

# z/OS 1.11: Migration

**Marna WALLE** mwalle@us.ibm.com  
z/OS System Build and Install  
IBM Poughkeepsie  
March 2, 2010

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**Abstract: z/OS 1.11: Migration Part 1 of 2**

This is part one of a two-part session that will be of interest to System Programmers and their managers who are migrating to z/OS 1.11 from either z/OS 1.9 or z/OS 1.10. It is strongly recommended that you attend both sessions for a complete migration picture.

In part one, the speaker will focus on preparing for your z/OS 1.11 migration. She will discuss the changed content of z/OS 1.11. 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 R11 was September 25, 2009.*

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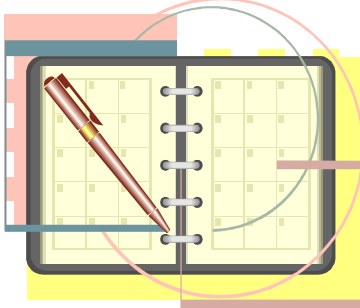
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## z/OS 1.11: Migration Agenda – Part I

- ▶ **Content of z/OS R11**
  - Elements and Features Added, Changing, and Withdrawn
- ▶ **z/OS Ordering and Deliverables**
  - Products Related to z/OS
- ▶ **z/OS Policies**
  - z/OS Coexistence-Migration-Fallback
- ▶ **Positioning for z/OS R11:**
  - 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 R11
- ▶ **ServerPac Installation Enhancements for z/OS R11**
- ▶ **Summary**

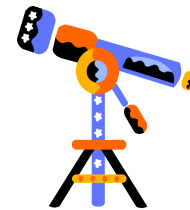


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## Scope

### ➤ **Focus on Migrating to z/OS R11 from z/OS R10 and R9**

- 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"*



**Related Publications:**

z/OS Planning for Installation (GA22-7504-16) - **refresh level is “January 2010”!**  
z/OS Introduction and Release Guide (GA22-7502)  
z/OS 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 Migration (GA22-7499-22) – **refresh level is “January 2010”!**  
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
<a href="http://www.ibm.com/servers/eserver/zseries/zos">http://www.ibm.com/servers/eserver/zseries/zos</a>	IBM z/OS home page
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<a href="http://www.ibm.com/servers/eserver/zseries/zos/unix/suptlk/">http://www.ibm.com/servers/eserver/zseries/zos/unix/suptlk/</a>	IBM Ported Tools for z/OS: Supplementary Toolkit for z/OS feature 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 R11 Base Elements and Optional Features Changing (from R9)**

→ BCP	→ Integrated Security Services:	→ SDSF
→ C/C++ Without Debug Tool	→ Enterprise Identity Mapping	→ Security Server - RACF
→ Common Information Model (CIM)	→ Network Authentication Service	→ SMP/E (V3R5)
→ Communications Server	→ ISPF	→ TSO/E
→ Communications Server Security Level 3	→ JES2	→ z/OS Security Level 3:
→ Cryptographic Services:	→ JES3	→ IBM Tivoli Directory Server Security Level 3
→ ICSF (FMID HCR7751)	→ Language Environment	→ Network Authentication Service Level 3
→ PKI Services	→ Library Server	→ SSL Level 3
→ System SSL	→ Metal C Runtime Library	→ z/OS UNIX
→ DFSMSdftp	→ Network File System	
→ DFSMSdss	→ RMF	
→ DFSMSshsm	→ Run-Time Library Extensions	
→ DFSMSrmm		
→ DFSMSstvs		
→ DFSORT		
→ Distributed File Service		
→ HCD		
→ HCM		
→ HLASM (V1R6)		
→ HLASM Toolkit (V1R6)		
→ IBM Tivoli Directory Server		

**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 R11 (from z/OS R9)

→ This element changed in z/OS R11 (from z/OS R10)

All other elements not listed have not changed since z/OS R9.  
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 R11 since z/OS R9. For a complete list of all the z/OS R11 base elements and optional features, see Appendix A in this presentation.

Element and Functions Withdrawn from z/OS R10		
<b>Assignment of CPU affinity to a logical processor from BCP</b>	Base Element –CPU affinity has long been obsolete for z/OS partitions operating under PR/SM. The system will ignore attempts to assign CPU affinity	<b>as of R10</b>
<b>English and Japanese panels from DFSORT</b>	Priced Feature - no replacement offered	<b>as of R10</b>
<b>RMF LDAP replacement (from RMF)</b>	Priced Feature - RMF LDAP interface is replaced with a CIM Monitoring Interface (introduced as of z/OS R7)	<b>as of R10</b>










### Withdrawn in z/OS R10 (last delivered in z/OS R9)

This section lists items that were withdrawn in z/OS R10. You should take this into account as you plan your migration to z/OS R11. The removal of these functions may have migration actions which you can perform now, in preparation for z/OS R11.

- IBM has removed support for CPU affinity. CPU affinity originally provided support for assigning work to the same CP. However, this predates Processor Resource/Systems Manager (PR/SM), which introduced logical processors. CPU affinity has long been obsolete for z/OS partitions operating under PR/SM, which makes the CP on which a piece of work executes unpredictable. z/OS V1R9 is the last release to provide support for the assignment of CPU affinity to a logical processor. Beginning with z/OS V1R10, any attempt to assign CPU affinity is ignored. For example, specifications for assigning a program to a specific logical processor or processors using the program properties table (PPT) or a SCHEDxx member of parmlib are ignored.
- The DFSORT ISPF panels are used to generate and execute DFSORT jobs, and are available in both English and Japanese. z/OS V1R9 is the last release that supports these panels. No replacement is planned for this limited-function interactive facility. All other previously supported methods for invoking DFSORT are still supported.
- Before z/OS V1R10, the RMF LDAP backend, ERB6LBCK, allowed access to RMF performance data from application programs. Effective with z/OS V1R10, this interface has been removed from z/OS. In its place you can use the Common Information Model (CIM) monitoring interface, which has been provided since z/OS V1R7. CIM allows system programmers to write applications (CIM monitoring clients) that retrieve system resource measurements. If a CIM client asks the CIM server to obtain z/OS metrics, the CIM server invokes the appropriate z/OS RMF monitoring provider to retrieve these metrics. The z/OS RMF monitoring providers use RMF Monitor III performance data.



Element and Functions Withdrawn from z/OS R11		
<b>BIND DNS 4.9.3 from CS</b> 	Base Element – consider BIND DNS 9.2.0* (as of z/OS R4) as replacement, or other solutions. (* note future removal.)	As of R11
<b>Network Database (NDB) function from CS</b> 	Base Element - investigate the distributed data facility (DDF) provided by z/OS DB2, and the DB2 Run-Time Client	As of R11
<b>DHCP server function from Communications Server</b> 	Base Element - investigate using a DHCP server on Linux for System z	As of R11
<b>Boot Information Negotiation Layer (BINL) function from CS</b> 	Base Element - investigate the use of <i>IBM Tivoli Provisioning Manager for OS Deployment</i> for network based operating system installation services	As of R11
<b>Integrated Security Services LDAP Server</b> 	Base Element - implement IBM Tivoli Directory Server for z/OS (avail since R8)	As of R11 
<b>Attaching zFS multi-file system aggregates in a shared file system environ.</b> 	Base Element – For shared multi-fs aggr: mounting was removed in R8, attaching has been removed in R11.	As of R11
<b>IPCS Problem Management Subcommands</b>	Base Element – Consider using IBM Tivoli Information Management for z/OS V7 (5698-A08) or other similar product.	As of R11

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### Withdrawn in z/OS R11 (last delivered in z/OS R10)

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




- Network Database (NDB) function: z/OS V1R10 was the last release in which z/OS Communications Server supported the Network Database (NDB) function. Starting with z/OS V1R11 you have to use the distributed data facility (DDF) provided by DB2 for z/OS, and the DB2 Runtime Client.
- BIND DNS 4.9.3: z/OS V1R10 was the last release in which z/OS Communications Server supported BIND DNS 4.9.3. If you have been using BIND DNS 4.9.3 as a caching-only name server, use the z/OS Resolver DNS Caching function in z/OS V1R11 instead. If you have been using BIND DNS 4.9.3 as a primary or secondary authoritative name server, migrate to BIND DNS on Linux for System z. If you want to implement a temporary replacement, implement BIND DNS 9.2.0, which has been included in z/OS beginning with V1R4. (Note that support for BIND DNS 9.2.0 is planned to be removed in a future release.) Use the dnsmigrate tool to migrate a z/OS BIND 4.9.3 DNS server configuration file to a z/OS BIND 9.2.0 DNS server configuration file.
- Boot Information Negotiation Layer (BINL): z/OS V1R10 was the last release in which z/OS Communications Server supported the Boot Information Negotiation Layer (BINL). Starting with z/OS V1R11, you have to use another product, such as IBM Tivoli Provisioning Manager for OS Deployment V5 (5724-Q99), for network-based operating system installation services.
- DHCP server: z/OS V1R10 was the last release in which z/OS Communications Server supported the Dynamic Host Configuration Protocol (DHCP) server function. Starting with z/OS V1R11, you have to use a DHCP server on a system other than your z/OS system.
- Integrated Security Services LDAP Server: z/OS V1R10 was the last release of z/OS that supported the Integrated Security Services LDAP Server. A new optimized LDAP server, a component of IBM Tivoli Directory Server for z/OS (IBM TDS), was delivered by PTF for z/OS V1R8 and is integrated in z/OS V1R9 and later. If you are currently using the Integrated Security Services LDAP Server, you must migrate to IBM TDS. IBM TDS is designed to allow greater consolidation of LDAP directories on z/OS to help simplify enterprise management and disaster recovery.

- Beginning in z/OS V1R11, you can no longer attach zFS multi-file system aggregates that are shared across systems in a sysplex. IBM has previously recommended that multi-file system aggregates not be shared in a sysplex environment. Any attempts to attach zFS multi-file system aggregates will fail in a z/OS UNIX shared file system environment with message IOEZ00046E. Attaching zFS compatibility mode aggregates, which have a single file system per data set, will continue to be supported in all environments.
- z/OS V1R10 is the last release that includes IPCS Problem Management Subcommands. As of z/OS V1R11, the subcommands have been removed from z/OS. If you currently use the IPCS problem management subcommands to report and track problems, consider using IBM Tivoli Information Management for z/OS V7 (5698-A08) or other similar products. IBM plans to continue to enhance the dump and trace analysis and display facilities of IPCS. The removed subcommands are:
  - ADDDSN — add a data set name to a problem
  - ADDPROB — add a problem to IPCS
  - DELDSN — delete a data set from a problem
  - DELPROB — delete a problem from IPCS
  - LISTDSN — list data set attributes
  - LISTPROB — list problems
  - MODDSN — modify data set attributes
  - MODPROB — modify problem attributes



<h2>Functions Planned to be Withdrawn</h2> <p><i>in the future...</i></p>		
<b>zFS multi-file system aggregates (from Distributed File Service)</b> 	Base Element - zFS compatibility mode aggregates will be supported	<b>Future</b> 
<b>Optional setting for RFC4301 compliance (from Communications Server)</b> 	Base Element – IBM intends to make RFC4301 compliance mandatory when using IPSec policies. This RFC includes restrictions on the routing of fragmented packets, which may require changes to existing z/OS IP filtering policy	<b>Planned for release after z/OS R11</b>
<b>BIND 9.2.0 function (from the Communications Server)</b> 	Base Element – 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.	<b>Future</b>
<del>Support for OSAM data sets with INCLD and REPLICATE (not KEYRANGE) attributes from DFSMS</del>  	Base Element - IBM no longer plans to remove this support from z/OS in the foreseeable future. IBM still recommends that you stop using these attributes.	<b>Future</b> 

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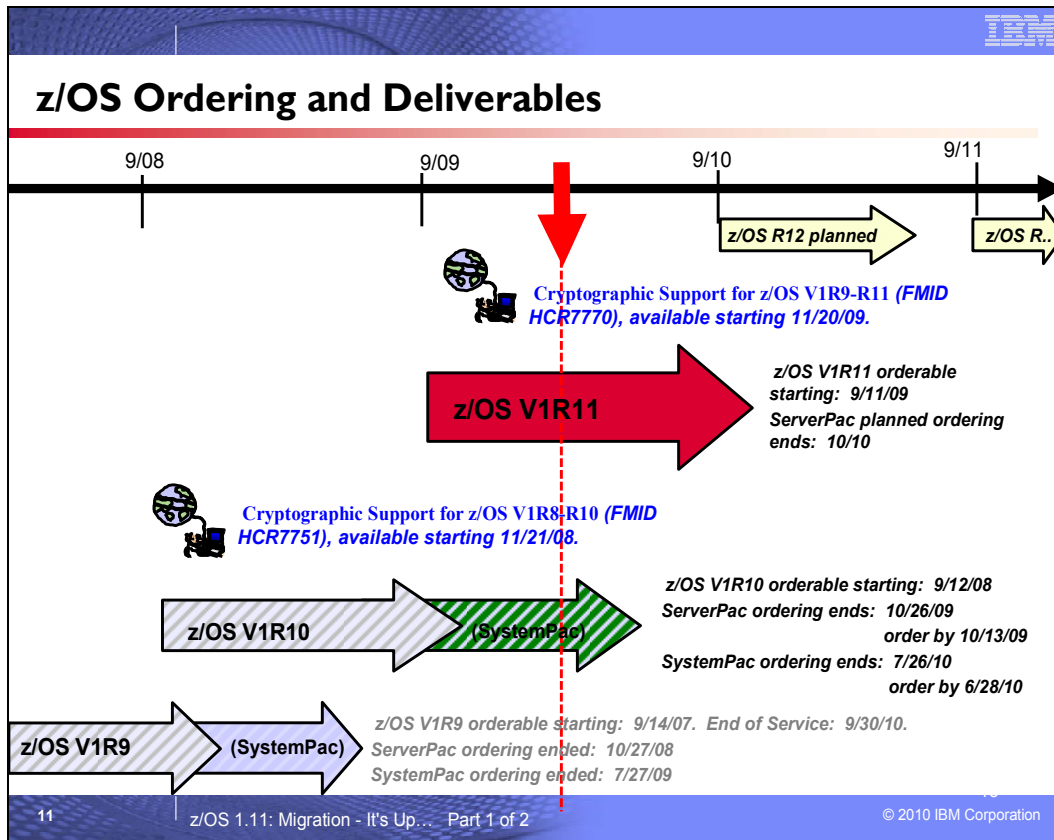
<h2>Functions Planned to be Withdrawn</h2> <p><i>in the future...</i></p>		
<b>Language Environment runtime options via USERMOD</b> 	Base Element support – use CEEPRMxx instead (with z/OS R12 NONOVR support, if necessary)	<b>Future</b>
<b>CSVRTLS services for Language Environment RunTime Library Services</b>	Base Element support – LE RTLS support was removed in z/OS R5. Usage tracking assistance is provided in OA29019.	<b>Planned for release after z/OS R11</b>
<b>msys for Setup</b>	Base Element	<b>Planned for release after z/OS R11</b>
<b>DCE and DCE Security Server</b>	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.	<b>Future</b>
<b>DFS support that utilizes the DCE architecture</b> 	Base Element support – z/OS Network File System (NFS) implementation as the replacement	<b>Future</b>
<b>z/OS UNIX Connection Manager and Process Manager</b>	Base Element	<b>Future</b>

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## Planned for removal in a future z/OS release

This section lists items that IBM has announced it intends to remove in a future z/OS release. 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.

- In a future release, IBM plans to withdraw support for zFS multi-file system aggregates. When this support is withdrawn, only zFS compatibility mode aggregates will be supported. (A zFS compatibility mode aggregate has a single file system per data set.)
- z/OS V1.11 is planned to be the last z/OS release where RFC4301 compliance is optional. In a future release of z/OS, IBM intends to make RFC4301 compliance mandatory. RFC4301, "Security Architecture for the Internet Protocol," specifies the base architecture for IPsec-compliant systems, including restrictions on the routing of fragmented packets. In z/OS V1.10 and V1.11 RFC4301 compliance enforcement is an optional setting in the z/OS IPsec policy. Changing an IPsec policy from being non-compliant to compliant might require minor changes to IP filters for IP traffic that is routed through z/OS. The Configuration Assistant for z/OS Communications Server includes functions to assist with identifying and making such changes.
- In a future release, IBM plans to remove the capability to change 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 V1R5 was the last release of z/OS to support Run-Time Library Services (RTLS) for Language Environment. In a future release, the underlying CSVRTLS services will be 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 in z/OS V1R11, and rolled back to z/OS V1R10 and z/OS V1R9 with APAR OA29019. Exploit the z/OS tracking facility to help you determine if you are using any of the CSVRTLS services (SET RTLS command, DISPLAY RTLS command, and CSVRTLS macro):
  - For z/OS V1R11, see APAR OA29019.
  - For z/OS V1R10 and z/OS V1R9, install PTF UA50068 for APAR OA29019.
- In a future release of z/OS, the BIND 9.2.0 function will be removed from the z/OS Communications Server component. Customers who currently use or plan to use the z/OS BIND 9.2.0 function as a caching-only name server should use the Resolver cache function, which will be available in z/OS V1.11, to cache DNS responses. Customers who currently use or plan to use the z/OS BIND 9.2.0 function as a primary or secondary authoritative name server should investigate using BIND on Linux for System z.
- The msys for Setup element of z/OS will be removed in the release following z/OS V1.11. IBM intends to continue to deliver improvements to help with z/OS setup and configuration in the future.
- In a future release, IBM plans to withdraw support for 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/or the IBM Directory Server as replacement strategies for each of the DCE technologies. See the DCE Replacement Strategies Redbook for more details: <http://www.redbooks.ibm.com/redbooks/pdfs/sg246935.pdf>
- In a future release, IBM plans to withdraw support for the z/OS Distributed File Service support that utilizes the Distributed Computing Environment (DCE) architecture. IBM recommends the z/OS Network File System (NFS) implementation as the replacement. The Distributed File Service also supports the Server Message Block (SMB) architecture. Support for SMB remains, and is not affected by this withdrawal of support.
- In a future release, IBM plans to withdraw support for z/OS UNIX System Services Connection Scaling, specifically the Connection Manager and Process Manager components.
- In IBM United States Software Announcement 204-180 dated August 10, 2004, IBM announced its intent to withdraw support for VSAM IMBED, REPLICATE, and KEYRANGE attributes in a future release. Based on customer feedback, IBM no longer plans to remove this support from z/OS in the foreseeable future. IBM still recommends that you stop using these attributes and plans to remove IMBED and REPLICATE attributes during logical DFSMSdss restore operations and DFSMSHsm recall operations as announced in IBM United States Software Announcement 207-175 dated August 7, 2007. For information about how to detect IMBED and REPLICATE attributes on existing data sets and catalogs, refer to INFO APAR II13894.



## z/OS Ordering and Deliverable Key Dates

Key Dates for recent z/OS releases:

- **August 18, 2009:** z/OS V1.11 CFSW configurator support for stand-alone path (5694-A01) and price proposal support.
- **September 11, 2009:** First date for ordering z/OS V1.11 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 25, 2009:** z/OS V1.11 general availability via ServerPac, CBPDO and SystemPac.
- **October 13, 2009:** Recommended last date for submitting z/OS V1.10 orders via the entitled Customized Offerings (ServerPac and CBPDO). This date will allow for adequate order processing time.
- **October 26, 2009:** Last date for processing orders for z/OS V1.10 via ServerPac and CBPDO.
- **November 20, 2009:** General availability of Cryptographic Support for z/OS V1R9-R11 Web deliverable. This Web deliverable will support z/OS V1.9 through z/OS V1.11.
- **June 28, 2010:** Recommended last date for submitting z/OS V1.10 orders via the fee Customized Offering SystemPac. This date will allow for adequate order processing time.
- **July 26, 2010:** Last date for processing orders for z/OS V1.10 via SystemPac.
- **September 30, 2010:** End of service for z/OS V1.9 (5694-A01).
- **September 2010:** Planned availability date for z/OS R12.

## 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:

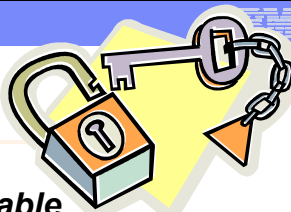
1. Allocate a R/W HFS or zFS directory on the z/OS driving system where the package will be staged (optional).
2. Download both parts of the package from the download zone:  
<http://www.ibm.com/eserver/zseries/zos/downloads/>
3. Run the sample job provided in the README.TXT file. The job will invoke 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.

**Cryptographic Support for z/OS V1R9-R11 Web deliverable** (ICSF FMID HCR7770) was available on November 20, 2009. This Web deliverable supports z/OS V1.9 through z/OS V1.11. This Web deliverable contains support for:

**Extended PKCS11 Support:** With the focus on data security, cryptographic services must be continuously available. New ICSF designs that use integration between hardware and software components are intended to help improve the availability of z/OS host applications. ICSF is planned to provide new functions that allow the IBMPKCS11Impl Java provider to be the sole cryptographic engine. Also, a software cryptographic engine function embedded in ICSF can be used so that no optional cryptographic coprocessors will be required for PKCS11 processing. Additional algorithms planned to be supported are DSA, DH, EC, AES GCM, BLOWFISH, and RC4.

**Elliptical Curve Cryptography (ECC) Support:** ICSF plans support intended to comply with RFC4869 Suite B Cryptographic Suites for Ipsec and the following new clear key algorithms: Galois/Counter Mode encryption for AES (GCM), Elliptic Curve Diffie Hellman key derivation (ECDH), Elliptic Curve Digital Signature Algorithm (ECDSA), and HMAC. This support is also designed to comply with NIST requirements to support a FIPS-140-2 mode of operation for IPsec.

## Crypto Support in z/OS Releases



Release	Level Integrated and Available
z/OS R11	ICSF FMID HCR7751 is incorporated. <ul style="list-style-type: none"> <li>▪ <b>Cryptographic Support for z/OS V1R9-R11 Web deliverable (FMID HCR7770) available on 11/20/09.</b></li> </ul>
z/OS R10	ICSF FMID HCR7750 is incorporated. <ul style="list-style-type: none"> <li>▪ <b>Cryptographic Support for z/OS V1R8-R10 Web deliverable (FMID HCR7751) available on 11/21/08.</b></li> <li>▪ <b>Cryptographic Support for z/OS V1R9-R11 Web deliverable (FMID HCR7770) available on 11/20/09.</b></li> </ul>
z/OS R9	ICSF FMID HCR7740 is incorporated. <ul style="list-style-type: none"> <li>▪ <b>Cryptographic Support for z/OS V1R7-R9 Web deliverable (FMID HCR7750) available on 11/15/07.</b></li> <li>▪ <b>Cryptographic Support for z/OS V1R8-R10 Web deliverable (FMID HCR7751) available on 11/21/08.</b></li> <li>▪ <b>Cryptographic Support for z/OS V1R9-R11 Web deliverable (FMID HCR7770) available on 11/20/09.</b></li> </ul>

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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 R9, R10, and R11.

z/OS Releases and Crypto Web Deliverables		
Deliverable	General availability	Delivery method
<b>z/OS V1R9, FMID HCR7740 Incorporated</b>	September 28, 2007	New release of products
Cryptographic Support for z/OS V1R7-R9 (FMID HCR7750)	November 15, 2007	Web deliverable
Cryptographic Support for z/OS V1R8-R10 (FMID HCR7751)	November 21, 2008	Web deliverable
Cryptographic Support for z/OS V1R9-R11 (FMID HCR7770)	Planned for November 20, 2009	Web deliverable
<b>z/OS V1R10, FMID HCR7750 Incorporated</b>	September 26, 2008	New release of products
Cryptographic Support for z/OS V1R8-R10 (FMID HCR7751)	November 21, 2008	Web deliverable
Cryptographic Support for z/OS V1R9-R11 (FMID HCR7770)	November 20, 2009	Web deliverable
<b>z/OS V1R11, FMID HCR7751 Incorporated</b>	September 25, 2009	New release of products
Cryptographic Support for z/OS V1R9-R11 (FMID HCR7770)	November 20, 2009	Web deliverable
<b>z/OS V1R12, FMID HCR7770 Incorporated</b>	Planned for September 2010	New release of products

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.





## z/OS V1R11 Ordering

**▶ Program Number: 5694-A01**

- **Ensure you order the optional priced and unpriced features that you were using before!**
- **Especially remember your export controlled features, if you desire. Here's the complete list:**
  - **z/OS Security Level 3**
  - **Communications Server Security Level 3**
- ▶ **Ordering consideration for Cryptographic Services:**
  - **ICSF:** since ICSF is integrated into z/OS R11 is *\*not\** the highest level available as of **November 20, 2009 (FMID HCR7770)**. You may want to add the **Web deliverable** to your z/OS system.
  - **Important Future Ordering consideration:**
    - **IBM intends to discontinue delivery of software on 3480, 3480 Compressed (3480C), and 3490E tape media.**
    - **If you must use physical delivery, choose 3590 or 3592 tape media.**
  - **IBM plans to deliver the z/OS Customized Offerings (such as ServerPac, CBPDO...) and service orders on DVD media!**

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### **z/OS V1R11 Ordering**

The program number for z/OS Version 1 Release 11 is **5694-A01**. When ordering this program number, remember to order all the optional features that you were licensed for in previous releases of z/OS.

In z/OS V1R11 there are only two export controlled unpriced features: **z/OS Security Level 3**, and **Communications Server Security Level 3**. z/OS Security Level 3 contains the sub-elements: IBM Tivoli Directory Server for z/OS Security Level 3, Network Authentication Service Level 3, OCSF Security Level 3, and System Secure Sockets Layer (SSL) Security Level 3,

Typically, when one new z/OS release becomes orderable in ServerPac and CBPDO, the previous release is orderable for only a month. Due to this short overlap, it is very important that you order the z/OS release you need for migration and coexistence while it's still available for ordering. Typically, a z/OS release remains orderable in the fee'd deliverable SystemPac longer than in ServerPac.


#### **Important Future Ordering Consideration!**

IBM intends to discontinue delivery of software on 3480, 3480 Compressed (3480C), and 3490E tape media. IBM recommends using Internet delivery when ordering your z/OS products or service which eliminates tape handling. If you must use physical delivery, you may continue to choose 3590 or 3592 tape media. Internet delivery is IBM's strategic delivery method, therefore future software delivery enhancements will be focused on Internet delivery.

#### **Statement of Direction for DVD!**


IBM intends to provide the capability to deliver the z/OS Customized Offerings (such as ServerPac, CBPDO, Customized Offerings Driver, SystemPac, ProductPac) and service orders on DVD media. Though IBM recommends using Internet delivery when ordering z/OS products or service, eliminating tape handling, the option to specify DVD physical delivery may provide an option for those who cannot accept Internet delivery.





## Electronic Deliverables – A Strong Recommendation

- ▶ **If you want to receive z/OS VIRII electronically, you must order it via ShopzSeries. Some big advantages to installing electronically:**
  - ▶ **No tapes! No tapes! No tapes!**
  - ▶ **Faster delivery**
- ▶ **Some important considerations for installing electronically:**
  - ▶ **Driving system requirements (see later in this presentation)**
  - ▶ **Temporary file system space**
    - ▶ **Depends on order size, but can range between 10-20G.**
  - ▶ **Connectivity with firewall**
- ▶ **Download times are not an important consideration, as a two-phase download is done. You don't wait for the whole order to download before you can begin to install it !**



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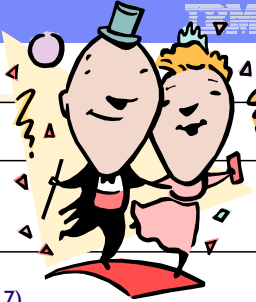
### Ordering and Installing z/OS R11 Electronically!

Internet delivery is the newer medium and, like tape, can be used for all products, that is, z/OS and products that run on z/OS. You must place the order using ShopzSeries (<http://www.ibm.com/software/shopzseries>). You can install the order using ServerPac, CBPDO, or SystemPac. ShopzSeries generates a customized download page for each order; the page includes order content and instructions. Support to install Internet orders has been added to the CustomPac Installation Dialog and CBPDO installation process.

A typical z/OS-only ServerPac or SystemPac order is approximately 10 GB (compressed) in size, but it could be much larger than that depending on what you order. A typical SystemPac order with multiple SRELS is approximately 14 GB (compressed) in size. A typical subsystem ServerPac or SystemPac order is approximately 1 GB (compressed) in size. You will know the size of your order when it is ready to download (the size can be found in the *CustomPac Dialog Information* document). As a general rule, you should have file system space equal to twice the order size, to allow it to be processed.

If you are downloading your order, the **entire** download might take considerable time. However, the download is done in two phases, and the first phase will usually not take very long (just a couple of minutes). Once it has finished, you can begin to use the dialog to configure your new order while the second phase is occurring. The RECEIVE job will send you a message to tell you when the dialog is ready to be used if you are logged on and have INTERCOM set in your TSO/E Profile. To see whether you have INTERCOM set, issue the PROFILE command from the TSO/E Ready prompt or ISPF Option 6. To set INTERCOM, issue PROFILE INTERCOM.

Before downloading your order, you must understand your network security environment. For example, does a z/OS image have access to the Internet? Are there security concerns for downloading to a workstation or transferring files to the host? If you are planning to download directly to z/OS, you must be familiar with the security and networking information required to navigate your enterprise's firewall from z/OS.

<b>Other Popular Products for z/OS</b>		
<ul style="list-style-type: none"> <li>▶ <b>IBM SMP/E for z/OS, V3.5 (5655-G44)</b> <ul style="list-style-type: none"> <li>• Same as incorporated into R10. Runs back on R7, R8, and R9!</li> </ul> </li> <li>▶ <b>IBM Debug Tool for z/OS V9 R1 (5655-U27) and V10 R1 (5655-V50)</b> <ul style="list-style-type: none"> <li>• Debug Tool no longer incorporated, as of z/OS R5</li> </ul> </li> <li>➤ <b>Print Services Facility Version 4.3 (5655-M32)</b></li> <li>▶ <b>IBM Ported Tools for z/OS (5655-M23)</b> - provides OpenSSH function!</li> <li>▶ <b>IBM Ported Tools for z/OS: Perl Feature (5655-M23)</b>- port of the Perl (version 5.8.7)</li> <li>▶ <b>IBM Ported Tools for z/OS: PHP Feature (5655-M23)</b>- port of the PHP (version 5.1.2)</li> <li>▶ <b>IBM Ported Tools for z/OS: Suppl Toolkit Feature (5655-M23)</b>- initially delivering bzip2, then service has added IRMM CLI and cURL 7.16.1</li> <li>▶ <b>IBM Ported Tools for z/OS: IBM HTTP Server V7.0 Feature (5655-M23)</b>- an HTTP Server, based on Apache Software Foundation's Apache HTTP Server, version 2.2.8</li> <li>▶ <b>XML Toolkit for z/OS V1 R9 (5655-J51)</b> <ul style="list-style-type: none"> <li>• Contains XML V1R8 and V1R7 levels, as well</li> </ul> </li> <li>▶ <b>XML Toolkit for z/OS V1 R10 (5655-J51)</b> – only contains XML V1R10 level</li> <li>➤ <b>IBM 64-bit SDK for z/OS, Java 2 Technology Edition, V5 (5655-N99)</b> <ul style="list-style-type: none"> <li>• Can be ordered and can coexist with <b>IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V5 (5655-N98)</b></li> </ul> </li> <li>➤ <b>IBM 64-bit SDK for z/OS, Java 2 Technology Edition, V6 (5655-R32)</b> <ul style="list-style-type: none"> <li>• Can be ordered and can coexist with <b>IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V6 (5655-R31)</b></li> </ul> </li> <li>• <b>SDK Note: IBM 64-bit SDK for z/OS, Java 2 Technology Edition, V1.4 is now out of service, as of Sept 30, 2008. IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V1.4 will be out of service, as of Sept 30, 2011.</b></li> </ul>		
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### **Some Popular Products to Consider Using and Ordering with z/OS**

#### **SMP/E for z/OS and OS/390 Version 3 Release 5 (5655-G44)**

SMP/E for z/OS V3.5 provides the following enhancements:

#### **Simplifying PSP buckets**

SMP/E has been extended to help simplify the task of verifying that required software fixes identified in the Preventive Service Planning (PSP) buckets have been installed. PSP buckets identify required software fixes for new hardware devices, toleration and coexistence of new software releases, and enabling new functions. IBM will consolidate the lists of required fixes from the PSP buckets and produce new Fix Category (FIXCAT) HOLDDATA to identify those fixes. Some example fix categories are IBM.Device.Server.z10-EC-2097 and IBM.Coexistence.z/OS.V1R10. The new type of ++HOLD statement will be used to identify APARs, their fix categories, and the PTFs that resolve the APARs.

Just like Error HOLDDATA, the new FIXCAT HOLDDATA will be delivered by IBM as part of all corrective service, preventative service, and product orders such as SMP/E Internet Service Retrieval (the SMP/E RECEIVE ORDER command), ShopzSeries, ServiceLink, TechSupport, and the Customized Offerings such as CBPDO, ServerPac, and SystemPac. It will also be available independently on an IBM Internet server (<http://service.software.ibm.com/holddata/390holddata.html> )

#### **Important toleration action:**

SMP/E releases prior to SMP/E V3.5 cannot process the new FIXCAT HOLDDATA. If you use a prior SMP/E release, you must install toleration APAR IO07480 (PTF UO00700 for SMP/E V3.3 or UO00701 for SMP/E V3.4) to allow those releases to silently ignore the FIXCAT HOLDDATA.

When FIXCAT HOLDDATA statements are received into a global zone, SMP/E will assign the fix category values as sourceids to the PTFs that resolve the APARs. These sourceids will then simplify selecting and installing the 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 FIXCAT operand. This tells SMP/E to process only FIXCAT HOLDDATA for the categories you specify, and all others are ignored.

Finally, SMP/E will use the new FIXCAT HOLDDATA to identify what required fixes are missing. A new REPORT MISSINGFIX command will analyze the new 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.

### **Fix Category Explorer**

To complement the new FIXCAT HOLDDATA, SMP/E has added a new Fix Category Explorer dialog. This dialog provides a hierarchical view of all fix categories from all FIXCAT HOLDDATA in the global zone and provides an easy method to manage the list of fix categories that are interesting to you. The Explorer dialog even identifies new Fix Categories that have been defined since the last time you used the dialog. The Fix Category Explorer is integrated into the existing SMP/E dialog options, and can be used, for example, in the Administration dialog to manage a permanent list of interesting fix categories stored in an OPTIONS entry, or to select fix categories of interest to be specified on an APPLY, ACCEPT, or REPORT MISSINGFIX command in the Command Generation dialog.

### **Long sourceids**

SMP/E has increased the maximum length allowed for a sourceid value from 8 to 64 characters to support more meaningful and easily recognized values. For example, sourceid values such as IBM.Device.z10-EC-2097 and IBM.Coexistence.z/OS.V1R10 will be possible. In addition, the wildcard characters "\*" and "%" can be used to implicitly select a list of sourceids for SMP/E commands that support their use. Sourceids may be defined on ++ASSIGN statements, defined on the SOURCEID operand of the RECEIVE command, and derived from fix categories specified on FIXCAT HOLDDATA statements.

### **ZONEEDIT command enhancements**

The ZONEEDIT command has been extended to allow wildcard specification in the conditional CHANGE subcommand, and to allow the UNIT, VOLUME, and WAITFORDSN subentries for DDDEF entries to be added if they do not already exist. Formerly the ZONEEDIT command only allowed existing subentries to be changed, but did not allow subentries to be added. If you prefer to keep your target or distribution library data sets uncataloged, then this change makes it easier for you, for example, to add the necessary UNIT and VOLUME subentries for DDDEF entries defined by a ServerPac.

### **HTTPS and FTP reconnect and retry support**

SMP/E has added reconnect and retry capabilities for HTTPS and FTP operations that fail due to apparent network outages and anomalies. This will help prevent SMP/E RECEIVE command and GIMGTPKG service routine failures because of short-lived network outages.

### **Support for FTP client parameters**

SMP/E will now allow user-specified parameters to be passed to the FTP client program for SMP/E FTP operations during the RECEIVE command and the GIMGTPKG service routine. A new FTPOPTIONS tag may be specified in the CLIENT or SMPCLNT data set to identify any parameters that SMP/E should pass to the FTP client program. This is most useful when you need to override the FTP.DATA configuration file used by the FTP client program.

### **RECEIVE ORDER command enhancements**

The RECEIVE ORDER command has been extended to resubmit orders when the request cannot be completely satisfied. This helps to ensure you obtain as much of your desired PTFs and HOLDDATA as possible, and eliminates the need to submit follow-on orders. Specifically, if an order request for CRITICAL, RECOMMENDED, or ALL PTFs results in no applicable PTFs, SMP/E will resubmit the order to obtain the latest HOLDDATA. When PTFs specified by name, or PTFs to fix specified APARS are requested, but not all requested PTFs are found or available, SMP/E will resubmit the order to only obtain those requested PTFs that can be found by the server. In addition, when a requested order cannot be fulfilled within the WAIT time specified (or defaulted), SMP/E will now end the RECEIVE command with a return code of 12 rather than 4. This helps differentiate a failing operation from a successful one.

### **HOLDDATA report changes**

SMP/E has defined a new report destination, SMPHRPT, for HOLDDATA reports. If the SMPHRPT DD name is allocated (either by DD statement or DDDEF entry), the HOLDDATA reports produced by the RECEIVE, APPLY, and ACCEPT commands will be written to this DD name while other reports are written to the SMPRPT DD name. If the SMPHRPT DD name is not allocated, all reports are written to SMPRPT. If you do not want to review the APPLY, ACCEPT, or RECEIVE command HOLDDATA reports, you can define SMPHRPT as a DUMMY data set. In addition, the Bypassed HOLD Reason Report for the APPLY and ACCEPT commands will now include only bypassed HOLDDATA for SYSMODs that are successfully applied or accepted. No longer will bypassed

HOLDDATA for SYSMODS that fail command processing appear in the report. This eliminates clutter and limits the report to only the HOLDDATA that must be reviewed or acted upon. Finally, suppressed reasonids will be consolidated and reported only once per FMID in the APPLY and ACCEPT command HOLDDATA reports. Formerly reasonids were reported once per SYSMOD and that contributed to the clutter and the large output. Reasonids to be suppressed are defined in the SUPPHOLD subentry of the active OPTIONS entry.

#### **BYPASS (HOLDSYS) message severity changes**

During APPLY and ACCEPT command processing SMP/E writes messages to identify SYSTEM HOLD conditions that have been bypassed. In prior SMP/E releases these messages had a severity of Warning and resulted in a minimum overall return code for the command of 4. With SMP/E V3.5, Informational messages will be written for bypassed SYSTEM HOLD conditions instead of Warning messages. This change to use Informational messages will result in a minimum overall return code for the command of 0 rather than 4 when SYSMOD HOLDS are bypassed, and helps make it easier for you to determine if the APPLY or ACCEPT operation was successful or not by simply inspecting the overall return code. To change APPLY and ACCEPT command processing to write Warning messages for bypassed SYSTEM HOLD conditions, use the new COMPAT(WARNBYPASS) execution parameter for program GIMSMP.

#### **SMP/E dialog enhancements**

The SYSMOD Management dialog will now allow all SYSTEM HOLDS to be bypassed easily with one action. To accomplish the same result, formerly you were required to select each unique reasonid. In addition, the REDO operand may now be specified for the APPLY and ACCEPT commands. In the Order Management dialog, when an ORDER entry is deleted from the global zone, the associated package directory within the SMPNTS will now also be deleted.

#### **UNIX file Utility Input for LMODs**

SMP/E has been extended to allow definition side deck files stored in the z/OS UNIX System Services file system to be included easily during link-edit operations. Specifically, in addition to members of partitioned data sets, relative file names can now be used as utility input on INCLUDE statements in JCLIN link-edit steps. This change is designed to make it easier for product packagers to use definition side deck files that reside in the z/OS UNIX file system.

### **IBM Debug Tool for z/OS Version 10 Release 1 (5655-U27)**

IBM Debug Tool for z/OS V10 includes the following enhancements:

#### **Business flexibility**

- The Debug Tool CICS Control (DTCN) Primary Menu screen is enhanced to support both a Load Module Name resource and a Compile Unit Name resource. The combination of a Load Module Name resource and a Compile Unit Name resource provides additional granularity which helps in identifying the program you want to debug.
- A RESTful HTTP access interface to read, create, update, and delete profiles in the DTCN profile repository is supported. A GUI interface allows you to manipulate the profiles from the workstation.
- Debug Tool now supports debugging C and C++ programs that run in the Airline Control System (ALCS). This support is available only if you debug in remote debug mode.
- The publication, *The IBM Debug Tool Customization Guide* now provides instructions for defining Terminal Interface Manager as an application under IBM Session Manager.
- Currency support for IMS V11 and CICS TS V4.1 is provided.

#### **IT simplification**

- Support is added for debugging of modules loaded from the Library Lookaside (LLA).
- The CODEPAGE(ccsid) option is added to the XML option of the LIST CONTAINER and LIST STORAGE commands to improve the display of character strings on a 3270 that are encoded in alternate code pages.
- The command SET MONITOR LIMIT is added so that the monitor window can display more than 1000 lines. QUERY MONITOR LIMIT will display the monitor limit setting.

- Support is added for multiple concurrent updates of variable values in the monitor window.
- A new command POPUP, is provided to open a Command window to improve the ability to enter a long Debug Tool command. In addition, the Command window is automatically displayed when the user enters a command continuation character or starts a multiline command. A SET POPUP command is also included to control the size of the Command window.
- A new command, FINDBP, is provided which will help you easily find line, statement, and offset breakpoints in the Source object while in full-screen mode.
- A new command is added, POSITION nnnn, to position to a line in the selected window.
- A new CICS Screen Control Mode, using the new DTSC transaction to improve the control and management of debug sessions in an MRO environment is provided.
- Set and Query IgnoreLink for CICS in remote debug mode is supported.
- Automatic saving and restoring of settings and breakpoints is now supported under IMS/TM.
- The EQASET transaction can now be used to associate an IMS LTERM with a TSO user ID when the Debug Tool IMS Language Environment® exit is used and the user has not signed on.
- The ability to display a complex data item such as a group or a structure as a single character string is added in remote debug mode.
- The LIST TITLED WSS command can now be used in the MONITOR command to place the variables defined in the Working-Storage section of a COBOL program into the monitor window.
- Display of COBOL DISPLAY messages in the debug console when in remote debug mode is supported.
- Enterprise PL/I %INCLUDE files and C/C++ header files support is enhanced in remote debug mode.
- Support is added for On Demand Load and Capture Source for C and C++ debug side files created with the DBGLD and CDADBGLD utilities shipped with the z/OS V1.11 XLC C/C++ compiler.
- Support is included for an additional processing mode for STEP OVER in Assembler compile units for "calls" whose target is an internal routine within the same compile unit. This new mode is enabled by the SET ASSEMBLER STEPOVER EXTINT statement.
- AT® CHANGE monitoring of assembler variables with dynamically updated addresses such as those in a DSECT is added.
- Support for the L (LIST) and M (MONITOR) prefix commands is extended to Assembler and Disassembly.

### Governance

- The EQASET transaction is enhanced to associate debug parms with LTERM ID if signon security is disabled and the user has not signed on.
- Support is added to run in Browse Mode. In this mode, modifications to storage or registers and modifications to control flow (for example, using the GOTO or JUMPTO commands) are not allowed. Browse Mode allows debugging of a program but does not allow the user to change the behavior of the program. This may be desirable in a production environment to prevent unauthorized changes to the program behavior.
- You can now show column 73-80 in a source view for a COBOL program.

### IBM Debug Tool for z/OS Version 9 Release 1 (5655-U27)

IBM Debug Tool for z/OS helps examine, monitor, and control the execution of application programs by letting you:

- Interactively debug an application as it runs
- Perform seamless debugging of mixed-language applications
- Make adjustments to your application while debugging
- Display, monitor, and alter program variables

Debug Tool also supports many programming languages and numerous execution environments.

IBM Debug Tool for z/OS V9.1 replaces all prior versions of both IBM Debug Tool for z/OS and IBM Debug Tool Utilities and Advanced Functions for z/OS. Debug Tool for z/OS V9.1 includes all of the function in the previous separate products as well as the new V9.1 function. Delivering this single comprehensive product provides significantly more function to existing Debug Tool for z/OS customers, and will help simplify ordering and installation. Current licensees of IBM Debug Tool Utilities and Advanced Functions Subscription and Support (5655-J19) are entitled to Debug Tool for z/OS V9.1. That existing 5655-J19 S&S offering is renamed IBM Debug Tool Subscription and Support. Existing Debug Tool for z/OS customers, looking to upgrade, will need to order the improved Debug Tool for z/OS V9.1 (5655-U27). It is recommended that they obtain the IBM Debug Tool Subscription and Support (5655-J19) as well.

Some of the enhancements include:

- A utility has been added to Debug Tool that can help users edit JCL to include Debug Tool enablement so that a debug session is started when the modified JCL is submitted for execution.
- You can now create CICS DTCN debugging profiles that persist across region termination and restart, and after the terminal that was used to create the profile has been disconnected.
- CICS DTCN users can now identify the program to debug by the data passed to the program through a COMMAREA or container in the current channel when the program is invoked.
- CICS DTCN users can now invoke Debug Tool at a program boundary for a CICS task that has already started.
- The Debug Tool user exit EQUUEDAT will now be invoked for C/C++ files created by the DEBUG(FORMAT(DWARF)) compiler option.
- A recovery routine has been added to handle RACF-compatible security problems when a data set used by a Debug Tool user exit (EQADBCXT, EQADDCXT, EQADICXT) cannot be opened.
- The processing of the Debug Tool user exits (EQADBCXT, EQADDCXT, EQADICXT) has been enhanced so that you can have different TEST runtime options for different programs.
- Some messages have been rewritten to improve message text and explanations.
- ...and many more!

As of z/OS V1R5, optional feature C/C++ *with* Debug Tool is no longer in z/OS. The functional replacement that you will need to order for that feature is the C/C++ *without* Debug Tool feature in z/OS and also the independent standalone program product - IBM Debug Tool for z/OS.

### **Print Services Facility Version 4 Release 3 (5655-M32)**

This latest release, IBM Print Services Facility V4.3, for z/OS helps provide:

- Enhancements to AFP bar code processing to provide more flexibility in applications that use bar codes
- Continued enhancements to AFP architected color management capabilities
- New finishing options for applications that are sent to cut sheet printers to allow them to take fuller advantage of cut sheet printer finishing capabilities and produce more professional looking documents
- Enhancements to AFP Download Plus, a separately priced PSF feature, helps improve processing efficiency and control, reduce z/OS system resource utilization and provide additional information on jobs processed by AFP Download Plus
- Improved messages and error handling to improve quality and assist in diagnosing print processing errors.

The planned general availability date for PSF V4.3 is September 25, 2009.

### **IBM Ported Tools for z/OS Version 1 Release 1 (5655-M23)**

IBM Ported Tools for z/OS is designed to provide the select features of secure shell known as OpenSSH enabling for:

- Authentication for both the client and server
- Privacy through encryption
- Data integrity
- Authorization
- Forwarding or tunneling
- An optional feature of compression
- Communication using SSH1 and SSH2 protocols.

Ordering information: It is an unpriced program product that can be ordered with z/OS. It can run on z/OS R4 and higher. It has been generally available since May 28, 2004. The program numbers are IBM Ported Tools for z/OS (5655-M23) and IBM Ported Tools for z/OS Software and Subscription (5655-M29).

### **IBM Ported Tools for z/OS: Perl for z/OS Feature (5655-M23)**

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](http://www.ibm.com/servers/eserver/zseries/zos/unix/port_tools.html).

Ordering information: Perl for z/OS is an unpriced feature of the IBM Ported Tools for z/OS, an unpriced licensed program. It has been generally available since June 16, 2006. The program numbers are IBM Ported Tools for z/OS (5655-M23) and IBM Ported Tools for z/OS Software and Subscription (5655-M29).

### **IBM Ported Tools for z/OS: PHP for z/OS Feature (5655-M23)**

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.

Ordering information: PHP for z/OS is an unpriced feature of the IBM Ported Tools for z/OS, an unpriced licensed program product. It has been generally available since May 25, 2007. The program numbers are IBM Ported Tools for z/OS (5655-M23) and IBM Ported Tools for z/OS Software and Subscription (5655-M29).

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

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. With the initial delivery, we are delivering 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.
- 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)**



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.

IBM HTTP Server V7.0 is an unpriced feature of the IBM Ported Tools for z/OS unpriced licensed program.

### **XML Toolkit for z/OS Version 1 Release 9 (5655-J51)**

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.

Ordering information: The availability date was June 16, 2006. The program numbers are XML Toolkit for z/OS (5655-J51), and XML Toolkit for z/OS S&S (5655-I30).

### **XML Toolkit for z/OS Version 1 Release 10 (5655-J51)**

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.**

Ordering information: The availability date was December 12, 2008. The program numbers are XML Toolkit for z/OS (5655-J51), and XML Toolkit for z/OS S&S (5655-I30). XML Toolkit for z/OS V1.9 remains orderable, and is orderable with XML Toolkit for z/O V1.10.

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

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)**

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

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)**

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.

Ordering information: The program numbers are IBM 64-bit SDK for z/OS, Java Technology Edition, V6.0.0 (5655-R31), and IBM SDK for z/OS Software Subscription and Support V1.1.0 (5655-I48).


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

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.

Ordering information: The program numbers are IBM 64-bit SDK for z/OS, Java Technology Edition, V6.0.0 (5655-R32), and IBM SDK for z/OS Software Subscription and Support V1.1.0 (5655-I48).

## z/OS Policies



- ▶ **Annual Release Frequency**
  - z/OS VI R11 GA is planned for **Sept 25, 2009**
  - **All z/OS releases are planned for GA every September**
    - *z/OS VIR12 is planned for September 2010.*
- ▶ **Service Support Policy**
- ▶ **Coexistence-Migration-Fallback Policy**

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### Release Frequency


In response to customer feedback that the 6-month release cycle was too short and complicated customer migration plans, IBM announced in August 2002 that the release schedule for z/OS has changed to a 12-month cycle. The vast majority of z/OS customers migrate to new releases every 12 to 18 months. Less frequent releases in the future will allow IBM to provide even more integration testing for z/OS and related IBM middleware. It will also enable IBM to align 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 V1R11 is the sixth release to be delivered on this annual release cycle.*

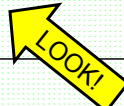
These statements regarding the new release strategy represent current intentions of IBM. Any reliance on these statements is at the relying party's sole risk and will not create any liability or obligation for IBM. All statements regarding IBM's plans, directions, and intent are subject to change or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

## z/OS Service Policy



- ▶ **Release serviceable for three years following GA**
  - ▶ IBM Lifecycle Extension for z/OS V1.7 (5637-A01) is a fee-based offering
  - ▶ IBM Lifecycle Extension for z/OS V1.8 (5638-A01) is a fee-based offering
- ▶ **At least 12 months notice before withdrawing service**
- ▶ **Handy website:**  
[http://www.ibm.com/servers/eserver/zseries/zos/support/zos\\_eos\\_dates.html](http://www.ibm.com/servers/eserver/zseries/zos/support/zos_eos_dates.html)

	GA Date	End of Service Date
z/OS V1R6	24 Sept 2004	Occurred on 30 Sept 2007
z/OS V1R7	30 Sept 2005	Occurred on 30 Sept 2008 (see above!)
z/OS V1R8	29 Sept 2006	Occurred on 30 Sept 2009 (see above!)
z/OS V1R9	28 Sept 2007	Announced to occur on 30 Sept 2010 (and SMP/E V3.4!)
z/OS V1R10	26 Sept 2008	Planned to be Sept 2011
z/OS V1R11	25 Sept 2009	Planned to be Sept 2012



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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 * *See "z/OS V1.7 Lifecycle Extended Service" below for a fee-based accommodation.
z/OS V1R8	29 September 2006	Occurred 30 September 2009 *See "z/OS V1.8 Lifecycle Extended Service" below for a fee-based accommodation.
z/OS V1R9	28 September 2007	30 September 2010 (announced)
z/OS V1R10	26 September 2008	September 2011 (planned)
z/OS V1R11	25 September 2009	September 2012 (planned)

### **z/OS V1.7 Lifecycle Extended Service**

To address our customer requirements of support and service IBM is announcing a special extended lifecycle accommodation (5637-A01) exclusively for z/OS V1.7. z/OS V1.7 offered many advances in platform simplification, security, availability, and application development capabilities making it one of the most popular releases of z/OS ever.

The IBM Lifecycle Extension for z/OS V1.7 provides corrective service, which is a work around or fix to a problem. If you are licensed for the IBM LifeCycle Extension for z/OS V1.7 problem reporting remains unchanged. The IBM Support Center can be contacted to report problems that may be associated with z/OS V1.7. The IBM Support Center will provide a fix or circumvention for new problems that are defects in z/OS V1.7. Any PTF for z/OS V1.7 that was available prior to the end of z/OS V1.7 warranty period (September 30, 2007) will continue to be available through the existing service acquisition portals such as SMP/E RECEIVE ORDER and ShopzSeries.

***The IBM LifeCycle Extension for z/OS V1.7 does not provide preventive service or new function, nor does it provide any extension or changes to IBM's coexistence or migration policy for z/OS.***

Customers with SoftwareXcel or SupportLine support should contact their IBM representative, an IBM Business Partner, or the IBM Call Center for additional information.

- Starting October 1, 2008, IBM will offer a fee-based, corrective service extension for up to a 2 year period following the z/OS V1.7 discontinuance of the warranty service (September 30, 2008). This support enables users who have not completed their migration to z/OS V1.8 or z/OS V1.9 to continue to receive corrective service for z/OS V1.7 in the 2 year period of October 1, 2008 through September 30, 2010
- Available as a six month minimum purchase with the option of either:
  - Purchasing the support for a longer period OR
  - Extending the existing purchase period in increments of one month

If you purchase the IBM Lifecycle Extension for z/OS V1.7, you must license it for all IBM z/Architecture servers running z/OS V1.7; however, you may specify unique duration periods for servers migrating their z/OS V1.7 images on differing schedules.

### **z/OS V1.8 Lifecycle Extended Service**

The IBM Lifecycle Extension for z/OS V1.8 (5638-A01) provides fee-based corrective service (a fix, bypass, or restriction to a problem) beyond the September 30, 2009, withdrawal of program services date for z/OS V1.8 (5694-A01). If you acquire the IBM Lifecycle Extension for z/OS V1.8, 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 V1.8, and the IBM Support Center will provide a fix, bypass, or restriction for new problems that are defects in z/OS V1.8. Any PTF for z/OS V1.8 that was available prior to the withdrawal of z/OS V1.8 program services (September 30, 2009) will continue to be available through the existing service acquisition portals such as SMP/E RECEIVE ORDER and ShopzSeries.

Starting October 1, 2009, IBM will offer a fee-based, corrective service extension for up to a 2-year period following the z/OS V1.8 discontinuance of program services (September 30, 2009). This support enables users who have not completed their migration to z/OS V1.9 or z/OS V1.10 to continue to receive corrective service for z/OS V1.8 in the 2-year period of October 1, 2009, through September 30, 2011. ***This does not alter the z/OS coexistence, migration, fallback, or service policy.***

The Lifecycle Extension for z/OS V1.8 is flexible, with a minimum 3-month purchase and a maximum period of duration through September 30, 2011. This supports variable migration plans, where you could have differing migration schedules either for single machines or within a Parallel Sysplex. Lifecycle Extension must be ordered for all machines running z/OS V1.8 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 V1.8 as your migration plans progress.

You must notify IBM if:

- The permanent MSUs change for any IBM z/Architecture machine running z/OS V1.8
- You add or remove an IBM z/Architecture machine that is running z/OS V1.8
- You add or remove z/OS V1.8 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 R11 Coexistence

With z/OS V1.7 Lifecycle Extended Service  
With z/OS V1.8 Lifecycle Extended Service

- **Starting with z/OS R6, IBM has aligned the coexistence, fallback, and migration policy with the service policy.**
- **z/OS R9, z/OS R10, and z/OS R11** are supported for coexistence, migration, and fallback
- **If you stage your JES2 or JES3, then you may use with z/OS R11:**
  - z/OS R9 JES2 (with z/OS R9 SDSF) and z/OS R10 JES2 (with z/OS R10 SDSF) are supported for coexistence, migration, and fallback
  - Note that SDSF is aligned with the JES2 release.
  - z/OS R9 JES3 and z/OS R10 JES3 are supported for coexistence, migration, and 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 R11 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.

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 V1R11 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 V1R11 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 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 V1R11 is coexistence, fallback, and migration supported with the following two z/OS releases: V1R10 and V1R9.** This means that:

- Coexistence of a V1R11 system with a V1R10 or V1R9 system is supported.
- Fallback *from* V1R11 to V1R10 or V1R9 is supported.
- Migration *to* V1R11 *from* V1R10 or V1R9 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 V1R11 JES2 and JES3 are coexistence, fallback, and migration supported with the following JES releases: V1R11, V1R10, and V1R9.**

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 JES2 and SDSF releases allowed with z/OS V1R11 BCP are shown below. Note that the SDSF release level must be the same as the JES2 release level. Before z/OS V1R9, the SDSF release level had to be the same as the BCP release level.

BCP release	JES2 release allowed	SDSF release allowed
R11	R9	R9
	R10	R10
	R11	R11

The JES3 and SDSF releases allowed with z/OS V1R11 BCP are shown below. Note that SDSF is supported with JES3, starting with z/OS V1R10. Before z/OS V1R10, SDSF was supported only with JES2.

BCP release	JES3 release allowed	SDSF release allowed
R11	R9	Not allowed with JES3
	R10	R10
	R11	R11

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	Releases that	Explanation (see note 2)
------	---------------	--------------------------

release (see note 1)	are coexistence, fallback, and migration supported with the release in column one (see note 1)	
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.
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. <b>However, R4 is not coexistence, fallback, and migration supported with R8.</b> 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	Planned availability for R12 is September 2010. At that time, R10 is planned to be the oldest release that is service supported and therefore the oldest release that is coexistence, fallback, and migration supported with R12.
Notes:		
<ol style="list-style-type: none"> <li>For readability, the version numbers have been omitted from the releases shown. Also, release numbering of future releases (later than R7) is for illustrative purposes and is not a guarantee of actual release numbers.</li> <li>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.</li> </ol>		

## Positioning for z/OS R11




- ▶ **Read Documentation and PSP buckets**
  - z/OS *Migration* and z/OS *Planning for Installation*
  - Software PSP buckets: ZOSVIRI1: ZOSGEN, SERVERPAC, ...
  - Use FIXCATs or the EPSPT tool for PSP bucket verification!
- ▶ **DASD Storage Requirements for z/OS R11:**



	z/OS R9	z/OS R10	z/OS R11
<b>Target</b>	6,400	6,700	6,063
<b>DLIB</b>	8,900	9,200	8,781
<b>File System</b>	2,900	3,100	3,100

sizes in 3390 cylinders

The 3390-6 limit is 6678 cylinders !!!



Approaching 3390-3 limit of 3339 cylinders !!!

- ▶ **Ensuring System Requirements Are Satisfied**
  - Driving System Requirements
  - 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 V1R11 *Migration* (GA22-7499-16) - use the "January 2010" level.
- z/OS V1R11 *Planning for Installation* (GA22-7504-22) - use the "January 2010" level.
- zSeries *Platform Test Report for z/OS and Linux Virtual Servers* (formerly, the z/OS *Parallel Sysplex Test Report*)
- z/OS V1 R11 *Introduction and Release Guide* (GA22-7502)

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 is handy for coexistence service as mentioned later in this presentation)
- 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 (<https://techsupport.services.ibm.com/server/390.psp390>) 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 R11 PSP bucket is ZOSV1R11. 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 ZOSV1R11 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:

- 2097DEVICE for the z10 EC server
- 2098DEVICE for the z10 BC server
- 2094DEVICE for the z9 EC server
- 2096DEVICE for the z9 BC server
- 2084DEVICE for the z990 server
- 2086DEVICE for the z890 server
- 2064DEVICE for the z900 server
- 2066DEVICE for the z800 server

### 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, you can use one of the following methods:

- **Preferred automated method:** Use the SMP/E V3R5 REPORT MISSINGFIX command in conjunction with the FIXCAT type of HOLDDATA. For complete information about the REPORT MISSINGFIX command, see *SMP/E Commands*.
- **Alternative automated method:** Use the Enhanced PSP Tool (EPSPT), and the extract files found at (<http://www14.software.ibm.com/webapp/set2/psp/srchBroker>) . *Note that no extract files will be produced after December 31, 2010, and then this method will be not usable.* The Web site provides a search capability as well as pull down lists for types of PSP buckets. The types supported include Processors, z/OS, and Functions. So you can simply select the processor you are preparing for and click **Go**.

### DASD Storage Requirements

If you are migrating to z/OS R11 from z/OS R9 or you will have a different product set than your previous release, you will see increased need for DASD. How much more depends on what levels of products you are running. Keep in mind the DASD required for your z/OS system includes (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*.

For z/OS R11:

- The total storage required for all the target data sets is 6,063 cylinders on a 3390 device. **It is strongly recommended that review the size of your existing target volumes and plan for the required target volume storage for z/OS R11.**

- The total storage required for all the distribution data sets listed in the space table is 8,781 cylinders on a 3390 device.



- The total file system (HFS or zFS) storage is 3,100 cylinders on a 3390 device for the ROOT and 50 cylinders for the /etc file system. For the CIM element, the space required for the /var VARWBEM file system is 50 cylinders. **It is strong 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.



## Driving System Requirements - ServerPac via Tape



### ▶ Minimum to Install z/OS R11 ServerPac via tape:

1. Either of the following:
  - **z/OS R9**, or
  - Customized Offerings Driver V3 (575I-COD, a subset of z/OS R9 with SMP/E V3R5)
2. ...plus the same requirements since z/OS R8 for OMVS address space, LE run-time options, ...

### ▶ Minimum to Service the New Target System:

- Includes shipped levels of **program binder**, **SMP/E**, and **HLASM**, and **UNIX System Services** requirements!

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## Driving System Requirements - Electronic ServerPac



### ▶ **Electronic delivery is available for those locations that can order z/OS products via ShopzSeries.**

- ▶ Can choose between tape and electronic delivery
- ▶ **Must** be ordered from ShopzSeries to obtain electronic delivery

### ▶ **Minimum to Install z/OS R11 ServerPac via electronic delivery:**

- Must meet the tape requirements (on the previous foil)
- And to verify integrity of the data within the package SHA-1 hash values are used, must have either:
  - **ICSF** configured and active (which is preferred, for performance)
  - **-or-** **IBM SDK Java 2 Technology Edition V1.4 or later** (ICSF is **not** necessary in this case!).

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## 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 R11 GA, this driver is a subset of a z/OS R9 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 DFSMSdfp, 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 R11

Driving system requirements for installing z/OS R11 by way of ServerPac or dump-by-data-set SystemPac are:

- *An operating system:* Use either of the following:
  - z/OS V1R9 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 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 OS/390, Java 2 Technology Edition. z/OS V1R10 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*.
- *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 R11 (and Installing CBPDO)

After installing via ServerPac, you will eventually want to install service on your z/OS R11 system. The driving system to install service on your z/OS R11 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 R11 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 R11 Wave 0:

- z/OS R9 or later.
- The Customized Offerings Driver V3 (5751-COD).

#### z/OS R11 CBPDO: Driving System Wave 1 (and to service a ServerPac system)

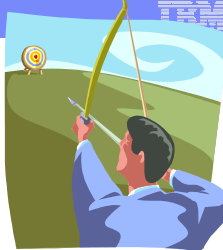
In Wave 1 you install most of the elements and features. The driving system requirements for installing Wave 1 are:

- *An operating system:* Use any of the following:
  - z/OS R9, except that the **program binder**, **HLASM**, and **SMP/E** must be at the current (latest) levels. To satisfy the binder and SMP/E requirements, you can use a STEPLIB DD statement to access the z/OS V1R11 program binder and z/OS V1R11 SMP/E (V3R5) in the Wave 0 target system's SYS1.MIGLIB data set, and to access the z/OS V1R11 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 LNKLST concatenation. If you don't add SCEERUN to your LNKLST, 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 LNKLST 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 R11 CBPDO: Driving System Wave 2**

In Wave 2 you install the z/OS V1R11 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.

## Target System Requirements for z/OS R11



- ▶ **Software Requirements**
  - Coexistence Software (on Other Target Systems)
  - Correct Levels of IBM Non-z/OS and Non-IBM Products
    - If the IBM products are still service-supported, they may be used on z/OS V1R11, **with some exceptions** found in *z/OS V1R11 Planning for Installation*, Appendix B.
  - Functional Requirements
    - Some functions may need specific SW or HW levels for exploitation.
  
- ▶ **Hardware Requirements**
  - Processor Requirements:
    - **IBM System z server: z10, z9, z990, z890, z900, or z800**
  - Coupling Facility: see <http://www.ibm.com/eserver/zseries/psocftable.html>
  - Current CFCC level is I6. Use CFSIZER for planning structure sizes to get to the current CFCC level.

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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 IBM software products that run with z/OS, and which are documented in *z/OS V1R11 Planning for Installation* Appendix, are documented slightly differently than they had been. 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 R11.

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 R11, and what is currently orderable.

If you're migrating to z/OS V1R11, 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/isv110.html> for z/OS R10 support. See <http://www.ibm.com/systems/z/os/zos/software/isv111.html> for z/OS R11 support at z/OS R11 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>

### 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 V1R11 runs only in

z/Architecture mode, and only on z10, z9, z990, z890, z900 or z800 servers.

### Identifying Processor Requirements

z/OS V1R11 runs on the following IBM System z or their equivalents:

- 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 migrating coupling facility levels, lock, list and cache structure sizes might need to be increased to support new function. **For example, when you upgrade from CFCC level 14 to level 15 the required size of the structure might increase.** This adjustment can have an impact when the system allocates structures or copies structures from one coupling facility to another at different coupling facility levels.

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/>.

<b>Some IBM SW Target System Requirements for z/OS R11</b>	
<b>product name</b>	<b>minimum supported level</b>
<b>CICS TS</b>	<b>V3 R1 + PTFs UK29210, UK29407, and UK40130</b> (V2R2 was end of Service: 4/30/08, V2R3 is end of Service: 9/30/09)
<b>DB2</b>	<b>V8 R1</b> (V7.1 was end of Service: 6/30/08)
<b>IMS</b>	<b>V9 R1 with PTF UK41224</b> (V7 R1 was end of Service: 11/8/05; V8 R1 was end of Service: 11/05/08)
<b>WebSphere Application Serve</b>	<b>V6.0.1 + PTFs UK24272 (which must be applied with PTFs UK24273, UK24327, and UK24438) Will be end of service 9/30/10.</b> (V5.0 was end of service: 9/30/08)
<b>Tivoli OMEGAMON XE</b>	<b>V4.1 + PTFs described in Technote 1382493</b> (V2.2 was end of Service: 9/30/08)
<b>Tivoli System Automation</b>	<b>V3.1 + PTFs Will be end of service 9/30/10.</b> (V2.3 was end of Service: 9/30/07)
<b>IBM SDK Java 2 Tech Edition</b>	<b>V1 R4 Will be end of service 9/30/11.</b> (z/OS R11 is the last release for which SDK1.4 (5655-I56) support is planned)
<b>Tivoli zSecure Suite products</b>	<b>V1 R11</b>

→ Remember to refer to Appendix B in *z/OS R11 Planning for Installation* for exceptions above the minimum service-supported level, and for functional SW requirements.

→ 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 R11

For the list of the IBM software products that run on z/OS R11 (above minimum service-supported levels, or those with specific PTF requirements), refer to Appendix B of *z/OS R11 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/>.

z/OS R11 is the last release for which SDK1.4 (5655-I56) support is planned. On z/OS V1.11, these z/OS Java products are supported until withdrawn from service:



- IBM 31-bit SDK for z/OS, Java Technology Edition, Version 6.0 (5655-R31)
- IBM 64-bit SDK for z/OS, Java Technology Edition, Version 6.0 (5655-R32)
- IBM 31-bit SDK for z/OS, Java 2 Technology Edition, Version 5.0 (5655-N98)
- IBM 64-bit SDK for z/OS, Java 2 Technology Edition, Version 5.0 (5655-N99)
- IBM SDK for z/OS, Java 2 Technology Edition, Version 1.4 (5655-I56). Note that the announced end of service for this product is September 30, 2011.

For more information about z/OS Java SDK products see <http://www.ibm.com/servers/eserver/zseries/software/java/>.



## SMP/E V3R5's support for FIXCAT HOLDDATA

### For Target System PTF Verification (*new!!*)

- **A HOLDDATA type FIXCAT (fix category) to associate an APAR to a particular category of fix for target system PTFs identified as minimum or functional levels.\*\***

```
++HOLD(HCP3100) FIXCAT FMID(HCP3100) REASON(AK59275) RESOLVER(UK40130)
CATEGORY (IBM.TargetSystem-RequiredService.z/OS.V1R11) DATE(09208) .
```

- **A SOURCEID of the FIXCAT name will be added by SMP/E to the resolving PTF. This SOURCEID can be used on APPLY or ACCEPT commands.**
- **New REPORT MISSINGFIX command can be used to see what is needed, but not yet installed.**

```
SET BDY(GLOBAL) .          /* Your CICS global */
REPORT MISSINGFIX ZONES(CICS31T) FIXCAT(IBM.TargetSystem-RequiredService.z/OS.V1R11) .
```

\*\*If you pull the HOLDDATA from the ftp website, use FULL!

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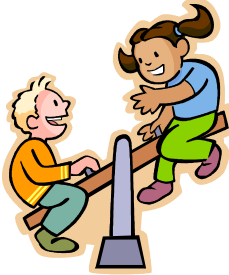
### Programmatic Help with Target System PTF Verification for z/OS Release 11

*z/OS R11 Planning for Installation* Appendix B documents the PTFs that are required for minimum support on z/OS R11 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.V1R11**, 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 R11.

**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 Requirements for z/OS R11

- ▶ **Programmatic assistance is available!**
  - ▶ **SMP/E V3R5's support for FIXCAT HOLDDATA**
  - ▶ **-or- Use EPSPT with Extract Files**
  
- ▶ **PTFs can be found in your handout for:**
  - ▶ **z/OS R10 to R11 Coexistence PTFs**
  - ▶ **z/OS R9 to R11 Coexistence PTFs**
  
- ▶ **These tables won't be provided for the next release (in z/OS Migration, extract files, or in the presentation handout), as you should only be using SMP/E V3R5 to know the Coexistence PTFs by then 😊.**




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### Coexistence Service Requirements for z/OS Release 11

To understand the Coexistence-Fallback-Migration policy for z/OS, and which releases are supported with z/OS V1 R11, see the Coexistence section of this presentation. See Appendix B of this handout for a list of the coexistence service on z/OS R10 and R9, for z/OS R11.

As SMP/E V3R5 FIXCAT support allows you to have the most up to date and correct information about z/OS coexistence, z/OS R11 is planned to be the last release in which these published lists will be provided in the following ways: *z/OS Migration* book, EPSPT extract files (from the ZOSGEN PSP bucket), and within handouts for presentations.

## SMP/E V3R5's support for FIXCAT HOLDDATA For Coexistence Verification (Preferred)



- **A HOLDDATA type FIXCAT (fix category) to associate an APAR to a particular category of fix.\*\***

```
++HOLD(HBB7740) FIXCAT FMID(HBB7740) REASON(AA26493)
RESOLVER(UA44704) CATEGORY(IBM.Coexistence.z/OS.V1R11)
```

- **A SOURCEID of the FIXCAT name will be added by SMP/E to the resolving PTF. This SOURCEID can be used on APPLY or ACCEPT commands.**
- **New REPORT MISSINGFIX command can be used to see what is needed, but not yet installed.**

```
SET BDY(GLOBAL). /* Your z/OS global */
REPORT MISSINGFIX ZONES(ZOS19T) FIXCAT(IBM.Coexistence.z/OS.V1R11).
```

**\*\*If you pull the HOLDDATA from the ftp website, use FULL!**

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### Programmatic Help with Coexistence PTFs for z/OS Release 11

SMP/E has been extended to help simplify the task of verifying required software fixes identified in Preventive Service Planning (PSP) buckets are installed. PSP buckets identify required software fixes for new hardware devices, toleration and coexistence of new software releases, and for enabling new functions. IBM consolidates the lists of required fixes from PSP buckets and produces Fix Category (FIXCAT) HOLDDATA to identify those fixes. For helping with coexistence verification for z/OS R11, the fix category of interest is **IBM.Coexistence.z/OS.V1R11**. You can use the new type 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 new FIXCAT HOLDDATA to identify what required fixes are missing. A new REPORT MISSINGFIX command analyzes the new 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.

It is very important that all z/OS V3R4 users install UO00701 (APAR IO07480). This PTF allows SMP/E V3R4 (which is in z/OS V1R7, V1R8, and V1R9) to quietly ignore new FIXCAT HOLD statements that will be present in IBM product and service offerings. In addition, the PTF provides support for SMP/E users who share SMPCSI data sets between pre-z/OS V1R10 systems and z/OS V1R10 and higher systems.

## Use EPSPT with Extract Files For Coexistence Verification (Alternate)



- **This solution uses the existing Enhanced PSP Tool (EPSPT).**
  - **"Extract files" are produced from the ZOSGEN PSP bucket that contain the Coexistence PTFs.**
  - **You should use the Extract file for the z/OS release you are migrating FROM.**
    - **For instance, the ZOSVIR9 ZOSGEN Extract file contains the PTFs that you need to coexist with z/OS R11.**
- **The Coexistence PTFs from the z/OS Migration book, along with any subsequently defined coexistence PTFs are included, for a complete and current Coexistence PTF list!**

- **It is intended that z/OS R11 is the last release to exploit EPSPT for Coexistence Verification – use FIXCATs instead!**
- **Plan for no extract files after December 31, 2010!**

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### EPSPT Programmatic Help with Coexistence PTFs for z/OS Release 11

IBM plans to remove the Enhanced PSP Tool, host compare program, and the associated extract files from the IBM Technical Support Web site (at <http://www14.software.ibm.com/webapp/set2/psp/srchBroker>) effective December 31, 2010. The Enhanced PSP Tool's function has been replaced by the addition of FIXCAT (fix category) information to Enhanced HOLDDATA and the REPORT MISSINGFIX function introduced in z/OS V1.10 SMP/E, which offers distinct advantages over the Enhanced PSP Tool. This SMP/E function is also available for all supported releases of z/OS in SMP/E for z/OS V3.5 (5655-G44), which you can order separately. Enhanced HOLDDATA is available in all IBM service delivery offerings and in the 730-day file from the Enhanced HOLDDATA Web site at: <http://service.software.ibm.com/holddata/390holddata.html>.

z/OS R11 is intended to be the last release in which the coexistence PTFs will be added to the extract file. Therefore, z/OS R11 will be the last release in which you could do coexistence verification with the EPSPT tool.

If you still wish to use EPSPT (instead of FIXCAT) to assist in programmatically determining which coexistence PTFs you must install on your current system in preparation for migration to a later z/OS release, you may. However, note that z/OS R11 is planned to be the last release in which coexistence PTFs will be put in the extract file for EPSPT support.

When you retrieve the extract file from the ZOSGEN PSP bucket subset that is used as input to EPSPT, the file will contain the current list of coexistence PTFs for migrating to a later z/OS release. Coexistence PTFs are identified in the "Cross Product Dependencies" section of the ZOSGEN PSP bucket subset.

The steps to take to programmatically determine whether your current system has the complete list of required Coexistence PTFs for migration using EPSPT are:

1. Download and install the latest EPSPT level, available from <http://www14.software.ibm.com/webapp/set2/sas/f/psp/download.html>. Latest tool is: Report Level:1.04.11 Last Update:2007/06/28
2. Download the extract file from your current release's ZOSGEN PSP bucket subset. The list of "to" release coexistence PTFs is found in the "from" release ZOSGEN PSP bucket subset!
3. Using the extract file from your current release's ZOSGEN PSP bucket subset, run the EPSPT. Sample JCL to do this can be found at <http://www14.software.ibm.com/webapp/set2/sas/f/psp/use.html>
4. Resolve any outstanding discrepancies that the EPSPT has identified.

From time to time, you may want to download the extract file from your current release's ZOSGEN PSP bucket subset, and rerun EPSPT to ensure that any newly added coexistence PTFs are verified.

An example of the beginning of the ZOSGEN PSP extract file (from the ZOSV1R10 upgrade) is:

```
/* Preventive Service Planning */
/* UPGRADE: ZOSV1R10, SUBSET: ZOSGEN */
/* Updates also available at ftp site: */
/* ftp site = ftp://ftp.software.ibm.com/s390/pspapartool/ */
/* ftp file = ZOSV1R10_ZOSGEN.txt */
/* Last Extract: */
/* Time = 18:07:12 */
/* Date = 07/30/2009 */
APAR(AA24172) FMID(HBB7750) FIX(UA46864) UPG(ZOSV1R10) SUB(ZOSGEN).
APAR(AA26037) FMID(HBB7750) FIX(UA47790) UPG(ZOSV1R10) SUB(ZOSGEN).
APAR(AA26493) FMID(HBB7750) FIX(UA44705) UPG(ZOSV1R10) SUB(ZOSGEN).
APAR(AA27032) FMID(HBB7750) FIX(UA45081) UPG(ZOSV1R10) SUB(ZOSGEN).
...
```

## z/OS V1 R11 Install-Related Enhancements



### ServerPac Deliverable Enhancements:

- **ServerPac in z/OS R11:**
  - File system default change from HFS to zFS
  - Default volume change from 3390-3 to 3390-9
  - Improvements in Modify System Layout :
    - No more overallocated error on volumes with existing space after ALLOCDS has run!! (That is, MSL changes are allowed.)
  - Order Tivoli OMEGAMON and other Tivoli monitoring products by themselves, without z/OS, in 4Q09.
    - Find them under group "IBM Tivoli Monitoring Products" on Shopz.
  
- **ServerPac in z/OS R10:**
  - ACCEPT RSU
  - SYSUT\* and SMPWRK\* values in SMP/E CSI and jobs updated
  - SDSF for JES3 support
  - CEA and SYSREXX security setup: Security customization is performed.

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### z/OS R11 Installation Enhancements in ServerPac

Effective with z/OS R11 availability, these enhancements will be made available for ServerPac and SystemPac:

- The default file system type is changed from HFS to zFS, because zFS is the strategic file system for the z/OS platform. The CustomPac Dialog continues to allow file system types to be changed between HFS and zFS.
- The default volume is changed from 3390-3 to 3390-9 to accommodate the increased sizes of product libraries and file systems. The installation dialog continues to support the use of larger and smaller volumes.
- The Modify System Layout dialog has been redesigned to make it easier for you to maintain ServerPac and SystemPac configurations after installation. This is intended to make them easier to reuse for later installations.
  - Specifically, the Modify System Layout (MSL) dialog has been changed to allow you to enter MSL if the ALLOCDS job has been run and the ServerPac order has been set to STARTED without triggering the volume overflow condition process. You may save your changes in MSL, however a new message will be issued to indicate that you have to re-run the Install jobs if you want your changes to be used for that order. The new message is: CPP0605097W: - Your order is already started. To use the changes you made, rerun the installation jobs.
- SMP/E archive segmentation is now used for Internet delivery. Archive files will be split into 500 MB segments to help alleviate bottlenecks created by large archive files and to help avoid downloading a large percentage of large archives multiple times when downloads are restarted.
- Effective 4Q2009, Tivoli OMEGAMON and other Tivoli monitoring products can be ordered in ServerPac or SystemPac without having z/OS in the same order. When you order with ShopzSeries, you can locate these products in a display group called "IBM Tivoli Monitoring Products." You must select "IBM Tivoli Management Services on z/OS (5698-A79)" as the base product for a Tivoli ServerPac or SystemPac order.

**Customized Offerings Driver (COD)** The Customized Offerings Driver (COD) is a prebuilt stand-alone driving system that can be used to install z/OS using ServerPac or CBPDO if you do not have a driving system or your driving system does not meet the minimum driving system requirements. The Customized Offerings Driver has a new order number (5751-COD), and has been updated to include a subset of z/OS V1.9 to supports the minimum driving system requirements for installing z/OS R11.

### z/OS R10 Installation Enhancements in ServerPac

#### ACCEPT RSU\*

For ServerPac orders, service is integrated with product code according to the following timeline:

- ServerPac is refreshed every month to pick up the most current RSU.

- All products incorporate high impact or pervasive (HIPER) and PTF-in-error (PE) fixes that are available up to the day your order is built. Because these PTFs are still fairly new at the time your order is built, they are not SMP/E ACCEPTed. They have been APPLYed only, therefore allowing you to back them off of your system using the SMP/E RESTORE command, if necessary. Your order also includes (in its SMP/E global zone) the latest unintegrated service that was available at the time the order was created. In addition, the PTFs that were SMP/E APPLYed but not ACCEPTed are also in the SMP/E global zone.
- All z/OS elements and features will incorporate additional service that has been through platform (integration) testing (SOURCEID ZOSV1Rn, where n is the release number).

Prior to z/OS R10, all PTFs that were APPLYed in ServerPac, were also ACCEPTed. As of z/OS R10, only the latest RSU (SOURCEID RSU\*) and the PTFs with SOURCEID ZOSV1Rn are ACCEPTed.

The publication *ServerPac: Installing Your Order*, which comes with your order, specifies the integrated service level applicable to your order. Your ServerPac order will also include unintegrated service that was available when your order was built.

### **SYSUT\* and SMPWRK\* values in SMP/E CSI and jobs**

The values for SMP/E's SYSUT and SMPWRK data sets have (in some cases) been too small for installing large PTFs or large electronic orders. To accommodate this, the SYSUT and SMPWRK values have been increased in the ServerPac deliverable. These are the values that will be provided in ServerPac (in 3390 tracks):

SMPWRK1	PDS	FB	80	150
SMPWRK2	PDS	FB	80	150
SMPWRK3	PDS	FB	80	9500
SMPWRK4	PDS	FB	80	132
SMPWRK6	PDS	FB	80	20000
SYSUT1	SEQ	--	--	7500
SYSUT2	SEQ	--	--	1500
SYSUT3	SEQ	--	--	960
SYSUT4	SEQ	--	--	3000

### **SDSF for JES3 Support**

With z/OS R10 SDSF, support for JES3 has been added. To accommodate this in ServerPac, the "JES Element Selection" panel will do some enhanced processing.

On this panel, select at least one JES element for installation: JES2 (and SDSF) or JES3 (and SDSF). If your installation requires both JES elements to be installed, you can select BOTH.

For each JES element you select, specify whether the dialog is to merge the SMP/E zones of the JES element with the Base Control Program (BCP) zones. When you merge a JES element with the BCP zones, the SDSF zone is automatically merged with the BCP zones:

- If you specify the JES2 zone to be merged with the BCP zones, both JES2 and SDSF zones are merged with the BCP zones. Similarly, if you specify JES3 to be merged with the BCP zones, both JES3 and SDSF zones are merged with the BCP zones.
- If you specify both JES elements to be merged with the BCP zones, the JES2, JES3, and SDSF zones are merged with the BCP zones.

**Note:** If you install both JES elements, you cannot merge only one of the JES elements with the BCP zones. The error message CPPP0601011E will appear to indicate that the action is not allowed.



If you migrate JES2 or JES3 together with the rest of z/OS, IBM recommends that you specify **Y** on this panel to merge the selected JES elements into the BCP zone. However, if you plan to stage your z/OS and JES migrations separately, do not merge zones. The dialog loads the JES element's zones, but does not merge them.


### **CEA and SYSREXX Setup**

Security customization (provided in ServerPac job RACFTGT) now includes the necessary security customization for CEA and System REXX.



## Some Migration Actions You Can Do NOW for z/OS R11

- 1. Transition off of removed functions and elements:**
  - In R10: CPU affinity, DFSORT panels, RMF LDAP backend.
  - In R11: “old” LDAP, CS removals 
  - Beyond R11: zfs multi-fs aggr, ...
- 2. Prepare Driving and Target Systems:**
  - Driving systems - Doing electronic delivery? Review requirements.
  - Target systems -
    - DASD storage for z/OS R11 – **position on larger DASD??** 
    - IBM product level research
    - ISV research for z/OS R11
    - Use FIXCAT **IBM.TargetSystem-RequiredService.z/OS.V1R11**
  - Coexisting systems - install required coexistence service
    - Use FIXCAT **IBM.Coexistence.z/OS.V1R11** or the EPSPT Extract file!
- 3. Review PSP buckets:** z/OS, and Functional (HCHECKER, ZIIP, ZAAP, ...)
- 4. Use IBM Health Checker for z/OS!**




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z/OS 1.11: Migration - It's Up... Part 1 of 2
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### Prepare for your migration to z/OS R11!

In this presentation you've seen many things can you can do right now, on your current z/OS release to help make your z/OS R11 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!* Usage

1. Install all Migration Health Check PTFs on your current release. PTFs will be marked as HCHECKER (FIXCAT is `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\*,\*MIGV1R\*)**
  - 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.
5. **---MIGRATE TO NEW RELEASE---**
6. Install any updated Migration Health Check PTFs on your new release.
7. Activate the Migration Health Checks appropriate for that release, specifying releases you migrated *through to current* . For example, one way is:
  - **F HZSPROC,ACTIVATE,CHECK=(IBM\*,\*MIGV1R\*)**
8. Migration Health Checks will run on your new release.
9. Review output for exceptions to verify that migration actions were successfully performed. Deactivate when you wish.



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## Migration Health Checks for z/OS R11

(and some **Best Practice Checks** helpful for migrations)

BCP: Migrate from a Sysplex Timer to STP	ZOSMIGREC_SUP_STP_USE <b>(no APAR)</b>	LOW INACTIVE	For z/OS R11 and beyond
BCP: Remove message flood automation exits	CNZ_OBSOLETE_MSGFLD_AUTOMATION <b>(no APAR)</b>	MEDIUM ACTIVE	For z/OS R11 and beyond
BCP: Resource Managers specified in IEAVTRML	RTM_IEAVTRML <b>(no APAR)</b>	LOW ACTIVE	For z/OS R11 and beyond
DFSMSdfp: Redefine catalogs with IMBED, REPLICATE, and KEYRANGE attributes	CATALOG_IMBED_REPLICATE <b>(no APAR)</b>	LOW ACTIVE	For z/OS R11 and beyond.

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<b>Migration Health Checks for z/OS R11</b> (and some <b>Best Practice Checks</b> helpful for migrations)			
DFSMSrmm: Replace obsolete stem variables in REXX execs	ZOSMIGV1R11_RMM_REXX_STEM <b>(OA26947)</b>	MED INACTIVE	For z/OS R9 and z/OS R10
DFSMSrmm: Migrate from VRSEL(OLD) to VRSEL(NEW) in parmlib member EDGRMMxx	ZOSMIGV1R11_RMM_VRSEL_OLD <b>(OA26947)</b>	MED INACTIVE	For z/OS R9 and R10
DFSMSrmm: Use DFSMSrmm parmlib options instead of USERMOD to specify how VRSEL processing handles duplicate GDGs	ZOSMIGV1R11_RMM_DUPLICATE_GDG <b>(OA26947)</b>	MED INACTIVE	For z/OS R9 and R10


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<b>Migration Health Checks for z/OS R11</b> (and some <b>Best Practice Checks</b> helpful for migrations)			
JES2: Verify z11 checkpoint level	JES2_Z11_UPGRADE_CK_JES2 <b>(no APAR)</b>	LOW ACTIVE	For z/OS R11 and beyond
ISS LDAP: Migrate from LDAP Server to IBM TDS	LDAP_USE_TDS <b>(OA27843)</b>	LOW ACTIVE	For z/OS R8, z/OS R9, and z/OS R10
SDSF: Check that the SAF class SDSF is active	SDSF_CLASS_SDSF_ACTIVE <b>(PK68253)</b>	LOW ACTIVE	For z/OS R9 and beyond.
Communications Server: Migrate from BIND DNS 4.9.3 function	ZOSMIGV1R11_CS_DNSBIND9 <b>(no APAR)</b>	LOW INACTIVE	For z/OS R11 and beyond.
Communications Server: Update IP filter policy to filter IP fragments correctly for RFC 4301 compliance	ZOSMIGV1R11_CS_RFC4301 <b>(OA28605)</b>	LOW INACTIVE	For z/OS R10 and R11.

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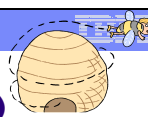
## Migration Health Checks for z/OS R11 (and some **Best Practice Checks** helpful for migrations)



zFS: Using sysplex_admin_level=2 for z/OS R11 coexistence	ZOSMIGV1R11_ZFS_INTERFACELEVEL <b>(OA27198)</b> 	LOW INACTIVE	For z/OS R9 and R10.
zFS: Discontinue use of multi-file system aggregates	ZOSMIGV1R11_ZFS_RM_MULTIFS (when sysplex) or ZOSMIGREC_ZFS_RM_MULTIFS (when not sysplex) <b>(OA27198)</b>	LOW INACTIVE	For z/OS R9 and beyond.
General: Version root has enough room on DASD	ZOSMIGREC_ROOT_FS_SIZE <b>(OA28684 and OA28631)</b>	LOW INACTIVE	For z/OS R9 and beyond.


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## Migration Health Checks for z/OS R10 (and some **Best Practice Checks** helpful for migrations)




ICSF: Detection of the existence of retained RSA private keys on a PCICC or PCIXCC/CEX2C cryptographic card	ICSMIG7731_ICSF_RETAINED_RSAKEY <b>(OA24221)</b>	LOW INACTIVE	For HCR7731 (z/OS V1R8) and beyond.
ICSF: PKDS size in an ICSF pre-HCR7750 env is sufficiently allocated to support 4096-bit RSA keys	ICSMIG7731_ICSF_PKDS_TO_4096BIT <b>(OA24221)</b>	LOW INACTIVE	For HCR7731 (z/OS V1R8) and HCR7740 (z/OS V1R9) only.
SDSF: ISFPRMxx detection	SDSF_ISFPARMS_IN_USE <b>(PK59629)</b>	LOW ACTIVE	For z/OS R8 and beyond.
LE: CEEPRMxx detection	CEE_USING_LE_PARMLIB <b>(PK62487)</b>	LOW ACTIVE	For z/OS R8 and beyond.
RACF: More specific profiles for LDAP change logging.	ZOSMIGV1R9_RACF_PASSWRD_ENVELOPE <b>(OA24327)</b>	LOW INACTIVE	For z/OS R8 only.

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<b>Migration Health Checks for z/OS R10</b> <b>(and some <b>Best Practice Checks</b> helpful for migrations)</b> 			
Infoprint Server: <b>Migrate from IP PrintWay basic to extended mode</b>	PRINTWAY_BASIC_STARTED (OA26583 and OA26577)	LOW ACTIVE	For z/OS R8 and higher
DFSMSrmm: <b>Define default partitioning support</b>	ZOSMIGV1R10_RMM_REJECT S_DEFINED  (OA26608)	LOW INACTIVE	For z/OS R8 and z/OS V1R9.
DFSMSrmm: <b>Update volume replacement policies</b>	ZOSMIGV1R10_RMM_VOL_RE PLACE_LIM  (OA26608)	LOW INACTIVE	For z/OS R8 and z/OS V1R9.
DFSMSrmm: <b>Use DELETE disposition support for tape data sets</b>	ZOSMIGV1R10_RMM_VRS_DE LETED  (OA26608)	LOW INACTIVE	For z/OS R8 and z/OS V1R9.

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<b>Migration Health Checks for z/OS R10</b> <b>(and some <b>Best Practice Checks</b> helpful for migrations)</b> 			
CS: <b>Removal of Boot Information Negotiation Layer (BINL)</b>	ZOSMIGV1R10_CS_BINL  (OA25593 and PK68195)	LOW INACTIVE	For z/OS R8 through z/OS V1R10.
CS: <b>Removal of Berkeley Internet Name Domain (BIND) 4.9.3</b>	ZOSMIGV1R10_CS_BIND4  (OA25593 and PK68195)	LOW INACTIVE	For z/OS R8 through z/OS V1R10.
CS: <b>Removal of Dynamic Host Configuration Protocol (DHCP)</b>	ZOSMIGV1R10_CS_DHCP  (OA25593 and PK68195)	LOW INACTIVE	For z/OS R8 through z/OS V1R10.
CS: <b>Removal of Network Database (NDB)</b>	ZOSMIGV1R10_CS_NDB  (OA25593 and PK68195)	LOW INACTIVE	For z/OS R8 through z/OS V1R10.

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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.

### 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 described about. 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!*



## z/OS 1.11: Migration - Part 1 Summary

- ▶ **Content of z/OS R11**
  - Remember to order export controlled features: [z/OS Sec Lvl 3](#) and [CS Sec Lvl 3](#)
- ▶ **z/OS Ordering and Deliverables**
  - Cryptographic Support for R9-R11 (HCR7770) web deliverable available on 11/20/09.
  - [SMP/E V3R5](#), Ported Tools (and all features), XML R9 and R10, 31-bit and 64-bit SDKs...
- ▶ **z/OS Policies**
  - z/OS R11 Coexistence-Migration-Fallback from [z/OS R10](#) or [z/OS R9](#).
  - If you're on z/OS R9, start planning for your migration to R11!
- ▶ **Ensuring System Requirements are Satisfied**
  - Driving System Requirements - z/OS R9 ...
  - Target System Requirements
    - Review DASD space requirements – position to use larger volumes?
    - Minimum Subsys levels: CICS 3.1, DB2 8.1, IMS 9.1, WAS 6.0.1, Tiv Omeg XE V4+PTFs.
    - Use FIXCAT [IBM.TargetSystem-RequiredService.z/OS.VIR11](#)
- ▶ **Coexistence Requirements**
  - Use FIXCAT [IBM.Coexistence.z/OS.VIR11](#), or the EPSPT tool with PSP extract files!
- ▶ **Migration Actions You Can Do NOW:**
  - Replacements for removed functions and elements - and future removals.
  - Use IBM Health Checker for migration verification



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## Appendix A: List of Base Elements and Optional Features for z/OS V1R11

The following table lists the base elements and optional features in z/OS V1R11. The following table headings are used:

### Name

What this document calls the element or feature. (To help you distinguish elements from features, element names in this column are highlighted.)

### Function level

The most recent release in which the element or feature changed. ("Change" means that one or more of the element's or feature's FMIDs [function modification identifiers] was changed, or that the element or feature was added to the system. New function added in program temporary fixes [PTFs] is not considered change.) Also, for nonexclusive elements and features, the equivalent level of the separate product is listed in parentheses.

**Note:** The function level is expressed as a z/OS function level.

Do not confuse the function level with the product level. All elements and features are at the V1R11 product level but they are at various function levels. For example, the product level of z/OS BookManager READ is z/OS V1R11 but its function level is OS/390 V1R1 because OS/390 V1R1 was the last release in which it changed.

### Type and description

- "Type" means the following:
- Whether it's a base element or optional feature
  - Whether the base element or optional feature is exclusive (existing only within z/OS) or nonexclusive (also available as a separate product)
  - If an optional feature, whether it's priced or unpriced
  - If an optional feature, whether it supports dynamic enablement (note that all the priced features support dynamic enablement)
- "Description" is a brief description of the element or feature, and miscellaneous facts about it.

## Base elements and optional features in z/OS V1R11

Name	Last time changed (and equivalent product if nonexclusive)	Type and description
<b>Alternate Library for REXX<sup>™</sup></b>	z/OS V1R9  (see description about equivalent programs)	Type: base element, nonexclusive.  Alternate Library for REXX enables users to run compiled REXX programs. This base element is nonexclusive to z/OS because the following programs provide equivalent functions: <ul style="list-style-type: none"> <li>• The Alternate Library portion of the priced product IBM Library for REXX on zSeries V1R4 (5695-014). The Alternate Library consists of FMIDs HWJ9143 (ENU) and JWJ9144 (JPN). These are the same FMIDs that are in the z/OS base element.</li> <li>• The no-fee Web download Alternate Library for REXX on z/OS.</li> </ul> This base element was new in z/OS V1R9. Including it as a base element in z/OS is intended to make it easier to use than the functionally equivalent programs listed above.
<b>BCP</b>	z/OS V1R11	Type: base element, exclusive.  The Base Control Program (BCP) provides essential operating system

		services. The BCP includes the I/O configuration program (IOCP), the workload manager (WLM), system management facilities (SMF), the z/OS UNIX <sup>(R)</sup> System Services (z/OS UNIX) kernel, the program management binder, IBM Health Checker for z/OS, and support for the Unicode <sup>(TM)</sup> Standard. As of z/OS V1R8, the BCP also includes z/OS XML System Services (z/OS XML). As of z/OS V1R9, the BCP also includes Capacity Provisioning (FMID HPV7740) and System REXX for z/OS Base.
<b>BDT</b>	OS/390 V1R2	Type: base element, exclusive.  Bulk Data Transfer (BDT) provides the base services that the optional BDT features (BDT File-to-File and BDT SNA NJE) need to transfer data from one computer system to another.  You cannot activate any BDT functions until one or both of the optional BDT features is enabled.
BDT File-to-File	OS/390 V1R2	Type: optional feature, exclusive, priced, can be dynamically enabled.  BDT File-to-File allows users at one z/OS system in a SNA network to copy data sets to or from another z/OS system in the network. This feature is related to the element BDT.
BDT SNA NJE	OS/390 V1R2	Type: optional feature, exclusive, priced, can be dynamically enabled.  BDT SNA NJE allows JES3 users to transmit jobs, output, commands, and messages from one computer system to another within a SNA network. This feature is related to the element BDT and the feature JES3.
BookManager BUILD	OS/390 V1R1  (BookManager BUILD/MVS V1R3, 5695-045)	Type: optional feature, nonexclusive, priced, can be dynamically enabled.  BookManager BUILD creates softcopy documents that can be used by any of the BookManager products, such as BookManager READ or Library Server.
<b>BookManager READ</b>	OS/390 V1R1  (BookManager READ/MVS V1R3, 5695-046)	Type: base element, nonexclusive.  BookManager READ is used to display, search, and manage online documents and bookshelves. A related optional feature is BookManager BUILD.
C/C++ without Debug Tool	z/OS V1R11	Type: optional feature, exclusive, priced, can be dynamically enabled.  C/C++ without Debug Tool consists of: <ul style="list-style-type: none"> <li>• XL C/C++ compiler</li> <li>• XL C/C++ application development utilities</li> </ul>
<b>CIM</b>	z/OS V1R11	Type: base element, exclusive.  Common Information Model (CIM) is a standard data model for describing and accessing systems management data in heterogeneous environments. It allows system administrators to write applications that measure system resources in a network with different operating systems and hardware. To enable z/OS for cross platform management, a subset of resources and metrics of a z/OS system are mapped into the CIM standard data model.  CIM was new in z/OS V1R7. In z/OS V1R9, a new component was added that contains a Java programming interface for CIM client applications. In z/OS V1R10, all CIM components were consolidated under one single FMID, HPG7750.  Transport layer security (TLS) encryption is performed for CIM by base element Communications Server. CIM does not implement any of its own encryption algorithms.

<b>Communications Server</b>	z/OS V1R11	<p>Type: base element, exclusive, can be dynamically enabled.</p> <p>Communications Server supports secure TCP/IP, SNA, and UNIX networking throughout an enterprise. It gives you the ability to connect subsystems and applications to each other, and to connect network devices (such as terminals and printers) to the system.</p> <p>Communications Server consists of two components: IP Services and SNA Services.</p> <p>A related optional feature is Communications Server Security Level 3.</p> <p>For encryption, IP Services uses the SNMPv3 DES 56-bit and IP Sec DES 56-bit algorithms. IP Services also uses the System SSL component of Cryptographic Services for encryption services. SNA Services uses the limited DES algorithm for encryption.</p>
Communications Server Security Level 3	z/OS V1R11	<p>Type: optional feature, exclusive, unpriced, cannot be dynamically enabled.</p> <p>This feature works in conjunction with the Communications Server base element to provide stronger encryption (greater than 64 bits) than that available without this feature. This feature uses the TDES and AES algorithms for encryption. The actual level of encryption that takes place with this feature installed can be configured to be less than the maximum level enabled by this feature.</p> <p>This feature is worldwide exportable subject to U.S. export regulations.</p>
<b>Cryptographic Services</b>	z/OS V1R11	<p>Type: base element, exclusive.</p> <p>Cryptography is the transformation of data to conceal its meaning. In z/OS, the base element Cryptographic Services provides the following base cryptographic functions: data secrecy, data integrity, personal identification, digital signatures, and the management of cryptographic keys. Keys as long as 56 bits are supported by this base element. (Keys longer than 56 bits are supported by the optional feature z/OS Security Level 3.)</p> <p>Cryptographic Services consists of the following components:</p> <ul style="list-style-type: none"> <li>• Integrated Cryptographic Service Facility (ICSF), which was last changed in z/OS V1R11.</li> <li>• Open Cryptographic Services Facility (OCSF), which was last changed in z/OS V1R9.</li> <li>• PKI Services, which was last changed in z/OS V1R11.</li> <li>• System Secure Sockets Layer (SSL), which was last changed in z/OS V1R11.</li> </ul> <p>For encryption:</p> <ul style="list-style-type: none"> <li>• OCSF uses the RC2/RC4/RC5 40-56 bit and DES 56-bit algorithms.</li> <li>• PKI Services uses the RACF<sup>(R)</sup> component of optional feature Security Server, and the ICSF, OCSF, and System SSL components of base element Cryptographic Services. PKI Services uses the RSA, DSA, and DES 56-bit algorithms.</li> <li>• System SSL uses the RC2/RC4, DES through 56-bit, Diffie-Hellman, RSA, and DSA algorithms.</li> </ul>
<b>DCE Base Services</b>	OS/390 V2R9	<p>Type: base element, exclusive.</p> <p>DCE Base Services provides services for developing and running client/server applications, including remote procedure call, directory, security, and</p>

		<p>distributed time services. This element is at the Open Group Open Software Foundation (OSF) DCE 1.1 level.</p> <p>DCE Base Services uses the limited DES algorithm for encryption.</p>
<b>DFSMSdfp</b> <sup>(TM)</sup>	z/OS V1R11	<p>Type: base element, exclusive.</p> <p>DFSMSdfp provides storage, data, program, and device management functions. Related optional features are DFSMSrmm<sup>(TM)</sup>, DFSMSdss<sup>(TM)</sup>, DFSMShsm<sup>(TM)</sup>, and DFSMStvs.</p> <p>In z/OS V1R9, the FMID for the English panels was eliminated and the panels were merged into the base FMID, which is HDZ1190.</p>
DFSMSdss	z/OS V1R11	<p>Type: optional feature, exclusive, priced, can be dynamically enabled.</p> <p>DFSMSdss copies and moves data for backup and recovery, and to reduce free-space fragmentation.</p>
DFSMSHsm (and DFSMSdss)	z/OS V1R11	<p>Type: optional feature, exclusive, priced, can be dynamically enabled.</p> <p>DFSMSHsm provides automated DASD storage management, including space management for low and inactive data, and availability management for accidental data loss caused by local and site disasters. DFSMSHsm also lets you make effective use of tape media.</p> <p>DFSMSHsm requires DFSMSdss. For this reason, DFSMSHsm is not available by itself. If you want to use DFSMSHsm, you must order the DFSMSHsm/DFSMSdss combination. (DFSMSdss is also available by itself for those who do not want DFSMSHsm.)</p>
DFSMSrmm	z/OS V1R11	<p>Type: optional feature, exclusive, priced, can be dynamically enabled.</p> <p>DFSMSrmm helps you manage your removable media as one enterprise-wide library across systems that can share DASD.</p>
DFSMStvs	z/OS V1R11	<p>Type: optional feature, exclusive, priced, can be dynamically enabled.</p> <p>DFSMS<sup>(TM)</sup> Transactional VSAM Services (DFSMStvs) enables batch jobs and CICS online transactions to update shared VSAM data sets concurrently.</p>
DFSORT <sup>(TM)</sup>	z/OS V1R10	<p>Type: optional feature, exclusive, priced, can be dynamically enabled.</p> <p>DFSORT provides fast and easy sorting, merging, copying, reporting, and analysis of your business information, as well as versatile data handling at the record, field, and bit level. DFSORT also includes the high-performance ICEGENER facility, the versatile ICETOOL utility, Symbols, and multiple output capability with the powerful OUTFIL feature.</p>
<b>Distributed File Service</b>	z/OS V1R11	<p>Type: base element, exclusive.</p> <p>Distributed File Service provides:</p> <ul style="list-style-type: none"> <li>• The DCE file serving (DFS<sup>(TM)</sup>) component of the Open Group Open Software Foundation (OSF) DCE. The file serving support (the DFS client and server) is at the OSF 1.2.2 level.</li> <li>• The zSeries File System (zFS). The zFS is a UNIX file system that can be used in addition to the hierarchical file system (HFS). zFS file systems contain files and directories that can be accessed with the z/OS hierarchical file system file APIs. zFS file systems can be mounted into the z/OS UNIX hierarchy along with other local (or remote) file system types (such as HFS, TFS, AUTOMNT, and NFS). The zFS does not replace the HFS; it is complementary to the HFS. As of z/OS V1R7, you can use any combination of HFS and zFS file systems. zFS can be used for the root file system. Because zFS has higher performance characteristics than HFS and is the strategic file</li> </ul>

		<p>system, HFS might no longer be supported in future releases and you will have to migrate the remaining HFS file systems to zFS.</p> <p>The zFS provides significant performance gains in most environments requiring files 8 KB in size or greater that are frequently accessed and updated. The access performance of smaller files is equivalent to that of the HFS. For all files, the zFS provides a reduced exposure to loss of updates. The zFS is a logging file system with a write pattern to disk that reduces the points of failure after a system outage. For additional information about the zFS, including how to migrate data from the HFS to the zFS, see <i>z/OS Distributed File Service zSeries File System Administration</i>.</p> <p>As of z/OS V1R11, zFS has the capability of running sysplex-aware for read/write mounted file systems.</p> <ul style="list-style-type: none"> <li>Server message block (SMB) file/print serving support. The SMB support is based on the X/Open PC Interworking: SMB, Version 2. Included in the support is access to HFS, sequential, PDS, PDSE, and VSAM data sets from Windows<sup>(R)</sup> XP Professional, Windows Terminal Server on Windows 2003, SUSE Linux<sup>(R)</sup> with Samba, and Redhat Linux with Samba. Windows workstation users can also exploit z/OS printer capabilities using the SMB file/print server interface to the z/OS Infoprint Server feature.</li> </ul> <p>For the software necessary to use the DFS or SMB file/print serving support, as well as the other Distributed File Service functions, see Appendix B, Software requirements for running z/OS V1R11, in <i>z/OS V1R11 Planning for Installation</i>.</p> <p>The DFS and SMB support use the DES 56-bit algorithm for encryption.</p>
<b>EREP</b>	OS/390 V1R1  (EREP MVS <sup>(TM)</sup> V3R5, 5658-260)	Type: base element, nonexclusive.  The Environmental Record Editing and Printing Program (EREP) edits and prints reports for the records placed in the error recording data set (ERDS), helping IBM service representatives fix problems.
<b>ESCON<sup>(R)</sup> Director Support</b>	OS/390 V1R1	Type: base element, exclusive.  ESCON Director Support enables the reporting of ESCON director device errors to z/OS.
<b>FFST<sup>(TM)</sup></b>	OS/390 V1R2	Type: base element, exclusive.  First Failure Support Technology <sup>(TM)</sup> (FFST) provides immediate notification and first failure data capture for software events.
<b>GDDM<sup>(R)</sup></b>	OS/390 V1R2  (GDDM/MVS V3R2, 5695-167)	Type: base element, nonexclusive.  GDDM provides presentation services and device-driving capability. It includes PCLK and REXX code. Related optional features are GDDM-Presentation Graphics Feature and GDDM-REXX. Other GDDM-associated products (IVU, GKS, IMD) are not in z/OS, but are separately orderable with z/OS.
GDDM-PGF	OS/390 V1R2  (GDDM/PGF V2R1.3, 5668-812)	Type: optional feature, nonexclusive, priced, can be dynamically enabled.  GDDM-Presentation Graphics Feature (PGF) is a set of programs for creating presentation material in a variety of styles.  This feature is related to the base element GDDM.
GDDM-REXX	OS/390 V1R2  (GDDM-REXX/MVS	Type: optional feature, nonexclusive, priced, can be dynamically enabled.  GDDM-REXX is a productivity tool that enables programmers to prototype

	V3R2, 5664-336)	GDDM applications and to create small routines and utility programs quickly and easily.  This feature is related to the base element GDDM.
<b>HCD</b>	z/OS V1R11	Type: base element, exclusive.  Hardware Configuration Definition (HCD) defines both the operating system configuration and the processor hardware configuration for a system. A related optional feature is HCM.
<b>HCM</b>	z/OS V1R11	Type: optional feature, exclusive, priced, can be dynamically enabled.  Hardware Configuration Manager (HCM) is a workstation-based graphical user interface to the base element HCD.
<b>HLASM</b>	z/OS V1R10  (HLASM for z/OS and z/VM <sup>(R)</sup> and z/VSE <sup>(TM)</sup> V1R6, 5696-234)	Type: base element, nonexclusive.  High Level Assembler (HLASM) integrates almost all functions of past assemblers and provides extensions and improvements. A related optional feature is the HLASM Toolkit.
<b>HLASM Toolkit</b>	z/OS V1R10  (Toolkit feature of HLASM for z/OS and z/VM and z/VSE V1R6, 5696-234)	Type: optional feature, nonexclusive, priced, can be dynamically enabled.  HLASM Toolkit provides tools to improve application development, debugging, and recovery. It is related to the base element HLASM.
<b>IBM HTTP Server</b>	OS/390 V2R10 (but see description)	Type: base element, exclusive.  IBM HTTP Server is the Web server for z/OS. It provides scalable, high performance Web serving for critical e-business applications. It supports Secure Sockets Layer (SSL) secure connections, dynamic caching using the Fast Response Cache Accelerator, multiple IP addresses, proxy authentication, and double-byte character set characters.  IBM HTTP Server NA Secure is now a component of IBM HTTP Server. Before V1R6, it was an optional feature of z/OS. This packaging change was the only change to IBM HTTP Server in V1R6; there was no functional change.
<b>IBM TDS</b>	z/OS V1R11	Type: base element, exclusive.  IBM Tivoli Directory Server for z/OS (IBM TDS) provides client access to an LDAP server. It consists of an LDAP server, an LDAP client, and LDAP client utilities.  For encryption, IBM TDS uses the DES (56-bit) and MD5 encryption algorithms.
<b>ICKDSF</b>	z/OS V1R4 z990 Compatibility Support feature  (ICKDSF for z/OS, z/OS.e, and OS/390 R17, 5655-257)	Type: base element, nonexclusive.  The Device Support Facility (ICKDSF) enables you to perform functions needed for the installation and use of IBM DASD.  ICKDSF was last changed in the z/OS V1R4 z990 Compatibility Support feature. This level was carried forward to the z/OS V1R4 z990 Exploitation Support feature and then to z/OS V1R5 and later, and is functionally equivalent to the R17 level of the ICKDSF product.
<b>Infoprint Server</b>	z/OS V1R8	Type: optional feature, exclusive, priced, can be dynamically enabled.  Infoprint Server allows you to print files on z/OS printers from any workstation that has TCP/IP access. This feature consists of the following components:  <ul style="list-style-type: none"> <li>• IP PrintWay<sup>(TM)</sup></li> </ul>

		<ul style="list-style-type: none"> <li>• NetSpool<sup>(TM)</sup></li> <li>• Print Interface</li> <li>• Printer Inventory Manager</li> <li>• Transform Interface</li> <li>• z/OS Infoprint Central</li> </ul> <p>IBM recommends that you use the Infoprint Server feature's IP PrintWay component rather than the Communications Server base element's Network Print Facility (NPF) to reroute print data to an IP network. IP PrintWay provides improved function, capacity, performance, and usability over NPF.</p>
<b>Integrated Security Services</b>	z/OS V1R11	<p>Type: base element, exclusive.</p> <p>Integrated Security Services provides base security functions for z/OS. Its components are:</p> <ul style="list-style-type: none"> <li>• DCE Security Server, which was last changed in OS/390 V2R9. This component is at the OSF DCE 1.2.2 level. This component uses the limited DES algorithm for encryption.</li> <li>• Enterprise Identity Mapping (EIM), which was last changed in z/OS V1R10. This component allows you to map a user's identity on one system to the user's identity on another system.</li> <li>• Network Authentication Service, which was last changed in z/OS V1R11. Network Authentication Service uses the DES algorithm for encryption.</li> <li>• Open Cryptographic Enhanced Plug-ins (OCEP), which was last changed in z/OS V1R9.</li> </ul> <p>As of z/OS V1R11, LDAP Server is no longer a component of Integrated Security Services. IBM TDS, a base element introduced in z/OS V1R8, contains a rewritten LDAP Server.</p>
<b>ISPF</b>	z/OS V1R11	<p>Type: base element, exclusive.</p> <p>ISPF provides facilities for all aspects of host-based software development. ISPF has four major components:</p> <ul style="list-style-type: none"> <li>• Dialog Manager (DM). The Dialog Manager provides services to dialogs and end users. These services include display, variable services, input and output, user and application profiles, table management, system interface services, and dialog testing and debugging aids.</li> <li>• Program Development Facility (PDF). PDF provides services to assist dialog or application developers. These include edit and browse functions, a wide range of foreground and batch compilers, data set and catalog utilities, TSO command interfaces, and data set search and compare functions.</li> <li>• Software Configuration and Library Manager (SCLM). SCLM is a tool that controls, maintains, and tracks all of the software components of the application throughout the development cycle.</li> <li>• Client/Server component. The Client/Server component provides users who have a workstation running Windows or UNIX with a graphical user interface to ISPF application panels.</li> </ul>
<b>JES2</b>	z/OS V1R11	<p>Type: base element, exclusive.</p> <p>JES2 accepts the submission of work for the BCP. JES2 exercises independent control over its job processing functions, whereas JES3 exercises centralized control.</p> <p>A prior release of JES2 can be used with z/OS V1R11.</p>

JES3	z/OS V1R11	<p>Type: optional feature, exclusive, priced, can be dynamically enabled.</p> <p>JES3 accepts the submission of work for the BCP. JES3 exercises centralized control over its job processing functions, whereas JES2 exercises independent control.</p> <p>A prior release of JES3 can be used with z/OS V1R11.</p>
<b>Language Environment<sup>(R)</sup></b>	z/OS V1R11	<p>Type: base element, exclusive.</p> <p>Language Environment provides the run-time environment for programs generated with C, C++, COBOL, Fortran, and PL/I.</p> <p>Inclusion of Language Environment as a base element in z/OS does not replace the need for separate compilers.</p> <p>Language Environment uses the limited DES algorithm for encryption.</p>
<b>Library Server</b>	z/OS V1R10	<p>Type: base element, exclusive.</p> <p>Library Server converts BookManager and InfoCenter documents to HTML for display through a Web browser, and provides unified organization and searching of BookManager, PDF, and InfoCenter documents.</p>
<b>Metal C Runtime Library</b>	z/OS V1R11	<p>Type: base element, exclusive.</p> <p>The Metal C Runtime Library is a set of LPA-resident C functions that can be called from a C program created using the z/OS XL C compiler METAL option.</p> <p>This base element was new in z/OS V1R9.</p>
<b>MICR/OCR</b>	OS/390 V1R1	<p>Type: base element, exclusive.</p> <p>This element provides the device support code for various magnetic and optical devices.</p>
<b>msys for Setup</b>	z/OS V1R4 (but see description)	<p>Type: base element, exclusive.</p> <p>Managed System Infrastructure for Setup (msys for Setup) was introduced in z/OS V1R1 to provide a graphical user interface for configuring z/OS and products that run on z/OS. With z/OS V1R8, much of the function has been removed from msys for Setup. Of the seven plug-ins that supported the framework, six have been removed. The six plug-ins removed in z/OS V1R8 are:</p> <ul style="list-style-type: none"> <li>• IP Services</li> <li>• ISPF</li> <li>• Language Environment</li> <li>• Parallel Sysplex</li> <li>• RMF<sup>(TM)</sup></li> <li>• z/OS UNIX</li> </ul> <p>The only remaining plug-in, the DB2 V8 plug-in, is unaffected and remains available for enablement, setup, and configuration of DB2. Also remaining are the framework and DFSMS support.</p>
<b>NFS</b>	z/OS V1R11	<p>Type: base element, exclusive.</p> <p>Network File System (NFS) acts as a file server to workstations, personal computers, or other authorized systems in a TCP/IP network. It consists of a client and a server. It supports Berkeley sockets but not TCP/IP sockets.</p> <p>NFS uses the Network Authentication Service component of Integrated</p>



		<p>Security Services for encryption.</p> <p>NFS is always enabled, even when the alternate base configuration is ordered.</p> <p>In z/OS V1R8, the NFS server and client FMIDs were merged into one FMID.</p>
<b>OSA/SF</b>	z/OS V1R4 z990 Compatibility Support feature	<p>Type: base element, exclusive.</p> <p>Open Systems Adapter/Support Facility (OSA/SF) provides a user-friendly interface for monitoring and controlling the zSeries Open Systems Adapter feature, which provides network connectivity directly to local area networks (LANs) and wide area networks (WANs) that support IP and SNA protocols. OSA/SF supports Gigabit, Token Ring, Fast Ethernet, 1000Base-T Ethernet, 10 Gigabit Ethernet, and ATM features depending on the server on which z/OS runs. For details, see <i>System z10, System z9 and zSeries OSA-Express Customer's Guide and Reference, SA22-7935</i>.</p> <p>OSA/SF was last changed in the z/OS V1R4 z990 Compatibility Support feature. This level was carried forward to the z/OS V1R4 z990 Exploitation Support feature and then to z/OS V1R5 and later.</p> <p>OSA/SF became exclusive with the introduction of the z/OS V1R4 z990 Compatibility Support feature.</p>
RMF	z/OS V1R11	<p>Type: optional feature, exclusive, priced, can be dynamically enabled.</p> <p>Resource Measurement Facility (RMF) gathers data about z/OS resource usage and performance, and provides reports on any system in a sysplex.</p>
<b>Run-Time Library Extensions</b>	z/OS V1R11	<p>Type: base element, exclusive.</p> <p>Run-Time Library Extensions extends the run-time support provided by the Language Environment base element. It consists of :</p> <ul style="list-style-type: none"> <li>• Common Debug Architecture (CDA) libraries</li> <li>• Utilities</li> <li>• UNIX System Laboratories (USL) I/O Stream Library and USL Complex Mathematics Library</li> </ul>
SDSF	z/OS V1R11	<p>Type: optional feature, exclusive, priced, can be dynamically enabled.</p> <p>System Display and Search Facility (SDSF) provides you with information to monitor, manage, and control your z/OS system.</p> <p>If you use a prior release of JES2 or JES3 with z/OS V1R11, you must use the same prior release of SDSF with z/OS V1R11.</p>
Security Server	z/OS V1R11	<p>Type: optional feature, exclusive, priced, can be dynamically enabled.</p> <p>Security Server lets you control access to protected resources. Security Server contains one component, RACF.</p> <p>Security Server uses the limited DES, CDMF, RC 40-bit, RSA, and DSA algorithms for encryption.</p>
<b>SMP/E</b>	z/OS V1R10  (SMP/E for z/OS V3R5, 5655-G44)	<p>Type: base element, nonexclusive.</p> <p>SMP/E is a tool for installing and maintaining software, and for managing the inventory of software that has been installed.</p> <p>Before z/OS V1R2, SMP/E was an exclusive base element. Beginning with z/OS V1R2, SMP/E is nonexclusive because of the introduction of the SMP/E product. The SMP/E product allows customers who are currently licensed for</p>

		<p>an earlier level of z/OS to order and install the latest level of SMP/E without having to upgrade their entire operating system. This allows products that run on z/OS to exploit the packaging and installation enhancements of SMP/E without requiring a later level of the operating system. This also allows customers to exploit new electronic delivery and installation technologies in SMP/E sooner. The SMP/E product is available at no additional charge to customers.</p> <p>The Planning and Migration Assistant (PMA), a component of SMP/E, can help you maintain, plan for, and order new releases of z/OS and other products. It provides reports that use IBM-supplied data, your SMP/E consolidated software inventory (CSI) data set, and a CustomPac inventory file. The PMA Web site is <a href="http://www.ibm.com/systems/z/os/zos/smpe/pma/">http://www.ibm.com/systems/z/os/zos/smpe/pma/</a>.</p>
<b>TIOC</b>	OS/390 V1R1	<p>Type: base element, exclusive.</p> <p>TIOC allows console services and TSO/E to communicate with the terminal hardware.</p>
<b>TSO/E</b>	z/OS V1R11	<p>Type: base element, exclusive.</p> <p>Time Sharing Option/Extensions (TSO/E) provides an interactive terminal interface. As in prior releases of TSO/E, this element includes CLISTS and REXX, but does not include a REXX compiler.</p>
z/OS Security Level 3	z/OS V1R11	<p>Type: optional feature, exclusive, unpriced, cannot be dynamically enabled.</p> <p>z/OS Security Level 3 provides strong encryption for z/OS.</p> <p>The components in this feature are:</p> <ul style="list-style-type: none"> <li>• IBM TDS Security Level 3, which was last changed in z/OS V1R10. This component works in conjunction with the IBM TDS base element to provide stronger encryption (greater than 64 bits) than that available without the z/OS Security Level 3 feature. This component uses the RC4, TDES, and Advanced Encryption Standard (AES) algorithms for encryption.</li> <li>• Network Authentication Service Level 3, which was last changed in z/OS V1R11. This component works in conjunction with the Network Authentication Service component of the Integrated Security Services base element to provide stronger encryption (greater than 64 bits) than that available without the z/OS Security Level 3 feature. This component uses the TDES and AES algorithms for encryption.</li> <li>• OCSF Security Level 3, which was last changed in z/OS V1R9. This component works in conjunction with the OCSF component of the Cryptographic Services base element to provide stronger encryption (greater than 64 bits) than that available without the z/OS Security Level 3 feature. This component uses the TDES, DES, and RC2/RC4/RC5 algorithms for encryption.</li> <li>• System Secure Sockets Layer (SSL) Security Level 3, which was last changed in z/OS V1R11. This component works in conjunction with the System SSL component of the Cryptographic Services base element to provide stronger encryption (greater than 64 bits) than that available without the z/OS Security Level 3 feature. This component uses the RC2/RC4, TDES, and AES algorithms for encryption.</li> </ul> <p>This feature is worldwide exportable subject to U.S. export regulations.</p>
<b>z/OS UNIX</b>	z/OS V1R11	<p>Type: base element, exclusive.</p> <p>z/OS UNIX System Services (z/OS UNIX) provides the standard command interface familiar to interactive UNIX users. This base element is made up of four components:</p> <ul style="list-style-type: none"> <li>• Application Services, which was last changed in z/OS V1R11. This</li> </ul>

		<p>component includes the Shell and Utilities, Debugger, and Parallel Environment.</p> <ul style="list-style-type: none"> <li>• Connection Manager, which was last changed in OS/390 V2R7.</li> <li>• Integrated Call Level Interface (ICLI), which was last changed in z/OS V1R6.</li> <li>• Process Manager, which was last changed in OS/390 V2R7.</li> </ul>
<b>3270 PC File Transfer Program</b>	OS/390 V1R2  (3270 PC File Transfer Program V1R1.1, 5665-311)	Type: base element, nonexclusive.  3270 PC File Transfer Program transfers files from the host to the workstation for offline data manipulation, updating, or correction or for the transfer and storage of local data in the host system.

**Appendix B: Coexistence Service for z/OS V1R11**

Coexistence and fallback PTFs installed on back-level systems allow those systems to coexist with z/OS V1R11 systems during your migration, and allow backout from z/OS V1R11 to the back-level systems if necessary. Coexistence and fallback are important because they allow you to migrate systems in a multisystem configuration to z/OS V1R11 using rolling IPLs (one system at a time), allowing for continuous application availability. These PTFs, and any that are recently found that are not listed below, are identified with the SMP/E FIXCAT IBM.Coexistence.z/OS.V1R11.

**This table is for coexistence and fallback service on z/OS V1R10 for z/OS V1R11.**

Element or feature, and function provided by PTFs	z/OS V1R10 PTFs (and corresponding APARs)
<b>BCP:</b> Fixes a problem that occurs when a new cross-system type ENF code is defined in z/OS V1R11. Specifically, the problem occurs when a pre-z/OS V1R11 system receives an unknown ENF signal code and does not clean up the storage associated with the unknown code.	UA44705 (APAR OA26493)
<b>BCP:</b> The JCL EATTR parameter is new in z/OS V1R11 and indicates whether a data set can support extended attributes (format-8 and format-9 DSCBs). The PTF allows the parameter to be ignored on z/OS V1R10 systems, which do not have EATTR support.	UA46865 (APAR OA27441)
<b>BCP:</b> z/OS V1R11 provides GRS GQSCAN/ISGQUERY ENQ constraint relief. The PTF is required for GQSCAN processing to send message formats to later-level systems. The support on a z/OS V1R11 system detects whether the PTF has not been applied to peers and prevents any peers without the PTF from joining a sysplex. The support also prevents offending earlier-level systems that do not have the PTF from coming into the sysplex once the earlier-level system has successfully joined.	UA46864 (APAR OA24172)
<b>BCP:</b> z/OS V1R11 systems can run with a sysplex CDS formatted to support the new system status detect protocol. The PTF allows systems at earlier releases to coexist with systems that are running with a sysplex CDS that has been formatted to support the new system status detection protocol. All systems must have the PTF installed or be at release z/OS V1R11 and running with a sysplex couple data set formatted for this new system status detect function in order for the function to become enabled.	UA47790 (APAR OA26037)
<b>BCP:</b> Allows Optimized Schema Representations (OSRs) generated on z/OS V1R11 systems to be used by z/OS XML System Services on z/OS V1R10 systems.	UA46860 (APAR OA28153)
<b>BCP:</b> Allows WLM to correctly calculate the entire CEC capacity when MVS utilization is below 90%.	UA45081 (APAR OA27032)
<b>Communications Server:</b> Allows pre-z/OS V1R11 systems to successfully establish secure connections using TLSv1.1 with z/OS V1R11 systems. Without the PTF, pre-z/OS V1R11 systems are not able to recognize the protocol level for TLSv1.1 and will reset the connection.	UK41038 (APAR PK72201)
<b>Communications Server:</b> Allows for compatibility in VTAM for RTP connections.	UA44023 (APAR OA26490)
<b>Cryptographic Services:</b> Allows an earlier system to tolerate the new encrypted AES keys in a CKDS shared with z/OSV1R11 ICSF. Also, enhances the sharing of a PKDS on an earlier system with z/OSV1R11 sysplex support for the PKDS.	UA44731 for FMID HCR7750 (APAR OA26579)
<b>DFSMSdftp:</b> Allows z/OS V1R10 DFSMSdftp OAM to tolerate enhancements made in z/OS V1R11 for 2 GB object support for tape and OAM archive retention.	UA46463 (APAR OA26334)
<b>DFSMSdftp:</b> Allows pre-z/OS V1R11 systems to share the data set separation profile that contains both old and new syntax in an SMS sysplex environment. Without the PTF, pre-z/OS V1R11 systems cannot recognize the new syntax, and the data set separation function is disabled. With the PTF, pre-z/OS V1R11 systems will ignore the new data set separation by volume syntax and continue to function as before.	UA46068 (APAR OA25344)
<b>DFSMSdftp:</b> In z/OS V1R11, extended address volume support is enhanced to allow straddled extents to be created for VSAM data sets. The PTF allows a VSAM data set allocated in z/OS V1R11 with straddled extents to be processed from z/OS V1R10 such that the data set can be referenced, extended, partial released, and scratched. In addition, the DADSM conversion routines have been changed to tolerate and validate straddled extents.	UA46206 (APAR OA26623)
<b>DFSMSdftp:</b> In z/OS V1R11, support was added for the EATTR attribute, allowing specification of whether or not a data set can reside in Extended Addressable Storage (EAS) on an Extended Addressable Volume (EAV). This PTF allows a VSAM data set	UA46284 (APAR OA27069)

allocated on z/OS V1R11 to be accessed from z/OS V1R10 such that the data set's EATTR attribute is recognized and handled appropriately. The PTF also allows both IDCAMS (using IMPORT and EXPORT) and DSS (using DSS COPY and RESTORE) to handle data sets created on z/OS V1R11 in terms of moving such data sets to z/OS V1R10, and retaining the original EATTR specification associated with the source VSAM data set.	
<b>DFSMSdftp:</b> In z/OS V1R11, extended address volume support is enhanced, and as a result an allocation can span the track-managed or cylinder-managed boundary. The PTF allows a z/OS V1R10 system to do a partial space release of a VSAM data set spanning the track-managed or cylinder-managed boundary.	UA44892 (APAR OA26839)
<b>DFSMSdftp:</b> Tolerates extended address volume enhancements in z/OS V1R11 by detecting extended format sequential data sets (EFSAM) in the EAS and fails them with existing abend 313-0C because they are not supported in z/OS V1R10 (needs OA26623 and OA27577).	UA46221 (APAR OA27578)
<b>DFSMSdftp:</b> Tolerates extended address volume enhancements in z/OS V1R11 by providing new DFA fields that allow programs to learn which data set types can be opened with format-8 DSCBs. In z/OS V1R10, only the new VSAM bit, DFAVSAMFOREAS, will be on.	UA46205 (APAR OA27577)
<b>DFSMSdftp:</b> In z/OS V1R11, extended address volume enhancements support all EATTR values that are attached to a VSAM cluster allocated from a z/OS V1R11 system. The PTF allows an extension to a new volume to recognize the EATTR value and select space appropriately.	UA46431 (APAR OA27286), UA46703 (APAR OA27270)
<b>DFSMSdftp:</b> Tolerates extended address volume enhancements in z/OS V1R11 by accepting and ignoring the EATTR keyword.	UA46865 (APAR OA27441)
<b>DFSMSdftp:</b> Tolerates extended address volume enhancements in z/OS V1R11. Specifically, the PTF permits Access Method Services (AMS) to recognize the EATTR value on an import of a portable data set created from z/OS V1R11 and also supports passing the EATTR value on a z/OS V1R10 export. Having the EATTR value propagated to the portable data set will allow a subsequent import of this portable data set to a z/OS V1R10 (or higher) release to support the EATTR value. Releases prior to z/OS V1R10 will not support EATTR on an import or export; therefore, the EATTR value will not be specified for an imported data set and in the exported portable data set.	UA46322 (APAR OA27545)
<b>DFSMSdftp:</b> Tolerates extended address volume enhancements in z/OS V1R11. Specifically, the PTF detects extended format sequential data sets (EFSAM) in the EAS and fails them because they are not supported in z/OS V1R10, restores EFSAMs properly, properly handles an extent that resides in both the non-EAS and EAS, and properly handles the updating and preservation of EATTR and F9DSCB fields.	UA00021 (APAR OA26996) and UA48144 (APAR OA29235)
<b>DFSMSshsm:</b> Causes z/OS V1R10 to ignore the ALL keyword on BDELETE, HBDELETE, and ARCBDEL commands, allowing these commands to function correctly on z/OS V1R10 when the ALL keyword is used.	UA48183 (APAR OA29178)
<b>DFSMSshsm:</b> Tolerates extended address volume (EAV) enhancements in z/OS V1R11. Non-VSAM data sets that have format-8 or format-9 DSCBs will be visible to the system but will not be eligible for migration, backup, or ABACKUP processing. In z/OS V1R10, DFSMSshsm can recall, recover, and perform aggregate recovery (ARECOVER) of both VSAM and non-VSAM data sets from a z/OS V1R11 migration or backup copy with format-8 and format-9 DSCBs. Recall/Recover/ARECOVER of non-VSAM data sets that have format-8 or format-9 DSCBs will be completed to the track managed space.  Recover REPLACE of non-VSAM data sets, if a pre-allocated non-VSAM data set is found with a format-8 or format-9 DSCB will be failed. If a pre-allocated non-VSAM data set is found with a format-1 DSCB, the EATTR value is passed to DFSMSdss for processing.	UA00026 (APAR OA27146)
<b>DFSMSshsm:</b> Allows pre-z/OS V1R11 systems to tolerate the new CDS record provided with the enhancement for maintaining retained data set backup copy. In earlier releases, DFSMSshsm fails a data set backup request that would cause an active backup copy to become a retained backup version. The following functions do not process retained backup versions on pre-z/OS V1R11 systems: RECOVER, BDELETE, EXPIREBV, DELVOL, AUDIT, RECYCLE, and FREEVOL BVOL AGE. In most cases, a warning message is issued when DFSMSshsm skips over a retained	UA46357 (APAR OA26327)

copy.	
<b>DFSMSHsm:</b> Allows a pre-z/OS V1R11 DFSMSHsm to read the z/OS V1R11 SMS copy pool definitions without error. In earlier releases, DFSMSHsm backs up a copy pool that has been defined in z/OS V1R11, however, the backup command will fail if the SMS copy pool definition indicates that the catalog information is required to be captured. The FREEVOL and AUDIT commands on pre-z/OS V1R11 systems are also updated to tolerate the new CSI information data sets on ML1. (Audit commands on a pre-z/OS V1R11 release will not detect errors from the new support.)	UA46225 (APAR OA26328), UA46073 (APAR OA26497), UA46091 (APAR OA26498), UA47252 (APAR OA28743)
<b>DFSMSHsm:</b> Allows pre-z/OS V1R11 DFSMSHsm systems to recall and recover data sets from a z/OS V1R11 DFSMSHsm LFS migration and backup copies from NOOVERFLOW and OVERFLOW volumes. Use of the ARECOVER command to recover ML1 data sets that are LFS will recover to ML1 volumes on pre-z/OS V1R11 systems.	UA46267 (APAR OA26330)
<b>DFSMSrmm:</b> Enables an application that has been updated to handle multiple resources, to be compiled and run on a pre-z/OS V1R11 system. The updated application can run on any release and will get the benefit only when the PTF is installed. The callers' code will work whether or not the PTF is installed.	UA46197 (APAR OA25714)
<b>DFSORT:</b> Allows z/OS V1R10 DFSORT to tolerate DFSMS extended address volume enhancements in z/OS V1R11.	UK45047 (APAR PK77146)
<b>Distributed File Service:</b> Provides a base for future function in zFS.	UA45614 (APAR OA25026)
<b>ISPF:</b> Allows pre-z/OS V1R11 systems to display ISPF panels that exploit the new )INEXIT panel definition statement. Without the PTF, pre-z/OS V1R11 systems will not be able to recognize the new syntax, and panels that might otherwise display correctly will not display because of a syntax error.	UA46323 (APAR OA26999)
<b>JES2:</b> Allows members running z/OS V1R9 JES2 (FMID HJE7740) or z/OS V1R10 JES2 (FMID HJE7750) to coexist in a multi-access spool (MAS) with members running z/OS V1R11 JES2 (FMID HJE7760).	UA46531 (APAR OA25093)
<b>JES3:</b> Allows lower level JES3 releases to coexist with z/OS R11 JES3.	UA48640 (APAR OA29420)
<b>NFS:</b> Several new NFS server site attributes are added in z/OS V1R11 to expand the NFS file system type (z/OS UNIX versus MVS data set) specification capability. The new attributes provide the capability to specify an MVS data set prefix in addition to the z/OS UNIX prefix hfs, and the ability to specify the heuristic to be used for determining the file system type when no prefix is specified. Another new NFS server site attribute is added in z/OS V1R11 to detect and report excessive delays in NFS server z/OS UNIX field system and MVS data set access requests. The default attribute settings are such that the NFS server will work the same as in previous releases. Pre-z/OS V1R11 NFS servers must tolerate the existence of the new attributes. The PTF also allows pre-z/OS V1R11 NFS servers to read the z/OS V1R11 NFS mount handle database, resulting in the NFS server being able to start successfully.	UA46259 (APAR OA25864)
<b>SDSF:</b> Allows z/OS V1R10 systems to use the SDSF z/OS V1R11 level of parm lib member ISFPRMxx.	UK90016 (APAR PK66761)
<b>z/OS UNIX:</b> F OMVS,NEWROOT compatibility.	PTF for APAR OA29567

### z/OS V1R9 coexistence and fallback PTFs

Install, on z/OS V1R9, the coexistence and fallback PTFs listed in the table below.

Element or feature, and function provided by PTFs	z/OS V1R9 PTFs (and corresponding APARs)
<b>BCP:</b> Fixes a problem that occurs when a new cross-system type ENF code is defined in z/OS V1R11. Specifically, the problem occurs when a pre-z/OS V1R11 system receives an unknown ENF signal code and does not clean up the storage associated with the unknown code.	UA44704 (APAR OA26493)
<b>BCP:</b> z/OS V1R11 provides GRS GQSCAN/ISGQUERY ENQ constraint relief. The PTF is required for GQSCAN processing to send message formats to later-level systems. The support on a z/OS V1R11 systems detects whether the PTF has not been applied to peers and prevents any peers without the PTF from joining a sysplex. The support also prevents offending earlier-level systems that do not have the PTF	UA46863 (APAR OA24172)

from coming into the sysplex once the earlier-level system has successfully joined.	
<b>BCP:</b> z/OS V1R11 systems can run with a sysplex CDS formatted to support the new system status detect protocol. The PTF allows systems at earlier releases to coexist with systems that are running with a sysplex CDS that has been formatted to support the new system status detection protocol. All systems must have the PTF installed or be at release z/OS V1R11 and running with a sysplex couple data set formatted for this new system status detect function in order for the function to become enabled.	UA47789 (APAR OA26037)
<b>BCP:</b> Allows Optimized Schema Representations (OSRs) generated on z/OS V1R11 systems to be used by z/OS XML System Services on z/OS V1R9 systems.	UA46859 (APAR OA28153)
<b>BCP:</b> Allows WLM to correctly calculate the entire CEC capacity when MVS utilization is below 90%.	UA45080 (APAR OA27032)
<b>BCP:</b> Allows a z/OS V1R9 system to tolerate the WLM policy changes and related control block changes that were introduced in z/OS V1R10.	UA39716 (APAR OA17252), UA41279 (APAR OA25013)
<b>BCP:</b> Causes the z/OS V1R9 program management binder to reject a PO5 PMAR level with the z/OS V1R10 (and later) PO sublevel.	UA39319 (APAR OA20962)
<b>BCP:</b> Allows a z/OS V1R9 system to tolerate changes made in z/OS V1R10 to console data that is passed between members of a sysplex.	UA39760 (APAR OA18204)
<b>BCP:</b> Prevents all WTORs and retained action messages that are outstanding on pre-z/OS V1R10 systems when a z/OS V1R10 or later system joins a sysplex from appearing twice in the response to a D R command that is processed on the z/OS V1R10 or later system.	UA40988 (APAR OA24850)
<b>BCP:</b> Allows a z/OS V1R9 system to tolerate changes made in z/OS V1R10 to resource recovery services (RRS) as RRS saves data during startup.	UA39874 (APAR OA23153)
<b>Communications Server:</b> Allows pre-z/OS V1R11 systems to successfully establish secure connections using TLSv1.1 with z/OS V1R11 systems. Without the PTF, pre-z/OS V1R11 systems are not able to recognize the protocol level for TLSv1.1 and will reset the connection.	UK41040 (APAR PK72201)
<b>Communications Server:</b> Allows for compatibility in VTAM for RTP connections.	UA44025 (APAR OA26490)
<b>Cryptographic Services:</b> Allows an earlier system to tolerate the new AES master key in a CKDS in z/OS V1R11. Also, for a PKDS that is shared between z/OS V1R11 ICSF and a prior ICSF, the PTF allows updates to be made to the PKDS from the prior ICSF.	PTF UA44730 for FMID HCR7740 (APAR OA26579), PTF UA44731 for FMID HCR7750 (APAR OA26579)
<b>Cryptographic Services:</b> In z/OS V1R10, the LRECL of the PKA key data set (PKDS) was increased. Without the PTF, the increase in size could cause problems when the PKDS is shared between multiple levels of ICSF. The PTF allows an earlier level of ICSF to perform I/O with either the existing PKDS or the larger PKDS. It also prevents the earlier level of ICSF from creating or using RSA keys that are larger than 2048 bits.	UA37971 (APAR OA21807)
<b>DFSMSdfp:</b> Tolerates extended address volume enhancements in z/OS V1R11. Specifically, the PTF restores EFSAMs properly and properly handles the updating and preservation of EATTR and F9DSCB fields.	UA00022 (APAR OA26996), UA48233 (APAR OA29102) and UA48146 (APAR OA29235)
<b>DFSMSdfp:</b> In z/OS V1R10 (and later), multiple lock structures are supported. The PTF prevents a z/OS V1R9 system from opening a data set that z/OS V1R10 or later has already opened to a secondary lock structure. (Current sharing can still be performed by using the current lock structure, IGWLOCK00.) The PTF also provides toleration of new shared structures and communication that is done between SMSVSAM instances.	UA42230 (APAR OA25754)
<b>DFSMSdfp:</b> In z/OS V1R11, Extended Address Volume support is enhanced to allow an extent that starts in track-managed space and ends in cylinder-managed space. This PTF allows a VSAM data set allocated in z/OS V1R11 with an extent starting in track-managed space and ending in cylinder-managed space to be processed from z/OS V1R10. With this PTF this VSAM file could be referenced, extended, partial released and scratched. In addition the DADSM convert routines were changed to tolerate and validate extents that start in track-managed space and end in cylinder-managed space.	UA46207 (APAR OA26623)
In z/OS V1R11, the extended attribute data set attribute, EATTR, can be assigned to data sets. This PTF allows DADSM create and extend functions in z/OS V1R10 to honor the specified EATTR value when allocating and extending files. For example,	

<p>an EATTR=NO value for a VSAM file can be specified in z/OS V1R11 during allocation, but processed in z/OS V1R10 during extend processing. With this PTF the z/OS V1R10 will use the NO value for EATTR during extend. In addition DADSM create interfaces have been changed to support the recording of the passed EATTR value in the format 1/8 DSCB.</p> <p>This PTF also removes STAT084 errors in the OBTAIN, CVAFSEQ, CVAFDIR, and CVAFFILT macros. This allows data set list builders like ISPF and IEHLIST LISTVTOC (and many others) to display/see DSCBs with extended attributes as long as EADSCB=OK has been specified. In other words what you see on z/OS V1R11 is what you will see on z/OS V1R10. The stat084 used to be set for a data set with extended attribute DSCBs where the data set type described by this DSCB was not supported in the release for EAS.</p>	
<p><b>DFSMSdfp:</b> Allows pre-z/OS V1R11 systems to share the data set separation profile that contains both old and new syntax in an SMS sysplex environment. Without the PTF, pre-z/OS V1R11 systems cannot recognize the new syntax, and the data set separation function is disabled. With the PTF, pre-z/OS V1R11 systems will ignore the new data set separation by volume syntax and continue to function as before.</p>	UA46069 (APAR OA25344)
<p><b>DFSMSdfp:</b> Causes a z/OS V1R9 system to do the following:</p> <ul style="list-style-type: none"> <li>• Fail OSREQ DELETE and OSREQ RETRIEVE requests for objects greater than 268 435 456 bytes.</li> <li>• Skip OSMC processing of objects greater than 268 435 456 bytes.</li> <li>• Recognize the new P value in the FULL column of the TAPEVOL and VOLUME tables as permanently marked full.</li> </ul>	UA39934 (APAR OA22026)
<p><b>DFSMSdfp:</b> Allows z/OS V1R9 DFSMSdfp OAM to tolerate enhancements made in z/OS V1R11 for 2 GB object support for tape and OAM archive retention.</p>	UA46464 (APAR OA26334)
<p><b>DFSMSdfp:</b> Allows the new (in z/OS V1R10 and later) P volume full value to be displayed as "yes" in the volume full column on the Mountable Optical Volume List ISMF panel (DGTLGP31) of a z/OS V1R9 system.</p>	UA39959 and, if Japanese, UA39960 (APAR OA22400)
<p><b>DFSMSdfp:</b> In z/OS V1R10, the LSPACE macro's parameter list was extended to support extended address volumes (EAVs). The PTF allows a z/OS V1R9 system to tolerate the change.</p>	UA40221 (APAR OA22449)
<p><b>DFSMSdfp:</b> Allows a DEVSERV QDASD command issued on z/OS V1R9 to report the actual size of an extended address volume even though the volume cannot be brought online. (Extended address volume support was introduced in z/OS V1R10.)</p>	UA40229 (APAR OA21487)
<p><b>DFSMSdss<sup>(TM)</sup>:</b> Allows a z/OS V1R9 system to restore a data set that was dumped from an extended address volume on z/OS V1R10. See the APAR for additional information.</p>	UA44190 (APAR OA26354)
<p><b>DFSMShsm:</b> Causes z/OS V1R9 to ignore the ALL keyword on BDELETE, HBDELETE, and ARCBDEL commands, allowing these commands to function correctly on z/OS V1R9 when the ALL keyword is used.</p>	UA48184 (APAR OA29178)
<p><b>DFSMShsm:</b> Support is added for preserving the EATTR value.</p>	UA00028 (APAR OA27146)
<p><b>DFSMShsm:</b> Allows pre-z/OS V1R11 DFSMShsm systems to recall and recover data sets from a z/OS V1R11 DFSMShsm LFS migration and backup copies from NOOVERFLOW and OVERFLOW volumes. Use of the ARECOVER command to recover ML1 data sets that are LFS will recover to ML1 volumes on pre-z/OS V1R11 systems.</p>	UA46268 (APAR OA26330)
<p><b>DFSMShsm<sup>(TM)</sup>:</b> Allows a z/OS V1R9 system to tolerate backups created with the z/OS V1R10 (or later) NEWNAME SPHERE(NO) and GVCN(YES) keywords.</p>	UA39926 (APAR OA23786)
<p><b>DFSMShsm:</b> Allows a pre-z/OS V1R11 DFSMShsm to read the z/OS V1R11 SMS copy pool definitions without error. In earlier releases, DFSMShsm backs up a copy pool that has been defined in z/OS V1R11, however, the backup command will fail if the SMS copy pool definition indicates that the catalog information is required to be captured. The FREEVOL and AUDIT commands on pre-z/OS V1R11 systems are also updated to tolerate the new CSI information data sets on ML1. (Audit commands on a pre-z/OS V1R11 release will not detect errors from the new support.)</p>	UA46226 (APAR OA26328), UA46074 (APAR OA26497), UA46092 (APAR OA26498), UA47253 (APAR OA28743)
<p><b>DFSMShsm:</b> Allows pre-z/OS V1R11 systems to tolerate the new CDS record</p>	UA46358 (APAR OA26327)



provided with the enhancement for maintaining retained data set backup copy. In earlier releases, DFSMSShsm fails a data set backup request that would cause an active backup copy to become a retained backup version. The following functions will not process retained backup versions on pre-z/OS V1R11 systems: RECOVER, BDELETE, EXPIREBV, DELVOL, AUDIT, RECYCLE, and FREEVOL BVOL AGE. In most cases, a warning message is issued when DFSMSShsm skips over a retained copy.	
<b>DFSMSShsm:</b> Allows a z/OS V1R9 system to tolerate enhanced CDS backup of XCF events in z/OS V1R10 and later.	UA39940 (APAR OA22211)
<b>DFSMSShsm:</b> If you are using DFSMSShsm to manage extended address volumes on a z/OS V1R10 or later system, the PTF allows a z/OS V1R9 system to recall or recover an EAS data set with a format-8 or format-9 DSCB if the data set was migrated to, or backed up on, z/OS V1R10 or later. The PTF also allows VCC keywords specified in the management class to be processed correctly.	UA40306 (APAR OA22804)
<b>DFSMSrmm:</b> Enables an application that has been updated to handle multiple resources, to be compiled and run on a pre-z/OS V1R11 system. The updated application can run on any release and will get the benefit only when the PTF is installed. The callers' code will work whether or not the PTF is installed.	UA46198 (APAR OA25714)
<b>DFSMSrmm<sup>(TM)</sup>:</b> Allows a z/OS V1R9 system to tolerate the DFSMSrmm CDS changes made in the TS1130 device support enhancement provided by APAR OA22132 and integrated in z/OS V1R10 and later.	UA40426 and, if Japanese, UA40427 (APAR OA22706)
<b>DFSMSrmm:</b> Allows a z/OS V1R9 system to tolerate the new EDGHSKP RPTEXT command in SYSIN. The PTF is required <b>only</b> if you want to prepare in advance to override the z/OS V1R10 and later RPTEXT XREPTXT DD default processing, which is to create only extended (X) records.	UA38172 (APAR OA23177)
<b>Distributed File Service:</b> Provides a base for future function in zFS.	UA45616 (APAR OA25026)
<b>HCD:</b> In z/OS V1R10 and later, HCD allows multiple users to work simultaneously on the IODF. The PTFs prevent earlier z/OS releases from accessing an IODF prepared for multiuser access.	UA90386 and, if Japanese, UA90388 (APAR OA22842)
<b>IBM TDS:</b> Allows new directory attributes in z/OS V1R10 (and later) for an IBM TDS LDAP server to be tolerated by z/OS V1R9.	UA38112 and, if Japanese, UA38113 (APAR OA22022)
<b>ISPF:</b> Allows pre-z/OS V1R11 systems to display ISPF panels that exploit the new )INEXIT panel definition statement. Without the PTF, pre-z/OS V1R11 systems will not be able to recognize the new syntax, and panels that might otherwise display correctly will not display because of a syntax error.	UA46303 (APAR OA26999)
<b>JES2:</b> Allows members running z/OS V1R9 JES2 (FMID HJE7740) to coexist in a multi-access spool (MAS) with members running z/OS V1R11 JES2 (FMID HJE7760).	UA46530 (APAR OA25093)
<b>JES3:</b> Supports WLM APAR OA17252.	UA39863 (APAR OA21882)
<b>JES3:</b> Allows lower level JES3 releases to coexist with z/OS R11 JES3.	UA48639 (APAR OA29420)
<b>NFS:</b> Causes a z/OS V1R9 NFS Server to ignore site attributes that are new in z/OS V1R11. Note that on fallback you must remove any exploitation of the new function from your export file and any <b>mount</b> commands.	UA46261 (APAR OA25864)
<b>NFS:</b> A new NFS server processing attribute was added in z/OS V1R10 to better support ACLs between the z/OS server and z/OS client. The new attribute indicates that the server is communicating with a z/OS client, not some other client. The value is set automatically by the client; no user action is required. However, pre-z/OS V1R10 NFS servers must tolerate the existence of the new attribute.	UA37369 (APAR OA22759)
<b>NFS:</b> Allows a z/OS V1R9 system to read the z/OS V1R10 and later NFS mount handle database, resulting in the NFS server being able to start successfully.	UA40245 (APAR OA24257)
<b>SDSF:</b> Allows z/OS V1R9 systems to use the SDSF z/OS V1R11 level of parmliib member ISFPRMxx.	UK90015 (APAR PK66761)
<b>SDSF:</b> Allows z/OS V1R9 SDSF to tolerate (by ignoring) new keywords added to parmliib member ISFPRMxx in z/OS V1R10. This allows z/OS V1R9 systems to share the same SDSF parmliib member with z/OS V1R10 or later systems. Note that only z/OS V1R9 and later SDSF can share parmliib members.	UK90012 and, if Japanese, UK33993 (APAR PK51434)
<b>Security Server:</b> In z/OS V1R10 and later, the Network Authentication Service of base element Integrated Security Services exploits RACF password phrase support to allow the use of Kerberos passwords longer than eight characters. Kerberos keys are generated whenever a Kerberos principal's RACF password or password phrase	UA42084 (APAR OA24616)

is changed. The PTF allows pre-z/OS V1R10 images that share the same RACF database with a V1R10 or later image to associate Kerberos key expiration with the password phrase expiration value when Kerberos keys are generated on the V1R10 or later image based upon RACF password phrase change, and to continue to base Kerberos key expiration on the password expiration value when Kerberos keys are generated based upon RACF password change.	
<b>SMP/E:</b> Allows SMP/E V3R4 (which is in z/OS V1R7, V1R8, and V1R9) to quietly ignore new FIXCAT HOLD statements that will be present in IBM product and service offerings. In addition, the PTF provides support for SMP/E users who share SMPCSI data sets between pre-z/OS V1R10 systems and z/OS V1R10 (and later) systems.	UO00701 (APAR IO07480)
<b>TSO/E:</b> In z/OS V1R10 (and later), the IKJTSOxx parmlib member has a new statement, LOGON. The PTF causes this new operand to be ignored if it is encountered on z/OS V1R9 during syntax checking of parmlib member IKJTSOxx. It also ensures that the TSO/E PARMLIB LIST ROUTE(*) command will display system settings correctly in a mixed sysplex environment.	UA39739 (APAR OA20525)
<b>z/OS UNIX:</b> Provides a base for future function in zFS.	UA45844 (APAR OA24745)