The slide features a green header with the text "IBM System z" and "Technical University 2011". The main content area is white with the title "Migrating to z/OS R13 - Part 1 of 3" in green. Below the title is the code "zZS24" and the speaker's name "Marna WALLE" followed by her affiliation "IBM Systems and Technology Group", location "Poughkeepsie, New York USA", and email "mwalle@us.ibm.com". A green footer contains the copyright notice "©2011 IBM Corporation".

IBM System z
Technical University 2011

Migrating to z/OS R13 - Part 1 of 3

zZS24

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Abstract: Migrating to z/OS R13 - Part 1 of 3

This is part one of a three-part session that will be of interest to System Programmers and their managers who are migrating to z/OS R13 from either z/OS R11 or z/OS R12. It is strongly recommended that you attend all three sessions for a complete migration picture.

In part one, the speaker will focus on preparing for your z/OS R13 migration. She will discuss the changed content of z/OS R13. She will cover ordering and delivery options, and will explain the coexistence, migration, fall back, and service policies. Driving and target system requirements for both software and hardware will be highlighted along with some migrations actions you can perform now on your current z/OS release.

The general availability date for z/OS V1 R13 was September 30, 2011.

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Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

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Migrating to z/OS R13 - Part 1 of 3 Agenda



f Content of z/OS R13

- Changing and Withdrawn Elements and Features

f z/OS Ordering and Deliverables

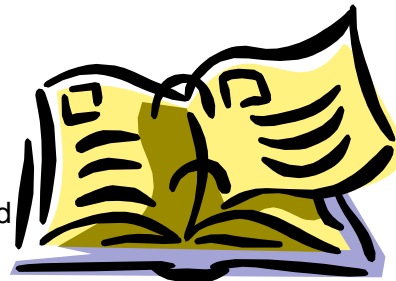
- Products Related to z/OS

f z/OS Policies

- z/OS End of Service dates
- z/OS Coexistence-Migration-Fallback

f Planning for z/OS R13:

- Ensuring System Requirements are Satisfied
 - Driving and Target System Requirements
- Coexistence System Requirements
 - Programmatic Verification is Available!
- Migration Actions You Can Do NOW
- Programmatic Verification of Migration Actions for z/OS R13
- Installation Enhancements for z/OS R13



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Structure of *Migrating to z/OS R13* Presentations



• Session Part 1 of 3

- Content is what you just saw on the prior foil

• Session Part 2 of 3

- Migrations actions for z/OS R13 and R12 from selected elements:
 - General migration actions
 - BCP
 - Communications Server
 - DFSMS
 - Infoprint Server
 - System SSL and TSO/E



• Session Part 3 of 3

- Migrations actions for z/OS R13 and R12 from selected elements:
 - Distributed File Service
 - JES2 and JES3
 - Language Environment
 - z/OS UNIX
 - SMP/E and ServerPac Installation Enhancements
 - Some Helpful z/OS R13 Sysprog Enhancements!

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Scope



• Focus on Migrating to z/OS R13 from z/OS R12 and R11

If migrating to a new server level, see:

- for z890 and z990: migration action in *z/OS Migration* "Migrate to a z990 or z890 server"
- for z9 EC and BC: migration action in *z/OS Migration* "Migrate to a System z9 server"
- for z10 EC and BC: migration action in *z/OS Migration* "Migrate to a System z10 server"
- for z196 and z114: migration action in *z/OS Migration* "Migrate to an IBM zEnterprise server" **or attend session "z/OS Software Positioning for the zEnterprise (z196 or z114) Server"**



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Related Publications:

- z/OS R13 Planning for Installation (GA22-7504-25)*
- z/OS R13 Migration (GA22-7499-19)*
- z/OS R13 Introduction and Release Guide (GA22-7502)*
- z/OS R13 Program Directory (n/a)*
- System z Platform Test Report for z/OS and Linux Virtual Servers (available from <http://www.ibm.com/servers/eserver/zseries/zos/integtst/>)*
- z/OS Summary of Interface and Message Changes (SA22-7505)*
- z/OS MVS Initialization and Tuning Reference (SA22-7592)*
- z/OS UNIX System Services Planning (GA22-7800)*
- ServerPac: Installing Your Order (no order number; custom-built to your order)*
- ServerPac: Using the Installation Dialog, (SA22-7815)*

URL	DESCRIPTION
http://www.ibm.com/systems/z/os/zos/	IBM z/OS home page
http://publib.boulder.ibm.com/infocenter/ieduasst/stgv1r0/index.jsp	IBM Education Assistant
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http://www.ibm.com/servers/eserver/zseries/zos/installation/	z/OS Installation
http://www.ibm.com/software/support/lifecycle/index_a_z.html	End of Service dates for IBM Software
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http://www.ibm.com/support/techdocs/atmastr.nsf/Web/Flashes	IBM Systems Center Flashes
http://www.ibm.com/servers/eserver/zseries/zos/support/	z/OS Technical Support
http://www.ibm.com/ibmlink/	IBMLink web page
http://www.ibm.com/systems/z/advantages/psocftable.html	Coupling Facility Level (CFLEVEL) Considerations web page
http://service.boulder.ibm.com/390holddata.html	Enhanced HOLDDATA web page
http://www14.software.ibm.com/webapp/set2/psp/srchBroker	PSP buckets web page
http://www.ibm.com/software/shopzseries	ShopzSeries home page
http://www-03.ibm.com/systems/z/os/zos/software/isv113.html	Software Dev. Supporting z/OS V1.13
http://www.ibm.com/servers/eserver/zseries/swprice/	IBM System z Software Pricing
http://www.ibm.com/servers/eserver/zseries/zos/zos_sods.html	z/OS statements of direction web page
http://www.ibm.com/software/network/commserver/zos/	z/OS Communications Server web page
http://www.ibm.com/systems/z/os/zos/features/unix/bpxa1ty1.html	IBM Ported Tools for z/OS web page

IBM Education:

IBM courses are available for z/OS. For schedules and enrollment on the world wide web, IBM Global Campus

URL: <http://www.ibm.com/services/learning/> .

z/OS R13 Changing Elements (from z/OS R11 and R12)

<ul style="list-style-type: none"> → BCP → C/C++ Without Debug Tool → Common Information Model (CIM) → Communications Server → Communications Server Security Level 3 → Cryptographic Services: <ul style="list-style-type: none"> → ICSF (FMID HCR7780) → PKI Services → System SSL → DFSMSdfp → DFSMSdss → DFSMShsm → DFSMSrmm → DFSMSstvs → DFSORT → Distributed File Service → HCD → HCM → IBM Tivoli Directory Server → Infoprint Server 	<ul style="list-style-type: none"> → Integrated Security Services: <ul style="list-style-type: none"> → Network Authentication Service → ISPF → JES2 → JES3 → Language Environment → Library Server → Metal C Runtime Library → Network File System → RMF → Run-Time Library Extensions 	<ul style="list-style-type: none"> → SDSF → Security Server - RACF → SMP/E (V3R6) → TSO/E → z/OS Security Level 3: <ul style="list-style-type: none"> → IBM Tivoli Directory Server Security Level 3 → Network Authentication Service Level 3 → SSL Level 3 → z/OS UNIX
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KEY:

- **Black (in bold)** are base elements
- **Green (also in bold)** are optional priced features
- **Brown (also in italics)** are optional unpriced features with export controls
- This element changed in z/OS R13 (from z/OS R11)
- This element changed in z/OS R13 (from z/OS R12)

All other elements not listed have not changed since z/OS R11.
There are no new elements, since z/OS R9.

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z/OS Elements and Features



z/OS consists of base elements and optional features:

- The **base elements** (or simply *elements*) deliver essential operating system functions. When you order z/OS, you receive all of the base elements.
- The **optional features** (or simply *features*) are orderable with z/OS and provide additional operating system functions. Optional features are unpriced or priced:
 - Unpriced features* are shipped to you **only if** you order them. If you plan to use any unpriced features, IBM recommends that you order them when you order your base elements. You must not wait until the next release becomes available. Once a release's base elements are no longer orderable, usually neither are its unpriced features.
 - Priced features* are **always** shipped to you. When IBM packages your order, we *enable* the priced features that you ordered. These features are ready to use after you install z/OS (and customize them as needed). We *disable* the priced features that you did not order. Although they are installed on your system, you cannot use them. Later on, if you decide to use them, you notify IBM and you enable them dynamically (which is known as *dynamic enablement*). You dynamically enable by updating parmlib member IFAPRDxx and you notify IBM by contacting your IBM representative.

Elements and features may be exclusive or nonexclusive:

- An element or feature is called *exclusive* to z/OS if it exists only within z/OS (not also as a separately orderable, or stand-alone, product) and if future functional enhancements will occur only within z/OS.
- An element or feature is called *nonexclusive* if it exists both (1) within z/OS and (2) as a stand-alone product.

Listed in the foil above are the changing elements within z/OS R13 since z/OS R11.

Element and Functions Withdrawn from z/OS R12		
Optional setting for RFC4301 compliance (from Communications Server) 	Base Element – All IP security filters must be compliant with RFC4301. You can no longer use the RFC4301Compliance parameter on the IpFilterPolicy statement to specify whether Policy Agent enforces compliance. It is ignored, and the Policy Agent will enforce the rule that all IP filters are compliant.	As of R12
CSVRTLS services in the BCP for Language Environment RunTime Library Services	Base Element support – LE RTLS support was removed in z/OS R5. BCP RTLS services (SET RTLS, DISPLAY RTLS, RTLS in IEASYSxx and CSVRTLSxx, and CSVRTLS macro) are removed in z/OS R12. Usage tracking assistance is provided in OA29995 (R11) and OA29019 (R10).	As of R12
mSYS for Setup	Base Element – CBPDO users should run job CLNOS390. ServerPac users do not need to do anything.	As of R12

Withdrawn in z/OS R12 (last delivered in z/OS R11)

This section lists items that were withdrawn in z/OS R12. You should take this into account if you are migrating from z/OS R11 to z/OS R13. The removal of these functions may have migration actions which you can perform now, in preparation for z/OS R13.

- Beginning with z/OS R12, all IP security filters must be compliant with RFC 4301. You can no longer use the RFC4301Compliance parameter on the IpFilterPolicy statement to specify whether Policy Agent enforces compliance. The RFC4301Compliance parameter is ignored and Policy Agent enforces the rule that ensures all IP filters are compliant.

IP filter policy support for filtering fragments was improved in z/OS R10. Before z/OS V1R10, Communications Server filtered all IP fragments using a policy of first possible filter match and filtered IPv6 fragments as protocol IPv6Frag. Beginning with z/OS R10, Communications Server follows rules and restrictions established by RFC 4301 (<http://www.ietf.org/rfc/rfc4301.txt>) to ensure proper classification of fragments. RFC 4301, "Security Architecture for the Internet Protocol", specifies the base architecture for IPSec-compliant systems, including restrictions on the routing of fragmented packets.

Communications Server does not implement stateful fragment checking, therefore, restrictions were added as required by RFC 4301 to require that IP filter rules for routed traffic do not allow specific ports, types, or codes. The configuration parameter RFC4301Compliance could be used in z/OS R10 and z/OS R11 to optionally configure whether the RFC 4301 rules should be applied. Beginning with z/OS R12, this parameter (RFC4301Compliance on the IpFilterPolicy statement) is deprecated. All IP filter rules must support the RFC 4301 rules and restrictions.


- z/OS R5 was the last release of z/OS to support Run-Time Library Services (RTLS) for Language Environment. In z/OS R12, the underlying CSVRTLS services are removed from z/OS. A way to track CSVRTLS usage, and to let you find any programs that might be using these services is available. Exploit the z/OS tracking facility to help determine if you are using any of the CSVRTLS services (SET RTLS command, DISPLAY RTLS command, CSVRTLS macro, and RTLS system parameter in IEASYSxx parmlib member) removed from z/OS R12. For z/OS R11, install PTF UA49184 for APAR OA29995.

Migrating to z/OS R13 - Part 1 of 3

- Starting in z/OS R12, support is withdrawn for Managed System Infrastructure for Setup (msys for Setup). In the future, IBM intends to continue to deliver improvements to help with z/OS setup and configuration. As of z/OS R12, discontinue using msys for Setup for function enablement, setup, or configuration of z/OS.

Element and Functions Withdrawn from z/OS R13








z/OS UNIX Connection Manager and Process Manager	Base Element	In z/OS R13
DCE and DCE Security Server	Base Elements – IBM WebSphere Application Server, the IBM Network Authentication Service, and/or the IBM Directory Server as replacement strategies for each of the DCE technologies.	In z/OS R13
DFS support that utilizes the DCE architecture 	Base Element support – z/OS Network File System (NFS) implementation as the replacement	In z/OS R13

Withdrawn in z/OS R13 (last delivered in z/OS R12)

This section lists items that were withdrawn in z/OS R13. You should take this into account if you are migrating from z/OS R11 to z/OS R13, or from z/OS R12 to z/OS R13. The removal of these functions may have migration actions which you can perform now, in preparation for z/OS R13.

- z/OS R12 is the last release to include the z/OS UNIX System Services Connection Scaling, specifically the Connection Manager and Process Manager components. This support was provided in SMP/E FMIDs HCMG100 (for Connection Manager, and JCMG1J0 if Japanese) and HPMG110 (for Process Manager, and JPMG1J0 if Japanese).
- z/OS R12 is the last release to include z/OS Distributed Computing Environment (DCE) and Distributed Computing Environment Security Server (DCE Security Server). IBM recommends the IBM WebSphere Application Server, the IBM Network Authentication Service, and the IBM Directory Server as replacements. See the DCE Replacement Strategies Redbook for more details: <http://www.redbooks.ibm.com/redbooks/pdfs/sg246935.pdf>
- z/OS R12 is the last release to include z/OS Distributed File Service support using the Distributed Computing Environment (DCE) architecture. IBM recommends the z/OS Network File System (NFS) as a replacement. Support in Distributed File Service for Server Message Block (SMB) architecture remains, and is not affected by this withdrawal of support.

Functions Planned to be Withdrawn <i>in the release after z/OS R13...</i>		
zFS multi-file system aggregates (from Distributed File Service) 	Base Element – copy zFS multi-file system aggregates to zFS compatibility mode aggregates. 	In the release after z/OS R13
zFS cloning support (such as zfsadm clone and zfsadm clonesys commands). Do not mount file systems containing a cloned file system (.bak).	Base elements – when support for cloning is removed, only zFS capability mode aggregates will be supported. Find (with <code>modify zfs,query</code> command) and copy any cloned files to compatibility mode aggregates.	In the release after z/OS R13
BIND 9.2.0 function (from the Communications Server)	Base Element support – for use as a caching-only name server, use Resolver cache function (in z/OS R11). For use as a primary or secondary authoritative name server, consider using BIND on Linux for System z.	In the release after R13
BPX.DEFAULT.USER 	Base Element support – use BPX.UNIQUE.USER instead (as of R11) or assign unique UIDs and GIDs. 	In the release after R13
Capacity Provisioning using System z API with SE and HMC	Base Element support – will use BCPII instead. System z API will still be supported on the SE and HMC. Use Tracking Facility with OA35284. Look for "CPO-W:SNMP usage domain name".	In the release after R13
Language Environment runtime options via USERMOD 	Base Element support – use CEEPRMxx instead (with z/OS R12 NONOVR support, if necessary)	In the release after R13

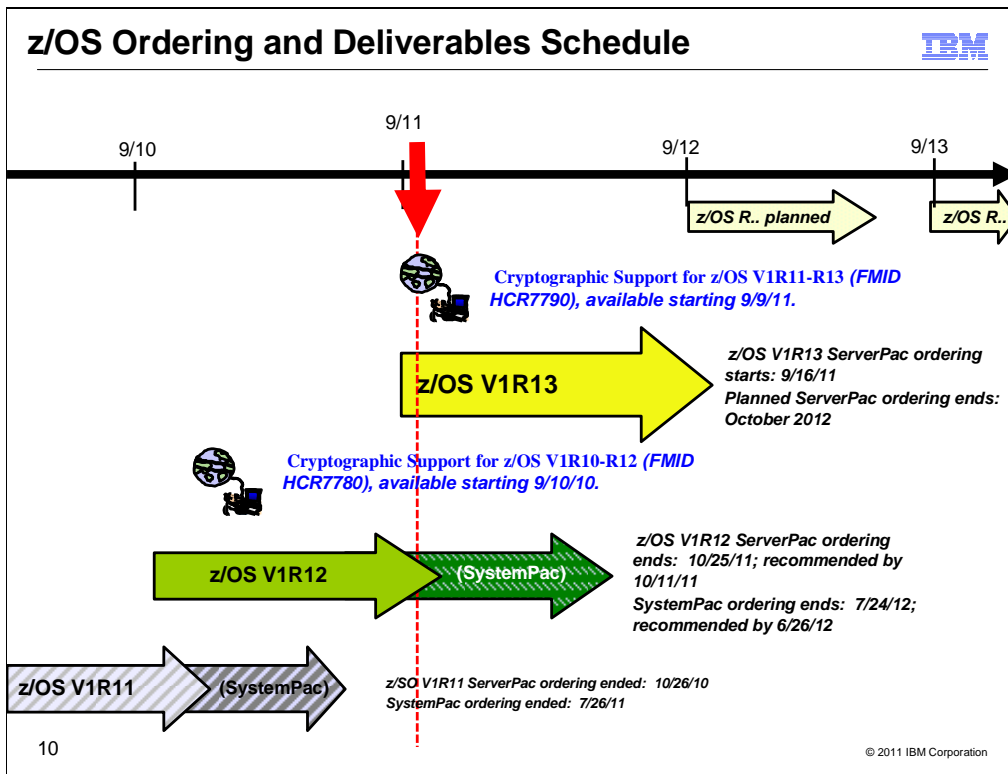
Planned for removal in the release following z/OS R13

This section lists items that IBM has announced it intends to remove in the release after z/OS R13. You are encouraged to consider these removals when making your plans for system upgrades. These statements represent IBM's current intentions. IBM development plans are subject to change or withdrawal without further notice.

- z/OS R13 is planned to be the last release to support multi-file system zSeries File System (zFS) aggregates, including zFS clones. Support for the `zfsadm clone` command and mount support for zFS file system data sets containing a cloned (.bak) file system will be removed. IBM recommends that you use copy functions such as `pax` and `DFSMSdss` to back up z/OS UNIX file systems to separate file systems. Support for zFS compatibility mode aggregates will remain.
- z/OS V1R13 is planned to be the last release that zFS will support cloning file systems. In anticipation of this removal of support, you should discontinue using zFS clone functions, such as the **zfsadm clone** and **zfsadm clonesys** commands. You should also discontinue mounting any zFS file system aggregates that contain a cloned (.bak) file system. When support for cloning file systems is withdrawn, only zFS compatibility mode aggregates will be supported.
 Steps to take:
 - Determine if cloned file systems (.bak) have been created or are in the process of being created on your system.
 - Issue the **modify zfs,query** command and review the contents of the FILE report. The `Flg` field in the report will indicate the status of the file system aggregate.
 - If your system contains cloned file systems, copy that data to a compatibility mode aggregate.
- z/OS R13 is planned to be the last release in which the BIND 9.2.0 function will be available. If you currently use or plan to use the z/OS BIND 9.2.0 function as a caching-only name server, you should use the resolver function, which became generally available in z/OS R11, to cache Domain Name Server (DNS) responses. If you currently use or plan to use the z/OS BIND 9.2.0 function as a primary or secondary authoritative name server, you should investigate using BIND on Linux for System z or BIND on an IBM blade in an IBM zEnterprise BladeCenter Extension (zBX).
- z/OS R13 is planned to be the last release to support BPX.DEFAULT.USER. IBM recommends that you either use the BPX.UNIQUE.USER support that was introduced in z/OS R11, or assign unique UIDs to users who need them and assign GIDs for their groups.

Migrating to z/OS R13 - Part 1 of 3

- z/OS R13 is planned to be the last release to provide the z/OS Capacity Provisioning support that utilizes the System z API for communication with the Support Element (SE) or Hardware Management Console (HMC). This protocol is based on IP network connection using SNMP. IBM recommends configuring the Capacity Provisioning Manager for communication via the z/OS BCP Internal Interface (BCPii) protocol. The SE and HMC support for the System z API remains, and is not affected by this withdrawal of support. You can use the tracking facility to help with this migration action. In tracking facility output, look for violations that start with CPO-W:SNMP usage *domain name*, where *domain name* is replaced with the actual name of the affected domain. Exploit the z/OS tracking facility on z/OS V1R12 or z/OS V1R11 by installing the PTF for APAR OA35284.
 - If you are using the tracking facility and have no instances of affected domains after starting Capacity Provisioning Manager, then this migration action is not applicable to you.
 - Set up BCPii as described in z/OS MVS Programming: Callable Services for High-Level Languages.
 - Define the required security profiles to allow the Capacity Provisioning Manager user to access the hardware information.
 - Add the Topology.Protocol=INTERNAL key to the Capacity Provisioning Manager parameter file. Using the default values, the file is the member CPO.DOMAIN1.PARM(PARM).
- z/OS R13 is planned to be the last release to support specification of the default Language Environment run-time options settings via SMP/E installable USERMODs. IBM recommends using the CEEPRMxx parmlib member to change the default Language Environment run-time options for the system.



z/OS Ordering and Deliverable Key Dates

Key Dates for recent z/OS releases:

- **September 16, 2011:** First date for ordering z/OS V1.13 ServerPac, SystemPac, CBPDO using CFSW configuration support or ShopzSeries, the Internet ordering tool. Note that most z/OS media (executable code) is shipped only through Customized Offerings (ServerPac, SystemPac, and CBPDO).
- **September 30, 2011:** z/OS V1.13 general availability via ServerPac, CBPDO and SystemPac.
- **October 11, 2011:** Recommended last date for submitting z/OS V1.12 orders via the entitled Customized Offerings (ServerPac and CBPDO). This date will allow for adequate order processing time.
- **October 25, 2011:** Last date for processing orders for z/OS V1.12 via ServerPac and CBPDO.
- **September 9, 2011:** General availability of Cryptographic Support for z/OS V1R11-R13 Web deliverable. This Web deliverable will support z/OS V1.11 through z/OS V1.13.
- **June 26, 2012:** Recommended last date for submitting z/OS V1.12 orders via the fee Customized Offering SystemPac. This date will allow for adequate order processing time.
- **July 24, 2012:** Last date for processing orders for z/OS V1.12 via SystemPac.
- **September 30, 2012:** End of service for z/OS V1.11 (5694-A01).

Web deliverables

Sometimes enhancements are provided as Web deliverables, **and not integrated in your ServerPac, CBPDO, or SystemPac deliverable**. For example, some of the ICSF enhancements are available this way. z/OS Web deliverables are available from <http://www.ibm.com/eserver/zseries/zos/downloads/>. They are packaged as two files that you download:

- A **readme** file, which contains a sample job to uncompress the second file, transform it into a format that SMP/E can process, and invoke SMP/E to RECEIVE the file. This file must be downloaded as text.
- A **pax.z** file, which contains an archive (compressed copy) of the FMIDs to be installed. This file needs to be downloaded to a workstation and then uploaded to a host as a binary file.

For Web downloads, you must perform the following tasks:

1. Allocate a R/W HFS or zFS directory on the z/OS driving system where the package will be staged (optional).

Migrating to z/OS R13 - Part 1 of 3

2. Download both parts of the package from the download zone:
<http://www.ibm.com/eserver/zseries/zos/downloads/>
3. Run the sample job provided in the README.TXT file. The job will invoke the GIMUNZIP service routine to extract the original data from the packages.
4. Obtain and install service for the target system. Service is not included in Web deliverables. You can obtain service for Web deliverables through your regular preventive service deliverables that you use for z/OS.
5. Install (SMP/E APPLY) the downloaded FMIDs, according to directions in the Program Directory.

Cryptographic Support for z/OS V1R11-R13 Web deliverable (ICSF FMID HCR7790) was available on September 9, 2011. This web deliverable supports z/OS V1.11, z/OS V1.12, and z/OS V1.13, and includes support for these new functions when used with a Crypto Express3 Coprocessor (CEX3C) card, available on IBM zEnterprise servers:

- AES Key-Encrypting-Keys (KEKs), which are thought to be stronger than DES and TDES KEKs, and to better protect AES and ECC encryption keys.
- Diffie-Hellman key exchanges using elliptic curve cryptography (ECC), and encryption of ECC keys encrypted under AES Key Encryption Keys.
- PKA RSA PKCS#1 Optimal Asymmetric Encryption Padding (OAEP) using the SHA-256 algorithm, in addition to the existing support for the SHA-1 algorithm. This function is intended to help meet the requirements of the Japanese Banking Association, and is planned to be available for z/OS V1.13 and the Cryptographic Support for z/OS V1.10 through z/OS V1.12 web deliverable with the PTF for APAR OA36705 in September 2011.
- Storing up to 100 PIN decimalization tables within the secure boundary of the cryptographic coprocessors. This function is intended to help you meet the ANSI X9.8 PIN protection requirements that are thought to make PIN block security decimalization table attacks more difficult. This support also requires a Trusted Key Entry (TKE) V7.1 workstation, available on IBM zEnterprise servers.
- Dynamic PKA Master Key Changes, designed to allow PKA callable services processing to continue while the key is changed. This support aligns PKA master key change procedures with those for AES, DES, and ECC master key changes. This support is also available with a Crypto Express2 Coprocessor (CEX2C) card, available for IBM System z10 servers.
- Exchanging DES and TDES keys with other cryptographic systems using ANSI TR-31 Key Blocks. TR-31 key blocks are intended to allow keys and their attributes to be exchanged between different cryptographic systems, as described by the ANSI TR-31 Specification Interoperable Secure Key Exchange Key Block Specification for Symmetric Algorithms, Version 7-12-2010.

Also ICSF is planned to support:

- Support for hardware-based RSA 4096-bit cryptography using a Crypto Express3 Accelerator (CEX3A), available on zEnterprise System servers, in addition to the existing support for the same function using the Crypto Express3 Coprocessor (CEX3C) available on IBM zEnterprise servers.
- Dynamic CKDS Administration, which is designed to allow CKDS refresh operations to be processed in parallel with CKDS updates, and to be coordinated for all members of a Parallel sysplex that share the same CKDS data set with the system on which the changes are originated, providing a single point of administration for all the systems in the sysplex while helping provide continuous availability for related ICSF encryption functions. This new function supports dynamic utility-based updates to an active CKDS and CKDS replacement.
- Dynamic CKDS Reencipher and Symmetric Master Key changes, a function designed to simplify the process for changing symmetric master keys while helping provide continuous availability for related ICSF encryption functions. Similar to the refresh function described above, this will allow CKDS updates

Migrating to z/OS R13 - Part 1 of 3

to be processed in parallel, without the need to suspend CKDS updates, and coordinate the changes for all members of a Parallel Sysplex that share the same CKDS data set with the system on which the changes is originated, providing a single point of administration for all the systems in the sysplex.

Crypto Support in z/OS Releases	
Release	Level Integrated and Available
z/OS R13	ICSF FMID HCR7780 is incorporated. ▪ Cryptographic Support for z/OS V1R11-R13 Web deliverable (FMID HCR7790) planned to be available on 9/9/11.
z/OS R12	ICSF FMID HCR7770 is incorporated. ▪ Cryptographic Support for z/OS V1R10-R12 Web deliverable (FMID HCR7780) available on 9/10/10. ▪ Cryptographic Support for z/OS V1R11-R13 Web deliverable (FMID HCR7790) planned to be available on 9/9/11.
z/OS R11	ICSF FMID HCR7751 is incorporated. ▪ Cryptographic Support for z/OS V1R9-R11 Web deliverable (FMID HCR7770) available on 11/20/09. ▪ Cryptographic Support for z/OS V1R10-R12 Web deliverable (FMID HCR7780) available on 9/10/10. ▪ Cryptographic Support for z/OS V1R11-R13 Web deliverable (FMID HCR7790) planned to be available on 9/9/11.
Your current ICSF level indicates which migration actions you'll need to perform when going to z/OS R13.	
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z/OS ICSF Release Levels

The support for cryptography (z/OS base element ICSF) has been delivered via Web deliverables and release incorporations for z/OS R11, R12, and R13.

z/OS Releases and Crypto Web Deliverables		
Deliverable	General availability	Delivery method
z/OS V1R11, FMID HCR7751 Incorporated	September 25, 2009	New release of products
Cryptographic Support for z/OS V1R9-R11 (FMID HCR7770)	November 20, 2009	Web deliverable
Cryptographic Support for z/OS V1R10-R12 (FMID HCR7780)	September 10, 2010	Web deliverable
Cryptographic Support for z/OS V1R11-R13 (FMID HCR7790)	September 9, 2011	Web deliverable
z/OS V1R12, FMID HCR7770 Incorporated	September 24, 2010	New release of products
Cryptographic Support for z/OS V1R10-R12 (FMID HCR7780)	September 10, 2010	Web deliverable
Cryptographic Support for z/OS V1R11-R13 (FMID HCR7790)	September 9, 2011	Web deliverable
z/OS V1R13, FMID HCR7780 Incorporated	September 30, 2010	New release of products
Cryptographic Support for z/OS V1R11-R13 (FMID HCR7790)	September 9, 2011	Web deliverable

Refer to this technote: <http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/TD103782> for a complete history of ICSF deliverables, and functions contained in those deliverables.

Some popular (no-charge!) products for z/OS



- [IBM z/OS Management Facility, V1 R13 \(5655-S28, 5655-S29\)](#)
- [IBM Ported Tools for z/OS V1 R2 \(5655-M23, 5655-M29\)](#), available 7/9/10.
 - V1R2 is updated with newer versions of the associated open source code; specifically OpenSSH 5.0p1, OpenSSL 0.9.8k, and zlib 1.2.3. **and features (all the same prior level): IBM Ported Tools for z/OS: Perl Feature, IBM Ported Tools for z/OS: PHP Feature, IBM Ported Tools for z/OS: Suppl Toolkit Feature (bzip2, cURL 7.16.1), IBM Ported Tools for z/OS: IBM HTTP Server V7.0 Feature (5655-M23)**
- [XML Toolkit for z/OS V1 R9 \(5655-J51, 5655-I30\)](#)
 - Contains XML V1R8 and V1R7 levels, as well
- [XML Toolkit for z/OS V1 R10 \(5655-J51, 5655-I30\)](#) – only contains XML V1R10 level
- [IBM 64-bit SDK for z/OS, Java 2 Technology Edition, V5 \(5655-N99, 5655-I48\)](#)
- [IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V5 \(5655-N98, 5655-I48\)](#)
- [IBM 64-bit SDK for z/OS, Java 2 Technology Edition, V6 \(5655-R32, 5655-I48\)](#)
- [IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V6 \(5655-R31, 5655-I48\)](#)
- [IBM 64-bit SDK for z/OS, Java 2 Technology Edition, V6.0.1 \(5655-R32, 5655-I48\)](#)
- [IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V6.0.1 \(5655-R31, 5655-I48\)](#)
 - V6.0.1, available since 3/18/11.

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IBM z/OS Management Facility Version 1 Release 13 (5655-S28, 5655-S29)

The latest release of z/OSMF V1.13 offers several enhancements designed to:

- Clone z/OS images and deploy software more easily and consistently, using a new software deployment task
- Define new storage volumes to SMS quickly and easily, using a new DASD management task
- More easily maintain highly secure network connections with an updated z/OSMF-based Configuration Assistant for z/OS Communications Server
- Create a more unified z/OS experience for system programmers by enabling a new web-enabled ISPF interface from z/OSMF
- Support easier monitoring of z/OS Capacity Provisioning Manager status, using a new capacity provisioning task
- Consolidate monitoring for z/OS and Linux workload server resources with new, integrated Linux system data gatherers in the updated Resource Monitoring task
- Improve monitoring and management of incidents, and sending of diagnostic data using the updated Incident Log task
- Integrate the z/OS experience with the ability to link and launch between z/OSMF applications and between z/OSMF and other browser-accessible applications
- Deliver a new z/OS jobs REST interface designed to enable z/OS and non z/OS systems to submit z/OS jobs, obtain job status, retrieve job output, and more.

A large portion of the z/OS Management Facility application is written in Java, and therefore is eligible to run on IBM System z Application Assist Processors (zAAPs). Some functions in z/OS Management Facility use the Common Information Model (CIM) and are eligible for the IBM System z Integrated information Processor (zIIP). Also remember that zAAP-eligible workloads may run on the zIIP processor, thus helping maximize the return on your zIIP investment.

IBM Ported Tools for z/OS Version 1 Release 2 (5655-M23, 5655-M29)

IBM Ported Tools for z/OS is a program product available at no cost to you (for the product or for the features). It is designed to deliver ported tools and utilities (modified to operate within the z/OS environment) which are useful for application development on, and secure communications to, the z/OS platform. IBM Ported Tools for z/OS includes utilities such as OpenSSH, Perl, PHP, bzip2, cURL, Xvfb, and IBM HTTP Server 7.0 where OpenSSH is in the product base and the remaining items are separate features.

Migrating to z/OS R13 - Part 1 of 3

For Version 1 Release 2 of the IBM Ported Tools for z/OS product (available July 9, 2010), the base is updated to include a more current OpenSSH as well as more current versions of associated Open SSL and zlib information. Only the base is updated; the other utilities included in the IBM Ported Tools for z/OS product are optional features and are not updated. IBM Ported Tools for z/OS is delivered in SMP/E format and provides the following OpenSSH features:

- Authentication for both client and server
- Privacy through encryption
- Data integrity
- Authorization
- Forwarding or tunneling
- An optional feature of compression

This latest release of OpenSSH has been enhanced with the following:

- OpenSSH has been updated with newer versions of the associated open source code; specifically OpenSSH 5.0p1, OpenSSL 0.9.8k, and zlib 1.2.3.
- OpenSSH can be configured to allow OpenSSH keys to be stored in SAF key rings.
- OpenSSH can be configured to collect SMF Type 119 records for both the client and the server for login failures and file transfers.
- OpenSSH is now an XPLINK application.

Xvfb support is now provided through FMID HVFB111 instead of being in the base of IBM Ported Tools for z/OS which is now FMID HOS1120. The Xvfb for z/OS code is provided as a separate FMID in order to allow IBM to provide more efficient support. However, Xvfb (FMID HVFB111) will be delivered whenever the base of IBM Ported Tools for z/OS (FMID HOS1120) is ordered. FMID HVFB111 is the same code that was available as PTFs UA21819 and UA32671 with the base of IBM Ported Tools for z/OS V1.1 which was FMID HOS1110.

If running on z/OS V1.11, PTFs for the following APARs must be applied: PK86329, and OA29401.

IBM Ported Tools for z/OS: Perl for z/OS Feature (5655-M23, 5655-M29)

IBM Ported Tools for z/OS: Perl for z/OS Feature provides a port of the Perl (version 5.8.7) scripting language to the z/OS UNIX platform. Perl (Practical Extraction and Report Language) is a very popular general-purpose programming language that is widely used on UNIX and other computing platforms.

Support for z/OS UNIX has been available for several years in the open-source version of Perl. Building this version of Perl is often difficult even for experienced users, and requires access to several GNU utilities.

Perl for z/OS is preconfigured and precompiled, and is designed to eliminate the need for those complicated tasks. EBCDIC-related factors in the Perl application have been addressed; therefore, it is anticipated that Perl applications can run with data generated entirely in the z/OS UNIX environment. As with any z/OS related programming language, Perl programs that process data originating from non-EBCDIC (typically ASCII) systems must still convert this data from ASCII to EBCDIC, and vice versa. Tips for conversion can be found in IBM Ported Tools for z/OS: Perl for z/OS User's Guide (SA23-1347) at <http://www.ibm.com/servers/eserver/zseries/zos/bkserv/> or http://www.ibm.com/servers/eserver/zseries/zos/unix/port_tools.html.

IBM Ported Tools for z/OS: PHP for z/OS Feature (5655-M23, 5655-M29)

IBM Ported Tools for z/OS: PHP for z/OS Feature (PHP for z/OS) provides a port of the PHP (version 5.1.2) scripting language to the z/OS UNIX System Services platform. PHP (PHP: Hypertext Preprocessor) is a general purpose scripting language that is well-suited for Web development. PHP's syntax is similar to that of C and Perl, making it easy for anyone with basic programming skills to learn. It allows one to embed program statements directly within an HTML page. PHP is both powerful and flexible: it has a rich set of APIs and it contains a Perl-compatible regular expression library. PHP is popular in the computing industry and is available on a wide variety of platforms. PHP for z/OS includes an extension to access DB2 for z/OS via ODBC. This allows PHP applications to access DB2 data on z/OS.

IBM Ported Tools for z/OS: Supplementary Toolkit for z/OS Feature (5655-M23, 5655-M29)

IBM Ported Tools for z/OS: Supplementary Toolkit for z/OS Feature has been created to provide miscellaneous utilities that are commonly used on other platforms, and now on the z platform as well. The initial delivery contained bzip2. bzip2 is a powerful data compression tool. It is widely used on other platforms in the industry and has now been made available to run on z/OS UNIX System Services. Its usage syntax is intuitive and therefore makes it

attractive for a wide audience. As with most compression utilities, it provides both compression and decompression capabilities. Additional utilities and updates to the Supplementary Toolkit may be made via the service stream, in order to provide a seamless delivery mechanism – watch for them on

<http://www.ibm.com/servers/eserver/zseries/zos/unix/suptlk/>

The following additional utilities were made available via the service stream:

- IBM Integrated Removable Media Manager for the Enterprise on System z (IRMM) command line interface (CLI) (APAR: OA22006). **IRMM CLI** permits a z/OS administrator to fully administer, control, and monitor the distributed tape infrastructure from z/OS. **Note:** in line with Withdrawal Announcement 909-291, dated December 01, 2009, for 5655-S57, Integrated Removable Media Manager for the Enterprise on System z V1.1, the portion of the Supplementary Toolkit associated with IRMM will no longer be marketed after March 1, 2010.
- cURL 7.16.1 (APAR: OA22944). **cURL** is an open source tool that can transfer data from or to a server or servers, using one of the supported protocols (HTTP, HTTPS, FTP, FTPS, TFTP, DICT, TELNET, LDAP or FILE). The command is designed to work without user interaction. cURL offers a variety of useful functions like proxy support, user authentication, FTP upload, HTTP post, SSL connections, cookies, file transfer, resume, and more. It is a command-line UNIX application, and runs in the z/OS UNIX System Services environment.

IBM Ported Tools for z/OS: IBM HTTP Server V7.0 Feature (5655-M23, 5655-M29)

IBM Ported Tools for z/OS: IBM HTTP Server V7.0 provides an HTTP Server, or Webserver (based on Apache Software Foundation's Apache HTTP Server (version 2.2.8)) for the z/OS UNIX System Services environment. IBM HTTP Server V7.0 provides support for dynamic content via CGI/FastCGI, compression, caching, proxying, request rewriting, SSL, and LDAP Authentication. Because it uses the z/OS UNIX System Services environment, authentication and authorization can be based on SAF credentials and secure connections use z/OS System SSL (and ICSF).

The IBM Ported Tools for z/OS: IBM HTTP Server V7.0 feature has the same functionality found in the WebSphere Application Server for z/OS V7.0 product.

XML Toolkit for z/OS Version 1 Release 9 (5655-J51, 5655-I30)

The C++ XML parser within this toolkit is a port of the IBM XML Parser for C++, XML4C V5.6, which is based on Apache's Xerces C++ V2.6 parser.

- Specify that XML Schema annotations not be generated
- Specify that XML Schema annotations not be regenerated when deserializing a grammar
- Turn off default entity resolution
- Perform schema-only validation when there is a Document Type Definition (DTD)

The IBM XSLT Processor for C++, XSLT4C V1.10 within this toolkit, which is based on Apache's Xalan C++ V1.10 XSLT processor, has been updated with:

- XML1.1 and Namespaces for XML1.1 support
- Improved pluggable memory management
- Improvements in Xalan XML serializers designed to provide improved performance.

Support for the Java XML Parser and Processor is not packaged with the IBM XML Toolkit for z/OS. This support can now be obtained within the IBM SDK for z/OS, product offerings.

The XML Toolkit for z/OS is based on open-source software developed by the Apache Software Foundation that does not provide for compatibility with prior releases. Care must be taken when installing IBM XML Toolkit for z/OS, V1.9, because the XML parsers and the XSLT processors in this toolkit are not compatible with previous releases. Please note, the IBM XML Toolkit for z/OS, V1.9 packages the latest XML parser and XSLT processor from Apache as well as those XML parsers and the XSLT processors from previous XML Toolkits so that applications that are using XML Toolkit for z/OS, V1.8 or XML Toolkit for z/OS, V1.7 will continue to run. This is intended to allow for continued use of these levels of the toolkit by applications that have written to their specific APIs.

This release contains FMIDs HXML170, HXML180, and HXML190.

XML Toolkit for z/OS Version 1 Release 10 (5655-J51, 5655-I30)

The XML Parser, C++ Edition has been updated with the following support:

- Ability to optionally utilize z/OS XML System Services (z/OS XML) as an underlying parsing technology when performing DOM (Document Object Model) and SAX2 (Simple API for XML) based parsing operations. Support is provided for both non-validating parsing as well as validating parsing utilizing schema based on the W3C Schema recommendation. This enhancement is provided by way of a set of new z/OS-specific parser C++ classes that are similar in name to and closely mimic the existing DOM and SAX2 interfaces. Utilizing z/OS XML provides redirection to zAAP specialty processors of the portion of the XML parsing operation performed by z/OS XML and may result in significant improved raw performance as well.
- A new feature that supports importing multiple schemas with the same namespace.
- Improved source offset support, enhancing the ability to obtain information that correlates parsed output with the associated data in the input document being parsed. This new support is included in the new z/OS-specific parser classes described above.

This release contains FMID HXML1A0. If you need a prior level of XML Toolkit for z/OS, then you must order the previous release of the product. XML Toolkit for z/OS V1.9 remains orderable, and is orderable with XML Toolkit for z/OS V1.10.

IBM 64-bit SDK for z/OS, Java 2 Technology Edition, V5 (5655-N99, 5655-I48)

64-bit SDK for z/OS, Java 2 Technology Edition, V5 is a Java SDK that contains a reengineered Java 2 virtual machine at the SDK 5 level and the IBM Just-in-Time (JIT) compiler. The program is a key building block for developing on demand applications. 64-bit SDK for z/OS, Java 2 Technology Edition, V5 is designed to be compliant with the Java SDK 5 compatibility test and is intended to provide the stability, service, and scalability you expect from a zSeries program.

64-bit SDK for z/OS, Java 2 Technology Edition, V5 is designed to provide:

- Support for Java application programming in a 64-bit environment
- Java 2 APIs at the SDK 5 level
- Continuation of the "write once, run anywhere" Java paradigm
- Java Record I/O (JRIO)
- XML support
- System Authorization Facility (SAF) and cryptography support
- Use the System z9 and zSeries Application Assist Processors (zAAPs) available on z9 EC, z9 BC, z990 and z890 servers
- Additional reliability, availability, and serviceability (RAS) enhancements

Ordering information: The program numbers are IBM 64-bit SDK for z/OS, Java 2 Technology Edition, V5 (5655-N99), and IBM SDK for z/OS Software Subscription and Support (5655-I48)

IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V5 (5655-N98, 5655-I48)

31-bit SDK for z/OS, Java 2 Technology Edition, V5 is a Java SDK that contains a reengineered Java 2 virtual machine at the SDK 5 level and the IBM Just-in-Time (JIT) compiler. The program is a key building block for developing on demand applications. 31-bit SDK for z/OS, Java 2 Technology Edition, V5 is compliant with the Java SDK 5 compatibility test and is designed to provide the stability, service, and scalability you expect from a zSeries program.

31-bit SDK for z/OS, Java 2 Technology Edition, V5 is designed to provide:

- Support for Java application programming in a 31-bit environment
- Java 2 APIs at the SDK 5 level
- Continuation of the "write once, run anywhere" Java paradigm
- Java Record I/O (JRIO)
- XML support
- System Authorization Facility (SAF) and cryptography support
- Use the System z9 and zSeries Application Assist Processors (zAAPs) available on z9 EC, z9 BC, z990 and z890 servers
- Additional reliability, availability, and serviceability (RAS) enhancements

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Ordering information: The program numbers are IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V5 (5655-N98), and IBM SDK for z/OS Software Subscription and Support (5655-I48)

IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V6 (5655-R31, 5655-I48)

31-bit SDK for z/OS, Java Technology Edition, V6 provides a software development kit (SDK) at the Java technology level, designed to be compliant with the Sun SDK 6 application programming interfaces (APIs). With 31-bit SDK for z/OS, Java Technology Edition, V6 you can:

- Test and deploy Java applications in a 31-bit environment
- Continue the "write once, run anywhere" Java paradigm
- Use your System z Application Assist Processors (zAAPs) available on z9 BC, z9 EC, z990, and z890 servers to run eligible Java work
- Leverage traditional System z benefits: scalability, reliability, availability, and serviceability.

IBM 64-bit SDK for z/OS, Java 2 Technology Edition, V6 (5655-R32, 5655-I48)

64-bit SDK for z/OS, Java Technology Edition, V6 provides a software development kit (SDK) at the Java technology level, designed to be compliant with the Sun SDK 6 application programming interfaces (APIs). With 64-bit SDK for z/OS, Java Technology Edition, V6 you can:

- Test and deploy Java applications in a 64-bit environment
- Continue the "write once, run anywhere" Java paradigm
- Use your System z Application Assist Processors (zAAPs) available on z9 BC, z9 EC, z990, and z890 servers to run eligible Java work
- Leverage traditional System z benefits: scalability, reliability, availability, and serviceability.

IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V6.0.1 (5655-R31, 5655-I48)

The 31-bit SDK for z/OS, Java Technology Edition Version 6 Release 0 Modification 1 has been enhanced to:

- Use enhanced z/OS Java unique security and JZOS functionality
- Have Java exploit added z196 instructions

IBM 64-bit SDK for z/OS, Java 2 Technology Edition, V6.0.1 (5655-R32, 5655-I48)

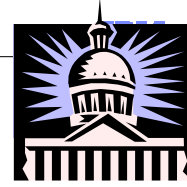
The 64-bit SDK for z/OS, Java Technology Edition Version 6 Release 0 Modification 1 has been enhanced to:

- Use enhanced z/OS Java unique security and JZOS functionality
- Have Java exploit added z196 instructions

End of Service Dates for Older IBM SDK levels:

- **IBM 64-bit SDK for z/OS, Java 2 Technology Edition, V1 Release 4 (5655-I56):** was out of service as of September 30, 2008.
- **IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V1 Release 4 (5655-M30):** has announced it will be out of service as of September 30, 2011. z/OS R11 was the last release for which IBM SDK V1R4 support was available.

z/OS Policies



f Annual Release Frequency

- z/OS V1 R13 GA is planned for Sept 30, 2011
- All z/OS releases are planned to GA every September

f Service Support Policy

f Coexistence-Migration-Fallback Policy

f Policy Change!

- f* z/OS V1.13 is planned to be the last release to support a staged migration for JES2 and JES3. Future releases will require you to migrate to all elements of z/OS at the same time, including JES2, JES3, or both.

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Release Frequency


Since August 2002 the release schedule for z/OS has been a 12-month cycle. At that time, IBM aligned the coexistence, migration, and fallback policy with the service policy, with the annual releases.

Starting with z/OS R6, IBM intends to deliver z/OS releases annually, with general availability in September.

This predictable release cycle will enable you to better plan your migration, freeing you to increase the value of your computing environment to your business and deliver better service to your end users. New z/OS functions will continue to be delivered between releases through the normal maintenance stream or as Web deliverables. In addition, significant new functions may be delivered between releases as features of the product. *z/OS V1R13 is the eighth release to be delivered on this annual release cycle.*

These statements regarding the new release strategy represent current intentions of IBM. Any reliance on these statements is at the relying party's sole risk and will not create any liability or obligation for IBM. All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice.

z/OS Service Policy



- f* **Release serviceable for three years following GA.**
- f* **Then, for up to two additional years, you can purchase:**
 - f* IBM Lifecycle Extension for z/OS V1.9 (5646-A01)
 - f* IBM Lifecycle Extension for z/OS V1.10 (5656-A01)
- f* **At least 12 months notice before withdrawing service**
- f* **Handy website:**
http://www.ibm.com/servers/eserver/zseries/zos/support/zos_eos_dates.html

	GA Date	End of Service Date
z/OS V1R9	28 Sept 2007	Occurred on 30 Sept 2010 (and SMP/E V3.4!) Lifecycle Extension, until 30 Sept 2012
z/OS V1R10	26 Sept 2008	Occurred on 30 Sept 2011 Lifecycle Extension, until 30 Sept 2013.
z/OS V1R11	25 Sept 2009	Announced to be 30 Sept 2012
z/OS V1R12	24 Sept 2010	Planned to be Sept 2013
z/OS V1R13	30 Sept 2011	Planned to be Sept 2014

LOOK!

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Service Policy

IBM's current policy is to provide maintenance (service) for each release of z/OS for three years following its general availability (GA) date. However, service on the last release of a version might be extended beyond the intended three-year period. Prior to withdrawing service for any version or release of z/OS, IBM intends to provide at least 12 months notice. The service policy for z/OS also applies to any enhancements (including but not limited to web deliverables), such as the *System REXX Support for z/OS V1.8* download that was provided for z/OS R8.

See the table below for expiration dates for service support. Planned end of service dates are based on the 3-year service policy.

Version and release	General availability (GA)	End of service (EOS)
OS/390 V2R8	24 September 1999	Occurred 30 September 2002
OS/390 V2R9	31 March 2000	Occurred 31 March 2003
OS/390 V2R10	29 September 2000	Occurred 30 September 2004
z/OS V1R1	30 March 2001	Occurred 31 March 2004
z/OS V1R2	26 October 2001	Occurred 31 October 2004
z/OS V1R3	29 March 2002	Occurred 31 March 2005
z/OS V1R4	27 September 2002	Occurred on 31 March 2007
z/OS V1R5	26 March 2004	Occurred on 31 March 2007
z/OS V1R6	24 September 2004	Occurred on 30 September 2007
z/OS V1R7	30 September 2005	Occurred on 30 September 2008 * *The "z/OS V1.7 Lifecycle Extended Service" offering expired on 30 September 2010.
z/OS V1R8	29 September 2006	Occurred 30 September 2009 * *The "z/OS V1.8 Lifecycle Extended Service" offering expired on 30 September 2011.
z/OS V1R9	28 September 2007	Occurred 30 September 2010 * *See "z/OS V1.9 Lifecycle Extended Service" below for a fee-based accommodation, through 30 September 2012.
z/OS V1R10	26 September 2008	Occurred 30 September 2011 * *See "z/OS V1.10 Lifecycle Extended Service" below for a fee-based accommodation, through 30 September 2013.

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z/OS V1R11	25 September 2009	30 September 2012 (announced)
z/OS V1R12	24 September 2010	September 2013 (planned)
z/OS V1R13	30 September 2011	September 2014 (planned)

z/OS V1.7 Lifecycle Extended Service - through September 30, 2010

If you require support for defects for z/OS V1R7 beyond September 2010, contact an IBM representative for a special bid.

z/OS V1.8 Lifecycle Extended Service - through September 30, 2011

If you require support for defects for z/OS V1R8 beyond September 2011, contact an IBM representative for a special bid.

z/OS V1.9 Lifecycle Extended Service - through September 30, 2012

To address our customers' requirements for defect support, IBM is announcing an extended lifecycle accommodation for z/OS V1.9. IBM Lifecycle Extension for z/OS V1.9 offers fee-based corrective service to users who have not completed their migration from z/OS V1.9 to either z/OS V1.10 or V1.11.

The IBM Lifecycle Extension for z/OS V1.9 (5646-A01) provides fee-based corrective service (a fix, bypass, or restriction to a problem) beyond the September 30, 2010, withdrawal of program services date for z/OS V1.9 (5694-A01). If you acquire the IBM Lifecycle Extension for z/OS V1.9, problem reporting remains unchanged for the duration of the Lifecycle Extension period. During this time, the IBM Support Center can be contacted to report problems that may be associated with z/OS V1.9, and the IBM Support Center will provide a fix, bypass, or restriction for new problems that are defects in z/OS V1.9. Any PTF for z/OS V1.9 that was available prior to the withdrawal of z/OS V1.9 program services (September 30, 2010) will continue to be available through the existing service acquisition portals such as SMP/E RECEIVE ORDER and ShopzSeries.

Starting October 1, 2010, IBM will offer a fee-based, corrective service extension for up to a 2-year period following the z/OS V1.9 discontinuance of program services (September 30, 2010). This support enables users who have not completed their migration to z/OS V1.10 or z/OS V1.11 to continue to receive corrective service for z/OS V1.9 in the 2-year period of October 1, 2010, through September 30, 2012. This does not alter the z/OS coexistence, migration, fallback, or service policy. The Lifecycle Extension for z/OS V1.9 is flexible, with a minimum 3-month purchase and a maximum period of duration through September 30, 2012. This supports variable migration plans, where you could have differing migration schedules for either single machines or machines within a Parallel Sysplex. Lifecycle Extension must be ordered for all machines running z/OS V1.9 at a physical location, either for individual IBM z/Architecture machines or for one or more IBM z/Architecture machines within a qualified Parallel Sysplex (in which case MSU aggregation may apply). However, you can add or remove machines running z/OS V1.9 as your migration plans progress.

You must notify IBM if:

- The permanent MSUs change for any IBM z/Architecture machine running z/OS V1.9
- You add or remove an IBM z/Architecture machine that is running z/OS V1.9
- You add or remove z/OS V1.9 from any IBM z/Architecture machine

You must notify IBM within the same calendar month that the changes occur as these changes may affect the pricing for that machine or qualified Parallel Sysplex.

z/OS V1.10 Lifecycle Extended Service - through September 30, 2013

To address our customers' requirements for defect support, IBM is announcing an extended lifecycle accommodation for z/OS V1.10. IBM Lifecycle Extension for z/OS V1.10 offers fee-based corrective service to users who have not completed their migration from z/OS V1.10 to either z/OS V1.11 or z/OS V1.12. The IBM Lifecycle Extension for z/OS V1.10 (5656-A01) provides fee-based corrective service (a fix, bypass, or restriction to a problem) beyond the September 30, 2011, withdrawal of program services date for z/OS V1.10 (5694-A01). If you acquire the IBM Lifecycle Extension for z/OS V1.10, problem reporting remains unchanged for the duration of the Lifecycle Extension period. During this time, the IBM Support Center can be contacted to report problems that may be associated with z/OS V1.10, and the IBM Support Center will provide a fix, bypass, or restriction for problems that are defects in z/OS V1.10. Any PTF for z/OS V1.10 that was available prior to the withdrawal of z/OS V1.10 program services (September 30, 2011) will continue to be available through the existing service acquisition portals such as SMP/E RECEIVE ORDER and ShopzSeries.

- Starting October 1, 2011, IBM will offer a fee-based, corrective service extension for up to a 2-year period following the z/OS V1.10 discontinuance of program services (September 30, 2011). This support enables

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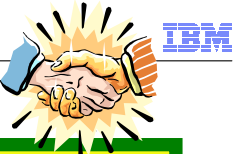
users who have not completed their migration to z/OS V1.11 or z/OS V1.12 to continue to receive corrective service for z/OS V1.10 in the 2-year period of October 1, 2011, through September 30, 2013. **This does not alter the z/OS coexistence, migration, fallback, or service policy.**

- The Lifecycle Extension for z/OS V1.10 is flexible, with a minimum 3-month purchase and a maximum period of duration through September 30, 2013. This supports variable migration plans, where you could have differing migration schedules for either single machines or machines within a Parallel Sysplex. Lifecycle Extension must be ordered for all machines running z/OS V1.10 at a physical location, either for individual IBM z/Architecture machines or for one or more IBM z/Architecture machines within a qualified Parallel Sysplex (in which case MSU aggregation may apply). However, you can add or remove machines running z/OS V1.10 as your migration plans progress.

You must notify IBM if:

- The permanent MSUs change for any IBM z/Architecture machine running z/OS V1.10
- You add or remove an IBM z/Architecture machine that is running z/OS V1.10
- You add or remove z/OS V1.10 from any IBM z/Architecture machine
- You must notify IBM within the same calendar month that the changes occur as these changes may affect the pricing for that machine or qualified Parallel Sysplex.

z/OS Coexistence Policy



With z/OS V1.9 Lifecycle Extended Service

z/OS R9

z/OS R10

z/OS R11

z/OS R12

z/OS R13

With z/OS V1.10 Lifecycle Extended Service

- Starting with z/OS R6, IBM has aligned the coexistence, fallback, and migration policy with the service policy.
- **z/OS R11, z/OS R12, and z/OS R13** are supported for coexistence, migration, and fallback
- **Keep in mind:** exploitation of new function can require that all systems be at z/OS R13 before use. Fallback maintenance may not be available for all exploitation cases. Consult the appropriate exploitation documentation to understand the limitations on fallback.

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Understanding Coexistence

Coexistence occurs when two or more systems at different software levels share resources. The resources could be shared at the same time by different systems in a multisystem configuration, or they could be shared over a period of time by the same system in a single-system configuration. Examples of coexistence are two different JES releases sharing a spool, two different service levels of DFSMSdfp sharing catalogs, multiple levels of SMP/E processing SYSMODs packaged to exploit the latest enhancements, or an older level of the system using the updated system control files of a newer level (even if new function has been exploited in the newer level).

The sharing of resources is inherent in multisystem configurations that involve Parallel Sysplex implementations. But other types of configurations can have resource sharing too. Examples of configurations where resource sharing can occur are:

- A single processor that is time-sliced to run different levels of the system, such as during different times of the day
- A single processor running multiple images by means of logical partitions (LPARs)
- Multiple images running on several different processors
- Parallel Sysplex or non-Parallel Sysplex configurations

Note: The term coexistence does not refer to z/OS residing on a single system along with VSE/ESA, VM/ESA, or z/VM in an LPAR or as a VM guest.

z/OS systems can coexist with specific prior releases. This is important because it gives you flexibility to migrate systems in a multisystem configuration using rolling IPLs rather than requiring a systems-wide IPL. The way in which you make it possible for earlier-level systems to coexist with z/OS is to install coexistence service (PTFs) on the earlier-level systems.

You should complete the migration of all earlier-level coexisting systems as soon as you can. Keep in mind that the objective of coexistence PTFs is to allow existing functions to continue to be used on the earlier-level systems when run in a mixed environment that contains later-level systems. Coexistence PTFs are not aimed at allowing new functions provided in later releases to work on earlier-level systems.

Rolling z/OS across a multisystem configuration

A *rolling IPL* is the IPL of one system at a time in a multisystem configuration. You might stage the IPLs over a few hours or a few weeks. The use of rolling IPLs allows you to migrate each z/OS system to a later release, one at a time, while allowing for continuous application availability. For example, data sharing applications offer continuous availability in a Parallel Sysplex configuration by treating each z/OS system as a resource for processing the workload. The use of rolling IPLs allows z/OS systems running these applications to be IPLed one at a time, to migrate to a new release of z/OS, while the applications continue to be processed by the other z/OS systems that support the workload. By using LPAR technology, you can use rolling IPLs to upgrade your systems without losing either availability or capacity.

You can use rolling IPLs when both of the following are true:

- The release to which you're migrating falls is supported for coexistence, fallback, and migration with the releases running on the other systems.
- The appropriate coexistence PTFs have been installed on the other systems in the multisystem configuration.

Even when you're using applications that do not support data sharing, rolling IPLs often make it easier to schedule z/OS software upgrades. It can be very difficult to schedule a time when all applications running on all the systems in a multisystem configuration can be taken down to allow for a complex-wide or Parallel Sysplex-wide IPL. The use of rolling IPLs not only enables continuous availability from an end-user application point of view, but it also eliminates the work associated with migrating all z/OS systems in a multisystem configuration at the same time.

Understanding fallback

Fallback (backout) is a return to the prior level of a system. Fallback can be appropriate if you migrate to z/OS R13 and, during testing, encounter severe problems that can be resolved by backing out the new release. By applying fallback PTFs to the "old" system before you migrate, the old system can tolerate changes that were made by the new system during testing.

Fallback is relevant in all types of configurations, that is, single-system or multisystem, with or without resource sharing. As an example of fallback, consider a single system that shares data or data structures, such as user catalogs, as you shift the system image from production (on the "old" release) to test (on the new release) and back again (to the old release). The later-level test release might make changes that are incompatible with the earlier-level production release. Fallback PTFs on the earlier-level release can allow it to tolerate changes made by the later-level release.

As a general reminder, always plan to have a backout path when installing new software by identifying and installing any service required to support backout.

Fallback is at a system level, rather than an element or feature level, except for z/OS JES2 and z/OS JES3. That is, except for z/OS JES2 and z/OS JES3, you can't back out an element or feature; you can only back out the entire z/OS product. z/OS JES2 and z/OS JES3 fallback can be done separately as long as the level of JES is supported with the release of z/OS and any necessary fallback PTFs are installed. (Do note the change for staging JES, which is planned for the release after z/OS R13: Future releases will require you to migrate to all elements of z/OS at the same time, including JES2, JES3, or both.)

Fallback and coexistence are alike in that the PTFs that ensure coexistence are the same ones that ensure fallback.

Note: Keep in mind that new functions can require that all systems be at z/OS V1R13 level before the new functions can be used. Therefore, be careful not to exploit new functions until you are fairly confident that you will not need to back out your z/OS V1R13 systems, as fallback maintenance is not available in these cases. You should consult the appropriate element or feature documentation to determine the requirements for using a particular new function.

Which releases are supported for coexistence, fallback, and migration?

Starting with z/OS R6, IBM has aligned the coexistence, fallback, and migration policy with the service policy. IBM intends to continue with the practice of providing service support for each release of z/OS for three years following its general availability (GA) date. IBM, at its sole discretion, may choose to leave a release supported for more than three years. This change to the coexistence, fallback, and migration policy is effective starting with z/OS R6 (that is, the first release of the new annual release cycle). **As a general rule, this means that three releases will be supported for coexistence, fallback, and migration over a period of three years.** This represents an increase of one year over the two-year period provided by the current coexistence, fallback, and

Migrating to z/OS R13 - Part 1 of 3

migration policy of four releases under a six-month release cycle. The intention of this policy change is to simplify and provide greater predictability to aid in release migrations.

Exceptions are:

- In some cases, more than three releases may be coexistence, fallback, and migration supported if IBM at its sole discretion chooses to provide service support for greater than three years for a release.
- Any z/OS release having three or fewer months of service remaining at general availability of a new release will not be coexistence, fallback, or migration supported with the new release.

Thus, except for JES2 and JES3, **z/OS V1R13 is coexistence, fallback, and migration supported with the following two z/OS releases: V1R12 and V1R11.** This means that:

- Coexistence of a V1R13 system with a V1R12 or V1R11 system is supported.
- Fallback *from* V1R13 to V1R12 or V1R11 is supported.
- Migration *to* V1R13 *from* V1R12 or V1R11 is supported.

For JES2 and JES3, the way in which three consecutive releases is determined is different than for the rest of the operating system. If a JES2 or JES3 release is functionally equivalent to its predecessor (that is, its FMID is the same), then the release is considered to be the same JES release. Thus, **z/OS V1R13 JES2 and JES3 are coexistence, fallback, and migration supported with the following JES releases: V1R13, V1R12, and V1R11.** z/OS V1.13 is planned to be the last release to support a staged migration for JES2 and JES3. Future releases will require you to migrate to all elements of z/OS at the same time, including JES2, JES3, or both.

As of z/OS V1R2, compliance to the coexistence, fallback, and migration policy for JES2 and JES3 is enforced. A migration to a JES2 or JES3 release level that is not supported by the policy results in the following:

- For JES2: If the JES2 release level for a system that is initializing is not compatible with the other active systems in the JES2 MAS, message HASP710 is issued and the JES2 address space for the initializing system is terminated.
- For JES3: If the JES3 release level for a local is not compatible with the global in a JES3 multisystem complex, message IAT2640 is issued and the JES3 local is not allowed to connect to the global.

The z/OS coexistence, fallback, and migration policy applies to the elements and features of z/OS, not to customer-developed applications, vendor-developed applications, or IBM products that run on z/OS. IBM performs integration testing and will provide service as necessary to support the z/OS coexistence, fallback, and migration policy.

See the table below for a summary of current and planned coexistence, fallback, and migration support. These statements represent IBM's current intentions. IBM reserves the right to change or alter the coexistence, fallback, and migration policy in the future or to exclude certain releases beyond those stated. IBM development plans are subject to change or withdrawal without further notice. Any reliance on this statement of direction is at the relying party's sole risk and does not create any liability or obligation for IBM.

Releases that are coexistence, fallback, and migration supported with z/OS V1R6 and beyond

z/OS release (see note 1)	Releases that are coexistence, fallback, and migration supported with the release in column one (see note 1)	Explanation (see note 2)
R6	R6, R5, R4, R3	The new policy starts. General availability of R6 was September 2004. R2 would be the oldest service-supported release at that time and therefore the oldest release that is coexistence, fallback, and migration supported. However, its end-of-service date (October 2004) is within three months of R6 general availability (September 2004), so R3 becomes the oldest release that is coexistence, fallback, and migration supported with R6.
R7	R7, R6, R5, R4	General availability of R7 was September 30, 2005. R4 is the oldest release that is service supported at that time and therefore the oldest release that is coexistence, fallback, and migration supported with R7.

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R8	R8, R7, R6, R5	General availability of R8 was September 29, 2006. R4 is the oldest release that is service supported at that time because its end-of-service date was extended by 18 months to 31 March 2007. However, R4 is not coexistence, fallback, and migration supported with R8. Therefore, R5 is oldest release that is coexistence, fallback, and migration supported with R8.
R9	R9, R8, R7	General availability of R9 was September 28, 2007. R7 is the oldest release that is service supported at that time and therefore the oldest release that is coexistence, fallback, and migration supported with R9.
R10	R10, R9, R8	General availability of R10 was September 26, 2008. R8 is the oldest release that is service supported at that time and therefore the oldest release that is coexistence, fallback, and migration supported with R10.
R11	R11, R10, R9	General availability of R11 was September 25, 2009. R9 is the oldest release that is service supported at that time and therefore the oldest release that is coexistence, fallback, and migration supported with R11.
R12	R12, R11, R10	General availability of R12 was September 24, 2010. R10 is the oldest release that is service supported at that time and therefore the oldest release that is coexistence, fallback, and migration supported with R12.
R13	R13, R12, R11	General availability for R13 was September 30, 2011. R11 is the oldest release that is service supported at that time and therefore the oldest release that is coexistence, fallback, and migration supported with R13.

Notes:

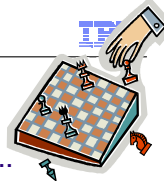


1. For readability, the version numbers have been omitted from the releases shown. Also, any release numbering of future releases is for illustrative purposes and is not a guarantee of actual release numbers.
2. Future general availability (GA) dates are projections based on the annual release cycle. Future end of service (EOS) dates are projections based on the 3-year service policy.

Positioning for z/OS R13

- Read Documentation and PSP buckets
 - z/OS Migration and z/OS Planning for Installation
 - Software PSP buckets: ZOSV1R13: ZOSGEN, SERVERPAC, ...
 - Must use FIXCATs for coexistence verification.
- DASD Storage Requirements for z/OS R13:

	z/OS R11	z/OS R12	z/OS R13	
Target	6,063	5,891	5,868	The 3390-6 limit is 6678 cylinders !!!
DLIB	8,781	8,599	8,941	
File System	3,100	3,100	3293 (HFS) 3309 (zFS)	Approaching 3390-3 limit of 3339 cylinders !!!

sizes in 3390 cylinders
- Ensuring System Requirements Are Satisfied
 - Driving System Requirements – no new news.
 - SMP/E IO11698 PTF (RSU1004) for access authority.
 - Target System Requirements
 - Hardware and Software
 - Coexistence System Requirements
- Migration Actions You Can Do NOW

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z/OS Documentation: Where to Start

To gain an overview of z/OS and plan for the installation, review:

- z/OS V1R13 Migration (GA22-7499-19)
- z/OS V1R13 Planning for Installation (GA22-7504-25)
- zSeries Platform Test Report for z/OS and Linux Virtual Servers (formerly, the z/OS Parallel Sysplex Test Report)
- z/OS V1 R13 Introduction and Release Guide (GA22-7502) - great for finding new functions in a release to exploit!

To install z/OS, review Preventive Service Planning (PSP) Buckets for:

- ServerPac (if using ServerPac to install)
- z/OS and individual elements (including ZOSGEN, which helps you with general z/OS level information)
- Hardware, if you will using specific HW functions or upgrading your server

In addition, to install z/OS using ServerPac, review:

- ServerPac: Using the Installation Dialog (SC28-1244)
- The custom-built installation guide, ServerPac: Installing Your Order

To install z/OS using CBPDO, review the z/OS Program Directory.

PSP Buckets

z/OS, and most products that run on it, provide files containing information that became available after the product documents were printed. Kept on IBM's RETAIN system and also available using IBMLink, these files are called preventive service planning (PSP) "buckets", or just "PSPs". PSP buckets are identified by an *upgrade* identifier, and specific parts of them are called *subsets*. Each upgrade contains information about a product. Subsets contain information about specific parts of a product. For example, the z/OS PSP bucket has subsets for the BCP, JES2, ServerPac, and others.

For software upgrades for ServerPac and CBPDO installations, refer to *z/OS Program Directory*. For software upgrades for SystemPac installations, the upgrade is CUSTOMPAC and the subsets are SYSPAC/FVD (for full volume dump format) and SYSPAC/DBD (for dump-by-data-set format).

At the beginning of each PSP bucket is a change index. For each subset, the change index identifies the date of the latest entries in each section. You can quickly determine whether there are new entries you need to read by checking the change index. Since z/OS V1R7, the contents of PSP buckets are no longer shipped with CBPDO and ServerPac orders. Instead of the actual PSP information, you now receive the names of relevant upgrades and subsets, and you're directed to the PSP Web site

(<http://www14.software.ibm.com/webapp/set2/psearch/search?domain=psp>) for the contents of the buckets. This ensures that you see the latest PSP information, as the PSP information that was provided with an order was current only on the day the order was created.

The upgrade for the z/OS R13 PSP bucket is ZOSV1R13. Recognizing that there are many PSP buckets to review, z/OS uses descriptive element names, instead of FMIDs for the subsets. This reduces the number of PSP buckets that must be reviewed, since most elements are composed of multiple FMIDs. There are subsets in the ZOSV1R13 upgrade for general topics (ZOSGEN), and for the ServerPac deliverable (SERVERPAC) that should be reviewed also. DFSMS is consolidated into one subset. All PSP upgrades and subset IDs are listed in the *z/OS Program Directory*. However, the non-exclusive elements' stand-alone product upgrade and subsets are used.

Hardware PSP upgrade identifiers

Hardware PSP bucket upgrade IDs are in the form xxxxDEVICE and contain the latest software dependencies for the hardware, and recommended PTFs and APARs required for specific processor models. The PSP hardware upgrade identifiers are:

- 2818DEVICE for the z114 server.
 - The FIXCAT name is IBM.Device.Server.z114-2818.
- 2817DEVICE for the z196 server.
 - The FIXCAT name is IBM.Device.Server.z196-2817.
- For an IBM zEnterprise BladeCenter Extension (zBX) attached to your z196 or z114 CPC, the PTFs are identified in the 2458DEVICE PSP bucket.
 - The FIXCAT name is IBM.Device.Server.zBX-2458.
- 2097DEVICE for the z10 EC server.
 - The FIXCAT name is IBM.Device.Server.z10-EC-2097.
- 2098DEVICE for the z10 BC server
 - The FIXCAT name is IBM.Device.Server.z10-BC-2098.
- 2094DEVICE for the z9 EC server
 - The FIXCAT name is IBM.Device.Server.z9-EC-2094.
- 2096DEVICE for the z9 BC server
 - The FIXCAT name is IBM.Device.Server.z9-BC-2096.
- 2084DEVICE for the z990 server
 - The FIXCAT name is IBM.Device.Server.z990-2084.
- 2086DEVICE for the z890 server
 - The FIXCAT name is IBM.Device.Server.z890-2086.
- 2064DEVICE for the z900 server
 - The FIXCAT name is IBM.Device.Server.z900-2064.
- 2066DEVICE for the z800 server
 - The FIXCAT name is IBM.Device.Server.z800-2066.

Specific functions for each server also have corresponding FIXCATs.

Verifying the PTFs in the PSP buckets are installed

- To simplify finding the appropriate PSP bucket and identifying which PTFs listed in the PSP bucket need to be installed on your system, use the SMP/E REPORT MISSINGFIX command in conjunction with the FIXCAT type of HOLDDATA. For complete information about the REPORT MISSINGFIX command, see *SMP/E Commands*. For a description of what FIXCATs are available, go to <http://www.ibm.com/systems/z/os/zos/smp/> and click on "Guide to fix category values and descriptions".

DASD Storage Requirements

Keep in mind the DASD required for your z/OS system includes all z/OS elements (per the z/OS Policy). That is, it includes ALL elements, ALL features that support dynamic enablement, regardless of your order, and ALL unpriced features that you ordered. This storage is in addition to the storage required by other products you might have installed. All sizes include 15% freespace to accommodate the installation of maintenance.

The total storage required for z/OS data sets is listed in the space table in the *z/OS Program Directory*, and is also provided below.

For z/OS R13:

- The total storage required for all the target data sets is 5,868 cylinders on a 3390 device. **It is strongly recommended that you review the size of your existing target volumes and plan for the required target volume storage for z/OS R13.**
- The total storage required for all the distribution data sets listed in the space table is 8,941 cylinders on a 3390 device.



- The total file system storage is 3293 cylinders on a 3390 device for the ROOT when it is an HFS, and 3309 cylinders on a 3390 device for the ROOT when it is a zFS. You will need 50 cylinders for the /etc file system (either HFS or zFS). For the CIM element, the space required for the /var VARWBEM file system is 50 cylinders (either HFS or zFS). **It is strongly recommended that you put your file system ROOT data set on multiple 3390-3 volumes (a multi-volume data set) or on a volume larger than a 3390-3.** Use IBM Health Checker for z/OS check ZOSMIGREC_ROOT_FS_SIZE to determine whether a volume has enough space for the z/OS version root file system, available back to z/OS R9 in APARs OA28684 and OA28631.

z/OS Driving System Requirements

The *driving system* is the system image (hardware and software) that you use to install the target system. The *target system* is the system software libraries and other data sets that you are installing. You log on to the driving system and run jobs there to create or update the target system. Once the target system is built, it can be IPLed on the same hardware (same LPAR or same processor) or different hardware than that used for the driving system.

If your driving system will share resources with your target system after the target system has been IPLed, *be sure to install applicable coexistence service* on the driving system before you IPL the target system. If you don't install the coexistence service, you will probably experience problems due to incompatible data structures (such as incompatible data sets, VTOCs, catalog records, GRS tokens, or APPC bind mappings).

Customized Offerings Driver (5751-COD)

The Customized Offerings Driver V3 (5751-COD) is an entitled driving system you can use if:

- you don't have an existing system to use as a driving system, or
- your existing system does not meet driving system requirements and you don't want to upgrade it to meet those requirements.

At z/OS R13 GA, this driver is a subset of a z/OS R11 system (with the level of SMP/E at V3R5).

The Customized Offerings Driver is in DFSMSdss dump/restore format and supports 3390 triple-density or higher DASD devices. The Customized Offerings Driver requires a locally attached non-SNA terminal and a system console from the IBM (or equivalent) family of supported terminal types: 317x, 327x, 319x, or 348x. An IBM (or equivalent) supported tape drive is also required to restore the driver.

The Customized Offerings Driver is intended to run in single-system image and monoplex modes only. Its use in multisystem configurations is not supported. The Customized Offerings Driver is intended to be used only to install new levels of z/OS using ServerPac or CBPDO, and to install service on the new software until a copy (clone) of the new system can be made. The use of the Customized Offerings Driver for other purposes is not supported.

The Customized Offerings Driver includes an HFS and the necessary function to use Communications Server (IP Services), Security Server, and the system-managed storage (SMS) facility of DFSMSdftp, but these items are not customized. However, existing environments can be connected to, and used from, the Customized Offerings Driver system.

Identifying Driving System Software Requirements for ServerPac for z/OS R13

Migrating to z/OS R13 - Part 1 of 3

Driving system requirements for installing z/OS R13 by way of ServerPac or dump-by-data-set SystemPac are:

- *An operating system:* Use either of the following:
 - z/OS V1R11 or later, or
 - The Customized Offerings Driver V3 (5751-COD).
- *A terminal:* A locally-attached or network-attached terminal that can be used to establish a TSO/E session on the IPLed system is required.
- *Proper authority:* Use the RACFDRV installation job as a sample of the security system definitions required so that you can perform the installation tasks.
- *Proper security:*
 - In order for you to install into the zFS, the user ID you use must have read access to the SUPERUSER.FILESYS.PFSCCTL resource in the RACF FACILITY class.
 - In order for you to install the z/OS UNIX files, the following is required:
 - The user ID you use must be a superuser (UID=0) or have read access to the BPX.SUPERUSER resource in the RACF facility class.
 - The user ID you use must have read access to facility class resources BPX.FILEATTR.APF, BPX.FILEATTR.PROGCTL, and BPX.FILEATTR.SHARELIB (or BPX.FILEATTR.* if you choose to use a generic name for these resources). The commands to define these facility class resources are in SYS1.SAMPLIB member BPXISEC1.
 - Group IDs uucpg and TTY, and user ID uucp, must be defined in your security database. These IDs must contain OMVS segments with a GID value for each group and a UID value for the user ID. (For ease of use and manageability, define the names in uppercase.)
 - The group ID and user ID values assigned to these IDs cannot be used by any other IDs. They must be unique.
- You must duplicate the required user ID and group names in each security database, including the same user ID and group ID values in the OMVS segment. This makes it easier to transport the HFS data sets from test systems to production systems. For example, the group name TTY on System 1 must have the same group ID value on System 2 and System 3. If it is not possible to synchronize your databases you will need to continue running the FOMISCHO job against each system after z/OS UNIX is installed.

If names such as uucp, uucpg, and TTY are not allowed on your system, or if they conflict with existing names, you can create and activate a user ID alias table. For information about defining these group and user IDs to RACF and about creating a user ID alias table (USERIDALIASTABLE), see *z/OS UNIX System Services Planning*. Other sources of information are SYS1.SAMPLIB member BPXISEC1. (**Note:** You can use the RACFDRV installation job as a sample of the security system definitions required to perform the installation tasks.)
- *Language Environment run-time options:* As of z/OS R7, ServerPac requires that the following Language environment run-time options are **not** specified as nonoverrideable (NONOVR) in the CEEDOPT CSECT: ALL31, ANYHEAP, BELOWHEAP, DEPTHCONDLIMIT, ERRCOUNT, HEAP, HEAPCHK, HEAPPOOLS, INTERRUPT, LIBSTACK, PLITASKCOUNT, STACK, STORAGE, THREADHEAP, and THREADSTACK .
- *Language Environment:* The CustomPac Installation Dialog uses the Language Environment run-time library SCEERUN. If SCEERUN is not in the link list on the driving system, you must edit the ServerPac installation jobs to add it to the JOBLIB or STEPLIB DD statements.
- *OMVS address space active:* For ServerPac only (not SystemPac), an activated OMVS address space with z/OS UNIX kernel services operating in full function mode is required.
- *SMS active:* The Storage Management Subsystem (SMS) must be active to allocate HFS and PDSE data sets, whether they are SMS-managed or non-SMS-managed. Also, the use of HFS data sets is supported only when SMS is active in at least a null configuration, even when the data sets are not SMS-managed. Do either of the following:
 - To allocate non-SMS-managed HFS and PDSE data sets, you must activate SMS on the driving system in at least a null configuration. You must also activate SMS on the target system.
 - To allocate SMS-managed HFS and PDSE data sets, you must activate SMS on the driving system in at least a minimal configuration. Then you must define a storage group, create SMS-managed volumes, and

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write, translate, and activate a storage class ACS routine that allows the allocation of PDSE and HFS data sets with the names in the ALLOCDS job. You must also activate SMS on the target system.

- *SMP/E ++JARUPD Support:* If your ServerPac order contains any product that uses the ++JARUPD support introduced in SMP/E V3R2, then your driving system will require IBM SDK for z/OS, Java 2 Technology Edition. z/OS V1R13 itself does not use the ++JARUPD support.
- *zFS configuration requirements (optional):* If you will specify that you will use a zFS for ServerPac installation, then you must be sure that the zFS has been installed and configured, as described in *z/OS Distributed File Service zSeries File System Administration*.
- *Electronic delivery requirements (optional):* If you intend to receive your ServerPac order by way of the Internet, you need the following:
 - ICSF configured and active so that it can calculate SHA-1 hash values in order to verify the integrity of data being transmitted. If ICSF is not configured and active, SMP/E calculates the SHA-1 hash values using an SMP/E Java application class, provided that IBM SDK for z/OS, Java 2 Technology Edition, V1 (5655-I56) or later is installed. IBM recommends the ICSF method because it is likely to perform better than the SMP/E method. (To find out how to configure and activate ICSF, see *z/OS Cryptographic Services ICSF System Programmer's Guide*. For the required SMP/E setup, see *SMP/E User's Guide*.)
 - A download file system. Your order is provided in a compressed format and is saved in a download file system. The size of this file system should be approximately twice the compressed size of your order to accommodate the order and workspace to process it.
 - Firewall configuration. If your enterprise requires specific commands to allow the download of your order using FTP through a local firewall, you must identify these commands for later use in the CustomPac Installation Dialog, which manages the download of your order.
 - Proper dialog level. If you are using a CustomPac Installation Dialog whose Package Version is less than 17.00.00, you must migrate the dialog to this level or later. You can determine if you have the correct dialog level by looking for the text "This dialog supports electronic delivery." at the bottom of panel CPPPPOLI. If your dialog is not at the minimum level, follow the migration scenarios and steps described in *ServerPac: Using the Installation Dialog*.
- *DVD requirements (optional):* If you intend to receive your ServerPac or SystemPac dump-by-data-set order by way of DVD, you need the following:
 - Order available on z/OS host system. To make the order available on your z/OS host system, upload the order to the z/OS host from the DVD(s). Refer to readme.pdf on the first DVD to find the various methods for making your order available on your z/OS host system.
 - Space requirements on z/OS. Ensure you have the required space on your z/OS host system. To get the actual size of the order, refer to dialog.txt on the first DVD.
 - Space requirements on a workstation. If you chose to copy your order from the DVD(s) to a workstation before uploading the contents to your z/OS host system, ensure you have the required space available on your workstation.
- *Proper level for service:* In order for you to install service on the target system that you're building, your driving system must minimally meet the driving system requirements for CBPDO Wave 1 and must have the current (latest) levels of the program management binder, SMP/E, and HLASM. The service jobs generated by the CustomPac Installation Dialog use the target system's (and therefore current) level of the binder, SMP/E, and HLASM. If you choose to use your own jobs, model them after the jobs provided by ServerPac or dump-by-data-set SystemPac by adding STEPLIB DD statements to access MIGLIB (for the binder and SMP/E) and SASMMOD1 (for HLASM). Be sure that the SASMMOD1 and SYS1.MIGLIB data sets are APF authorized. Another way to install service is from a copy of your target system.

Identifying Driving System Software Requirement for Servicing z/OS R13 (and Installing CBPDO)

After installing via ServerPac, you will eventually want to install service on your z/OS R13 system. The driving system to install service on your z/OS R13 ServerPac system are the same as to install with the CBPDO method. For servicing your ServerPac system, you must meet the driving system requirements for "Wave 1" below.

When you use the CBPDO method of installing z/OS you install in three stages called *waves*. (Wave 1, in order to be more manageable, is divided into several tasks called *ripples*.) This section describes the driving system requirements for each wave.

z/OS R13 CBPDO: Driving System Wave 0

In Wave 0 you install the program management binder (part of the BCP), the HLASM base element, and the SMP/E base element. These items must be installed on (available from) the driving system for subsequent wave installations.

You can use either of the following as the driving system for installing z/OS R13 Wave 0:

- z/OS R11 or later.
- The Customized Offerings Driver V3 (5751-COD).

z/OS R13 CBPDO: Driving System Wave 1 (and to service a ServerPac system)

In Wave 1 you install most of the elements and features. The driving system requirements for installing Wave 1 are:

- *An operating system:* Use any of the following:
 - z/OS R11, except that the **program binder**, **HLASM**, and **SMP/E** must be at the current (R13) levels. The HLASM level hasn't changed since z/OS R10. To satisfy the binder and SMP/E requirements, you can use a STEPLIB DD statement to access the z/OS V1R13 program binder and z/OS V1R13 SMP/E (V3R6) in the Wave 0 target system's SYS1.MIGLIB data set. You should STEPLIB to z/OS V1R13 HLASM's (V1R6) ASM.SASMMOD1 data set. Ensure that the target system's SYS1.MIGLIB and ASM.SASMMOD1 data sets are APF authorized on the driving system.
 - The Customized Offerings Driver V3 (5751-COD).
- *Proper security:* In order for you to install into the file system, the security definitions described previously for ServerPac are required.
- *Binder entry in SMP/E UTILITY:* The SMP/E UTILITY must have an entry for the binder. You can specify any of these program names in the UTILITY entry: IEWBLINK, HEWL, IEWL, LINKEDIT, or HEWLH096. (The linkage editor, which uses the names HEWLKED, HEWLF064, IEWLF440, IEWLF880, and IEWLF128, cannot be used.)
- *Language Environment:* You must add SCEERUN (the run-time library provided by Language Environment) to your program search order because many elements and features require it. If you wish, add SCEERUN to your LNKST concatenation. If you don't add SCEERUN to your LNKST, you must access SCEERUN by using STEPLIB DD statements in the individual element and feature procedures that require them. The BCP's Program Management Binder is one function that requires access to SCEERUN; it has been required since OS/390 R10. This means that you must make available SCEERUN (via the LNKST or STEPLIB, for instance) to any JCL and procedures (such as SMP/E procedures) that invoke the binder. This ensures that processing, such as conversion of long names to short names, is successful.
- *OMVS address space active:* Before you install the elements and features in Wave 1, you must activate the OMVS address space in full function mode on the driving system. To activate OMVS, complete the required customization (for example, SMS and RACF setup) as described in *z/OS UNIX System Services Planning*.
- *Target system's file system mounted:* The target system's file system must be mounted.

z/OS R13 CBPDO: Driving System Wave 2

In Wave 2 you install the z/OS V1R13 level of JES2 or JES3. Wave 2 is optional and can be combined with Wave 1. The driving system requirements for Wave 2 are the same as for Wave 1.



Migration Action for SMP/E APAR IO11698: Authorize use of SMP/E commands and services (Required, as of IO11698 on SMP/E V3R5 (level 35.27, RSU1004), for z/OS R11)

Beginning with SMP/E V3R5 (which is in z/OS V1R10, z/OS V1R11, and z/OS V1R12), with the PTF for APAR IO11698 applied, System Authorization Facility (SAF) checks are added to SMP/E. With this change, only users who have sufficient access authority are able to invoke SMP/E functions, including all SMP/E commands (for

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example, RECEIVE, APPLY, LIST), the GIMZIP and GIMUNZIP service routines, and the GIMIAP copy utility invocation program.

To ensure current users have the access authority to invoke SMP/E functions, you must define appropriate SAF facility class profiles in the active security manager and specify all user IDs that need to use SMP/E functions in the access lists of these profiles. These functions include:

- All SMP/E commands processed by program GIMSMP. For example, SET, RECEIVE, APPLY, ACCEPT, UCLIN, LIST, REPORT, and so on.
- The GIMZIP and GIMUNZIP service routines, used for packaging and file extraction.

The GIMIAP copy utility invocation program used in jobs created by the SMP/E GENERATE command.

Migration action: Authorize use of SMP/E commands and services **before** you apply the PTF for APAR IO11698. For further information see:

- "Authorizing use of SMP/E commands and services" in *SMP/E for z/OS User's Guide*.
- INFO APAR II14489 (which is the HOLD ACTION information included below).

SMP/E APAR IO11698 HOLD ACTION Information:

SMP/E is adding Security Authorization Facility (SAF) checks to ensure only users that have sufficient access authority are allowed to invoke certain SMP/E functions. The functions to be protected are all SMP/E commands processed by program GIMSMP (for example, SET, RECEIVE, APPLY, ACCEPT, UCLIN, LIST, REPORT, etc.), the GIMZIP and GIMUNZIP service routines, and the GIMIAP copy utility invocation program.

To allow current SMP/E users to continue executing SMP/E functions, you must define the appropriate facility class resources in the active security manager and grant all userids that should be allowed to invoke the protected SMP/E functions read access to those resources.

The resource names are constructed in the following form:

- GIM.CMD.command for the SMP/E commands, where "command" is the name of the current SMP/E command being attempted. For example, GIM.CMD.APPLY for the APPLY command.

- GIM.PGM.program for the GIMZIP, GIMUNZIP or GIMIAP service routines, where "program" is the name of the service routine being processed. For example, GIM.PGM.GIMZIP for GIMZIP.

You may exploit the granularity of protection supported by SMP/E and define discrete resources to protect individual SMP/E functions, or you may choose to define generic resources. However, if the resources are not defined in the security manager, or a user does not have read authority to those resources, then SMP/E processing will stop.

A sample RACF command to define a single generic FACILITY class profile and to define a userid in the access list of that profile is as follows:

```
RDEFINE FACILITY GIM.* UACC(NONE)
PERMIT GIM.* CLASS(FACILITY) ID(userid) ACCESS(READ)
```

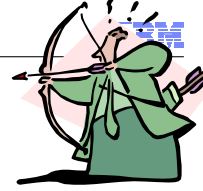
If you have activated SETROPTS RACLIST processing for the FACILITY class, you must also refresh SETROPTS RACLIST processing for the updates to take affect:

```
SETROPTS RACLIST(FACILITY) REFRESH
```

It may be difficult to identify and add all necessary userids to the access list for the subject profiles, whether using a single generic profile as in the example above, or multiple discrete profiles. With this in mind, although not recommended by IBM, it is possible to define the profiles with UACC(READ) and AUDIT(ALL(READ)) to help identify and log all userids that currently invoke SMP/E functions and will require eventual definition in the profiles' access list. After sufficient analysis has occurred and the access list has been updated, then profiles should be changed to UACC(NONE).

Note: The sample commands above to define a FACILITY class profile and to define a userid in the access list of that profile assume the use of RACF as the security manager. If you use a security manager other than RACF, see the appropriate documentation for equivalent commands.

Target System HW Requirements for z/OS R13



Hardware Requirements

- Processor Requirements:
 - IBM System z server: **z114, z196, z10, z9, z990, z890, z900, or z800**
- Coupling Facility: see <http://www.ibm.com/eserver/zseries/psocftable.html>
 - z114 and z196 initially ships with CFCC level 17
 - CFCC level 17 support requires coexistence on z/OSR11.
 - These PTFs are identified with FIXCATs
 IBM.Device.Server.z196-2817, IBM.Device.Server.z114-2818, IBM.Function.SYSPLXDataSharing, IBM.Coexistence.z/OS.V1R12, and IBM.Coexistence.z/OS.V1R13
 - Larger CF structure sizes may be necessary for CFCC level 17. Use CFSIZER for planning structure sizes to get to the current CFCC level.

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Target System Hardware Requirements

The minimal hardware requirements for z/OS, as well as additional hardware needed by specific z/OS elements and features, are documented in *z/OS Planning for Installation*. Remember, z/OS V1R13 runs only in z/Architecture mode.

Identifying Processor Requirements

z/OS V1R13 runs on the following IBM System z or their equivalents:

- IBM zEnterprise 114 (z114)
- IBM zEnterprise 196 (z196)
- IBM System z10 Enterprise Class (z10 EC)
- IBM System z10 Business Class (z10 BC)
- IBM System z9 Enterprise Class (z9 EC), formerly the IBM System z9 109 (z9-109)
- IBM System z9 Business Class (z9 BC)
- IBM eServer zSeries 990 (z990)
- IBM eServer zSeries 890 (z890)
- IBM eServer zSeries 900 (z900)
- IBM eServer zSeries 800 (z800)

Identifying Coupling Facility Requirements

There are hardware and software requirements related to coupling facility levels (CFLEVELs). See <http://www.ibm.com/eserver/zseries/psocftable.html>.

When you change coupling facility control code (CFCC) levels, your coupling facility structure sizes might change. The coupling facility structure sizer tool can size structures for you and takes into account the amount of space needed for the current CFCC levels. Access the tool at: <http://www.ibm.com/servers/eserver/zseries/cfsizer/>

z114 and z196 servers initially ship with CFCC level 17. If, as part of your migration to a z114 or z196 server, you change CFCC levels (either by placing a coupling facility on the z114 or z196 server or by moving the coupling facility to a z10 EC or z10 BC at a later CFCC level), you might have larger structure sizes than you did previously.

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If your CFCC levels are identical, structure sizes are not expected to change when you migrate from a previous server to a newer generation server.

The PTFs to support CF Level 17, have coexistence (or sysplex preconditioning) PTFs that are required to be installed on z/OS R11 throughout your sysplex prior to implementing CF Level 17. These PTFs have been identified with the SMP/E FIXCATs of IBM.Device.Server.z196-2817, IBM.Device.Server.z114-2818, IBM.Function.SYSPLEXDataSharing, IBM.Coexistence.z/OS.V1R12, and IBM.Coexistence.z/OS.V1R13.

Migration Action with z196 and z114 and z/OS R13



Accommodate HiperDispatch default of YES on IBM zEnterprise (Recommended)

- As of R13 when running on z196 or z114, IEAOPTxx keyword HIPERDISPATCH will default to YES, if not specified.
- If HIPERDISPATCH=NO is specified, the specification will be honored as it was on previous z/OS releases.
- **Action:** Examine your IEAOPTxx member(s) that will be used for z/OS R13 that will be IPLed on a zEnterprise.
- If YES, then nothing to do. If omitted, then the default for you will switch from NO to YES. Understand YES considerations*. Recommended to use FIXCAT for your server (IBM.Device.Server.xxxxxxx) for installing HIPERDISPATCH fixes.
- If NO, then investigate:
 - Recommendation is to use YES, where the LPAR weight guarantees a share of two or more physical processors without a compelling reason for running HIPERDISPATCH=NO.
 - If you still want NO, change the SUP_HiperDispatch health check to succeed, add the machine type to the MachTypes parameter and verify that the HIPERDISPATCH parameter is NO.

PARM(' HIPERDISPATCH(NO) ,MachTypes (2817 , 2818) ')

* YES considerations include: WLM policy considerations, and using the "Global Performance Data Control" in LPAR profiles.



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Migration Action Associated with z196 and z114, and z/OS R13

Accommodate HiperDispatch default of YES on IBM zEnterprise 196 (z196 or z114)

Not required, but recommended. You should be aware of changes in how system resources are being managed. Beginning with z/OS V1R13 when running on a z196 or z114 server, the IEAOPTxx keyword HIPERDISPATCH will default to YES. If HIPERDISPATCH=NO is specified, the specification will be honored as it was on previous z/OS releases.

Action: Examine the IEAOPTxx member(s) used for each z/OS V1R13 image that will be IPLed on a z196 or z114. Then find the HIPERDISPATCH keyword and take one of the following actions:

- For HiperDispatch=YES, no action is required.
- When the HiperDispatch keyword is omitted, note that the image will take the default of HiperDispatch=YES and IPL with HiperDispatch enabled. Decide if you wish to accept that HiperDispatch will be enabled by default by reviewing the subsequent steps, and the "HiperDispatch=YES considerations" section.
- For HiperDispatch=NO, investigate why that image was running in HiperDispatch=NO and choose one of the following:
 - Define a plan to migrate that image to HiperDispatch=YES. See the "HiperDispatch=YES considerations" section for further information.
 - Continue to run the image with HiperDispatch=NO (IBM does not recommend this option for LPARs where the LPAR weight guarantees a share of two or more physical processors without a compelling reason for running HiperDispatch=NO).

To get the SUP_HiperDispatch health check to succeed, add the machine type to the MachTypes parameter and verify that the HIPERDISPATCH parameter is NO.

HiperDispatch=YES considerations:

- Before enabling HiperDispatch review the WLM policy and make appropriate changes as needed that are described in the "WLM Policy Considerations" in the "Planning Considerations For HiperDispatch Mode" white paper at <http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP101229>.
- Verify that the LPAR profiles of the partitions in which the system may be IPLed allow for "Global Performance Data Control". See the *Processor Resource/Systems Manager Planning Guide* for a description of this capability. If this capability is not allowed, WLM will be unable to understand capacity that is used by other LPARs and will use all logical processors. Using all logical processors will result in

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suboptimal use of cache, reducing the capacity of the partition when more logical processors are defined compared to the share of the partition. This can also result in the "short CP" effect where a logical processor may have a unit of work dispatched while removed from a physical processor for significant intervals. This can lead to response time problems.

Reference information: *"Planning Considerations for HiperDispatch Mode"* white paper at IBM Techdocs
<http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP101229>.

Software Requirements for z/OS R13



f Software Requirements:

- **Coexistence Software** (on other z/OS systems)
- **Target Software** (correct levels of IBM non-z/OS and non-IBM products on the z/OS system)
 - If the IBM products are still service-supported, they may be used on z/OS V1R13, **with some exceptions** found in *z/OS V1R13 Planning for Installation*, Appendix B.
- **Functional Requirements**
 - Some functions may need specific SW or HW levels for exploitation.
 - *Reminder:* Consult the appropriate exploitation documentation to understand the limitations on fallback.

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Choosing IBM Products That You Want to Run with z/OS

The functional and minimal requirements are found in the *z/OS Planning for Installation* which is available on the Internet from <http://www.ibm.com/servers/eserver/zseries/zos/bkserv/>.

For a list of products available for ordering with z/OS, you can use the self-service Internet application ShopzSeries: <http://www.ibm.com/software/shopzseries>.

The minimum level IBM software products that run with z/OS, and which are documented in *z/OS V1R13 Planning for Installation* Appendix B. Carefully review what is documented. Only the IBM software products levels **above the minimum service-supported level, or which need specific APARs or PTFs are documented**. Other IBM software products not documented in this Appendix, if they are still service-supported, are supported with z/OS R13.

Many of these products can be ordered as part of your z/OS ServerPac order, z/OS SystemPac order, separate CBPDO order, or separate ProductPac order. Note that there may be differences between what is minimally service supported, what is minimally supported with z/OS R13, and what is currently orderable.

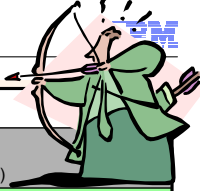
If you're migrating to z/OS V1R13, you can find out which products have new levels by using ShopzSeries or by using the SMP/E base element's Planning and Migration Assistant. Both tools use data found on your system as well as the latest IBM software product catalog.

Choosing ISV products that you want to run with z/OS

For a list of independent software vendors (ISVs) that support z/OS, as well as announcements, testimonials, and other information, see <http://www.ibm.com/systems/z/os/zos/software/isv113.html> for z/OS R13 support at z/OS R13 GA.

For a directory of IBM and IBM Business partners that provide z/OS applications, tools, and services, see the Global Solutions Directory: <http://www.ibm.com/software/solutions/isv>

Some IBM SW Target System Req's for z/OS R13



Product name	Minimum supported level
CICS TS	V3 R1 + PTFs UK29210, UK29407, and UK40130 (V2R2 was end of service: 4/30/08, V2R3 was end of service: 9/30/09)
DB2	V8 R1 (V7.1 was end of service: 6/30/08)
IMS	V10 R1 with PTFs UK47628, UK38953, UK41225, and UK41224 (end of service: 11/12/12) (V7 R1 was end of service: 11/8/05; V8 R1 was end of service: 11/05/08; V9 R1 was end of service 11/7/10)
WebSphere Application Server	V6.1 – end of service 9/30/12. (V6.0.1 was end of service: 9/30/10; V5.0 was end of service: 9/30/08)
Tivoli OMEGAMON XE	V4.1 + PTFs described in XE Technotes (V3.1 is end of service: 4/30/11; V2.2 was end of service: 9/30/08)
Tivoli System Automation	V3.2 + PTFs UA43003, UA44993, UA47085, UA43533, and UA52313. (V3.1 was end of service 9/30/10; V2.3 was end of service: 9/30/07)
IBM SDK Java Technology Edition (31-bit or 64-bit)	V5 R0 (V1R4 was end of service: 9/30/11. z/OS R11 was the last release for which SDK V1R4 was supported)
Tivoli Netview	V5 R2 with PTFs UA42145 and UA46832 – end of service 3/31/12. (V5R1 is still in service until 3/31/12)

→ Use FIXCAT IBM.TargetSystem-RequiredService.z/OS.V1R13
 → Website <http://www-306.ibm.com/software/support/lifecycle/> can be helpful.

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Selected IBM subsystem products that will run on z/OS R13

For the list of the IBM software products that run on z/OS R13 (above minimum service-supported levels, or those with specific PTF requirements), refer to Appendix B of *z/OS R13 Planning for Installation* and PSP buckets. This appendix also lists functions of z/OS that require specific z/OS optional features, IBM middleware products, or IBM application products.

A handy website for finding end of service dates for IBM products is <http://www.ibm.com/software/support/lifecycle/>.

Target System PTF Verification for z/OS R13



1. RECEIVE the latest HOLDDATA. (If you pull HOLDDATA from the ftp website, make sure you use FULL!)

- HOLDDATA is produced to associate a particular PTF with a minimum or functional level for z/OS R13.

```
++HOLD(HWRE320) FIXCAT FMID(HWRE320) REASON(AA31274)
RESOLVER(UA52313) CATEGORY(IBM.TargetSystem-
RequiredService.z/OS.V1R11, IBM.TargetSystem-
RequiredService.z/OS.V1R12, IBM.TargetSystem-
RequiredService.z/OS.V1R13) DATE(11154).
```

2. Run the REPORT MISSINGFIX command to see what is needed, but not yet installed.

```
SET BDY(GLOBAL). /* Your Tivoli System Automation global */
REPORT MISSINGFIX ZONES(TIVTGT)
FIXCAT(IBM.TargetSystem-RequiredService.z/OS.V1R13).
```

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Programmatic Help with Target System PTF Verification for z/OS Release 13

z/OS R13 Planning for Installation Appendix B documents the PTFs that are required for minimum support on z/OS R13 and PTFs that are required to use specific functions. These PTFs (for both minimum and functional support) also will be identified with a FIXCAT called **IBM.TargetSystem-RequiredService.z/OS.V1R13**, in Enhanced HOLDDATA. You can use the SMP/E REPORT MISSINGFIX command to help identify those PTFs on your current system which would be needed for your upgrade to z/OS R13.

Note: Appendix B also documents minimum product release levels and release levels for functional requirements. This FIXCAT support is only for PTFs (not release levels) that are documented in this Appendix.

Coexistence System PTF Verification for z/OS R13



- **Must** use FIXCATs to verify coexistence PTFs are installed.
- **Other related coexistence FIXCATs you may want to use:**
 - IBM.Coexistence.z/OS.V1R13
 - IBM.Coexistence.ICSF.z/OS_V1R11-V1R13-HCR7790
 - IBM.Coexistence.z/OSMF.V1R13
 - ...and there may be others!

Use the FIXCAT Explorer* !

* SMP/E panels: 1.1, global, 2 Options, select your options, 7, 2, YES for explore.

```

Fix Category Explorer
-----
Row 2 to 14 of 52
SCROLL ==> HALF

Commands: FIND -Find a string, E -Expand all, C -Collapse all, U -Unselect all
Actions: E -Expand, C -Collapse, S -Select, U -Unselect, V -View patterns

No Fix Categories are new since 2011/05/11.

Fix Categories
-----
New Selected

-IBM.Coexistence.*
+IBM.Coexistence.DB2.*
+IBM.Coexistence.ICSF.*
+IBM.Coexistence.IN8.*
-IBM.Coexistence.z/OS.*
  IBM.Coexistence.z/OS.V1R10
  IBM.Coexistence.z/OS.V1R11
  IBM.Coexistence.z/OS.V1R12
  IBM.Coexistence.z/OS.V1R13
-IBM.Coexistence.z/OSMF.*
  IBM.Coexistence.z/OSMF.V1R12
  IBM.Coexistence.z/OSMF.V1R13
+IBM.DB2.*
  
```

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Coexistence Service Requirements for z/OS Release 13

As of z/OS R12, you must use SMP/E FIXCATs to identify the z/OS coexistence PTFs. The coexistence PTFs for z/OS R13 are not documented in *z/OS R13 Migration*, are not included in PSP buckets, and are not included in any handouts for conferences.

SMP/E FIXCATs allow you to have the most up to date and correct information about z/OS coexistence, and is the easiest way to quickly determine if you have all the necessary coexistence PTFs installed. Take into consideration other products that you may be migrating with z/OS R13 – for instance z/OSMF R13, or an ICSF Web deliverable – and use SMP/E FIXCATs to verify their coexistence requirements as well.

By using the SMP/E FIXCAT Explorer via the dialogs, you can quickly determine when new SMP/E FIXCATs have been introduced. Expand all the categories under IBM.Coexistence.*, as shown in the screen shot above. Any new categories you haven't seen before will be identified with "NEW".

Coexistence System PTF Verification for z/OS R13



1. RECEIVE the latest HOLDDATA. (If you pull HOLDDATA from the ftp website, make sure you use FULL!)
 - HOLDDATA is produced to associate a particular PTF as coexistence between z/OS R11 or z/OS R12, with z/OS R13.

```
++HOLD(HQX7760) FIXCAT FMID(HQX7760) REASON(AM03128)
RESOLVER(UK90030) CATEGORY(IBM.Coexistence.z/OS.V1R13)
DATE(11082).
```

2. Run the REPORT MISSINGFIX command to see what is needed, but not yet installed.

```
SET BDY(GLOBAL). /* Your z/OS R11 global */
REPORT MISSINGFIX ZONES(ZOSR11T)
FIXCAT(IBM.Coexistence.z/OS.V1R13).
```

An even better idea is to also include here the FIXCAT IBM.Function.HealthChecker!

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Using FIXCAT for coexistence PTFs for z/OS R13

For coexistence verification for z/OS R13, the fix category of interest is **IBM.Coexistence.z/OS.V1R13**. You can use the FIXCAT of ++HOLD statement to identify APARs, their fix categories, and the PTF that resolves the APAR.

When FIXCAT HOLDDATA statements are received into a global zone, SMP/E assigns the fix category values as sourceids to the PTFs that resolve the APARs. These sourceids then simplify selecting and installing required fixes. During APPLY and ACCEPT command processing you can specify the assigned sourceids on the SOURCEID and EXSRCID operands to select the SYSMODs associated with a particular fix category.

In addition, for the APPLY and ACCEPT commands you can specify which Fix Categories are of interest using the new FIXCAT operand. This tells SMP/E to process only FIXCAT HOLDDATA for the categories you specify, and all others are ignored.

Finally, SMP/E uses the FIXCAT HOLDDATA to identify what required fixes are missing. The REPORT MISSINGFIX command analyzes the FIXCAT HOLDDATA and determine which fixes (APARs) identified by the HOLDDATA are not yet installed. Only the fixes associated with the fix categories of interest to you, specified by you, are analyzed and identified. For example, you can identify only the missing fixes associated with a particular hardware device or coexistence for a specific new software release.

Note that you can use wildcards in the FIXCAT name in the REPORT MISSINGFIX command. For example, if you wanted to verify coexistence for z/OSMF R13 as well as z/OS R13 on your z/OS R11 system, your command could be:

```
REPORT MISSINGFIX ZONES(ZOSR11T) FIXCAT(IBM.Coexistence.z/OS*.V1R13).
```

Some Migration Tasks You Can Do NOW



1. Transition off of removed functions and elements:

- In R12: RFC4301 compliance, CSVRTLS removal, ...
- In R13: DCE removals, DCE Security Server, ...
- Beyond R13: zFS multi-fs, BPX.DEFAULT.USER, BIND 9.2.0, ...

2. Review documentation and PSP buckets.

3. Prepare Driving and Target Systems:

- Driving systems – nothing new here, if you've handled SMP/E APAR IO11698.
- Target systems -



– Preparation for CFCC level 17?

– DASD storage for z/OSR13 – position root on larger DASD??

– IBM product level research: FIXCAT **IBM.TargetSystem-RequiredService.z/OS.V1R13**



– ISV research for z/OSR13

- Coexisting systems - FIXCAT **IBM.Coexistence.z/OS.V1R13** (and others!)

4. Use IBM Health Checker for z/OS! FIXCAT **IBM.Function.HealthChecker**

- Activate the Migration Health Checks (they are shipped INACTIVE).

5. Perform z/OS R13 migration actions you can do NOW .

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Prepare for your migration to z/OS R13!

In this presentation you've seen many things you can do right now, on your current z/OS release to help make your z/OS R13 migration smooth. Listed above are the things that were shown in this presentation, but make sure to look at the *z/OS Migration* book so that you know a more complete migration picture.

IBM Health Checker for z/OS for Migration Use



1. Install all Migration Health Check PTFs on your current release. PTFs will be marked with FIXCAT **IBM.Function.HealthChecker**.
2. Activate the Migration Health Checks appropriate for your migration path, specifying releases you are migrating *through* and *to*. For example, one way is:
 - **F HZSPROC,ACTIVATE,CHECK=(IBM*,*MIG*)**
Could also be IBM,ZOSMIG* or other ways...*
3. Migration Health Checks will run on your current release.
4. Review output for exceptions to create planning items for your migration plan.

Note: some “Best Practice” health checks can also be useful for migration.

These checks are shipped **ACTIVE**.



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Using IBM Health Checker for z/OS for migration purposes

Starting in z/OS V1R10, the Health Checker infrastructure is exploited for migration purposes. Health Checks that are helpful for determining migration action applicability are provided. These checks ("Migration Health Checks") should be used prior to your migration to the new z/OS release to assist with your migration planning, and re-run after your migration to verify that the migration action was successfully performed. As with any Health Check, no updates are performed to the system. Migration Health Checks only report on the applicability of a specific migration action on a system; and only report on the currently active system.

Details on how to run the Migration Health Checks are provided in beginning of the *z/OS Migration* book.

General System REXX Reminder!



- Some IBM Health Checker for z/OS checks are written in System REXX.
- Exploiters of System REXX (not just checks) require both of the following:
 - **Compiled REXX** needs either Alternate Library for REXX (available in z/OS since V1R9) *or* from the IBM Library for REXX on zSeries (5695-014). The runtime library will need to be available to the system:
 - REXX.SEAGALT can be put in the LNKLST.
 - REXX.SEAGLPA can be put in the LPALST.
 - If you do not APF-authorize the library, you will get an abend when the runtime routines are requested by an APF-Authorized routine.
 - **System REXX** customization must be performed. Customization tasks are documented in "System REXX" in *z/OS MVS Programming: Authorized Assembler Services Guide*.

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System REXX health check considerations


All exploiters of the System REXX support in z/OS require that the System REXX customization be performed. Using the IBM Health Checker for z/OS health checks is one example of possible System REXX exploitation. In particular, any compiled REXX execs must have the proper runtime support available from the Alternate Library for REXX (available in z/OS since V1R9) or from the IBM Library for REXX on zSeries (5695-014). Several IBM Health Checker for z/OS migration health checks have been written in compiled System REXX. These health checks rely upon the System REXX customization and runtime activities being completed. If System REXX (and the security environment that System REXX requires) have not been properly customized, then System REXX health checks will not execute successfully.

- For System REXX customization activities, refer to "System REXX" in *z/OS MVS Programming: Authorized Assembler Services Guide*.
- For compiled REXX exec runtime availability, see "Alternate Library for REXX Customization Considerations" in *z/OS Program Directory*, or refer to product documentation accompanying IBM Library for REXX on zSeries.

IBM Health Checker for z/OS Checks for Migration IBM

<ol style="list-style-type: none"> 1. ZOSMIGREC_ROOT_FS_SIZE 2. XCF_SYSPLEX_CDS_CAPACITY 3. RSM_MEMLIMIT 4. ZOSMIGREC_SUP_TIMER_INUSE 5. SUP_HiperDispatchCPUConfig 6. ZOSMIGV1R13_CNZ_CONS_OPER_MODE 7. SUP_HiperDispatch 8. CNZ_SYSCONS_ALLOWCMD 9. ZOSMIGV1R12_SUP_LCCA_ABOVE_16M 10. ZOSMIGV1R12_RCF_PCCA_ABOVE_16M 11. GRS_AUTHQLVL_SETTING 12. ZOSMIGV1R11_CS_RFC4301 13. ZOSMIGV1R11_CS_BIND9 	<ol style="list-style-type: none"> 14. CATALOG_IMBED_REPLICATE 15. ZOSMIGV1R11_ZFS_RM_MULTIFS / ZOSMIGREC_ZFS_RM_MULTIFS 16. ZOSMIGV1R13_ZFS_FILESYS 17. ZOSMIGREC_SMB_RPC 18. INFOPRINT_PRINTWAY_MODE 19. ZOSMIGV1R12_INFOPRINT_INVSIZE 20. INFOPRINT_V2DB_CHECK 21. JES2_Z11_Upgrade_CK_JES2 22. CEE_USING_LE_PARMLIB 23. SDSF_ISFPARMS_IN_USE 24. USS_HFS_DETECTED 25. ZOSMIGV1R13_RO_SYMLINKS
---	---

All these checks are cross-referenced for the associated migration action in *z/OS R13 Migration!*



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Migration Health Checks and Best Practice Health Checks

Migration Health Checks are not different from other Health Checks, but they do have some characteristics which allow them to be uniquely identified:

- the name of the check follows a convention. For z/OS, the convention is: **ZOSMIGVvRrr***_component_program_name* (and for the ICSF element, the convention is **ICSMIGNnnn***_component_program_name*). Notice the "MIG" characters, followed immediately by the release identifier. This tells you that the check helps with migration, and the migration action was introduced in the release specified in the name. If the version and release where the change is occurring isn't announced yet, you may see **ZOSMIGREC***_component_program_name* (where **REC** indicates it is RECommended, and is not a requirement yet).
- the check has a status of **INACTIVE** by default. Because you may not want to know about migration actions during non-migration periods, Migration Health Checks will not automatically be active.

There are Best Practice Health Checks that can help with migration actions, and yet they do not have the Migration Health Check naming convention. That is because the component owners felt that the practice is recommended for reasons above and beyond migration purposes. All Health Checks (whether they are Migration Health Checks or Best Practice Health Checks) will be cross-referenced in the *z/OS Migration* book when they can assist with a specific migration action. *So be aware, your migration assistance is not just limited to the checks that follow the Migration Health Check naming convention!*

This table shows all the IBM Health Checks for z/OS referenced in the *z/OS R13 Migration* book. You can see the related migration action, the check name, where the check ships, the severity, and if it active (background in yellow) or inactive (background in white).

BCP: default locations for PCCA control blocks to retain 24-bit virtual storage location	ZOSMIGV1R12_RCF_PCCA_ABOVE_16M (OA32015)	INACTIVE LOW	For z/OS R10 and z/OS R11 only
BCP: default locations for LCCA control blocks to retain 24-bit virtual storage location	ZOSMIGV1R12_SUP_LCCA_ABOVE_16M (OA32015)	INACTIVE LOW	For z/OS R10 and z/OS R11 only

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BCP: warns that the number of CPUs is approaching the requirement to use HiperDispatch	SUP_HiperDispatchCPUConfig (OA30476)	ACTIVE LOW	For z/OS R10 and beyond.
BCP: verify expected HiperDispatch state matches what is actually in use	SUP_HIPERDISPATCH (OA36150)	ACTIVE MED	For z/OS R13
BCP: verify ALLOWCMD setting with desired value	CNZ_SYSCONS_ALLOWCMD	ACTIVE LOW	For z/OS R12 and beyond
BCP: verify if console operating mode is explicitly specified.	ZOSMIGV1R13_CNZ_CONS_OPER_MODE (OA32930)	INACTIVE LOW	For z/OS R11, and R12
z/OS UNIX: Migrate from HFS file systems to zFS file systems	USS_HFS_DETECTED (OA29947)	ACTIVE LOW	For z/OS R11 and beyond.
BCP: Migrate from a Sysplex Timer to STP	ZOSMIGREC_SUP_TIMER_INUSE (no APAR)	INACTIVE LOW	For z/OS R11 and beyond
BCP: Determine if system is using the recommended AUTHQLVL setting	GRS_AUTHQLVL_SETTING	ACTIVE LOW	For z/OS R13 and beyond
DFSMSdfp: Redefine catalogs with IMBED, REPLICATE, and KEYRANGE attributes	CATALOG_IMBED_REPLICATE (no APAR)	ACTIVE LOW	For z/OS R11 and beyond.
JES2: Verify z11 checkpoint level	JES2_Z11_UPGRADE_CK_JES2 (no APAR)	ACTIVE LOW	For z/OS R11 and beyond
Communications Server: Migrate from BIND DNS 9.2.0 function	ZOSMIGV1R11_CS_DNSBIND9 (no APAR)	INACTIVE LOW	For z/OS R11 and beyond.
Communications Server: Update IP filter policy to filter IP fragments correctly for RFC 4301 compliance	ZOSMIGV1R11_CS_RFC4301 (OA28605)	INACTIVE LOW	For z/OS R10 and R11.
zFS: Discontinue use of multi-file system aggregates	ZOSMIGV1R11_ZFS_RM_MULTIFS (when sysplex) or ZOSMIGREC_ZFS_RM_MULTIFS (when not sysplex) (OA27198)	INACTIVE LOW	For z/OS R9 and beyond.
zFS: Verify if the sysplex is running sysplex=filesys	ZOSMIGV1R13_ZFS_FILESYS (OA35465)	INACTIVE LOW	For z/OS R11 and R12
SMB: Determine if SMB is running with the Distributed Computing Environment (DCE) and DCE/DFS File Server	ZOSMIGREC_SMB_RPC (OA30117)	INACTIVE MEDIUM	For z/OS R11 and beyond.
BCP: Enough XCF groups in your CDS.	XCF_SYSPLEX_CDS_CAPACITY (no APAR)	ACTIVE MEDIUM	For z/OS R4 and beyond.
General: Version root has enough room on DASD	ZOSMIGREC_ROOT_FS_SIZE (OA28684 and OA28631)	INACTIVE LOW	For z/OS R9 and beyond.
Infoprint Server: Migrate from IP PrintWay basic to extended mode	INFOPRINT_PRINTWAY_MODE (OA26583)	ACTIVE LOW	For z/OS R8 and higher

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Infoprint Server: Increase space in the Printer Inventory file system	ZOSMIGV1R12_INFOPRINT_INVSIZE (OA32093)	INACTIVE LOW	For z/OS R10 and R11.
Infoprint Server: Remove Version 2 Printer Inventory files at fallback at z/OS V1R11	INFOPRINT_V2DB_CHECK (OA32093)	ACTIVE LOW	For z/OS R10 and beyond.
SDSF: ISFPRMxx detection	SDSF_ISFPARMS_IN_USE (PK59629)	ACTIVE LOW	For z/OS R8 and beyond.
LE: CEEPRMxx detection	CEE_USING_LE_PARMLIB (PK62487)	ACTIVE LOW	For z/OS R8 and beyond.
BCP: Verify that virtual storage limits are set properly	RSM_MEMLIMIT (no APAR)	ACTIVE LOW	For z/OS R4 and beyond.
BCP: Determine if z/OS R13 symlinks will impact current system.	ZOSMIGV1R13_RO_SYMLINKS (OA35605 and OA35636)	INACTIVE LOW	For z/OS R11 and R12.

Something available for those that share IEASYSxx!



Consider exploiting WARNUND for new IEASYSxx statements

- **Description:** Starting in z/OS V1R13 (and rolled back to z/OS V1R11 and z/OS V1R12 in OA35929), you can specify the WARNUND statement in IEASYSxx.
- Usage of this statement indicates to produce a new warning message IEA660I when undefined statements are encountered, rather than prompting for a correct statement. No DISPLAY IPLINFO,WARNUND support.
- Usage of WARNUND can be particularly useful when specifying new parmlib options in IEASYSxx (such as the new CATALOG=, IXGCNF=, AUTOR=), and allowing these new IEASYSxx specifications to be shared with pre-z/OS V1R13 systems.
- **Steps to take:**
 - Install **OA35929** on all pre-z/OS V1R13 systems.
 - As you add new statements in IEASYSxx for functional exploitation and you wish to share those modified IEASYSxx members with pre-z/OS V1R13 systems, add **"WARNUND"** to those IEASYSxx members at the beginning of IEASYS00 as that will cover updates in all IEASYSxx members.

Beware of typos! Review your messages!

– Before WARNUND support:

IEA321I INVALID PARAMETER SYNTAX - CATALOG=(00 - UNDEFINED KEYWORD

IEA324I SYSP INPUT TERMINATED IN IEASYSMW

IEA336A RESPECIFY PARAMETERS OR PRESS ENTER TO CANCEL

– After WARNUND support:

IEA321I INVALID PARAMETER SYNTAX - CATALOG=(00 - UNDEFINED KEYWORD

IEA660I PROCESSING CONTINUES AFTER UNDEFINED KEYWORD DUE TO WARNUND



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Migration Action Recommendation: WARNUND Option in IEASYSxx

This parameter asks that the system warn on finding an undefined system parameter rather than prompting for new system parameters. Once the WARNUND parameter has been found, it applies to all subsequent system parameter processing. If you want WARNUND processing for all IEASYSxx parmlib members, put WARNUND at the beginning of IEASYS00 as then it covers all subsequent system parameters within IEASYS00 and any other IEASYSxx members processed. If you need WARNUND processing active for some specific parameter in some IEASYSxx member, you could place WARNUND just before that parameter. If you want WARNUND processing for your reply to IEA101A, you must specify it within the reply text (earlier within that reply than any undefined parameter). For example, you might reply "R 0,WARNUND,SYSP=01,NEWPARAM=VALUE".

When a warning condition is detected, messages IEA321I and IEA660I are issued.

If there is a syntax error with the operand of the undefined parameter, the system may display further error messages and may prompt for new parameters via message IEA336A.

Note: DISPLAY IPLINFO,WARNUND is not supported.

New Message IEA660I

IEA660I PROCESSING CONTINUES AFTER UNDEFINED KEYWORD DUE TO WARNUND

Explanation: An undefined system parameter was encountered, and identified in preceding message IEA321I. Because of the use of the WARNUND system parameter, the system ignores the undefined parameter and continues processing the system parameters, having skipped this parameter and (if syntactically correct) its operand(s). The system will not re-prompt for new parameters due to this undefined keyword unless there is a syntax error with the operand of that keyword. In that case, further error messages may be displayed and you may be prompted with message IEA336A to respecify.

Changed Message IEA321I (for System Action documentation)

Migrating to z/OS R13 - Part 1 of 3

System Action: The system prompts the operator for a reply by issuing message IEA336A, IEA324I, IEA332A, or IEA906A, unless <text> is UNDEFINED KEYWORD and the WARNUND system parameter is in effect, in which case the system ignores the undefined keyword and continues processing the system parameters.

Example:

In IEASYSMW (note no WARNUND):

```
BROWSE      SYS1.PARMLIB.POK(IEASYSMW) - 01.03
  Command ==>
***** Top of Data *****
CATALAG=(00,ZZ),
...
```

IPL:

```
IEA101A SPECIFY SYSTEM PARAMETERS FOR z/OS 01.13.00 HBB7780
R 0,CLPA,SYSP=(MW,AI,OS)
IEE600I REPLY TO 00 IS;CLPA,SYSP=(MW,AI,OS)
IEA321I INVALID PARAMETER SYNTAX - CATALAG=(00 - UNDEFINED KEYWORD
IEA324I SYSP INPUT TERMINATED IN IEASYSMW
IEA336A RESPECIFY PARAMETERS OR PRESS ENTER TO CANCEL
```

In IEASYSMW (with WARNUND):

```
BROWSE      SYS1.PARMLIB.POK(IEASYSMW) - 01.04
  Command ==>
***** Top of Data *****
WARNUND,
CATALAG=(00,ZZ),
...
```

IPL:

```
IEA101A SPECIFY SYSTEM PARAMETERS FOR z/OS 01.13.00 HBB7780
R 0,CLPA,SYSP=(MW,AI,OS)
IEE600I REPLY TO 00 IS;CLPA,SYSP=(MW,AI,OS)
IEA321I INVALID PARAMETER SYNTAX - CATALAG=(00 - UNDEFINED KEYWORD
IEA660I PROCESSING CONTINUES AFTER UNDEFINED KEYWORD DUE TO WARNUND
ISG313I SYSTEM IS INITIALIZING IN GRS NONE MODE.  RING OR STAR CONFIGURATION
KEYWORDS IN GRSCNF00 ARE IGNORED.
```

Migrating to z/OS R13 - Part 1 of 3 Summary



- **Content of z/OS R13**
 - Prepare now for removed content: RFC4301, DCE and DCE Security Server,
 - And future removals: zFS multi-fs aggrs, BPX.DEFAULT.USER, LE usermod, ...
- **z/OS Ordering and Deliverables**
 - Order z/OS R12 on ServerPac before Oct 11, 2011 if you need it!
 - Latest ICSF level (HCR7790) is planned to be available on Sept 9, 2011. Not in R13.
 - z/OSMF, Ported Tools (and all features), XML R9 and R10, 31-bit and 64-bit SDKs...
- **z/OS Policies**
 - z/OS R13 Coexistence-Migration-Fallback from z/OS R12 or z/OS R11.
 - The Lifecycle Extension can help you for corrective service, not extended coexistence.
- **Ensuring System Requirements are Satisfied**
 - Driving, Target SW, Target HW, and Coexisting System Requirements – file sys is larger!
 - HiperDispatch default change on zEnterprise with z/OS R13.
 - Use FIXCATs IBM.TargetSystem-RequiredService.z/OS.V1R13, IBM.Coexistence.z/OS.V1R13, IBM.Function.HealthChecker, and others.
- **Use IBM Health Checker for Migration Actions:**
 - Install and activate INACTIVE migration health checks.
 - Review migration health check output for z/OS R13.
- **Evaluate using WARNUND:** helpful when sharing IEASYSxx for new statements!
- **...and everything applicable in the next presentations!**