OS V1R13	LS SS	Time last referenced
EDG@TVXD	z/OS V1R13	LC	TVEXTPURGE days
EDG@VEX	z/OS V1R13	LD	VRSEL exclude
EDG@XDSB	z/OS V1R13	LV LD	Expiration date
EDG@XDTJ	z/OS V1R13	SD SV	Volume expiration date
EDG@CSIP	z/OS V1R12	LC	Client/server local IP address
EDG@HLD	z/OS V1R12	LV	Hold attribute
EDG@JRNS	z/OS V1R12	LC	Journal status
EDG@RMID	z/OS V1R12	LC	Started procedure name
EDG@SRIP	z/OS V1R12	LC	Server IP address
EDG@STDS	z/OS V1R12	LC	Debug setting

Table 120. DFSMSrmm TSO subcommand REXX variables (continued)

Variable name	Release	Subcommands	Contents
EDG@STIS	z/OS V1R12	LC	IP verb state
EDG@STIT	z/OS V1R12	LC	IP verb time
EDG@STIV	z/OS V1R12	LC	IP verb
EDG@STLA	z/OS V1R12	LC	Local active tasks
EDG@STLH	z/OS V1R12	LC	Local held tasks
EDG@STLO	z/OS V1R12	LC	Local tasks
EDG@STLR	z/OS V1R12	LC	Last CDS reserve time
EDG@STNH	z/OS V1R12	LC	New requests held
EDG@STPL	z/OS V1R12	LC	PDA Trace levels
EDG@STQC	z/OS V1R12	LC	Queued catalog requests
EDG@STQN	z/OS V1R12	LC	Queued nowait requests
EDG@STQR	z/OS V1R12	LC	Queued requests
EDG@STRF	z/OS V1R12	LC	Task requested function
EDG@STRH	z/OS V1R12	LC	CDS Reserved
EDG@STRM	z/OS V1R12	LC	DFSMSrmm status
EDG@STRT	z/OS V1R12	LC	Task requestor's system ID
EDG@STSA	z/OS V1R12	LC	Server active tasks
EDG@STSH	z/OS V1R12	LC	Server held tasks
EDG@STSL	z/OS V1R12	LC	Server listener
EDG@STSO	z/OS V1R12	LC	Server tasks
EDG@STST	z/OS V1R12	LC	Task start time
EDG@STTQ	z/OS V1R12	LC	Task requestor's ID
EDG@STTR	z/OS V1R12	LC	Task requestor type
EDG@STTS	z/OS V1R12	LC	Task status
EDG@STTT	z/OS V1R12	LC	Task token

Structured field introducers

Table 121 lists new and changed DFSMSrmm structured field introducers that you can use with the DFSMSrmm application programming interface. For more information, see *z/OS DFSMSrmm Application Programming Interface*.

Table 121. Structured field introducers

Release	SFI name	SFI number	Data Description	Subcommands
z/OS V2R1	EXRB	X'830800'	Retained by	LC OPT, LV VOL, SV(e)
z/OS V2R1	LRED	X'84F800'	Last reference extra days	LC, LD,SD(e)
z/OS V2R1	MCAT	X'851200'	SMS Management class attributes enabling	LC
z/OS V2R1	XDSB	X'8C6100'	Expiration date set by	LV VOL, SV(e), LD, SD(e)
z/OS V1R13	CRID	X'817900'	File 1 create user ID	LV VOL,SV(e)
z/OS V1R13	DLR/DLRJ	X'823000'	Date last referenced/read	LD LV LS SD(e) SS SV(e)
z/OS V1R13	DRP	X'827000'	Default retention period	LC

DFSMSrmm

Table 121. Structured field introducers (continued)

Release	SFI name	SFI number	Data Description	Subcommands
z/OS V1R13	DSEQ	X'829000'	Data set sequence	LD LV SD(e) SV(e)
z/OS V1R13	LCDJ	X'841500'	Last change date	LB LD LO LP LR LV LS SD(e) SP(e) SS(e)
z/OS V1R13	LCID	X'842000'	Character (variable length)	LB LD LO LP LR LV LS SD(e) SP(e) SS(e) SV(e)
z/OS V1R13	LCSI	X'842500'	Last change system ID	LB LD LO LP LR LV LS SD(e) SP(e) SS(e) SV(e)
z/OS V1R13	LCTM	X'843500'	Last change time	LB LD LO LP LR LV LS SD(e) SP(e) SS(e) SV(e)
z/OS V1R13	LCUD	X'843600'	Last user change date	LB LD LO LP LR LV LS SD(e) SP(e) SS(e) SV(e)
z/OS V1R13	LCUT	X'843700'	Last user change time	LB LD LO LP LR LV LS SD(e) SP(e) SS(e) SV(e)
z/OS V1R13	LDAM	X'84A100'	Automove	LC
z/OS V1R13	MEDR	X'857000'	Recording technology	LV SV LC
z/OS V1R13	MEDT	X'858000'	Media type	LV SV LC
z/OS V1R13	MRP	X'85D000'	Maximum retention period	LC
z/OS V1R13	OLON	X'86C100'	Old loan location	LV SV(e)
z/OS V1R13	RLPR	X'888500'	Required location priority	LV SV(e)
z/OS V1R13	RM	X'888800'	Retention method	LC OPT, LV VOL, SV(e)
z/OS V1R13	RMSB	X'888A00'	Retention method set by	LV VOL SV(e)
z/OS V1R13	RTDJ	X'88C000'	Retention date	LD LV SD SV
z/OS V1R13	SEQ	X'898000'	Volume sequence	LV
z/OS V1R13	TLR	X'8A6800'	Time in hours, minutes, seconds, and tenths of seconds	LS SS
z/OS V1R13	TVXD	X'8A7800'	TVEXTPURGE days	LC OPT
z/OS V1R13	XDSB	X'8C6100'	Expiration date set by	LV VOL, SV(e), LD, SD(e)
z/OS V1R13	VEX	X'8B4100'	VRSEL exclude	LD SD(e)
z/OS V1R12	CSIP	X'819250'	Client IP address	LC
z/OS V1R12	HLD	X'838F40'	Volume hold	LV SV(e)
z/OS V1R12	RMID	X'889000'	Started procedure name	LC
z/OS V1R12	SRIP	X'8A1A30'	Server IP address	LC
z/OS V1R12	STDS	X'8A2800'	Debug setting	LC
z/OS V1R12	STIS	X'8A3200'	Task - IP verb state	LC
z/OS V1R12	STIT	X'8A3201'	Task - IP verb time	LC
z/OS V1R12	STIV	X'8A3203'	Task - IP verb	LC
z/OS V1R12	STLA	X'8A3300'	Local active tasks	LC
z/OS V1R12	STLH	X'8A3307'	Local held tasks	LC
z/OS V1R12	STLO	X'8A3314'	Local tasks	LC
z/OS V1R12	STLR	X'8A3317'	Last RESERVE time	LC
z/OS V1R12	STNH	X'8A3400'	New requests held	LC
z/OS V1R12	STPL	X'8A3450'	PDA trace levels	LC

Table 121. Structured field introducers (continued)

Release	SFI name	SFI number	Data Description	Subcommands
z/OS V1R12	STQC	X'8A3500'	Catalog requests	LC
z/OS V1R12	STQN	X'8A3511'	Nowait requests	LC
z/OS V1R12	STQR	X'8A3515'	Queued requests	LC
z/OS V1R12	STRF	X'8A3600'	Task - requested function	LC
z/OS V1R12	STRH	X'8A3602'	CDS RESERVED	LC
z/OS V1R12	STRM	X'8A3607'	RMM status	LC
z/OS V1R12	STRT	X'8A3614'	Task - requestor's system	LC
z/OS V1R12	STSA	X'8A3650'	Server active tasks	LC
z/OS V1R12	STSH	X'8A3657'	Server held tasks	LC
z/OS V1R12	STSL	X'8A3661'	Server listener task	LC
z/OS V1R12	STSO	X'8A3664'	Server tasks	LC
z/OS V1R12	STST	X'8A3669'	Task start time	LC
z/OS V1R12	STTQ	X'8A3700'	Task requestor	LC
z/OS V1R12	STTR	X'8A3701'	Task requestor's type	LC
z/OS V1R12	STTS	X'8A3702'	Task status	LC
z/OS V1R12	STTT	X'8A3703'	Task token	LC

DFSMSStvs summary of interface changes

There are no new or changed interfaces for DFSMSStvs.

Chapter 10. DFSORT summary of interface changes

This topic summarizes the new and changed interface components of DFSORT.

New reserved words for symbols

The following are new DFSORT/ICETOOL reserved words which are no longer allowed as symbols: LC, LN, MC, MN, UC and UN.

If you used any of these words as a symbol previously, you must change them. For example, if you used MC, you can change it to mc.

Central storage controls

The IBM-supplied default for the existing EXPOLD installation option has been changed to EXPOLD=50%. If you want DFSORT to use EXPOLD, as in previous releases, you can set EXPOLD=MAX.

The IBM-supplied default for the existing EXPRES installation option has been changed to EXPRES=10%. If you want DFSORT to use EXPRES, as in previous releases, you can set EXPRES=0.

The IBM-supplied default for the new TUNE installation option is TUNE=STOR which specifies allocation of available central storage as needed in increments sized to balance resource usage for concurrent sorts. If you want DFSORT to allocate available central storage using fixed sized increments, as in previous releases, you can set TUNE=OLD.

TUNE installation option

A new TUNE installation default allows you to specify whether DFSORT should allocate storage in increments with additional disk work space to minimize the risk of failure, or to allocate all storage at initialization so disk work space allocation can be reduced.

Chapter 11. Distributed File Service summary of interface changes

In addition to the Distributed File Service interfaces described in this topic, you should also review Chapter 2, “Summary of changes to SYS1.PARMLIB,” on page 5 and Chapter 4, “Summary of changes to SYS1.SAMPLIB,” on page 21. This topic summarizes the new and changed interface components of Distributed File Service (DFS/SMB and zFS).

zFS

The zFS interfaces described in this topic are:

- “zFS APIs”
- “zFS commands” on page 220
- “zFS system commands” on page 222
- “zFS data sets” on page 224

zFS APIs

Table 122 lists new or changed zFS APIs.

Table 122. Summary of new and changed zFS APIs

API	Release	Description	Reason for change
Attach Aggregate	z/OS V1R13	Changed: No longer supports the ATT_NONBS flag; if specified, it is ignored.	Release update
Clone File System	z/OS V2R1	Removed.	Removal of the zFS clone function
Create File System	z/OS V2R1	Removed.	Removal of multi-file system aggregates
Format Aggregate	z/OS V2R1	New flag: The af_aggrversion flag.	Improved large directory performance
Grow Aggregate	z/OS V2R1	Changed: Supports version 1.5 aggregates by using AGGR_ID version 3.	Improved large directory performance
List Aggregate Status	z/OS V2R1	Changed: Supports version 1.5 aggregates by using AGGR_STATUS3.	Improved large directory performance
List File System Status	z/OS V1R13	Changed: The fsid_len parameter must be specified as a data type of char, rather than short.	Release update
	z/OS V2R1	Changed: Supports version 1.5 aggregate by using FS_STATUS2. Also, a new aggregate size greater than 4TB can be specified by using AGGR_ID3.	Improved large directory performance
List File Information	z/OS V2R1	Changed: Lists detailed file or directory information.	Improved large directory performance
Rename File System	z/OS V1R13	Changed: The fsid_len parameter must be specified as a data type of char, rather than short.	Release update
	z/OS V2R1	Removed.	Removal of multi-file system aggregates
Reset Backup Flag	z/OS V2R1	New: Resets the backup bit after a backup completes.	Improved large directory performance

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Table 122. Summary of new and changed zFS APIs (continued)

API	Release	Description	Reason for change
Set Config API	z/OS V2R1	New: <ul style="list-style-type: none"> Query and set change_aggrversion_on_mount Query and set converttov5 Query and set format_aggrversion Removed: <ul style="list-style-type: none"> Query auto_attach setting Query and set nbs set user_cache_readahead 	Improved large directory performance
Query Config API	z/OS V2R1	New: <ul style="list-style-type: none"> Query and set change_aggrversion_on_mount Query and set converttov5 Query and set format_aggrversion Removed: <ul style="list-style-type: none"> Query auto_attach setting Query and set nbs set user_cache_readahead 	Improved large directory performance
Set File System Quota	z/OSV1R13	Changed: The fsid_len parameter must be specified as a data type of char, rather than short.	Release update
	z/OS V2R1	Removed.	Removal of multi-file system aggregates

zFS commands

Table 123 identifies changes to zFS commands. For detailed information about these commands, see *z/OS Distributed File Service zFS Administration*.

Table 123. Summary of new and changed zFS commands

zFS command	Release	Description	Reason for change
ioeagfmt	z/OS V2R1	Changed: -newauditfid is now the default. New options: <ul style="list-style-type: none"> -nonewauditfid specifies that the aggregate should not be formatted with a zFS auditfid stored in it. -version4 specifies that the aggregate should be a version 1.4 aggregate. -version5 specifies that the aggregate should be a version 1.5 aggregate. If neither option is specified, the IOEFSPRM option format_aggrversion is honored. 	Improved large directory performance
	z/OS V2R1	New requirement: zFS must be active if ioeagfmt is used.	Improved large directory performance
ioeagslv	z/OS V2R1	Changed: Now does not allow salvage of aggregates with more than one file system. It also does not allow salvage with a .bak file system in aggregate.	Salvager enhancement
ioefsutl converttov4	z/OS V2R1	New: Converts a version 1.5 aggregate to a version 1.4 aggregate.	Improved large directory performance
ioefsutl converttov5	z/OS V2R1	New: Converts a version 1.4 aggregate to a version 1.5 aggregate.	Improved large directory performance

Table 123. Summary of new and changed zFS commands (continued)

zFS command	Release	Description	Reason for change
ioefsutl format	z/OS V2R1	New: Formats a VSAM linear data set to become a zFS compatibility mode aggregate.	Improved large directory performance
ioefsutl salvage	z/OS V2R1	New: Scans an aggregate and reports inconsistencies.	Improved large directory performance
MOUNT	z/OS V1R13	Changed: The NONBS parameter is no longer supported; if specified, it is ignored. zFS always runs with new block security (NBS) support on.	Release update
	z/OS V2R1	Changed: The READAHEAD, FSGROW, NBS, and RW parameters are now ignored. AGGREGATE and FILESYSTEM are now invalid in a non-sysplex environment.	Removal of multi-file system aggregates and the zFS clone function.
	z/OS V2R1	New options: The CONVERTTOV5 and NOCONVERTTOV5 options specify whether a zFS read/write file system is to be assigned the converttov5 attribute. They override the IOEFSPRM options converttov5 and change_aggrversion_on_mount.	Improved large directory performance
zfsadm	z/OS V1R13	Changed: When the command displays help text or a syntax error message, it will show the name of the command as IOEZADM.	Release update
zfsadm aggrinfo	z/OS V2R1	Changed: When a zFS file system is quiesced, the -long option now displays the job name, system, and time stamp that issued the quiesce. It also displays the aggregate version and the converttov5 attribute.	Enhanced zFS quiescing and improved large directory performance
zfsadm attach	z/OS V1R13	Changed: No longer supports the -nonbs option; if specified, it is ignored. zFS always runs with -nbs support on.	Release update
zfsadm clone	z/OS V2R1	Removed.	Removal of multi-file system aggregates and the zFS clone function.
zfsadm clonesys	z/OS V2R1	Removed.	Removal of multi-file system aggregates and the zFS clone function.
zfsadm config	z/OS V1R13	Changed: No longer support the -nonbs off option; if specified, it is ignored. zFS always runs with -nbs support on.	Release update
	z/OS V2R1	New options: <ul style="list-style-type: none"> • change_aggrversion_on_mount • converttov5 • format_aggrversion 	Improved large directory performance
zfsadm configquery	z/OS V1R13	Changed: The -nbs option is always on. zFS always runs with new block security (NBS) support.	Release update
	z/OS V2R1	New options: <ul style="list-style-type: none"> • change_aggrversion_on_mount • converttov5 • format_aggrversion 	Improved large directory performance
zfsadm convert	z/OS V2R1	New: Converts a read/write aggregate to version 1.5 or a directory to an extended (v5) directory.	Improved large directory performance

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Table 123. Summary of new and changed zFS commands (continued)

zFS command	Release	Description	Reason for change
zfsadm create	z/OS V2R1	Removed.	Removal of multi-file system aggregates and the zFS clone function.
zfsadm delete	z/OS V2R1	Changed: You can only delete .bak file systems.	Improved large directory performance
zfsadm fileinfo	z/OS V2R1	New: Displays detailed information about a file or directory.	Improved large directory performance
zfsadm format	z/OS V2R1	New options: <ul style="list-style-type: none"> -version4 specifies that the aggregate should be a version 1.4 aggregate -version5 specifies that the aggregate should be a version 1.5 aggregate. If neither option is specified, the default is the IOEFSPRM option format_aggrversion.	Improved large directory performance
	z/OS V2R1	Changed: The -long option will now display the version.	Improved large directory performance
zfsadm lsquota	z/OS V2R1	Removed.	Removal of multi-file system aggregates and the zFS clone function.
zfsadm query	z/OS V1R13	Changed: The -dircache option will now only report zeros. Also, the statistics directory cache subcommand is no longer used and reports zeros.	Release update
zfsadm rename	z/OS V2R1	Removed.	Removal of multi-file system aggregates and the zFS clone function.
zfsadm setquota	z/OS V2R1	Removed.	Removal of multi-file system aggregates and the zFS clone function.

zFS system commands

Table 124 identifies changes to system commands for zFS. For detailed information about these changes to system commands, see *z/OS Distributed File Service zFS Administration*.

Table 124. Summary of new and changed zFS system commands

System command	Release	Description	Reason for change
modify zfs abort	z/OS V1R13	Changed: Now causes zFS to produce a dump and then execute an internal restart.	Release update
modify zfs hangbreak	z/OS V1R13	Changed: Now causes zFS to execute an internal restart.	Release update
modify zfs process	z/OS V1R13	New: The status and dataset keywords have been added.	Release update

Table 124. Summary of new and changed zFS system commands (continued)

System command	Release	Description	Reason for change
modify zfs query	z/OS V1R13	<p>Changed: The output of the following reports was enhanced to provide more file system information and statistical data.</p> <ul style="list-style-type: none"> • VM • LFS (Directory Cache Statistics information was also removed) • LOCK • STKM • STOR • CTKC • SVI 	Release update

zFS data sets

Table 125 lists new and changed zFS data sets.

Table 125. Summary of new and changed zFS data sets

zFS data sets	Release	Description	Reason for change
IOESFSPRM	z/OS V2R1	New option: The <code>quiesce_message_delay</code> option controls how long it takes in seconds for message IOEZ00581E to be displayed when an RWSHARE aggregate is quiesced.	Enhanced zFS quiescing
	z/OS V2R1	<p>New options:</p> <ul style="list-style-type: none"> <code>format_aggreversion</code> specifies the default version of the aggregate when formatting it. The default version is 4. This option is also honored in ISHELL and AUTOMOUNT. <code>change_aggrversion_on_mount</code> changes the aggregate version to 1.5 on read/write mount. <code>converttov5</code> changes the aggregate version to 1.5 and converts the root directory at mount time. Each v4 directory is converted to v5 when first accessed. <p>Changed options:</p> <ul style="list-style-type: none"> The default for <code>convert_auditfid</code> was changed to ON. The default for <code>meta_cache_size</code> was changed, depending on whether <code>metaback_cache_size</code> and <code>meta_cache-size</code> is specified. The default value for <code>user_cache_size</code> is calculated according to the real storage available during zFS initialization. 	Improved large directory performance
	z/OS V2R1	New option: The <code>max_errors</code> option specifies the maximum number of errors that the salvager program allows before it stops.	Improved salvager performance
	z/OS V2R1	<p>Changed: These options are ignored:</p> <ul style="list-style-type: none"> <code>auto_attach</code> <code>fsgrow</code> <code>define_aggr</code> <code>nbs</code> <code>user_cache_readahead</code> 	Removal of multi-file system aggregates and the zFS clone function.
	z/OS V1R13	<p>Deleted: The following options were removed:</p> <ul style="list-style-type: none"> <code>dir_cache_size</code> <code>nbs</code> <code>sysplex_admin_level</code> <p>Changed: The default values for the following options have changed:</p> <ul style="list-style-type: none"> <code>aggrgrow</code> <code>client_cache_size</code> <code>client_reply_storage</code> <code>file_threads</code> <code>meta_cache_size</code> <code>sysplex</code> <code>sysplex_filesys_sharemode</code> 	Release update

SMB

The SMB interfaces described in this topic are:

- “SMB commands”
- “SMB system commands”
- “SMB environment variables”
- “SMB operating system support” on page 226

SMB commands

Table 126 lists new or changed SMB commands. For detailed information about these commands, see *z/OS Distributed File Service SMB Administration*.

There were no new or changed SMB commands in V2R1.

Table 126. Summary of new and changed SMB commands

SMB command	Release	Description	Reason for change
dfsexport	z/OS V1R13	Changed: The -force parameter is no longer supported; the -type parameter no longer exports DCE files.	Removal of DCE support

SMB system commands

Table 127 lists new or changed SMB system commands. For detailed information about these commands, see *z/OS Distributed File Service SMB Administration*.

Table 127. Summary of new and changed SMB system commands.

There are no new or changed SMB system commands in V2R1.

System command	Release	Description	Reason for change
modify dfs query	z/OS V1R13	Changed: The FILESETS and TKM reports no longer contain RPC information.	Removal of DCE support
		Deleted: The AFS4INT and LFS reports are no longer supported.	

SMB environment variables

Table 128 lists the new or changed environment variables. For details, see *z/OS Distributed File Service SMB Administration*.

There were no new or changed SMB environment variables in V2R1.

Table 128. Summary of new and changed SMB environment variables

SMB environment variable	Release	Description	Reason for change
_EUV_AUTOLOG	z/OS V1R13	Changed: This environment variable should always be set to NO .	Removal of DCE support
_IOE_PROTOCOL_RPC	z/OS V1R13	Changed: This environment variable has been disabled and is no longer used.	Removal of DCE support
_IOE_EXPORT_TIMEOUT	z/OS V1R12	Changed: The expected value has changed.	Release update
_IOE_SMB_PROTOCOL_LEVEL	z/OS V1R12	Changed: The expected value has changed.	Release update

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Table 128. Summary of new and changed SMB environment variables (continued)

SMB environment variable	Release	Description	Reason for change
_IOE_WIRE_CODEPAGE	z/OS V1R12	Changed: The SMB server does not support translation of double-byte character set (DBCS) data.	Release update

SMB operating system support

Table 129 lists the new operating systems supported by SMB. For details, see *z/OS Distributed File Service SMB Administration*.

Table 129. Summary of new operating systems supported by SMB

Operating System	Release	Description	Reason for change
Windows 7 platforms	z/OS V1R13	New: SMB now supports Microsoft Windows 7 Professional, Microsoft Windows 7 Enterprise, and Microsoft Windows 7 Ultimate Editions (32- and 64-bit)	New operating system support for V1R13
Windows Server 2008	z/OS V2R1	New: SMB now supports Microsoft Windows Server 2008 acting as a domain controller for pass-through authentication.	New domain controller support for V2R1.

Chapter 12. IBM Tivoli Directory Server summary of interface changes

This topic contains new and changed interfaces for:

- “Configuration options”
- “Utilities”
- “Client application programming routines”
- “Environment variables” on page 228

Configuration options

Table 130 lists the new and changed IBM Tivoli® Directory Server (IBM TDS) configuration options. See *z/OS IBM Tivoli Directory Server Administration and Use for z/OS* for more detailed information.

Table 130. Summary of new and changed IBM Tivoli Directory Server (IBM TDS) configuration options

Configuration option	Release	Description	Reason for change
plugin	z/OS V2R1	Updated to support ICTX and remote crypto plug-ins	ICTX and remote crypto support
sslCipherSpecs	z/OS V2R1	Updated to support TLS (Transport Layer Security) V1.2	TLS (Transport Layer Security) V1.2 support

Utilities

There are no new or changed utilities.

Client application programming routines

Table 131 lists the new and changed LDAP client application programming routines. See *z/OS IBM Tivoli Directory Server Client Programming for z/OS* for more detailed information.

Table 131. Summary of new and changed LDAP client application programming routines

Routine name	Release	Description	Reason for change
ldap_get_function_vector()	z/OS V2R1	Updated to support current release	Release update
ldap_get_option()	z/OS V2R1	Updated to support TLS (Transport Layer Security) V1.2	TLS (Transport Layer Security) V1.2 support
ldap_set_option()	z/OS V2R1	Updated to support TLS (Transport Layer Security) V1.2	TLS (Transport Layer Security) V1.2 support
ldap_set_option_np()	z/OS V2R1	Updated to support TLS (Transport Layer Security) V1.2	TLS (Transport Layer Security) V1.2 support

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Table 131. Summary of new and changed LDAP client application programming routines (continued)

Routine name	Release	Description	Reason for change
ldap_version()	z/OS V2R1	<ol style="list-style-type: none">1. Updated to support current release2. Updated to support TLS (Transport Layer Security) V1.2	<ol style="list-style-type: none">1. Release update2. TLS (Transport Layer Security) V1.2 support

Environment variables

Table 132 lists the new and changed environment variables used by Tivoli Directory Server. For detailed information about these environment variables, see *z/OS IBM Tivoli Directory Server Client Programming for z/OS*.

Table 132. Summary of new and changed IBM Tivoli Directory Server (IBM TDS) environment variables

Environment variable	Release	Description	Reason for change
LDAP_SSL_CIPHER_FORMAT	z/OS V2R1	New: Specifies the SSL cipher suites format.	TLS V1.2

Chapter 13. ICKDSF summary of interface changes

This topic describes the ICKDSF interface “Commands.”

Commands

Command name	Release	Description	Reason for change
CONTROL	z/OS V2R1	Updated: CONFIGURE(DISPLAY) now displays the microcode LIC and bundle level if available.	Multi-Target Mirror support.
FLASHCPY ESTABLISH	z/OS V2R1	Updated: Restrictions for PRESERVEMIRROR have been updated to indicate that PREFERRED is not valid if the devices specified are in a peer-to-peer multi-target relationship.	Multi-Target Mirror support.
FLASHCPY ESTABLISH	z/OS V2R1	Updated: New optional value, V2, for the CHANGERECDING parameter, to allow multiple incremental Flashcopy relationships.	Multiple Incremental FlashCopy support.
FLASHCPY QUERY RELATIONS	z/OS V2R1	Updated: Response updated to indicate that the volume allows multiple incremental relationships.	Multiple Incremental FlashCopy support.
PPRCOPY ESTPAIR	z/OS V2R1	Updated: New FAILOVERMT parameter, to request that a multi-target configuration should be created rather than the existing cascaded failover state when doing a failover.	Multi-Target Mirror support.
PPRCOPY POPULATESESSION	z/OS V2R1	Updated: For JOIN, new MTIVOLLIST and MTRVOLLIST subparameters, for lists of individual volumes or ranges of volumes for a multi-target configuration.	Multi-Target Mirror support.
PPRCOPY QUERY	z/OS V2R1	Updated: Responses updated for multi-target configuration.	Multi-Target Mirror support.
PPRCOPY SETCHARACTERISTICS	z/OS V2R1	New: Allows management software to designate a Metro Mirror pair in a multi-target PPRC configuration that must remain full duplex when performing a Remote Pair FlashCopy (Preserve Mirror) operation.	Multi-Target Mirror support.
INIT	z/OS V1R13	Updated: New keyword RESERVED marks a volume as reserved. Specify the name of the reserve storage pool with the OWNERID keyword, in the form IBMRSPrsname, where rsname is the name of the reserved storage pool.	Support for z/OSMF.

ICKDSF

Command name	Release	Description	Reason for change
INIT	z/OS V1R12	Updated: New keyword NODSEXIST requests that volumes that contain data sets other than the index data set or VVDS should not to be initialized.	To prevent the accidental initialization of volumes that contain data sets.

Chapter 14. Infoprint Server summary of interface changes

The Infoprint Server interfaces described in this topic are:

- “Application programming interface”
- “Configuration files” on page 232
- “Environment variables” on page 233
- “Exits” on page 235
- “Filters” on page 235
- “Infoprint Central” on page 236
- “ISPF panels” on page 237
- “JCL parameters” on page 239
- “Job attributes” on page 239
- “Printer Inventory attributes” on page 240
- “RACF profiles” on page 246
- “SMF type 6 record for IP PrintWay” on page 246
- “/usr/lpp/Printsrv/samples directory” on page 246
- “z/OS UNIX commands for Infoprint Server” on page 247

Application programming interface

Table 133 lists the changes to the Infoprint Server application programming interface. For more information, see *z/OS Infoprint Server Customization*.

Table 133. Summary of Infoprint Server application programming interface changes

Function or data structure	Release	Description	Reason for change
DocumentInfo	z/OS V1R12	Updated: New field high_size was added.	Support for large files (>2GB)
GetAPIVersionNumber	z/OS V1R12	New: Returns the version number of the API.	Support for large files (>2GB)

Configuration files

Table 134 lists the new and changed configuration files that Infoprint Server uses. For more information, see *z/OS Infoprint Server Customization*.

Table 134. Summary of new and changed Infoprint Server configuration files

Configuration file	Release	Description	Reason for change
aopd.conf	z/OS V2R1	Updated: These attributes are new in the aopd.conf file: <ul style="list-style-type: none"> dynamic-configuration lets you enable dynamic configuration. xcf-group-name lets you specify a unique qualifier for the Cross-system coupling facility (XCF) group name. 	Dynamic configuration
	z/OS V2R1	Updated: If dynamic configuration is enabled, you must specify the following attributes in the system configuration definition instead of in the aopd.conf file: <ul style="list-style-type: none"> ascii-codepage specifies the name of an IBM-supplied or custom ASCII code page supported by the z/OS iconv utility. console-name specifies the name of the extended MCS console that Infoprint Central uses to send commands to the z/OS system. ebcdic-codepage specifies the name of an IBM-supplied or custom EBCDIC code page supported by the z/OS iconv utility. ipp-port-number specifies the number of the port at which the IPP Server waits for print requests. job-prefix specifies a prefix that Print Interface and NetSpool use for the job IDs of output data sets that they allocate on the JES spool. log-retention specifies the number of days worth of messages that Infoprint Server retains in the common message log. lpd-port-number specifies the number of the port at which the Infoprint Server LPD waits for print requests. max-historical-inventory-size specifies the maximum size in megabytes (MBs) of the Historical Inventory, /var/Printsrv/hinv. smf-recording indicates whether IP PrintWay extended mode writes SMF type 6 records for data sets that it sends to a printer or email destination. snmp-community specifies the name assigned to the SNMP community for making SNMP requests to the z/OS system. 	Dynamic configuration
	z/OS V1R13	Updated: The jes-name attribute is new in the aopd.conf file. It specifies the name of a secondary JES2 system.	Secondary JES2 support

Table 134. Summary of new and changed Infoprint Server configuration files (continued)

Configuration file	Release	Description	Reason for change
aopmsg.conf	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server ignores this file if it exists. You must specify these attributes in the system configuration definition instead of in the aopmsg.conf file: <ul style="list-style-type: none"> hardcopy-messages specifies which additional messages Infoprint Server sends to the hardcopy log. hardcopy-message-list specifies the message IDs of the messages that Infoprint Server sends to the hardcopy log. 	Dynamic configuration

Environment variables

Table 135 lists the new and changed environment variables that Infoprint Server uses. For more information, see *z/OS Infoprint Server Customization*.

Table 135. Summary of new and changed Infoprint Server environment variables

Environment variable	Release	Description	Reason for change
AOP_ALLOW_ALL_CHARACTERS_IN_LINE_DATA	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The allow-all-characters-in-line-data attribute in the system configuration definition replaces it.	Dynamic configuration
AOP_APPLID	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The applid attribute in the system configuration definition replaces it.	Dynamic configuration
AOP_BLANK_TRUNCATION_CLASSES	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The blank-truncation-classes attribute in the system configuration definition replaces it.	Dynamic configuration
AOP_IGNORE_DCF_ROUTING_ERRORS	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The ignore-dcf-routing-errors attribute in the system configuration definition replaces it.	Dynamic configuration
AOP_MAIL_DO_NOT_ADD_SUFFIX	z/OS V2R1	Deleted: If you run IP PrintWay extended mode and dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The mail-do-not-add-suffixes attribute in the system configuration definition replaces it. If you run IP PrintWay basic mode, continue to specify the AOP_MAIL_DO_NOT_ADD_SUFFIX environment variable in the IP PrintWay basic mode startup procedure.	Dynamic configuration
AOP_MAIL_PRESERVE_SUFFIXES	z/OS V2R1	Deleted: If you run IP PrintWay extended mode and dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The mail-preserve-suffixes attribute in the system configuration definition replaces it. If you run IP PrintWay basic mode, continue to specify the AOP_MAIL_PRESERVE_SUFFIXES environment variable in the IP PrintWay basic mode startup procedure.	Dynamic configuration

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Table 135. Summary of new and changed Infoprint Server environment variables (continued)

Environment variable	Release	Description	Reason for change
AOP_MAIL_USE_FIRST_ADDRESS	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The mail-use-first-address attribute in the system configuration definition replaces it.	Dynamic configuration
	z/OS V1R13	New: IP PrintWay extended mode sends all documents in an output group to the email addresses for the first document in the output group. IP PrintWay basic mode does not support this variable.	Email enhancements
AOP_MAXTHREADTASKS	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The max-thread-tasks attribute in the system configuration definition replaces it.	Dynamic configuration
AOP_MVS_RETURN_CODES	z/OS V1R12	New: Returns MVS return codes (0, 4, 8) from a transform instead of UNIX return codes (0, 1).	Support for Infoprint Transforms to AFP V2.2
AOP_SELECT_WORK_FROM_HOLD_QUEUE	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The select-work-from-hold-queue attribute in the system configuration definition replaces it.	Dynamic configuration
AOP_SUPPRESS_POST_UNIX_FILTER_FORMATTING	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The suppress-post-unix-filter-formatting attribute in the system configuration definition replaces it.	Dynamic configuration
AOPHINVD_MAXTHREADTASKS	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The aophinvd-max-thread-tasks attribute in the system configuration definition replaces it.	Dynamic configuration
AOPIPPD_MAXTHREADTASKS	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The aoppidd-max-thread-tasks attribute in the system configuration definition replaces it.	Dynamic configuration
AOPLIMIT_DOCS	z/OS V1R12	New: Limits the number of documents that Infoprint Central displays.	Support for large number of documents
AOPLIMIT_JOBS	z/OS V1R12	New: Limits the number of print jobs that Infoprint Central displays.	Support for large number of documents
AOPLPD_MAXTHREADTASKS	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The aoplpd-max-thread-tasks attribute in the system configuration definition replaces it.	Dynamic configuration
AOPMAILER	z/OS V2R1	Deleted: If you run IP PrintWay extended mode and dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The mailer-path-name attribute in the system configuration definition replaces it. If you run IP PrintWay basic mode, continue to specify the AOPMAILER environment variable in the IP PrintWay basic mode startup procedure.	Dynamic configuration
AOPMAILER_OPTIONS	z/OS V2R1	Deleted: If you run IP PrintWay extended mode and dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The mailer-options attribute in the system configuration definition replaces it. If you run IP PrintWay basic mode, continue to specify the AOPMAILER_OPTIONS environment variable in the IP PrintWay basic mode startup procedure.	Dynamic configuration
AOPNETD_MAXTHREADTASKS	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The aopnetd-max-thread-tasks attribute in the system configuration definition replaces it.	Dynamic configuration

Table 135. Summary of new and changed Infoprint Server environment variables (continued)

Environment variable	Release	Description	Reason for change
AOPNETD_USE_FIXED_JOBID	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The netspool-use-fixed-jobid attribute in the system configuration definition replaces it.	Dynamic configuration
AOPNETD_USE_UNALTERED_JOBID	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The netspool-use-unaltered-jobid attribute in the system configuration definition replaces it.	Dynamic configuration
AOPOUTD_MAXTHREADTASKS	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The aopoutd-max-thread-tasks attribute in the system configuration definition replaces it.	Dynamic configuration
AOPSDBD_MAXTHREADTASKS	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The aopsdbd-max-thread-tasks attribute in the system configuration definition replaces it.	Dynamic configuration
AOPSSID_MAXTHREADTASKS	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The aopssid-max-thread-tasks attribute in the system configuration definition replaces it.	Dynamic configuration
AOPSUBD_MAXTHREADTASKS	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The aopsubd-max-thread-tasks attribute in the system configuration definition replaces it.	Dynamic configuration
AOPWSMD_MAXTHREADTASKS	z/OS V2R1	Deleted: If dynamic configuration is enabled, Infoprint Server no longer uses this environment variable. The aopwsmd-max-thread-tasks attribute in the system configuration definition replaces it.	Dynamic configuration
JAVA_HOME	z/OS V2R1	Updated: For Infoprint Central and the IPP Server, specifies the location of Java™ 7.0.	Java 7.0 support
	z/OS V1R12	Updated: For Infoprint Central, specifies the location of Java 5.0 or 6.0 files. For IPP Server, specifies the location of Java 6.0 files.	Java 6.0 support
LIBPATH	z/OS V1R12	Updated: Specifies the IBM XML Toolkit V1.10 libraries.	Support for XML Toolkit V1.10

Exits

Table 136 lists the new and changed Infoprint Server exits. For more information, see *z/OS Infoprint Server Customization*.

Table 136. Summary of new and changed Infoprint Server exits

Exits	Release	Description	Reason for change
IP PrintWay Response Notification exit	z/OS V1R12	Updated: IP PrintWay extended mode now supports the Response Notification exit. In previous releases, only IP PrintWay basic mode supported this exit.	Enhancements to IP PrintWay extended mode.

Filters

There are no new or changed Infoprint Server filters.

Infoprint Central

Table 137 lists the new and changed fields in Infoprint Central. For more information, see the Infoprint Central help system.

Table 137. Summary of new and changed Infoprint Central fields

Field	Release	Description	Reason for change
Age	z/OS V1R13	New: Displays the age of print jobs on the JES spool.	Infoprint Central enhancements
Direct download	z/OS V1R13	New: Displays whether PSF sends MO:DCA-P data directly to the AFP Download Plus receiver.	Printer Inventory enhancements for PSF
Display status	z/OS V1R13	New: Displays whether PSF displays status information for the AFP Download Plus receiver.	Printer Inventory enhancements for PSF
Email embedded headers	z/OS V1R13	New: Displays whether documents with line-data format can contain email headers.	Email enhancements
Email inline message	z/OS V1R13	New: Displays data that is included inline at the beginning of each email.	Email enhancements
Email inline text and line data	z/OS V1R13	New: Displays whether data in text and line-data documents is included inline in the body of the email.	Email enhancements
Fail on error	z/OS V1R12	New: Displays whether the transform to AFP fails when data stream errors or warnings occur.	Support for Infoprint Transforms to AFP V2.2
No response action	z/OS V1R13	Updated: Displays the action that PSF takes when the response timeout value expires for an AFP Download Plus receiver.	Printer Inventory enhancements for PSF
No response notify	z/OS V1R13	New: Displays the user ID to which PSF sends a message when a response is not received from the AFP Download Plus receiver.	Printer Inventory enhancements for PSF
Page limit (AFP-only): Lower	z/OS V1R13	New: Displays the total number of AFP pages used as the lower limit for selecting print jobs from the JES spool.	IP PrintWay job-selection by records and AFP pages
Page limit (AFP-only): Upper	z/OS V1R13	New: Displays the total number of AFP pages used as the upper limit for selecting print jobs from the JES spool.	IP PrintWay job-selection by records and AFP pages
Paper length	z/OS V1R13	New: Displays the length of the paper.	Printer Inventory enhancements for PSF
Paper width	z/OS V1R13	New: Displays the width of the paper.	Printer Inventory enhancements for PSF
Presentation text objects (PTOCA)	z/OS V1R13	New: Displays whether PSF includes PTOCA objects inline.	Printer Inventory enhancements for PSF
Record limit: Lower	z/OS V1R13	New: Displays the total number of records used as the lower limit for selecting print jobs from the JES spool.	IP PrintWay job-selection by records and AFP pages
Record limit: Upper	z/OS V1R13	New: Displays the total number of records used as the upper limit for selecting print jobs from the JES spool.	IP PrintWay job-selection by records and AFP pages
Recovery pages	z/OS V1R13	New: Displays how often PSF synchronizes with the AFP Download Plus receiver.	Printer Inventory enhancements for PSF

Table 137. Summary of new and changed Infoprint Central fields (continued)

Field	Release	Description	Reason for change
Report Line-Mode Conversion paper-length errors	z/OS V1R13	New: Displays whether the 3800 Line-Mode Conversion function reports paper-length errors.	Printer Inventory enhancements for PSF
Save printer information	z/OS V1R13	Deleted: Deleted because PSF V4 does not use it.	Printer Inventory enhancements for PSF
Response timeout	z/OS V1R13	New: Displays the maximum number of seconds PSF waits for a response from the AFP Download Plus receiver.	Printer Inventory enhancements for PSF
Send messages on failure	z/OS V1R12	New: Displays whether PSF sends all messages to the AFP Download Plus receiver when it cannot send an output data set.	AFP Download Plus support
Send separator pages	z/OS V1R12	New: Displays whether PSF sends separator pages to the AFP Download Plus receiver.	AFP Download Plus support
Submitted within	z/OS V1R13	Updated: Field Submitted within on the Work with Print Jobs panel is now called Submitted and lets you select two new options: More than and Less than .	Infoprint Central enhancements
Trailer error page	z/OS V1R12	New: Displays whether the transform to AFP writes messages to a trailer error page when data stream errors or warnings occur.	Support for Infoprint Transforms to AFP V2.2
Use Line-Mode Migration LINECT	z/OS V1R13	New: Displays whether the Line-Mode Migration function uses the number of lines specified in the LINECT parameter.	Printer Inventory enhancements for PSF

ISPF panels

Table 138 lists the new and changed Infoprint Server ISPF panels. For more information, see the ISPF help system.

Table 138. Summary of new and changed Infoprint Server ISPF panels

ISPF panel	Release	Description	Reason for change
Email Protocol (printer definition)	z/OS V1R13	Updated: Displays new fields: <ul style="list-style-type: none"> • Embedded headers: Specifies whether documents with line-data format can contain email headers. • Inline message: Specifies data that is included inline at the beginning of each email. • Inline text and line data: Specifies whether data in text and line-data documents is included inline in the body of the email. 	Email enhancements
Infoprint Server: System Configuration	z/OS V2R1	New: This panel lets authorized administrators customize Infoprint Server. To view and edit fields on this panel, select Option 8 System on the Infoprint Server: Printer Inventory Manager ISPF panel. The Log stream name field lets you specify the name of a system logger log stream that Infoprint Server uses for messages.	Dynamic configuration System logger

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Table 138. Summary of new and changed Infoprint Server ISPF panels (continued)

ISPF panel	Release	Description	Reason for change
Job Selection Rule	z/OS V1R13	Updated: Contains new fields: <ul style="list-style-type: none"> • Page limit (AFP-only): Specifies the total number of AFP pages used as the lower and upper limits for selecting print jobs from the JES spool. • Record limit: Specifies the total number of records used as the lower and upper limits for selecting print jobs from the JES spool. 	IP PrintWay job-selection by records and AFP pages
Processing (printer definition)	z/OS V1R12	Updated: Contains new fields: <ul style="list-style-type: none"> • Fail on error: Specifies whether the transform to AFP fails when data stream errors or warnings occur. • Trailer error page: Specifies whether the transform to AFP writes messages to a trailer error page when data stream errors or warnings occur. 	Support for Infoprint Transforms to AFP V2.2
PSF FSA, AFP Download Plus	z/OS V1R13	Updated: Contains new fields: <ul style="list-style-type: none"> • Direct download: Specifies whether PSF sends MO:DCA-P data directly to the AFP Download Plus receiver. • Display status: Specifies whether PSF displays status information. • No response action: Specifies the action that PSF takes when the response timeout value expires. • No response notify: Specifies the user ID to which PSF sends a message when a response is not received from the AFP Download Plus receiver. • Paper length: Specifies the length of the paper. • Paper width: Specifies the width of the paper. • Presentation text objects (PTOCA): Specifies whether PSF includes PTOCA objects inline. • Recovery pages: Specifies how often PSF synchronizes with the AFP Download Plus receiver. • Report Line-Mode Conversion paper-length errors: Specifies whether the 3800 Line-Mode Conversion function reports paper-length errors. • Response timeout: Specifies the maximum number of seconds to wait for a response. • Use Line-Mode Migration LINECT: Specifies whether the Line-Mode Migration function uses the LINECT parameter. 	Printer Inventory enhancements for PSF

Table 138. Summary of new and changed Infoprint Server ISPF panels (continued)

ISPF panel	Release	Description	Reason for change
PSF FSA, AFP Download Plus	z/OS V1R12	Updated: Contains new fields: <ul style="list-style-type: none"> • Send messages on failure: Specifies whether PSF sends all messages to the AFP Download Plus receiver when it cannot send an output data set. • Send separator pages: Specifies whether PSF sends separator pages to the AFP Download Plus receiver. 	Printer Inventory enhancements for PSF
PSF FSA	z/OS V1R13	Updated: Field Save printer information field was deleted because PSF V4 does not support it.	Printer Inventory enhancements for PSF
PSF FSS	z/OS V1R13	Updated: New field Log messages specifies whether PSF writes messages in the Infoprint Server common message log.	Common message log enhancements for PSF

JCL parameters

There are no new and changed JCL parameters for Infoprint Server.

Job attributes

Table 139 lists the new and changed Infoprint Server job attributes. For more information, see *z/OS Infoprint Server Operation and Administration*.

Table 139. Summary of new and changed Infoprint Server job attributes

Attribute	Release	Description	Reason for change
fail-on-transform-error	z/OS V1R12	New: Specifies whether the transform to AFP fails when data stream errors or warnings occur.	Support for Infoprint Transforms to AFP V2.2
jes-form-length	z/OS V1R12	New: Specifies the paper length.	Job submission enhancement
mail-embedded-headers	z/OS V1R13	New: Specifies whether the document with line-data format contain email headers.	Email enhancements
mail-inline-text	z/OS V1R13	New: Specifies whether data in text and line-data documents is included inline in the body of the email.	Email enhancements
trailer-transform-error-page	z/OS V1R12	New: Specifies whether the transform to AFP writes messages to a trailer error page when data stream errors or warnings occur.	Support for Infoprint Transforms to AFP V2.2

Printer Inventory attributes

Table 140 lists the new and changed attributes that can be specified in the Printer Inventory. For more information, see *z/OS Infoprint Server Operation and Administration*.

Table 140. Summary of new and changed Infoprint Server Printer Inventory attributes

Attribute	Release	Description	Reason for change
allow-all-characters-in-line-data	z/OS V2R1	New: This attribute determines how Infoprint Server detects the data format of documents that contain line data. This attribute is equivalent to the AOP_ALLOW_ALL_CHARACTERS_IN_LINE_DATA environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
aophinvd-max-thread-task	z/OS V2R1	New: This attribute specifies the maximum number of MVS tasks that aophinvd can have concurrently active. This attribute is equivalent to the AOPIPPD_MAXTHREADTASKS environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
aopipdpd-max-thread-tasks	z/OS V2R1	New: This attribute specifies the maximum number of MVS tasks that aopipdpd can have concurrently active. This attribute is equivalent to the AOPIPPD_MAXTHREADTASKS environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
aoplpd-max-thread-tasks	z/OS V2R1	New: This attribute specifies the maximum number of MVS tasks that aoplpd can have concurrently active. This attribute is equivalent to the AOPLPD_MAXTHREADTASKS environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
aopnetd-max-thread-tasks	z/OS V2R1	New: This attribute specifies the maximum number of MVS tasks that aopnetd can have concurrently active. This attribute is equivalent to the AOPNETD_MAXTHREADTASKS environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
aopoutd-max-thread-tasks	z/OS V2R1	New: This attribute specifies the maximum number of MVS tasks that aopoutd can have concurrently active. This attribute is equivalent to the AOPOUTD_MAXTHREADTASKS environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
aopsdbd-max-thread-tasks	z/OS V2R1	New: This attribute specifies the maximum number of MVS tasks that aopsdbd can have concurrently active. This attribute is equivalent to the AOPSDBD_MAXTHREADTASKS environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration

Table 140. Summary of new and changed Infoprint Server Printer Inventory attributes (continued)

Attribute	Release	Description	Reason for change
aopsubd-max-thread-tasks	z/OS V2R1	New: This attribute specifies the maximum number of MVS tasks that aopsubd can have concurrently active. This attribute is equivalent to the AOPSUBD_MAXTHREADTASKS environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
aopssid-max-thread-tasks	z/OS V2R1	New: This attribute specifies the maximum number of MVS tasks that aopssid can have concurrently active. This attribute is equivalent to the AOPSSID_MAXTHREADTASKS environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
aopwsmd-max-thread-tasks	z/OS V2R1	New: This attribute specifies the maximum number of MVS tasks that aopwsmd can have concurrently active. This attribute is equivalent to the AOPWSMD_MAXTHREADTASKS environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
applid	z/OS V2R1	New: This attribute specifies the application program ID that IP PrintWay extended mode uses to establish a VTAM session with printers. This attribute is equivalent to the AOP_APPLID environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
ascii-codepage	z/OS V2R1	New: This attribute specifies The name of an IBM-supplied or custom ASCII code page supported by the z/OS iconv utility. This attribute is equivalent to the ascii-codepage attribute that you can specify in the aopd.conf file when dynamic configuration is not enabled.	Dynamic configuration
blank-truncation-classes	z/OS V2R1	New: This attribute specifies the list of JES output classes for which IP PrintWay removes blanks from the end of records or lines. This attribute is equivalent to the AOP_BLANK_TRUNCATION_CLASSES environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
configuration-version	z/OS V2R1	New: This attribute specifies the level of the system configuration definition.	Dynamic configuration
console-name	z/OS V2R1	New: This attribute specifies the name of the extended MCS console that Infoprint Central uses to send commands to the z/OS system. This attribute is equivalent to the console-name attribute that you can specify in the aopd.conf file when dynamic configuration is not enabled.	Dynamic configuration
direct-download	z/OS V1R13	New: This attribute specifies whether PSF sends MO:DCA-P data directly to the AFP Download Plus receiver.	Printer Inventory enhancements for PSF
display-status	z/OS V1R13	New: This attribute specifies whether PSF displays status information.	Printer Inventory enhancements for PSF

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Table 140. Summary of new and changed Infoprint Server Printer Inventory attributes (continued)

Attribute	Release	Description	Reason for change
ebcdic-codepage	z/OS V2R1	New: This attribute specifies the name of an IBM-supplied or custom EBCDIC code page supported by the z/OS iconv utility. This attribute is equivalent to the ebcdic-codepage attribute that you can specify in the aopd.conf file when dynamic configuration is not enabled.	Dynamic configuration
fail-on-transform-error	z/OS V1R12	New: This attribute specifies whether the transform to AFP fails when data stream errors or warnings occur.	Support for Infoprint Transforms to AFP V2.2
hardcopy-messages	z/OS V2R1	New: This attribute specifies which additional messages Infoprint Server sends to the hardcopy log. This attribute is equivalent to the hardcopy-messages attribute that you can specify in the aopmsg.conf file when dynamic configuration is not enabled.	Dynamic configuration
hardcopy-message-list	z/OS V2R1	New: This attribute specifies the message IDs of the messages that Infoprint Server sends to the hardcopy log. This attribute is equivalent to the hardcopy-message-list attribute that you can specify in the aopmsg.conf file when dynamic configuration is not enabled.	Dynamic configuration
ignore-dcf-routing-errors	z/OS V2R1	New: This attribute indicates whether IP PrintWay extended mode writes an error message when it cannot find a printer definition in the Printer Inventory that matches the specified DEST, CLASS, and FORMS JCL parameters. This attribute is equivalent to the AOP_IGNORE_DCF_ROUTING_ERRORS environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
inline-ptoca-objects	z/OS V1R13	New: This attribute specifies whether PSF includes PTOCA objects inline.	Printer Inventory enhancements for PSF
ipp-port-number	z/OS V2R1	New: This attribute specifies the number of the port at which the IPP Server waits for print requests. This attribute is equivalent to the ipp-port-number attribute that you can specify in the aopd.conf file when dynamic configuration is not enabled.	Dynamic configuration
job-prefix	z/OS V2R1	New: This attribute specifies a prefix that Print Interface and NetSpool use for the job IDs of output data sets that they allocate on the JES spool. This attribute is equivalent to the job-prefix attribute that you can specify in the aopd.conf file when dynamic configuration is not enabled.	Dynamic configuration
log-messages	z/OS V1R13	New: This attribute specifies whether PSF writes messages in the Infoprint Server common message log.	Printer Inventory enhancements for PSF

Table 140. Summary of new and changed Infoprint Server Printer Inventory attributes (continued)

Attribute	Release	Description	Reason for change
log-retention	z/OS V2R1	New: This attribute specifies the number of days worth of messages that Infoprint Central displays for print jobs and printers. Also, the number of days for which Infoprint Central displays print jobs that have been removed from the JES spool. This attribute is equivalent to the log-retention attribute that you can specify in the aopd.conf file when dynamic configuration is not enabled. If dynamic configuration is enabled, the default value changes to 1 day. If dynamic configuration is not enabled, the default value is 0 unless the Infoprint Central daemon is started, in which case the default value is 1 day.	Dynamic configuration
logstream-name	z/OS V2R1	New: This attribute specifies the name of the log stream that is defined to the MVS system logger for Infoprint Server messages. This attribute is only available if dynamic configuration is enabled.	System logger
lower-page-limit	z/OS V1R13	New: This attribute specifies the total number of AFP pages used as the lower limit for selecting print jobs from the JES spool.	IP PrintWay job-selection by records and AFP pages
lower-record-limit	z/OS V1R13	New: This attribute specifies the total number of records used as the lower limit for selecting print jobs from the JES spool.	IP PrintWay job-selection by records and AFP pages
lpd-port-number	z/OS V2R1	New: This attribute specifies the number of the port at which the Infoprint Server LPD waits for print requests. This attribute is equivalent to the lpd-port-number attribute that you can specify in the aopd.conf file when dynamic configuration is not enabled.	Dynamic configuration
mail-embedded-headers	z/OS V1R13	New: This attribute specifies whether documents with line-data format can contain email headers.	Email enhancements
mail-do-not-add-suffixes	z/OS V2R1	New: This attribute indicates whether IP PrintWay extended mode appends a suffix to file names specified in the MAILFILE JCL parameter or the mail-file-name job attribute. This attribute is equivalent to the AOP_MAIL_DO_NOT_ADD_SUFFIX environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
mail-inline-message	z/OS V1R13	New: This attribute specifies data that is included inline at the beginning of each email.	Email enhancements
mail-inline-text	z/OS V1R13	New: This attribute specifies whether data in text and line-data documents is included inline in the body of the email.	Email enhancements
mail-preserve-suffixes	z/OS V2R1	New: This attribute specifies the suffixes that IP PrintWay extended mode preserves in file names specified in the MAILFILE JCL parameter or in the mail-file-name job attribute. This attribute is equivalent to the AOP_MAIL_PRESERVE_SUFFIXES environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration

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Table 140. Summary of new and changed Infoprint Server Printer Inventory attributes (continued)

Attribute	Release	Description	Reason for change
mail-use-first-address	z/OS V2R1	New: When the print job contains more than one document, this attribute indicates whether IP PrintWay extended mode sends each document to the email address or addresses specified for the first document in the print job. This attribute is equivalent to the AOP_MAIL_USE_FIRST_ADDRESS environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
mailer-options	z/OS V2R1	New: This attribute specifies options for the z/OS UNIX sendmail command. This attribute is equivalent to the AOPMAILER_OPTIONS environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
mailer-path-name	z/OS V2R1	New: This attribute specifies the full path name of the z/OS UNIX sendmail command that IP PrintWay extended mode uses to send output to email destinations. This attribute is equivalent to the AOPMAILER environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
max-historical-inventory-size	z/OS V2R1	New: This attribute specifies the maximum size in megabytes (MBs) of the Historical Inventory, /var/Printsrv/hinv. This attribute is equivalent to the max-historical-inventory-size attribute that you can specify in the aopd.conf file when dynamic configuration is not enabled.	Dynamic configuration
max-thread-tasks	z/OS V2R1	New: This attribute specifies limit is the maximum number of MVS tasks that a single process (daemon) can have concurrently active. This attribute is equivalent to the AOP_MAXTHREADTASKS environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
netspool-use-fixed-jobid	z/OS V2R1	New: This attribute indicates whether NetSpool assigns the same job ID to all output data sets that it creates on the JES spool. This attribute is equivalent to the AOPNETD_USE_FIXED_JOBID environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
netspool-use-unaltered-jobid	z/OS V2R1	New: This attribute indicates whether NetSpool assigns a job ID to output data sets that it creates on the JES spool. This attribute is equivalent to the AOPNETD_USE_UNALTERED_JOBID environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
paper-length	z/OS V1R13	New: This attribute specifies the length of the paper.	Printer Inventory enhancements for PSF
paper-width	z/OS V1R13	New: This attribute specifies the width of the paper.	Printer Inventory enhancements for PSF
report-line-mode-conversion-paper-length-errors	z/OS V1R13	New: This attribute specifies whether the 3800 Line-Mode Conversion function reports paper length errors.	Printer Inventory enhancements for PSF
response-timeout	z/OS V1R13	New: This attribute specifies the maximum number of seconds PSF waits for a response from the AFP Download Plus receiver.	Printer Inventory enhancements for PSF

Table 140. Summary of new and changed Infoprint Server Printer Inventory attributes (continued)

Attribute	Release	Description	Reason for change
select-work-from-hold-queue	z/OS V2R1	New: This attribute indicates whether IP PrintWay extended mode selects new held output groups from the JES spool. This attribute is equivalent to the AOP_SELECT_WORK_FROM_HOLD_QUEUE environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
send-messages-on-failure	z/OS V1R12	New: This attribute specifies whether PSF sends all messages to the AFP Download Plus receiver when it cannot send an output data set.	AFP Download Plus support
send-separator-pages	z/OS V1R12	New: This attribute specifies whether PSF sends separator pages to the AFP Download Plus receiver.	AFP Download Plus support
smf-recording	z/OS V2R1	New: This attribute indicates whether IP PrintWay extended mode writes SMF type 6 records for data sets that it sends to a printer or email destination. SMF type 6 records contain accounting information. This attribute is equivalent to the smf-recording attribute that you can specify in the aopd.conf file when dynamic configuration is not enabled.	Dynamic configuration
snmp-community	z/OS V2R1	New: This attribute specifies the name assigned to the SNMP community for making SNMP requests to the z/OS system. This attribute is equivalent to the snmp-community attribute that you can specify in the aopd.conf file when dynamic configuration is not enabled.	Dynamic configuration
suppress-post-unix-filter-formatting	z/OS V2R1	New: This attribute indicates whether IP PrintWay extended mode formats line or text data after a UNIX filter processes it. This attribute is equivalent to the AOP_SUPPRESS_POST_UNIX_FILTER_FORMATTING environment variable that you can specify in the aopstart EXEC when dynamic configuration is not enabled.	Dynamic configuration
trailer-transform-error-page	z/OS V1R12	New: This attribute specifies whether the transform to AFP writes messages to a trailer error page when data stream errors or warnings occur.	Support for Infoprint Transforms to AFP V2.2
transmit-recovery-pages	z/OS V1R13	New: This attribute specifies how often PSF synchronizes with the AFP Download Plus receiver.	Printer Inventory enhancements for PSF
upper-page-limit	z/OS V1R13	New: This attribute specifies the total number of AFP pages used as the upper limit for selecting print jobs from the JES spool.	IP PrintWay job-selection by records and AFP pages
upper-record-limit	z/OS V1R13	New: This attribute specifies the total number of records used as the upper limit for selecting print jobs from the JES spool.	IP PrintWay job-selection by records and AFP pages
use-line-mode-migration-linect	z/OS V1R13	New: This attribute specifies whether the Line-Mode Migration function uses the LINECT parameter.	Printer Inventory enhancements for PSF

RACF profiles

Table 141 lists the new and changed RACF resource profiles that Infoprint Server uses. For more information, see *z/OS Infoprint Server Customization*.

Table 141. Summary of new and changed Infoprint Server RACF resource profiles

Resource profile	Release	Description	Reason for change
AOP.CONFIGURATION	z/OS V2R1	<p>New: This profile in the PRINTSRV class lets you control access to the new system configuration definition in the Printer Inventory:</p> <ul style="list-style-type: none"> • READ access lets you view the system configuration definition. • UPDATE access lets you view and edit the system configuration definition. <p>READ or UPDATE access to the AOP.ADMINISTRATOR profile in the PRINTSRV class also lets you view the system configuration definition.</p> <p>If the AOP.CONFIGURATION profile does not exist, users who have UPDATE access to the AOP.ADMINISTRATOR profile in the PRINTSRV class can view and edit the system configuration definition.</p>	Dynamic configuration

SMF type 6 record for IP PrintWay

Table 142 lists the new and changed fields in the SMF type 6 record for IP PrintWay extended mode. For more information, see *z/OS MVS System Management Facilities (SMF)*.

Table 142. Summary of new and changed SMF type 6 record for Infoprint Server

Field in Type 6 record	Release	Description	Reason for change
SMF6ACCT	z/OS V2R1	New: Contains accounting information from the JOB JCL statement.	SMF enhancements
SMF6ACTL	z/OS V2R1	New: Contains the length of the accounting information in the SMF6ACCT field.	SMF enhancements
SMF6FTL	z/OS V2R1	Updated: Indicates whether fields SMF6ACTL and SMF6ACCT are present in the record.	SMF enhancements

/usr/lpp/Printsrv/samples directory

Table 143 lists the new and changed files in the Infoprint Server /usr/lpp/Printsrv/samples directory. For more information, see *z/OS Infoprint Server Customization*.

Table 143. Summary of new and changed Infoprint Server files in /usr/lpp/Printsrv/samples directory

File	Release	Description	Reason for change
aopd.conf	z/OS V2R1	Updated: The comments in the aopd.conf sample file were updated to identify the attributes that are ignored when dynamic configuration is enabled.	Dynamic configuration
aopmsg.conf	z/OS V2R1	Updated: The comments in the aopmsg.conf sample file were updated to say that the aopmsg.conf file is ignored when dynamic configuration is enabled.	Dynamic configuration

Table 143. Summary of new and changed Infoprint Server files in /usr/lpp/Printsrv/samples directory (continued)

File	Release	Description	Reason for change
aopxfd.conf	z/OS V2R1	Updated: The comments in the aopxfd.conf sample file were updated to: <ul style="list-style-type: none"> • Remove information about the IBM Infoprint transforms from AFP to PCL, PDF, and PostScript because these products are out of service • Add information for V2R3 of IBM Infoprint Transforms to AFP • Update information for IBM Print Transforms from AFP for Infoprint Server for z/OS 	Support for IBM transform products

z/OS UNIX commands for Infoprint Server

Table 144 lists the new and changed z/OS UNIX commands provided by Infoprint Server. For more information, see *z/OS Infoprint Server Operation and Administration*.

Table 144. Summary of new and changed z/OS UNIX commands for Infoprint Server

Command	Release	Description	Reason for change
pidu	z/OS V1R12	Updated: The new display-fully command displays the attributes of a printer definition and all its included components.	Release update

Chapter 15. Integrated Security Services summary of interface changes

This topic contains new and changed interfaces for:

- Enterprise Identity Mapping (EIM)
 - “Utilities”
- Network Authentication Service
 - “APIs”
 - “Configuration options”
 - “Environment variables”

Enterprise Identity Mapping (EIM) summary of interface changes

This topic summarizes the new and changed EIM interfaces.

Commands

There are no new or changed commands.

Utilities

There are no new or changed utilities.

Network Authentication Service summary of interface changes

APIs

There are no new or changed APIs.

Configuration options

There are no new or changed configuration options.

Environment variables

There are no new or changed environment variables.

Chapter 16. ISPF summary of interface changes

The ISPF interfaces described in this topic are:

- “ISPF system commands”
- “ISPF primary commands”
- “ISPF line commands”
- “ISPF installation-wide exits”
- “ISPF file-tailoring skeletons”
- “ISPF configuration table keywords”
- “ISPF panel language” on page 252
- “ISPF panels” on page 252
- “ISPF services” on page 252
- “ISPF load modules” on page 252
- “ISPF variables” on page 252
- “ISPF DTL tags” on page 252

The Software Configuration and Library Manager (SCLM) interfaces described in this topic are:

- “SCLM line commands” on page 252
- “SCLM macros” on page 252
- “SCLM panels” on page 252
- “SCLM services” on page 252
- “SCLM translators” on page 252
- “SCLM variables” on page 252

ISPF system commands

There are no new or changed ISPF system commands.

ISPF primary commands

There are no new or changed ISPF primary commands.

ISPF line commands

There are no new or changed ISPF line commands.

ISPF installation-wide exits

There are no new or changed ISPF installation-wide exits.

ISPF file-tailoring skeletons

There are no new or changed ISPF file-tailoring skeletons.

ISPF configuration table keywords

There are no new or changed ISPF configuration table keywords.

ISPF

ISPF panel language

There are no new or changed ISPF panel language statements.

ISPF panels

There are no new or changed ISPF panels.

ISPF services

There are no new or changed ISPF services.

ISPF load modules

The TSO/ISPF Client Gateway now adds new load modules ISPZINL and ISPZINO. ISPZINL is distributed in the system SIEALNKE data set. ISPZINO is distributed in the ISPF LPA data set. Both load modules are required to be available for gateway operations.

ISPF variables

There are no new or changed ISPF variables.

ISPF DTL tags

There are no new or changed SCLM line commands.

SCLM line commands

There are no new or changed SCLM line commands.

SCLM macros

There are no new or changed SCLM macros.

SCLM panels

There are no new or changed SCLM panels.

SCLM services

There are no new or changed SCLM services.

SCLM translators

There are no new or changed SCLM translators.

SCLM variables

There are no new or changed SCLM variables.

Chapter 17. JES2 summary of interface changes

In addition to the interface changes included in this topic, updates to JES2 might have resulted in SYS1.PARMLIB and SYS1.SAMPLIB member changes. See Chapter 2, “Summary of changes to SYS1.PARMLIB,” on page 5 and Chapter 4, “Summary of changes to SYS1.SAMPLIB,” on page 21 for those changes.

The JES2 interfaces described in this topic are:

- “Commands”
- “ENF records” on page 257
- “Initialization statements” on page 257
- “Installation exits” on page 258
- “Executable macros” on page 258
- “SSI function codes” on page 260

Commands

Table 145 lists the new and changed JES2 commands. See *z/OS JES2 Commands* for more detailed information.

Table 145. Summary of new and changed JES2 Commands

Interface_type	Release	Description	Reason for change
\$A Job	z/OS V2R1	Changed command: New parameter JOBCORR added.	Releases a subset of jobs by a matching job correlator parameter value.
\$ADD JOBCLASS	z/OS V2R1	New command: New command for defining a new job class.	Creates a new job class.
\$C Job	z/OS V2R1	Changed command: New parameter JOBCORR added.	Cancels a subset of jobs by a matching job correlator parameter value.
\$C O Job	z/OS V2R1	Changed command: New parameter JOBCORR added.	Cancels output for a subset of jobs by a matching job correlator parameter value.
\$D CKPTDEF	z/OS V2R1	Changed command: Changed parameter INUSE.	Displays checkpoint data set multi-access spool configuration.
\$D CLASSGRP	z/OS V2R1	New command: Display class groups.	Displays job class groups for the member.
\$D DEBUG	z/OS V2R1	Changed command: New command for displaying debug settings.	Displays JES2 monitoring and recording activity settings.
\$D I(nnnmm)	z/OS V2R1	Changed command: CLass parameter updated.	CLass parameter supports up to eight characters.
\$D INITINFO	z/OS V2R1	New command: New command for displaying initialization information.	Displays JES2 initialization information.

Table 145. Summary of new and changed JES2 Commands (continued)

Interface_type	Release	Description	Reason for change
\$D Job	z/OS V2R1	Changed command: New parameters JOBCORR and REQUIRES_zos added. CLASS parameter updated.	Displays information about a subset of jobs by a matching job correlator parameter value. Displays the required z/OS level. CLASS parameter supports up to eight characters.
\$D JOBCLASS	z/OS V2R1	Changed command: New parameters DSENQSHR and SYSSYM added. Updated jobclass parameter.	Displays the setting for shared control of data set serialization. Displays system symbols setting. Jobclass supports up to eight characters.
\$D JOBDEF	z/OS V2R1	Changed command: New parameters CISUB_PER_AS, CNVT_ENQ, CNVT_SCHENV, INTERPRET added.	Displays the settings for subtasks, ENQ, scheduling environment and interpreter parameters.
\$DEL JOBCLASS	z/OS V2R1	New command: New command for deleting a job class.	Deletes a user-defined job class.
\$D O Job	z/OS V2R1	Changed command: New parameter JOBCORR added.	Displays output characteristics for a subset of jobs by a matching job correlator parameter value.
\$D OFF(n).JR	z/OS V2R1	Changed command: CLASS parameter changed.	Multiple job class names up to eight characters in length can be specified.
\$D OFF(n).JT	z/OS V2R1	Changed command: CLASS parameter changed.	Multiple job class names up to eight characters in length can be specified.
\$D OUTDEF	z/OS V2R1	Changed command: New parameters JOEUSE, SAPI_OPT and WS_OPT added. Removed BROADCAST parameter.	Displays number of JOES and settings for SAPI work selection optimization.
\$D RDR(nn)	z/OS V2R1	Changed command: CLASS parameter changed.	Multiple job class names up to eight characters in length can be specified.
\$D SPOOL	z/OS V2R1	Changed command: New parameter ABSTR added.	Displays the size and starting track for each SPOOL data set on the volume.
\$E Job	z/OS V2R1	Changed command: New parameter JOBCORR added. CLASS parameter updated.	Restarts a subset of jobs by a matching job correlator parameter value. CLASS parameter supports up to eight characters.
\$H Job	z/OS V2R1	Changed command: New parameter JOBCORR added. CLASS parameter updated.	Holds a subset of jobs by a matching job correlator parameter value. CLASS parameter supports up to eight characters.
\$L Job	z/OS V2R1	Changed command: New parameter JOBCORR added.	Lists job output information for a subset of jobs by a matching job correlator parameter value.

Table 145. Summary of new and changed JES2 Commands (continued)

Interface_type	Release	Description	Reason for change
\$O Job	z/OS V2R1	Changed command: New parameter JOBCORR added.	Releases or cancels held output groups for a subset of jobs by a matching job correlator parameter value.
\$P Job	z/OS V2R1	Changed command: New parameter JOBCORR added. CClass parameter updated.	Purges a subset of jobs by a matching job correlator parameter value. CClass parameter supports up to eight characters.
\$P O Job	z/OS V2R1	Changed command: New parameter JOBCORR added.	Purges output for a subset of jobs by a matching job correlator parameter value.
\$P TRACE	z/OS V1R13	Changed command: Reserved trace IDs changed.	Trace IDs 48-255 are available for customer use.
\$S Job	z/OS V2R1	Changed command: New parameter JOBCORR added.	Initiates a subset of batch jobs into execution by a matching job correlator parameter value.
\$S TRACE	z/OS V1R13	Changed command: Reserved trace IDs changed.	Trace IDs 48-255 are available for customer use.
\$T CKPTDEF	z/OS V2R1	Changed command: Changed parameter MODE.	MODE=DUPLEX does not affect the checkpoint INUSE setting for multi-access spool configuration.
\$T Init	z/OS V2R1	Changed command: New parameter JOBCORR added.	Multiple job class names up to 8 characters in length can now be specified.
\$T INTRDR	z/OS V2R1	Changed command: New parameters ASID_TRACE, JOBNAME_TRACE and JOB_NUMBER_TRACE added. CClass parameter changed.	Specifies ASID, job name and job number to use for filtering JES2 INTRDR trace points. Specifies the default execution job class for internal readers that are not specified on the JOB statement.
\$T Job	z/OS V2R1	Changed command: New parameter JOBCORR added. CClass parameter updated.	Changes a subset of jobs' class, priority or affinity by a matching job correlator parameter value. CClass parameter supports up to eight characters.
\$T JOBCLASS	z/OS V2R1	Changed command: New parameters ACTIVE, DSENQSHR, GROUP, SYSSYM added. CClass parameter changed.	Sets active, data set serialization, group and system symbol job class characteristics. Multiple job class names up to 8 characters in length can now be specified.
\$T JOBDEF	z/OS V2R1	Changed command: New parameters CISUB_PER_AS, CNVT_ENQ, CNVT_SCHENV, INTERPRET added.	Sets job processing characteristics for subtasks, ENQ, scheduling environment and interpreter parameters.
\$T L(nnnn).ST(n)	z/OS V2R1	Changed command: LIMit and PLIM parameters changed.	Variable size range is 0-4294967295.

JES2

Table 145. Summary of new and changed JES2 Commands (continued)

Interface_type	Release	Description	Reason for change
\$T L(nn).JT(nn)	z/OS V2R1	Changed command: LIMit and PLIM parameters changed.	Variable size range is 0-4294967295.
\$T O Job	z/OS V2R1	Changed command: New parameter JOBCORR added.	Sets output characteristics for a subset of jobs by a matching job correlator parameter value.
\$T OFF(n).JR	z/OS V2R1	Changed command: CLass parameter changed.	Multiple job class names up to 8 characters in length can now be specified.
\$T OFF(n).JT	z/OS V2R1	Changed command: CLass and LIMit parameters changed.	Multiple job class names up to 8 characters in length can now be specified. Variable size range is 0-4294967295.
\$T OFF(n).SR	z/OS V2R1	Changed command: SYSOUT work selection processing.	Specifies work selection and processing characteristics of offload SYSOUT receivers.
\$T OFF(n).ST	z/OS V2R1	Changed command: LIMit and PLIM parameters changed.	Variable size range is 0-4294967295.
\$T OUTDEF	z/OS V2R1	Changed command: New parameters SAPI_OPT and WS_OPT added. Removed BROADCAST parameter.	Enables or disables SAPI work selection optimization.
\$T PROCLIB	z/OS V2R1	Changed command: Function updated.	\$T PROCLIB functional update.
\$T PRT(nnnnn) and \$T R(nnnnn).PR(m)	z/OS V2R1	Changed command: LIMit parameter changed.	Output size range is 0-4294967295.
\$T PUN(nn) and \$T R(nnnnn).PU(m)	z/OS V2R1	Changed command: LIMit parameter changed.	Output size range is 0-4294967295.
\$T TRACE	z/OS V1R13	Changed command: Reserved trace IDs changed.	Trace IDs 48-255 are available for customer use.
\$D SPOOL	z/OS V1R13	Changed command: New parameters MIGDATA, MPERCENT, PHASE, and TARGET added.	Displays spool migration information
\$D SPOOLDEF	z/OS V1R13	Changed command: New parameter DSNMASK added.	Displays data set mask name
\$E JOB	z/OS V1R13	Changed command: New parameter STEP added.	Restarts job at next step once current step completes
\$MSPL	z/OS V1R13	New command: Migrate a spool volume.	Migrates spool volume to new or existing spool volume
\$S SPOOL	z/OS V1R13	Changed command: New parameter DSNAME added.	Specifies a data set name for a new spool volume
\$T JOB	z/OS V1R13	Changed command: New parameter SPIN added.	SPINs JESLOG data sets or a SYSOUT DD
\$T JOBCLASS	z/OS V1R13	Changed command: New parameter JOBRC added.	Sets method JES2 will use to determine job return codes for class
\$T SPOOL	z/OS V1R13	Changed command: New parameter SPACE added.	Expands a spool volume data set
\$T SPOOLDEF	z/OS V1R13	Changed command: New parameter VOLUME added.	Sets prefix for JES2 spool volumes

ENF records

Table 146 lists the new and changed ENF records for JES2. See *z/OS JES2 Initialization and Tuning Reference* for more information.

Table 146. Summary of new and changed ENF codes for JES2

ENF Code	Release	Description	Reason for change
78	z/OS V2R1	New code: New ENF code 78	Indicates that a job is no longer eligible for execution
70	z/OS V2R1	Changed parameter: New TRACE IDs	New Trace IDs 45 and 46

Initialization statements

Table 147 lists the new and changed JES2 initialization statements. See *z/OS JES2 Initialization and Tuning Reference* for more information.

Table 147. Summary of new and changed JES2 Initialization Statements

Initialization Statement	Release	Description	Reason for change
CKPTDEF	z/OS V2R1	Changed parameter: INUSE	Release update for checkpoint data set support.
CKPTSPACE	z/OS V2R1	Changed parameter: BERTNUM	Release update for CATs support.
DEBUG	z/OS V2R1	New parameter: MEMBER_STATUS	Member status change notification.
OFF(n).JR	z/OS V2R1	Changed parameter: CLASS	Release updates for jobclass function.
OFF(n).JT	z/OS V2R1	Changed parameters: CLASS, LIMIT	Release updates for jobclass and job limits function.
INIT(nnnn)	z/OS V2R1	Changed parameter: CLASS	Release updates for jobclass function.
JOBCLASS	z/OS V2R1	New parameters: ACTIVE, DSENQSHR, SYSSYM Changed parameters: CLASS, GROUP	Release updates for jobclass function and system symbols.
JOBDEF	z/OS V2R1	New parameters: CISUB_PER_AS, CNVT_ENQ, CNVT_SCHENV, INTERPRET	Release updates for converter/interpreter subtasks.
NETSERV	z/OS V2R1	Changed parameter: STACK	INET configuration updates.
NJEDEF	z/OS V2R1	Changed parameter: OWNNODE	Parameter value requirements updates.
OUTDEF	z/OS V2R1	New parameter: SAPI_OPT Changed parameters: BROADCAST, DSLIMIT	Release updates for SAPI work selection optimization. BROADCAST obsoleted.
PROCLIB(xxxxxxxx)	z/OS V2R1	Changed parameter: xxxxxxxx	Dynamic PROCLIB support updates.
SPOOLDEF	z/OS V2R1	Changed parameter: DSNMASK	Naming requirements updates.

Table 147. Summary of new and changed JES2 Initialization Statements (continued)

Initialization Statement	Release	Description	Reason for change
TRACE(n)	z/OS V2R1	Changed parameter: START	Reserved trace IDs changed to 1-47.
JOBCLASS	z/OS V1R13	New parameter: JOBRC.	Specify method for determining job return code
SPOOL	z/OS V1R13	New statement: SPOOL.	Binds the specified spool volumes

Installation exits

Table 148 lists the new and changed JES2 installation exits. See *z/OS JES2 Installation Exits* for more information.

Table 148. Summary of new and changed JES2 Installation Exits

Exit	Release	Description	Reason for change
Exit 60	z/OS V2R1	New installation exit: JES2 converter exit (subtask)	Controls conversion processing in the JES2CI address space
Exit 59	z/OS V2R1	New installation exit: Post interpretation	Controls the interpreter when called after the converter is called in the JES2CI address space
Exit 53	z/OS V2R1	Changed installation exit: Programming considerations	Subpool usage limitations
Exit 6	z/OS V2R1	Changed installation exit: Use in conjunction with Exit 60	Only gets control when the converter is called in the JES2 address space
Exit 58	z/OS V1R13	New installation exit: Subsystem interface (SSI) end-of-step	Controls step return code and job continuation

Executable macros

Table 149 lists the new and changed JES2 executable macros. See *z/OS JES2 Macros* for more information.

Table 149. Summary of new and changed JES2 executable macros

Macro	Release	Description	Reason for change
\$\$BUSY	z/OS V2R1	Changed macro: New parameter JOA	Specifies the address of the JOA to use for processing
\$\$JOE	z/OS V2R1	Changed macro: New parameter NXPREG	Specifies work register to use to store the next pre-fetched JOE
\$\$DOGBERT	z/OS V2R1	Changed macro: New parameter GETCOUNT	Support counting control blocks of a particular type
\$\$DOGCAT	z/OS V2R1	Changed macro: New parameters BATCHONLY and GETCOPY	Process only batch job execution queues, and obtain a copy of a CAT
\$\$DSERV	z/OS V2R1	Changed macro: New parameter OPTIONS	Support for serializing checkpoint versions

Table 149. Summary of new and changed JES2 executable macros (continued)

Macro	Release	Description	Reason for change
\$ESTAE	z/OS V2R1	Changed macro: New parameter DUMP added	Support capturing a dump in the user environment
\$FREEBUF	z/OS V2R1	Changed macro: New TYPE value SUBST	Support symbol substitution
\$GETBUF	z/OS V2R1	Changed macro: New parameter BUFL for TYPE=SUBST	Support symbol substitution
\$GETHP	z/OS V2R1	Changed macro: New parameter FIX	Support page fixing storage
\$GETMAIN	z/OS V2R1	Changed macro: New TCB value CURRENT	Support associating GETMAINed storage with the current TCB
\$GETRTN	z/OS V2R1	Changed macro: New parameter MISSING	Label to branch to if the routine cannot be located
\$JBIDBLD	z/OS V2R1	Changed macro: New parameter JID1CHR	Force the macro to return a job ID with a single character prefix followed by a 7 digit job number
\$JCORBLD	z/OS V2R1	New macro: New job correlator macro	Build a job correlator for the supplied job
\$JQESERV	z/OS V2R1	Changed macro: New parameter POSTRTN	Support logical association of a series of \$JQESERV requests, treating them as one request
\$PDBFIND	z/OS V2R1	Changed macro: New DSKEY value LASTSYS	Support locating the last system data set
\$QJQE	z/OS V2R1	Changed macro: New parameter NXPREG	Specifies work register to use to store the next pre-fetched JOE
\$RETURN	z/OS V2R1	Changed macro: New parameter RCG	Support returning a 64-bit return code
\$SCANTAB	z/OS V2R1	Changed macro: Updated character set support	Support for 8 character job class character set
\$SEAS	z/OS V2R1	Changed macro: New parameters ERRET and OKRET	Label to branch to if the macro returns an error (ERRET) or returns an okay return code (OKRET)
\$SJBLOCK	z/OS V2R1	Changed macro: New parameter ACCEPT	Support nested SSI calls
\$TRACE	z/OS V2R1	Changed macro: New optional second parameter NOFILTER added to TYPE=TEST parameter	Supports skipping the trace filter tests and returning only the TEDE control block
\$WSTAB	z/OS V2R1	Changed macro: New parameter POS	Supports a work selection criteria that has the same significance before and after the "/".
\$#JOE	z/OS V1R13	Changed macro: New parameter CBADDR added	Specifies the address of JOA to use for processing
\$DOGJOE	z/OS V1R13	Changed macro: New operand KEEP added to parameter ACTION=FETCHNEXT	Specifies to not release the memory for the JOA

JES2

Table 149. Summary of new and changed JES2 executable macros (continued)

Macro	Release	Description	Reason for change
\$DOGJOE	z/OS V1R13	Changed macro: New operand JOETIME added to parameter #POST.	Updates JOECRTME if OUTDEF OUTTIME=UPDATE has been specified

SSI function codes

Table 150 lists the new and changed JES2 function codes. See *z/OS MVS Using the Subsystem Interface* for more information.

Table 150. Summary of new and changed JES2 Function Codes

SSI Function Code	Release	Description	Reason for change
85	z/OS V2R1	New SSI function code. New modify job SSI 85.	New modify job function call SSI function code 85.
82	z/OS V2R1	Changed SSI function code: Job class fields updated.	Job class and job class group updates.
80	z/OS V2R1	Changed SSI function code: STAT, STTR, STJQ, STSC, STVB, STVO new and changed fields.	Element updates for 64 bit support. Job execution support.
71	z/OS V2R1	Changed SSI function code: Checkpoint version fields updated.	Checkpoint version support.
54	z/OS V2R1	Changed SSI function code: SSVISLVL field updated.	Service level field updates.
20	z/OS V2R1	Changed SSI function code: SSRRJCRP parameter added.	New job correlator support.
1	z/OS V2R1	Changed SSI function code: SSOUFLG field updated.	User selection flags updates.
83	z/OS V1R13	Changed SSI function code: Fields and descriptions added.	JES device information services

Chapter 18. JES3 summary of interface changes

In addition to the interface changes included in this topic, updates to JES3 might have resulted in SYS1.PARMLIB and SYS1.SAMPLIB member changes. See Chapter 2, “Summary of changes to SYS1.PARMLIB,” on page 5 and Chapter 4, “Summary of changes to SYS1.SAMPLIB,” on page 21 for those changes.

The JES3 interfaces described in this topic are:

- “Commands”
- “Diagnostic codes” on page 262
- “Executable macros” on page 262
- “Initialization statements” on page 263
- “SMF records” on page 264
- “SSI function codes” on page 264

Commands

Table 151 lists the new and changed JES3 commands. See *z/OS JES3 Commands* for more detailed information.

Table 151. Summary of new and changed JES3 commands

Command	Release	Description	Reason for change
*FAIL	z/OS V2R1	Changed command: DUMP parameter updated.	NETSERV update.
*INQUIRY,J	z/OS V2R1	Changed command: U parameter updated.	Spool data set support.
*INQUIRY,JOBTRACK	z/OS V2R1	Changed command: JOBTRACK parameter updated.	ENF 70 events update.
*INQUIRY,Q	z/OS V2R1	Changed command: U parameter updated.	Spool data set support.
*MODIFY,C=class	z/OS V2R1	Changed command: New SYSSYM parameter.	Job class system symbols support
*MODIFY,CONFIG	z/OS V2R1	Changed command: New M parameter.	Member name update.
*MODIFY,JOBTRACK	z/OS V2R1	Changed command: JOBTRACK parameter updated.	ENF 70 events update.
*MODIFY,M	z/OS V2R1	Changed command: JES3DLOG updated.	JES3DLOG impact.
*MODIFY,NETSERV	z/OS V2R1	Changed command: STACK parameter updated. Start rules updated.	INET configuration. NETSERV start rules.
*START,DJdevnum	z/OS V2R1	Changed command: New DD parameter added and parameters updated.	Spool data set support..
*CALL,JU	z/OS V1R13	New command: Calls JESJCLIN Utility	Release update.
Operator activities for particular starts: spool data sets	z/OS V1R13	Spool data set updates.	Release update.
*START,main	z/OS V1R13	Changed command: Recovery of work from a failed or stopped processor.	Release update.

Diagnostic codes

Table 152 lists the new and changed JES3 diagnostic codes for z/OS V2R1 and z/OS V1R13. See *z/OS JES3 Diagnosis Reference* for a complete list and explanation of JES3 dump codes. See *z/OS MVS System Codes* for a complete list and explanation of system codes.

Table 152. Summary of new and changed JES3 diagnostic codes

Code	Release	Description	Reason for change
DM029	z/OS V2R1	New codes: New reason code added.	APAR OA38883
DM200	z/OS V2R1	Changed code: Additional information.	In-stream data
DM766	z/OS V2R1	New codes: New reason code added.	Spool delete support
DM767	z/OS V2R1	New codes: New reason code added.	Spool delete support
U0015	z/OS V1R13	New codes: New reason codes added.	Description update

Executable macros

Table 153 lists the new and changed executable macros for z/OS V2R1, V1R13, and V1R12. See *z/OS JES3 Customization* for more detailed information.

Table 153. Summary of new and changed JES3 executable macros

Executable macro	Release	Description	Reason for change
AOPEN	z/OS V2R1	Changed macro: New parameter JOBNUM added.	Spool delete support
APURGE	z/OS V2R1	Changed macro: New parameter STTRELB added.	Spool delete support
ATRACK	z/OS V2R1	Changed macro: New parameter JOBNUM added.	Spool delete support
AWRITE	z/OS V2R1	Changed macro: New parameters JOBNUM and TATUPDWR added.	Spool delete support
IATXCPYF	z/OS V2R1	Changed macro: New parameter JOBNUM added.	Spool delete support
IATXFSS	z/OS V2R1	Changed macro: New AUTOREST value for TYPE parameter.	Auto restart support
IATXJDS	z/OS V2R1	Changed macro: New parameters JOBNUM and JETUPD added.	Spool delete support
IATXEUR	z/OS V2R1	New macro: Extent utilization data retrieval macro	Spool data set support
IATXJCT	z/OS V2R1	Changed macro: New parameter AWAIT added.	ENF 70 support
IATXSEC	z/OS V2R1	Changed macro: New parameter ENTITYX added. New VERIFY keyword for ENCRYPT parameter, and new FACILITY keyword for CLASS parameter.	Job class security checking
JDSGET	z/OS V2R1	Changed macro: New parameters TYPE=SYSINDS and UPDATE added .	In-stream data and MVS Cancel support
WRTCHAIN	z/OS V2R1	Changed macro: New parameter JOBNUM added.	Spool delete support
ADEBLOCK	z/OS V1R13	Changed macro: Added new DATCC parameter.	Release update

ENF records

Table 154 lists the new and changed ENF records for JES2. See *z/OS JES3 Initialization and Tuning Reference* for more information.

Table 154. Summary of new and changed ENF codes for JES3

ENF Code	Release	Description	Reason for change
70	z/OS V2R1	New parameter: JES3 signals an ENF 70 event for job status changes.	ENF 70 support

Initialization statements

Table 155 lists the new and changed initialization statements for z/OS V2R1, V1R12, and V1R13. See *z/OS JES3 Initialization and Tuning Reference* for more detailed information.

Table 155. Summary of new and changed JES3 initialization statements

Statement	Release	Description	Reason for change
CLASS	z/OS V2R1	New parameter: The SYSSYM parameter has been added.	Job class system symbols support
NETSERV	z/OS V2R1	Changed parameter: STACK updated	INET update
OPTIONS	z/OS V2R1	Changed parameters: The default for the DUMP parameter has been changed to PRDMP. The JES and MVS values for DUMP have been deleted.	DUMP updates
OPTIONS	z/OS V2R1	Deleted parameter: The SDI parameter has been deleted.	Spool delete support
OPTIONS	z/OS V2R1	New parameter: The DUPLOGON parameter has been added.	Duplicate logon support
OPTIONS	z/OS V2R1	New parameter: The JOBTRACK parameter has been added.	ENF 70 support
OUTSERV	z/OS V2R1	Changed parameter: CARRIAGE updated	FCB update
SYSOUT	z/OS V2R1	Changed parameter: CARR updated	FCB update
BUFFER	z/OS V1R13	Changed statement: Restart or Command Modification updated.	*MODIFY CONFIG update
FORMAT	z/OS V1R13	Changed statement: Restart or Command Modification updated.	*MODIFY CONFIG update
INCLUDE	z/OS V1R13	Changed statement: DYNALLOC statement location.	*MODIFY CONFIG update
OPTIONS	z/OS V1R13	Changed statement: Restart or Command Modification updated.	*MODIFY CONFIG update
SPART	z/OS V1R13	Changed statement: Restart or Command Modification updated.	*MODIFY CONFIG update
SYSOUT	z/OS V1R13	Changed statement: Restart or Command Modification updated.	*MODIFY CONFIG update
TRACK	z/OS V1R13	Changed statement: Restart or Command Modification updated.	*MODIFY CONFIG update

SMF records

There are no new or changed JES3 SMF records for z/OS V2R1 or V1R13. See *z/OS MVS System Management Facilities (SMF)* for a complete explanation of SMF records.

SSI function codes

Table 156 lists the new and changed JES3 function codes . See *z/OS MVS Using the Subsystem Interface* for more information.

Table 156. Summary of new and changed JES3 Function Codes

SSI Function Code	Release	Description	Reason for change
82	z/OS V2R1	Changed SSI function code: Job class fields updated.	Job class and job class group updates.
80	z/OS V2R1	Changed SSI function code: STAT, STTR, STJQ, STSC, STVB, STVO new and changed fields.	Element updates for 64 bit support. Job execution support.
71	z/OS V2R1	Changed SSI function code: Checkpoint version fields updated.	Checkpoint version support.
54	z/OS V2R1	Changed SSI function code: SSVISLVL field updated.	Service level field updates.
1	z/OS V2R1	Changed SSI function code: SSOUFLG field updated.	User selection flags updates.
82	z/OS V1R13	Changed SSI function code: Parameters descriptions are updated.	Descriptions updated
83	z/OS V1R13	Changed SSI function code: Fields and descriptions added.	JES device information services

Chapter 19. Language Environment summary of interface changes

The following Language Environment interfaces are described in this topic:

- “Application-writer interfaces”
- “C/C++ runtime library APIs”
- “C/C++ runtime library feature test macros” on page 266
- “Callable services”
- “Compiler-writer interfaces” on page 266
- “Data areas” on page 266
- “Environment variables” on page 267
- “Event handler calls” on page 268
- “Macros” on page 268
- “Runtime options” on page 269
- “Utilities” on page 269

Application-writer interfaces

There are no new or changed Language Environment application-writer interfaces (AWIs). For general information about AWIs, see *z/OS Language Environment Programming Reference*.

Callable services

Table 163 on page 269 lists the new or changed Language Environment callable services. For more information, see *z/OS Language Environment Programming Reference*.

Table 157. Summary of new and changed Language Environment callable services

Callable service	Release	Description	Reason for change
CEE3INF	z/OS V1R13	Changed: The <i>sys/subsys</i> parameter no longer supports 31 bit.	Release updates
CEEGPID	z/OS V1R13	Changed: Updated to reflect the current version and platform ID for Language Environment.	Release updates
CEEGTJS	z/OS V2R1	New: Retrieve a JCL symbol values by specifying a JCL symbol name.	Enhanced use of JCL symbolics

C/C++ runtime library APIs

For more information about C/C++ runtime library APIs, see New and updated information in *z/OS XL C/C++ Runtime Library Reference*.

C/C++ runtime library feature test macros

For more information about C/C++ runtime library feature test macros, see New and updated information in *z/OS XL C/C++ Runtime Library Reference*.

Compiler-writer interfaces

Table 158 lists the new or changed Language Environment compiler-writer interfaces (CWIs). For more information, see *z/OS Language Environment Vendor Interfaces*.

Table 158. Summary of new and changed Language Environment CWIs

CWI	Release	Description	Reason for change
__far_jump()	z/OS V1R13	Changed: Parameter descriptions have been updated.	Release update
	z/OS V2R1	Changed: Parameter descriptions have been updated.	Vector support
__stack_info()	z/OS V1R13	Changed: The second argument to the function must now be a null pointer.	Release update
CEEYPPAF	z/OS V2R1	Changed: Parameter description has been updated.	Vector support
CEEGOTO	z/OS V2R1	Changed: Displays vector register information in the XPLINK extended format label variable-resume area.	Vector support
CEEKRGPM	z/OS V1R13	New: Registers a pattern matching routine to support deferred debugging.	Deferred debugging support
CEEGOTO	z/OS V1R12	Changed: Displays high register information in the XPLINK extended format label variable-resume area.	High register support
CEEPL0D	z/OS V1R12	Changed: The mod_size parameter no longer returns module lengths greater than 16 MB.	Support for the RTLS function has been removed
CEEP0CB_LOAD	z/OS V1R12	Changed: Reason code 5 no longer issued.	Support for the RTLS function has been removed

Data areas

Table 159 lists the new or changed Language Environment data areas. For more information, see *z/OS Language Environment Vendor Interfaces*.

Table 159. Summary of new and changed Language Environment data areas

Data area	Release	Description	Reason for change
CEECAA	z/OS V1R13	Changed: Includes new fields to support enhanced I/O abend recovery and to support initializing multiple CEEPIPI environments.	I/O abend recovery
CEEMCH	z/OS V1R12	Changed: Updated to display high register information.	High register support
	z/OS V2R1	Changed: Support for vectors has been added.	Vector support
CEE0CB	z/OS V1R12	Changed: Support for the RTLS function has been removed.	Support for the RTLS function has been removed
	z/OS V2R1	Changed: Support for HEAPZONES runtime option has been added.	HEAPZONES runtime option support

Table 159. Summary of new and changed Language Environment data areas (continued)

Data area	Release	Description	Reason for change
CEEPCB	z/OS V1R12	Changed: Support for the RTLS function has been removed.	Support for the RTLS function has been removed.
	z/OS V2R1	Changed: Support for vectors has been added.	Vector support
CEERCB	z/OS V1R13	Changed: Includes a new field to support a pattern match routine to enable deferred debugging and to display current release information.	Deferred debugging support and release updates
	z/OS V2R1	Changed: Updated to display current release information.	Release updates.

Environment variables

Table 160 lists the new or changed Language Environment environment variables. For more information, see *z/OS XL C/C++ Programming Guide*.

Table 160. Summary of new and changed Language Environment environment variables

Environment variable	Release	Description	Reason for change
_EDC_IO_ABEND	z/OS V1R13	New: Provides enhanced I/O abend recovery support.	I/O abend recovery
_BPXK_AUTOCVT	z/OS V1R12	Changed: A restriction was added that automatic text conversion can only take place between IBM-1047 and ISO8859-1 code sets.	Service update
	z/OS V2R1	Changed: A new option activates the automatic conversion of files that are supported by Unicode Services.	Unicode exploitation
_BPXK_CCSDS	z/OS V1R12	Changed: A restriction was added that automatic text conversion can only take place between IBM-1047 and ISO8859-1 code sets.	Service update
_BPXK_PCCSID	z/OS V2R1	New: Identifies the program CCSID for the running thread or user.	Unicode exploitation
_CEE_ENVFILE_COMMENT	z/OS V1R12	New: Defines the comment character to be checked for when reading records from a file	Service update
_CEE_REALLOC_CONTROL	z/OS V1R12	New: Added for control improvements in the processing of the realloc() C/C++ function to provide the ability to more efficiently use storage.	realloc() control support
_EDC_FLUSH_STDOUT_PIPE	z/OS V1R12	New: Flushes the stdout stream when the stdin stream is being read. Both stdin and stdout must be pipes.	Service update
_EDC_FLUSH_STDOUT_SOCKET	z/OS V1R12	New: Flushes the stdout stream when the stdin stream is being read. Both stdin and stdout must be sockets.	Service update
_EDC_PTHREAD_BACKOUT	z/OS V2R1	New: Determines the Language Environment quiesce term behavior.	Enhanced signal handling

Language Environment

Table 160. Summary of new and changed Language Environment environment variables (continued)

Environment variable	Release	Description	Reason for change
_EDC_PTHREAD_YIELD_MAX	z/OS V1R12	New: Allows applications to specify a maximum wait time other than the 32 millisecond default.	pthread_yield() and sched_yield() max time delay support
_EDC_STRPTM_STD	z/OS V2R1	New: Indicates changes to strptime() that are provided for UNIX standard compliance.	UNIX standard compliance
_EDC_SUSV3	z/OS V2R1	New value: When the new value, 2, is set, all the behaviors protected by _EDC_SUSV3=1 is exposed and pole error-related behaviors specified by SUSV3 is enabled.	Conformance with the latest C language standard (C11)
_POSIX_TMPNAM	z/OS V1R12	New: Determines if the tmpnam() function produces an MVS data set name or a UNIX file name when the POSIX(ON) runtime option has been specified.	Service update

Event handler calls

Table 161 lists the new or changed Language Environment event handler calls. For more information, see *z/OS Language Environment Vendor Interfaces*.

Table 161. Summary of new and changed Language Environment event handler calls

Event	Release	Description	Reason for change
Event Code 18	z/OS V1R13	Changed: Parameter descriptions have been updated.	Release update
Event Code 44	z/OS V1R13	New: The code has been added to allow member languages to report back their program mask requirements.	Release update
POSIX fork() imminent	z/OS V1R12	Changed: A second parameter, thread_id, has been added.	pthread_yield() and sched_yield() max time delay support.

Macros

For information about macros, see *z/OS Language Environment Vendor Interfaces*, *z/OS Language Environment Programming Guide* and *z/OS Language Environment Customization*.

Table 162. Summary of new and changed Language Environment runtime options

Macro	Release	Description	Reason for change
CEEPPA	z/OS V2R1	Changed: Support added for vector registers.	Vector support
CEEXOPT	z/OS V2R1	Changed: No longer allows processing of CEECOPT, CEEDOPT, or CELQDOPT.	Support for creating usermods to modify runtime option defaults at the installation level was removed.

Runtime options

Table 163 lists the new or changed Language Environment runtime options. For more information, see *z/OS Language Environment Customization*, *z/OS Language Environment Programming Guide*, and *z/OS Language Environment Programming Reference*.

Table 163. Summary of new and changed Language Environment runtime options

Runtime option	Release	Description	Reason for change
All runtime options	z/OS V1R12	New attributes: Added the OVR and NONOVR attributes, which specify if the runtime options can be overridden.	Parmlib enhancements
	z/OS V2R1	Changed:: Runtime options can no longer be set at the installation level.	Support for creating usermods to modify runtime option defaults at the installation level was removed.
HEAP64	z/OS V2R1	New parameter: The FILL parameter specifies that an increment to user heap storage is released when the last of the storage within that increment is freed.	Improved allocation of user heap storage for AMODE 64 applications
HEAPZONES	z/OS V2R1	New runtime option: Controls user heap overlay toleration and checking. When activated, the runtime option affects any obtained storage that can be controlled by the HEAP or HEAP64 runtime options.	Support of heap zone check toleration and checking
PAGEFRAMESIZE	z/OS V2R1	New runtime option: Allows users to request storage to be backed by either 4K or 1M pages for user heap, library heap, I/O heap, and stack for Language Environment AMODE 64 applications.	AMODE 64 support for 1M and 2G large pages
PAGEFRAMESIZE64	z/OS V2R1	New runtime option: Specifies the preferred frame size in virtual storage for HEAP64, LIBHEAP64, IOHEAP64, and STACK64 storage that was obtained during application initialization and runtime.	AMODE 64 support for 1M and 2G large pages
USERMODS	z/OS V2R1	Removed: Use the CEEPRMxx parmlib member to set the system-default Language Environment options	Usability

Utilities

No Language Environment utilities were added or changed. For more information about utilities, see *z/OS Language Environment Customization*, *z/OS Language Environment Programming Guide*, and *z/OS Language Environment Debugging Guide*.

Chapter 20. NFS summary of interface changes

There are no new or changed interfaces for NFS.

Chapter 21. RMF summary of interface changes

This topic describes the Resource Measurement Facility (RMF™) interface changes to the SMF records in section “SMF records.”

SMF records

Table 164 lists the new and updated SMF records. See *z/OS MVS System Management Facilities (SMF)* for more detailed information.

Table 164. Summary of new and changed RMF SMF records

SMF record	Release	Description	Reason for change
Type 70 (RMF Processor Activity)	z/OS V2R1	Multiple updates: <ul style="list-style-type: none"> subtype 1: new Logical Core data section; also changes to the CPU control section, CPU data section, ASID Data Area Section, PR/SM Partition Data Section, and PR/SM Logical Processor Data Section. 	APAR OA44101
		Multiple updates: <ul style="list-style-type: none"> subtype 2: changes to the Cryptographic CCA Coprocessor, Cryptographic Accelerator, and Cryptographic PKCS11 Coprocessor data sections. 	APAR OA43493
		Multiple updates: <ul style="list-style-type: none"> subtype 1: changes in the CPU data section to support group capacity enhancements and absolute LPAR, and to support warning-track interruption subtype 2: changes to the Cryptographic CCA Coprocessor and Cryptographic Accelerator data sections 	Release update
Type 71 (RMF Paging Activity)	z/OS V2R1	New field in Paging Data Section	APAR OA44101
		New fields: <ul style="list-style-type: none"> changes to support 4 TB real storage 	APAR OA44503
		New fields: <ul style="list-style-type: none"> changes to support pageable large pages activity 	Release update
	z/OS V1R13	Multiple updates: <ul style="list-style-type: none"> no more data is collected for the <i>swap placement section</i> new fields have been added to support storage-class memory (SCM) and pageable large pages. 	Release update

RMF

Table 164. Summary of new and changed RMF SMF records (continued)

SMF record	Release	Description	Reason for change
Type 72 (RMF Workload Activity and Storage Data)	z/OS V2R1	subtype 3: changes to Workload Manager Control Data Section	APAR OA44101
		Multiple updates: <ul style="list-style-type: none"> • subtype 3: changes to support I/O priority groups • subtype 5: new GRS QScan Statistics data section added to monitor QScan requests 	Release update
	z/OS V1R13	Multiple updates: <ul style="list-style-type: none"> • subtype 3 has been extended to collect: <ul style="list-style-type: none"> – CPU time used by work units while promoted by the z/OS supervisor (<i>report class period data section</i>) – response-time distribution data for service and report class periods that have defined execution velocity goals (<i>response time distribution data section</i>). • new subtype 5 introduced to support serialization delay measurements. 	Release update
Type 74 (RMF Activity of Several Resources)	z/OS V2R1	• subtype 4: changes to existing data sections to support CS5 path operating at 8x bandwidth using the PCIe third generation protocol, adapter type PCIe-O.	APAR OA44502
		• subtype 9: changes to existing data sections to support PCIE enhancements.	APAR OA44524
		Multiple updates: <ul style="list-style-type: none"> • subtype 1: changes to support devices in alternate subchannel sets • subtype 4: changes to existing data sections and addition of the new Storage Class Memory data section to support exploitation of the Flash Express feature; changes to support THIN interrupts • subtype 5: new fields in the RAID Rank/Extent Pool data section • subtype 9: new subtype for PCI Express Based Function Activity 	Release update
Type 75 (RMF Page Data Set Activity)	z/OS V2R1	One new field: <ul style="list-style-type: none"> • changes to support 4 TB real storage 	APAR OA44503
		One changed field: a bitmap record is changed to indicate page space type storage-class memory (SCM).	Release update
	z/OS V1R13	One changed field: a bitmap record is changed to indicate page space type storage-class memory (SCM).	Release update
Type 78 (RMF Virtual Storage and I/O Queuing Activity)	z/OS V2R1	New fields: In subtype 2, the virtual storage private area data section is extended.	Release update

Table 164. Summary of new and changed RMF SMF records (continued)

SMF record	Release	Description	Reason for change
New fields: In subtype 2, the virtual storage private area data section is extended.	Release update		
Type 79 (RMF Monitor II Activity)	z/OS V2R1	Multiple updates: <ul style="list-style-type: none"> • subtype 1: changes to support I/O priority groups • subtype 2: changes to support I/O priority groups • subtype 9: changes to support devices in alternate subchannel sets and changes to support the interrupt delay time facility • subtype 11: a bitmap record has been changed to indicate page space type storage-class memory (SCM). 	Release update
	z/OS V1R13	One changed field: a bitmap record is changed to indicate page space type storage-class memory (SCM).	Release update
Type 104 (RMF Distributed Platform Performance Data)	z/OS V2R1	New SMF record type: Support of long-term performance analysis and capacity planning of AIX, Linux, and Windows systems.	Release update

Chapter 22. SDSF summary of interface changes

In addition to the interface changes included in this topic, updates to SDSF might have resulted in SYS1.PARMLIB and SYS1.SAMPLIB member changes. See Chapter 2, “Summary of changes to SYS1.PARMLIB,” on page 5 and Chapter 4, “Summary of changes to SYS1.SAMPLIB,” on page 21 for those changes.

The SDSF interfaces described in this topic are:

- “Programming interfaces”
- “Commands and action characters” on page 279
- “Panels” on page 280
- “User exits” on page 280
- “SAF resources” on page 281

Programming interfaces

This topic describes new and changed programming interfaces.

Java

Table 165 describes the changes for SDSF's support of the Java programming language. See *z/OS SDSF Operation and Customization* for more detailed information.

Table 165. Summary of changes for Java

Change	Release	Description	Reason for change
Enhanced support for browse	z/OS V2R1	Change: Support for browsing job output, check output and the system log without the need for EXECIO or similar utility.	Release update
Console name modification	z/OS V2R1	Change: Control activation of an extended console with a unique name.	Release update
Support for the OPERLOG	z/OS V1R13	Change: The operlog() method in the ISFLogRunner class accesses the sysplex-wide system log, OPERLOG.	Release update
Sublists to request SDSF panel data	z/OS V1R13	Change: New methods allow you to request a subset of the data. Refer to the Javadoc for more information.	Release update
Support for Java	z/OS V1R12	Change: SDSF adds support for the Java programming language.	Release update

REXX

Table 166 on page 278 and Table 167 on page 278 list the changes for SDSF's support of the REXX programming language. See *z/OS SDSF Operation and Customization* for more detailed information.

SDSF

Table 166. Summary of changes for REXX commands

Command	Release	Description	Reason for change
ISFBROWSE	z/OS V2R1	Changed command: Support for browsing job output, check output and the system log without the need for EXECIO or similar utility.	Release output
ISFLOG	z/OS V1R13	Changed command: New option TYPE(OPERLOG) accesses the sysplex-wide system log, OPERLOG.	Release update
ISFLOG	z/OS V1R12	New command: Access the SYSLOG.	Release update

Table 167. Summary of changes for REXX special variables

Special Variable	Release	Description	Reason for change
ISFDISPLAYMODE	z/OS V2R1	Changed special variable: Now accepts LONG, which shows the full sort and filter criteria.	Release update
ISFSECTRACE	z/OS V2R1	New special variable: Controls security tracing.	Release update
ISFPRTWRITER	z/OS V2R1	New special variable: Specifies a writer name, for printing.	Release update
ISFPRTSOURCEATTS	z/OS V2R1	New special variable: Indicates whether source attributes are to be used for printing.	Release update
ISFCONMOD	z/OS V2R1	New special variable: Controls the modification of the extended console name to obtain a unique name.	Release update
ISFDUPDS	z/OS V2R1	New special variable: Controls whether SDSF displays duplicate SYSOUT data sets.	Release update
ISFCMODE	z/OS V1R13	New special variable: Sets the mode for sysplex communication.	Release update
ISFCKLIM	z/OS V1R12	New special variable: Limits the rows on the CKH panel.	Release update
ISFDATE	z/OS V1R12	New special variable: Sets the date format for special variables.	Release update
ISFLINE	z/OS V1R12	New special variable: Contains the result of a browse request.	Release update
ISFLINELIM	z/OS V1R12	New special variable: Limits the number of ISFLINE variables.	Release update
ISFLOGSTARTTIME	z/OS V1R12	New special variable: Specifies the starting time for records returned by the ISFLOG command.	Release update
ISFLOGSTARTDATE	z/OS V1R12	New special variable: Specifies the starting date for records returned by the ISFLOG command.	Release update
ISFLOGSTOPTIME	z/OS V1R12	New special variable: Specifies the ending time for records returned by the ISFLOG command.	Release update
ISFLOGSTOPDATE	z/OS V1R12	New special variable: Specifies the ending date for records returned by the ISFLOG command.	Release update

Table 167. Summary of changes for REXX special variables (continued)

Special Variable	Release	Description	Reason for change
ISFLRECL	z/OS V1R12	New special variable: Contains the logical record length for the allocated data set.	Release update
ISFRECFM	z/OS V1R12	New special variable: Contains the record format for the allocated data set.	Release update
ISFSYSID	z/OS V1R12	New special variable: Specifies the member to be processed by the ISFLOG command.	Release update

Commands and action characters

Table 168 lists the new and changed commands and action characters. See the SDSF online help for more detailed information. For commands that are specific to SDSF REXX execs, see “REXX” on page 277.

Table 168. Summary of new and changed SDSF commands and action characters

Function	Release	Description	Reason for change
PRINT	z/OS V2R1	Changed command: Now uses the record format value to determine how to handle carriage control for all printing.	Release update
SET CONMOD	z/OS V2R1	New command: Controls the modification of extended console names, used to obtain unique names.	Release update
SET DISPLAY	z/OS V2R1	Changed command: Now accepts LONG, to display the full sort and filter criteria.	Release update
SET DUPDS	z/OS V2R1	New command: Controls whether SDSF displays duplicate SYSOUT data sets.	Release update
SET SECTRACE	z/OS V2R1	New command: Turns security tracing on and off.	Release update
SORT	z/OS V2R1	Changed command: Now accepts up to 10 columns.	Release update
J0	z/OS V1R13	New command: Displays the Job 0 (J0) panel (JES3 only).	Release update
NC	z/OS V1R13	New command: Displays the Network Connections (NC) panel.	Release update
NS	z/OS V1R13	New command: Displays the Network Servers (NS) panel.	Release update
INIT, LI, NO, PUN, RDR, H, O	z/OS V1R13	Changed command: Now available in the JES3 environment. New action characters, as described in the SDSF online help.	Release update
SET CMODE	z/OS V1R13	New command: Controls the mode that SDSF uses for communication to provide sysplex-wide data on SDSF panels.	Release update
L	z/OS V1R12	New action character: Displays the history of a check that is selected on the CK panel.	Release update

Panels

Table 169 lists the changes to SDSF panels. See *z/OS SDSF Operation and Customization* for more detailed information.

Table 169. Summary of new and changed SDSF panels

Panel	Release	Description	Reason for change
J0	z/OS V1R13	New panel: JES3-only panel that shows information about JES3 Job 0.	Release update
NC	z/OS V1R13	New panel: Network Connect (NC), shows information about networking connections to an adjacent node.	Release update
NS	z/OS V1R13	New panel: Network Server (NS), shows information about server-type networking devices on the node.	Release update
INIT, LI, NO, PUN, RDR, H, O	z/OS V1R13	Changed panel: Now available in the JES3 environment.	Release update
CK, ENC, LI, NO, PS, PUN, RDR, RM, SO	z/OS V1R13	Changed panel: Now can show sysplex-wide data without WebSphere MQ.	Release update
OPERLOG	z/OS V1R13	Changed panel: Now shows messages with the color and highlighting that were assigned to them when they were issued.	Release update
CKH	z/OS V1R12	New panel: Shows the history of a check that is selected on the CK panel.	Release update

User exits

Table 170 lists the changes to the SDSF user exit routine. See *z/OS SDSF Operation and Customization* for more detailed information.

Table 170. Summary of changes to the SDSF user exit routine

User exit	Release	Description	Reason for change
Authorization	z/OS V1R13	New field: UPRCMODE sets the mode that SDSF uses for communication to provide sysplex-wide data on SDSF panels.	Release update
Initialization	z/OS V2R1	New field: UPROFLG2.UPRO2DNL affects normalization of the CPU% column on the DA panel.	Release update
Initialization	z/OS V2R1	New field: UPROFLG2.UPRO2NMD disables modification of the extended console name to obtain a unique name.	Release update
Initialization	z/OS V2R1	New fields: UPROFLG3.UPRO3JPC, UPROFLG3.UPRO3JPD, UPROFLG3.UPRO3JPE and UPROFLG3.UPRO3JPP control the scope of the CK, DA, ENC and PS panels.	Release update
Initialization	z/OS V2R1	New fields: UPROFLG3.UPRO3NOD controls whether SDSF includes duplicate SYSOUT data sets.	Release update

Table 170. Summary of changes to the SDSF user exit routine (continued)

User exit	Release	Description	Reason for change
Initialization	z/OS V2R1	New fields: UPRS6FSY controls the use of system symbols with filtering.	Release update
Initialization	z/OS V2R1	New fields: UPXCONSF specifies the suffixes to use for modifying the extended console name.	Release update
Initialization	z/OS V1R13	New fields: UPRSLCMD, UPRSLCIC and UPRSLCWC allow you to specify a character to use when issuing system commands through SDSF instead of the slash (/).	Release update
Initialization	z/OS V1R13	Changed flag: UPROFLG2.UPRO2DU8 now controls how device names are formatted on the PUN and RDR panels, in addition to the PR panel.	Release update
Initialization	z/OS V1R12	New flags: <ul style="list-style-type: none"> • UPROFLG2.UPRO2IDJ controls the rows that are shown on the initiator panel by default. • UPROFLG2.UPRO2OVW controls the lines shown on the OPERLOG panel. • UPRCKLIM sets the default maximum number of instances for a check for IBM Health Checker for z/OS that will be read from the logstream for the CKH panel. • UPROFLG2.UPRO2DF8 controls how device names are formatted on the PR panel. 	Release update

SAF resources

Table 171 lists the new and changed SAF resources related to SDSF. See *z/OS Planning for Multilevel Security and the Common Criteria* and *z/OS SDSF Operation and Customization* for more detailed information.

Table 171. Summary of new and changed SAF resources

SAF resource	Release	Description	Reason for change
Miscellaneous	z/OS V1R13	Changes for JES3: The INIT, LI, NO, PUN, RDR, O and H panels now show JES3 data. When running SDSF in the JES3 environment, you must use SAF to provide SDSF security. In addition, some resources that are unique to the JES3 environment are introduced. New resources are introduced with the J0, NC and NS panels.	Release update

SDSF

Table 171. Summary of new and changed SAF resources (continued)

SAF resource	Release	Description	Reason for change
Miscellaneous	z/OS V1R12	Changes for JES3: The PR panel now shows JES3 data. When running SDSF in the JES3 environment, you must use SAF to provide SDSF security. Some resources that are unique to the JES3 environment are used.	Release update

Chapter 23. Security Server summary of interface changes

In addition to the interface changes included in this topic, updates to Security Server have resulted in SYS1.SAMPLIB member changes. See Chapter 4, “Summary of changes to SYS1.SAMPLIB,” on page 21 for those changes.

The Security Server interfaces described in this topic are:

- “Callable services”
- “Class descriptor table (CDT)” on page 285
- “Commands” on page 286
- “Data areas” on page 290
- “Database templates” on page 292
- “Exits” on page 293
- “Macros” on page 293
- “Panels” on page 293
- “SMF records” on page 298
- “Utilities” on page 299

Callable services

Table 172 lists the new and changed RACF callable services. See *z/OS Security Server RACF Callable Services* for more detailed information.

Table 172. Summary of new and changed RACF callable services

Callable service name	Release	Description	Reason for change
IRRSDL00 (R_data lib)	z/OS V1R13	<ul style="list-style-type: none">• A new private key type X'00000009' for Elliptic Curve Crypto (ECC) key stored in PKDS will be handled by functions DataGetFirst and DataGetNext in R_data lib callable service.	<ul style="list-style-type: none">• Extend the ECC support on hardware from RACF and PKI Services to enhance the key security and to enhance the RACDCERT command to handle the growing number of key types
IRRSCH00 (R_cacheserv)	z/OS V1R13	<ul style="list-style-type: none">• Function code X'0007' provides support for an extended read/write cache containing both RACF and distributed user information. The function is further defined by the Option parameter.	<ul style="list-style-type: none">• Enhance z/OS Identity Propagation support by eliminating the need to go to the RACF database for the retrieval of security relevant information.
IRRSCO00 (R_chown)	z/OS V2R1	<ul style="list-style-type: none">• The R_chown service RACF authorization section has been updated.	<ul style="list-style-type: none">• Clarify the user authority when CHOWN.UNRESTRICTED exists and does not exist.

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Table 172. Summary of new and changed RACF callable services (continued)

Callable service name	Release	Description	Reason for change
IRRSDL00 or IRRSDL64 (R_data lib)	z/OS V2R1	<ul style="list-style-type: none"> Function code X'08', DataPut, adds a certificate to the RACF database (if it does not already exist), and connect it to a key ring. Multiple private_key_types have been updated for secure PKCS11 support. 	<ul style="list-style-type: none"> If the private key associated with the certificate is specified in a DER-encoded format or as a key label, the certificate will be added with the specified key types accordingly in the RACF database. Prevent the deletion of the private key and the certificate that has been used to generate a request.
IRRSEQ00 (R_admin)	z/OS V2R1	<ul style="list-style-type: none"> The R_admin service, Profile extract parameter list (input and output) table is updated for length X'04000000'. 	<ul style="list-style-type: none"> The length X'04000000' description has been enhanced for clarity.
IRRSGI00 (R_getinfo)	z/OS V1R13	<ul style="list-style-type: none"> Update the R_getInfo service to return the value of the APPLDATA fields of the caller specified profile in the REALM class. 	<ul style="list-style-type: none"> The r_getinfo service is updated to support an additional function to retrieve certain information from the RACF database.
IRRSGM00 (getGMAP)	z/OS V2R1	<ul style="list-style-type: none"> Update the getGMAP service usage notes when a new GID is assigned and SETROPTS AUDIT(GROUP) is in effect. 	<ul style="list-style-type: none"> Determine if an SMF type 80 record is to be generated.
IRRSIA00 (InitACEE)	z/OS V2R1	<ul style="list-style-type: none"> initACEE register and deregister return codes with reason code 28. 	<ul style="list-style-type: none"> The certificate cannot be deregistered because it has been used to generate a request through RACDCERT GENREQ.
IRRSIM00 (R_usermap)	z/OS V1R13	<ul style="list-style-type: none"> Function code X'0008' returns the RACF user ID associated with the supplied user's Distinguished Name and Registry/Realm Name. 	<ul style="list-style-type: none"> The R_usermap support of Identity Propagation enables a user's Distinguished Name and a Registry/Realm Name to be used to determine the associated RACF user ID,
IRRSKA00 (ck_access)	z/OS V2R1	<ul style="list-style-type: none"> If the user does not have the RACF Auditor attribute, and a file system name was specified in the CRED, and the FSACCESS class is active and RACLISTed, RACF will check for a profile in the FSACCESS class that covers the file system name. If a matching profile is found and the user does not have at least UPDATE authority, access is denied. Otherwise, authorization is determined by subsequent checks. 	<ul style="list-style-type: none"> Check for proper authority.
IRRSKI00 (ck_IPC_access)	z/OS V2R1	<ul style="list-style-type: none"> An audit record is optionally written, depending on the audit options in effect for the system. If the audit function code in the CREDIPC is AFC_WGETIPC, no audit record is written. 	<ul style="list-style-type: none"> Check audit function code to determine if an audit record is to be written.

Table 172. Summary of new and changed RACF callable services (continued)

Callable service name	Release	Description	Reason for change
IRRSKP00 (ck_priv)	z/OS V2R1	<ul style="list-style-type: none"> If the caller is not superuser and the audit function code is listed, an authorization check is performed on the corresponding resource name in the UNIXPRIV class. If the authorization check is successful, the caller is treated as a superuser. 	<ul style="list-style-type: none"> Check for proper authority.
	z/OS V1R13	<ul style="list-style-type: none"> Update the UNIXPRIV class resource names used in ck_priv table 	<ul style="list-style-type: none"> Check for proper authority.
IRRSXP00 (R_PKIServ)	z/OS V2R1	<ul style="list-style-type: none"> The R_PKIServ SAF callable service Parmlist_version parameter is updated. CertPlist for GENCERT and REQCERT table is updated with new field names. 	<ul style="list-style-type: none"> Provide granular authorization on PKI functions. PKI Services supports the creation of Extended Validation certificates.
IRRSQF00 (query_file_security_options)	z/OS V2R1	<ul style="list-style-type: none"> The query_file_security_options service Output_value parameter note is updated with a new condition. 	<ul style="list-style-type: none"> If all conditions are true, then _POSIX_CHOWN _RESTRICTED is not in effect.
IRRSUM00 (getUMAP)	z/OS V2R1	<ul style="list-style-type: none"> Update the getUMAP service Flag parameter to search by user ID, return z/OS UNIX user identifier (UID). 	<ul style="list-style-type: none"> The getUMAP service flag parameter is updated to not create a new UID even if BPX.UNIQUE.USER is defined.

Class descriptor table (CDT)

Table 173 lists new and changed RACF classes in the class descriptor table (CDT), ICHRRCDX, which is supplied by IBM. To find the details associated with the CDT entry for each class, see *z/OS Security Server RACROUTE Macro Reference*.

The class name is part of the programming interface for the RACROUTE and ICHEINTY macros. For more information about these macros, see *z/OS Security Server RACROUTE Macro Reference* and *z/OS Security Server RACF Macros and Interfaces*.

Table 173. Summary of new and changed classes

Class name	Release	Description	Reason for change
DSNADM	z/OS V2R1	Updated for RACF support for DB2 V11	RACF support for DB2 V11
FSACCESS	z/OS V2R1	Added for z/OS UNIX System Services mutex and condition variables	z/OS UNIX System Services mutex and condition variables support
GDSNGV	z/OS V2R1	Added for RACF support for DB2 V11	RACF support for DB2 V11
GDSNPK	z/OS V2R1	Updated for RACF support for DB2 V11	RACF support for DB2 V11
GDSNSM	z/OS V2R1	Updated for RACF support for DB2 V11	RACF support for DB2 V11
GDSNSP	z/OS V2R1	Updated for RACF support for DB2 V11	RACF support for DB2 V11
GDSNSQ	z/OS V2R1	Updated for RACF support for DB2 V11	RACF support for DB2 V11
GDSNTB	z/OS V2R1	Updated for RACF support for DB2 V11	RACF support for DB2 V11
GDSNUF	z/OS V2R1	Updated for RACF support for DB2 V11	RACF support for DB2 V11

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Table 173. Summary of new and changed classes (continued)

Class name	Release	Description	Reason for change
GZMFAPLA	z/OS V1R13	Added as the grouping class for z/OSMF authorization roles.	Support for z/OSMF
KERBLINK	z/OS V1R12	Updated to control which users are authorized to use the SKRDKDC started procedure to decrypt service tickets for a given principal.	Support for Network Authentication Service
LDAP	z/OS V1R13	Added to control authorization roles for LDAP administration.	Support for Tivoli Directory Server for z/OS
MDSNGV	z/OS V2R1	Added for RACF support for DB2 V11	RACF support for DB2 V11
MDSNPK	z/OS V2R1	Updated for RACF support for DB2 V11	RACF support for DB2 V11
MDSNSM	z/OS V2R1	Updated for RACF support for DB2 V11	RACF support for DB2 V11
MDSNSP	z/OS V2R1	Updated for RACF support for DB2 V11	RACF support for DB2 V11
MDSNSQ	z/OS V2R1	Updated for RACF support for DB2 V11	RACF support for DB2 V11
MDSNTB	z/OS V2R1	Updated for RACF support for DB2 V11	RACF support for DB2 V11
MDSNUF	z/OS V2R1	Updated for RACF support for DB2 V11	RACF support for DB2 V11
SYSAUTO	z/OS V2R1	Added for APAR OA41282	APAR OA41282
VMDEV	z/OS V1R13	Controls access to z/VM real devices.	Support for z/VM
ZMFAPLA	z/OS V1R13	Added as the member class for z/OSMF authorization roles.	Support for z/OSMF

Commands

Table 174 lists the new and changed RACF commands. See *z/OS Security Server RACF Command Language Reference* for more detailed information.

Table 174. Summary of changed RACF commands

Command name	Release	Description	Reason for change
Multiple commands: ADDUSER, ALTUSER, RDEFINE	z/OS V2R1	<ul style="list-style-type: none"> Commands have been updated to reflect the removal of the BPX.DEFAULT.USER UNIX profile. 	<ul style="list-style-type: none"> The removal of RACF support for default OMVS segments.
ALTUSER	z/OS V2R1	When NOEXPIRED is specified, the password or password phrase value you supply is subject to certain rules. Those rules include the basic RACF rules for password phrase syntax and any password syntax rules set by the installation through the SETROPTS PASSWORD(RULEn) command.	The NOEXPIRED parameter has been clarified for password and password phrase syntax rules.
DELGROUP	z/OS V2R1	Has been modified to issue a new ENF signal, ENF 79, for classes that have been defined in the RACF Class Descriptor Table with the SIGNAL=YES option	Alert listeners to a possible change in a user's or group's authorizations to resources.
DELUSER	z/OS V2R1	Has been modified to issue a new ENF signal, ENF 79, for classes that have been defined in the RACF Class Descriptor Table with the SIGNAL=YES option	Alert listeners to a possible change in a user's or group's authorizations to resources.

Table 174. Summary of changed RACF commands (continued)

Command name	Release	Description	Reason for change
PERMIT	z/OS V2R1	Has been modified to issue a new ENF signal, ENF 79, for classes that have been defined in the RACF Class Descriptor Table with the SIGNAL=YES option	Alert listeners to a possible change in a user's or group's authorizations to resources.

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Table 174. Summary of changed RACF commands (continued)

Command name	Release	Description	Reason for change
RACDCERT	z/OS V2R1	<ul style="list-style-type: none"> The Re-adding a certificate sub-function conditions are updated for the RACDCERT ADD function. The ADD function, PKCS #7 and PKCS #12 processing details. The BIND function, TOKEN(token-name) sub-function is updated The CHECKCERT, DELETE, GENCERT, REKEY, ROLLOVER functions are updated. A new LISTCHAIN function is added. 	<ul style="list-style-type: none"> Re-adding a certificate sub-function conditions are updated for clarity. The known signature algorithms to RACF are enhanced. TOKEN(token-name) sub-function is enhanced for clarity. Support for reporting certificates in the chain when added and listed.
	z/OS V1R13	<p>The following new command options are added:</p> <ul style="list-style-type: none"> The PKDS operand is added to the ADD and IMPORT functions. The PKDS suboperand of the NISTECC and BPECC operands is added to the GENCERT and REKEY functions. The RSA operand and PKDS suboperand are added to the GENCERT and REKEY functions. 	Hardware keys generated with elliptic curve cryptography (ECC) algorithms
	z/OS V1R12	<ul style="list-style-type: none"> The following functions are updated to support certificates generated with elliptic curve cryptography (ECC) algorithms: <ul style="list-style-type: none"> ADD BIND CHECKCERT GENCERT GENREQ IMPORT LIST REKEY The following functions are updated to support certificates with long distinguished names: <ul style="list-style-type: none"> ADD ALTER DELETE GENCERT LIST MAP The following functions are updated to support certificate validity periods that extend beyond the year 2041: <ul style="list-style-type: none"> ADD CHECKCERT GENCERT IMPORT LIST REKEY 	<ul style="list-style-type: none"> Keys generated with elliptic curve cryptography (ECC) algorithms Long distinguished names. Also, APAR OA30560. Long certificate validity periods. Also, APAR OA30951.
RACMAP	z/OS V1R13	The QUERY function is added.	Distributed identity filters

Table 174. Summary of changed RACF commands (continued)

Command name	Release	Description	Reason for change
RALTER	z/OS V2R1	Has been modified to issue a new ENF signal, ENF 79, for classes that have been defined in the RACF Class Descriptor Table with the SIGNAL=YES option	Alert listeners to a possible change in a user's or group's authorizations to resources.
	z/OS V1R13	The CHECKADDRS and NOCHECKADDRS options of the KERB operand are added.	Support for Network Authentication Service
	z/OS V1R12	The SYMCPACFWRAP suboperand is added to the ICSF operand.	Support of ICSF encrypted symmetric keys and CP Assist for Cryptographic Function (CPACF). Also, APAR OA29193.
RDEFINE	z/OS V2R1	Has been modified to issue a new ENF signal, ENF 79, for classes that have been defined in the RACF Class Descriptor Table with the SIGNAL=YES option	Alert listeners to a possible change in a user's or group's authorizations to resources.
	z/OS V1R13	The CHECKADDRS option of the KERB operand is added.	Support for Network Authentication Service
	z/OS V1R12	The SYMCPACFWRAP suboperand is added to the ICSF operand.	Support of ICSF encrypted symmetric keys and CP Assist for Cryptographic Function (CPACF). Also, APAR OA29193.
RDELETE	z/OS V2R1	Has been modified to issue a new ENF signal, ENF 79, for classes that have been defined in the RACF Class Descriptor Table with the SIGNAL=YES option	Alert listeners to a possible change in a user's or group's authorizations to resources.
	z/OS V1R12	The NOGENERIC operand is added.	Improved RACF serviceability
RLIST	z/OS V1R12	<ul style="list-style-type: none"> Support is added for the new SYMCPACFWRAP suboperand of the ICSF operand. Support is added for the new UNUSABLE indicator in the listing of certain discrete profiles. 	<ul style="list-style-type: none"> Support of ICSF encrypted symmetric keys and CP Assist for Cryptographic Function (CPACF). Also, APAR OA29193. Improved RACF usability
SEARCH	z/OS V1R12	Support is added for the new UNUSABLE indicator in the listing of certain discrete profiles.	Improved RACF usability
SET	z/OS V1R12	<ul style="list-style-type: none"> The GENERICANCHOR operand and the GENERICANCHOR suboperand of the TRACE operand are added. The CLASS and USERID suboperands of the TRACE operand are added. 	<ul style="list-style-type: none"> Generic profile performance Improved RACF serviceability

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Table 174. Summary of changed RACF commands (continued)

Command name	Release	Description	Reason for change
TARGET	z/OS V2R1	<ul style="list-style-type: none"> The TCP Address parameter has been updated. 	<ul style="list-style-type: none"> TCP/IP was added as a communication protocol for RACF Remote Sharing Facility (RRSF) in z/OS V1R13, for IPv4. In z/OS V2R1 support is added for IPv6.
	z/OS V1R13	<ul style="list-style-type: none"> The following new command options are added: <ul style="list-style-type: none"> – LISTPROTOCOL – PROTOCOL(TCP) The several TARGET operands are updated to support the new PROTOCOL(TCP) option. 	TCP/IP support for RACF remote sharing facility (RRSF)

Data areas

Table 175 lists the new and changed RACF data areas. See *z/OS Security Server RACF Data Areas* for more detailed information.

Table 175. Summary of new and changed RACF data areas

Data area name	Release	Description	Reason for change
AFC	z/OS V2R1	New fields, AFC_FSACCESS and AFC_SHMMCV have been added.	z/OS UNIX System Services mutex and condition variables support
	z/OS V1R13	New constants, AFC_MOUNT_NA, AFC_MOUNT_U, AFC_MOUNT_UNA, AFC_UNMOUNT_U, and AFC_UNMOUNT_UNA have been added.	z/OS UNIX System Services user mount support
COMP	z/OS V2R1	New fields, PKIS_MODR_ERRL_LEN, PKIS_MODR_ERRL@, PKIS_MODC_ERRL_LEN, and PKIS_MODC_ERRL@, have been added.	z/OS PKI Services certificate administration support.
	z/OS V1R13	<p>New constants, UMAP_ID_PROPAGATION_LEN and UMAP_TOTAL_LEN have been added.</p> <p>New function code, UMAP_DID_TO_R has been added.</p> <p>New fields, UMAP_DISTINGUISHED_NAME and UMAP_DISTINGUISHED_NAME_LEN have been added for distinguished name mapping.</p> <p>New fields, UMAP_REGISTRY_NAME and UMAP_REGISTRY_NAME_LEN have been added for registry or realm name mapping.</p>	z/OS identity propagation support
	z/OS V1R12	A new constant, CDDL_ATT_SET_MIN_SERIAL, has been added.	ICSF field support. Also, APAR OA29193.

Table 175. Summary of new and changed RACF data areas (continued)

Data area name	Release	Description	Reason for change
COMX	z/OS V1R12	A new constant, CDDLX_ATT_SET_MIN_SERIAL, has been added.	ICSF field support. Also, APAR OA29193.
CRED	z/OS V2R1	New fields, CREDFS, CREDFSALET, and CREDFSADDR have been added.	RACF support for access control administration of z/OS UNIX System Services file systems
ENF2	z/OS V2R1	New field, ENF2GROUP, has been added.	RACF support for DB2 V11.
ENF3	z/OS V2R1	New data area, IRRPENF3, has been added.	RACF support for DB2 V11.
FXAP	z/OS V1R13	ARFXPVER, ARFXPLEN, ARFXUSED, ARFXNORM, ARFXOPER, ARFXEXIT, ARFXTRST, and ARFXPRIV have been added.	RACF exit enhancement
GANC	z/OS V1R12	A new macro, IRRPGANC, has been added.	Generic profile performance
GAPL	z/OS V1R12	New fields, ATEMOBJS, ATEPRF64, and ATETMSTP, have been added.	Generic profile performance
GPRFL	z/OS V1R12	A new macro, IRRGPRFL, has been added.	Generic profile performance
ICRX	z/OS V1R13	New programming interface, ICRXMULT, has been added.	z/OS identity propagation support
ISP	z/OS V1R13	New fields, RPEDIDCT, RPEDIDLN, and RPEDIDOF, have been added for RACRPE.	z/OS identity propagation support
	z/OS V1R12	A new field, RPEFSCPW, is added to RACRPE.	ICSF field support. Also, APAR OA29193.
RCVT	z/OS V2R1	RCVTVRMC has been changed to 7790 and a new constant RCVTVR90 has been added with that value.	Release update
	z/OS V1R13	1. New programming interface, RCVTIDPV, has been added. 2. RCVTAUTU has been added in RCVTFLG3. 3. RCVTVRMC has been changed to 7780 and a new constant RCVTVR72 has been added with that value.	1. z/OS identity propagation support 2. RACF exit enhancement 3. Release update
	z/OS V1R12	1. A new field, RCVTGANC, has been added. 2. Updated RCVTVRMC to 7770 and a new constant RCVTVR71 has been added with that value.	1. Generic profile performance 2. Release update
RCXP	z/OS V1R13	New fields RCXAUSED, RCXANORM, RCXAOPER, RCXAEXIT, and RCXABYPS have been added.	RACF exit enhancement
RDXP	z/OS V1R13	RDXAUSED, RDXANORM, RDXASPEC, RDXAOPER, and RDXAEXIT have been added.	RACF exit enhancement

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Table 175. Summary of new and changed RACF data areas (continued)

Data area name	Release	Description	Reason for change
RXTW	z/OS V1R12	New fields, EXTWRTAS and EXTWRTAD, have been added	Improved RACF serviceability
SAFP	z/OS V2R1	Constant, SAFPR90 (with a value of 22) has been added. SAFPCURR has been changed to the same value (22).	Release update
	z/OS V1R13	Constant, SAFPR80 (with a value of 21) has been added. SAFPCURR has been changed to the same value (21).	Release update
	z/OS V1R12	Constant, SAFPR7A (with a value of 20) was added and constant SAFPCURR has been changed to the same value (20).	Release update

Database templates

Table 176 lists the new and changed RACF database templates. See *z/OS Security Server RACROUTE Macro Reference* or *z/OS Security Server RACF Macros and Interfaces* for more detailed information.

Table 176. Summary of RACF database template changes

Segment name	Release	Description of change	Reason for change
User template			
TSO	z/OS V1R13	The description of the four-byte TPERFORM field is updated to indicate that the performance group value is stored as a two-byte value.	APAR OA35112
General template			
CERTDATA	z/OS V2R1	Updated to include updated and new associated key types for the CERTPRVT field in the CERTDATA segment.	Enterprise PKCS #11 secure key support
	z/OS V2R1	Updated to include the CERTGREQ field that is added to indicate if the certificate has been used for generating a request.	RACDCERT GENREQ certificate deletion support
	z/OS V1R13	The CERTPRVT field is updated to include additional key types.	Hardware keys generated with elliptic curve cryptography (ECC) algorithms
	z/OS V1R12	<ul style="list-style-type: none"> The descriptions of the CERTSTRT and CERTEND fields are updated. The CERTPRVT field is updated to include additional key types. 	<ul style="list-style-type: none"> Long certificate validity periods. Also, APAR OA30951. Keys generated with elliptic curve cryptography (ECC) algorithms
ICSF	z/OS V1R12	The CSFSCPW field is added.	Support of ICSF encrypted symmetric keys and CP Assist for Cryptographic Function (CPACF). Also, APAR OA29193.
KERB	z/OS V1R13	The CHECKADDRS field is added.	Support for Network Authentication Service

Exits

Table 177 lists the new and changed RACF exits. See *z/OS Security Server RACF System Programmer's Guide* for more detailed information.

Table 177. Summary of new and changed RACF exits

Exit name	Release	Description	Reason for change

Macros

Table 178 lists the new and changed RACF macros. See *z/OS Security Server RACF Macros and Interfaces* or *z/OS Security Server RACROUTE Macro Reference* for more detailed information.

Table 178. Summary of changed executable RACF macros

Macro name	Release	Description	Reason for change
ICHEACTN	z/OS V2R1	Updated to accept the RELEASE=7790 keyword.	Release update
	z/OS V1R13	Updated to accept the RELEASE=7780 keyword.	Release update
	z/OS V1R12	Updated to accept the RELEASE=7770 keyword.	Release update
ICHEINTY	z/OS V2R1	Updated to accept the RELEASE=7790 keyword.	Release update
	z/OS V1R13	Updated to accept the RELEASE=7780 keyword.	Release update
	z/OS V1R12	<ul style="list-style-type: none"> Updated to accept the RELEASE=7770 keyword. The INDEX parameter is added. 	<ul style="list-style-type: none"> Release update Generic profile performance
ICHETEST	z/OS V2R1	Updated to accept the RELEASE=7790 keyword.	Release update
	z/OS V1R13	Updated to accept the RELEASE=7780 keyword.	Release update
	z/OS V1R12	Updated to accept the RELEASE=7770 keyword.	Release update
RACROUTE	z/OS V2R1	Updated to accept the RELEASE=7790 keyword.	Release update
	z/OS V1R13	Updated to accept the RELEASE=7780 keyword.	Release update
	z/OS V1R12	Updated to accept the RELEASE=7770 keyword.	Release update

Panels

Table 179 on page 294 lists the new and changed RACF panels. Some panels may be updated by more than one release enhancement. The first part of the panel number indicates the type of panel that is affected:

ICHH Displays help information that is related to a panel or a task that you are performing

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ICHM Displays message information that is related to a panel or a task that you are performing

ICHP Allows you to enter information such as a user ID or profile name

Table 179. Summary of new and changed RACF panels

Panel number	Release	Description	Reason for change
ICHHB0 ICHPB0	z/OS V2R1	Updated to support reporting certificates in the chain when added and listed	Support for reporting certificates in the chain when added and listed.
ICHCB02 ICHH771 ICHHB03B ICHPB03B	z/OS V2R1	Updated to support GENREQ certificate deletion	RACDCERT GENREQ certificate deletion support
ICHH21F ICHH22F ICHP21F ICHP22F	z/OS V1R13	New: Added for hardware support of generating Elliptic Curve Crypto (ECC) keys	Hardware support for generating Elliptic Curve Crypto (ECC) keys
ICHC76 ICHCB02 ICHCB71 ICHCB71A ICHH716 ICHH716A ICHP76 ICHPB02 ICHPB03B ICHPB04 ICHPB71 ICHPB71A	z/OS V1R13	Updated to support the hardware support of generating Elliptic Curve Crypto (ECC) keys	Hardware support for generating Elliptic Curve Crypto (ECC) keys
ICHH21F ICHH22F ICHP21F ICHP22F	z/OS V1R13	Updated to support the KERB segment of REALM class profiles	KERB segment of REALM class profiles
ICHH714 ICHHB81 ICHPB81	z/OS V1R12	Updated to support long distinguished names	Long distinguished names. Also, APAR OA30560.
ICHP21A ICHP22A	z/OS V1R12	Updated to support ICSF encrypted symmetric keys	Support of ICSF encrypted symmetric keys and CP Assist for Cryptographic Function (CPACF). Also, APAR OA29193.
ICHC76 ICHCB71 ICHP76 ICHPB71 ICHPB71A ICHH715 ICHH716 ICHH719 ICHH747 ICHHB01A	z/OS V1R12	Updated to support elliptic curve cryptography	Keys generated with elliptic curve cryptography (ECC) algorithms

Table 179. Summary of new and changed RACF panels (continued)

Panel number	Release	Description	Reason for change
ICHH23 ICHP23	z/OS V1R12	Updated to allow for the specification of the NOGENERIC option	Improved RACF serviceability
ICHH717	z/OS V1R12	Updated the range value to support long certificate validity periods	Long certificate validity periods. Also, APAR OA30951.
ICHH21PS ICHH21Q ICHHC18 ICHP21Q ICHP22Q ICHR22P ICHS21Q	z/OS V1R11	New: Added to support program signing and verification	Program signing and verification. Also, APARs OA26109 and OA26110.
ICHCB71A ICHH21S ICHH22S ICHH22S1 ICHH22S2 ICHHI04 ICHHS06 ICHH716A ICHP21S ICHP22S ICHP22S1 ICHP22S2	z/OS V1R11	New: Added to support ICSF segment for general resource profiles	ICSF segment for general resource profiles
ICHH21A ICHH22A ICHH28 ICHM21 ICHP21A ICHP22A ICHP28 ICHP41A ICHP42 ICHS21 ICHS22 ICHS28	z/OS V1R11	Updated to support program signing and verification	Program signing and verification. Also, APARs OA26109 and OA26110.

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Table 179. Summary of new and changed RACF panels (continued)

Panel number	Release	Description	Reason for change
ICHCB71 ICHH21A ICHH22A ICHH28 ICHH716 ICHHT70 ICHHT71 ICHM21 ICHM22 ICHM41 ICHM73 ICHP21A ICHP22A ICHP28 ICHP73 ICHP76 ICHPB70 ICHPB71 ICHPB71A	z/OS V1R11	Updated to support ICSF segment for general resource profiles	ICSF segment for general resource profiles
ICHH21A ICHH22A ICHH28 ICHH31 ICHH32 ICHH38 ICHH41A1 ICHH42A1 ICHM21 ICHM41 ICHP00 ICHP00SM ICHP21A ICHP21P ICHP21PC ICHP21PH ICHP21PN ICHP215 ICHP22A ICHP22P ICHP28 ICHP31 ICHP32 ICHP38 ICHP41 ICHP41A1 ICHP42 ICHP42A1 ICHP48 ICHR22P	z/OS V1R10	Updated to support custom fields	Custom fields

Table 179. Summary of new and changed RACF panels (continued)

Panel number	Release	Description	Reason for change
ICHH21CF ICHH21P ICHH21PC ICHH21PH ICHH21PN ICHH22P ICHH41CF ICHH41T ICHH41T1 ICHHC02 ICHP21P ICHP21PC ICHP21PH ICHP21PN ICHP22P ICHP41T ICHP41T1	z/OS V1R10	New: Added to support custom fields	Custom fields
ICHH404 ICHH54AX ICHH54B ICHH54C ICHH54D ICHHE02 ICHHP13	z/OS V1R10	Updated to support password phrase enveloping	Password phrase enveloping
ICHH21F ICHH22F ICHHE02 ICHP21F ICHP22F	z/OS V1R10	Updated to support Kerberos password phrase	Kerberos password phrase
ICHH7A ICHPB71	z/OS V1R10	Updated to support IPv6	IPv6 support
ICHH715	z/OS V1R10	Updated to support 4096-bit key	4096-bit key support

SMF records

Table 180 lists the new and changed RACF SMF records. See *z/OS Security Server RACF Macros and Interfaces* and *z/OS Security Server RACF Auditor's Guide* for more detailed information.

Table 180. Summary of new and changed RACF SMF records

Record type	Event code/field name	Release	Description	Reason for change
Type 80	Event code 66(42)	z/OS V2R1	Added the following bit definitions for byte 2: Bit Keyword specified 5 TOKEN	Enterprise PKCS #11 secure key support
		z/OS V1R13	Added the following bit definitions for byte 2: Bit Keyword specified 2 KUKEYAGREE 3 RSA 4 PKDS	<ul style="list-style-type: none"> • APAR OA33703 • Hardware keys generated with elliptic curve cryptography (ECC) algorithms
		z/OS V1R12	Added the following bit definitions for byte 2: Bit Keyword specified 0 NISTECC 1 BPECC	Keys generated with elliptic curve cryptography (ECC) algorithms
	Event code 69(45)	z/OS V1R12	Added relocate sections 426, 427, and 428.	PKI Services
	Event code 72(48)	z/OS V2R1	Added relocate sections 422, 426, and 429.	PKI Services certificate administration support
	Event code 73(49)	z/OS V1R12	Added relocate sections 427 and 428.	PKI Services
	Event code 83(53)	z/OS V1R12	Added relocate sections 427 and 428.	PKI Services
	Event code 87(57)	z/OS V1R13	Added the following bit definition for byte 0: Bit Keyword specified 2 QUERY	Distributed identity filters
	Table of extended-length relocate section variable data	z/OS V1R12	New: 426(1AA), 427(1AB), and 428(1AC)	<ul style="list-style-type: none"> • Keys generated with elliptic curve cryptography (ECC) algorithms • PKI Services
	SMF80VRM	z/OS V1R13	Updated for FMID 7780.	Release update
	z/OS V1R12	Updated for FMID 7770.	Release update	
Type 81	SMF81VRM	z/OS V1R13	Updated for FMID 7780.	Release update
		z/OS V1R12	Updated for FMID 7770.	Release update
Type 83	SMF83VRM	z/OS V1R13	Updated for FMID 7780.	Release update
		z/OS V1R12	Updated for FMID 7770.	Release update

Utilities

Table 181 lists the new and changed RACF utilities. For information about the IRRDBU00 and IRRRID00 utilities, see *z/OS Security Server RACF Security Administrator's Guide*. For information about the IRRADU00 utility, see *z/OS Security Server RACF Auditor's Guide*. For more information about other RACF utilities, see *z/OS Security Server RACF System Programmer's Guide*.

Table 181. Summary of new and changed RACF utilities

Utility name	Release	Description	Reason for change
IRRADU00	z/OS V1R12	<ul style="list-style-type: none"> Updated to unload updated SMF type 80 records event codes 69, 73, and 83. A new Writing your own Application subsection has been added Logical record lengths have been modified for OUTDD, XMLFORM DD, and XMLOUT DD. An attention notice has been added to IRRADU00 examples. 	<ul style="list-style-type: none"> PKI Services A reminder that IRRADU00 output can change with new releases of z/OS or when service is applied. The extension of the blocksize of the IRRADU00 data set. This occurs when a record grows beyond the current LRECL size. Reduce confusion regarding SMF utility's use of parameter called OUTDD.
IRRDBU00	z/OS V2R1	<ul style="list-style-type: none"> The database unload utility is able to extend processing for fields such as the certificate field in profiles in the DIGTCERT class. The certificate is processed to extract the subject's distinguished name, the issuer's distinguished name, and the signature algorithm in readable text format. Record 0560 is updated to support GRCERT_KEY_TYPE. 	<ul style="list-style-type: none"> Database Unload of Certificate DNs support Enterprise PKCS #11 secure key support
	z/OS V1R13	<ul style="list-style-type: none"> Record 0560 is updated to support the updated CERTPRVT field of the CERTDATA segment in the general template. Record 0580 is updated to support the new CHKADDRS field of the KERB segment in the general template. 	<ul style="list-style-type: none"> Hardware keys generated with elliptic curve cryptography (ECC) algorithms Support for Network Authentication Service
	z/OS V1R12	<ul style="list-style-type: none"> Record 0560 is updated to support the updated CERTPRVT field of the CERTDATA segment in the general template. Record 05G0 is updated to support the new CSFSCPW field of the ICSF segment in the general template. 	<ul style="list-style-type: none"> Keys generated with elliptic curve cryptography (ECC) algorithms Support of ICSF encrypted symmetric keys and CP Assist for Cryptographic Function (CPACF). Also, APAR OA29193.

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Chapter 24. SMP/E summary of interface changes

In addition to the interface changes included in this topic, updates to SMP/E might have resulted in SYS1.SAMPLIB member changes. See Chapter 4, “Summary of changes to SYS1.SAMPLIB,” on page 21 for those changes.

The SMP/E interfaces described in this topic are:

- “Commands”
- “Data sets and files” on page 302
- “Exits” on page 302
- “Macros” on page 303
- “Modification control statements (MCS)” on page 303
- “Panels” on page 303
- “Programming interfaces” on page 307
- “Service routines” on page 307

Commands

Table 182 lists the new and changed SMP/E commands. See *SMP/E for z/OS Commands* for more detailed information about these commands.

Table 182. Summary of new and changed SMP/E commands

Command	Release	Description	Reason for change
All SMP/E commands and services	V3R5 with IO11698	New: SAF checking was added to ensure that only users with sufficient access authority can invoke SMP/E functions.	IO11698
ACCEPT	SMP/E V3R5	<ul style="list-style-type: none"> • Changed: EXSRCID and SOURCEID operands • New: FIXCAT operand 	Release update
	SMP/E V3R6	Changed: Added support for multi-tasking using the SYSPRINT definition in the GIMDDALC data set	Multi-tasking using GIMDDALC SYSPRINT allocation
	SMP/E V3R6	Changed: Retains all HOLDDATA when SYSMOD is deleted from the global zone.	SYSMOD Comparison HOLDDATA report
APPLY	SMP/E V3R5	<ul style="list-style-type: none"> • Changed: EXSRCID and SOURCEID operands • New: FIXCAT operand 	Release update
	SMP/E V3R6	New: Added support for multi-tasking using the SYSPRINT definition in the GIMDDALC data set	Multi-tasking using GIMDDALC SYSPRINT allocation
JCLIN	SMP/E V3R5	Changed: Miscellaneous changes.	Release update
	SMP/E V3R6	Changed: Added support for the RMODE(31) Binder option	Release update.
LIST	SMP/E V3R5	<ul style="list-style-type: none"> • Changed: EXSRCID and SOURCEID operands • New: HOLDFIXCAT operand 	Release update

Table 182. Summary of new and changed SMP/E commands (continued)

Command	Release	Description	Reason for change
REJECT	SMP/E V3R5	Changed: SOURCEID operand	Release update
	SMP/E V3R6	Changed: HOLDDATA, PURGE and TARGETZONE operands. Deletes HOLDDATA only during the NOFMID and select modes of REJECT processing, and only when the HOLDDATA operand is specified.	SYSMOD Comparison HOLDDATA Report
REPORT CROSSZONE	SMP/E V3R6	New: ZONES operand to allow the specification of target and DLIB zones that are defined in different global zones.	Cross Global Zone Reporting
REPORT MISSINGFIX	SMP/E V3R5	New: Determines whether any FIXCAT APARs exist that are applicable but are not installed yet, and whether any SYSMODs are available to satisfy the missing FIXCAT APARs	Release update
REPORT SYSMODS	SMP/E V3R6	Changed: COMPAREDTO operand. Allows the specification of target and DLIB zones that are defined in different global zones.	Cross Global Zone Reporting
	SMPE V3R6	New: SYSMOD Comparison HOLDDATA Report' to identify SYSTEM and USER HOLDS that must be resolved before installing SYSMODs identified in the SYSMOD Comparison Report.	SYSMOD Comparison HOLDDATA Report
RESTORE	SMPE/V3R6	Changed: Retains any internal ++HOLD information when a SYSMOD is deleted from the global zone.	SYSMOD Comparison HOLDDATA Report
UCLIN	SMP/E V3R5	New: FIXCAT operand	Release update
	SMP/E V3R6	Changed: Retain any internal ++HOLD information when a SYSMOD is deleted from the global zone.	SYSMOD Comparison HOLDDATA Report
UNLOAD	SMP/E V3R5	Changed: EXSRCID and SOURCEID operands	Release update
ZONEEDIT	SMP/E V3R5	Changed: Enhanced support for adding certain subentries to selected SMP/E entries in the same zone	Release update

Data sets and files

Table 183 lists the changes to the SMP/E data sets and files for this release. See *SMP/E for z/OS Reference* for more detailed information about these data sets and files.

Table 183. Summary of new and changed SMP/E data sets

Data set	Release	Description	Reason for change
SMPHRPT	SMP/E V3R5	New: for ACCEPT, APPLY, and RECEIVE processing	Release update

Exits

There are no new or changed SMP/E exits for SMP/E V3R6 and SMP/E V3R5.

Macros

There are no new or changed SMP/E macros for SMP/E V3R6 and SMP/E V3R5.

Modification control statements (MCS)

Table 184 lists the changes to the SMP/E modification control statements (MCSs).

Table 184. Summary of new and changed SMP/E MCSs

Macro	Release	Description	Reason for change
++ASSIGN MCS	SMP/E V3R5	Changed: Enhanced support for long source IDs	Release update
++HOLD MCS	SMP/E V3R5	New: FIXCAT operand	Release update
++MOD MCS	SMP/E V3R6	Changed: Support for the RMODE(31) Binder option	Release update
++RELEASE MCS	SMP/E V3R5	New: FIXCAT operand	Release update

Panels

Table 185 lists the new and changed SMP/E panels. Some panels may be updated by more than one release enhancement.

Table 185. Summary of new and changed SMP/E panels

Panel name	Release	Description	Reason for change
GIMCGACA	SMP/E V3R5	Updated	Release update
GIMCGAPA	SMP/E V3R5	Updated	Release update
GIMCGFC	SMP/E V3R5	Updated	Release update
GIMCGHFC	SMP/E V3R5	Updated	Release update
GIMCGND2	SMP/E V3R6	Updated	Release update
GIMCGNDH	SMP/E V3R6	Deleted	Release update
GIMCGRJM	SMP/E V3R6	Updated	Release update
GIMCGRJP	SMP/E V3R6	Updated	Release update
GIMCGRPA	SMP/E V3R6	Updated	Release update
GIMCGRPC	SMP/E V3R6	Updated	Release update
GIMCGRPE	SMP/E V3R5	New	Release update
GIMCGRPS	SMP/E V3R5	Updated	Release update
GIMCGRPX	SMP/E V3R6	New	Release update
GIMCGRV5	SMP/E V3R5	Updated	Release update
GIMCGSRC	SMP/E V3R5	Updated	Release update
GIMCGXSR	SMP/E V3R5	Updated	Release update
GIMCGZNM	SMP/E V3R6	Deleted	Release update
GIMDFHC1	SMP/E V3R6	Updated	Release update
GIMDFHC2	SMP/E V3R5	Updated	Release update
GIMDFHC	SMP/E V3R5	New	Release update
	SMP/E V3R6	Updated	Release update

Table 185. Summary of new and changed SMP/E panels (continued)

Panel name	Release	Description	Reason for change
GIMDFOC	SMP/E V3R5	Updated	Release update
	SMP/E V3R6	Updated	Release update
GIMDFTB	SMP/E V3R5	Updated	APAR IO13217
GIMFCEN	SMP/E V3R5	New	Release update
GIMFCE	SMP/E V3R5	New	Release update
GIMFCEU	SMP/E V3R5	New	Release update
GIMFCEV	SMP/E V3R5	New	Release update
GIMHCAC	SMP/E V3R5	Updated	Release update
GIMHCAP	SMP/E V3R5	Updated	Release update
GIMHCBH	SMP/E V3R5	Updated	Release update
GIMHCFC2	SMP/E V3R5	Updated	Release update
GIMHCFC	SMP/E V3R5	Updated	Release update
GIMHCHF	SMP/E V3R5	Updated	Release update
GIMHCNM	SMP/E V3R6	Deleted	Release update
GIMHCRJ2	SMP/E V3R6	Updated	Release update
GIMHCRJ4	SMP/E V3R6	Updated	Release update
GIMHCRJB	SMP/E V3R6	Updated	Release update
GIMHCRJC	SMP/E V3R6	Updated	Release update
GIMHCRJD	SMP/E V3R6	Updated	Release update
GIMHCRP5	SMP/E V3R5	New	Release update
GIMHCRPA	SMP/E V3R6	Updated	Release update
GIMHCRPM	SMP/E V3R6	Updated	Release update
GIMHCRP5	SMP/E V3R5	Updated	Release update
GIMHCRPX	SMP/E V3R6	New	Release update
GIMHCRPY	SMP/E V3R5	New	Release update
GIMHDFHC	SMP/E V3R6	Updated	Release update
GIMHDHC2	SMP/E V3R5	New	Release update
GIMHDHC	SMP/E V3R5	New	Release update
	SMP/E V3R6	Updated	Release update
GIMHFCEN	SMP/E V3R5	New	Release update
GIMHFCE	SMP/E V3R5	New	Release update
GIMHFCEU	SMP/E V3R5	New	Release update
GIMHFCEV	SMP/E V3R5	New	Release update
GIMHICA1	SMP/E V3R5	Updated	Release update
GIMHICB1	SMP/E V3R5	Updated	Release update
GIMHICD1	SMP/E V3R5	Updated	Release update
GIMHICE0	SMP/E V3R5	Updated	Release update
GIMHICF1	SMP/E V3R5	Updated	Release update
GIMHICVA	SMP/E V3R5	Updated	Release update
GIMHIFC2	SMP/E V3R5	New	Release update

Table 185. Summary of new and changed SMP/E panels (continued)

Panel name	Release	Description	Reason for change
GIMHIFC	SMP/E V3R5	New	Release update
GIMHIPA1	SMP/E V3R5	Updated	Release update
GIMHIPB0	SMP/E V3R5	Updated	Release update
GIMHIPD1	SMP/E V3R5	Updated	Release update
GIMHIPVA	SMP/E V3R5	Updated	Release update
GIMHIRDO	SMP/E V3R5	New	Release update
GIMHIXA1	SMP/E V3R5	Updated	Release update
GIMHIXA	SMP/E V3R5	Updated	Release update
GIMHIXE	SMP/E V3R5	Updated	Release update
GIMHIXH	SMP/E V3R5	Updated	Release update
GIMHIXJ	SMP/E V3R5	Updated	Release update
GIMHIXL	SMP/E V3R5	New	Release update
GIMHOC0	SMP/E V3R5	Updated	Release update
GIMHOH0	SMP/E V3R5	Updated	Release update
GIMHQ011	SMP/E V3R5	Updated	Release update
GIMHQ226	SMP/E V3R5	Updated	Release update
GIMHQ27A	SMP/E V3R5	New	Release update
GIMHQ28A	SMP/E V3R5	Updated	Release update
GIMHQ28B	SMP/E V3R5	Updated	Release update
GIMHQ28C	SMP/E V3R5	New	Release update
GIMHQI00	SMP/E V3R5	Updated	Release update
GIMHQI1H	SMP/E V3R5	Updated	Release update
	SMP/E V3R6	Updated	Release update
GIMHQI27	SMP/E V3R5	Updated	Release update
GIMHQI28	SMP/E V3R5	Updated	Release update
GIMHRDPO	SMP/E V3R5	Updated	Release update
GIMHXA3B	SMP/E V3R5	Updated	Release update
GIMHXC1	SMP/E V3R5	Updated	Release update
GIMHXD1	SMP/E V3R5	New	Release update
GIMHXM1	SMP/E V3R5	New	Release update
GIMHXO1	SMP/E V3R5	Updated	Release update
GIMHXO2A	SMP/E V3R5	New	Release update
GIMHXO2	SMP/E V3R5	Updated	Release update
GIMHXO4	SMP/E V3R5	Updated	Release update
GIMHXQ2	SMP/E V3R5	Updated	Release update
GIMHXQ3	SMP/E V3R5	Updated	Release update
GIMHXT1	SMP/E V3R5	New	Release update
GIMISACA	SMP/E V3R5	Updated	Release update
GIMISACB	SMP/E V3R5	Updated	Release update
GIMISACD	SMP/E V3R5	Updated	Release update

Table 185. Summary of new and changed SMP/E panels (continued)

Panel name	Release	Description	Reason for change
GIMISACE	SMP/E V3R5	Updated	Release update
GIMISACF	SMP/E V3R5	Updated	Release update
GIMISACV	SMP/E V3R5	Updated	Release update
GIMISAPA	SMP/E V3R5	Updated	Release update
GIMISAPB	SMP/E V3R5	Updated	Release update
GIMISAPD	SMP/E V3R5	Updated	Release update
GIMISAPV	SMP/E V3R5	Updated	Release update
GIMISEXA	SMP/E V3R5	Updated	Release update
GIMISEXE	SMP/E V3R5	Updated	Release update
GIMISEXH	SMP/E V3R5	Updated	Release update
GIMISEXJ	SMP/E V3R5	Updated	Release update
GIMISEXL	SMP/E V3R5	Updated	Release update
GIMISFC	SMP/E V3R5	New	Release update
GIMISIDC	SMP/E V3R5	Updated	Release update
GIMISIDF	SMP/E V3R5	Updated	Release update
GIMISIDN	SMP/E V3R5	Updated	Release update
GIMISIDO	SMP/E V3R5	Updated	Release update
GIMISIDS	SMP/E V3R5	Updated	Release update
GIMISIDT	SMP/E V3R5	Updated	Release update
GIMODELC	SMP/E V3R5	Updated	Release update
GIMODELP	SMP/E V3R5	New	Release update
GIMQIT1H	SMP/E V3R5	Updated	Release update
GIMQIT26	SMP/E V3R5	Updated	Release update
GIMQUSE3	SMP/E V3R5	Updated	Release update
GIMQUSEB	SMP/E V3R5	Updated	Release update
GIMRCCU	SMP/E V3R5	Updated	Release update
GIMRCFU	SMP/E V3R5	Updated	Release update
GIMRCOT	SMP/E V3R5	Updated	Release update
GIMRCPDI	SMP/E V3R5	Updated	Release update
GIMRCPU	SMP/E V3R5	Updated	Release update
GIMWCGZR	SMP/E V3R6	Updated	Release update
GIMWCSCH	SMP/E V3R6	Updated	Release update
GIMWHLDF	SMP/E V3R5	New	Release update
GIMWHRPT	SMP/E V3R5	New	Release update
GIMWNETR	SMP/E V3R5	New	Release update
GIMWNFO	SMP/E V3R5	New	Release update
GIMWORDP	SMP/E V3R5	New	Release update
GIMWRCVO	SMP/E V3R5	New	Release update
GIMWREDO	SMP/E V3R5	New	Release update
GIMWREPM	SMP/E V3R5	New	Release update

Table 185. Summary of new and changed SMP/E panels (continued)

Panel name	Release	Description	Reason for change
GIMWT350	SMP/E V3R5	Updated	Release update
GIMWT360	SMP/E V3R6	New	Release update
GIMWTLSI	SMP/E V3R5	New	Release update
GIMWTUTA	SMP/E V3R5	New	Release update
GIMWTUUT	SMP/E V3R5	New	Release update
GIMWZED	SMP/E V3R5	New	Release update

Programming interfaces

There are no new or changed SMP/E programming interfaces for SMP/E V3R6 and SMP/E V3R5.

Service routines

There are no new or changed SMP/E service routines for SMP/E V3R6 and SMP/E V3R5.

Chapter 25. TSO/E summary of interface changes

In addition to the message and interface changes included in this topic, updates to TSO/E might have resulted in SYS1.MACLIB, SYS1.PARMLIB and SYS1.SAMPLIB member changes. See Chapter 1, “Summary of changes to SYS1.MACLIB,” on page 3, Chapter 2, “Summary of changes to SYS1.PARMLIB,” on page 5 and Chapter 4, “Summary of changes to SYS1.SAMPLIB,” on page 21 for those changes.

The TSO/E interfaces described in this topic are:

- “Commands”
- “Macros” on page 310
- “Panels” on page 310

Commands

Table 186 lists the updated commands. See *z/OS TSO/E Command Reference* for more detailed information.

Table 186. Summary of changed TSO/E commands

Command	Release	Description	Reason for change
ALLOCATE	z/OSV2R1	Updated: The operand DSNTYPE has been updated for the ALLOCATE command.	Release update
	z/OS V1R12	Updated: The operand DSNTYPE has been updated for the ALLOCATE command.	Release update
	z/OS V1R13	Updated: The operand RETPD has been updated for the ALLOCATE command.	Release update
ATTRIB	z/OS V1R13	Updated: The operands BUFNO and RETPD have been updated for the ATTRIB command.	Release update
LINK	z/OS V1R12	Updated: The description of the COMPAT operand for the LINK command has been updated to add new values.	Release update
LISTALC	z/OS V1R12	Updated: The operand HISTORY has been updated for DSORG for the LISTALC command.	Release update
LISTDS	z/OSV2R1	Updated: The operand STATUS has been updated for DDNAMES for the LISTDS command.	Release update
LOGOFF	z/OSV2R1	Updated: The TSO segment, including the TSO profile, has been updated for the LOGOFF command.	Release update
LINK	z/OS V1R13	Updated: The LINK command has been updated with a new PRIV parameter of the STRIPSEC option.	Release update
MVSSERV	z/OS V1R13	Updated: The MVSSERV command has been updated.	Release update

TSO/E

Table 186. Summary of changed TSO/E commands (continued)

Command	Release	Description	Reason for change
SEND	z/OS V1R13	Updated: The SEND command has been updated.	Release update
TERMINAL	z/OS V1R12	Updated: Obsolete information about TCAM has been removed from TERMINAL command operands.	Release update

Macros

Table 187 lists the new and changed macros.

Table 187. Summary of new and changed TSO/E macros

Macros	Release	Description	Reason for change
	z/OS V1R12	Updated: Changed the Execute and List Forms of TPG	Release update
TPUT	z/OS V1R12	Updated: Added new return codes to the TPUT maro.	Release update
	z/OS V1R12	Updated: Changed the Execute, Standard and List Forms of TPUT.	Release update
TPG	z/OS V1R12	Updated: Added new return codes to the TPG macro.	Release update
	z/OS V1R12	Updated: Changed the Execute and List Forms of TPG.	Release update

Panels

There are no new and changed TSO/E panels in z/OS V2R1, V1R13, and V1R12.

Table 188 lists the new and changed TSO/E panels.

Table 188. Summary of new and changed TSO/E panels

Command	Release	Description	Reason for change

Chapter 26. XL C/C++ summary of interface changes

This chapter describes interface changes to the XL C/C++ compiler.

Compiler options

Table 189 lists the new and updated XL C/C++ compiler options. See *z/OS XL C/C++ User's Guide* for more detailed information.

Table 189. Summary of new and changed XL C/C++ compiler options

Compiler option	Release	Description	Reason for change
ARCH(10)	z/OS V1R13	New value: Produces code that uses instructions available on the 2827-xxx models for IBM zEnterprise® EC12 (zEC12) in z/Architecture® mode.	Release update
DEBUG(LEVEL(<i>level</i>))	z/OS V2R1	New value: Controls the amount of debug information produced.	Release update
DSAUUSER NODSAUSER (C only)	z/OS V1R13	New option: When DSAUSER is specified with the METAL option, a field of the size of a pointer is reserved on the stack.	Release update
INCLUDE NOINCLUDE	z/OS V2R1	New option: Specifies additional header files to be included in a compilation unit.	Release update
LANGLVL(AUTOTYPEDEDUCTION)	z/OS V1R12	New value: When LANG(AUTOTYPEDEDUCTION) is in effect, you do not need to specify a type when declaring a variable. Instead, the compiler deduces the type of an auto variable from the type of its initializer expression.	Release update
LANGLVL(C1XNORETURN)	z/OS V2R1	New value: Controls whether the _Noreturn function specifier is supported.	Release update
LANGLVL(C99COMPLEX)	z/OS V1R13	New value: Controls whether C99 complex data types and related keywords are enabled.	Release update
LANGLVL(C99COMPLEXHEADER)	z/OS V1R13	New value: Controls whether the C99 complex.h header file is used.	Release update
LANGLVL(C99LONGLONG)	z/OS V1R12	New value: When LANG(C99LONGLONG) is in effect, the C++ compiler provides the C99 long long with IBM extensions feature.	Release update
LANGLVL(C99PREPROCESSOR)	z/OS V1R12	New value: When LANG(C99PREPROCESSOR) is in effect, C99 and C++ compilers provide a common preprocessor interface, which can ease the porting of C source files to the C++ compiler and avoid preprocessor compatibility issues.	Release update
LANGLVL(COMPATVALUEBINDING)	z/OS V1R13	New value: When you are porting code to IBM XL C/C++ compiler, you can specify this option to instruct the compiler to allow a non-const reference to bind to an rvalue of a user-defined type where an initializer is not required.	Release update
LANGLVL(CONSTEXPR)	z/OS V2R1	New value: Controls whether the generalized constant expressions feature is enabled.	Release update
LANGLVL(DECLTYPE)	z/OS V1R12	New value: When LANG(DECLTYPE) is in effect, decltype can be used on an expression to get the resultant type of that expression, which might be type dependent.	Release update
LANGLVL(DEFAULTANDDELETE)	z/OS V2R1	New value: Controls whether the defaulted and deleted functions feature is enabled.	Release update
LANGLVL(DELEGATINGCTORS)	z/OS V1R12	New value: When LANG(DELEGATINGCTORS) is specified, you can concentrate common initializations and post initializations in one constructor, which improves the readability and maintainability of the program.	Release update
LANGLVL(EXPLICITCONVERSION OPERATORS)	z/OS V2R1	New value: Controls whether the explicit conversion operators feature is enabled.	Release update
LANGLVL(EXTC1X)	z/OS V2R1	New value: Indicates that compilation is based on the C11 standard, invoking all the currently supported C11 features and other implementation-specific language extensions.	Release update
LANGLVL(EXTENDEDINTEGERSAFE)	z/OS V1R12	New value: With this option, if a decimal integer literal that does not have a suffix containing u or U cannot be represented by the long long int type, you can decide whether to use the unsigned long long int to represent the literal.	Release update

Table 189. Summary of new and changed XL C/C++ compiler options (continued)

Compiler option	Release	Description	Reason for change
LANGLVL(GNU_COMPLEX)	z/OS V1R13	New value: Controls whether GNU complex data types and related keywords are enabled.	Release update
LANGLVL(GNU_SUFFIXIJ)	z/OS V1R13	New value: Controls whether support for GNU-style complex numbers is enabled.	Release update
LANGLVL(INLINENAMESPACE)	z/OS V1R12	New value: When you specify the LANGLVL(INLINENAMESPACE) option, members of the inline namespace can be defined and specialized as if they were also members of the enclosing namespace.	Release update
LANGLVL(REFERENCECOLLAPSING)	z/OS V2R1	New value: Controls whether the reference collapsing feature is enabled.	Release update
LANGLVL(RIGHTANGLEBRACKET)	z/OS V2R1	New value: Controls whether the right angle bracket feature is enabled.	Release update
LANGLVL(RVALUEREFERENCES)	z/OS V2R1	New value: Controls whether the rvalue references feature is enabled.	Release update
LANGLVL(SCOPEDENUM)	z/OS V2R1	New value: Controls whether the scoped enumeration feature is enabled.	Release update
LANGLVL(STATIC_ASSERT)	z/OS V1R12	New value: When LANGLVL(STATIC_ASSERT) is set, a severe error message for compile time assertions is issued on failure.	Release update
LANGLVL(TEMPSASLOCALS)	z/OS V1R13	New value: Extends the lifetime of temporaries to reduce migration difficulty.	Release update
LANGLVL(TEXTAFTERENDIF)	z/OS V1R13	New value: Suppresses the warning message that is emitted when you are porting code from a compiler that allows extra text after #endif or #else to IBM XL C/C++ compiler.	Release update
LANGLVL(VARIADICTEMPLATES)	z/OS V1R12	New value: When LANGLVL(VARIADICTEMPLATES) is set, you can define class and function templates that have any number (including zero) of parameters.	Release update
NAMEMANGLING(zOSV1R12_ANSI)	z/OS V1R12	New value: NAMEMANGLING(zOSV1R12_ANSI) is compatible with z/OS XL C++ V1R12 link modules that were created with NAMEMANGLING(ANSI) or #pragma namemangling(ansi).	Release update
NAMEMANGLING(zOSV2R1_ANSI)	z/OS V2R1	New value: NAMEMANGLING(zOSV2R1_ANSI) is compatible with z/OS XL C++ V2R1 link modules that were created with NAMEMANGLING(ANSI) or #pragma namemangling(ansi).	Release update
SMP NOSMP	z/OS V2R1	New option: Enables parallelization of program code.	Release update
STRICT(SUBSCRIPTWRAP)	z/OS V2R1	New value: Prevents the compiler from assuming that array subscript expressions will never overflow.	Release update
SYSSTATE (Metal C only)	z/OS V2R1	New option: Provides additional SYSSTATE macro parameters to the SYSSTATE macro that is generated by the compiler.	Release update
TARGET(zOSV1R12)	z/OS V1R12	New value: TARGET(zOSV1R12) generates object code to run under z/OS Version 1 Release 12 and subsequent releases.	Release update
TARGET(zOSV1R13)	z/OS V1R13	New value: TARGET(zOSV1R13) generates object code to run under z/OS Version 1 Release 13 and subsequent releases.	Release update
TARGET(zOSV2R1)	z/OS V2R1	New value: TARGET(zOSV2R1) generates object code to run under z/OS Version 2 Release 1 and subsequent releases.	Release update
TEMPLATEDDEPTH (C++ only)	z/OS V1R13	New option: The TEMPLATEDDEPTH option specifies the maximum number of recursively instantiated template specializations that are processed by the compiler.	Release update
THREADED NOTHREADED	z/OS V2R1	New option: Indicates to the compiler whether it must generate threadsafe code.	Release update
TUNE(10)	z/OS V1R13	New value: TUNE(10) generates code that is executable on all models, but is optimized for the 2827-xxx using IBM zEnterprise EC12 (zEC12).	Release update

Cataloged procedures

There are no new or changed cataloged procedures in z/OS V1R12, V1R13, and V2R1.

Commands

There are no new or changed commands for **as**, **c89**, **dbg1d**, or **x1c** utilities in z/OS V1R12, V1R13, and V2R1.

Chapter 27. z/OS UNIX summary of interface changes

In addition to the interface changes included in this topic, updates to z/OS UNIX might have resulted in SYS1.PARMLIB and SYS1.SAMPLIB member changes. See Chapter 2, “Summary of changes to SYS1.PARMLIB,” on page 5 and Chapter 4, “Summary of changes to SYS1.SAMPLIB,” on page 21 for those changes.

The z/OS UNIX interfaces described in this topic are:

- “Callable services”
- “Configuration files” on page 316
- “Daemons” on page 316
- “Data sets” on page 316
- “Environment variables” on page 316
- “FACILITY class profiles” on page 317
- “REXX execs” on page 317
- “Shell commands” on page 318
- “Syscall commands” on page 323
- “System commands” on page 325
- “TSO/E commands” on page 326

Callable services

Table 190 lists the new and changed z/OS UNIX callable services. For details, see *z/OS UNIX System Services Programming: Assembler Callable Services Reference*.

Table 190. Summary of new and changed callable services

Callable service	Release	Description	Reason for change
BPX1BAS, BPX4BAS	z/OS V1R12	New: This service binds the socket descriptor to the best source address.	This callable service binds the best source address for the provided destination IP address to an AF_INET6 socket descriptor.
BPX1CCS	z/OS V1R13	Updated: Expand the BPXYCCA macro used by BPX1CCS to map the MsgAttributes parameter to include both supplied and returned CART/ConsoleID fields.	The user-supplied CART/ConsoleID fields allow a user to identify the console used by WTO to issue messages.
BPX1CPL	z/OS V2R1	Updated: Two new values were added to the FunctionCode parameter.	Flash memory enhancement
BPX1EXC, BPX4EXC	z/OS V2R1	Updated: An usage note was added.	Logging off unattended terminals
BPX1FCT, BPX4FCT	z/OS V2R1	Updated: The SetCvtOff and SetCvtAll subcommands were updated.	Unicode exploitation
BPX1FSY, BPX4FSY	z/OS V2R1	Updated: The usage notes were updated with Unicode Services information.	Unicode exploitation
BPX1GTH, BPX4GTH	z/OS V2R1	Updated: A new usage note was added.	Pipes enhancement

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Table 190. Summary of new and changed callable services (continued)

Callable service	Release	Description	Reason for change
BPX1LSK, BPX4LSK	z/OS V2R1	Updated: The usage notes were updated with Unicode Services information.	Unicode exploitation
BPX1PTR, BPX4PTR	z/OS V2R1	Updated: New parameter attributes were added for new request parameters PT_THREAD_VR and PT_WRITE_VR.	Vector registers support
BPX1RED, BPX4RED	z/OS V2R1	Updated: The usage notes were updated with Unicode Services information.	Unicode exploitation
BPX1SPN, BPX4SPN	z/OS V2R1	Updated: An usage note was added.	Logging off unattended terminals

Configuration files

There are no new or changed configuration files for z/OS UNIX.

Daemons

There are no new or changed daemons for z/OS UNIX.

Data sets

There are no new or changed data sets for z/OS UNIX.

Environment variables

Table 191 lists the new and changed environment variables. For details, see *z/OS UNIX System Services Planning*.

Table 191. Summary of new and changed z/OS UNIX environment variables.

Environment variable	Release	Description	Reason for change
_BPXK_AUTOCVT	z/OS V2R1	Updated: A new option activates the automatic conversion of files that are supported by Unicode Services.	Unicode exploitation
_BPXK_DISABLE_SHLIB	z/OS V1R13	New: Specifies whether normal system shared library program processing is enabled or disabled for a process.	Release enhancement
_BPXK_INET_FASTPATH	z/OS V2R1	Deleted.	Removal of support
_BPXK_PCCSID	z/OS V2R1	New: Identifies the program CCSID for the running thread or user.	Unicode exploitation
_BPXK_TECHNIQUE	z/OS V2R1	New: Specifies the Unicode Services conversion technique to use for the I/O conversion operation.	Unicode exploitation
_BPXK_TIMEOUT	z/OS V2R1	New: Specifies whether the process should time out.	Logging off unattended terminals
_BPXK_UNICODE_TECHNIQUE	z/OS V2R1	New: Specifies the Unicode Services conversion technique to use for the I/O translation operation.	Unicode exploitation

Table 191. Summary of new and changed z/OS UNIX environment variables. (continued)

Environment variable	Release	Description	Reason for change
_BPXK_UNICODE_SUB	z/OS V2R1	New: Specifies the Unicode Services substitution action to take for I/O translation operation when a source character is not convertible to a target character.	Unicode exploitation
_BPXK_UNICODE_MAL	z/OS V2R1	New: Specifies the Unicode Services substitution action to take for the translation operation when a source character is malformed.	Unicode exploitation

FACILITY class profiles

Table 192 lists the new and changed z/OS UNIX resource profiles in the RACF FACILITY class. For details, see *z/OS UNIX System Services Planning*.

Table 192. Summary of new and changed z/OS UNIX resource profiles in the RACF FACILITY class

Class profile name	Release	Description	Reason for change
BPX.DEFAULT.USER	z/OS V2R1	Deleted: Use BPX.UNIQUE.USER instead.	Security enhancement
BPX.EXECMVS. <i>programname</i>	z/OS V1R12	New profile: Allows unauthorized callers of the execmvs callable service to pass an argument that is greater than 100 characters to an authorized program.	Security enhancement

UNIXPRIV class profiles

Table 193 lists the new and changed z/OS UNIX resource names in the RACF UNIXPRIV class. For details, see *z/OS UNIX System Services Planning*.

Table 193. Summary of new and changed z/OS UNIX resource names in the RACF UNIXPRIV class

Class profile name	Release	Description	Reason for change
For SUPERUSER: FILESYS.USERMOUNT	z/OS V1R13	New resource name: SUPERUSER.FILESYS.USERMOUNT allows nonprivileged users to mount and unmount file systems with the nosetuid option.	Mount and unmount enhancement
For SUPERUSER: SHMMCV.LIMITS	z/OS V2R1	New resource name: SUPERUSER.SHMMCV.LIMITS allows the user to create up to 4,194,304 mutexes or condition variables to be associated with a single shared memory segment.	Allow more mutexes

REXX execs

There are no new or changed REXX execs for z/OS UNIX.

REXX functions

Table 194 lists new and changed syscall commands. For details, see *z/OS Using REXX and z/OS UNIX System Services*.

Table 194. Summary of new and changed z/OS UNIX functions

Function	Release	Description	Reason for change
procinfo()	z/OS V2R1	New request type: The filepath request retrieves file information for the specified process.	Pipes enhancement

Shell commands

Table 195 lists the new and changed shell commands. For details, see *z/OS UNIX System Services Command Reference*.

Table 195. Summary of new and changed shell commands

Command name	Release	Description	Reason for change
automount	z/OS V1R12	Updated command: Release updates and removal of restriction that the zFS file system must be a compatibility mode file system.	Command enhancement
	z/OS V2R1	Updated command: The -f option displays the information of the job that last accessed the specified file system. A list of allocation-spec keywords for allocany and allocuser has been added. A new keyword, charcase, was added. It indicates the case for names that can match the * specification.	Automount enhancement
bpxmtext	z/OS V2R1	New option: The -d option specifies that the <i>reason_code</i> or <i>error_number</i> is provided as a decimal number.	Errno support
bpxtrace	z/OS V1R12	Updated command: Various updates were made to the command.	Command update
cat	z/OS V2R1	Updated command: New options were added. TEXT_CONV was added to the Environment Variables section. The Portability section was updated.	Additional text conversion support
	z/OS V2R1	Removed restriction: The filecodeset restriction of the -W option was removed.	Unicode exploitation
c89	z/OS V1R12	Updated command: The -l <i>libname</i> option was added.	Command update
cd	z/OS V2R1	Updated exit value: Exit value 2 can also be a result of too many arguments.	Clarification
chtag	z/OS V1R12	Updated command: Various updates were made to the command.	Command update

Table 195. Summary of new and changed shell commands (continued)

Command name	Release	Description	Reason for change
cmp	z/OS V2R1	Updated command: New options were added. TEXT_CNV was added to the Environment Variables section. The Portability section was updated.	Additional text conversion support
	z/OS V2R1	Removed restriction: The filecodeset restriction of the -W option was removed.	Unicode exploitation
comm	z/OS V2R1	Updated command: New options were added. TEXT_CNV was added to the Environment Variables section. The Portability section was updated.	Additional text conversion support
cp	z/OS V1R12	Updated command: Various updates have been made, including information about the record file format.	Command enhancement
cut	z/OS V2R1	Updated command: New options were added. TEXT_CNV was added to the Environment Variables section. The Portability section was updated.	Additional text conversion support
dbgld	z/OS V1R12	Updated command: Various updates were made to the command.	Command update
dbx and dbx subcommands	z/OS V1R12	Updated command and subcommands: Various updates were made to the command. A usage note was added to the dbx commands goto and gotoi . The unload subcommand was also updated. The examples were updated to include one for the <code>_CEE_RUNOPTS="test(all)"</code> environment variable.	Command update
	z/OS V2R1	Updated subcommand: The <code>\$showcodelines</code> variable was added to the set subcommand. It indicates the lines where the debugger can stop and where breakpoints can be set.	Debug enhancement
	z/OS V2R1	New variable: A new variable, <code>\$noregs</code> , was added to the set subcommand of dbx . The usage note for the registers subcommand was also updated with information about displaying and assigning vector registers.	dbx support of vector-enabled programs
df	z/OS V1R13	Updated option: The -v option now displays the user name and effective user ID.	Nonprivileged user mounts
diff	z/OS V2R1	Updated command: New options were added. TEXT_CNV was added to the Environment Variables section. The Portability section was updated.	Additional text conversion support
	z/OS V2R1	Removed restriction: The filecodeset restriction of the -W option was removed.	Unicode exploitation

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Table 195. Summary of new and changed shell commands (continued)

Command name	Release	Description	Reason for change
dircmp	z/OS V2R1	Updated command: New options were added. TEXT_CNV was added to the Environment Variables section.	Additional text conversion support
	z/OS V2R1	Removed restriction: The filecodeset restriction of the -W option was removed.	Unicode exploitation
ed	z/OS V2R1	Updated command: New options were added. TEXT_CNV was added to the Environment Variables section. The Portability section was updated.	Additional text conversion support
egrep	z/OS V2R1	Updated command: New options were added.	Additional text conversion support
ex	z/OS V1R13	New -W option and new -B file tag specific option: Support is added to edit untagged z/OS files containing ASCII data or to override the code set value of tagged files.	Enhanced text conversion control
	z/OS V2R1	Updated command: New options were added. TEXT_CNV was added to the Environment Variables section. The Portability section was updated.	Enhanced text conversion control
	z/OS V2R1	Removed restriction: The filecodeset restriction of the -W option was removed.	Unicode exploitation
expand	z/OS V2R1	Updated command: New options were added. TEXT_CNV was added to the Environment Variables section. The Portability section was updated.	Additional text conversion support
extattr	z/OS V1R12	New file format: Support is added for the record file format.	Command enhancement
fgrep	z/OS V2R1	Updated command: New options were added.	Additional text conversion support
file	z/OS V2R1	Updated command: New options were added. TEXT_CNV was added to the Environment Variables section. The Portability section was updated.	Additional text conversion support
	z/OS V2R1	Removed restriction: The filecodeset restriction of the -W option was removed.	Unicode exploitation
fuser	z/OS V1R12	New restriction: A restriction was added.	Command clarification
grep	z/OS V2R1	Updated command: New options were added. TEXT_CNV was added to the Environment Variables section. The Portability section was updated.	Additional text conversion support
	z/OS V2R1	Removed restriction: The filecodeset restriction of the -W option was removed.	Unicode exploitation

Table 195. Summary of new and changed shell commands (continued)

Command name	Release	Description	Reason for change
head	z/OS V2R1	Updated command: New options were added. TEXT_CNV was added to the Environment Variables section. The Portability section was updated.	Additional text conversion support
	z/OS V2R1	Removed restriction: The filecodeset restriction of the -W option was removed.	Unicode exploitation
kill	z/OS V1R12	Command update: The process to be killed must belong to the current user; however, any process can be killed by a superuser.	Command clarification
ls	z/OS V1R12	New file format: Updated to reflect record file format support.	Command enhancement
	z/OS V2R1	New usage note: A usage note was added to the ls command about issuing the ls command against a large directory structure.	APAR OA46568
mount	z/OS V1R13	New option: If the -m option is used, the file name can be for any file or directory within the file system.	Mount granularity
	z/OS V2R1	Updated command: The parameter key has new options.	Early warning of full file systems
more	z/OS V2R1	Updated command: New options were added. TEXT_CNV was added to the Environment Variables section. The Portability section was updated. The interactive commands section was updated.	Additional text conversion support
	z/OS V2R1	Removed restriction: The filecodeset restriction of the -W option was removed.	Unicode exploitation
mv	z/OS V1R12	Command update: Updated to reflect record file format support.	Command enhancement
obrowse	z/OS V1R13	New environment variable: BPXWISHISPF controls the use of the ISPF browse dialog service.	Command enhancement
oedit	z/OS V1R13	New environment variable: BPXWISHISPF controls the use of the ISPF browse dialog service.	Command enhancement
pack	z/OS V2R1	Updated command: New options were added. TEXT_CNV was added to the Environment Variables section. The Portability section was updated.	Additional text conversion support
paste	z/OS V2R1	Updated command: New options were added. TEXT_CNV was added to the Environment Variables section. The Portability section was updated.	Additional text conversion support
pax	z/OS V1R12	Command update: Various updates were made, including information about the record file format.	Command enhancement

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Table 195. Summary of new and changed shell commands (continued)

Command name	Release	Description	Reason for change
rmdir	z/OS V1R12	Command update: Minor updates were made to the exit values documentation.	Command clarification
script	z/OS V1R13	New command: Makes a typescript of a terminal session.	Release enhancement
sed	z/OS V2R1	Updated command: New options were added. TEXT_CNV was added to the Environment Variables section. The Portability section was updated.	Additional text conversion support
skulker	z/OS V1R12	New option: The -R option specifies a recursive move through subdirectories to find both non-directory files and subdirectories that are equal to or older than the specified number of days. Other documentation updates were made, including an update to the restriction.	Command enhancement
sh	z/OS V2R1	Variable update: The TMOU variable includes text on using the PWT BPXPRMxx option instead.	Logging off unattended terminals
	z/OS V2R1	New restriction: If the tagged script is being run with automatic conversion enabled, the code page of the locale must be SBCS.	Unicode exploitation
	z/OS V2R1	New restriction: Certain arithmetic substitution was changed to comply with UNIX specifications.	APAR OA46394
strings	z/OS V2R1	Updated command: New options were added. TEXT_CNV was added to the Environment Variables section. The Portability section was updated.	Additional text conversion support
	z/OS V2R1	Removed restriction: The filecodeset restriction of the -W option was removed.	Unicode exploitation
su	z/OS V1R12	Command update: Additional information was added.	Command update
tail	z/OS V2R1	Updated command: New options were added. TEXT_CNV was added to the Environment Variables section. The Portability section was updated.	Additional text conversion support
	z/OS V2R1	Removed restriction: The filecodeset restriction of the -W option was removed.	Unicode exploitation
tcsh	z/OS V2R1	New restriction: If the tagged script is being run with automatic conversion enabled, the code page of the locale must be SBCS.	Unicode exploitation
tso	z/OS V1R12	Command update: Various documentation updates were made.	Command update

Table 195. Summary of new and changed shell commands (continued)

Command name	Release	Description	Reason for change
tsocmd	z/OS V1R12	New command: Runs a TSO/E command from the shell (including authorized commands).	Release enhancements
unmount	z/OS V1R13	New option and parameter: The -m option specifies that the <i>name...</i> parameter can be any file or directory within the file system to be unmounted.	Command enhancements
		A rule concerning mount authority was added.	Command clarification
unexpand	z/OS V2R1	Updated command: New options were added. TEXT_CNV was added to the Environment Variables section. The Portability section was updated.	Additional text conversion support
vi	z/OS V1R13	New -W option and new -B file tag specific option Support is added to edit untagged z/OS files containing ASCII data or to override the code set value of tagged files.	Enhanced text conversion control
	z/OS V2R1	Updated command: New options were added. TEXT_CONV was added to the Environment Variables section. The Portability section was updated.	Additional text conversion support
	z/OS V2R1	Removed restriction: The filecodeset restriction of the -w option was removed.	Unicode exploitation
wc	z/OS V2R1	Updated command: New options were added. TEXT_CNV was added to the Environment Variables section. The Portability section was updated.	Additional text conversion support

Syscall commands

Table 196 lists new and changed syscall commands. For details, see *z/OS Using REXX and z/OS UNIX System Services*.

Table 196. Summary of new and changed z/OS UNIX syscall commands

Syscall commands	Release	Description	Reason for change
chattr	z/OS V1R12	New predefined variables: Two new predefined variables have been added: S_FFCRNL and S_FFRECORD.	Release updates
f_control_cvt	z/OS V2R1	New parameters: <ul style="list-style-type: none"> • QueryCvt • SetAutoCvtAll • CVT_SETCVTALL • CVT_SETCVT_OFF • CVTSETCVTON 	Unicode support
fchattr	z/OS V1R12	New predefined variables: Two new predefined variables have been added: S_FFCRNL and S_FFRECORD.	Release updates

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Table 196. Summary of new and changed z/OS UNIX syscall commands (continued)

Syscall commands	Release	Description	Reason for change
fstat	z/OS V1R12	New predefined variables: Two new predefined variables have been added: S_FFCRNL and S_FFRECORD.	Release updates
getmntent	z/OS V1R13	New parameter: The pathflag parameter was added.	Command update
	z/OS V1R13	New predefined variables: The MNT_UID variable was added.	Command update
mount	z/OS V1R13	A rule concerning mount authority was added.	Mount granularity
msgget	z/OS V2R1	New syscall command: Locates or creates a message queue.	Extending IPC capabilities for REXX
msgrcv	z/OS V2R1	New syscall command: Receives messages from message queues.	Extending IPC capabilities for REXX
msgrmid	z/OS V2R1	New syscall command: Removes the message queue.	Extending IPC capabilities for REXX
msgset	z/OS V2R1	New syscall command: Sets the message queue attributes	Extending IPC capabilities for REXX
msgsnd	z/OS V2R1	New syscall command: Sends messages to message queues.	Extending IPC capabilities for REXX
msgstat	z/OS V2R1	New syscall command: Obtains status information for a message queue.	Extending IPC capabilities for REXX
shmat	z/OS V2R1	New syscall command: Attaches a shared memory segment.	Extending IPC capabilities for REXX
shmdt	z/OS V2R1	New syscall command: Detaches a shared memory segment.	Extending IPC capabilities for REXX
shmget	z/OS V2R1	New syscall command: Locates or creates a shared memory segment.	Extending IPC capabilities for REXX
shmlkdestroy	z/OS V2R1	New syscall command: Removes a shared memory lock.	Extending IPC capabilities for REXX
shmlkinit	z/OS V2R1	New syscall command: Initializes a shared memory lock.	Extending IPC capabilities for REXX
shmlobtain	z/OS V2R1	New syscall command: Obtains a shared memory lock.	Extending IPC capabilities for REXX
shmlkrelease	z/OS V2R1	New syscall command: Releases a shared memory lock.	Extending IPC capabilities for REXX
shmid	z/OS V2R1	New syscall command: Removes a shared memory lock.	Extending IPC capabilities for REXX
shmset	z/OS V2R1	New syscall command: Sets the attributes for a shared memory segment.	Extending IPC capabilities for REXX
shmstat	z/OS V2R1	New syscall command: Obtains the status information for a shared memory segment.	Extending IPC capabilities for REXX
stat	z/OS V1R12	New predefined variables: Two new predefined variables have been added: S_FFCRNL and S_FFRECORD.	Release updates
unmount	z/OS V1R13	A rule concerning mount authority was added.	Mount granularity
v_close	z/OS V2R1	New syscall command: Closes a file that was previously opened using v_open .	Extending the file server interfaces for REXX

Table 196. Summary of new and changed z/OS UNIX syscall commands (continued)

Syscall commands	Release	Description	Reason for change
v_open	z/OS V2R1	New syscall command: Opens an existing file and optionally establishes share reservations on the file.	Extending the file server interfaces for REXX

System commands

Table 197 lists new and changed system commands that affect z/OS UNIX. For more information, see *z/OS MVS System Commands*.

For other elements that have z/OS UNIX command impacts, see the following sections:

- “z/OS UNIX commands” on page 84
- “z/OS UNIX commands for Infoprint Server” on page 247

Table 197. Summary of new and changed system commands for z/OS UNIX

System command	Release	Description	Reason for change
D GRS,ANALYZE	z/OS V1R12	The D GRS,ANALYZE operator command displays the latch identity for the system that the command is running in.	Command enhancement
D OMVS,F	z/OS V1R13	The UID filter displays information for the file systems mounted by the specific user.	Mount granularity
D OMVS,L	z/OS V1R13	The display output was updated to show the system limit and user limit of rnonprivileged user mounts.	Mount granularity
	z/OS V2R1	The display output was updated to show the maximum system limit of named or unnamed pipes (MAXPIPES) that can be open in the system. The limit is not configurable.	Pipe monitoring support
D OMVS,O	z/OS V1R13	The display output was updated to show NONEMPTYMOUNTPT, MAXUSERMOUNTSYS, and MAXUSEDRMOUNTUSER information.	Mount granularity
D OMVS,PIPES	z/OS V2R1	New parameter: Displays pipe usage	Pipe monitoring support
D OMVS,W	z/OS V1R13	The D OMVS,W display displays a table of file latch holders and waiters filtering options have been added to the D OMVS,W command to limit the amount of data being displayed.	Command enhancement
MODIFY	z/OS V1R13	The display was updated to show the system setting and highwater marks for MAXUSERMOUNTSYS and MAXUSERMOUNTUSER.	Mount granularity

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Table 197. Summary of new and changed system commands for z/OS UNIX (continued)

System command	Release	Description	Reason for change
SETOMVS	z/OS V1R13	New parameters: MAXUSERMOUNTSYS, MAXUSERMOUNTUSER, NONEMPTYMOUNTPT	Mount granularity
	z/OS V1R13	New parameter: LOSTMSG	Lost message detection

TSO/E commands

Table 198 lists the new and changed TSO/E commands that affect z/OS UNIX. For details, see *z/OS UNIX System Services Command Reference*.

Table 198. Summary of new and changed TSO/E commands

TSO/E commands	Release	Description	Reason for change
BXPBATCH	z/OS V1R12	Various updates were made.	Command clarification
BPXMTEXT	z/OS V2R1	Displays reason code text.	Not listed in previous releases
BPXMTRACE	z/OS V2R1	Activates or deactivate traces for processes	Not listed in previous releases
ISHELL	z/OS V1R12	Display was updated to include the new record file format.	Record file format support
	z/OS V1R13	A note was added about the BPXWISHISPF environment variable.	Command enhancement
OBROWSE	z/OS V1R13	New option: The -o option specifies that the original dialog service is to be used.	Command enhancement
OEDIT	z/OS V1R13	New option: The -o option specifies that the original dialog service is to be used.	Command enhancement
MOUNT	z/OS V1R13	Updated option: The behavior of the -f fsname option has changed. A rule concerning mount authority was added.	Mount granularity
UNMOUNT	z/OS V1R12	Additional information was added.	Command update
	z/OS V1R13	A rule concerning mount authority was added.	Mount granularity
ZLSOF	z/OS V2R1	New command: Displays information about open files, sockets, and pipes (including named pipes, which are also known as FIFO special files).	PIPE and LFS serviceability improvement

Part 2. Summary of message and code changes for z/OS V2R1

The topics list new, changed, and deleted messages for z/OS V2R1 elements and features. All message changes are in element specific topics.

The following elements and features were updated with new, changed, or deleted messages or codes for z/OS V2R1.

-

z/OS V2R1 messages

Chapter 28. z/OS V2R1 summary of message changes

BCP and DFSMS summary of message changes for z/OS V2R1

This topic lists new, changed, and deleted messages for BCP, DFSMSdfp, DFSMSdss, DFSMSHsm, DFSMSrmm, and DFSMSStvs. It also lists new, changed, and deleted operator messages for RMF and TSO/E. (New, changed, and deleted non-operator messages for TSO/E are in “TSO/E summary of message changes for z/OS V1R13” on page 392.) All the messages in this section are grouped together, without distinction as to element or feature.

All messages for the BCP and DFSMS, as well as the operator messages for RMF and TSO/E, are documented in:

- *z/OS MVS System Messages, Vol 1 (ABA-AOM)*
- *z/OS MVS System Messages, Vol 2 (ARC-ASA)*
- *z/OS MVS System Messages, Vol 3 (ASB-BPX)*
- *z/OS MVS System Messages, Vol 4 (CBD-DMO)*
- *z/OS MVS System Messages, Vol 5 (EDG-GFS)*
- *z/OS MVS System Messages, Vol 6 (GOS-IEA)*
- *z/OS MVS System Messages, Vol 7 (IEB-IEE)*
- *z/OS MVS System Messages, Vol 8 (IEF-IGD)*
- *z/OS MVS System Messages, Vol 9 (IGF-IWM)*
- *z/OS MVS System Messages, Vol 10 (IXC-IZP)*

New

- ADR185W
- ADR530I
- ADR531E
- ADR532E
- ADR533I
- ADR560E
- ADR561E
- ADR562E
- ADR564E
- ADR565I
- ADR566E
- ADR567E
- ADR568I
- ADR569I
- ADR599I
- ADR803I
- ADR925W
- ADR984W
- ADYH005E
- ADYH006E
- AIR039I
- AIR040I
- AIR041I
- AIR042I
- AIR573I
- AIR574I
- AIZ002I
- AIZ003I
- AIZ004I
- AIZ005I
- AIZ006I
- AIZ007I
- AIZ008I
- AIZ009I
- AIZ010I
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- AMA773I
- AMA774I
- AMA775I
- AMD125I
- ANTA5500E
- ANTA5501E
- ANTB8002I
- ANTF0513
- ANTF0514
- ANTI1038E
- ANTI1041E
- ANTI8037I
- ANTP0275I
- ANTP0276I
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- ANTQ8370I
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- ANTQ8373I
- ANTQ8374I
- ANTQ8375I
- ANTS5170W
- ANTU2200I
- ANTU2201E
- ANTU2202I
- ANTU2203I
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- ANTU2206E
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- ARC1271I

- ARC1636I
- ARC1839I
- ARC1849I
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- ATR255E
- ATR256E
- ATR257E
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- BPXO075I
- BPXP028I
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- IEASYMU03I
- IEASYMU04I
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- IEF911I
- IEA988I
- IEAVEH110I
- IEAVEH111E
- IEB148E
- IEB1130I
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- IEB1175E
- IEB1176T
- IEB1177T
- IEB1178T
- IEB1179W
- IEB1180T
- IEC161I (return code 132)
- IEC359I (form 5 of 6)
- IEC359I (form 6 of 6)
- IEC365D
- IEC366E
- IEC367W
- IECH0100I
- IECH0101E
- | • IEE088D
- IEE190I
- IEE583I
- IEE728I
- IEE745I
- IEE759I
- IEF024I
- IEF386I
- IEF900I
- IEF901I
- IEFA050E
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- IEFC659I
- IEFI014I
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- IGD17395I
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- IGGHC112I
- IGVH111I
- IGVH112E

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- IGW054I
- IGW431I
- IGW01047T
- IGW01262E
- IGW01263E
- IGW01264E
- IGWRH0132I
- ILRH0112I
- IOS140W
- IOS320I
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- IOS330I
- IOS331I
- IOS332I
- IOS333I
- IOS334I
- IOS634I
- IOS635I
- IOS636I
- IOSHC099I
- IOSHC117I
- IOSHC118I
- IOSHC119E
- IOSHC120I
- IOSHC130I
- IOSHC131I
- IOSHC132E
- IOSHC133I
- IOSHC140I
- IOSHC141I
- IOSHC142E
- IOSHC143I
- IOSHC144I
- IOSHC145I
- IOSHM0316I
- IOSHM0433I
- IOSHM0434I
- IOSHM0435I
- IOSHM0436I
- IOSHM0813I
- IOSHM0814I
- IOSHM0815I
- IOSHM0816E
- IOSHM0817A
- IOSHM0818I
- IOSHM0819I
- IOSHS0018I
- IOSHS0019I
- IOSPF500I
- IOSPF501I
- IOSPF502I
- IOSPF503I
- IOSPF504I
- IOSPF505I
- IQP001I
- IQP002I
- IQP004I
- IQP006I
- IQP007I
- IQP008I
- IQP020I
- IQP021I
- IQP022I
- IQP023I
- IQP024I
- IQP031I
- IQP032I
- IQP033I
- IQP034I
- IQP035I
- IQP036I
- IQP037I
- IQP038I
- IQP039I
- IQP040I
- IQP041I
- IQP060I
- IQP061I
- IQP062I
- IQP066I
- IRA127I
- IRA203E
- IRA866I
- ISG379E
- ISG380E
- ISG381D
- ISN013I
- IWM066I
- IWM067Ic
- IXC567I
- IXC568I
- IXC583I
- IXC584I
- IXC592I
- IXC593I
- IXC594I
- IXC746I
- IXCH0155I
- IXCH0218I
- IXCH0219I

- IXCH0224I
- IXCH0225E
- IXCH0257E
- IXCH0258I
- IXCH0259E
- IXCH0260I
- IXCH0261E
- IXCH0262I
- IXCH0263E
- IXCH0264I
- IXCH0265E
- IXCH0266I
- IXCH0439I
- IXCH047I
- IXCH048E
- IXCH0533I
- IXCH0924I
- IXCH0925I
- IXCH0926I
- IXCH0927I

- IXCH0928I
- IXCH0929I
- IXCH0930I
- IXC441I
- IXC442I
- IXC443I
- IXC444I
- IXC445I
- IXC471I
- IXC472I
- IXC473I
- IXG316E
- IXG317E
- IXG318E
- IXG319I
- IXL016I
- IXL163I
- IXL164I
- IXL165I

Changed

- ADR049E
- ADR285E
- ADR332E
- ADR342I
- ADR360I
- ADR380E
- ADR383W
- ADR439E
- ADR497E
- ADR502I
- ADR556W
- ADR707E
- ADR778E
- ADR832E
- ADR840W
- ADR918I
- ADR980E
- ADRY501I
- ADRY503E
- ADRY3501I
- AMA583E
- AMD115I
- AMD116I
- ANTC8407I
- ANTI1037E
- ANTI8027I
- ANTI8029I
- ANTQ8224I
- ANTQ8243I
- ANTR8845E
- ANTT0030I
- ANTT0031I
- ANTX8036I
- ANTX8138I

- ANTX8164W
- ANTF0420I
- ANTF0421I
- ANTP8802I
- ANTQ8221I
- ARC0034I
- ARC0061I
- ARC0103I
- ARC0139I
- ARC0161I
- ARC0162I
- ARC0167I
- ARC0185I
- ARC0216I
- ARC0246I
- ARC0260I
- ARC0336I
- ARC0340I
- ARC0352I
- ARC0412I
- ARC0434E
- ARC0442I
- ARC0445I
- ARC0461I
- ARC0514I
- ARC0550I
- ARC0640I
- ARC0654I
- ARC0704E
- ARC0734I
- ARC0784I
- ARC0936I
- ARC0939I
- ARC1128I

- ARC1158I
- ARC1179I
- ARC1248I
- ARC1258I
- ARC1280I
- ARC1311I
- ARC1334I
- ARC1356I
- ARC1358I
- ARC1806E
- ARC1812I
- ARC1836I
- ARC1901I
- ARC6172E
- ARC6250I
- ASA104I
- BPXF063I
- BPXF075I
- BPXF105E
- BPXF106E
- BPXF110E
- BPXF140E
- BPXF150I
- BPXF156E
- BPXF167E
- BPXF168E
- BPXF169E
- BPXF170E
- BPXF171E
- BPXF172E
- BPXF173E
- BPXF174E
- BPXF175E
- BPXF176E
- BPXF178I
- BPXF213E
- BPXF216E
- BPXF217E
- BPXF221I
- BPXF243E
- BPXF244E
- BPXF245I
- BPXF257I
- BPXF265I
- BPXF266E
- BPXF270I
- BPXH002E
- BPXI039I
- BPXI042I
- BPXM123E
- BPXO043I
- BPXO045I
- BPXO051I
- BPXO074I
- BPXP007E
- BPXP013I
- BPXTF009E
- BPXTF010E
- BPXTF011I
- BPXTF012I
- BPXTF014I
- BPXTF015I
- BPXTF107I replaces BPXTF007I
- CBR1110I
- CBR1180I
- CBR9225I
- CBR9890I
- CEA0023I
- CNZ0005I
- CNZ2400I
- CNZ2603I
- CNZ3005A
- CNZ3008A
- CNZ3009E
- CNZ3010I
- CNZ3011I
- CNZ3012A
- CNZ3015A
- CNZ4000I
- CNZ4001I
- CNZ4100I
- CNZ4102I
- CNZ4104I
- CNZ4207I
- CNZ4300I
- CNZ4301I
- CNZ4302I
- CNZ9001I
- CNZ9008A
- CNZ9012I
- CNZHF0002I
- CNZHF0003I
- CNZHF0005I
- CNZHF0006E
- CNZHS0003I
- CNZHS0005I
- COF004I
- COF012I
- COF013I
- COF015I
- COF023I
- COF101I
- COF102I
- COF103I
- COF104I
- COF105I
- COF106I
- COF107I
- COF108I
- COF109I
- COF110I
- COF111I

- COF112I
- COF113I
- COF114I
- COF115I
- COF116I
- COF117I
- CPO1020I
- CPO1026I
- CPO1027I
- CPO1028I
- CPO1029I
- CPO1039E
- CPO1086E
- CPO1088I
- CPO1109E
- CPO1110E
- CPO1111E
- CPO1127E
- CPO1129E
- CPO1135E
- CPO1141E
- CPO1148E
- CPO1149E
- CPO1155E
- CPO1158E
- CPO1162E
- CPO1165E
- CPO1167E
- CPO1169E
- CPO1171E
- CPO1172E
- CPO1175E
- CPO1176E
- CPO1177E
- CPO1178E
- CPO1185E
- CPO1201E
- CPO1206E
- CPO1209E
- CPO1210E
- CPO1211E
- CPO1212E
- CPO1232E
- CPO1308E
- CPO1401E
- CPO1402E
- CPO1403E
- CPO2013E
- CPO2014E
- CPO2015I
- CPO2016I
- CPO2017I
- CPO2018I
- CPO2019E
- CPO2020I
- CPO2021W
- CPO2022E
- CPO2023E
- CPO2027E
- CPO2030I
- CPO2050E
- CPO2051E
- CPO2052E
- CPO2053E
- CPO2054E
- CPO2055E
- CPO2056E
- CPO2057E
- CPO2070W
- CPO2102E
- CPO2104W
- CPO2106E
- CPO2115E
- CPO2102E
- CPO2103E
- CPO2104E
- CPO2105E
- CPO2106E
- CPO2107E
- CPO2108E
- CPO2109E
- CPO2110E
- CPO2111E
- CPO2112E
- CPO2113E
- CPO2114E
- CPO2115E
- CPO2116E
- CPO2117E
- CPO2118E
- CPO2119E
- CPO2120E
- CPO2121E
- CPO2122E
- CPO2284E
- CPO2285E
- CPO2290E
- CPO2505E
- CPO3002W
- CPO3005E
- CPO3006E
- CPO3007E
- CPO3008W
- CPO3009I
- CPO3016W
- CPO3017W
- CPO3018W
- CPO3020I
- CPO3030I
- CPO3031W
- CPO3032I
- CPO3033W

- CPO3036I
- CPO3040W
- CPO3041W
- CPO3042E
- CPO3044W
- CPO3045E
- CPO3046E
- CPO3047E
- CPO3048E
- CPO3050E
- CPO3051E
- CPO3056E
- CPO3060W
- CPO3801W
- CPO3802W
- CPO3870E
- CPO3910I
- CPO3911I
- CPO3912I
- CPO3913I
- CPO3950E
- CPO4001E
- CPO4002E
- CPO4003E
- CPO4104I
- CPO4106E
- CPO4113I
- CPO4201I
- CPO4202I
- CPO4250I
- CPO4307W
- CPO4309W
- CPO5000E
- CPO8051E
- CPO8052E
- CPO8058W
- CPO8060E
- CPO8061E
- CPO8108E
- CPO8311E
- CPO8312E
- CPO8700E
- CPO8701E
- CPO9806E
- CPO9808E
- CPO9809E
- CPO9809E
- CPO9810E
- CPO9811E
- CPO9813E
- CPO9818E
- CPO9834E
- CPO9845W
- CPO9846W
- CPO9847E
- CPO9848E
- CPO9854E
- CPO9857E
- CPO9858E
- CPO9861E
- CPO9862E
- CPO9865E
- CPO9866E
- CPO9869W
- CPO9871W
- CPO9900E
- CPO9901E
- CPO9902W
- CPO9903E
- CPO9904E
- CPO9905E
- CPO9906E
- CPO9907E
- CPO9908E
- CPO9909E
- CPO9910E
- CPO9911E
- CPO9912E
- CPO9913E
- CPO9914E
- CPO9915E
- CSV016I
- CSV518I
- CSV540E replaces CSV540I
- CSV560I
- CSV561I
- CUN3000I
- EDG0205E
- EDG2130I
- EDG3008E
- EDG4004I
- EDG6641E
- FEW1003E
- FEW1004E
- HIS005I
- | • HIS007I
- | • HIS015I
- | • HIS019I
- | • HIS025I
- | • HIS026I
- HIS031I
- | • HIS034I
- IAR019I
- IDC21364I
- IDC2899I
- IDC3009I
- IEA074I
- IEA075I
- IEA135I
- IEA195I
- IEA196I
- IEA383I

- IEA386I
- IEA434I
- IEA404A
- IEA494I
- IEA611I
- IEA911E
- IOC21364I
- IEC023I
- IEC026I
- IEC027I
- IEC030I
- IEC036I
- IEC141I
- IEC143I
- IEC214I
- IEC142I
- IEC143I
- IEC147I
- IEC161I (return code 001)
- IEC161I (return code 014)
- IEC161I (return code 020)
- IEC161I (return code 021)
- IEC161I (return code 022)
- IEC161I (return code 029)
- IEC161I (return code 032)
- IEC161I (return code 052)
- IEC161I (return code 056)
- IEC161I (return code 064)
- IEC161I (return code 089)
- IEC161I (return code 128)
- IEC161I (return code 129)
- IEC161I (return code 195)
- IEC161I (return code 205)
- IEC161I (return code 220)
- IEC204I
- IEC210I
- IEC214I
- IEC218I
- IEC347I
- IEC348I
- IEC349I
- IEC352I
- IEC353I
- IEC359I (form 1 of 6)
- IEC363D, IEC364D
- IEC378I (form 1 of 2)
- IEC393I
- IEC501A
- IEC501E
- IEC614I
- IEC999I
- IEE028I
- IEE097I
- IEE115I
- IEE148I
- IEE150I
- IEE174I (form 2 of 35)
- IEE174I (form 6 of 35)
- IEE174I (form 17 of 35)
- IEE174I (form 19 of 35)
- IEE174I (form 21 of 35)
- IEE174I (form 23 of 35)
- IEE178I
- IEE185I
- IEE241I
- IEE254I
- IEE296I
- IEE301I
- IEE316I
- IEE328I
- IEE342I
- IEE399I
- IEE406I
- IEE459I (form 1 of 3)
- IEE459I (form 2 of 3)
- IEE504I
- IEE505I
- IEE521I
- IEE583I
- IEE612I
- IEE677I
- IEE708I
- IEE735I
- IEE768I
- IEE841I
- IEE844W
- IEE852I
- IEE854I
- IEE921I
- IEE967I
- IEE970I
- IEF032I
- IEF157E
- IEF287I
- IEF473I
- IEF490I
- IEF689I
- IEF739D
- IEFA003I
- IEFC627I
- IEFC630I
- IEW2101I
- IEW2353E
- IFA023I
- IFA760I
- IFA761I
- IFA788I
- IFA790I
- IFA817I
- IFA832I
- IFA845I
- IGD002I

- IGD030I
- IGD031I
- IGD068I
- IGD17071I
- IGD17073I
- IGD17076I
- IGD17269I
- IGD17279I
- IEW2101I
- IEW2141E
- IEW2353E
- IGW031I
- IGW540I
- IGW704A
- IGWRH0130I
- IGWRH0131E
- IKJ574I
- IOS051I
- IOS085I
- IOS090I
- IOS103I
- IOS156I
- IOS157I
- IOS158I
- IOS500I
- IOS502I
- IOS503I
- IOS506I
- IOS530I
- IOS566I
- IOS630I
- IOS1500I
- IOSHM0201I
- IOSHM0303I
- IOSHM0304I
- IOSHM0308I
- IOSHM0399I
- IOSHM0401I
- IOSHM0416I
- IOSHM0420I
- IOSHM0427I
- IOSHM0429I
- IOSHM0803E
- IOSHM0804I
- IOSHM0806I
- IOSHS0010I
- IOSHS0011I
- IRA200E
- IRA201E
- IRA202E
- IRA205I
- IRA206I
- IRA501I
- IWM002I
- IWM005W
- IWM063I
- IWM064I
- IWM078E
- IXC114I
- IXC250I
- IXC266I
- IXC291I
- IXC328I
- IXC334I
- IXC347I
- IXC352I
- IXC357I
- IXC359I
- IXC360I
- IXC361I
- IXC362I
- IXC367I
- IXC373I
- IXC375I
- IXC405D
- IXC420D
- IXC510I
- IXC511I
- IXC517I
- IXC518I
- IXC522I
- IXC528I
- IXC531I
- IXC532I
- IXC538I
- IXC544I
- IXC546I
- IXC574I
- IXC582I
- IXC583I
- IXC584I
- IXC585E
- IXC745I
- IXCH0444E
- IXCH0912I
- IXG256I
- IXG310I
- IXG384I
- IXG385I
- IXG510I
- IXG601I
- IXL014I
- IXL015I
- IXL150I
- IXL160E

Deleted

- BPXI070I
- CNZ1001I
- CNZ1002I
- CHZHF0013E
- HWI014I
- IEA026I
- IEB148I
- IEB600I
- IEB601I
- IEB602I
- IEB603I
- IEB604I
- IEB605I
- IEB606I
- IEB607I
- IEB608I
- IEB609I
- IEE047I
- IEE083A
- IEE125A
- IEE126I
- IEE130I
- IEE141A
- IEE142I
- IEE276I
- IEE277I
- IEE278I
- IEE319I
- IEE320I
- IEE367I
- IEE370I
- IEE501I
- IEE530I
- IEE687I
- IEE688I
- IEE870I
- IEE889I
- IEE890I
- IEE930I
- IEW2201W
- IGW701I
- IRA203I
- IRA204E
- IXL141I

Dump output messages

New

- BHI10001I
- BHI10002I
- BHI10003I
- BHI10004I

Changed

- BLS18210I
- BLS19002I
- BLS19003I
- BLS19005I

MVS system codes

For explanations and additional details, see *z/OS MVS System Codes*.

New:

- 277
- EC6

Changed system completion codes:

- 00C
- 042
- 050
- 05C
- 09E
- 1FB

- 18F
- 233
- 2E0
- 306
- 430
- 438
- 6FB
- 800
- C0D
- DC2
- D22
- EC7
- OOC

Changed wait state codes:

- 0A2
- 1FB

Deleted:

Although the following RACF system completion codes are still in use, to avoid redundancy they are deleted from *z/OS MVS System Codes*. Instead, find the complete descriptions in *z/OS Security Server RACF Messages and Codes*:

Communications Server summary of message changes for z/OS V2R1

The messages for Communications Server are documented in:

- *z/OS Communications Server: IP Messages Volume 1 (EZA)*
- *z/OS Communications Server: IP Messages Volume 2 (EZB, EZD)*
- *z/OS Communications Server: IP Messages Volume 3 (EZY)*
- *z/OS Communications Server: IP Messages Volume 4 (EZZ, SNM)*
- *z/OS Communications Server: SNA Messages*

New

EZA1532I	EZA1778I
EZA1533I	EZA1779I
EZA1545I	EZA1780I
EZA1546I	EZA4268I
EZA1548I	EZA5205E
EZA1549I	EZA6409I
EZA1555I	EZA6410I
EZA1556I	EZD0023I
EZA1771I	EZD0032I
EZA1773I	EZD0837I
EZA1775I	EZD0838I
EZA1776I	EZD0839I
EZA1777I	EZD1156I

EZD1288I	EZZ8174I
EZD1289I	IST2338I
EZD1290I	IST2361I
EZD1390I	IST2362I
EZD1391I	IST2364I
EZD1392I	IST2365I
EZD1590I	IST2366I
EZD2014I	IST2367I
EZD2016I	IST2368I
EZD2017I	IST2369I
EZD2019I	IST2370I
EZD2020A	IST2371I
EZD2021A	IST2372I
EZD2022A	IST2373I
EZD2023I	IST2374I
EZD2024I	IST2375I
EZD2025I	IST2376I
EZD2026I	IST2377I
EZD2027I	IST2378I
EZD2028I	IST2379I
EZD2029I	IST2380I
EZD2038I	IST2381I
EZD2039I	IST2382I
EZY1979I	IST2383I
EZZ0061I	IST2384E
EZZ0062I	IST2386I
EZZ0063I	IST2387I
EZZ0064I	IST2388I
EZZ0065I	IST2389I
EZZ0066I	IST2390I
EZZ0143I	IST2391I
EZZ0144I	IST2392I
EZZ0618I	IST2393I
EZZ0836I	IST2395I
EZZ0837I	IST2396I
EZZ0838I	IST2397I
EZZ2684I	IST2398I
EZZ2685I	IST2399I
EZZ2686I	IST2400I
EZZ2687I	IST2401I
EZZ2688I	IST2402I
EZZ6062I	IST2403I
EZZ8121I	IST2404I
EZZ8172I	IST2405I
EZZ8173I	IST2406I

IST2407I
IST2408I
IST2409I
IST2410I
IST2411I

| IST2417I
| ISTM015I
| ISTM016I
IVT5593I

Changed

EZA1532I	EZZ0322I
EZA1533I	EZZ0323I
EZA1545I	EZZ0326I
EZA1546I	EZZ0344I
EZA1548I	EZZ0356I
EZA1549I	EZZ0358I
EZA1555I	EZZ0371I
EZA1556I	EZZ0395I
EZA5164E	EZZ0398I
EZB0760E	EZZ0610I
EZD0033I	EZZ0614I
EZD0034I	EZZ0638I
EZD0035I	EZZ0639I
EZD0044I	EZZ0650I
EZD0811I	EZZ0651I
EZD0832I	EZZ0656I
EZD0833I	EZZ0658I
EZD0834I	EZZ0661I
EZD0934I	EZZ0662I
EZD0938I	EZZ0663I
EZD0968I	EZZ0664I
EZD1106I	EZZ0665I
EZD1163I	EZZ0671I
EZD1284I	EZZ0684I
EZD1374E	EZZ0691I
EZD1388E	EZZ0692I
EZD1723I	EZZ0707I
EZD1725I	EZZ0708I
EZD1731I	EZZ0709I
EZD1754I	EZZ0710I
EZYFT99I	EZZ0713I
EZZ0056I	EZZ0714I
EZZ0146I	EZZ0715I
EZZ0147I	EZZ0716I
EZZ0148I	EZZ0718I
EZZ0164I	EZZ0721I
EZZ0165I	EZZ0724I
EZZ0320I	EZZ0726I

EZZ0729I		EZZ6064I
EZZ0730I		EZZ6081I
EZZ0733I		EZZ6238I
EZZ0746I		EZZ6385I
EZZ0749I		EZZ7453I
EZZ0757I		EZZ7839I
EZZ0758I		EZZ7805I
EZZ0761I		EZZ7822I
EZZ0768I		EZZ7884I
EZZ0769I		EZZ7900I
EZZ0771I		EZZ7901I
EZZ0781I		EZZ7902I
EZZ0782I		EZZ7906I
EZZ0783I		EZZ7922I
EZZ0784I		EZZ7923I
EZZ0785I		EZZ7924I
EZZ0795I		EZZ7925I
EZZ0798I		EZZ7940I
EZZ0799I		EZZ7946I
EZZ0800I		EZZ7948I
EZZ0801I		EZZ7952I
EZZ0808I		EZZ7953I
EZZ0809I		EZZ7955I
EZZ0810I		EZZ8052I
EZZ0811I		EZZ8061I
EZZ0812I		EZZ8128I
EZZ0813I		EZZ8138I
EZZ0814I		EZZ8142I
EZZ0815I		EZZ8143I
EZZ0818I		EZZ8144I
EZZ0823I		EZZ8145I
EZZ0824I		EZZ8146I
EZZ0826I		EZZ8147I
EZZ0827I		EZZ8148I
EZZ0828I		EZZ8149I
EZZ0829I		EZZ8150I
EZZ0830I		EZZ8165I
EZZ0831I		EZZ8453I
EZZ0832I		EZZ8648I
EZZ2909I		EZZ8649I
EZZ3125I		EZZ9295I
EZZ3205I		EZZ9296I
EZZ4348I		EZZ9297E
EZZ6035I		EZZ9299E
EZZ6060I		EZZ9675E

EZZ9830I		IST1719I
IKT00201I		IST1724I
IST087I		IST1751I
IST486I		IST1871I
IST1016I		IST1884I
IST1074I		IST1968I
IST1085I		IST2001I
IST1221I		IST2154I
IST1230I		IST2155I
IST1314I		IST2337I
IST1476I		IST2346I
IST1494I		IST2361I
IST1578I		IST2362I
IST1631I		IST2389I
IST1650I		IST2396I
IST1680I		IST2397I
IST1684I		IST2398I
IST1697I		IST2406I
IST1717I		

Deleted

Messages deleted in V2R1:

EZA1535I	EZZ9128I - EZZ9153I
EZD1184I	EZZ9157I
EZZ8791I - EZZ8823I	EZZ9162I
EZZ8828I	EZZ9163I
EZZ9041I - EZZ9054I	EZZ9164I
EZZ9058I	EZZ9168I
EZZ9083I	EZZ9169I
EZZ9085I	EZZ9170I
EZZ9089I - EZZ9096I	EZZ9171I
EZZ9106I	EZZ9172I
EZZ9107I	EZZ9215I - EZZ9220I
EZZ9108I	EZZ9258I
EZZ9110I	EZZ9270I
EZZ9111I	EZZ9271I
EZZ9112I	EZZ9338I
EZZ9115I	EZZ9339I
EZZ9116I	EZZ9340I
EZZ9119I	EZZ9341I
EZZ9120I	EZZ9347I
EZZ9122I	EZZ9348I
EZZ9123I	EZZ9349I
EZZ9125I	EZZ9350I
EZZ9126I	EZZ9351I
	EZZ9376I

EZZ9420I
EZZ9524I - EZZ9542I
EZZ9547I
EZZ9550I - EZZ9556I
EZZ9559I - EZZ9566I
EZZ9568I - EZZ9582I
EZZ9584I
EZZ9587I
EZZ9588I
EZZ9589I
EZZ9691I - EZZ9700I
EZZ9702I
EZZ9703I
EZZ9705I
EZZ9707I
EZZ9708I
EZZ9710I
EZZ9711I
EZZ9712I
EZZ9713I
EZZ9720I
EZZ9721I
EZZ9722I
EZZ9723I
EZZ9725I
EZZ9726I
ISTM011I
ISTM012E

Messages deleted in Version 1 (V1R1 - V1R13)

EZA1470E
EZA1482I
EZA1483I
EZA1484I
EZA1487I
EZA1497I
EZA1499I
EZA1500I - EZA1506I
EZA1508I - EZA1510I
EZA1516I
EZA1517I
EZA1521I
EZA1523I - EZA1526I
EZA1529I - EZA1530E
EZA1537I - EZA1541I

EZA1646I
EZA1667I
EZA1668I
EZA1674W - EZA1679W
EZA1738W
EZA1763W
EZA2088I
EZA2089I
EZA2187I
EZA2188I
EZA2191I
EZA2246I
EZA2248I
EZA3950I - EZA4173E
EZA5925I
EZA5949W
EZA6191W
EZA9216I
EZA9217I
EZA9233I
EZA9452I
EZA9452I
EZA9452I
EZB2500 - EZB2785
EZD0011I
EZD0901I
EZD0914I
EZD0916I
EZD0921I
EZD0947I
EZD0949I
EZD0955I
EZD0972I
EZD0976I
EZD0997I has been replaced by EZD1158I
EZD0999I
EZD1000I - EZD1004I
EZD1016I
EZD1017I
EZD1023I
EZD1024I - Replaced by EZD1795I
EZD1028I - Replaced by EZD1158I
EZD1047I
EZD1048I
EZD1050I
EZD1056I - Replaced by EZD1789I
EZD1078I

EZD1080I	EZZ0383I - EZZ0394I
EZD1084I	EZZ0400I
EZD1091I - Replaced by EZD1912I	EZZ0403I
EZD1134I - Replaced by EZD1923I	EZZ0606I
EZD1729I	EZZ0607I
EZD1931I	EZZ0668I - EZZ0670I
EZY1290I	EZZ0674I - EZZ0679I
EZY1304I	EZZ0727I
EZY1305E	EZZ0728I
EZY1345E	EZZ0755I
EZY1346E	EZZ0756I
EZY1377I - EZY1379I	EZZ2368I
EZY1387E	EZZ3100I
EZY1944I	EZZ3102I - EZZ3104I
EZY2005I	EZZ3124I
EZY2046I	EZZ4212I
EZY2047I	EZZ4329I
EZY2049I	EZZ4820I - EZZ5027E
EZY2050I	EZZ6004
EZY2051I	EZZ6016
EZY2067I	EZZ6019
EZY2140I	EZZ6029 - EZZ6033
EZY2141I	EZZ6036
EZY2662E	EZZ6062
EZY2664I	EZZ6063
EZY2666I	EZZ6066
EZY3760 - EXY3773	EZZ6067I
EZY3798 - EZY3817	EZZ6068I
EZY3823 - EZY3835	EZZ6069 - EZZ6079
EZY3829 - EZY3827	EZZ6108I
EZY3990 - EZY3992	EZZ6360I
EZY4195 - EZY4197	EZZ6383I
EZYFT56W	EZZ6452I - EZZ6705I
EZYFT57I	EZZ7251 - EZZ7331
EZYFT66	EZZ7476I
EZYTE23E - EZYTE26E	EZZ8139I
EZZ0159I	EZZ8201I - EZZ8229I
EZZ0175 - EZZ0208	EZZ8483 - EZZ8494
EZZ0349I	EZZ8497
EZZ0352I	EZZ8499
EZZ0365I	EZZ9165I
EZZ0366I	EZZ9166I
EZZ0367I	EZZ9167I
EZZ0370I	EZZ9272I
EZZ0373I	EZZ9273I

EZZ9274I	IST1491I
IKV0001I - IKV0029I	IST1492I
IST004I	IST1620I
IST318I	IST1646I
IST407I	IST1647I
IST408I	IST1648I
IST409I	IST1659I
IST432I	IST1741I
IST446I	IST1770I - Replaced by IST2275I
IST468I	IST1771I - Replaced by IST2252I and IST2254I
IST469I	IST1772I - Replaced by IST2252I and IST2254I
IST470I	IST1812I - IST1815I
IST471I	IST1918I
IST821I	IST2051I
IST823I	IST2053I
IST1165I	IST2060I
IST1171I	IST2112I
IST1172I	IST2228A
IST1325I	ISTH003I
IST1340I	ISTH004E
IST1341I	ISTH007I
IST1344I	ISTH008E
IST1362I	ISTM001I - ISTM010E
IST1371I - Replaced by IST1797I	ISU1500I - ISU1583I
IST1387I - IST1390I	IVT5602I

Cryptographic Services Integrated Cryptographic Service Facility (ICSF) summary of message changes for z/OS V2R1

The messages for Cryptographic Services Integrated Cryptographic Service Facility (ICSF) are documented in *z/OS Cryptographic Services ICSF Messages*.

New

CSFG1034
CSFG1042
CSFH0030I
CSFH0031E
CSFH0032I
CSFM653I
CSFM654I
CSFM655I
CSFM657I
CSFM659I
CSFM660I
CSFM661I
CSFM662I

| CSFM663I
| CSFM664I
| CSFM665E
| CSFM673E
| CSFY0086

Changed

| CSFC0316
| CSFG0002
| CSFH0011I
| CSFM009I
| CSFM109I
| CSFM111I
| CSFM123E
| CSFM124I
| CSFM129I
| CSFM134I
| CSFM135E
| CSFM136I
| CSFM137E
| CSFM138I
| CSFM139I
| CSFM639I
| CSFM641I

Deleted

| None.

Cryptographic Services PKI Services summary of message changes for z/OS V2R1

This topic lists new, changed, and deleted messages for Cryptographic Services PKI Services.

All messages for PKI Services are documented in *z/OS Cryptographic Services PKI Services Guide and Reference*.

New

IKYC089I
IKYK004I
IKYP046I

Changed

None

Deleted

None

CMP return codes

New:

531

557

558

559

560

Changed:

520

521

Cryptographic Services System SSL Programming summary of message changes for z/OS V2R1

The messages for Cryptographic Services System SSL Programming are documented in *z/OS Cryptographic Services System SSL Programming*.

New

GSK00009E

GSK01064I

Changed

None.

Deleted

None.

DFSORT summary of message changes for z/OS V2R1

This topic lists new, changed, and deleted messages for NFS.

All messages for NFS are documented in: *z/OS DFSORT Messages, Codes and Diagnosis Guide*

New

ICE290A

ICE291I

Changed

ICE000I

ICE118I

ICE015A

ICE141A

ICE034A

ICE189A

ICE083A

ICE217A

ICE114A

ICE234A

ICE236I
ICE243A
ICE244A
ICE245A

ICE272A
ICE276A
ICE283A
ICE285A

Deleted

Messages retired in V2R1:

None

Distributed File Service summary of message changes for z/OS V2R1

The messages for Distributed File Service are documented in *z/OS Distributed File Service Messages and Codes*.

New

Messages

New zFS messages:

IOEZ00807I	IOEZ00765E	IOEZ00805A
IOEZ00700E	IOEZ00766E	IOEZ00806A
IOEZ00701E	IOEZ00767E	IOEZ00807I
IOEZ00702E	IOEZ00768E	IOEZ00808I
IOEZ00703E	IOEZ00769E	IOEZ00809I
IOEZ00704E	IOEZ00770E	IOEZ00810I
IOEZ00705I	IOEZ00771E	IOEZ00811E
IOEZ00707I	IOEZ00773E	IOEZ00812I
IOEZ00708E	IOEZ00774E	IOEZ00813I
IOEZ00709I	IOEZ00775E	IOEZ00814E
IOEZ00710E	IOEZ00776I	IOEZ00816I
IOEZ00722I	IOEZ00777A	IOEZ00815E
IOEZ00723I	IOEZ00778I	IOEZ00816I
IOEZ00726I	IOEZ00779A	IOEZ00817E
IOEZ00729I	IOEZ00780E	IOEZ00819E
IOEZ00730I	IOEZ00781I	IOEZ00821E
IOEZ00733I	IOEZ00782I	IOEZ00822E
IOEZ00734E	IOEZ00783E	IOEZ00823E
IOEZ00735I	IOEZ00784E	IOEZ00824E
IOEZ00739I	IOEZ00785I	IOEZ00825E
IOEZ00740E	IOEZ00786I	IOEZH0030I
IOEZ00750E	IOEZ00787I	IOEZH0031I
IOEZ00751I	IOEZ00788E	IOEZH0032E
IOEZ00752E	IOEZ00789E	IOEZH0033E
IOEZ00753I	IOEZ00790I	IOEZH0041I
IOEZ00754I	IOEZ00791I	IOEZH0043I
IOEZ00755I	IOEZ00792E	IOEZH0044E
IOEZ00756I	IOEZ00793E	IOEZH0045E
IOEZ00757I	IOEZ00794E	
IOEZ00758I	IOEZ00795E	
IOEZ00759I	IOEZ00797I	
IOEZ00760I	IOEZ00798I	
IOEZ00761E	IOEZ00800I	
IOEZ00762E	IOEZ00801I	
IOEZ00763E	IOEZ00802I	
IOEZ00764E	IOEZ00803I	

New Health Checker messages:

IOEZH0015I		
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Reason codes

New DF04rr reason codes:

0002

New EFxrrr reason codes

680A	6A25	6B12
614A	6A26	6B14
614B	6A27	6B15
614D	6A28	6B16
614E	6A29	6B17
614F	6B00	6B18
614B	6B01	6B19
62A0	6B02	6B1A
62A1	6B03	6B1B
665F	6B04	6B1C
6660	6B05	6B1E
6661	6B06	6B1F
6662	6B0C	6B20
6A32	6B0D	6B21
62A0	6B0E	6B24
62A1	6B0F	6B25
6A24	6B10	

Return codes

There were no new return codes in V2R1.

Changed

Changed Messages

IOEZ00053E	IOEZ00201E	IOEZ00589E
IOEZ00055I	IOEZ00369I	IOEZ00604I
IOEZ00093E	IOEZ00440I	IOEZ00617I
IOEZ00094E	IOEZ00547I	IOEZ00639I
IOEZ00095E	IOEZ00548I	IOEZ00643I
IOEZ00183E	IOEZ00576E	IOEZ00675E
IOEZ00185E	IOEZ00581E	IOEZ00676E
IOEZ00190E	IOEZ00587I	IOEZ00742I

New Health Checker messages:

IOEZH0021E		
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Reason codes

Changes to DF04rr reason codes

0002

6028	668	6765
602D	6682	6766
6034	668B	676B
6058	668C	6773
6127	668D	6774
6128	668E	6800
6130	668F	6801
6132	6691	6802
6133	6692	6803
6136	6693	6804
6137	6694	6805
6138	669A	6807
6139	669B	6808
613A	669C	696E
613B	669F	696F
613C	66A2	6970
613D	66A3	6971
613E	66A9	6972
613F	66AB	6973
6140	66B0	6974
6141	66E1	6975
6142	66E4	6976
6143	6710	6977
6144	671C	6978
6145	6731	6979
6146	6732	697A
6147	6733	697B
6148	6734	697D
624A	6735	697E
624B	6736	607F
625A	6737	6081
625B	6738	6982
62B4	6739	6983
6324	673A	6984
642C	673B	6985
6507	673C	6986
650B	673F	6987
650E	6740	6988
6510	6756	6989
6511	6757	69A8
6609	6758	69C7
660A	6759	6B05
6617	675A	6B11
6645	675B	6B22
6647	6761	6B23
6648	6762	

Return codes

There were no changed return codes.

Deleted

Deleted

IOEZ00021E	IOEZ00149E	IOEZ00316I
IOEZ00022I	IOEZ00150E	IOEZ00319E
IOEZ00026I	IOEZ00151E	IOEZ00330I
IOEZ00027E	IOEZ00152E	IOEZ00332I
IOEZ00028E	IOEZ00153E	IOEZ00333E
IOEZ00029E	IOEZ00154E	IOEZ00335I
IOEZ00030E	IOEZ00155E	IOEZ00339E
IOEZ00031I	IOEZ00156E	IOEZ00352E
IOEZ00047E	IOEZ00160E	IOEZ00384E
IOEZ00049E	IOEZ00161E	IOEZ00386I
IOEZ00056I	IOEZ00162E	IOEZ00402I
IOEZ00061I	IOEZ00169E	IOEZ00404I
IOEZ00063I	IOEZ00172I	IOEZ00407I
IOEZ00065I	IOEZ00174I	IOEZ00408I
IOEZ00066E	IOEZ00177I	IOEZ00409I
IOEZ00067E	IOEZ00180E	IOEZ00414I
IOEZ00071I	IOEZ00189E	IOEZ00415E
IOEZ00072E	IOEZ00193I	IOEZ00419E
IOEZ00073E	IOEZ00194E	IOEZ00423E
IOEZ00074I	IOEZ00195E	IOEZ00448I
IOEZ00075E	IOEZ00196E	IOEZ00449I
IOEZ00086E	IOEZ00197E	IOEZ00450I
IOEZ00089I	IOEZ00198E	IOEZ00452E
IOEZ00090E	IOEZ00203E	IOEZ00455I
IOEZ00091E	IOEZ00204E	IOEZ00456I
IOEZ00097E	IOEZ00205E	IOEZ00525I
IOEZ00098E	IOEZ00206E	IOEZ00526I
IOEZ00099I	IOEZ00215I	IOEZ00527I
IOEZ00101E	IOEZ00216I	IOEZ00528I
IOEZ00102E	IOEZ00217E	IOEZ00529I
IOEZ00103E	IOEZ00218I	IOEZ00530I
IOEZ00104E	IOEZ00219I	IOEZ00531I
IOEZ00107E	IOEZ00220E	IOEZ00532I
IOEZ00108I	IOEZ00221E	IOEZ00533I
IOEZ00111E	IOEZ00222E	IOEZ00534I
IOEZ00113I	IOEZ00223E	IOEZ00535I
IOEZ00114I	IOEZ00224E	IOEZ00541I
IOEZ00115I	IOEZ00225I	IOEZ00542D
IOEZ00116I	IOEZ00226E	IOEZ00543E
IOEZ00121E	IOEZ00227E	IOEZ00544E
IOEZ00125E	IOEZ00228E	IOEZ00546E
IOEZ00126E	IOEZ00254E	IOEZ00552I
IOEZ00128E	IOEZ00305E	IOEZ00556E
IOEZ00130I	IOEZ00306I	IOEZ00577E
IOEZ00137E	IOEZ00307I	IOEZ00578E
IOEZ00145E	IOEZ00310E	IOEZ00588E
IOEZ00146E	IOEZ00311I	IOEZ00593I
IOEZ00147E	IOEZ00310E	IOEZ00594I
IOEZ00148E	IOEZ00313E	IOEZ00647E

Deleted reason codes

60AE	6105	6232
60B2	6106	6233
60B3	6107	6234
60B4	6116	6235
60B5	6122	6236
60B6	6123	6237
60B7	6124	6247
60B8	6127	6248
60BB	6129	6249
60BF	612A	627B
60C1	612B	6280
60CE	612C	6281
60CF	612D	6282
60D0	612E	6283
60D2	612F	6284
60D6	6131	6285
60D7	6134	6286
60DB	6135	6287
60EC	6149	6288
60F0	6152	6289
60F1	6160	628A
60F3	6211	628B
60F4	6213	628C
60F5	6214	628D
60F6	6215	628E
60F7	6216	628F
60F8	6217	6290
60F9	6218	6291
60FA	6219	6292
60FB	621A	6293
60FF	621B	6294
6059	621D	6295
605F	621E	6296
606F	620	6297
607D	621	6298
607E	622	6299
607F	6224	629A
6092	6225	629B
609C	6226	629C
60A1	6227	629D
60A4	6228	6687
60AD	6229	66AE
6100	622A	66AF
6101	622B	6997
6102	622C	6998
6103	6230	6999
6104	6231	69B8

Deleted return codes

There were no deleted return codes in V2R1.

HCD summary of message changes for z/OS V2R1

This section contains the new, changed, and deleted messages for HCD for z/OS V2R1. The messages for HCD are documented in *z/OS and z/VM HCD Messages*.

New

The section contains new messages for HCD for z/OS V2R1.

CBDA691I
CBDA901I
CBDA902I
CBDA903I
CBDA904I
CBDC096I
CBDC097I
CBDG347I
CBDG348I
CBDG375I
CBDG376I
CBDG422I
CBDG547I
CBDG548I
CBDG573I
CBDG574I
CBDG575I
CBDG576I
CBDG577I
CBDG578I
CBDG579I
CBDG580I
CBDG581I
CBDG582I
CBDG583I
CBDG584I
CBDG585I
CBDG586I
CBDG587I
CBDG588I
CBDG589I
CBDG590I
CBDG591I
CBDG592I
CBDG593I
CBDG594I
CBDG595I
CBDG596I
CBDG597I
CBDG598I
CBDG599I
CBDG609I

CBDG740I
CBDG741I
CBDG742I
CBDG925I
CBDG926I
CBDG970I
CBDG971I
CBDG972I

Changed

The section contains changed messages for HCD for z/OS V2R1.

CBDA099I
CBDA121I
CBDA159I
CBDA196I
CBDA241I
CBDA270I
CBDA374I
CBDA425I
CBDA435I
CBDA449I
CBDA599I
CBDA605I
CBDA630I
CBDA698I
CBDA854I
CBDA848I
CBDA854I
CBDA880I
CBDA950I
CBDC099I
CBDD793I
CBDD814I
CBDD816I
CBDG180I
CBDG300I
CBDG302I
CBDG303I
CBDG304I
CBDG307I
CBDG320I
CBDG321I
CBDG338I
CBDG522I
CBDG661I

CBDG700I
CBDG701I
CBDG708I
CBDG726I
CBDG735I
CBDG753I
CBDG754I
CBDG905I

Deleted

No messages were deleted from HCD for z/OS V2R1.

IBM Tivoli Directory Server summary of message changes for z/OS V2R1

The messages for IBM Tivoli Directory Server are documented in *z/OS IBM Tivoli Directory Server Messages and Codes for z/OS*.

New

GLD1303E
GLD1304E
GLD1305E
GLD1306E
GLD1307E
GLD1308E
GLD1309E
GLD2032E
GLD2287E
GLD2288E
GLD9101A
GLD9102A
GLD9103A
GLD9104A
GLD9105A
GLD9106E
GLD9107E
GLD9108E
GLD9110E
GLD9111E
GLD9112E
GLD9201A
GLD9202A
GLD9203A
GLD9204E
GLD9205A
GLD9206A
GLD9207A

Changed

None.

Deleted

None.

Infoprint Server summary of message changes for z/OS V2R1

This section contains the new, changed, and deleted messages for Infoprint Server for z/OS V2R1. The messages for Infoprint Server are documented in *z/OS Infoprint Server Messages and Diagnosis*.

New

The section contains new messages for Infoprint Server for z/OS V2R1.

AOP153W
AOP174E
AOP175W
AOP176E
AOP177W
AOP178W
AOP179W
AOP180E
AOP184I
AOP185E
AOP186E
AOP187E
AOP188E
AOP189E
AOP190W
AOP191I
AOP192E
AOP193E
AOP195E
AOP4040E
AOPIM006
AOPIM019

Changed

The section contains changed messages for Infoprint Server for z/OS V2R1.

AOP139E

Deleted

No messages were deleted from Infoprint Server for z/OS V2R1.

JES2 summary of message changes for z/OS V2R1

The messages for JES2 are documented in *z/OS JES2 Messages*.

New

\$HASP117
\$HASP142
\$HASP143
\$HASP144
\$HASP145
\$HASP146

\$HASP539
\$HASP825
\$HASP1701
\$HASP2101
\$HASP2102

Changed

\$HASP003
\$HASP095
\$HASP249
\$HASP305
\$HASP307
\$HASP319
\$HASP361
\$HASP455
\$HASP647
\$HASP807
\$HASP835
\$HASP890
\$HASP893
\$HASP896

In addition, the following JES2 messages were changed from all uppercase characters to mixed-case characters. For details, see *z/OS JES2 Messages*:

\$HASP107
\$HASP108
\$HASP110
\$HASP111
\$HASP112
\$HASP113
\$HASP114
\$HASP115
\$HASP116
\$HASP118

Deleted

\$HASP306

JES3 summary of message changes for z/OS V2R1

The messages for JES3 are documented in *z/OS JES3 Messages*.

New

IAT1200
IAT3208
IAT3210
IAT3233
IAT3234
IAT3303
IAT3839
IAT3840
IAT3841
IAT3842
IAT4042
IAT4043
IAT4044
IAT4045
IAT4046
IAT4047

IAT4221
IAT4453
IAT6156
IAT6303
IAT6315
IAT6824
IAT7244
IAT7262
IAT8101
IAT8352
IAT8750
IAT8751
IAT8752
IAT8753
IAT8754
IAT8755

IAT8756

IAT8989

Changed

IAT2000

IAT7230

IAT2640

IAT7231

IAT3007

IAT7294

IAT3098

IAT7295

IAT3100

IAT7762

IAT3159

IAT8001

IAT3255

IAT8055

IAT3395

IAT8079

IAT3441

IAT8098

IAT3822

IAT8147

IAT4100

IAT8531

IAT4126

IAT8583

IAT4174

IAT8587

IAT4885

IAT8646

IAT6130

IAT8685

IAT6131

IAT8707

IAT6133

IAT8756

IAT6135

IAT9103

IAT6853

Deleted

IAT3801

IAT8000

IAT4101

IAT8005

IAT6817

IAT8685

Language Environment summary of message changes for z/OS V2R1

The messages for Language Environment are documented in *z/OS Language Environment Runtime Messages*.

New

New messages:

CEE3235S	CEE3236S	CEE3237S	CEE3238S	CEE3239S	CEE3240S
CEE3716I	CEE3771I	IBM0646S	IBM0891S	IBM0895S	IGZ0263I
CEE3717I	EDC5263I	IBM0647S	IBM0892S	IBM0896S	IGZ0264S
CEE3753I	EDC5264I	IBM0889S	IBM0893S	IBM0897S	IGZ0265S
CEE3754S	IBM0645S	IBM0890S	IBM0894S	IBM0898S	IGZ0266S
					IGZ0268W
					IGZ0269W

New abend codes:

None

Changed

Changed messages:

CEE5101C	IBM0595S	IBM0621S	IBM0753S	IBM0843S	IBM0887S
CEE5727S	IBM0602S	IBM0622S	IBM0810S	IBM0854S	IBM0888S
IBM0210S	IBM0603S	IBM0623S	IBM0811S	IBM0860S	IBM0900S
IBM0555S	IBM0611S	IBM0624S	IBM0819S	IBM0861S	IBM0913S
IBM0562S	IBM0612S	IBM0625S	IBM0824S	IBM0862S	IBM0914S
IBM0566S	IBM0613S	IBM0626S	IBM0826S	IBM0863S	IBM0916S
IBM0570S	IBM0614S	IBM0640S	IBM0827S	IBM0865S	IBM0930S
IBM0573S	IBM0615S	IBM0641S	IBM0830S	IBM0870S	IBM0950S
IBM0580S	IBM0616S	IBM0642S	IBM0835S	IBM0882S	IBM0951S
IBM0583S	IBM0617S	IBM0643S	IBM0837S	IBM0883S	IBM0952S
IBM0584S	IBM0618S	IBM0644S	IBM0838S	IBM0884S	IBM0953S
IBM0585S	IBM0619S	IBM0751S	IBM0839S	IBM0885S	IBM0955S
IBM0586S	IBM0620S	IBM0752S	IBM0841S	IBM0886S	

Changed abend codes:

U4036	U4083	U4088	U4094
U4042	U4084	U4093	

The following errno2 was changed:

- C510000D

Deleted

Deleted messages:

None

Deleted abend codes:

None

NFS summary of message changes for z/OS V2R1

This topic lists new, changed, and deleted messages for NFS.

All messages for NFS are documented in: *z/OS Network File System Guide and Reference*

New

GFSA572E
GFSA779I
GFSA780I
GFSN5034E

Changed

GFSA361I
GFSA362I
GFSA385I

Deleted

Messages retired in V2R1:
None

SDSF summary of message changes for z/OS V2R1

The messages for SDSF are documented in *z/OS SDSF Operation and Customization*.

New

ISF041I	ISF781E
ISF042I	ISF782W
ISF050I	ISF783E
ISF051I	ISF784E
ISF052I	ISF785E
ISF053I	ISF786E
ISF054I	ISF787E
ISF055I	ISF788E
ISF056I	ISF789E
ISF057I	ISF790E
ISF058I	ISF791E
ISF115E	ISF792E
ISF121I	ISF793E
ISF166E	ISF794W
ISF167E	ISF865E
ISF778I	ISF866E
ISF779E	ISF867E
ISF780E	ISF868E

Changed

ISF112I

Deleted

None

Security Server RACF summary of message changes for z/OS V2R1

The messages for RACF are documented in *z/OS Security Server RACF Messages and Codes*.

New

ICH513A	ICH555A	IRRH500I	IRRH501E	IRRH502I	IRRH503E
IRRH504I	IRRH505E	IRRH506I	IRRH507I	IRRD198I	IRRD199I

IRRD200I IRRD301I IRRD302I IRRD303I

Changed

ICH408I ICH584I IRR008I IRRC130I IRRD108I IRRD112I IRRD117I
IRRD118I IRRD125I IRRD135I IRRD162I IRRD171I IRRM096I

Deleted

ICH513I
ICH555I

SMP/E V3R6 summary of message changes for z/OS V2R1

This topic lists new, changed, and deleted non-operator messages for SMP/E V3R6. (New, changed, and deleted messages for SMP/E V3R6 are listed in *SMP/E for z/OS Messages, Codes, and Diagnosis*.)

New

GIM25602I	GIM70515S
GIM36600E	GIM70516S
GIM43502E	GIM70517S
GIM43502S	GIM70518S
GIM43503E	GIM70520E
GIM43503S	GIM70521E
GIM43504E	GIM70522E
GIM43504S	GIM70523E
GIM56301E	GIM70524E
GIM56501I	GIM70525E
GIM69235S	GIM70526E
GIM69236S	GIM70527E
GIM69237S	GIM70530E
GIM69238S	GIM70531I
GIM69239S	GIM70531E
GIM69240S	GIM70532I
GIM69241S	GIM70532E
GIM69242S	GIM70533E
GIM69243S	GIM70534E
GIM69244S	GIM70535E
GIM69245W	GIM70536E
GIM70505S	GIM70537E
GIM70510S	GIM70538E
GIM70511S	GIM70539E
GIM70512S	GIM70540E
GIM70513S	GIM70541E
GIM70514S	GIM70542E

GIM70543E
GIM70544E
GIM70544S
GIM70545E
GIM70546E
GIM70547E
GIM70548E
GIM70549E
GIM70550S
GIM70552I
GIM70560E
GIM70561E
GIM70562E
GIM70563E
GIM70564E

GIM70565E
GIM70566E
GIM70567E
GIM70568E
GIM70569E
GIM70570S
GIM70580E
GIM70581E
GIM70582E
GIM70583E
GIM70584S
GIM70585E
GIM70586E
GIM70587E
GIM70588E

Changed

GIM20501I
GIM20702S
GIM20703S
GIM20704S
GIM25101S

GIM37100S
GIM39203S
GIM51611S
GIM69016S

Deleted

None

TSO/E summary of message changes for z/OS V2R1

This topic lists new, changed, and deleted non-operator messages for TSO/E. (New, changed, and deleted operator messages for TSO/E are listed in “BCP and DFSMS summary of message changes for z/OS V2R1” on page 329.)

The non-operator messages for TSO/E are documented in *z/OS TSO/E Messages*. The operator messages for TSO/E are documented in the *z/OS MVS System Messages*:

- For the *z/OS MVS System Messages*, Vol 1, Vol 2, Vol 3, Vol 4, Vol 5, and Vol 6, see *z/OS MVS Data Areas* in the *z/OS Internet library* (<http://www.ibm.com/systems/z/os/zos/bkserv/>).
- *z/OS MVS System Messages, Vol 7 (IEB-IEE)*
- *z/OS MVS System Messages, Vol 8 (IEF-IGD)*
- *z/OS MVS System Messages, Vol 9 (IGF-IWM)*
- *z/OS MVS System Messages, Vol 10 (IXC-IZP)*

New

IRX0276E
IRX0277E
IRX0278E
IRX0510E
IRX0511E

Changed

IKJ55074I
IKJ58411I
IKJ58418I
IKJ58419I
IRX0240I
IRX0566E

Deleted

None

XL C/C++ summary of message changes for z/OS V2R1

The messages for XL C/C++ are documented in *z/OS XL C/C++ Messages*.

New

CCN1145	CCN6671
CCN2407	CCN6672
CCN2476	CCN6679
CCN4483	CCN6688
CCN4485	CCN6689
CCN4500	CCN6690
CCN4501	CCN6691
CCN4502	CCN6692
CCN4503	CCN7534
CCN4504	CCN7535
CCN4505	CCN7536
CCN4506	CCN7537
CCN4507	CCN8127
CCN4508	CCN8157
CCN4509	CCN8421
CCN6306	CCN8426
CCN6307	CCN8461
CCN6308	CCN8462
CCN6309	CCN8463
CCN6310	CCN8464
CCN6311	CCN8465
CCN6312	CCN8466
CCN6388	CCN8467
CCN6389	CCN8468
CCN6390	CCN8469
CCN6648	CCN8470
CCN6649	CCN8471
CCN6650	CCN8472
CCN6670	CCN8473

CCN8474	CCN8926
CCN8475	CCN8927
CCN8660	CCN8931
CCN8661	CCN8959
CCN8662	CCN8960
CCN8663	CCN8966
CCN8664	CCN8967
CCN8665	CCN8968
CCN8666	CCN8969
CCN8667	CCN8970
CCN8668	CCN8971
CCN8669	CCN8972
CCN8670	CCN8973
CCN8800	CCN8974
CCN8801	CCN8975
CCN8816	CCN8976
CCN8817	CCN8977
CCN8887	CCN8978
CCN8888	CCN8979
CCN8891	CCN8980
CCN8903	CCN8981
CCN8918	CCN8984
CCN8922	CCN8985
CCN8923	CDA3505
CCN8925	

Changed

CCN1131	CCN3420
CCN2102	CCN3437
CCN2103	CCN3442
CCN2104	CCN3443
CCN2105	CCN3730
CCN2106	CCN3737
CCN2107	CCN4430
CCN2108	CCN5539
CCN2180	CCN6122
CCN2181	CCN6280
CCN2182	CCN6290
CCN2183	CCN6606
CCN2464	CCN7643
CCN2465	CCN8434
CCN2466	CCN8445
CCN2474	CCN8460
CCN2475	CCN8885
CCN3022	CCN8939

CDA3419

Deleted

CCN5734	CCN8949
CCN5735	CCN8951
CCN6627	CCN8956
CCN8921	CCN8957
CCN8948	CCN8965

z/OS UNIX summary of message changes for z/OS V2R1

This topic lists new, changed, and deleted messages, reason codes, and return codes for z/OS UNIX. They are documented in *z/OS UNIX System Services Messages and Codes*.

New

Messages

FDBX0557	FSUMF421	
FDBX0823	FSUMF422	
FDBX0824	FSUMF424	
FDBX0826	FSUMF425	
FOMF126I	FSUMF426	
FOMF127I		
FOMF128I		
FOMF129I		
FOMF161I		
FSUM1274		
FSUM1275		

Reason codes

X'062E' (JrMountedUnowned); missing in previous releases.
X'062A' (JrAlreadyUnDubbed); missing in previous releases.
X'062B' (JrRemntMode); missing in previous releases.
X'062D' (JrAsyncAnr); missing in previous releases.
X'0638' (JrInAddrAnyNotAllowed); missing in previous releases.
X'736C' (JRTTLSStopReadDataPending)
X'736D' (JRTTLSStopWriteDataPending)
X'736E' (JRInvalidFilter)

Return codes

The following reason codes are new.

065C (JrPtInvVRNumber)
065D (JrPtVRNotSupported)

Changed Messages

FOMF0102I
FSUM7131
FSUM7963
FSUMF143
FSUMF174

Reason codes

X'00DC' (JRSAFNotAuthorized)
X'0316' (JrShmBadSize)

Return codes

X'012A' (JrInvParmLength)
X'051B' (JrJobNameNotValid)
X'721D' (JrConfigErr)
X'7314' (JrInvalidValue)
X'734A' (JrIarv64Error)

Deleted Messages

There were no deleted messages in V2R1.

Reason codes

X'004A' (JrAppcCheckState)
X'0014' (JrAppcErrAlloc)
X'0016' (JrAppcErrSend)
X'0015' (JrAppcErrRecv)
X'0016' (JrappcErrAccept)
X'0547' (JrDefUidNotAllowed)
X'0120' (JrAppcErrRecvIncomp)

Return codes

There were no deleted return codes in V2R1.

Part 3. Summary of message and code changes for z/OS V1R13

The topics list new, changed, and deleted messages for z/OS V1R13 elements and features. All message changes are in element specific topics.

z/OS V1R13 messages

Chapter 29. z/OS V1R13 summary of message changes

BCP and DFSMS summary of message changes for z/OS V1R13

This topic lists new, changed, and deleted messages for BCP, DFSMSdfp, DFSMSdss, DFSMSHsm, DFSMSrmm, and DFSMSStvs. It also lists new, changed, and deleted operator messages for RMF and TSO/E. (New, changed, and deleted non-operator messages for TSO/E are in “TSO/E summary of message changes for z/OS V1R13” on page 392.) All the messages in this section are grouped together, without distinction as to element or feature.

All messages for the BCP and DFSMS, as well as the operator messages for RMF and TSO/E, are documented in:

- *z/OS MVS System Messages, Vol 1 (ABA-AOM)*
- *z/OS MVS System Messages, Vol 2 (ARC-ASA)*
- *z/OS MVS System Messages, Vol 3 (ASB-BPX)*
- *z/OS MVS System Messages, Vol 4 (CBD-DMO)*
- *z/OS MVS System Messages, Vol 5 (EDG-GFS)*
- *z/OS MVS System Messages, Vol 6 (GOS-IEA)*
- *z/OS MVS System Messages, Vol 7 (IEB-IEE)*
- *z/OS MVS System Messages, Vol 8 (IEF-IGD)*
- *z/OS MVS System Messages, Vol 9 (IGF-IWM)*
- *z/OS MVS System Messages, Vol 10 (IXC-IZP)*

New

- ADR185W
- ADR560E
- ADR561E
- ADR562E
- ADR564E
- ADR565I
- ADR566E
- ADR567E
- ADR568I
- ADR569I
- ADR599I
- ADR803I
- ADR925W
- ADYH005E
- ADYH006E
- AIR039I
- AIR040I
- AIR041I
- AIR042I
- AIR573I
- AIR574I
- AIZ002I
- AIZ003I
- AIZ004I
- AIZ005I
- AIZ006I
- AIZ007I
- AIZ008I
- AIZ009I
- AIZ010I
- AIZ011I
- AIZ012I
- AIZ013I
- AIZ014I
- AIZ015I
- AIZ016I
- AIZ017I
- AIZ018I
- AIZ019I
- AIZ020I
- AIZ021I
- AIZ022I
- AIZ023I
- AIZ024I
- AIZ025I
- AIZ026I
- AIZ027I
- AIZ028I

- AMA770I
- AMA771I
- AMA772I
- AMA773I
- AMA774I
- AMA775I
- AMD125I
- ANTA5500E
- ANTA5501E
- ANTB8002I
- ANTI1038E
- ANTI8037I
- ANTQ8286I
- ANTQ8287I
- ANTQ8288I
- ANTQ8290I
- ANTS5170W
- ANTU2200I
- ANTU2201E
- ANTU2202I
- ANTU2203I
- ANTU2204I
- ANTU2205I
- ANTU2206E
- ANTU2207I
- ANTU2208I
- ANTU2210I
- ANTU2211I
- ANTU2212I
- ANTU2213I
- ANTU2214I
- ANTU2216I
- ANTU2217A
- ANTU2218I
- ANTU2219I
- ANTU2221I
- ANTU2222I
- ANTX5129E
- ANTX5130W
- ANTX5132W
- ANTX5133E
- ANTX5134E
- ANTX5135W
- ANTX5136E
- ANTX5139E
- ANTX5140E
- ANTX5151E
- ANTX8060I
- ANTX8061E
- ANTX8062W
- ANTX8063I
- ANTX8064E
- ANTX8070I
- ANTX8071I
- ANTX8072I
- ANTX8073I
- ANTX8074I
- ANTX8144I
- ANTX8145I
- ANTX8147I
- ANTX8148I
- ANTX8155I
- ANTX8158I
- ANTX8159I
- ANTX8160I
- ANTX8169I
- ANTX8170W
- ANTX8172I
- ANTX8173W
- ANTX8174W
- ANTX8175I
- ANTX8176I
- ANTX8177W
- ANTF0510E
- ANTF0511E
- ANTP0274E
- ANTP7132E
- ANTP8803I
- ANTP8804I
- ANTP8807I
- ANTP8809I
- ATR247E

Changed

- | | |
|-----------|-----------|
| ADR263E | ANTI1015E |
| ADR380E | ANTI1020I |
| ADR472E | ANTI1025E |
| AIRH148E | ANTI8027I |
| AMA152I | ANTX8032W |
| AMD083I | ANTQ8243I |
| AMD104I | ANTQ8255I |
| ANTI1000I | ANTQ8257I |
| ANTI1001E | ANTQ8288I |
| ANTI1011E | ANTX8902I |

ANTX8905I
ANTF0425I
ARC0006I
ARC0019I
ARC0036E
ARC0103I
ARC0153I
ARC0161I
ARC0185I
ARC0223I
ARC0235I
ARC0260I
ARC0434E
ARC0503E
ARC0508I
ARC0541I
ARC0550I
ARC0553I
ARC0570I
ARC0580I
ARC0601E
ARC0604I
ARC0647I
ARC0704E
ARC0744E
ARC0750I
ARC1106I
ARC1128I
ARC1159I
ARC1169I
ARC1177I
ARC1194I
ARC1207I
ARC1219I
ARC1244I
ARC1277I
ARC1288I
ARC1311I
ARC1334I
ARC1377I
ARC1543I
ARC1605I
ARC1806E
ARC1807I
ARC1809I

ARC1812I
ARC1823I
ARC1834I
ARC1836I
ARC6087I
ARC6088E
BPXF035I
BPXO043I
BPXO044I
BPXO045I
BPXO051I
BPXO063I
CNZ6002I
CNZZ001I
CNZZ002E
CNZZ003I
CNZZ004E
CNZZ010E
CNZZ014E
CNZZ019I
CNZZ042I
CNZZ043I
CSV550I
CSV470I
CUN4026I
CBR9843I
DMO0012I
DMO0050I
DMO0051I
DMO0052E
DMO0053E
DMO0054I
EDG2420I
EDG2421I
EDG2424I
EDG2425I
EDG2426I
EDG2427I
EDG2428I
EDG6680E
EDG9114I
EDG9115I
EDG9116I
ERB246I
ERB247I

ERB324I	IEC029I
ERB803I	IEC030I
ERB812I	IEC036I
ERB818I	IEC143I
HIS019I	IEC145I
HWI003I	IEC147I
HWI008I	IEC161I
HWI009I	IEC218I
HWI011I	IEC708I
HWI013I	IEC709I
HWI014I	IEC710I
HWI019I	IEC711I
HWI020I	IEC712I
HWI021I	IEC988I
HZR0106I	IEE064I
HZR0107I	IEE174I
HZR0110I	IEE241I
HZS0200I	IEE254I
HZS0201I	IEE334I
HZS0202I	IEE459I
IAR007I	IEE479W
IAR019I	IEF017I
IAR021I	IEF157E
IDAI1001E	IEF287I
IDAI1002E	IEF377I
IDC3009I	IEF378I
IDC3309I	IEF379I
IDC11468I	IEF384I
IDC31617I	IEF893I
IEA015A	IEFA003I
IEA074I	IEW2690E
IEA080D	IEW4007I
IEA195I	IFA700I
IEA253I	IFA701I
IEA321I	IFA702I
IEA394A	IFA704I
IEA436I	IFA706I
IEA437I	IFA707I
IEA491E	IFA708I
IEA494I	IFA709I
IEA611I	IFA710I
IEA794I	IFA711I
IEA911E	IFA714I
IEC022I	IFA715I
IEC026I	IFA716I

IFA717I	ISG378I
IFA832I	IWM025I
IFA840I	IWM064I
IGD002I	IXC328I
IGD031I	IXC338I
IGD01019I	IXC347I
IGD17268I	IXC357I
IGD17351I	IXC359I
IGDH1011E	IXC360I
IGF513I	IXC361I
IGW048A	IXC362I
IGW451I	IXC374I
IGW612I	IXC375I
IGW612I	IXC510I
IGW701I	IXC517I
IGW838I	IXC518I
IGWRH0120I	IXC522I
IGWRH0121I	IXC538I
IGWRH0122I	IXC568I
IOS085I	IXC574I
IOS500I	IXC574I
IOS103I	IXG033E
IOSHM0201I	IXG210E
IOSHM0501I	IXG310I
IRA860I	IXG311I
IRA861I	IXG601I
ISG008E	IXG651I
ISG009D	IXG652I
ISG221I	IXG653I
ISG343I	IXL015I
ISG344I	IXL020I
ISG377I	IXL021I

Deleted

EDG0300I	EDG0306I
EDG0301I	EDG2241E
EDG0302I	IAR007I
EDG0303D	IEC102I
EDG0304I	IRA251I
EDG0305I	IXC335I

Dump output messages

z/OS V1R13 introduced no new, changed, or deleted dump output messages.

MVS System Codes

For explanations and additional details, see *z/OS MVS System Codes*.

New:

- 006
- EC6: 0794 and 0795, 0401 - 0791, 0794, 0795, 07E0 - 081C.
- EC7: 0090070 - 00090073, 00150031

Changed wait state codes:

- 074

Changed system completion codes:

- 02A
- 02B
- 042
- 05C
- 066
- 0B0
- 0B5
- 0BA
- 18A
- 18F
- 422
- 66D
- 7C4

- 800
- 8FB
- B78
- D22
- DFB
- EC6
- EC7
- EFB

Deleted:

Although the following RACF system completion codes are still in use, to avoid redundancy they are deleted from *z/OS MVS System Codes*. Instead, find the complete descriptions in *z/OS Security Server RACF Messages and Codes*:

- 182, 183, 185, 18F
- 282, 283, 285
- 382, 383, 385, 3C7
- 482, 483, 485, 4C6, 4C7
- 582, 585
- 683, 684, 685
- 8FB
- 9C7, AC5
- D82, D83, D84, D85, DFB
- E82, E83, E84, E85

CIM summary of message changes for z/OS V1R13

The messages for Common Information Model (CIM) are documented in *z/OS Common Information Model User's Guide*.

Communications Server summary of message changes for z/OS V1R13

The messages for Communications Server are documented in:

- *z/OS Communications Server: IP Messages Volume 1 (EZA)*
- *z/OS Communications Server: IP Messages Volume 2 (EZB, EZD)*
- *z/OS Communications Server: IP Messages Volume 3 (EZY)*
- *z/OS Communications Server: IP Messages Volume 4 (EZZ, SNM)*
- *z/OS Communications Server: SNA Messages*

New

EZA5208E	EZBH017I
EZAOP60I	EZBH018E
EZBH014I	EZBH019I
EZBH015E	EZBH020I
EZBH016I	EZBH021E

EZBH022I	EZZ3028I
EZD0049I	EZZ3029I
EZD1160I	EZZ3030I
EZD1823I	EZZ3066I
EZD1827I	EZZ8171I
EZD1852I	EZZ8346I
EZD1862I	EZZ8666I
EZD1863I	EZZ8667I
EZD1924I	EZZ8668I
EZD1925I	EZZ8669I
EZD1974E	EZZ8670I
EZD2015I	EZZ8671I
EZD2018I	EZZ8672I
EZD2035I	EZZ8673I
EZD2036I	EZZ8674I
EZD2037E	EZZ8675I
EZYTE90W	EZZ8676I
EZZ2611I	EZZ8677I
EZZ2612I	EZZ8678I
EZZ2613I	EZZ8730I
EZZ2614I	EZZ9311E
EZZ2619I	EZZ9312I
EZZ2620I	EZZ9313I
EZZ2672I	IST2344I
EZZ2673I	IST2345I
EZZ2674I	IST2346I
EZZ2675I	IST2347I
EZZ2676I	IST2360I

Changed

The following messages were changed in this release:

EZA5544E	EZZ6012I
EZAOP47I	EZZ6023I
EZD0044I	EZZ6040I
EZD0832I	EZZ6049I
EZD1069I	EZZ8453I
EZD1214I	EZZ8455I
EZD1312I	EZZ8507I
EZD1726I	EZZ8644I
EZD1806I	EZZ8648I
EZD1825I	EZZ8649I
EZY2638I	EZZ8653I
EZZ0600I	EZZ8654I
EZZ4223I	EZZ8655I
	EZZ8656I
	EZZ8657I

EZZ8662I	IST495I
EZZ8663I	IST967I
EZZ8664I	IST1054I
EZZ8665I	IST1128I
EZZ8761I	IST1221I
EZZ8769I	IST1306I
EZZ8773I	IST1345I
EZZ8774I	IST1350I
EZZ9297E	IST1370I
EZZ9298I	IST1717I
EZZ9304I	IST2130I
EZZ9327I	IST2298I
EZZ9679E	IST2299I
IST315I	IST2331I
IST317I	IST2332I
IST460I	IST2333I

Deleted

EZD1729I	ISTH003I
EZD1931I	ISTH004E
IST318I	ISTH007I
IST1659I	ISTH008E
IST1741I	IVT5602I

Cryptographic Services PKI Services summary of message changes for z/OS V1R13

The messages for PKI Services are documented in *z/OS Cryptographic Services PKI Services Guide and Reference*.

New

IKYC077I
 IKYC078I
 IKYC079I
 IKYC080I
 IKYC081I
 IKYC082I
 IKYC083I
 IKYC084I
 IKYD002I
 IKYD003I
 IKYU018I

Changed

IKYP030I

Deleted

None

DFSORT summary of message changes for z/OS V1R13

The messages for DFSORT are documented in *z/OS DFSORT Messages, Codes and Diagnosis Guide*.

New

ICE265A	ICE660A
ICE266A	ICE661A
ICE659I	

Changed

ICE018A	ICE276A
ICE043A	ICE298I
ICE107A	ICE613A
ICE111A	ICE614A
ICE113A	ICE619A
ICE114A	ICE624A
ICE151A	ICE637A
ICE189A	ICE646A
ICE211I	ICE652A
ICE214A	ICE653A
ICE221A	ICE898I
ICE223A	

Deleted

Messages retired in V1R13: None

Distributed File Service summary of message changes for z/OS V1R13

The messages for Distributed File Service are documented in *z/OS Distributed File Service Messages and Codes*.

New

The following messages were added:

IOEN00515I	IOEP00001A	IOEP00002A	IOEP12402E	IOEZ00382I	IOEZ00386I
IOEZ00579I	IOEZ00587I	IOEZ00643I	IOEZ00644I	IOEZ00645I	IOEZ00646I
IOEZ00718I	IOEZ00719I	IOEZ00720I	IOEZ00721I	IOEZ00724I	IOEZ00725I
IOEZ00727I	IOEZ00728I	IOEZ00731I	IOEZ00736I	IOEZ00740E	IOEZ00741I
IOEZ00742I	IOEZ00743I	IOEZ00744I	IOEZ00745E	IOEZ00746E	IOEZ00747I
IOEZH0014E					

The following EFXxxx reason codes were added:

614C	69C1	6A2A	6A2B	6A2C	6A2D
6A2E	6A2F	6A30	6A31		

Changed

The following messages have changed:

IOEZ00051I IOEZ00057I IOEZ00326E IOEZ00338A IOEZ00422E IOEZ00548I
IOEZ00660I IOEZH0010I IOEZH0012I

The following EFxxxx reason codes have changed:

6055 6058 663F

Deleted

The messages listed in the following table are no longer issued by their respective subcomponents.

Subcomponent	Messages no longer issued
Basic OverSeer Server (boserver) and bos commands	IOEB03001E IOEB03002E IOEB03003E IOEB03004E IOEB03006E IOEB03007E IOEB03009E
	IOEB03010E IOEB03011E IOEB03013E IOEB03015E IOEB03016E IOEB03017E IOEB03018E
	IOEB03023E IOEB03024E IOEB03025E IOEB03026E IOEB03027E IOEB03028E IOEB03029E
	IOEB03030E IOEB03031E IOEB03032E IOEB03033E IOEB03034E IOEB03035E IOEB03036E
	IOEB03037E IOEB03038E IOEB03039E IOEB03040E IOEB03041E IOEB03042E IOEB03043E
	IOEB03044E IOEB03045E IOEB03046E IOEB03047E IOEB03048E IOEB03049E IOEB03050E
	IOEB03051E IOEB03061E IOEB03062E IOEB03063E IOEB03064E IOEB03066E IOEB03067E
	IOEB03068E IOEB03069E IOEB03070E IOEB03071E IOEB03072E IOEB03073E IOEB03074E
	IOEB03075E IOEB03076E IOEB03077E IOEB03078E IOEB03082E IOEB03083E IOEB03084E
	IOEB03085E IOEB03086E IOEB03087E IOEB03088E IOEB03090E IOEB03092E IOEB03101E
	IOEB03102E IOEB03110E IOEB03111E IOEB03112E IOEB03113E IOEB03117E IOEB03118E
	IOEB03119E IOEB03120E IOEB03121E IOEB03123E IOEB03124E IOEB03125E IOEB03126E
	IOEB03127E IOEB03128E IOEB03129E IOEB03130E IOEB03131E IOEB03132E IOEB03133E
	IOEB03134E IOEB03135E IOEB03136E IOEB03137E IOEB03138E IOEB03139E IOEB03140E
	IOEB03141E IOEB03142E IOEB03143E IOEB03144I IOEB03145E IOEB03146E IOEB03147E
	IOEB03148E IOEB03149E IOEB03150E IOEB03151E IOEB03152E IOEB03153E IOEB03154E
	IOEB03155E IOEB03156E IOEB03157E IOEB03158E IOEB03159E IOEB03160E IOEB03161E
	IOEB03162E IOEB03163E IOEB03164E IOEB03165E IOEB03166E IOEB03167E IOEB03168E
	IOEB03169I IOEB03170E IOEB03171I IOEB03172I IOEB03585I IOEB03586E IOEB03587I
	IOEB03588I IOEB03589E IOEB03590E IOEB03592I IOEB03593E IOEB03596E IOEB03597E
	IOEB03598E IOEB03599E IOEB03600E IOEB03601E IOEB03602E IOEB03603E IOEB03604E
	IOEB03605E IOEB03606E IOEB03607E IOEB03608E IOEB03609E IOEB03610E IOEB03619E
	IOEB03621E IOEB03622E IOEB03623E IOEB03624E IOEB03625E IOEB03628E IOEB03629E
	IOEB03631E IOEB03632E IOEB03633E IOEB03634E IOEB03636E IOEB03644E IOEB03651E
	IOEB03652E IOEB03653E IOEB03654E IOEB03657E IOEB03660E IOEB03661E IOEB03662E
	IOEB03663E IOEB03664E IOEB03665E IOEB03666E IOEB03668E IOEB03669E IOEB03670E
	IOEB03671E IOEB03672E IOEB03673E IOEB03674E IOEB03675E IOEB03676E IOEB03677E
	IOEB03699E IOEB03700E IOEB03701E IOEB03703E IOEB03704E IOEB03705E IOEB03707E

Subcomponent	Messages no longer issued								
DFS Client (Cache Manager) and cm commands	IOEC04096I	IOEC04097I	IOEC04101I	IOEC04102A	IOEC04103A	IOEC04104A	IOEC04105A		
	IOEC04106A	IOEC04107I	IOEC04108I	IOEC04109I	IOEC04110A	IOEC04112I	IOEC04113A		
	IOEC04114A	IOEC04115I	IOEC04116I	IOEC04117I	IOEC04118I	IOEC04119I	IOEC04120I		
	IOEC04121I	IOEC04122A	IOEC04123A	IOEC04124A	IOEC04125A	IOEC04126I	IOEC04127A		
	IOEC04128A	IOEC04129A	IOEC04130A	IOEC04131A	IOEC04132A	IOEC04133A	IOEC04134A		
	IOEC04135A	IOEC04136A	IOEC04137A	IOEC04138I	IOEC04139I	IOEC04140I	IOEC04141I		
	IOEC04142A	IOEC04143I	IOEC04144I	IOEC04145I	IOEC04146A	IOEC04147I	IOEC04148A		
	IOEC04149I	IOEC04150I	IOEC04151I	IOEC04152A	IOEC04153I	IOEC04154I	IOEC04155A		
	IOEC04156I	IOEC04157I	IOEC04158A	IOEC04159I	IOEC04160A	IOEC04161I	IOEC04162A		
	IOEC04163I	IOEC04164A	IOEC04166I	IOEC04167I	IOEC04168A	IOEC04169A	IOEC04170A		
	IOEC04171A	IOEC04172A	IOEC04173A	IOEC04174A	IOEC04175A	IOEC04176A	IOEC04177A		
	IOEC04178I	IOEC04179A	IOEC04180A	IOEC04181A	IOEC04182A	IOEC04183I	IOEC04184I		
	IOEC04185I	IOEC04186A	IOEC04187A	IOEC04188A	IOEC04189A	IOEC04190A	IOEC04191A		
	IOEC04192A	IOEC04193A	IOEC04194A	IOEC04195I	IOEC04196A	IOEC04197A	IOEC04198I		
	IOEC04199I	IOEC04200I	IOEC04201I	IOEC04202A	IOEC04203I	IOEC04204I	IOEC04205I		
	IOEC04206I	IOEC04207A	IOEC04208A	IOEC04209A	IOEC04210A	IOEC04211A	IOEC04212A		
	IOEC04213A	IOEC04214A	IOEC04215I	IOEC04216I	IOEC04217I	IOEC04218I	IOEC04219I		
	IOEC04220I	IOEC04221I	IOEC04222I	IOEC04223I	IOEC04224I	IOEC04225I	IOEC04226A		
	IOEC04227A	IOEC04228A	IOEC04229A	IOEC05001E	IOEC05002E	IOEC05003E	IOEC05004I		
	IOEC05005E	IOEC05006E	IOEC05007E	IOEC05008E	IOEC05009E	IOEC05011E	IOEC05020E		
	IOEC05027E	IOEC05028E	IOEC05029E	IOEC05033E	IOEC05034E	IOEC05037E	IOEC05201I		
	IOEC05202E	IOEC05203E	IOEC05204E	IOEC05205E	IOEC05206E	IOEC05207E	IOEC05208E		
	IOEC05209E	IOEC05210I	IOEC05211E	IOEC05212E	IOEC05213E	IOEC05214E	IOEC05215I		
	IOEC05216E	IOEC05217E	IOEC05218E	IOEC05219E	IOEC05220E	IOEC05221E	IOEC05222E		
	IOEC05223E	IOEC05224E	IOEC05225E	IOEC05226E	IOEC05227E	IOEC05228I	IOEC05229I		
	IOEC05230I	IOEC05231E	IOEC05232E	IOEC05233E	IOEC05234E	IOEC05235E	IOEC05236E		
	IOEC05237E	IOEC05238E	IOEC05239E	IOEC05240E	IOEC05241E	IOEC05242E	IOEC05243E		
	IOEC05244E	IOEC05245I	IOEC05246I	IOEC05247E	IOEC05248I	IOEC05249I	IOEC05250E		
	IOEC05251I	IOEC05252E	IOEC05253E	IOEC05254E	IOEC05255I	IOEC05256I	IOEC05257I		
	IOEC05258I	IOEC05259I	IOEC05260I	IOEC05261I	IOEC05262I	IOEC05263I	IOEC05264I		
	IOEC05265I	IOEC05266I	IOEC05267E	IOEC05268E	IOEC05269I	IOEC05270I	IOEC05271I		
	IOEC05272I	IOEC05273I	IOEC05274I	IOEC05275I	IOEC05276I	IOEC05277I	IOEC05278I		
	IOEC05279I	IOEC05280I	IOEC05281I	IOEC05282I	IOEC05283I	IOEC05284E	IOEC05285E		
	IOEC05286I	IOEC05287E	IOEC05288E	IOEC05289E	IOEC05290E	IOEC05291E	IOEC05292E		
	IOEC05293E	IOEC05294E	IOEC05295E	IOEC05296E	IOEC05297E	IOEC05298E	IOEC05299E		
	IOEC05300E	IOEC05301E	IOEC05302E	IOEC05303E	IOEC05304E	IOEC05305E	IOEC05306E		
	IOEC05307E	IOEC05308E	IOEC05309E	IOEC05310E	IOEC05311I	IOEC05312I	IOEC05313I		
	IOEC05318I	IOEC05319I							
	DFS Configuration Program (dfsconf)	IOED01016I	IOED01017I	IOED01018I	IOED01019I	IOED01020I	IOED01021I	IOED01022I	
		IOED01023I	IOED01024I	IOED01032I	IOED01033I	IOED01034I	IOED01035I	IOED01036A	
		IOED01037E	IOED01038E	IOED01039E	IOED01040E	IOED01041E	IOED01042E	IOED01043E	
		IOED01044I	IOED01045E	IOED01046E	IOED01047E	IOED01048E	IOED01049A	IOED01050A	
		IOED01051A	IOED01052E	IOED01060I	IOED01061I	IOED01062I	IOED01063A	IOED01064E	
		IOED01065E	IOED01066E	IOED01067E	IOED01069I	IOED01070A	IOED01075A	IOED01076A	

Subcomponent	Messages no longer issued							
Fileset Server (ftserver) and fts commands	IOEF06001E	IOEF06004A	IOEF06005A	IOEF06006A	IOEF06007A	IOEF06008A	IOEF06009A	
	IOEF06010I	IOEF06011A	IOEF06016E	IOEF06017E	IOEF06018E	IOEF06019E	IOEF06020E	
	IOEF06026E	IOEF06031I	IOEF06032E	IOEF06033E	IOEF06046E	IOEF06047E	IOEF06048E	
	IOEF06067E	IOEF06068E	IOEF06071E	IOEF06074I	IOEF06075E	IOEF06081E	IOEF06083E	
	IOEF06084E	IOEF06085I	IOEF06086I	IOEF06087E	IOEF06501E	IOEF06502E	IOEF06503E	
	IOEF06504E	IOEF06505E	IOEF06506E	IOEF06509E	IOEF06513E	IOEF06519E	IOEF06520E	
	IOEF06522E	IOEF06523E	IOEF06524E	IOEF06525E	IOEF06526E	IOEF06527E	IOEF06528E	
	IOEF06529E	IOEF06530E	IOEF06531E	IOEF06532E	IOEF06536E	IOEF06538E	IOEF06540E	
	IOEF06548E	IOEF06550E	IOEF06552I	IOEF06553E	IOEF06555E	IOEF06557E	IOEF06558E	
	IOEF06559E	IOEF06560E	IOEF06561E	IOEF06566E	IOEF06571E	IOEF06575E	IOEF06576E	
	IOEF06577E	IOEF06578E	IOEF06579E	IOEF06580E	IOEF06581E	IOEF06586E	IOEF06587E	
	IOEF06588E	IOEF06589E	IOEF06590E	IOEF06591E	IOEF06592E	IOEF06594E	IOEF06595E	
	IOEF06596E	IOEF06597E	IOEF06598E	IOEF07062E	IOEF07063E	IOEF07064E	IOEF07065E	
	IOEF07113E	IOEF07114E	IOEF07115E	IOEF07116E	IOEF07117E	IOEF07118E	IOEF07119E	
	IOEF07120E	IOEF07121E	IOEF07122E	IOEF07123E	IOEF07124E	IOEF07125E	IOEF07126E	
	IOEF07127I	IOEF07128E	IOEF07129I	IOEF07130E	IOEF07131E	IOEF07132E	IOEF07133E	
	IOEF07136E	IOEF07137E	IOEF07138E	IOEF07139E	IOEF07140E	IOEF07141E	IOEF07145E	
	IOEF07147E	IOEF07151E	IOEF07152E	IOEF07154E	IOEF07155E	IOEF07156I	IOEF07157E	
	IOEF07158E	IOEF07159E	IOEF07160E	IOEF07161E	IOEF07162E	IOEF07163E	IOEF07164E	
	IOEF07165E	IOEF07166E	IOEF07167E	IOEF07168E	IOEF07169E	IOEF07170E	IOEF07171E	
	IOEF07172E	IOEF07173E	IOEF07174E	IOEF07175E	IOEF07176E	IOEF07177E	IOEF07179E	
	IOEF07180E	IOEF07181E	IOEF07182E	IOEF07183E	IOEF07184E	IOEF07185E	IOEF07186E	
	IOEF07187E	IOEF07208E	IOEF07209E	IOEF07210E	IOEF07211E	IOEF07212E	IOEF07213E	
	IOEF07214E	IOEF07215E	IOEF07216E	IOEF07217E	IOEF07218E	IOEF07219E	IOEF07220E	
	IOEF07221E	IOEF07222E	IOEF07223E	IOEF07224E	IOEF07231E	IOEF07232E	IOEF07233E	
	IOEF07234E	IOEF07235E	IOEF07237E	IOEF07239E	IOEF07240E	IOEF07241E	IOEF07245E	
	IOEF07246E	IOEF07247E	IOEF07248E	IOEF07249E	IOEF07250E	IOEF07251E	IOEF07252E	
	IOEF07253E	IOEF07254E	IOEF07255E	IOEF07256E	IOEF07257E	IOEF07258E	IOEF07259E	
	IOEF07260E	IOEF07261E	IOEF07262E	IOEF07263E	IOEF07264E	IOEF07265E	IOEF07266E	
	IOEF07267E	IOEF07268E	IOEF07269E	IOEF07270E	IOEF07271E	IOEF07272E	IOEF07273E	
	IOEF07274E	IOEF07275E	IOEF07276E	IOEF07277E	IOEF07280E	IOEF07281E	IOEF07282E	
	IOEF07283E	IOEF07284E	IOEF07285E	IOEF07286E	IOEF07287E	IOEF07288E	IOEF07289E	
	IOEF07290E	IOEF07291E	IOEF07292E	IOEF07293E	IOEF07294E	IOEF07295E	IOEF07296E	
	IOEF07297E	IOEF07298E	IOEF07299E	IOEF07301I	IOEF07303E	IOEF07304E	IOEF07305E	
	IOEF07306E	IOEF07307E	IOEF07308E	IOEF07309E	IOEF07310E	IOEF07311E	IOEF07313E	
	IOEF07315E	IOEF07316E	IOEF07317E	IOEF07319E	IOEF07320E	IOEF07321E	IOEF07322E	
	IOEF07323E	IOEF07324E	IOEF07325E	IOEF07326E	IOEF07327E	IOEF07349E	IOEF07350E	
	IOEF07351E	IOEF07352E	IOEF07353E	IOEF07354E	IOEF07355E	IOEF07356E	IOEF07357E	
	IOEF07358E	IOEF07359E	IOEF07360E	IOEF07361E	IOEF07362E	IOEF07363E	IOEF07364E	
	IOEF07365E	IOEF07366E	IOEF07442E	IOEF07443E	IOEF07444E	IOEF07445E	IOEF07446I	
	IOEF07447E	IOEF07451E	IOEF07452E	IOEF07454E	IOEF07455E	IOEF07456E	IOEF07457E	
	IOEF07460E	IOEF07461I	IOEF07462E	IOEF07463E	IOEF07464E	IOEF07465E	IOEF07466E	
	IOEF07467E	IOEF07468E	IOEF07469E	IOEF07470E	IOEF07471E	IOEF07472E	IOEF07473E	
	IOEF07474E	IOEF07475E	IOEF07477E	IOEF07478E	IOEF07479I	IOEF07480E	IOEF07481E	
	IOEF07482E	IOEF07483E	IOEF07484E	IOEF07485E	IOEF07486E	IOEF07487E	IOEF07488E	
	IOEF07489E	IOEF07490E	IOEF07491E	IOEF07492E	IOEF07493E	IOEF07494E	IOEF07495I	
	IOEF07496E	IOEF07497E	IOEF07498E	IOEF07499E	IOEF07500E	IOEF07501E	IOEF07502E	
	IOEF07503E	IOEF07504E	IOEF07505E	IOEF07506E	IOEF07507E	IOEF07508E	IOEF07510E	
	IOEF07511E	IOEF07527E	IOEF07528E	IOEF07529E	IOEF07530E	IOEF07531E	IOEF07532E	
	IOEF07533E	IOEF07534E	IOEF07535E	IOEF07536E	IOEF07537E	IOEF07538E		

Subcomponent	Messages no longer issued								
Backup Server (bakserver) and bak commands	IOEH08501E	IOEH08502E	IOEH08503E	IOEH08504E	IOEH08505E	IOEH08506E	IOEH08507E	IOEH08508E	
	IOEH08508E	IOEH08509E	IOEH08510E	IOEH08511E	IOEH08512E	IOEH08513E	IOEH08514E	IOEH08515E	
	IOEH08582E	IOEH08583E	IOEH08584E	IOEH08585E	IOEH08586E	IOEH08587E	IOEH08588E	IOEH08589E	
	IOEH08609I	IOEH08610I	IOEH08611I	IOEH08612I	IOEH08613I	IOEH08614I	IOEH08615I	IOEH08616I	
	IOEH08643E	IOEH08644E	IOEH08645E	IOEH08646E	IOEH08647E	IOEH08648E	IOEH08649E	IOEH08650E	
	IOEH08660I	IOEH08661I	IOEH08662I	IOEH08663I	IOEH08664I	IOEH08665I	IOEH08666I	IOEH08667I	
	IOEH08689E	IOEH08690E	IOEH08691E	IOEH08692E	IOEH08693E	IOEH08694E	IOEH08695E	IOEH08696E	
	IOEH08708I	IOEH08709I	IOEH08710I	IOEH08711I	IOEH08712I	IOEH08713I	IOEH08714I	IOEH08715I	
	IOEH08745E	IOEH08746E	IOEH08747E	IOEH08748E	IOEH08749E	IOEH08750E	IOEH08751E	IOEH08752E	
	IOEH08778E	IOEH08779E	IOEH08780E	IOEH08781E	IOEH08782E	IOEH08783E	IOEH08784E	IOEH08785E	
	IOEH08804E	IOEH08805E	IOEH08806E	IOEH08807E	IOEH08808E	IOEH08809E	IOEH08810E	IOEH08811E	
	IOEH08820E	IOEH08821E	IOEH08822E	IOEH08823E	IOEH08824E	IOEH08825E	IOEH08826E	IOEH08827E	
	IOEH08827E	IOEH08828E	IOEH08829E	IOEH08830E	IOEH08831E	IOEH08832E	IOEH08833E	IOEH08834E	
	IOEH08834E	IOEH08835E	IOEH08836E	IOEH08837E	IOEH08838E	IOEH08839E	IOEH08840E	IOEH08841E	
	IOEH08849I								
	Ubik Servers and udebug commands	IOEJ10001E	IOEJ10002E	IOEJ10003E	IOEJ10004E	IOEJ10005E	IOEJ10006E	IOEJ10007E	IOEJ10008E
		IOEJ10009E	IOEJ10010E	IOEJ10011E	IOEJ10012E	IOEJ10013E	IOEJ10014E	IOEJ10015E	
	Fileset Location Server (flserver)	IOEL10503E	IOEL10510I	IOEL10511I	IOEL10512I	IOEL10516I	IOEL10518A	IOEL10519A	
		IOEL10520A	IOEL10522A	IOEL10523A	IOEL10524E	IOEL10525I	IOEL10526A	IOEL10527I	
		IOEL10528E	IOEL10529E	IOEL10530E	IOEL10532E	IOEL10533E	IOEL10548I	IOEL10550E	
IOEL10551E		IOEL10553E	IOEL10554E	IOEL10556E	IOEL10557E	IOEL10558I			
mapid command	IOEM02000A	IOEM02001I	IOEM02002A	IOEM02003A	IOEM02004A	IOEM02050A	IOEM02051A		
	IOEM02052A	IOEM02053A	IOEM02054A	IOEM02055A	IOEM02056A	IOEM02057A	IOEM02058A		
	IOEM02059A	IOEM02060A	IOEM02061A	IOEM02062A	IOEM02067I	IOEM02068I	IOEM02069A		
	IOEM02100A	IOEM02101A							
General DFS	IOEN00105I	IOEN00108I	IOEN00135A	IOEN00137A	IOEN00138A	IOEN00139A	IOEN00140A		
	IOEN00141A	IOEN00142A	IOEN00143A	IOEN00144A	IOEN00145A	IOEN00148I	IOEN00149I		
	IOEN00150I	IOEN00180I	IOEN00181I	IOEN00182A	IOEN00183A	IOEN00184A	IOEN00185A		
	IOEN00186A	IOEN00187A	IOEN00188A	IOEN00189A	IOEN00190A	IOEN00191A	IOEN00192A		
	IOEN00193A	IOEN00194A	IOEN00403I	IOEN00404I	IOEN00405E	IOEN00406I	IOEN00409A		
	IOEN00410A	IOEN00423E							
General DFS internal errors	IOE011500A	IOE011501A	IOE011502A	IOE011504A	IOE011505A	IOE011506A	IOE011507I		
	IOE011508I	IOE011509I	IOE011510I	IOE011511I	IOE011512I	IOE011600A	IOE011700A		
	IOE011701A	IOE011702A	IOE011800A	IOE011900A	IOE011901A	IOE011902A	IOE011903A		
	IOE011904A	IOE011905A							
DFS Kernel (dfskern) and General DFS error	IOEP01157A	IOEP01158A	IOEP01159A	IOEP01163A	IOEP01500I	IOEP01501I	IOEP01502I		
	IOEP01503A	IOEP01504I	IOEP01505A	IOEP01506A	IOEP01507A	IOEP01508A	IOEP01509A		
	IOEP01510A	IOEP01511A	IOEP01512A	IOEP01513A	IOEP01514A	IOEP01515I	IOEP01521A		
	IOEP01522A	IOEP01523A	IOEP01524A	IOEP01525A	IOEP01526A	IOEP01527I	IOEP01528I		
	IOEP01710A								
scout command and token manager	IOES00401I	IOES00402I	IOES00403I	IOES00404I	IOES00405I	IOES00406I	IOES00407I		
	IOES00408I	IOES00409I	IOES00410I	IOES00411E	IOES00412E	IOES00413E	IOES00414E		
	IOES00415E	IOES00416E	IOES00417E	IOES00418E	IOES00419E	IOES00420E	IOES00421E		
	IOES14000A	IOES14001A	IOES14050A	IOES14051A	IOES14100A	IOES14101A	IOES14102A		
	IOES14150A	IOES14151A	IOES14152A	IOES14153A	IOES14154A	IOES14200A	IOES14201A		
	IOES14202A	IOES14203A	IOES14204A	IOES14250A	IOES14300A	IOES14500I	IOES14501A		
	IOES14502A	IOES14503E	IOES14504A	IOES14506A	IOES14507A	IOES14508A	IOES14509A		
	IOES14510A	IOES14511A	IOES14512A	IOES14513A	IOES14514A	IOES14515A	IOES14516A		
	IOES14517A	IOES14518A	IOES14525A	IOES14526A	IOES14527A	IOES14528A	IOES14529A		
	IOES14530A	IOES14531A	IOES14532A	IOES14533A	IOES14534A	IOES14535I	IOES14536A		
	IOES14537I	IOES14538A	IOES14539I	IOES14540A	IOES14541I	IOES14542A	IOES14543I		
	IOES14544A	IOES14545I	IOES14546A	IOES14547A	IOES14548A	IOES14549I	IOES14550A		
	IOES14551A	IOES14553A	IOES14561A	IOES14800A	IOES14801A	IOES14802A	IOES14803A		
	IOES14804A	IOES14805A	IOES14806A	IOES14807A	IOES14808A	IOES14809A	IOES14810A		
	IOES14811A	IOES14812E	IOES14813I	IOES14814A	IOES14815A				

Subcomponent	Messages no longer issued
Update Server (upserver) and Update Client (upclient)	IOEU15507E IOEU15508E IOEU15509E IOEU15510E IOEU15511E IOEU15512E IOEU15514E IOEU15515E IOEU15516E IOEU15517E IOEU15518E IOEU15519E IOEU15522E IOEU15523E IOEU15524E IOEU15527E IOEU15528E IOEU15529E IOEU15531E IOEU15533E IOEU15535E IOEU15537E IOEU15539E IOEU15540E IOEU15541E IOEU15542E IOEU15543E IOEU15544E IOEU15545E IOEU15546E IOEU15547E IOEU15548E IOEU15549E IOEU15550E IOEU15551E IOEU15553E IOEU15554E IOEU15555E IOEU15556E IOEU15557E IOEU15558E IOEU15559E IOEU15567E IOEU15569I IOEU15570E IOEU15571E IOEU15572E IOEU15573E IOEU15574E IOEU15575E IOEU15576E IOEU15577E IOEU15578E IOEU15579E IOEU15580E IOEU15581E IOEU15582E IOEU15584E IOEU15585E IOEU15586E IOEU15587E IOEU15588E IOEU15589E IOEU15590E IOEU15591E IOEU15592E IOEU15593E IOEU15594E IOEU15595E IOEU15596E IOEU15597E IOEU15599E IOEU15600E IOEU15601E IOEU15602E IOEU15603I IOEU15604E IOEU15605E
SMB Health Checker	IOEWH0001I IOEWH0002I IOEWH0010I IOEWH0011E IOEWH0012I IOEWH0014I IOEWH0020E
File Exporter (dfsexport)	IOEX18500A IOEX18501A IOEX18502I IOEX18503A IOEX18504A IOEX18505I IOEX18506A IOEX18507A IOEX18508A IOEX18509A IOEX18510A IOEX18511A IOEX18512A IOEX18513I IOEX18514A IOEX18515A IOEX18516A IOEX18517I IOEX18518I IOEX18519A IOEX18520A IOEX18521I IOEX18522I IOEX18523I IOEX18524A IOEX18525A IOEX18526A IOEX18528A IOEX18529I IOEX18530I IOEX18531I IOEX18532A IOEX18533A IOEX18534I IOEX18535A IOEX18536I IOEX18537I IOEX18538A IOEX18539A IOEX18540A IOEX18541A IOEX18542A IOEX18543A IOEX18544A

The following reason codes were deleted.

Reason code	Codes no longer issued
6Cxxxxrr (DFS Client reason codes)	0001 0003 0005 0007 0008 0009 000A 000B 000C 000D 000E 000F 0010 0011 0012 0013 0014 0015 0016 0017 0018 0019 001A 001B 001C 001D 001E 001F 0020 0021 0022 0023 0024 0025 0026 0027 0028 0029

HCD summary of message changes for z/OS V1R13

The messages for HCD are documented in *z/OS and z/VM HCD Messages*.

New

CBDG739I

Changed

CBDA269I

CBDA377I

CBDA398I

CBDG181I

CBDG721I

Deleted

None.

Infoprint Server summary of message changes for z/OS V1R13

The messages for Infoprint Server are documented in *z/OS Infoprint Server Messages and Diagnosis*.

New

AOP125E
AOP165E
AOP166E
AOP167I
AOP168I
AOP169I
AOP170I
AOP171I
AOP172E
AOP173E

Changed

None

Deleted

None

IBM Tivoli Directory Server summary of message changes for z/OS V1R13

The messages for IBM Tivoli Directory Server are documented in *z/OS IBM Tivoli Directory Server Messages and Codes for z/OS*.

New

GLD1298E	GLD1301E
GLD1299I	GLD1302E
GLD1300E	GLD1869W

Changed

GLD1070E	GLD3303E
GLD2401E	GLD3330E

Deleted

GLD1173E

JES2 summary of message changes for z/OS V1R13

The messages for JES2 are documented in *z/OS JES2 Messages*.

New

\$HASP519	\$HASP745
\$HASP740	\$HASP807
\$HASP741	\$HASP808
\$HASP742	\$HASP809
\$HASP743	\$HASP814
\$HASP744	

Changed

\$HASP003	\$HASP445
\$HASP064	\$HASP709
\$HASP249	\$HASP720
\$HASP443	\$HASP895

Deleted

None

JES3 summary of message changes for z/OS V1R13

The messages for JES3 are documented in *z/OS JES3 Messages*.

New

IAT3275	IAT7992
IAT3300	IAT7993
IAT3301	IAT8181
IAT3302	IAT8385
IAT7990	IAT8346
IAT7991	IAT9385

Changed

IAT3061	IAT7500
IAT3092	IAT7565
IAT3155	IAT7566
IAT3426	IAT8090
IAT4050	IAT8121
IAT4053	IAT8513

Deleted

IAT3398

Language Environment summary of message changes for z/OS V1R13

The messages for Language Environment are documented in *z/OS Language Environment Runtime Messages*.

New

New messages:

CEE3303E EDC4199

New abend codes:

None

Changed

Changed messages:

CEE5224W EDC5234S EDC6253S EDC6254S EDC6255S EDC6256S

Changed abend codes:

U4088 U4093 U4094

Deleted

Deleted messages:

None

Deleted abends:

None

NFS summary of message changes for z/OS V1R13

The messages for Network File System (NFS) are documented in *z/OS Network File System Guide and Reference*.

New

None

Changed

GFSC101E

Deleted

None

RMF summary of message changes for z/OS V1R13

This topic lists new, changed, and deleted messages for RMF.

The non-operator messages for RMF are also documented in *z/OS RMF Messages and Codes*. The operator messages for RMF are documented in:

- *z/OS MVS System Messages, Vol 1 (ABA-AOM)*
- *z/OS MVS System Messages, Vol 2 (ARC-ASA)*
- *z/OS MVS System Messages, Vol 3 (ASB-BPX)*
- *z/OS MVS System Messages, Vol 4 (CBD-DMO)*
- *z/OS MVS System Messages, Vol 5 (EDG-GFS)*
- *z/OS MVS System Messages, Vol 6 (GOS-IEA)*
- *z/OS MVS System Messages, Vol 7 (IEB-IEE)*
- *z/OS MVS System Messages, Vol 8 (IEF-IGD)*
- *z/OS MVS System Messages, Vol 9 (IGF-IWM)*
- *z/OS MVS System Messages, Vol 10 (IXC-IZP)*

New

None.

Changed

ERB225I

ERB466I

Deleted

None.

SDSF summary of message changes for z/OS V1R13

The messages for SDSF are documented in *z/OS SDSF Operation and Customization*.

New

ISF160E

ISF438I

ISF161E

ISF439I

ISF162E

ISF440I

ISF163E

ISF441E

ISF308E

ISF442I

ISF315I

ISF546I

ISF433I

ISF863E

ISF435I

ISF2011E

ISF436I

ISF2012E

ISF437I

ISF2210W

Changed

ISF311I

ISF312I

Deleted

None

Security Server RACF summary of message changes for z/OS V1R13

The messages for RACF are documented in *z/OS Security Server RACF Messages and Codes*.

New

IRRI016I, IRRI020I, IRRI021I, IRRI022I,
IRRI023I, IRRI024I, IRRI025I, IRRI026I,
IRRI027I, IRRI029I, IRRI030I, IRRI031I

IRRC040I, IRRC050I, IRRC051I, IRRC052I,
IRRC053I, IRRC054I, IRRC055I, IRRC056I,
IRRC057I, IRRC058I, IRRC059I, IRRC060I,
IRRC061I, IRRC062I, IRRC063I, IRRC064I

IRRM087I, IRRM088I, IRRM089I, IRRM090I,
IRRM091I, IRRM092I, IRRM093I, IRRM094I,
IRRM095I, IRRM096I, IRRM097I

IRRN001I, IRRN010I

IRRQ001I, IRRQ010I, IRRQ180I, IRRQ181I

IRRW214I, IRRW215I, IRRW216I

Changed

ICH12304

ICH11009I

ICH12305

ICH66102I

ICH14078

IRR803I

IRRB023I
IRRD125I, IRRD130I, IRRD135I, IRRD157I,
IRRD160I, IRRD171I, IRRD187I, IRRD188I

Deleted

IRRM056I

SMP/E V3R5 summary of message changes for z/OS V1R13

This topic lists new, changed, and deleted non-operator messages for SMP/E V3R5. (New, changed, and deleted messages for SMP/E V3R5 are listed in *SMP/E for z/OS Messages, Codes, and Diagnosis*.)

New

GIM20702S	GIM50811S
GIM20702T	GIM50812E
GIM20703S	GIM50812S
GIM20703T	GIM58902S
GIM20704S	GIM58903W
GIM20704T	GIM58904E
GIM26316E	GIM58905E
GIM26316S	GIM58906S
GIM34401I	GIM65915E
GIM34401S	GIM69224S
GIM35973I	GIM69225E
GIM35974I	GIM69227W
GIM35975I	GIM69228I
GIM35976I	GIM69229I
GIM35977I	GIM69230E
GIM39802E	GIM69231E
GIM44285I	GIM69232S
GIM65915E	GIM69233I
GIM42001I	GIM69234I
GIM50811E	

Changed

IKJ56411I	GIM69147S
GIM22800S	GIM69210S
GIM26307E	GIM69211S
GIM26307S	GIM693I
GIM26501W	GIM694I
GIM45301E	
GIM50301S	
GIM52101E	
GIM54001E	
GIM56701E	
GIM58900S	

Deleted

IKJ540111	IKJ54020A
IKJ540151	IKJ540301
IKJ54017A	IKJ566671

TSO/E summary of message changes for z/OS V1R13

This topic lists new, changed, and deleted non-operator messages for TSO/E. (New, changed, and deleted operator messages for TSO/E are listed in “BCP and DFSMS summary of message changes for z/OS V1R13” on page 373.)

The non-operator messages for TSO/E are documented in *z/OS TSO/E Messages*. The operator messages for TSO/E are documented in the *z/OS MVS System Messages*:

- *z/OS MVS System Messages, Vol 7 (IEB-IEE)*
- *z/OS MVS System Messages, Vol 8 (IEF-IGD)*
- *z/OS MVS System Messages, Vol 9 (IGF-IWM)*
- *z/OS MVS System Messages, Vol 10 (IXC-IZP)*

New

IRX0241I	IRX0242I
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Changed

IKJ564111	IKJ56447A
IKJ56424I	IKJ56702A

Deleted

IKJ540111	IKJ54020A
IKJ540151	IKJ540301
IKJ54017A	IKJ566671

XL C/C++ summary of message changes for z/OS V1R13

The messages for XL C/C++ are documented in *z/OS XL C/C++ Messages*.

New

CCN0007	CCN8434
CCN2063	CCN8445 to CCN8447
CCN2118	CCN8460
CCN2187	CCN8659
CCN2475	CCN8948
CCN4474	CCN8949
CCN4475	CCN8951 to CCN8958
CCN4478	CCN8961 to CCN8965
CCN5734	
CCN5735	
CCN5895	
CCN8153	

Changed

CCN7613
CCN8154

CCN8647
CCN8802

Deleted

CCN2473

CCN4157

z/OS UNIX summary of message changes for z/OS V1R13

The messages for z/OS UNIX are documented in *z/OS UNIX System Services Messages and Codes*. Messages from the REXX processor are documented in *z/OS MVS System Messages, Vol 3 (ASB-BPX)*.

New

Messages:

BPXTR009
BPXWE001
BPXWE002
BPXWE004
BPXWE005
BPXWE006
BPXWE009
BPXWE100
BPXWE101
BPXWE102
BPXWE103
BPXWE104
BPXWE105
BPXWE106
BPXWE107
BPXWE108
BPXWE109
BPXWE110
BPXWE112
FOMF0512I
FSUM3132
FSUM7930
FSUM7934
FSUM7963
FSUM7964
FSUMF174
FSUMF412
FSUMF415
FSUMF416
FSUMF419
FSUMF420

Return codes:

Changed

Messages:

FSUM1272
FSUM8999
FSUMF174

None

Reason codes:

X'063B', JrNoSetUID
X'063C', JrNoEmptyMntPtDir
X'063D', JrExceedMaxUsrMntSys
X'063E', JrExceedMaxUsrMntUsr
X'063F', JrNotOwner
X'0640', JrNotRootOwner
X'0641', JrFileSystemMigrated
X'0642', JrSysNameNotAllowed
X'0643', JrRemountNotAllowed
X'0644', JrUserUnMountNotAllowed
X'0645', JrPFSNotSupported
X'0646', JrNoRootAccess
X'0647', JrNoMntPtAccess
X'0648', JrTooManyInProgress
X'735B', JrNotAuthUnRsvdPort
X'735C', JrUnRsvdTCPPortConflict
X'735D', JrNoCritSocks
X'735E', JrNoPartnerInfo
X'735F', JrInvalidTCPIPStack
X'7360', JrNotSameSecDomain
X'7361', JrNoSecDomain
X'7362', JrNoSuspend
X'7363', JRsockIPv6InvalidScopeIdZero
X'7364', JROSMAccessDenied
X'7365', JRDisabled
X'7366', JRCallerMismatch
X'7367', JRTooManyInstances
X'7368', JROutOfSequence
X'7369', JRTcpGlobalStall
X'736A', JRTcpQueueSize

FSUMF209

Return codes:

None

Reason codes:
X'00DC' JRSAFNotAuthorized
X'018F', JrQuiescing

X'0316', JRShmBadSize
X'0570', JrSecurityConflict
X'0641', JrfileSystemMigrated

Deleted

Messages:
None

None

Return codes:

Reason codes:
None

Part 4. Appendixes

Appendix. Accessibility

Accessible publications for this product are offered through IBM Knowledge Center (<http://www.ibm.com/support/knowledgecenter/SSLTBW/welcome>).

If you experience difficulty with the accessibility of any z/OS information, send a detailed message to the "Contact us" web page for z/OS (<http://www.ibm.com/systems/z/os/zos/webqs.html>) or use the following mailing address.

IBM Corporation
Attention: MHVRCFS Reader Comments
Department H6MA, Building 707
2455 South Road
Poughkeepsie, NY 12601-5400
United States

Accessibility features

Accessibility features help users who have physical disabilities such as restricted mobility or limited vision use software products successfully. The accessibility features in z/OS can help users do the following tasks:

- Run assistive technology such as screen readers and screen magnifier software.
- Operate specific or equivalent features by using the keyboard.
- Customize display attributes such as color, contrast, and font size.

Consult assistive technologies

Assistive technology products such as screen readers function with the user interfaces found in z/OS. Consult the product information for the specific assistive technology product that is used to access z/OS interfaces.

Keyboard navigation of the user interface

You can access z/OS user interfaces with TSO/E or ISPF. The following information describes how to use TSO/E and ISPF, including the use of keyboard shortcuts and function keys (PF keys). Each guide includes the default settings for the PF keys.

- *z/OS TSO/E Primer*
- *z/OS TSO/E User's Guide*
- *z/OS ISPF User's Guide Vol I*

Dotted decimal syntax diagrams

Syntax diagrams are provided in dotted decimal format for users who access IBM Knowledge Center with a screen reader. In dotted decimal format, each syntax element is written on a separate line. If two or more syntax elements are always present together (or always absent together), they can appear on the same line because they are considered a single compound syntax element.

Each line starts with a dotted decimal number; for example, 3 or 3.1 or 3.1.1. To hear these numbers correctly, make sure that the screen reader is set to read out

punctuation. All the syntax elements that have the same dotted decimal number (for example, all the syntax elements that have the number 3.1) are mutually exclusive alternatives. If you hear the lines 3.1 USERID and 3.1 SYSTEMID, your syntax can include either USERID or SYSTEMID, but not both.

The dotted decimal numbering level denotes the level of nesting. For example, if a syntax element with dotted decimal number 3 is followed by a series of syntax elements with dotted decimal number 3.1, all the syntax elements numbered 3.1 are subordinate to the syntax element numbered 3.

Certain words and symbols are used next to the dotted decimal numbers to add information about the syntax elements. Occasionally, these words and symbols might occur at the beginning of the element itself. For ease of identification, if the word or symbol is a part of the syntax element, it is preceded by the backslash (\) character. The * symbol is placed next to a dotted decimal number to indicate that the syntax element repeats. For example, syntax element *FILE with dotted decimal number 3 is given the format 3 * FILE. Format 3* FILE indicates that syntax element FILE repeats. Format 3* * FILE indicates that syntax element * FILE repeats.

Characters such as commas, which are used to separate a string of syntax elements, are shown in the syntax just before the items they separate. These characters can appear on the same line as each item, or on a separate line with the same dotted decimal number as the relevant items. The line can also show another symbol to provide information about the syntax elements. For example, the lines 5.1*, 5.1 LASTRUN, and 5.1 DELETE mean that if you use more than one of the LASTRUN and DELETE syntax elements, the elements must be separated by a comma. If no separator is given, assume that you use a blank to separate each syntax element.

If a syntax element is preceded by the % symbol, it indicates a reference that is defined elsewhere. The string that follows the % symbol is the name of a syntax fragment rather than a literal. For example, the line 2.1 %OP1 means that you must refer to separate syntax fragment OP1.

The following symbols are used next to the dotted decimal numbers.

? indicates an optional syntax element

The question mark (?) symbol indicates an optional syntax element. A dotted decimal number followed by the question mark symbol (?) indicates that all the syntax elements with a corresponding dotted decimal number, and any subordinate syntax elements, are optional. If there is only one syntax element with a dotted decimal number, the ? symbol is displayed on the same line as the syntax element, (for example 5? NOTIFY). If there is more than one syntax element with a dotted decimal number, the ? symbol is displayed on a line by itself, followed by the syntax elements that are optional. For example, if you hear the lines 5 ?, 5 NOTIFY, and 5 UPDATE, you know that the syntax elements NOTIFY and UPDATE are optional. That is, you can choose one or none of them. The ? symbol is equivalent to a bypass line in a railroad diagram.

! indicates a default syntax element

The exclamation mark (!) symbol indicates a default syntax element. A dotted decimal number followed by the ! symbol and a syntax element indicate that the syntax element is the default option for all syntax elements that share the same dotted decimal number. Only one of the syntax elements that share the dotted decimal number can specify the ! symbol. For example, if you hear the lines 2? FILE, 2.1! (KEEP), and 2.1 (DELETE), you know that (KEEP) is the

default option for the FILE keyword. In the example, if you include the FILE keyword, but do not specify an option, the default option KEEP is applied. A default option also applies to the next higher dotted decimal number. In this example, if the FILE keyword is omitted, the default FILE(KEEP) is used. However, if you hear the lines 2? FILE, 2.1, 2.1.1! (KEEP), and 2.1.1 (DELETE), the default option KEEP applies only to the next higher dotted decimal number, 2.1 (which does not have an associated keyword), and does not apply to 2? FILE. Nothing is used if the keyword FILE is omitted.

*** indicates an optional syntax element that is repeatable**

The asterisk or glyph (*) symbol indicates a syntax element that can be repeated zero or more times. A dotted decimal number followed by the * symbol indicates that this syntax element can be used zero or more times; that is, it is optional and can be repeated. For example, if you hear the line 5.1* data area, you know that you can include one data area, more than one data area, or no data area. If you hear the lines 3* , 3 HOST, 3 STATE, you know that you can include HOST, STATE, both together, or nothing.

Notes:

1. If a dotted decimal number has an asterisk (*) next to it and there is only one item with that dotted decimal number, you can repeat that same item more than once.
2. If a dotted decimal number has an asterisk next to it and several items have that dotted decimal number, you can use more than one item from the list, but you cannot use the items more than once each. In the previous example, you can write HOST STATE, but you cannot write HOST HOST.
3. The * symbol is equivalent to a loopback line in a railroad syntax diagram.

+ indicates a syntax element that must be included

The plus (+) symbol indicates a syntax element that must be included at least once. A dotted decimal number followed by the + symbol indicates that the syntax element must be included one or more times. That is, it must be included at least once and can be repeated. For example, if you hear the line 6.1+ data area, you must include at least one data area. If you hear the lines 2+, 2 HOST, and 2 STATE, you know that you must include HOST, STATE, or both. Similar to the * symbol, the + symbol can repeat a particular item if it is the only item with that dotted decimal number. The + symbol, like the * symbol, is equivalent to a loopback line in a railroad syntax diagram.

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