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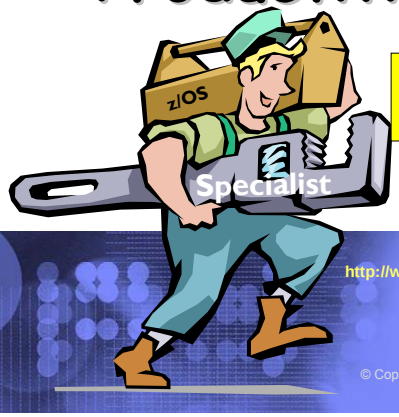
A System Programmer Productivity Tool Bag



Updated August 29, 2012
for zEC12 announcement

SHARE
Anaheim
Session 11700

August 2012

Presentation located at:
http://www.ibm.com/support/techdocs/atsmastr.nsf/Web/Techdocs
Document number: PRS840

Bette A. Brody
IBM Washington Systems Center
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Gaithersburg, MD 20879

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A Potpourri of Information

Did you Know...

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Recent Announcements

Software Releases
Service Discontinuance
Key Dates
Subscription Services
Statements of Direction

IBM

Announcements

- **z/OS is planning on a 2-year release cycle starting with the next release.**
- **z/OS *"next release"* is planned for 2H2013.**
- **FAQs**
  - **http://public.dhe.ibm.com/common/ssi/ecm/en/zsq03055usen/ZSQ03055USEN.PDF**
  - **z/OS home page: Under *Get more from z/OS***
    - **http://www-03.ibm.com/systems/z/os/zos/index.html**

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Announcements

August 28, 2012

IBM zEnterprise EC12 (zEC12)

- Announcement Letter 112-155
- Planned General Availability: September 19, 2012
  - Not all functions available – see announcement letter for additional planned availability dates
- Improved total system capacity
- Hexa-core 5.5 GHz processor chips
- 3TB of available real memory per server
- New crypto Express4S cryptographic adapter
- Flash Express® adapter card
- IBM zAware pattern recognition analytics for system health
- Energy efficiencies
- Unified Resource Manager

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Announcements

August 28, 2012

IBM zEnterprise PL/I for z/OS 4.3

- Announcement Letter 212-322
- Program number: 5655-W67

- Exploits latest zEC12 hardware architecture
- Improved complier performance
- Enhanced middleware support
  - SQL preprocessor enhancements
- Customer-requested productivity improvements
- Runs on these servers:
  - zEC12, z196, z10, z9, z990 or z890
- z/OS Release 12 or higher
- See announcement letter for additional middleware releases

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Announcements

August 28, 2012

Technology Update Pricing for AWLC

Announcement Letter 212-320

- Planned availability date: September 19, 2012

- Offers price-performance advantages for zEC12 server
- Three Technology Transition Offerings
  - Consist of Technology Update Pricing for Advanced Workload License Charges (AWLC)
  - Two revised Transition Charges for Sysplexses programs
- Reduces AWLC pricing on the zEC12 as compared to AWLC on a z196 with > 3 MSUs
- Offers sub-capacity or full capacity implementation

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Announcements

February 14, 2012

Revised availability: IBM z/OS Management Facility V1.13 DASD Management task

- Announcement Letter 212-030

The enhancements to z/OSMF to offer a new DASD Management task, described in Software Announcement 211-252, dated July 12, 2011, will not be available in first quarter 2012 with a PTF for APAR PM40869. IBM® is assessing plans for delivering this capability at a later date.

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Announcements

July 31, 2012

IBM Product ServerPac option and secure delivery for product and service downloads

- Announcement Letter ZP12-0358
- General Availability: October 15, 2012
- Will be able to place Product ServerPac orders using Shopz where the "base product" is not required to be included
- Eligible products: z/OS SREL or DB2
  - Shopz will have a visual icon (filled in triangle) indicating a product is eligible for a Product ServerPac
- Secure delivery via FTP using Secure Sockets Layer (FTPS)
  - The Shopz download pages will provide the option to download directly to your z/OS host system using FTPS

Statement of Direction: 4th quarter of 2013, IBM plans to require the use of FTPS for direct downloads to z/OS systems

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Announcements

April 11, 2012

Statement of direction: IBM z/OS

- Announcement Letter 212-086
- IBM intends to make new z/OS and z/OSMF releases available approximately every two years
- Provides sufficient time to plan for new releases and to leverage them for the most business value
- Beginning with z/OS Version 2, IBM plans to provide five years of z/OS support, with three years of optional, fee-based extended service (5+3)
  - IBM also plans to provide five years of z/OSMF support
    - Optional extended service is not planned to be available for z/OSMF Version 2

All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice.

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Announcements

February 15, 2011

z/OS 1.11 Extended Lifecycle Support

- Announcement Letter 212-025

- General Availability: October 1, 2012
- Requires IBM z/OS 1.11 license
- Fee based offering
- Provides corrective service (a fix, bypass or restriction) for up to 2 years
  - Starts October 1, 2012
  - Ends September 30, 2014
- Flexible – minimum 3 month purchase with additional 1 month increments
- Does not change coexistence, migration and fallback polices for z/OS
- FAQ available at http://www-03.ibm.com/systems/z/resources/faq/index.html

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Announcements

March 6, 2012

IBM zEnterprise and Unified Resource Manager

Announcement Letter 112-026

- New functions and configurations:
  - Hipersockets Completion Queue (now)
  - Improved network and Monitoring (now)

  - Support for 56 System x blades (March 30, 2012)
  - z/VM 6.2 guest exploitation support for high performance FICON (zHPF) (April 13, 2012)
  - zVM 6.2 Hipersockets Virtual switch Bridge Support (April 13, 2012)
  - z/VM 6.2 support for hipersockets integration with IEDN (April 13, 2012)
  - z/VM 6.2 support for improved network monitoring and metrics (April 13, 2012)
  - RPQ for additional Fibre Channel optics for BladeCenter chassis (April 24, 2012)
- Requires IBM System z196, z114

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Announcements

July 12, 2011

z/OS V1.13 – General Availability

Announcement Letter 211-252

- New functions announced:
  - Enhancements to z/OS Predictive Failure Analysis® and Runtime Diagnostics functions
  - Shorten batch windows using JCL improvements in JES2 environments.
  - New z/OS base component, z/OS Batch Runtime environment to simplify application programming
  - Improve I/O performance for z/OS UNIX® workloads in a Parallel Sysplex® using direct I/O with fully shared zFS file systems, and improve zFS availability with a new zFS internal restart function.
  - Security and Crypto enhancements
  - Improve system responsiveness with less-disruptive DFSMShsmTM journal and control data set (CDS) backups.
- Distribution: Internet, 3590, 3592 and DVD
- General Availability: September 30, 2011
- Requires IBM System z196, z114, z10 EC, z9 EC* and BC*, z900*, z990*, z890*, z800*

(*) Withdrawn from Marketing

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Announcements

July 12, 2011

z/OS Management Facility V1.13(5655-S28)

Announcement Letter 211-242

- New functions announced:
  - Clone z/OS images and deploy software more easily and consistently, using a new z/OSMF software deployment task. – Requires SMP/E 3.6
  - Define new storage volumes to SMS quickly and easily using a single UI, using a new z/OSMF disk management task.
  - More easily maintain highly secure network connections with an updated z/OSMF-based Configuration Assistant for z/OS Communications Server.
  - Integrate the z/OS experience with the ability to link and launch between z/OSMF applications and between z/OSMF and other browser-based applications
  - New Capacity Provisioning tasks
- Supported browsers: Internet Explorer 7 and 8; Mozilla Firefox 3.5 and 3.6
- Service and Support – must also order 5655-S29
  - z/OS Management Facility V1.13 Subscription and support
- General Availability: September 30, 2011
- Requires z/OS R13 or higher

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Announcements

July 12, 2011

SMP/E V3.6

Announcement Letter 211-259

- New functions announced:
  - Support z/OSMF software deployment
    - Requires z/OS 1.13
  - Two new report enhancements:
    - Report CROSSZONE
    - REPORT SYSMODS
    - Requires z/OS 1.11 or higher
- Distribution: Internet, 3590, 3592 and DVD
- Planned General Availability: September 30, 2011

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Announcements

February 15, 2011

z/OS V1.13 – Preview letter

Announcement Letter 211-007

- New functions announced:
  - Enhancements to z/OS Predictive Failure Analysis® and Runtime Diagnostics functions
  - Shorten batch windows using JCL improvements in JES2 environments.
  - New z/OS base component, z/OS Batch Runtime environment to simplify application programming
  - Improve I/O performance for z/OS UNIX® workloads in a Parallel Sysplex® using direct I/O with fully shared zFS file systems, and improve zFS availability with a new zFS internal restart function.
  - Security and Crypto enhancements
  - Improve system responsiveness with less-disruptive DFSMShsmTM journal and control data set (CDS) backups.
- Distribution: Internet, 3590, 3592 and DVD
- Planned General Availability: September 2011
- Requires IBM System z196, z10 EC, z9 EC and BC, z900, z990, z890, z800

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Notable Statements of Directions

- **z/OS 1.13 is the last release to allow: ***
  - the z/OS Capacity Provisioning support utilizing the System z API for communication with the Support Element (SE) or Hardware Management Console (HMC) – Use BCPii protocol
  - the BIND 9.2.0 function in Communications Server
  - support multi-file system zSeries File System (zFS) aggregates, including zFS clones
  - Support of BPX.DEFAULT.USER
  - Language Environment runtime options via a USERMOD
  - zFS cloning support
  - Communications Server last release to include TSO/E-based DNET function

* **Will be removed from the product in z/OS *next* Release**

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Notable Statements of Directions

- **z/OS 1.12 is the last release to allow: ***
  - z/OS Distributed File Service using DCE architecture
  - z/OS UNIX System Services Connection Scaling functions provided by Connection Manager and Process Manager components
  - z/OS Distributed Computing Environment (DCE) & DCE Security server

* **Will be removed from the product in z/OS *next* Release (z/OS V1R13)**

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Notable Statements of Directions

- **z/OS 1.11 is the last release to allow: ***
  - From Communications Server:
    - Optional setting for RFC4301 compliance – will be mandatory
  - Language Environment underlying CSVRTLS services
  - msys for Setup
  - SDK1.4 (5655-156) support

* **Will be removed from the product in z/OS *next* Release (z/OS V1R12)**

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Statements of Direction

For more information, and for all previously announced statements of direction affecting z/OS, visit

ibm.com/servers/eserver/zseries/zos/zos_sods.html

Also, see Washington Systems Center Flash10451 at
www.ibm.com/support/techdocs

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Note: All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice.

Functions Planned to be Withdrawn *in the TWO releases after z/OS 2.1*		**Announcement Letter**
Consoles shared mode (from the BCP)	Base elements – migrate distributed mode	**212-086** April 11, 2012

Functions Planned to be Withdrawn *in the TWO releases after z/OS 2.1*		**Announcement Letter**
Consoles shared mode (from the BCP)	Base elements – migrate distributed mode	**212-086** April 11, 2012
Functions Planned to be Withdrawn in z/OS 2.1		**Announcement Letter**
BIND DNS 9.2.0 (from Communications Server)	Base Element – Anyone using this as a caching-only name server should use the Resolver cache function, which will be available in z/OS R11 to cache DNS responses. Anyone using this as a primary or secondary authoritative name server should investigate using BIND on Linux for System z	**209-029** Feb. 24, 2009 **211-007** Feb. 15, 2011
zFS cloning support (such as zfsadm clone and zfsadm clonesys commands). Do not mount file systems containing a cloned file system (.bak)	Base elements – when support for cloning is removed, only zFS capability mode aggregates will be supported. Find (with **modify zfs,query** command) and copy any cloned files to compatibility mode aggregrates.	**211-007** Feb. 15, 2011

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zFS multi-file system aggregates (from Distributed File Service)	Base Element – copy zFS multi-file system aggregates to zFS compatibility mode aggregates.	**211-007** Feb. 15, 2011
BPX.DEFAULT.USER	Base Element support – use BPX.UNIQUE.USER instead (as of R11) or assign unique UIDs and GIDs.	**211-007** Feb. 15, 2011
SMP/E USERMOD for LE run-time options	IBM recommends using CEEPRMxx PARMLIB member to change Language Environment run-time options	**210-008** Feb. 9, 2010
Capacity Provisioning using System z API with SE and HMC	Base Element support – will use BCPii instead. System z API will still be supported on the SE and HMC. Use Tracking Facility with OA35284. Look for "CPO-W:SNMP *usage domain name*".	**211-007** Feb. 15, 2011
IBM Configuration Assistant for z/OS Communications Server Tool	Currently a web-download. Currently provided as an "as is" non-warranted web download. Customers should migrate to z/OSMF (IBM Configuration Assistant for z/OS Communications Server) which runs within z/OSMF is part of a supported IBM product and contains all functions supported with the Windows tool.	**211-252** July 12, 2011
Communications Server - TSO/E-based DNET function, a diagnostic tool for VTAM dump analysis	Base Element support – use similar functions available in IPCS for VTAM diagnosis instead.	**212-086** April 11, 2012
Product documentation on DVD	IBM is going"green". Documentation will be delivered over the Internet	**212-086** April 11, 2012
Functions Withdrawn in z/OS Release 13		**Announcement Letter**
DCE and DCE Security Server	Base Elements – IBM WebSphere Application Server, the IBM Network Authentication Service, and/or the IBM Directory Server as replacement strategies for each of the DCE technologies.	**209-242** Aug. 18, 2009
DFS support that utilizes the DCE architecture	Base Element support – z/OS Network File System (NFS) implementation as the replacement	**209-242** Aug. 18, 2009
z/OS UNIX Connection Manager and Process Manager	The z/OS UNIX System Services Connection Scaling functions provided by the Connection Manager and Process Manager components	**210-235** July 22, 2010
Functions Withdrawn in z/OS Release 12		**Announcement Letter**
Msys for Setup	Base element	**209-242** Aug.18, 2009
Optional setting for RFC4301 compliance (from Communications Server)	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. **[Will be removed in next z/OS Release]**	**208-042** Feb. 26, 2008 **209-242** Aug 18, 2009
Language Environment underlying CSVRTLS services	Base Element support – LE RTLS support was removed in z/OS R5. Usage tracking assistance is provided in OA29019.	**209-242** Aug. 18, 2009
Discontinue delivery of software on 3480, 3480C and 3480E tape media	IBM recommends using Internet Delivery Service. Internet delivery is IBM's flagship delivery method; therefore future software delivery enhancements will be focused in this area.	**208-186** Aug. 5, 2008 **209-242** Aug. 18, 2009 **910-136** July 22, 2010
Functions Withdrawn in z/OS Release 11		**Announcement Letter**

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BIND DNS 4.9.3 (from Communications Server)	Base Element - implement BIND 9.2.0 as a replacement (available since z/OS R4)	**209-029** Feb. 24, 2009 **203-266** Oct. 7, 2003 **204-017** Feb. 10, 2004 **208-042** Feb. 26, 2008
Network Database (NDB) function will be removed from Communications Server	Customers who currently use or plan to use the NDB function should investigate the distributed data facility (DDF) provided by z/OS DB2, and the DB2 Run-Time Client. DDF allows client applications running in an environment that supports DRDA(R) to access data at DB2(R) servers.	**209-029** Feb. 24, 2009 **207-175** Aug. 7, 2007 **208-042** Feb. 26, 2008
DHCP server function will be removed from the Communications Server component.	Customers who currently use or plan to use the z/OS DHCP server should investigate using a DHCP server on Linux for System z.	**209-029** Feb. 24, 2009 **207-175** Aug. 7, 2007 **208-042** Feb. 26, 2008
Boot Information Negotiation Layer (BINL) function will be removed from the Communications Server component	Customers using this function should investigate the use of IBM Tivoli(R) Provisioning Manager for OS Deployment for network based operating system installation services.	**209-029** Feb. 24, 2009 **207-175** Aug. 7, 2007 **208-042** Feb. 26, 2008
Attaching zSeries File System (zFS) multi-file system aggregates	**z/OS V1.10 is the last release** to allow attaching zSeries File System (zFS) multi-file system aggregates to be shared across systems in a sysplex. IBM has previously recommended these multi-file system aggregates not be shared in a sysplex environment. Once this support has been removed, attempts to attach zFS aggregates will fail in a z/OS UNIX shared file system environment. Attaching zFS compatibility mode aggregates, which have a single file system per data set, will continue to be supported in all environments. Note: Mounting was removed in z/OS 1.8	**205-034** Feb. 15, 2005 **208-186** Aug. 5, 2008
Support for IPCS Problem management commands	**z/OS V1.10 is the last release** to include IPCS Problem Management Subcommands. 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.	**208-186** Aug. 5, 2008
Integrated Security Services LDAP Server	**z/OS V1.10 is the last release** of z/OS which will support the Integrated Security Services LDAP Server. A new optimized LDAP server, called IBM Tivoli Directory Server for z/OS (ITDS) as delivered for z/OS 1.8. Customers who are currently using the Integrated Security Services LDAP Server, should investigate migrating to ITDS, which was designed to allow greater consolidation of LDAP directories on z/OS to help simplify enterprise management and disaster recovery	**208-186** Aug. 5, 2008

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z/OS Key Dates

Date	
9 September 2011	Cryptographic Support for z/OS R11-R13 Web deliverable
16 September 2011	First date to order z/OS 1.13
30 September 2011	General Availability z/OS 1.13
11 April 2012	z/OS SOD: Reversion and extending support to 5 years
19 September 2012	Cryptographic Support for z/OS R12-R13 Web deliverable
30 September 2012	z/OS 1.9 Lifecycle Extension Ends
30 September 2012	End of service for z/OS 1.11
01 October 2012	z/OS 1.11 Lifecycle Extension Available

Note: 34xx tape media no longer available after February 21, 2011

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Key dates

- **September 16, 2011**: First date for ordering z/OS V1.13 ServerPac, and CBPDO using CFSW configuration support or ShopzSeries, the Internet ordering tool. Most z/OS media (executable code) is shipped only through Customized Offerings (ServerPac, SystemPac, and CBPDO).
- **September 30, 2011**: z/OS V1.13 general availability via ServerPac and CBPDO.
- **September 9, 2011**: General availability of Cryptographic Support for z/ OS V1R11-R13 web deliverable. This web deliverable will support z/OS V1.11 through z/OS V1.13.
- **April 11, 2012**: z/OS announces SOD to reversion and extend support.

September 19, 2012: Cryptographic Support for z/OS V1R12-V1R13

This download will provide support for new encryption functions in the IBM zEnterprise EC12 and the new Crypto Express4S card

- **September 30, 2012**: End of service for z/OS V1.11 (5694-A01).
- **October 1, 2012**: Lifecycle Extension for z/OS 1.11 (5657-A01) generally available.

To obtain the Web deliverable listed above, visit
http://www.ibm.com/systems/z/os/zos/downloads/

The end of service for a Web deliverable occurs at end of service for the release on which it runs.

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It is very important to order the required z/OS release needed for migration, coexistence and fallback while it is still available. DO NOT WAIT until the last week to order. You need time for the order to get through the process without any problems.

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z/OS Service Support

OS/390 – All Releases	Service discontinued
z/OS V1R1 – z/OS V1R9[2]	Service discontinued
z/OS V1R10[3]	September 30, 2011
z/OS V1R11[4]	September 30, 2012
z/OS V1R12	September 2014*
z/OS V1R13	September 2016*

- [2] Extended Lifecycle – see announcement letter 210-027 for z/OS 1.9 (ends Sept. 30, 2012)
- [3] Extended Lifecycle – see announcement letter 211-002 for z/OS 1.10
- [4] Extended Lifecycle – see announcement letter 212-025 for z/OS 1.11
- * Planned end of service – not officially announced
- z/OS EOS dates at:
  http://www.ibm.com/servers/eserver/zseries/zos/support/zos_eos_dates.html

Now is the time to plan your migration to z/OS 1.12 or 1.13

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z/OS
IBM intends to market a given release until the next release becomes available. IBM may occasionally choose to continue to market a release beyond the availability of the next release.

All statements regarding the future direction and intent of IBM are subject to change or withdrawal without notice and represent goals and objectives only.

Statement of Direction: IBM intends to provide an IBM Lifecycle Extension for z/OS offering for future releases of z/OS. **This does not alter the z/OS coexistence, migration, fallback, or service policy.** The intention of this change is to provide an accommodation for customers who have not completed their migrations to newer z/OS releases within the service support period. All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice.

Notes:
- z/OS.e 1.8 was the last z/OS.e release.

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- The end of service for a Web deliverable occurs at end of service for the release on which it runs.

z/OS Server Support by Release

OS level	z196	z10 EC	z10 BC	z9 EC (z9-109)	z9 BC	z990	z900	z890	z800	G5/G6 MP3000
OS/390 2.10	No	No	No	No	No	Yes Note 2	Yes	Yes Note 2	Yes	Yes Note 1
z/OS 1.1	No	No	No	No	No	No	Yes	No	Yes	Yes
z/OS 1.2	No	No	No	No	No	Yes Note 2	Yes	Yes Note 2	Yes	Yes
z/OS 1.3	No	No	No	No	No	Yes Note 2	Yes	Yes Note 2	Yes	Yes
z/OS 1.4	No	No	No	Yes Note 2	Yes Note 2	Yes Note 2	Yes	Yes Note 2	Yes	Yes
z/OS 1.5	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
z/OS 1.6	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
z/OS 1.7	Yes Note 3	Yes	Yes Note 3	Yes	Yes	Yes	Yes	Yes	Yes	No
z/OS 1.8	Yes Note 4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
z/OS 1.9	Yes Note 5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
z/OS 1.10	Yes Note 6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
z/OS 1.11	Yes Note 7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
z/OS 1.12	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
z/OS 1.13	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No

Notes:

1. OS/390 2.10 also supported the following servers: Multiprise 2000; G4(R5), G3(R4), R3, R2 Parallel Enterprise Server s/390 server; RS/6000 with S/390 Server-on-Board, and S/390 Integrated Server.
2. Required z990 exploitation support for z/OS V1.4 and z/OS.e V1.4 Web deliverable
3. Required IBM Lifecycle Extension for z/OS V1.7 (5637-A01), available October 1, 2008 through September 30, 2010.
4. Recommended: IBM Lifecycle Extension for z/OS V1.8 (5638-A01) beyond the September 30th 2009 withdrawal of service date for z/OS V1.8.
5. Recommended: IBM Lifecycle Extension for z/OS V1.9 (5646-A01) beyond the September 30th 2010 withdrawal of service date for z/OS V1.9

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6. Recommended: IBM Lifecycle Extension for z/OS V1.10 (5656-A01) beyond the September 30th 2011 withdrawal of service date for z/OS V1.10
7. Recommended: IBM Lifecycle Extension for z/OS V1.11 (5657-A01) beyond the September 30th 2012 withdrawal of service date for z/OS V1.10

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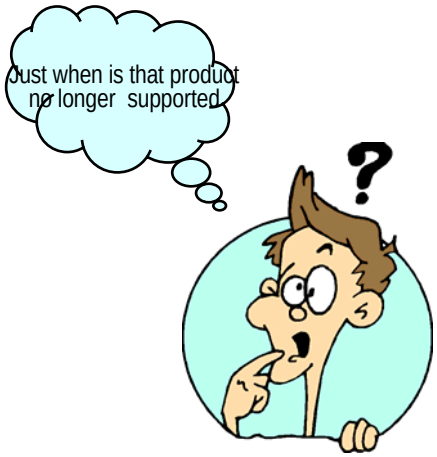
Service End Dates

- http://www.ibm.com/software/support/lifecycle



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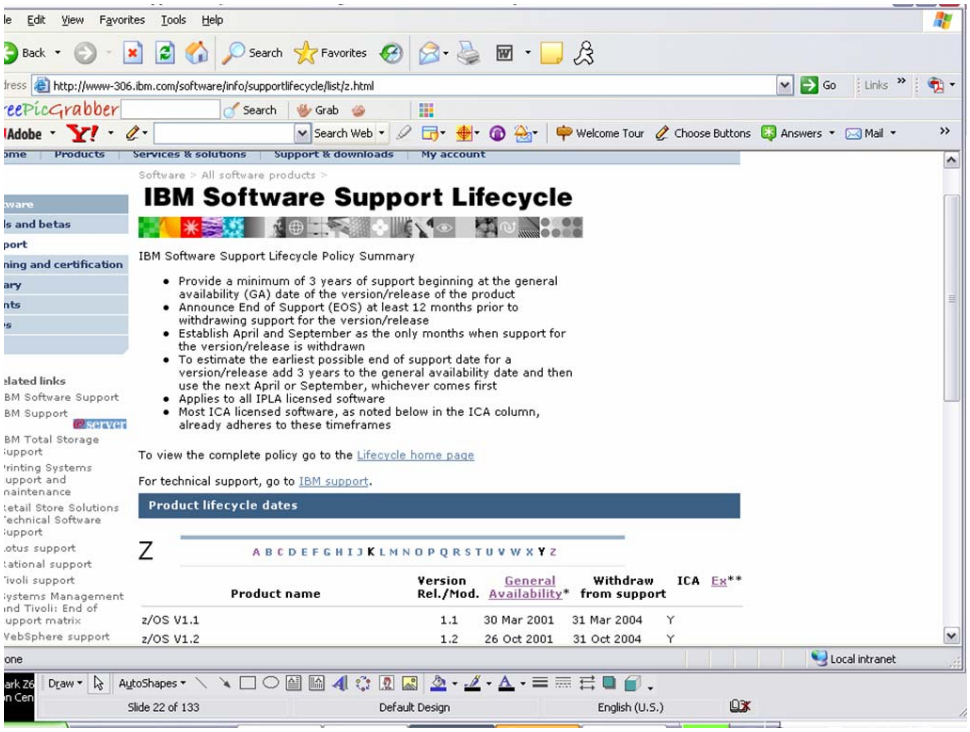

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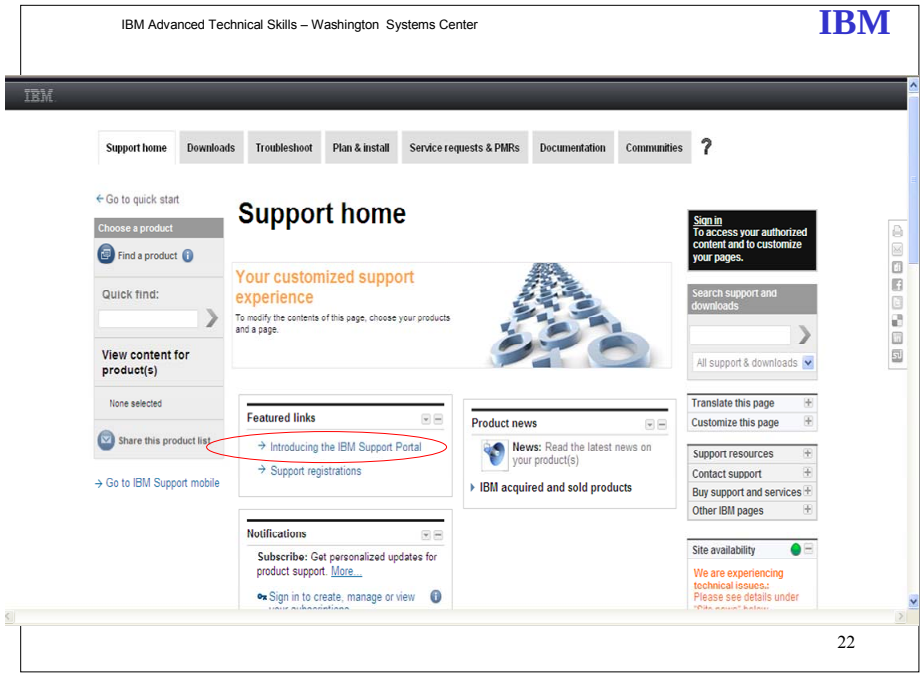

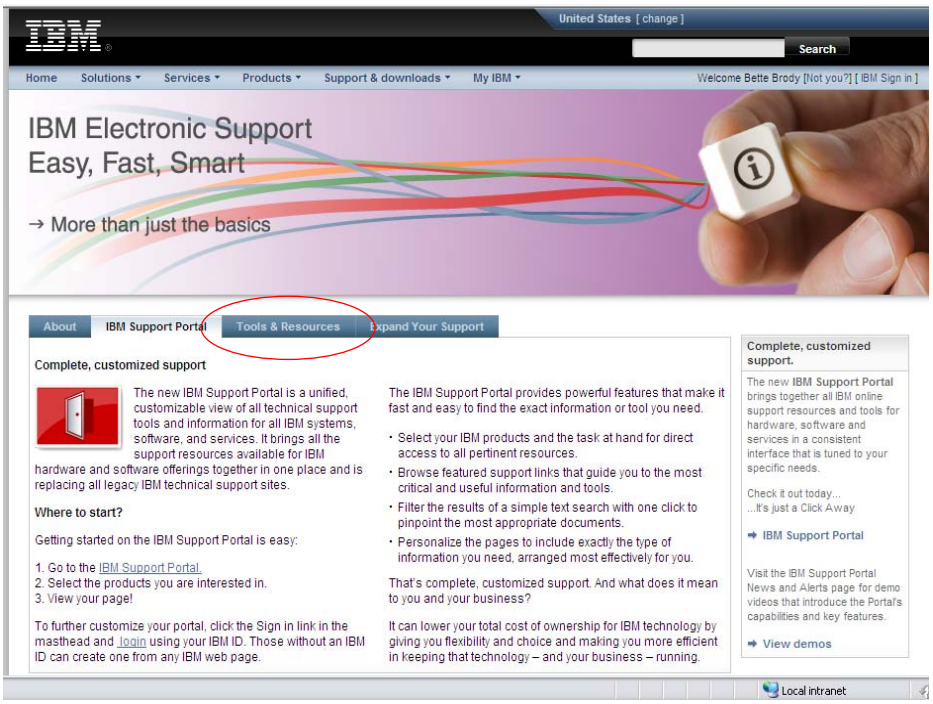

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SMP/E 3.6

SMP/E V3.6 provides:

- **Software Deployment in z/OSMF 1.1.3**
  - **Requires z/OS 1.13**
- The REPORT CROSSZONE and REPORT SYSMODS commands have been updated to compare the contents of target and DLIB zones defined in different global zones
  - Requires z/OS 1.11 or higher
- A new SYSMOD Comparison HOLDDATA Report is provided by REPORT SYSMODS
  - Requires z/OS 1.11 or higher
- **Included in z/OS V1R13**

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SMP/E V3.6 is designed to support z/OSMF software deployment, and provide two new reporting capabilities. Specifically, SMP/E V3.6 includes:

- Support for the new software deployment task provided with z/OS Management Facility V1.13 (5655-S28) and z/OS V1.13 (5694-A01). The z/OSMF software deployment task is designed to simplify cloning and deployment for SMP/Einstalled software. For more information, refer to Software Announcement 211-242, dated July 12, 2011, and Software Announcement 211-252, dated July 12, 2011.
- Two new report enhancements:
  - The REPORT CROSSZONE and REPORT SYSMODS commands have been updated to compare the contents of target and DLIB zones that are defined in different global zones. In prior releases of SMP/E, the zones to be compared must be defined in a single global zone. This is intended to help simplify crosszone reporting.
  - A new SYSMOD Comparison HOLDDATA Report is provided by REPORT SYSMODS. In addition to comparing the SYSMOD content of two target or DLIB zones, SMP/E now is designed to extract SYSTEM and USER HOLD information from the global zone to provide information about HOLDs that are new. When the global zone does not contain all the data needed to generate the report, a list of SYSMODs is provided so you can determine whether any HOLD actions are needed. This report is intended to help speed the deployment of maintenance upgrades by quickly identifying the differences in HOLDs between the existing and updated zones.

SMP/E for z/OS, V3.6 is a base element of z/OS V1.13 (5694-A01). It is also available as a separate no-charge program product, 5655-G44, for use with previous supported releases of z/OS.

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SMP/E for z/OS, V3.6 also runs on:
• z/OS V1.12
• z/OS V1.11

SMP/E support of z/OS Management Facility Software Deployment function requires z/OS V1.13 (5694-A01) or later, and z/OS Management Facility V1.13 (5655-S28) or later.

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Latest RSU

- Latest recommended Service Upgrade (RSU)

Month/Year	Service Available	RSU SOURCEID
August 2012 2nd quarter Quarterly report 1st addendum	Based upon the quarter above, this addendum contains PE resolution or HIPER/Security/Integrity/Pervasive PTFs and their associated requisites and supersedes through June 2012.	RSU1207
July 2012 2nd Quarter Quarterly report	All service through the end of March 2012 not already marked RSU. PE resolution and HIPER/Security/Integrity/Pervasive PTFs and their associated requisites and supersedes through May 2012.	RSU1206
June 2012 1st Quarter Quarterly report 2nd addendum	Based upon the quarter below, this addendum contains PE resolution or HIPER/Security/Integrity/Pervasive PTFs and their associated requisites and supersedes through April 2012.	RSU1205

http://www-03.ibm.com/systems/z/os/zos/support/servicetest/

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As part of IBM's commitment to quality and continuous improvement, we established an additional service testing environment called Consolidated Service Test (CST). As a result, we're redefining our RSU (Recommended Service Upgrade) for the z/OS platform so that it contains service that has been through CST testing. Now, the CST team tests all the current PTFs for these products together, so that we can recommend PTF service for z/OS and key subsystems together in one RSU sourceid, free of charge to all z/OS customers. That means that when you order the current service deliverable (ShopzSeries) you'll receive and install tested service for all of the following products:

- CICS Transaction Gateway for z/OS
- CICS Transaction Server for z/OS
- DB2 for z/OS
- DB2 Connect
- Geographically Dispersed Parallel Sysplex (GDPS/PPRC)
- IMS
- IRLM
- JAVA
- WebSphere Application Server for z/OS
- WebSphere MQ for z/OS
- z/OS
- IBM DB2 and IMS Tools
- IBM Tivoli (products listed in quarterly report)
- z/OS Problem Determination Tools
- IBM Tivoli Composite Application Manager for Transactions
- TKLM (Tivoli Key Lifecycle Manager)

Note: For a complete list of products/tools and levels tested, please consult the CST Quarterly report, specifically the *What Service was Installed* section.

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There are two ways you can find out what PTFs are in a given RSU:

- When you order a current preventive service deliverable, the list of PTFs will be included in the order. See Getting an RSU for complete information on getting and installing recommended service.
- Find the PTFs included in an RSU by selecting the RSUyymm.txt file for the RSU you're interested in. For complete information on ++ASSIGN statements and Enhanced HOLDDATA, see the Enhanced HOLDDATA for z/OS and OS/390 Web site.

Functions You Should be Using

Healthchecker
AutoIPL
Predictive Failure Analysis
HiperDispatch
CPU Measurement Facility
SMP/E 3.6 (*programmatic PSP buckets*)
zDAC
z/OSMF
z/OS Runtime Diagnostics

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IBM Health Checker for z/OS

Turn it On!!

- Objective: To identify potential problems before they impact availability or cause outages.
- The Health Checker is a tool that checks the current, active z/OS and sysplex settings and compares those values to either IBM suggested best practice values or user defined criteria.
- The tool produces reports to help customers analyze the values defined for a given system.
- The initial focus of the tool is the z/OS Base Control Program (BCP) element and related sysplex values.
- Can be run on a system configured as a parallel sysplex, monoplex, or XCF local environment running z/OS 1.4 and higher.
- Periodically updated with new checks.
- *Migration checks added for z/OS 1.10 through z/OS 1.13*

Integrated in z/OS 1.7 Base

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IBM Health Checker for z/OS

Value

- **Compares** your active system settings with those recommended by IBM.
- Notifies when exceptions are found.
- Write your own checks.
- Can help to configure for **best practices**
- Can help to **reduce the skill level**
- Can help **avoid outages**
- Runs on all supported releases of z/OS.
- Supports Migration Checks (z/OS V1.10)

Latest enhancements

- **For z/OS V1.11** – AutoIPL, DFSMS, static resource manager, DAE, SDSF.
- **New migration checks for z/OS V1.11** - IPSec filter rules, DNS, DFSMSrmm™, STP
- **For z/OS V1.12** – write checks in Metal C; checks: CF structures, configuration dat sets, CFRM protocols, SMB, DFSMS, IOS.
- Additional migration checks planned.

Over 200 Checks with more planned

ibm.com/servers/eserver/zseries/zos/hchecker/

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* Statements regarding IBM future direction and intent are subject to change or withdrawal, and represents goals and objectives only.

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IBM Health Checker for z/OS is a base function for z/OS V1R7 and higher releases providing a foundation to help simplify and automate the identification of potential configuration problems before they impact system availability. It compares active values and settings to those suggested by IBM or defined by your installation. The IBM Health Checker for z/OS consists of:

- The framework, which manages functions such as check registration, messaging, scheduling, command processing, logging, and reporting. The framework is provided as an open architecture in support of check writing.
- Checks, which evaluate settings and definitions specific to products, elements, or components. Checks are provided separately and are independent of the framework. The architecture of the framework supports checks written by IBM, independent software vendors (ISVs), and users. You can manage checks and define overrides to defaults using the MODIFY command or the HZSPRMxx parmlib member.

  IBM-supplied checks can be integrated with the product, element, or component, or they can be provided as PTFs. The use of PTFs to provide checks facilitates the availability of checks on non-z/OS release boundaries.
  You should review the check PTFs for specific releases supported.

You can find more information in the following manual: *IBM Health Checker for z/OS User's Guide* (SA22-7994-12)

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IBM Health Checker for z/OS Migration

Turn it On!!

- **Migration checks now part of the z/OS Health Checker**
- **Requires no changes to existing Health Checker**
- **z/OS Rxx "component" migration checks:**
  - **Follow a naming convention: ZOSMIGVvvRrr_*component_program_name***
- **Twenty-five z/OS R13 "component" migration checks**
  - **All checks are cross-referenced for the associated migration action in the z/*OS R13 Migration* book**
- **Review the z/*OS* R11, R12 and R13 *Migration* books for migration checks associated with those releases**

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Beginning with z/OS V1R10, the IBM Health Checker for z/OS infrastructure is being exploited for migration purposes. Checks are being added to determine the applicability of various migration actions. Before migrating to a new z/OS release, these new checks should be used to assist with migration planning. After migration the checks should be rerun to verify the migration actions were successfully performed. As with any IBM Health Checker for z/OS check, no updates are made to the system. These new migration checks only report on the applicability of specific migration actions on a system, and only on the currently active system.

The migration checks are very similar to the other checks provided by IBM Health Checker for z/OS. The only differences are:

- The names of migration checks follow the convention ZOSMIGVvvRrr_component_program_name (or, for ICSF, ICSFMIGnnnn_component_program_name). Notice the "MIG" characters followed immediately by the release identifier. This convention tells you that the check helps with migration and it tells you the release in which the migration action was introduced. If the release in which the migration action was introduced is not known, the name will be ZOSMIGREC.

- By default, migration checks are inactive. This is because you might not want to know about migration actions during nonmigration periods. As stated previously, migration checks are intended to be used on your current z/OS release and then again after you have migrated to your new z/OS release.

You can find more information in the following manual: *z/OS Migration* for z/OS R10, R11, R12 and R13. Also, *IBM Health Checker for z/OS User's Guide* (SA22-7994-02).

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Simplified software, service verification/ installation

SMP/E programmatic PSP buckets (SMP/E V3.5, 5655-G44)

Value

- Can simplify the verification and installation tasks for required service for new hardware and software levels, or to enable new hardware or software functions
- Can be less manual and error-prone
- Can result in faster implementation of hardware and software functions
- ... and help provide ongoing verification of hardware as new software is introduced
- ... ongoing verification of software as new hardware is introduced.

Capabilities

- IBM to create metadata that associates PTFs with one or more fix categories. Such as fixes needed for:
  - Specific hardware levels
  - New software FMIDs
  - Enabling new hardware/software functions
- IBM to deliver the metadata with existing PTF and HOLDDATA acquisition procedures.
- Integrate verification and installation tasks within typical SMP/E operations.
  - Conditionally process the metadata based on your interest and what is currently installed.
  - Extend well known SMP/E functions RECEIVE, APPLY, ACCEPT and REPORT

http://www-03.ibm.com/systems/z/os/zos/smpe/

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SMP/E 3.5 – FIXCAT HOLDDATA

- **This support provides the capability to identify PSP service – including coexistence PTFs when installing new Software release**
  - Always install latest enhanced HOLDDATA from IBM
  - Run SMP/E 3.5 REPORT MISSINGFIX
  - FIXCAT categories are also SOURCEIDs
- **Coexistence PTFs**
  - Use FIXCAT "IBM.Coexistence.z/OS.V1Rxx" to identify missing coexistence service (xx is the release)
- **Healthchecker – Migration checks**
  - Use FIXCAT "IBM.Function.Healthchecker" to identify available checks for z/OS R9 and R10 not yet installed.
- **PSP Buckets**
  - Use FIXCAT "*categories*" (where category values are identified via SMP/E 3.5 Dialogs under Fix Category Explorer)
    - ➢ Use FIXCAT SOURCEID(*categories*) *on APPLY, ACCEPT and REPORT MISSINGFIX commands*

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Coexistence Service: Coexistence and fallback PTFs installed on pre-z/OS V1R11 systems allow those systems to coexist with z/OS V1R11 systems during your migration, and allow backout from z/OS V1R11 to the previous 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.

Use the SMP/E V3R5 REPORT MISSINGFIX command in conjunction with the FIXCAT type of HOLDDATA, as follows:

- Order and install SMP/E V3R5 (which is the SMP/E level that is integrated in z/OS V1R11 and V1R10).
- Acquire and RECEIVE the latest HOLDDATA onto your pre-z/OS V1R11 or r10 systems. Use your normal service acquisition portals or download the HOLDDATA directly from http://service.software.ibm.com/holdata/390holddata.html.
- Run the SMP/E REPORT MISSINGFIX command on your pre-z/OS V1R11 or R10 systems and specify a Fix Category (FIXCAT) value of "IBM.Coexistence.z/ OS.V1Rxx". The report will identify any missing coexistence and fallback PTFs for that system. For complete information about the REPORT MISSINGFIX command, see *SMP/E Commands*.
- Periodically, you might want to acquire the latest HOLDDATA and rerun the REPORT MISSINGFIX command to find out if there are any new coexistence and fallback PTFs.

Programmatic PSP-bucket processing
A new type of ++HOLD statement is used to identify SYSMODs associated with specific categories of fixes. Such categories identify support for new hardware devices and new releases of software, or enable selected new functions. The ++HOLD FIXCAT statement identifies those SYSMODs and their fix categories. When FIXCAT HOLDs are received, the fix category values are assigned as source IDs to the SYSMODs resolving the APARs. During APPLY and ACCEPT command processing, you can use the assigned source IDs to select the SYSMODs associated with a particular fix category. In addition, a new REPORT MISSINGFIX command identifies fixes associated with particular fix categories not installed and identifies whether any SYSMODs are available to satisfy those missing fixes.

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AutoIPL (z/OS 1.10)

- **This support provides the capability to request the system to automatically IPL SADMP, re-IPL z/OS or both when a disabled wait state is requested by a system component**
  - This function is under the control of PARMLIB DIAGxx member and a new Wait State Action Table (WSAT)
    - Together these facilities specify actions to be taken for various disabled wait states
    - In Sysplex, an SFM Policy can result in actions loading disabled wait states on systems to be partitioned out and these actions can also trigger AutoIPL processing (PTF UA45446 to enable)
    - V XCF command allows you to request a SADMP, z/OS IPL, or both, after the system has been removed from the sysplex
  - Improved serviceability and FFDC (First Failure Data Capture) via quick, automatic SADMP
  - Improved system availability via quick re-IPL of z/OS images
  - LPAR Firmware is required

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AutoIPL is an availability function, introduced in z/OS 1.10, designed to allow the system to automatically IPL stand-alone dump, z/OS, or both, when the system requests certain disabled wait states to be loaded, or when specified as part of a request to VARY the system out of a sysplex.

The use of AutoIPL in multisystem-capable sysplex configurations where a Sysplex Failure Management (SFM) policy is active was previously disabled by PTF UA43911 (APARs OA26371/OA26574), because the IPL actions performed by AutoIPL could prevent or delay the successful completion of system isolation (fencing) and system removal actions performed by SFM. With APARs OA26574 and OA26371, when AutoIPL is activated in these configurations where SFM is active, the automatic IPL actions are not performed.

This restriction has now been removed. The PTF for APARs OA26993/OA26995, along with underlying LPAR firmware support (identified below), now enables AutoIPL to be used in configurations where an SFM policy is active. With this support, requested AutoIPL actions will be performed in accordance with the DIAGxx parmlib member, even when an SFM policy is active in the sysplex.

Use of SFM and system isolation to quickly and automatically remove a failed system from the sysplex remains a highly-recommended "best practice" for sysplex availability. In multisystem sysplexes the prompt removal of failed systems from the sysplex to permit cleanup of shared resources is of primary importance, enabling the remaining systems in the sysplex to continue normal operation.

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Additionally, the use of AutoIPL on a system in a multisystem-capable Sysplex configuration where an SFM policy is active **requires** the following LIC levels be installed:

- For z9 Systems at Driver-67 MCL006 in EC Stream (LPAR) G40954 (Bundle 38)
  - Also requires Feature Code 9904. Refer to DOC APAR OA26446 For z10 Systems at Driver-73: MCL009 in EC Stream (LPAR) F85901 (Bundle 45b)
- For z10 Systems at Driver-76: MCL003 in EC Stream (LPAR) N10965 (Bundle 8)

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Recommendation:

Customers should install the PTF for APARs OA26993/OA26995 on all systems in the sysplex, via a rolling IPL.

This PTF will not be fully effective on the system for which it is being applied until the PTF is applied to all systems in the sysplex. An IPL is required to activate this fix on each system of the sysplex. However, a rolling IPL is sufficient to accomplish the activation.

Customers should also install the underlying LPAR firmware support on the servers where all such z/OS systems are running. The PTF and the underlying LPAR firmware support can be installed independently, in any order and with any timing. However**, the AutoIPL function must not be used in a sysplex with SFM active until both the LPAR firmware support and the software support have been installed on all affected systems.**

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The AutoIPL support introduced in z/OS V1.10 is extended to multisystem-capable sysplex configurations with active Sysplex Failure Management (SFM) policies in z/OS V1.11, and available for z/OS V1.10 with the PTFs for APARs OA26993 and OA26995. New LPAR firmware support is also required. This new support is designed to perform the requested AutoIPL actions when an SFM policy is active in the sysplex. For information about the required microcode levels, refer to the text of APARs OA26993 and OA26995 for z/OS V1.10, or z/OS V1R11 Planning for Installation.

Two new checks are designed to report on your AutoIPL policy specification:

- One check will make sure an AutoIPL policy is established as a best practice whenever running on hardware supporting AutoIPL, when not in a GDPS configuration.
- The second check will validate the devices specified in the DIAGxx for SADMP and MVSTM AutoIPL policies. Devices will be checked to make sure they are available, are DASD, and are not defined as secondary devices in Metro Mirror (PPRC) pairs.

These checks are intended to help validate your AutoIPL configurations.

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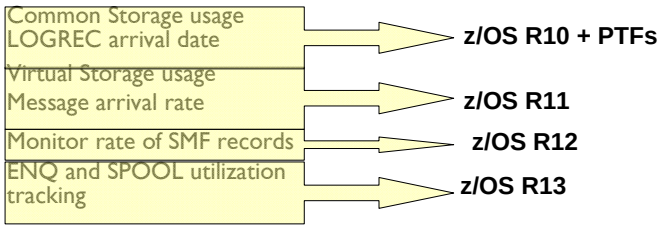
Predictive Failure Analysis

- **Designed to predict potential problems with your system before they occur**
- **Support provided via remote checks from IBM Health Checker**



- **Uses data to compare and model system behavior for future**
  - Identifies system trends
- **Publications**
  - z/OS Problem Management (G325-2564)
  - White paper **WP101454** : www.ibm.com/support/techdocs

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Predictive Failure Analysis (PFA) is designed to predict potential problems with your systems. It can help you avoid "soft" failures. PFA extends availability by going beyond failure detection to predict problems before they occur. PFA provides this support using remote checks from IBM Health Checker for z/OS to collect data about your installation. It uses the data to compare and model system behavior in the future and identifies when a system trend might cause a problem. PFA uses a z/OS UNIX System Services (z/OS UNIX) file system to manage the historical and problem data it collects.

PFA provides the following Checks:

- Common storage usage [detect increased use]
- LOGREC arrival rate [measure software failures using LOGREC to assist in determining if an address space or z/OS image is damaged.]
- Virtual Storage usage [Frame and slot usage checking]
- Message arrival rates [Monitor volume of messages]
- Monitor rate of SMF records [will issue an alert warning]
- ENQ and SPOOL utilization tracking [monitor JES2 spool utilization for persistent address spaces, monitor the enqueue request rates for the persistent address spaces having the highest rates, and monitor the enqueue request rate for the entire system.]

Predictive Failure Analysis is supported on z/OS 1.10 and later releases and requires:
• IBM SDK for z/OS, Java 2 Technology Edition, V1.4 or later
• IBM Health Checker for z/OS

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Predictive Failure Analysis

The PFA_LOGREC_ARRIVAL_RATE check issued false exception message AIRH110E. This occurred when the activity on the LPAR was low.

- **LOGREC Arrival Rate**
  - **New check-specific parameter EXCEPTIONMIN**
    - **EXCEPTIONMIN indicates the minimum LOGREC arrival rate for which an exception will be produced for both the current rate and the prediction.**
  - **Used to reduce false positives on systems having normally low arrival rates**
    - **z/OS 1.10 – PTF UA54819**
    - **z/OS 1.11 – PTF UA54820**
    - **z/OS 1.12 – in base**

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The **PFA_LOGREC_ARRIVAL_RATE** check issued false exception message AIRH110E. This occurred when the activity on the LPAR was low. Code has been added to have a new parameter **EXCEPTIONMIN** for the **PFA_LOGREC_ARRIVAL_RATE** check. The parameter EXCEPTIONMIN indicates the minimum LOGREC arrival rate for which an exception will be produced for both the current rate and the prediction. The value for EXCEPTIONMIN for PFA_LOGREC_ARRIVAL_RATE check is shown by the results of the **'MODIFY PFA,DISPLAY'** command when details are requested. The value for EXCEPTIONMIN can be updated using modify hzsproc,update command like the other configuration parameters.

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Runtime Diagnostics

- **Helps reduce the time spent deciding what actions to take to resolve a problem.**
  - This function is designed to analyze and help identify possible problem areas in as little as one minute, whereby an experienced operator might take up to 20 minutes.
    - For R13 – RTD checks GRS latch and z/OS UNIX® System Services file system latch contention
    - RTD automatically invoked when PFA detects very low SMF arrival rates.
- **Runtime Diagnostics helps you to pin point the source of a 'soft failure' by looking at z/OS system resources in real time and reporting on areas of contention. RTD checks for:**
  - Select critical messages in the Operlog (z/OS R12)
  - Address spaces with high CPU usage or which might be in a loop (z/OS R12)
  - Address spaces suspended in local lock contention (z/OS R12)
  - System address spaces that are ENQ "waiters" (z/OS R12)
  - Evaluates GRS latch and z/OS UNIX System Services file system latch contention (z/OS R13)
- **Autonomics (R13)** - RTD is automatically invoked from PFA when PFA detects very low SMF arrival rates, RTD problem notification sent to PFA. (R13)
- **Documented in *z/OS problem Management*** (G325-2564-08)

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Runtime Diagnostics lets you act on soft failures

Separate from but integrated with Predictive Failure Analysis (PFA) is z/OS Runtime Diagnostics (RTD). z/OS Runtime Diagnostics can help you reduce the time spent deciding what actions to take to resolve a problem quickly. Like an experienced sysprog, RTD can identify potentially related symptoms and causes when it appears a problem might affect the system's ability to process your workloads.

z/OS Runtime Diagnostics performs the following:

- Reviews critical messages in the Operlog stream to identify component and resource issues affecting system operation. System messages indicating when problems are detected and relieved are analyzed to identify outstanding issues (z/OS R12)
- Identifies address spaces with high CPU usage or which might be in a loop (z/OS R12)
- Identifies address spaces suspended in local lock contention (z/OS R12)
- Analyzes various types of contention including system address spaces that are ENQ "waiters" (z/OS R12)Evaluates GRS latch and z/OS UNIX System Services file system latch contention (z/OS R13)

RTD runs using the START operator command and returns results quickly to help you decide among alternative corrective actions and maintain high levels of system and application availability. RTD presents information about each exception, along with a recommended "next step" to take, and dumps the information into the syslog and an optional user-defined data set.

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PFA and RTD together

When PFA detects a rate that is too low for SMF arrival rates, message arrival rates, or enqueue request rates, it will be designed to invoke Runtime Diagnostics automatically. PFA will provide the output from Runtime Diagnostics in the health check exception report which will give your operators the information they need to identify and accurately isolate the source of the problem. The combination of PFA and Runtime Diagnostics can help improve your system availability by identifying potential issues before they can cause an unplanned outage. This function available with z/OS R13.

Predictive Failure Analysis is supported on z/OS 1.10 and later releases and requires:

- Java 5.0 or later with IBM 31-bit SDK for z/OS.
- IBM Health Checker for z/OS
- **Required PTFs -** The PFA PTFs are currently available; the SPE is OA27165, PTFs UA46241 and UA48243.

Publication

z/OS Problem Management - G325-2564 or visit the following Website:
ibm.com/systems/z/os/zos/bkserv/r10pdf/#zsys

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HiperDispatch

PR/SM

- **Supplies topology information/updates to z/OS**
- **Ties *high priority* logicals to physicals (gives 100% share)**
- **Distributes remaining share to *medium priority* logicals**
- **Distributes any additional service to unparked *low priority* logicals**

z/OS

- **Ties tasks to small subsets of logical processors**
- **Dispatches work to *high priority* subset of logicals**
- **Parks *low priority* processors not in need or will not get service**

Hardware cache optimization occurs when a given unit of work is consistently dispatched on the same physical CPU

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HiperDispatch

- HIPERDISPATCH=NO (default)
  - Partition is managed horizontal
  - Two levels of Dispatching
    - z/OS dispatches any task on any processor
    - PR/SM dispatches Logical Processors
- HIPERDISPATCH=YES
  - Partition is managed vertical
  - PR/SM dispatching is reduced
  - z/OS dispatches work with affinity to a small sets of processors

IBM Recommends Turning it ON!
Enabled via IEAOPTxx member of PARMLIB

Default is YES when running on a z196 or z114

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HiperDispatch was introduced with IBM's z10 server, and is available (via PTFs) on z/OS V1R7, z/OS V1R8, and z/OS V1R9. HiperDispatch was designed to minimize the z10 hardware performance degradation caused by processor cache misses, and maximize the amount of CPU processing power associated with any single logical processor. To achieve these design objectives, HiperDispatch implemented new designs within z/OS and PR/SM, and implemented a regular exchange of information between PR/SM and z/OS.

In z/OS V1.10, HiperDispatch was directed toward improving cache management in multiprocessing LPARs. For z/OS V1.11 HiperDispatch design improves the performance for large-scale z/OS systems include zIIP processors. These changes can improve system performance for LPARs with a large number of zIIPs.

Just as important as the scale of the system, is how it performs with that scalability. For example, HiperDispatch can provide intelligent dispatching of z/OS workloads and help improve the performance for higher n-way System z servers.

When more than 64 logical CPUs are defined for the LPAR, the message IRA865I is issued and HIPERDISPATCH is forced.

HiperDispatch cache and affinity node changes
This function is enhanced to exploit the z196 architecture and now allows three physical CPs from same chip to form affinity node. A z10 uses HiperDispatch book cache support and four physical CPs from same book. To realize the benefits of HiperDispatch, z/OS has been changed to force HiperDispatch=YES for LPARs with greater than 64 CPUs. On LPARs with greater than 64 CPUs defined on a z196 server with IEAOPT*xx* specifying HIPERDISPATCH=NO during IPL (or SET OPT=*xx* after IPL), the system generates a message but continues to run with HIPERDISPATCH=YES. The new message is IRA865I HIPERDISPATCH=YES FORCED DUE TO GREATER THAN 64 LPS DEFINED.

On LPARs in which HIPERDISPATCH=NO is specified with less than 64 CPUs, you can dynamically add more CPUs and continue to run in HIPERDISPATCH=NO. However, you may see the new message ISN012E HIPERDISPATCH MUST BE ENABLED TO CONFIGURE CPU IDS GREATER THAN 3F ONLINE.

Any attempt to configure CPUs greater than 64 CPUs online in HIPERDISPATCH=NO will be rejected with message IEE241I CPU(x) NOT RECONFIGURED ONLINE - REQUIRES HIPERDISPATCH ENABLED. An LPAR with greater than 64 CPUs that dynamically changed to HIPERDISPATCH=YES cannot go back to HIPERDISPATCH=NO. It will be treated as if it was IPLed with HIPERDISPATCH=YES after HIPERDISPATCH=YES is activated.

To assist with warning when you are getting close to 64 CPUs and running with HIPERDISPATCH=NO, the IBM Health Checker for z/OS check, SUP_HiperDispatchCPUConfig, is added in z/OS V1R12 and available on z/OS V1R11 and z/OS V1R10 with APAR OA30476. The check always succeeds for LPAR in HIPERDISPATCH=YES (all CPU configurations supported). When an LPAR is running with HIPERDISPATCH=NO, the check raises an exception when the number of CPUs is close to forcing the LPAR to IPL with HIPERDISPATCH=YES. The CPUSLEFTB4NEEDHD parameter indicates the minimum number of CPUs that can be installed and activated on an LPAR running in HIPERDISPATCH=NO. When CPUSLEFTB4NEEDHD=0, the check always succeeds. The default is 8, with values 0-63

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accepted. The system redrives the check when the HIPERDISPATCH state changes or CPUs are dynamically added. Possible IBM Health Checker for z/OS messages:
– IEAVEH080I CPU configuration supported with HiperDispatch *curstate*
– IEAVEH081E CPU configuration supported with HiperDispatch disabled.
numcpus more CPU(s) can be added with HiperDispatch disabled.

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zDAC

- **Automatic discovery and configuration for FICON disk and tape devices**
  - Helps reduce level of IT skill and time required to configure new devices
  - Uses intelligent analysis to help validate server and storage definitions are compatible with each other
  - Uses built-in best practices to help configure for high availability, helps avoid single points of failure
- **Transparent to existing configurations and settings**
  - Invoked through, integrated with z/OS Hardware Configuration Definition (HCD) and z/OS Hardware Configuration Manager (HCM)
  - Use with single systems or sysplexes
  - No z/OS migration actions required
- **Requires:**
  - IBM zEnterprise 196 or 114 server with FICON Express8 or FICON Express4
  - Switch/director attached fabric (no direct attachment)
  - z/OS V1.12 (at least one LPAR for Dynamic I/O capability)
  - Any IBM (or other vendor) FICON-attached System z controller that registers with the FICON name server (see your vendor for any required maintenance)
  - **Suggested:** FICON DCM (z/OS dynamic channel management) to help manage performance

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A new function, IBM System z Discovery and Auto-Configuration (zDAC), can help simplify the configuration and reduce the complexity and setup time of new or changed disk or tape device I/O configurations. zDAC can save time by proactively discovering new or changed devices, suggesting configurations that are in line with best practices for availability and in compliance with the I/O policies that you set. For example with the zDAC capability, the time it takes configuring a new disk subsystem in your z/OS environment can be reduced from 6 hours or more to as little as 20 minutes.

Specifically, zDAC is designed to automatically perform a number of I/O configuration definition tasks for new and changed disk and tape controllers connected to a switch or director to FICON channels. This new function can automatically discover storage devices accessible to the system but not currently configured. It does this by requesting to the name server and getting information on what is attached to the storage fabric, propose host definition values, explore the new devices for defined logical control units and devices, compare discovered logical control units and devices against those configured previously, and add missing logical control units and devices to the configuration by proposing control units, device numbers, and paths to reach them. Furthermore, the channel paths are chosen using an algorithm designed to minimize single points of failure, and therefore help maintain availability and resilience compliance guidelines.

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When new controllers are added to an I/O configuration or changes are made to existing controllers, the system is designed to discover them and propose configuration changes based on a policy you define in the Hardware Configuration Dialog (HCD). Your policy can include preferences for availability and bandwidth including parallel access volume (PAV) definitions, control unit numbers, and device number ranges.

zDAC is designed to perform discovery for all systems in a sysplex that support the function. zDAC will not change or alter existing storage configurations, zDAC-proposed configurations will incorporate the current contents of the I/O definition file (IODF) with additions for newly installed and changed controllers and devices. In addition, the zDAC capabilities and proposed configurations integrate transparently with existing HCD and z/OS Hardware Configuration Manager (HCM) functions.

zDAC is only available with the zGryphon server and z/OS (5694-A01) V1.12. It also requires storage connectivity via FICON-attached switches or directors. Connectivity from the zGryphon server to the director is required to be FICON Express 4 or FICON Express 8, but further connectivity to the disk or tape controller can be other. Disk and tape controllers can be from IBM or non-IBM vendors.

The first exploiter of zDAC is:

IBM SYSTEM STORAGE DS8700 (M/T 242x) is supporting zDAC and requires DS8000 licensed machine code level 6.5.15.xx (bundle version 75.15.xx.xx), or later.

There are two zDAC functions that intersect with the Control Unit. One is optional, and the other is needed to make zDAC work.

- The optional one is called "TINC", and our understanding is that z/OS has no hard dependency on it. If the CU doesn't support it, then zDAC will run slow, but it will still work.
- The other, is called "Name Server Registration". If the Control Unit does not register with the name server, then zDAC will not function with that CU.

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Publications

books and other things
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z/OS Softcopy Collection

Product	*z/OS V1Rx Collection*	z/OS V1R*x* and Software Products DVD Collection	z/OS Licensed Collection
z/OS V1R13	N/A	SK3T-4271-29	n/a
z/OS V1R12	N/A	SK3T-4271-28	n/a
z/OS V1R11	N/A	SK3T-4271-24	n/a
z/OS V1R10	SK3T-4269-22	SK3T-4271-22	n/a
z/OS V1R9	SK3T-4269-20	SK3T-4271-20	n/a

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z/OS V1R13 Migration

- **Path-specific migration documentation tailored to your migration path**
  - z/OS V1.12 → V1.13
  - z/OS V1.11 → V1.13 http://www-03.ibm.com/systems/z/os/zos/installation/
  - Comprehensive
  - **Latest: GA22-7499-20**
- **z/OS Summary of Messages and Changed Interfaces**
  - SA22-7505-17
  - The title has been changed to reflect the document's new scope
  - Enhanced to include not only message changes, but all interface changes for z/OS elements and features
    - Message changes are presented in Part 2
    - Interface changes are in Part 1

z/OS 1.10 is NOT a supported migration path to z/OS 1.13

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z/OS V1R12 Migration

- **Path-specific migration documentation tailored to your migration path**
  - z/OS V1.11 → V1.12
  - z/OS V1.10 → V1.12
  - Comprehensive

http://www-03.ibm.com/systems/z/os/zos/installation

- **z/OS Summary of Messages and Changed Interfaces**
  - SA22-7505-16
  - The title has been changed to reflect the document's new scope
  - Enhanced to include not only message changes, but all interface changes for z/OS elements and features
    - Message changes are presented in Part 2
    - Interface changes are in Part 1

z/OS 1.9 is NOT a supported migration path to z/OS 1.12

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z/OS Supported Migration Paths

- **z/OS 1.13**
  - z/OS V1.12 ==> V1.13
  - z/OS V1.11 ==> V1.13 - **z/OS 1.11 support withdrawn Sept. 30, 2012**
- **z/OS 1.12**
  - z/OS V1.11 ==> V1.12 - **z/OS 1.11 support withdrawn Sept. 30, 2012**
  - z/OS V1.10 ==> V1.12 -**z/OS 1.10 support withdrawn Sept. 30, 2011***
- **z/OS 1.11**
  - z/OS V1.10 ==> V1.11- **z/OS 1.10 support withdrawn Sept. 30, 2011***
  - z/OS V1.9 ==> V1.11 - **z/OS 1.9 support withdrawn Sept. 2010***

*** z/OS V1.xx Extended Lifecycle Support for fee is for up to 2 years starting with availability of fee offering**

z/OS Migration Checklists for z/OS R12 and z/OS R13 available at www.ibm.com/support/techdocs

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Notice z/OS 1.10 is **NOT** a supported migration path to z/OS 1.13.

The z/OS 1.7, 1.8, 1.9, 1.10 and 1.11 Extended Lifecycle Support for fee does NOT provide toleration, coexistence or fallback support when migrating to any z/OS release. Nor will it provide support to exploit new function.

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Redbooks, Pieces, Papers

- IBM zEnterprise EC12 Technical Introduction (SG24-8050-00) -- DRAFT
  - Last Update: August 27, 2012
- IBM zEnterprise EC12 Technical Guide (SG24-8049-00) -- DRAFT
  - Last Update: August 27, 2012
- IBM zEnterprise System Connectivity Handbook (SG24-5444-13) – DRAFT
  - Last Update: August 28, 2012
  - Planned publish date: December 2012

http://www.redbooks.ibm.com

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IBM zEnterprise EC12 Technical Introduction
In a Smarter Planet, information-centric processes are exploding in growth. The mainframe has always been the IT industry's leading platform for transaction processing, consolidated and secure data serving, and support for available enterprise-wide applications. IBM has extended the mainframe platform to help large enterprises reshape their customer experiences through information centric computing and to deliver on key business initiatives.

zEnterprise is recognized as the most reliable and trusted system, and the most secure environment for core business operations. The new zEnterprise System consists of the IBM zEnterprise EC12 (zEC12), an updated IBM zEnterprise® Unified Resource Manager, and the IBM zEnterprise BladeCenter® Extension (zBX) Model 003.

This IBM® Redbooks® publication discusses the zEC12, with its improved scalability, performance, security, resiliency, availability, and virtualization. The zEC12 has no peer as a trusted platform that also provides the most efficient transaction processing and database management. With efficiency at scale delivering significant cost savings on core processes,

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resources can be freed up to focus on developing new services to drive growth.
This book provides a technical overview of the zEC12, zBX Model 003, and Unified Resource Manager. It is intended for IT managers, architects, consultants, and anyone else who wants to understand the elements of the zEnterprise System. For this introduction to the zEC12, readers are not expected to be familiar with current IBM System z technology and terminology

IBM zEnterprise EC12 Technical Guide
The popularity of the Internet and the affordability of IT hardware and software have resulted in an explosion of applications, architectures, and platforms. Workloads have changed. Many applications, including mission-critical ones, are deployed on a variety of platforms, and the System z® design has adapted to this change. It takes into account a wide range of factors, including compatibility and investment protection, to match the IT requirements of an enterprise.

This IBM® Redbooks® publication discusses the new IBM zEnterprise System, which consists of the IBM zEnterprise EC12 (zEC12), an updated IBM zEnterprise Unified Resource Manager, and the IBM zEnterprise BladeCenter® Extension (zBX) Model 003.
The zEC12 is designed with improved scalability, performance, security, resiliency, availability, and virtualization. The superscalar design allows the zEC12 to deliver a record level of capacity over the prior System z servers. It is powered by 120 of the world's most powerful microprocessors running at 5.5 GHz and is capable of executing more than 75,000 millions of instructions per second (MIPS). The zEC12 Model HA1 is estimated to provide up to 50% more total system capacity than the z196 Model M80.

The zBX Model 003 infrastructure works with the zEC12 to enhance System z virtualization and management through an integrated hardware platform that spans mainframe, POWER7™, and System x® technologies. Through the Unified Resource Manager, the zEnterprise System is managed as a single pool of resources, integrating system and workload management across the environment.

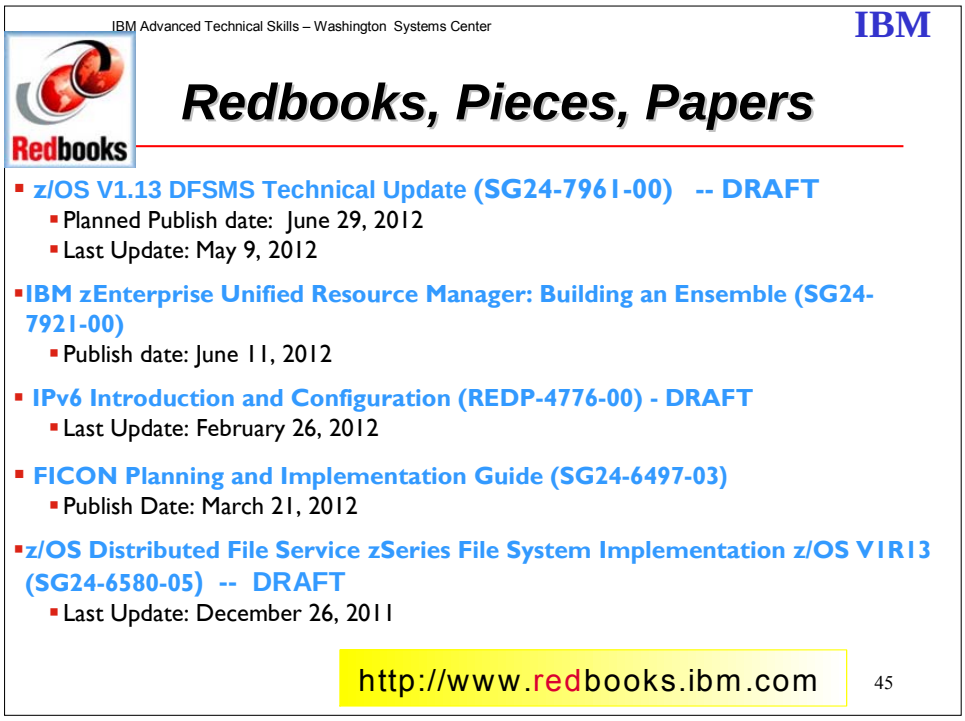
This book provides information about the zEnterprise System and its functions, features, and associated software support. Greater detail is offered in areas relevant to technical planning. This book is intended for systems engineers, consultants, planners, and anyone wanting to understand the zEnterprise System functions and plan for their usage. It is not intended as an introduction to mainframes. Readers are expected to be generally familiar with existing IBM System z technology and terminology.

IBM zEnterprise System Connectivity Handbook
This IBM Redbooks® publication discusses the connectivity options available for use within and beyond the data center for the following IBM System z family of mainframes:

- zEnterprise® EC12 (zEC12)
- zEnterprise 196 (z196)
- zEnterprise 114 (z114)
- System z10® Enterprise Class (z10 EC)
- System z10 Business Class (z10 BC)

This book highlights the hardware and software components, functions, typical uses, coexistence, and relative merits of these connectivity features.
This connectivity handbook assists readers in understanding the connectivity alternatives that

are available when planning and designing their data center infrastructures.
The changes to this edition are based on the System z hardware announcement dated August 28, 2012.
This book is intended for data center planners, IT professionals, system engineers, technical sales staff, and network planners who are involved in the planning of connectivity solutions for System z servers.



z/OS V1.13 DFSMS Technical Update
Each release of IBM® Data Facility Storage Management Subsystem (DFSMS) builds upon the previous version to provide enhanced storage management, data access, device support, program management, and distributed data access for the z/OS® platform in a system-managed storage environment.

This IBM Redbooks® publication provides a summary of the functions and enhancements in z/OS V1.13 DFSMS. It provides you with the information that you need to understand and evaluate the content of this DFSMS release, along with practical implementation hints and tips. Also included are enhancements that were made available through enabling PTFs that have been integrated into z/OS DFSMS V1.13.

This book was written for storage professionals and system programmers who have experience with the components of DFSMS. It provides sufficient information so that you can start

prioritizing the implementation of new functions and evaluating their applicability in your DFSMS environment.

IBM zEnterprise Unified Resource Manager: Building an Ensemble

For the first time it is possible to deploy an integrated hardware platform that brings mainframe and distributed technologies together: a system that can start to replace individual islands of computing and that can work to reduce complexity, improve security, and bring applications closer to the data that they need.

With the zEnterprise System a new concept in IT infrastructures is being introduced: zEnterprise ensembles. A zEnterprise ensemble is a collection of highly virtualized diverse systems that can be managed as a single logical entity where diverse workloads can be deployed. Ensembles, together with the virtualization, flexibility, security, and management capabilities provided by the zEnterprise System are key to solving the problems posed by today's IT infrastructure.

- The zEnterprise System consists of three components:
  IBM zEnterprise Central Processor Complex (CPC)
  The zEnterprise CPC can either be a zEnterprise 196 (z196) or a zEnterprise 114 (z114). Both zEnterprise CPCs offer z/OS, z/VSE, and z/TPF operating systems, as well as the ability to run many virtualized Linux servers under the z/VM operating system.
- IBM zEnterprise BladeCenter Extension (zBX)
  The zBX provides the capability to run the wide variety of applications typically found in UNIX and x86 architectures. The zBX supports select POWER7 blades running AIX and System x blades running Linux on System x and Microsoft Windows.
- IBM zEnterprise Unified Resource Manager
  Unified Resource Manager runs in the Hardware Management Console (HMC). It provides integrated management across all elements of the zEnterprise System.
  This IBM Redbooks® publication discusses how to plan and implement an ensemble, using the zEnterprise Unified Resource Manager. This book assumes a knowledge of IT systems, networks, and storage devices.

IPv6 Introduction and Configuration

Anyone that follows information technology has heard about the Internet running out of IP addresses. These statements are referring to allocation of the last block of Internet Protocol version 4 (IPv4) addresses being allocated in 2011. Internet Protocol version 6 (IPv6) is the replacement for IPv4 designed to address the limitation of addresses and change the way traffic is managed. This IBM Redpaper™ discusses the concepts and architecture of IP version 6 (IPv6) with focus on:
-An overview of IPv6 new features
-An examination of the IPv6 packet format
-An explanation of additional IPv6 functions
-A review of IPv6 mobility applications
-We then provide an introduction to Internet Control Message Protocol (ICMP) and discuss the functions of ICMP in an IPv6 network.

We then provide the IPv6 configuration steps for the the following clients:
-Microsoft Windows
-Red Hat Enterprise Linux

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-IBM® AIX®
-VMware vSphere ESXi 5.0

FICON Planning and Implementation Guide
This IBM® Redbooks® publication covers the planning, implementation, and management of IBM System z® FICON® environments. It discusses the FICON and Fibre Channel architectures, terminology, and supported topologies.

The book focuses on the hardware installation and the software definitions that are needed to provide connectivity to FICON environments.You will find configuration examples required to support FICON control units, FICON Channel-to-Channel (FCTC), and FICON Directors. It also discusses utilities and commands that are useful for monitoring and managing the FICON environment.

The target audience for this document includes IT Architects, data center planners, SAN administrators, and system programmers who plan for and configure FICON environments. You are expected to have a basic understanding of IBM zEnterprise™ and System z10® hardware, HCD, HCM or IOCP, and a broad understanding of the Fibre Channel and FICON architectures.

z/OS Distributed File Service zSeries File System Implementation z/OS V1R13

The z/OS® Distributed File Service zSeries® File System (zFS) is a z/OS UNIX® file system that can be used like the Hierarchical File System (HFS). zFS file systems contain files and directories, including Access Control Lists (ACLs), that can be accessed with the z/OS HFS application programming interfaces (APIs).

zFS file systems can be mounted into the z/OS UNIX hierarchy along with other local or remote file system types (for example, HFS, TFS, AUTOMNT, NFS, and so on). zFS does not replace HFS, but it is the z/OS UNIX strategic file system and IBM® recommends migrating HFS file systems to zFS. Beginning with z/OS V1R7, there are no restrictions for file system structures that should be kept as HFS instead of zFS.

This IBM Redbooks® publication helps you to install, tailor, and configure new zFS file systems. This information can be used by system administrators who work with the zFS component of the IBM z/OS Distributed File Service base element.
The book provides a broad description of the new architecture of the zFS file system for all releases up to zFS V1R13. You can use it as a reference when converting HFS file systems to zFS file systems. It will help you to create a solution for migrating to zFS file systems, and to understand the performance differences between HFS file systems and zFS file systems.

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Redbooks, Pieces, Papers

- z/OS Version 1 Release 13 Implementation (SG24-7946-00)
  - Publish date: March 13, 2012
  - Last Update: March 27, 2012
- z/OS Batch Modernization (SG24-7779-01)
  - Publish date: July 26, 2012
- Data Migration to IBM Disk Storage Systems (SG24-7432-01)
  - Publish date: February 23, 2012
- IBM Problem Determination Tools (SG24-7918-01)
  - Publish date: January 24, 2012
- DS8000 I/O Priority Manager (REDP-4760-01)
  - Publish date: January 11, 2012
  - Last Update: March 21, 2012
- DFSMShsm Fast Replication Technical Guide (SG24-7069-01)
  - Publish date: October 31, 2011

http://www.redbooks.ibm.com

z/OS Version 1 Release 13 Implementation

This IBM® Redbooks® publication provides information about installation and migration changes to be aware of if you are responsible for migrating systems from IBM z/OS® V1R10, z/OS V1R11, and z/OS V1R12 to z/OS V1R13. It also highlights actions that are needed to prepare for the installation of z/OS V1R12, including ensuring driving system and target system requirements are met and coexistence requirements are satisfied. There is a special focus on identifying new migration actions that must be performed for selected elements when migrating to z/OS V1R13.

This book addresses the following topics:

- z/OS V1R13 overview, z/OS V1R13 installation, managing volume backups with fast replication, XCF enhancements, console service enhancements
- DFSMSdfp, DFSMSoam, DFSMShsm, ISPF enhancements, DFSMSrmm enhancements, establishing IBM RACF® security for RRSF TCP/IP connections
- GRS enhancements, BCP supervisor, contents supervisor and RSM updates, improved channel recovery, Service aids enhancements, System Logger – S
- z/OS UNIX System Services, z/OS UNIX-related applications, RRS, z/OS Management Facility, z/OS HCD and HCM, C language
- Storage management enhancements, Common Information Model, Predictive Failure Analysis, Extended Address Volume, BCPii, Capacity Provisionin

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- System SSL enhancements, UNICODE, IBM Language Environment®, SDSF enhancements, JES2 enhancements, JES3 enhancements, IBM RMF™ enhancements
- IBM WebSphere® Application Server OEM, z/OSMF, CIM, and Capacity Provisioning setups
- BCPii Metal C example

Batch Modernization on z/OS

Mainframe computers play a central role in the daily operations of many of the world's largest corporations, and batch processing is a fundamental part of the workloads that run on the mainframe. A large portion of the workload on IBM® z/OS® systems is processed in batch mode. Although several IBM Redbooks® publications discuss application modernization on the IBM z/OS platform, this book specifically addresses batch processing in detail.

Many different technologies are available in a batch environment on z/OS systems. This book demonstrates these technologies and shows how the z/OS system offers a sophisticated environment for batch. In this practical book, we discuss a variety of themes that are of importance for batch workloads on z/OS systems and offer examples that you can try on your own system.

The audience for this book includes IT architects and application developers, with a focus on batch processing on the z/OS platform.

Data Migration to IBM Disk Storage Systems

Data migration has become a mandatory and regular activity for most data centers. Companies need to migrate data not only when technology needs to be replaced, but also for consolidation, load balancing, and disaster recovery.

This IBM Redbooks® publication addresses the aspects of data migration efforts while focusing on the IBM System Storage® as the target system. Data migration is a critical and complex operation, and this book provides the phases and steps to ensure a smooth migration. Topics range from planning and preparation to execution and validation.

The book also reviews products and describes available IBM data migration services offerings. It explains, from a generic standpoint, the appliance-based, storage-based, and host-based techniques that can be used to accomplish the migration. Each method is explained including the use of the various products and techniques with different migration scenarios and various operating system platforms.

This document targets storage administrators, storage network administrators, system designers, architects, and IT professionals who design, administer or plan data migrations in large data Centers. The aim is to ensure that you are aware of the current thinking, methods, tools, and products that IBM can make available to you. These items are provided to ensure a data migration process that is as efficient and problem-free as possible.

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The material presented in this book was developed with versions of the referenced products as of June 2011.

IBM Problem Determination Tools

IBM® Problem Determination Tools consists of a core group of IBM products designed to work in conjunction with compilers and run times to provide a start-to-finish development solution for the IT professional. This IBM Redbooks® publication can provide you with an introduction to the tools, guidance for program preparation to use with them, an overview of their integration, and several scenarios for their use.

If an abend occurs during testing, Fault Analyzer enables the programmer to quickly and easily pinpoint the abending location and optionally, the failing line of code. Many times, this is all the programmer requires to correct the problem. But occasionally, it might be necessary to delve a little deeper into the code to figure out the problem. Debug Tool allows the programmer to step through the code at whatever level is required to determine where the error was introduced or encountered.

After the code or data is corrected, the same process is followed again until no errors are encountered. But, this is not the whole story. Volume testing or testing with multiple terminals is sometimes required to ensure real-world reliability. Workload Simulator can be utilized to perform this type of testing.

After all tests have been completed, running the application using Application Performance Analyzer can ensure that no performance bottlenecks are encountered. It also provides a baseline to ensure that future enhancements do not introduce new performance degradation into the application.

DS8000 I/O Priority Manager

This IBM® Redpaper™ publication describes the concepts and functions of the IBM System Storage® DS8000® I/O Priority Manager. The DS8000 I/O Priority Manager enables more effective storage consolidation and performance management combined with the ability to align quality of service (QoS) levels to separate workloads in the system.

With DS8000 I/O Priority Manager, the system can prioritize access to system resources to achieve the volume's desired QoS based on defined performance goals (high, medium, or low) of any volume. I/O Priority Manager constantly monitors and balances system resources to help applications meet their performance targets automatically, without operator intervention. Starting with DS8000 Licensed Machine Code (LMC) level R6.2, the DS8000 I/O Priority Manager feature supports open systems and IBM System z®.

DS8000 I/O Priority Manager, together with IBM z/OS® Workload Manager (WLM), provides more effective storage consolidation and performance management for System z systems. Now tightly integrated with Workload Manager for z/OS, DS8000 I/O Priority Manager improves disk I/O performance for important workloads. It also drives I/O prioritization to the disk system by allowing WLM to give priority to the system's resources automatically when higher priority workloads are not meeting their performance goals. Integration with zWLM is exclusive to DS8000 and System z systems.

The paper is aimed at those who want to get an understanding of the DS8000 I/O Priority Manager concept and its underlying design. It provides guidance and practical illustrations for users who want to exploit the capabilities of the DS8000 I/O Priority Manager.

DFSMShsm Fast Replication Technical Guide

DFSMShsm Fast Replication provides DFSMShsm management for the use of volume-level fast replication. Fast replication is made possible by exploiting the FlashCopy® capability of Storage servers. With this capability, a set of Storage Groups can be defined as a copy pool. The volumes in this pool are processed collectively creating, by fast replication, backup versions that are managed by DFSMShsm.

Recovery can be performed at the volume or copy pool level. This capability is designed to work specifically with DB2® Version 8 or later. With DFSMShsm Fast Replication, the backup and recovery of DB2-related copy pools can be managed by DFSMShsm. DFSMShsm Fast Replication provides a fast, easy-to-use backup and recovery solution.

This IBM® Redbooks® publication consists of a technical overview of the DFSMShsm Fast Replication function in z/OS V1R12 DFSMS. It provides you with the information that you need to understand and evaluate the function, along with practical implementation hints and tips.

This book is written for storage professionals, database administrators, and system programmers who have experience with the components of DFSMS. It provides sufficient information for you to implement the DFSMShsm Fast Replication function in your storage environment.

DFSMShsm Fast Replication Technical Guide

DFSMShsm Fast Replication provides DFSMShsm management for the use of volume-level fast replication. Fast replication is made possible by exploiting the FlashCopy® capability of Storage servers. With this capability, a set of Storage Groups can be defined as a copy pool. The volumes in this pool are processed collectively creating, by fast replication, backup versions that are managed by DFSMShsm.

Recovery can be performed at the volume or copy pool level. This capability is designed to work specifically with DB2® Version 8 or later. With DFSMShsm Fast Replication, the backup and recovery of DB2-related copy pools can be managed by DFSMShsm. DFSMShsm Fast Replication provides a fast, easy-to-use backup and recovery solution.

This IBM® Redbooks® publication consists of a technical overview of the DFSMShsm Fast Replication function in z/OS V1R12 DFSMS. It provides you with the information that you need to understand and evaluate the function, along with practical implementation hints and tips.

This book is written for storage professionals, database administrators, and system programmers who have experience with the components of DFSMS. It provides sufficient information for you to implement the DFSMShsm Fast Replication function in your storage environment.

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Redbooks, Pieces, Papers

- **z/OS Management Facility (SG24-7851-00)**
  - Publish date: July 22, 2011
  - Last Update: August 5, 2011
- **IBM Systems Director Management Console: Introduction and Overview (SG24-7860-00)**
  - Publish date: April 12, 2011
  - **Last Update: September 22, 2011**
- **IBM Tivoli Directory Server for z/OS (SG24-7849-00)**
  - Publish date: June 30, 2011
  - Last Update: July 7, 2011
- **z/OS Traditional Application Maintenance and Support (SG24-7868-00)**
  - Publish date: March 16, 2011
  - Last Update: June 23, 2011
- **System z Crypto and TKE Update (SG24-7848-00)**
  - Publish date: May 31, 2011
  - Last Update: June 20, 2011

http://www.redbooks.ibm.com

z/OS Management Facility: This IBM® Redbooks® publication will help you install, configure and use the IBM z/OS® Management Facility (z/OSMF). IBM z/OS Management Facility (z/OSMF) is a new product for z/OS that will simplify, optimize and modernize the z/OS system programmer experience.

z/OSMF delivers solutions in a task-oriented, web-browser-based user interface with integrated user assistance. The goal of z/OS Management Facility is to improve system programmer productivity, and make functions easier to understand and use. This makes system programmers more productive as quickly as possible with the least amount of training. You can automate tasks, reduce the learning curve, and improve productivity through a modern, simplified, and intuitive task-based, browser-based interface.

The z/OSMF works with a mixed skills workforce: it is suited both for professionals who are new to z/OS and those already skilled on z/OS. Each professional has their own needs and faces their own challenges. A novice system programmer might need to understand the 'big picture' and how procedures are done. A novice will need to get documentation on procedures and tasks, and implement them according to the rules of the enterprise. The experienced system programmer, on the other hand, has the knowledge on tasks and procedures, so the goal is to make their functions less error prone and easier. This allows them to be more productive and contribute more to their business.

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z/OS has been delivering simplification since it was introduced, but z/OSMF brings a new dimension and focus to simplification. z/OSMF will simplify and modernize the user experience across the board and help make the pertinent information available readily available and easily accessible.

IBM Systems Director Management Console: Introduction and Overview: This IBM® Redbooks® publication positions the IBM Systems Director Management Console (SDMC) against the IBM Hardware Management Console (HMC). The IBM Systems Director Management Console provides system administrators the ability to manage IBM Power System® servers as well as IBM Power Blade servers. It is based on IBM Systems Director.

This publication is designed for system administrators to use as a deskside reference when managing Virtual Servers (formerly partitions) using the SDMC. The major functions the SDMC provides are server hardware management and virtualization management.

IBM Tivoli Directory Server for z/OS: This IBM® Redbooks® publication examines the IBM Tivoli® Directory Server for z/OS®. IBM Tivoli Directory Server is a powerful Lightweight Directory Access Protocol (LDAP) infrastructure providing a foundation for deploying comprehensive identity management applications and advanced software architectures.

This book provides an introduction to the IBM Tivoli Directory Server for z/OS providing a brief summary of its features and a examination of the possible deployment topologies. It discusses planning a deployment of IBM Tivoli Directory Server for z/OS, which includes prerequisites, planning considerations, and data stores, and provides a brief overview of the configuration process. Additional chapters provide a detailed discussion of the IBM Tivoli Directory Server for z/OS architecture that examines the supported back ends, discusses in what scenarios they are best used, and provides usage examples for each back end. The discussion of schemas breaks down the schema and provides guidance on extending it. A broad discussion of authentication, authorization, and security examines the various access protections, bind mechanisms, and transport security available with IBM Tivoli Directory Server for z/OS. This chapter also provides an examination of the new Password Policy feature. Basic and advanced replication topologies are also covered. A discussion on plug-ins provides details on the various types of plug-ins, the plug-in architecture, and creating a plug-in, and provides an example plug-in. Integration of IBM Tivoli Directory Server for z/OS into the IBM Workload Manager environment is also covered.

This publication also provides detailed information about the configuration of IBM Tivoli Directory Server for z/OS. It discusses deploying IBM Tivoli Directory Server for z/OS on a single system, with examples of configuring the available back ends. Configuration examples are also provided for deploying the server in a Sysplex, and for both basic and advanced replication topologies. Finally it provides guidance on monitoring and debugging IBM Tivoli Directory Server for z/OS.

z/OS Traditional Application Maintenance and Support: In this IBM® Redbooks® publication, we attempt to provide fresh insight into a problem domain that, in the authors' opinions, has been pushed to the back burner of technology writing for far too long—the domain of z/OS® (traditional) mainframe maintenance and production support. Since the mid-1980's, outside of a few websites and publications, this still-critical area of software has barely even received lip service by the world of mainstream technology media. In a small way, we are attempting address this situation.

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This book provides information in "what and how to" sections on the value of z/OS maintenance and support—not the value of the software, which is hardly in question, but the value of the software developers, and how they collaborate, analyze, code, and test the applications, fixes, and enhancements under their responsibility. We present new 21st Century tools to help them achieve their goals more easily and effectively. These tools integrate and provide a 1 + 1 + 1 = 5 value-proposition, for companies that are still doing work the way they did when in the mid-1970's, when Gerald Ford was president of the United States.

We are also describing, to a lesser extent, how you can effectively integrate the new tools with your existing development software stack, in order to find points of complimentary functionality. And we describe the new agile development and maintenance methodologies, and best practices for tools use and adoption.

System z Crypto and TKE Update: This IBM® Redbooks® publication provides detailed information about the implementation of hardware cryptography in the System z10® server. We begin by summarizing the history of hardware cryptography on IBM Mainframe servers, introducing the cryptographic support available on the IBM System z10, introducing the Crypto Express3 feature, briefly comparing the functions provided by the hardware and software, and providing a high-level overview of the application programming interfaces available for invoking cryptographic support.

This book then provides detailed information about the Crypto Express3 feature, discussing at length its physical design, its function and usage details, the services that it provides, and the API exposed to the programmer. This book also provides significant coverage of the CP Assist for Cryptographic Functions (CPACF). Details on the history and purpose of the CPACF are provided, along with an overview of cryptographic keys and CPACF usage details. A chapter on the configuration of the hardware cryptographic features is provided, which covers topics such as zeroizing domains and security settings. We examine the software support for the cryptographic functions available on the System z10 server. We look at the recent changes in the Integrated Cryptographic Service Facility (ICSF) introduced with level HCR7770 for the z/OS® operating system. A discussion of PKCS#11 support presents an overview of the standard and provides details on configuration and exploitation of PKCS#11 services available on the z/OS operating system.

The Trusted Key Entry (TKE) Version 6.0 workstation updates are examined in detail and examples are presented on the configuration, usage, and exploitation of the new features. We discuss the cryptographic support available for Linux® on System z®, with a focus on the services available through the IBM Common Cryptographic Architecture (CCA) API. We also provide an overview on Elliptical Curve Cryptography (ECC), along with examples of exploiting ECC using ICSF PKCS#11 services. Sample Rexx and Assembler code is provided that demonstrate the capabilities of CPACF protected keys.

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Redbooks, Pieces, Papers

- **OSA-Express Implementation Guide (SG24-5948-05)**
  - Publish date: April 9, 2009
  - Last Update: June 6, 2011
- **Setting Up and Using the IBM System z CPU Measurement Facility with z/OS (REDP-4727-00)**
  - Publish date: May 11, 2011
- **z/OS Version 1 Release 12 Implementation (SG24-7853-00)**
  - Publish date: April 15, 2011
  - Last Update: April 27, 2011
- **SMF Logstream Mode: Optimizing the New Paradigm (SG24-7919-00)**
  - Publish date: February 4, 2011
  - Last Update: February 10, 2011
- **DFSMS V1.12 Technical Update (SG24-7895-00)**
  - **Publish Date: September 30, 2011**
- **zFS Reorganization Tool (REDP-4769-00)**
  - **Publish date: January 24, 2012**
- **z/OS Identity Propagation (SG24-7850-00)**
  - **Publish Date: September 29, 2011**

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OSA-Express Implementation Guide: This IBM® Redbooks® publication will help you to install, tailor, and configure the Open Systems Adapter (OSA) features that are available on IBM System z10™ and IBM System z9® servers. It focuses on the hardware installation and the software definitions that are needed to provide connectivity to LAN environments. It provides information to help you with planning and system setup. It also includes helpful utilities and commands for monitoring and managing the OSA features.

The target audience for this document is system engineers, network administrators, and system programmers who will plan for and install OSA features. The reader is expected to have a good understanding of System z® hardware, HCD or IOCP, OSA/SF, SNA/APPN, and TCP/IP.

Setting Up and Using the IBM System z CPU Measurement Facility with z/OS: This IBM® Redpaper™ publication can help you install and manage the IBM System z® CPU Measurement Facility (CPU MF) capability. In this paper, you can learn how CPU MF gathers data and how this data can be used to more effectively manage your mainframe environment. You can also learn how this data can be used by IBM to help you more accurately characterize your workloads in preparation for capacity upgrades.

The topics covered in this paper target system programmers, capacity planners, or other technical personnel with working knowledge of systems and capacity.

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z/OS Version 1 Release 12 Implementation: This IBM® Redbooks® publication describes changes in installation and migration when migrating from a current z/OS® V1R10 and z/OS V1R11 to z/OS V1R12. Also described are tasks to prepare for the installation of z/OS V1R12, including ensuring that driving system and target system requirements are met, and coexistence requirements are satisfied. New migration actions are introduced in z/OS V1R12. This book focuses on identifying some of the new migration actions that must be performed for selected elements when migrating to z/OS V1R12. This book describes the following enhancements:

- z/OS V1R12 installation, HiperDispatch, System Logger, Auto-reply to WTORs, Real Storage Manager (RSM)
- DFSMS, DFSORT, Services aids, z/OS Infoprint Server, TSO/E, RMF™, Language Environment®, BCP allocation
- XML System Services, z/OS UNIX® System Services, BCP supervisor, Extended Address Volumes
- HyperSwap®. BCPii, (de)ciphering, Predictive Failure Analysis, C language, Hardware instrumentation services
- FICON® dynamic channel-path management, Workload Manager, SDSF, JES2, JES3, SMF, GRS, XCF, HCD
- Unicode, Capacity provisioning, RRS, Parallel subsystems initialization
- z/OS Management Facility (z/OSMF)

SMF Logstream Mode: Optimizing the New Paradigm: This IBM® Redbooks® publication positions the use of System Logger log streams as a repository for System Management Facilities (SMF) data against the previous use of Virtual Storage Access Method (VSAM) data sets for SMF data. This book expands on existing material by covering not just the implementation steps, but also by looking at how you use SMF data today, and using that information to help you identify the most appropriate repository for your SMF data.

If it transpires that log streams are appropriate for some or all of your SMF data, this book provides all the guidance that you are likely to require for a successful migration to this new paradigm.

The target audience for this document is system programmers and anyone who uses SMF data.

DFSMS V1.12 Technical Update: Each release of DFSMS builds upon the previous version to provide enhanced storage management, data access, device support, program management, and distributed data access for the z/OS platform in a system-managed storage environment.

This IBM Redbooks publication provides a summary of the functions and enhancements in z/OS V1R12 DFSMS. It provides you with the information that you need to understand and evaluate the content of this DFSMS release, along with practical implementation hints and tips. Also included are enhancements made available through enabling PTFs which are integrated into z/OS DFSMS V1R12.

This book was written for storage professionals and system programmers who have experience with the components of DFSMS. It provides sufficient information to start prioritizing the implementation of new functions and evaluating their applicability in your DFSMS environment.

zFS Reorganization Tool: This Redpaper™ describes and provides a zFS reorganization tool, named REORGTOOL, created as an alternative to directly using commands like pax or

copytree. It provides more flexibility in many situations and offers options for how the reorganization or copy processing should be done.

z/OS Identity Propagation : This IBM® Redbooks® publication explores various implementations of z/OS® Identity Propagation where the distributed identity of an end user is passed to z/OS and used to map to a RACF® user ID, and any related events in the audit trail from RACF show both RACF and distributed identities.

This book describes the concept of identity propagation and how it can address the end-to end accountability issue of many customers. It describes, at a high level, what identity propagation is, and why it is important to us. It shows a conceptual view of the key elements necessary to accomplish this.

This book provides details on the RACMAP function, filter management and how to use the SMF records to provide an audit trail. In depth coverage is provided about the internal implementation of identity propagation, such as providing information about available callable services.

This book examines the current exploiters of z/OS Identity Propagation and provide several detailed examples covering CICS® with CICS Transaction Gateway, DB2®, and CICS Web services with Datapower.

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Redbooks, Pieces, Papers

zEnterprise Redbook Series

- IBM zEnterprise 114 Technical Guide (SG24-7954-00)
  - Publish Date: September 30, 2011
  - **Last Update: February 27, 2012**
- IBM Building an Ensemble Using IBM zEnterprise Unified Resource Manager (SG24-7921-00)
  - **Publish date: June 11, 2012**
- IBM zEnterprise System Technical Introduction (SG24-7832-01)
  - Publish Date: August 15, 2011
  - Last Update: October 19, 2011
- IBM zEnterprise 196 Technical Guide (SG24-7833-01)
  - Publish Date: October 21, 2011
  - Last Update: March 19, 2012
- IBM System z Connectivity Handbook (SG24-5444-12)
  - Publish Date: July 22, 2010
  - Last Update: September 2, 2011
- IBM zEnterprise 196 Configuration Setup (SG24-7834-00)
  - Publish Date: November 18, 2010
  - Last Update: May 9, 2011

http://www.redbooks.ibm.com

IBM zEnterprise 114 Technical Guide: The popularity of the Internet and the affordability of IT hardware and software have resulted in an explosion of applications, architectures, and platforms. Workloads have changed. Many applications, including mission-critical ones, are deployed on a variety of platforms, and the System z® design has adapted to this change. It takes into account a wide range of factors, including compatibility and investment protection, to match the IT requirements of an enterprise.

The zEnterprise System consists of the IBM zEnterprise 196 (196) or IBM zEnterprise 114 (z114), the IBM zEnterprise Unified Resource Manager, and the IBM zEnterprise BladeCenter® Extension. The z114 is designed with improved scalability, performance, security, resiliency, availability, and virtualization. The z114 provides up to 18% Improvement in uniprocessor speed and 12% increase total system capacity for z/OS®, z/VM®, and Linux on System z over the z10™ BC.

The zBX infrastructure works with the z114 to enhance System z virtualization and management through an integrated hardware platform that spans mainframe, POWER7™, and System x technologies. The federated capacity from multiple architectures of the zEnterprise System is managed as a single pool of resources, integrating system and workload management across the environment through the Unified Resource Manager.

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This book provides an overview of the zEnterprise 114 and its functions, features, and associated software support. Greater detail is offered in areas relevant to technical planning. This book is intended for systems engineers, consultants, planners, and anyone wanting to understand the zEnterprise System functions and plan for their usage. It is not intended as an introduction to mainframes. Readers are expected to be generally familiar with existing IBM System z technology and terminology.

IBM zEnterprise Unified Resource Manager: The zEnterprise System is the first system of its kind. It was purposefully designed to help overcome fundamental problems of today's IT infrastructures and simultaneously provide a foundation for the future. The zEnterprise System represents both a revolution and an evolution of mainframe technology. IBM has integrated heterogeneous platforms under the well-proven System z hardware management capabilities, while extending System z qualities of service to those platforms.

The three main components of the zEnterprise System are the zEnterprise CPC, the zEnterprise Blade Extension (zBX), and the zEnterprise Unified Resource Manager. This IBM Redbooks publication discusses the Unified Resource Manager, including how to plan and implement an ensemble. This book assumes a knowledge of IT systems, networks, and storage devices.

IBM zEnterprise System Technical Introduction (SG24-7832-00): Recently we have seen an explosion in applications, architectures, and platforms. With the generalized availability of the Internet and the appearance of commodity hardware and software, several patterns have emerged that have gained center stage. Workloads have changed. Many applications, including mission-critical ones, are deployed in heterogeneous infrastructures and the System z design has adapted to this change. IBM has a holistic approach to System z design, which includes hardware, software and procedures. It takes into account a wide range of factors, including compatibility and investment protection, thus ensuring a tighter fit with the IT requirements of the entire enterprise.

This IBM® Redbooks® publication introduces the revolutionary scalable IBM zEnterprise System, which consists of the IBM zEnterprise 196 (z196) and the IBM zEnterprise BladeCenter® Extension (zBX). IBM is taking a bold step by integrating heterogeneous platforms under the well-proven System z hardware management capabilities, while extending System z qualities of service to those platforms. The z196 is a general-purpose server that is equally at ease with compute-intensive workloads and with I/O-intensive workloads. The integration of heterogeneous platforms is based on IBM's BladeCenter® technology, allowing improvements in price and performance for key workloads, as well as enabling a new range of heterogeneous platform solutions. The z196 is at the core of the enhanced System z platform designed to deliver technologies businesses need today along with a foundation to drive future business growth.

This book provides basic information about z196 and zBX capabilities, hardware functions and features, and its associated software support. It is intended for IT managers, architects, consultants, and anyone else who wants to understand the new elements of the zEnterprise System. For this introduction to the zEnterprise System, readers are not expected to be generally familiar with current IBM System z technology and terminology.

IBM zEnterprise System Technical Guide (SG24-7833-00): The popularity of the Internet and the affordability of IT hardware and software have resulted an in explosion of applications,

architectures, and platforms. Workloads have changed. Many applications, including mission-critical ones, are deployed on a variety of platforms and the System z design has adapted to this change. It takes into account a wide range of factors, including compatibility and investment protection, to match the IT requirements of an enterprise.

This IBM® Redbooks® publication discusses the IBM zEnterprise System, an IBM scalable mainframe server. IBM is taking a revolutionary approach by integrating different platforms under the well-proven System z hardware management capabilities, while extending System z qualities of service to those platforms. The zEnterprise System consists of the IBM zEnterprise 196 central processor complex, the IBM zEnterprise Unified Resource Manager, and the IBM zEnterprise BladeCenter Extension. The z196 is designed with improved scalability, performance, security, resiliency, availability, and virtualization. The z196 Model M80 provides up to 1.6 times the total system capacity of the z10 EC Model E64, and all z196 models provide up to twice the available memory of the z10 EC. The zBX infrastructure works with the z196 to enhance System z virtualization and management through an integrated hardware platform that spans mainframe and POWER7 technologies. Through the Unified Resource Manager, the zEnterprise System is managed as a single pool of resources, integrating system and workload management across the environment.

This book provides an overview of the zEnterprise System and its functions, features, and associated software support. Greater detail is offered in areas relevant to technical planning. This book is intended for systems engineers, consultants, planners, and anyone wanting to understand the zEnterprise System functions and plan for their usage. It is not intended as an introduction to mainframes. Readers are expected to be generally familiar with existing IBM System z technology and terminology.

IBM System z Connectivity Handbook (SG24-5444-11): This IBM® Redbooks® publication discusses the connectivity options available for use within and beyond the data center for the following IBM System z® family of mainframes:
zEnterprise 196 (z196)
zEnterprise 114 (z114)
System z10® Enterprise Class (z10 EC)
System z10 Business Class (z10 BC)

This book highlights the hardware and software components, functions, typical uses, coexistence, and relative merits of these connectivity features.
This connectivity handbook assists readers in understanding the connectivity alternatives that are available when planning and designing their data center infrastructures.
The changes to this edition are based on the System z hardware announcement dated July 12, 2011.

This book is intended for data center planners, IT professionals, system engineers, technical sales staff, and network planners who are involved in the planning of connectivity solutions for System z servers.

IBM zEnterprise 196 Configuration Setup (SG24-7834-00): This IBM® Redbooks® publication helps you install, configure, and maintain the IBM zEnterprise 196 server. The z196 offers new functions requiring a comprehensive understanding of the available configuration options. This book presents configuration setup scenarios, and discusses implementation

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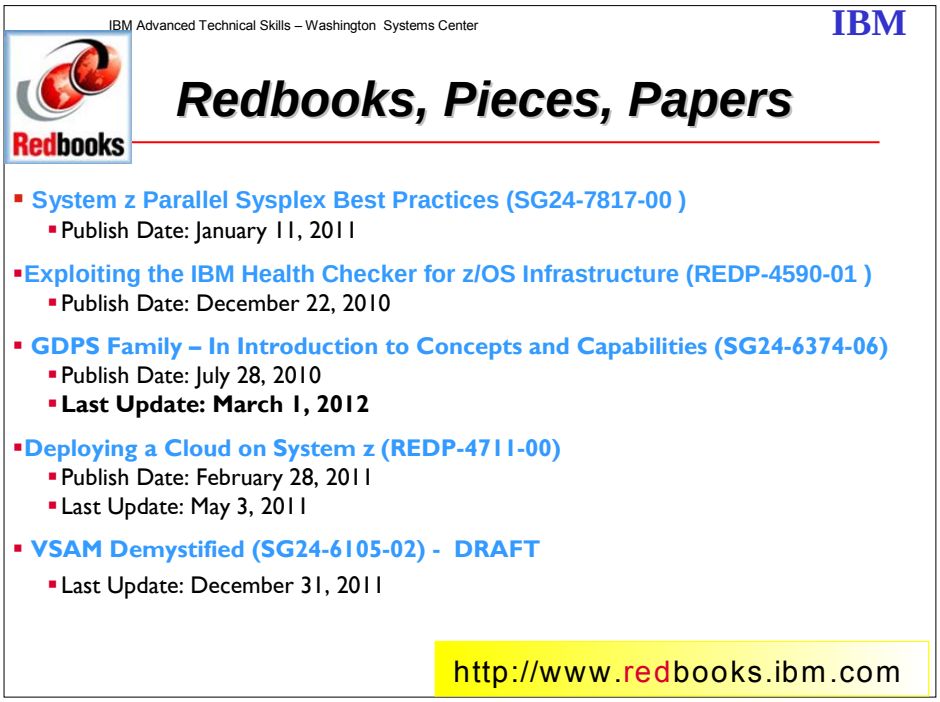
examples in detail. This book is intended for systems engineers, hardware planners, and anyone who needs to understand IBM System z® configuration and implementation. Readers should be generally familiar with current IBM System z technology and terminology. For details about the z196 server, see *IBM zEnterprise System Technical Introduction*, SG24-7832 and *IBM zEnterprise System Technical Guide*, SG24-7833.



System z Parallel Sysplex Best Practices: This IBM® Redbooks® publication pulls together diverse information regarding the best way to design, implement, and manage a Parallel Sysplex® to deliver the levels of performance and availability required by your organization. This book should be of interest to system programmers, availability managers, and database administrators who are interested in verifying that your systems conform to IBM best practices for a Parallel Sysplex environment. In addition to z/OS® and the sysplex hardware configuration, this book also covers the major IBM subsystems:

CICS®
DB2®
IMS™
MQ
WebSphere® Application Server

To get the best value from this book, readers should have hands-on experience with Parallel Sysplex and have working knowledge of how your systems are set up and why they were set up in that manner.

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Exploiting the IBM Health Checker for z/OS Infrastructure: The IBM® Health Checker for z/OS® (also identified in this book as IBM Health Checker) is a key component of the z/OS operating system, whose objective is to identify potential problems before they impact the system's availability. To do this it continuously checks many current, active z/OS and sysplex settings and compares them with those suggested by IBM or defined by you.
The IBM Health Checker for z/OS is made of two parts:
- A framework that provides check management and execution services. It supports check development by IBM, independent software vendors (ISVs), and users.
- Individual checks that look for specific z/OS settings and definitions, checking for potential problems.
Customers can use the IBM Health Checker for z/OS infrastructure to run their own checks, extending the reach of IBM Health Checker for z/OS to environment-specific settings.

This IBM Redpaper™ publication introduces the IBM Health Checker and describes how to activate and use it. It teaches you how to exploit the IBM Health Checker infrastructure to run custom checks and how to identify good candidates for writing your own checks. This publication also provides a number of sample checks to give you a good start creating custom checks for your environment.

GDPS Family – In Introduction to Concepts and Capabilities : This IBM® Redbooks® publication presents an overview of the GDPS® family of offerings and the role they play in delivering a business IT resilience solution. This book begins with a discussion of general concepts of business IT resilience and disaster recovery along with some issues related to high application availability, data integrity, and performance. These topics are considered within the framework of government regulation, increasing application and infrastructure complexity, and the competitive and rapidly changing modern business environment. Next, it describes the GDPS family of offerings with specific reference to how they can achieve your defined goals for disaster recover and high availability. Also covered are the features that simplify and enhance data replication activities, the prerequisites for implementing each offering, and some hints for planning for the future as well as immediate business requirements. Tables provide an easy-to-use summary and comparison of the offerings, and the additional planning and implementation services available from IBM are explained. Finally, a number of practical customer scenarios and requirements are described, along with the most suitable GDPS solution for each case. The intended audience for this book includes Systems Programmers, Technical Support Managers, Operations Managers, Availability Managers, and Disaster Recovery Planners.

Deploying a Cloud on System z: Cloud has become the new reality for IT shops. Lines of businesses bypass their own IT shops to take advantage of external providers of cloud offerings. However, many of the users that leverage public cloud services often have not considered concerns involving security, compliance, and availability. Cloud represents a new business model that requires a process discipline as well as the use of a corresponding set of technology. The new model requires an understanding of the hardware configuration, software images, a virtualized storage infrastructure, and network management. For many IT organizations that have mainframe resources, the mainframe organization manages these different disciplines and aspects of resources as part of their overall management of the platform as a whole. The mainframe's proven capacity to efficiently and securely provide virtualization contributes to the mainframe's position as the best contender to be that first cloud environment . Many IT shops are thinking of using their mainframe to pilot cloud. This paper describes the steps we took to create an environment that can efficiently deploy and manage a cloud in a Linux-based Infrastructure as a Service (IAAS).

VSAM Demystified : Virtual Storage Access Method (VSAM) is one of the access methods used to process data. Many of us have used VSAM and work with VSAM data sets daily, but exactly how it works and why we use it instead of another access method is a mystery.

This book helps to demystify VSAM and gives you the information necessary to understand, evaluate, and use VSAM properly. It clarifies VSAM functions for application programmers who work with VSAM. This book also builds upon the subject of Record Level Sharing and DFSMStvs.

The practical, straightforward approach should dispel much of the complexity associated with VSAM. Wherever possible an example is used to reinforce a description of a VSAM function.

This IBM® Redbooks publication is intended as a supplement to existing product manuals. It is intended to be used as an initial point of reference for VSAM functions.

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Redbooks, Pieces, Papers

- ABCs of z/OS System Programming Volume 8 (SG24-6988-01)
  - Last Update: July 26, 2012
- ABCs of z/OS System Programming Volume 13 (SG24-7717-01)
  - Publish Date: January 27, 2012
  - Last Update: February 7, 2012
- ABCs of z/OS System Programming Volume 1 (SG24-6981-02)
  - Publish Date: July 20, 2011
- ABCs of z/OS System Programming Volume 5 (SG24-6985-02)
  - Publish Date: May 12, 2011
- ABCs of z/OS System Programming Volume 9 (SG24-6989-05)
  - Publish Date: April 27, 2011
  - Last Update: May 12, 2011
- ABCs of z/OS System Programming Volume 4 (SG24-6984-00)
  - Publish Date: February 10, 2011
- ABCs of z/OS System Programming Volume 10 (SG24-6990-04)
  - Publish Date: March 20, 2012

http://www.redbooks.ibm.com

ABCs of z/OS System Programming: The ABCs of z/OS System Programming is a thirteen-volume collection that provides an introduction to the z/OS operating system and the hardware architecture. Whether you are a beginner or an experienced system programmer, the ABCs collection provides the information that you need to start your research into z/OS and related subjects. If you want to become more familiar with z/OS in your current environment, or if you

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are evaluating platforms to consolidate your e-business applications, the ABCs collection will serve as a powerful technical tool.
The contents of the volumes are:
Volume 1: Introduction to z/OS and storage concepts, TSO/E, ISPF, JCL, SDSF, and z/OS delivery and installation
Volume 2: z/OS implementation and daily maintenance, defining subsystems, JES2 and JES3, LPA, LNKLST, authorized libraries, Language Environment, and SMP/E
Volume 3: Introduction to DFSMS, data set basics, storage management hardware and software, VSAM, System-Managed Storage, catalogs, and DFSMStvs
Volume 4: Communication Server, TCP/IP and VTAM
Volume 5: Base and Parallel Sysplex , System Logger, Resource Recovery Services (RRS), global resource serialization (GRS), z/OS system operations, automatic restart management (ARM), Geographically Dispersed Parallel Sysplex (GPDS), availability in the zSeries environment
Volume 6: Introduction to security, RACF , Digital certificates and PKI, Kerberos, cryptography and z990 integrated cryptography, zSeries firewall technologies, LDAP, Enterprise Identity Mapping (EIM), and firewall technologies
Volume 7: Printing in a z/OS environment, Infoprint Server and Infoprint Central
Volume 8: An introduction to z/OS problem diagnosis
Volume 9: z/OS UNIX System Services
Volume 10: Introduction to z/Architecture, zSeries processor design, zSeries connectivity, LPAR concepts, HCD, and HMC
Volume 11: Capacity planning, performance management, RMF, and SMF
Volume 12: WLM
Volume 13: JES3

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Redbooks, Pieces, Papers

- **System z Personal Development Tool: Volume 1 Introduction and Reference (SG24-7721-04)**
  - Publish Date: March 21, 2012
- **System z Personal Development Tool: Volume 2 Installation and Basic Use (SG24-7722-04)**
  - Publish Date: March 21, 2012
- **System z Personal Development Tool: Volume 3 Additional Topics (SG24-7723-04)**
  - Publish Date: March 21, 2012
- **System z Personal Development Tool: Volume 4 Coupling and Parallel Sysplex (SG24-7859-00)**
  - Publish Date: December 15, 2010

http://www.redbooks.ibm.com

System z Personal Development Tool: Volume 1 Volume 2 and Volume 3
These IBM® Redbooks® publications introduces the IBM System z® Personal Development Tool (zPDT), which runs on an underlying Linux® system based on an Intel® processor. zPDT provides a System z system on a PC capable of running current System z operating systems, including emulation of selected System z I/O devices and control units. It is intended as a development, demonstration, and learning platform and is not designed as a production system. This book, providing specific installation instructions, is the second of three volumes. The first volume describes the general concepts of zPDT and a syntax reference for zPDT commands and device managers. The third volume discusses more advanced topics that may not interest all zPDT users. The IBM order numbers for the three volumes are SG24-7721, SG24-7722, and SG24-7723.
The systems discussed in these volumes are complex, with elements of Linux (for the underlying PC machine), z/Architecture® (for the core zPDT elements), System z I/O functions (for emulated I/O devices), and z/OS® (providing the System z application interface), and possibly with other System z operating systems. We assume the reader is familiar with the general concepts and terminology of System z hardware and software elements and with basic PC Linux characteristics.

System z Personal Development Tool: Volume 4: This IBM® Redbooks® publication describes the usage of Coupling Facility (CF) functions with the IBM System z® Personal Development Tool (zPDT). It describes the System z Coupling Application Developer Controlled Distribution, which is a Parallel Sysplex® "starter system" based on the AD-CD package and lists the exact steps taken to turn the normal AD-CD z/OS® system into a Parallel Sysplex base. This document assumes the reader is familiar with basic zPDT usage and

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terminology, with z/OS, with the z/OS AD-CD system, with basic z/VM® usage, and with general Parallel Sysplex concepts. It is not intended as an introduction to any of these topics.

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Redbooks, Pieces, Papers

- **Server Time Protocol Planning Guide (SG24-7280-02)**
  - Publish Date: April 22, 2010
  - **Last Update: August 1, 2011**
- **Server Time Protocol Implementation Guide (SG24-7281-02)**
  - Planned Publish Date: September 1, 2010
  - **Last Update: August 1, 2011**
- **Server Time Protocol Recovery Guide (SG24-7380-00)**
  - Publish Date: August 31, 2010
  - **Last Update: August 1, 2011**

Note: STP must be implemented on z196 and z114 Servers

http://www.redbooks.ibm.com

Server Time Protocol Planning Guide: Server Time Protocol (STP) is a server-wide facility implemented in the Licensed Internal Code (LIC) of the System z10 Enterprise Class (z10 EC), System z10 Business Class (z10 BC), IBM System z9 Enterprise Class (z9 EC), System z9 Business Class (z9 BC), zSeries z990 and z890 servers. It provides improved time synchronization in a sysplex or non-sysplex configuration. This document is intended for infrastructure architects and system programmers who need to understand the IBM STP functions . Readers are expected to be generally familiar with System z technology and terminology. The book provides planning information for Server Time Protocol functions and associated software support. For more detailed installation information, refer to the companion IBM Redbook, Server Time Protocol Implementation Guide, SG24-7281.

Server Time Protocol Implementation Guide: Server Time Protocol (STP) is a server-wide facility that is implemented in the Licensed Internal Code (LIC) of the IBM® System z10and IBM System z9®, and IBM eServer™ zSeries® z990 and z890 servers. It provides improved time synchronization in a sysplex or non-sysplex configuration.
This IBM Redbooks® publication will help you configure a Mixed or STP-only Coordinated Timing Network. It is intended for technical support personnel requiring information about:

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- Installing and configuring a Coordinated Timing Network
- Using STP functions and operations
- Migrating to a Coordinated Timing Network from various timing environments

Readers are expected to be familiar with IBM System z® technology and terminology. For planning, refer to our companion book, Server Time Protocol Planning Guide, SG24-7280. For information on how to recover your STP environment functionality, refer to Server Time Protocol Recovery Guide, SG24-7380.

Server Time Protocol Recovery Guide: This IBM Redbooks® publication will help you plan for and recover from a failure affecting your Mixed or STP-only Coordinated Timing Network. It is intended for technical support personnel requiring information about:

- Recovery concepts and definitions
- Identifying and taking appropriate actions for recovering from a failed component in a Coordinated Timing Network

Readers are expected to be familiar with IBM System z® technology and terminology. For planning information, refer to our companion book, Server Time Protocol Planning Guide, SG24-7280, and for implementation details refer to Server Time Protocol Implementation Guide, SG24-7281.

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Redbooks, Pieces, Papers

- **Communications Server for z/OS V1R13 TCP/IP, Volume 3 : High Availability, Scalability, and Performance** (SG24-7998-00)
  - Publish Date: February 24, 2012
- **Communications Server for z/OS V1R13 TCP/IP, Volume 2 : Standard Applications** (SG24-7997-00)
  - Publish Date: December 27, 2012
- **Communications Server for z/OS V1R13 TCP/IP Implementation Volume 4: Security and Policy-Based Networking** (SG24-7999-00)
  - Publish date: March 29, 2012
  - Last Update: April 24, 2012
- **IBM z/OS V1R13 Communications Server TCP/IP Implementation Volume 1: Base Functions, Connectivity, and Routing** (SG24-7996-00)
  - Publish Date: February 3, 2012

http://www.redbooks.ibm.com

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Communications Server for z/OS V1R13 TCP/IP, Volume 3 : High Availability, Scalability, and Performance : This IBM Redbooks® publication is for people who install and support z/OS Communications Server. It starts with a discussion of virtual IP addressing (VIPA) for high-availability, with and without a dynamic routing protocol. It describes several workload balancing approaches with the z/OS Communications Server. It also explains optimized Sysplex Distributor intra-sysplex load balancing. This function represents improved application support using optimized local connections together with weight values from extended Workload Manager (WLM) interfaces. Finally, this book highlights important tuning parameters and suggests parameter values to maximize performance in many client installations.

Communications Server for z/OS V1R13 TCP/IP, Volume 2 : Standard Applications: This IBM Redbooks® publication provides useful implementation scenarios and configuration recommendations for many of the TCP/IP standard applications that z/OS Communications Server supports.

For more specific information about z/OS Communications Server standard applications, high availability, and security, see the other volumes in the series:

- IBM z/OS V1R13 Communications Server TCP/IP Implementation: Volume 1 Base Functions, Connectivity, and Routing, SG24-7996
- IBM z/OS V1R13 Communications Server TCP/IP Implementation: Volume 3 High Availability, Scalability, and Performance, SG24-7998

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- IBM z/OS V1R13 Communications Server TCP/IP Implementation: Volume 4 Security and Policy-Based Networking, SG24-7999

For comprehensive descriptions of the individual parameters for setting up and using the functions that we describe in this book, along with step-by-step checklists and supporting examples, see the following publications:

- z/OS Communications Server: IP Configuration Guide, SC31-8775
- z/OS Communications Server: IP Configuration Reference, SC31-8776
- z/OS Communications Server: IP User's Guide and Commands, SC31-8780

This book does not duplicate the information in those publications. Instead, it complements them with practical implementation scenarios that can be useful in your environment. To determine at what level a specific function was introduced, see z/OS Communications Server: New Function Summary, GC31-8771. For complete details, we encourage you to review the documents that are listed in the additional resources section at the end of each chapter.

Communications Server for z/OS V1R13 TCP/IP Implementation Volume 4: Security and Policy-Based Networking

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Appendix E. AES-256 and trusted TCP connections
Appendix F. z/OS Communications Server IPSec RFC currency
Appendix G. Our implementation environment

IBM z/OS V1R13 Communications Server TCP/IP Implementation Volume 1: Base Functions, Connectivity, and Routing : This IBM Redbooks® publication is for people who install and support z/OS Communications Server. It introduces z/OS Communications Server TCP/IP, discusses the system resolver, showing implementation of global and local settings for single and multi-stack environments. It presents implementation scenarios for TCP/IP base functions, connectivity, routing, virtual MAC support, and sysplex subplexing.

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Redbooks

Redbooks, Pieces, Papers

- **Communications Server for z/OS V1R12 TCP/IP, Volume 3 : High Availability, Scalability, and Performance** (SG24-7898-00)
  - Publish Date: May 4, 2011
- **Communications Server for z/OS V1R12 TCP/IP, Volume 2 : Standard Applications** (SG24-7897-00)
  - Publish Date: April 8, 2011
  - Last Update: April 29, 2011
- **Communications Server for z/OS V1R12 TCP/IP Implementation Volume 4: Security and Policy-Based Networking** (SG24-7899-00)
  - Publish date: July 18, 2011
  - Last Update: July 27, 2011
- **IBM z/OS V1R12 Communications Server TCP/IP Implementation Volume 1: Base Functions, Connectivity, and Routing** (SG24-7896-00)
  - Publish Date: April 26, 2011

http://www.redbooks.ibm.com

IBM z/OS V1R12 Communications Server TCP/IP Implementation Volume 1: Base Functions, Connectivity, and Routing
This IBM Redbooks publication provides an introduction to z/OS Communications Server TCP/IP and discusses the system resolver. It also presents implementation scenarios for TCP/IP Base functions, Connectivity, Routing, Virtual MAC support, and sysplex subplexing. For more specific information about z/OS Communications Server standard applications, high availability, and security, refer to the other volumes in the series.
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Appendix B. Additional parameters and functions
Appendix C. Examples used in our environment
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IBM z/OS V1R12 Communications Server TCP/IP Implementation Volume 2: Standard Applications

This IBM Redbooks® publication provides useful implementation scenarios and configuration recommendations for many of the TCP/IP standard applications z/OS Communications Server supports. For more specific information about z/OS Communications Server standard applications, high availability, and security, refer to the other volumes in the series:
-- IBM z/OS V1R12 Communications Server TCP/IP Implementation Volume 1: Base Functions, Connectivity, and Routing, SG24-7798
-- IBM z/OS V1R12Communications Server TCP/IP Implementation Volume 3: High Availability, Scalability, and Performance, SG24-7800
-- IBM z/OS V1R12 Communications Server TCP/IP Implementation Volume 4: Security and Policy-Based Networking, SG24-7801

For comprehensive descriptions of the individual parameters for setting up and using the functions described in this book, along with step-by-step checklists and supporting examples, refer to the following publications:
-- z/OS Communications Server: IP Configuration Guide, SC31-8775
-- z/OS Communications Server: IP Configuration Reference, SC31-8776
-- z/OS Communications Server: IP User's Guide and Commands, SC31-8780
This book does not duplicate the information in those publications. Instead, it complements them with practical implementation scenarios useful in your environment. To determine at what level a specific function was introduced, refer to *z/OS Communications Server: New Function Summary*, GC31-8771. For complete details, we encourage you to review the documents referred to in the additional resources section at the end of each chapter.
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Appendix E. FTP and translation tables
Appendix F. Our implementation environment

IBM z/OS V1R12 Communications Server TCP/IP Implementation Volume 3: High Availability, Scalability, and Performance: In this IBM Redbooks® publication, we begin with a discussion of Virtual IP Addressing (VIPA), a TCP/IP high-availability approach that was introduced by the z/OS Communications Server. We then show how to use VIPA for high availability, both with and without a dynamic routing protocol. We also discuss a number of different workload balancing approaches that you can use with the z/OS Communications Server. We also explain the optimized Sysplex Distributor intra-sysplex load balancing. This function represents improved multitier application support using optimized local connections together with weight values from extended Workload Manager (WLM) interfaces. Finally, we highlight the most important tuning parameters and suggest parameter values that we observed to maximize performance in many client installations.

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IBM z/OS V1R12 Communications Server TCP/IP Implementation Volume 4: Security and Policy-Based Networking: The IBM z/OS® Communications Server TCP/IP Implementation series provides understandable, step-by-step guidance about how to enable the most commonly used and important functions of z/OS Communications Server TCP/IP. This IBM Redbooks® publication explains how to set up security for the z/OS networking environment. Network security requirements have become more stringent and complex. Because many transactions come from unknown users and untrusted networks, careful attention must be given to host and user authentication, data privacy, data origin authentication, and data integrity. We also include helpful tutorial information in the appendixes of this book because security technologies can be quite complex,

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LOOKAT

- LOOKAT is a z/OS, z/VM, VSE/ESA online help system specifically intended to provide users with message explanations when they need them
- Enter a message ID and LookAt will return the message explanation reducing retrieval time significantly.
- New Can also search APAR for message "apar for IEE495I"
- Recent addition is messages for Linux and AIX clusters
- Where
  - http://www-03.ibm.com/systems/z/os/zos/bkserv/lookat/index.html
  - http://www.ibm.com/servers/eserver/zseries/zos/bkserv
  - http://www-03.ibm.com/systems/z/os/zos/bkserv/lookat/lookatm.html
    - specifically for Mobile users

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Starting with LookAt V2.12 a new feature has been added to give you even more function with this S/390 message portal. In the event the message ID for which you are seeking more information is not found by LookAt, an automatic bookshelf search will be conducted on the Messages and Codes Bookshelf at the version/release level that you selected from the pull down on the LookAt main page.

LookAt support includes z/OS 1.2 through the latest release, z/VM V4R3 through the latest release, and VSE/ESA V2R5 through the current release. If you select a release prior to the level listed, you will be passed directly to a bookshelf search at that version/release level for your message ID. If you select a level in the list, LookAt will attempt to pinpoint your message ID in the correct publication and open to the exact spot.

Some publications in the early stages of LookAt support may not be LookAt-enabled. This is why the bookshelf search is offered - to help you find the information you need whether or not the publication is LookAt enabled.

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LOOKAT

- **Can install LookAt on MVS or workstation**
  - Interface InstallShield® packaging of enabling code for the workstation and host
    - TSO
    - TSO XMIT
    - Windows
- **Users can enter the LookAT command:**
  - At the TSO "READY" prompt
  - In the ISPF Command panel (Option 6)
  - From any ISPF command line
  - From the UNIX System Services Shell
- **You can download LookAt for Host and PALM edition from the following IBM Web site:**
  - ftp://ftp.software.ibm.com/ps/products/ibmreader/tools/lookat/

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LookAt, is a tool that lets you look up IBM messages quickly and easily on Microsoft Windows, z/OS, OS/390, Palm™ VIIx, and the Web, without having to know their origins. (See z/OS Hot Topics Newsletter #5, August 2001,GA22-7501-01 and z/OS Hot Topics Newsletter #6, February 2002,GA22-7501-02.)

Using the simple command, LOOKAT, on your host system, you can retrieve the explanation and any other information associated with any message you might receive on the host. It uses BookManager READ/MVS and the messages and codes books to locate and display message information. LOOKAT is a Rexx EXEC that runs under TSO.

Locate the LookAt code. You can find it in either of the following locations:

A direct link to the LookAt FTP site has been added to the LookAt home page. This should help you access this site to download the LookAt code that will run on your OS/390, z/OS, or z/VM host systems.
From this IBM Web site:
ftp://ftp.software.ibm.com/ps/products/ibmreader/tools/lookat

Don't have a Web connection nearby? It doesn't matter! Have a Palm™VIIx in your pocket? Great! Because now you can LookAt messages wherever you happen to be.

LookAt is now easier to install!
LookAt now includes an InstallShield® interface that installs the program files on your workstation and customizes your LookAt profile. It also keeps track of the files for you, and automatically replaces them when you install an updated version of LookAt. So, instead of

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copying and updating files by hand, the installation program does it for you in a fraction of the time. The Windows version even checks to see whether you are running the IBM Object REXX for Windows Runtime Library, and can launch the REXX Runtime Library installation program for you.

You can install LookAt on your MVS system or on your workstation. In both cases, the installation program copies the LookAt program files to your workstation. There are three versions of the installation program: TSO, TSO XMIT and Windows. They are available on the disc containing the LookAt code in IBM's Online Library Collection for OS/390 for March 2003 or later, or z/OS for June 2003 or later. You can also find them on the LookAt FTP site: ftp://ftp.software.ibm.com/ps/products/ibmreader/tools/lookat/.

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LOOKAT

- **LookAt Mobile Edition**
  - Access message information from anywhere using your wireless handheld device
  - Works with
    - PocketPC
    - Palm OS
    - Linux handhelds

- **Add LookAt to Mozilla Firefox search bar**
- **Link to Twitter**
- **Add as a Widget in Lotus Notes 8 sidebar**
- **Search "APAR for *message id*"**

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Adding LookAt to the Mozilla Firefox search bar
If you use LookAt often and would like to add it to the Mozilla Firefox search bar it is now possible. Doing so is a quick two step process.
First, install the Add to Search Bar plug-in for Firefox:

1. Open your Mozilla Firefox Web browser.
2. Go to the web page that allows you to install the Add to Search Bar plug-in into your Firefox location bar by clicking here: Add Search Bar plug-in.
3. Install the Add to Search Bar plug-in by clicking Add to Firefox. In the confirmation window, click Install Now. **Note:** The Add to Search Bar plug-in works with Firefox 2.0 and above and needs to be installed only once.
4. After the plug-in is installed, restart Firefox to make the plug-in available.

Next, add the LookAt Web site to your Firefox search bar:

1. Go to the LookAt Web page by clicking on the the following link: LookAt Web page.
2. Right-click in the Message ID input box.
3. From the list of options, select Add to Search Bar.
4. In the confirmation window, click OK to make LookAt active on your Firefox search bar

LookAt can be added as a Widget in the Lotus Notes 8 sidebar
Lotus Notes 8 allows the user to add widgets in the My Widgets sidebar. This new feature will all

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users to perform business actions in a quick and efficient way. These widgets can be standalone or launched from Live Text in Lotus Notes documents. If you use Lotus Notes 8, make sure to add LookAt as a widget so that it will always be at your fingertips.

Link to Twitter has been included on the LookAt home page!
The LookAt home page has been updated to include a link to Twitter so that you can share your knowledge or ask questions in regards to message explanations for IBM z/OS, z/VM, z/VSE and Clusters through the use of real-time feed. Once you sign up for an account with Twitter, you can do a search for LookAtMessages and subscribe to it as a blog to follow. If you have any further questions in regards to the way Twitter works, you can go to their website and check out the sections for "About Us" and "Blog".

APAR Search: Now you can perform a search on an APAR to a message. For example, if you look up message IEE459I, you get back the message details for that message. Let's say when you look up the message, you realize some of the details might not be as up-to-date as they should be. If that is the case, you can do a search on "apar for IEE459I". If an APAR happens to be associated with that message, the APAR information also appears. As a reminder, messages can be searched from either the LookAt Mobile Edition or from the LookAt homepage at the following Web site: ibm.com/systems/z/os/zos/bkserv/lookat/

Cookies Enabled!
We have added the ability for LookAt to find the most recent release for which you have requested message help. If you frequently seek message help for the same product and release, this will save you a little time since you will not have to click on the radio button each time. If you have cookie support enabled on your browser, LookAt can retrieve and enter this information for you. This feature will work on both the regular LookAt interface, the LookAt Mobile edition (provided that you have Internet capabilities on your mobile device with cookie support enabled), and the List Enabled Books page.

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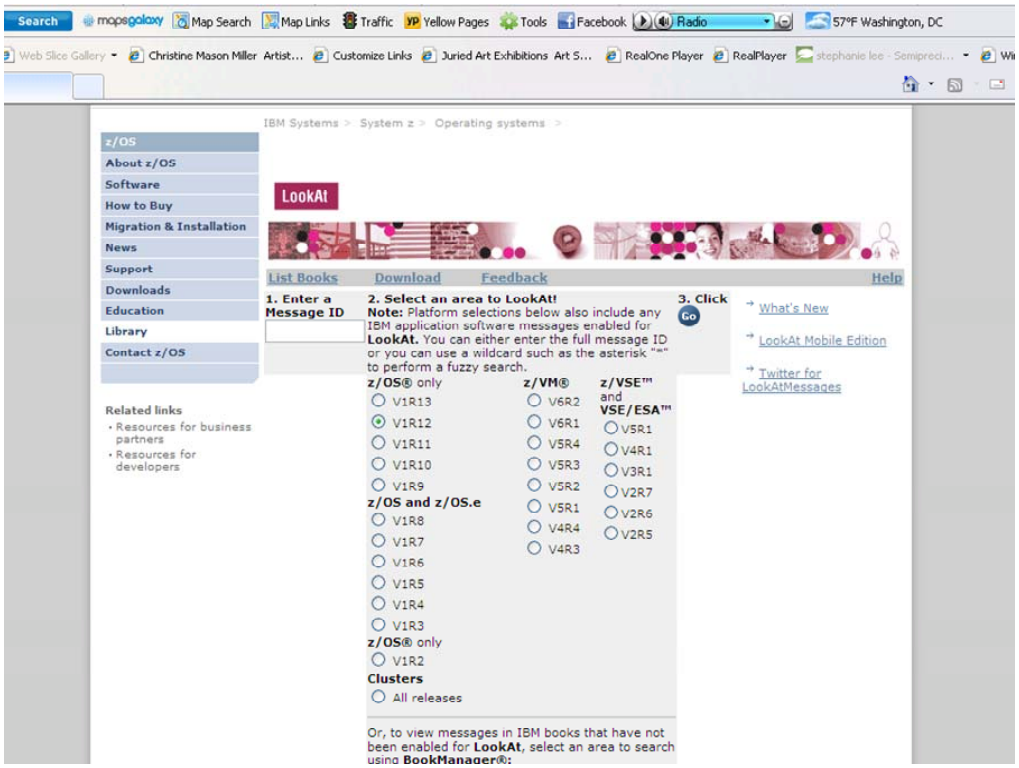

In the event the message ID for which you are seeking more information is not found by LookAt, an automatic bookshelf search will be conducted on the OS/390 Messages and Codes Bookshelf at the version/release level you selected from the pull down on the LookAt main page.

The "message ID" entered can be one of the following:
The complete message ID for a message to see a specific message. Or "APAR for *message-id*"

Part of a message ID with an asterisk (*) as a wild-card character if you don't know the entire ID or if you want to see a set of related message IDs. The "*" can represent zero or more character positions. You can place a wild-card at the beginning, in the middle, or at the end of a message ID. However, we do not recommend putting an "*" at the beginning of an ID as it will probably return a very large number of possible combinations. You can use more than one wild-card character in a message ID. As an example, try: $HASP*71

A "Latest Alerts" box will appear on the LookAt home page whenever there is a significant change or addition to LookAt that requires special attention on your part. These alert boxes will include the date the alert was originally issued and a link to a "LookAt Alerts" page, which will describe the changes. Alert boxes will be retained for a period of 30 days from the date of issue and then be removed. The information in the alerts will be retained in "LookAt News" for future reference.

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IBM Library Server Shelf search results "z/OS V1R6.0 elements and features messages and codes" - Microsoft Internet Explorer

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Address http://publibz.boulder.ibm.com/cgi-bin/bookmgr_OS390/SHELVES/EZ2MZ601?searchRequest=HASP070&SEARCH=Search&Type=FUZZY&searchTopic=

Search Results for a Shelf

Search results for shelf: ***EZ2MZ601 "z/OS V1R6.0 elements and features messages and codes"***

1 books have matches for: ***HASP070***

HAS2A140 z/OS V1R5.0-V1R6.0 JES2 Messages

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Contacts: [Contact z/OS | Contact OS/390]

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File Edit View Favorites Tools Help

Address http://publibz.boulder.ibm.com/cgi-bin/bookmgr_OS390/BOOKS/has2a140/4.12?ACTION=MATCHES&REQUEST=HASP070&TYPE=FUZZY&SHELF=&DT-

4.12 $HASP070

$HASP070

Explanation:

```
>>__ SPECIFY RECOVERY OPTIONS -__( 'RECOVER' OR 'TERMINATE'_____________>
>__ OR 'SNAP' AND, OPTIONALLY,__ ',NODUMP')_____________________________><
```

A JES2 error has occurred and JES2 has issued message $HASP095 to describe the error. The JES2 error rate has reached or exceeded the value specified on the RECVOPTS initialization statement (RECVOPTS COUNT=nn, INTERVAL=hhhh, where **nn** is the number of system ABENDs of the JES2 main task plus the number of JES2 catastrophic errors within the interval of **hhhh** hours. The default values for **nn** and **hhhh** are 2 and 24, respectively).

The JES2 processor that was running has a recovery routine for this error, but because the error rate has exceeded the value specified at initialization, JES2 does not automatically run the processor recovery routine. Instead, JES2 issues this message to require the operator to choose the action JES2 should take.

System Action: JES2 waits for the operator to reply. If the operator replies **RECOVER**, JES2 issues an indicative dump (message $HASP088) to the hardcopy log and then attempts recovery. If the operator replies **SNAP**, JES2 issues message $HASP088 at the console, and then issues message **$HASP070** again. If the operator replies **TERMINATE**, JES2 stops processing and a system dump is written. If no response is made after 10 minutes, then JES2 will take the default action of RECOVER. $HASP065 is issued every 30 seconds to tell the operator that an automatic response will occur for the WTOR.

Operator Response: Enter the appropriate reply:

Done Local intranet

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New

Publication News – z/OS 1.13

- **New Books**
  - *z/OS Batch Runtime Planning and User's Guide, SA23-2270*
- **Changed Books for z/OS 1.13**
  - *z/OS Distributed File Service Customization, SC24-5916*
  - *z/OS Distributed File Service Administration, SC24-5915*
  - *z/OS Distributed File Service SMB Administration*
  - *z/OS Distributed File Service zFS Administration*
- **Deleted books for z/OS 1.13**
  - *z/OS DCE Administration Guide*, SC24-5904

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New

Publication News – z/OS 1.12

- **New Books**
  - *IBM z/OS Management Facility, SA38-0652*
  - *IBM Tivoli Directory Server Messages and Codes for z/OS, SA23-2262*
- **Changed Books for z/OS 1.12**
  - *z/OS Support for Unicode: Using Unicode Services* has been retitled to *z/OS Unicode Services User's Guide and Reference.*
- **Deleted books for z/OS 1.12**
  - *z/OS MVS™, JES2 and JES3 Data Areas*, will not be produced as formal books, but will be posted to the z/OS Library Web site.
    - *z/OS MVS™ Data Areas*, Volumes 1–6
    - *z/OS JES2 Data Areas*, Volumes 1–5
    - *z/OS JES3 Data Areas*, Volumes 1–3

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Publication News

- **Latest Publications**
  - http://www.ibm.com/servers/eserver/zseries/zos/bkserv/
  - Links to the latest editions of publications when an edition of a publication becomes available superseding the edition available on a current CD collection kit bookshelf
- **z/OS Hot Topics Newsletter**
  - Obtain from z/OS Library
  - Published August
  - New issue August 2012
  - Hot Spotlight
    - Features web articles not in the latest Newsletter

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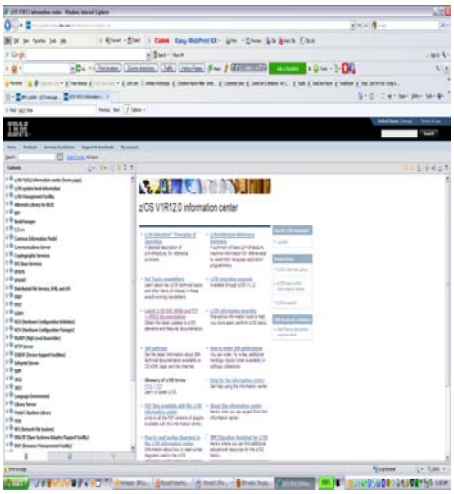
Information Center

- **Information Centers are the new IBM strategic mechanism for delivering product documentation**
- **z/OS R11 Delivered using the IBM Eclipse Help System framework**
  - The content of the z/OS Information Center is identical to what is in the traditional BookManager and PDF formats, however the presentation may differ to some degree
- **Information centers are strategic, IBM will continue investing in enhancements. Over time, the degree of search capability will be refined.**



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For the first time IBM is offering z/OS product documentation in an information center, delivered using the IBM Eclipse Help System framework. The content of the z/OS V1R9 through V1R13 Information Center (information for z/OS base elements and optional features) is identical to what is in the traditional BookManager and PDF formats, however the presentation may differ to some degree.

Information Centers are the new IBM strategic mechanism for delivering product documentation. Some advantages are:
They are indexed by Google and other internet search engines, so locating information should be easier.

You can create custom search scopes that include only the information you need for a particular task or job role.

Because information centers are strategic, IBM will continue investing in enhancements. Over time, the degree of search capability will be refined.

A hot link to the z/OS Information Center for z/OS release 1.9 – 1.13 is on the z/OS Book Serv web page.
http://www-03.ibm.com/systems/z/os/zos/bkserv/

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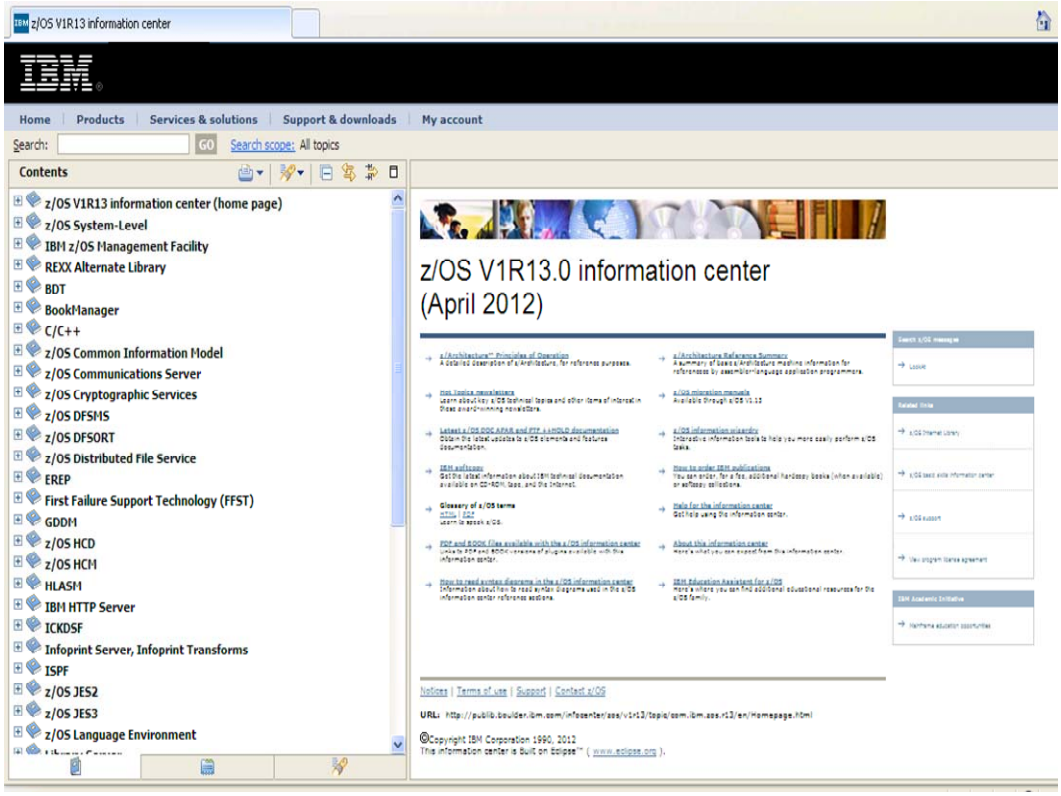

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Information Centers

- **Advantages:**
  - Are Internet friendly (easily accessed by Google)
  - Are non-proprietary (HTML and XML)
  - Can use just compressed HTML and navigation maps
  - Can take advantage of growing technologies (Semantic Web)
  - Can easily incorporate
    - Interactive elements wizards calculators, dynamic tables multimedia
  - Is more likely to be used interactively with a system
  - Have extensible function due to plug-in architecture
  - HTML article based rather than book-based so information can be more easily combined for solutions
- **Considerations for z/OS customers**
  - Information will no longer be available in the green screen native z/OS environment.
  - Primary delivery will be the internet/intranet through a web browser
  - No LookAt or hand-held support yet

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Did you know?

- z/OS and z/OS.e DOC APAR and PTF ++HOLD Documentation (Web only)
- **Updated weekly (with closures from prior week)**
  - DOC APARs and ++HOLD for documentation changes from PTF cover letters
  - Facilitates:
    - Searching for changes (IBM BookManager BookServer Search facility)

http://publibz.boulder.ibm.com/cgi bin/bookmgr_OS390/BOOKS/ZIDOCMST/CCONTENTS

Or from the z/OS library page:

Latest z/OS DOC APARs and PTF ++HOLD DOC data

Obtain the latest updates to z/OS elements and features documentation.

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This online collection of DOC APARs and ++HOLD for documentation changes from PTF coverletters can make it easier for you to obtain the latest updates to the z/OS library. The APARs are listed according to their closing date. APARs closed most recently will appear first. IBM has gathered these updates so you can:

- Search all changes using the IBM BookManager BookServer Search facility
- Print a documentation update
- Obtain weekly updates of this information

Each APAR lists:

APAR Number
Closing Date
Closing Code
Failing Component
Associated PTF number
Problem Summary
Problem Conclusion

All severity 1 APARs and DOC APARs considered high impact are identified with two asterisks (**) prior to the APAR number in the heading. For example:

**APAR Number: OW37334 (PER)

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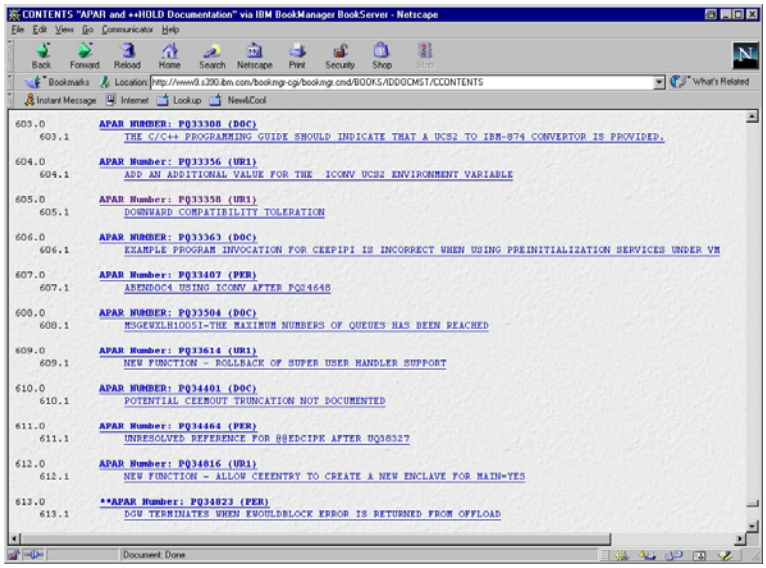
Sample List



You can get to this information via the book serv web site or from the z/OS home page.

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z/OS Basics Textbooks

- **z/OS Basics (SG24-6366-02) – *Updated January 4, 2012***
  - An Introduction to mainframe computing
  - Overview of z/OS environment
  - Developed for the z/OS Academic curriculum
- **z/OS Networking Basics**
  - Concepts of mainframe-based data communications
  - Methods for implementing TCP/IP and SNA on the z/OS operating system
  - Basic skills in network operations, security, and problem determination

For z/OS Basics:
- **http://www.redbooks.ibm.com/redbooks/pdfs/sg246366.pdf**

For Networking Basics:
- **http://publibz.boulder.ibm.com/zoslib/pdf/znetwork.pdf**

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The *z/OS Basics* provides students information on systems technology with the background knowledge and skills necessary to begin using the basic facilities of a mainframe computer.

For optimal learning, students are assumed to have successfully completed an introductory course in computer system concepts, such as computer organization and architecture, operating systems, data management, or data communications. They should also have successfully completed courses in one or more programming languages, and be PC literate.

Note that this text can also be used as a prerequisite for courses in advanced topics such as compiler algorithms, or for internships and special studies.

Others who will benefit from this text include data processing professionals who have experience with non-mainframe platforms, or who are familiar with some aspects of the mainframe but want to become knowledgeable with other facilities and benefits of the mainframe environment.

When moving through this text, instructors are encouraged to alternate between text, lecture, discussions, and hands-on exercises. The instructor-led discussions and hands-on exercises are an integral part of the learning experience, and can include topics not covered in this text.

After reading this text, students will have received:

- A general introduction to mainframe concepts, usage, and zSeries® architecture
- A comprehensive overview of z/OS®, a widely used mainframe operating system
- An understanding of mainframe workloads and an overview of the major middleware applications in use on mainframes today
- The basis for subsequent course work in more advanced, specialized areas of z/OS, such as system administration or application programming.

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This text is organized in four parts, as follows:
_ **Part 1. "Introduction to z/OS and the mainframe environment"** provides an overview of the types of workloads commonly processed on the mainframe, such as batch jobs and online transactions. This part of the text helps students explore the user include TSO/E and ISPF, UNIX® interfaces, job control language, file structures, and job entry subsystems. Special attention is paid to the users of mainframes and to the evolving role of mainframes in today's business world.
_ **Part 2. "Application programming on z/OS"** introduces the tools and utilities for developing a simple program to run on z/OS. This part of the text guides the student through the process of application design, choosing a programming language, and using a runtime environment.
_ **Part 3. "Online workloads for z/OS"** examines the major categories of real time workloads processed by z/OS, such as transaction processing, database management, and Web-serving. This part of the text includes discussions of network communications and several popular middleware products, including DB2®, CICS®, and WebSphere Application Server®.
_ **Part 4. "System programming on z/OS"** provides topics to help the student become familiar with the role of the z/OS system programmer. This part of the text includes discussions of system libraries, starting and stopping the system, security, and the clustering of multiple systems. Also provided is an overview of mainframe hardware systems, including processors and I/O devices.

Introduction to the New Mainframe: Networking Basics
Part 1: Introduction to networking on the mainframe
Part 2: TCP/IP implementation on the mainframe
Part 3: SNA and SNA/IP implementation on the mainframe
Part 4: Network operations and administration

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Links and Downloads

- **Internet Library and LibraryCenter**
  - http://www-03.ibm.com/systems/z/os/zos/bkserv
- **LookAt**
  - http://www-03.ibm.com/systems/z/os/zos/bkserv/lookat
- **Softcopy Website**
  - http://www.ibm.com/servers/eserver/zseries/softcopy
  - What's New
  - Known problems
- **Softcopy Reader V3.8 for Windows**
  - http://www.ibm.com/software/office/bkmgr/softcopyread.html
- **Softcopy Reader V3.7 for Linux**
  - http://www.ibm.com/support/docview.wss?doc=4000251&org=SW&rs=4
- **Adobe Acrobat**
  - http://www.adobe.com/support/downloads/main.html

New Look and feel

http://www-947.ibm.com/support/entry/portal/Overview/Software/Other_Software/BookManager_Product_Family

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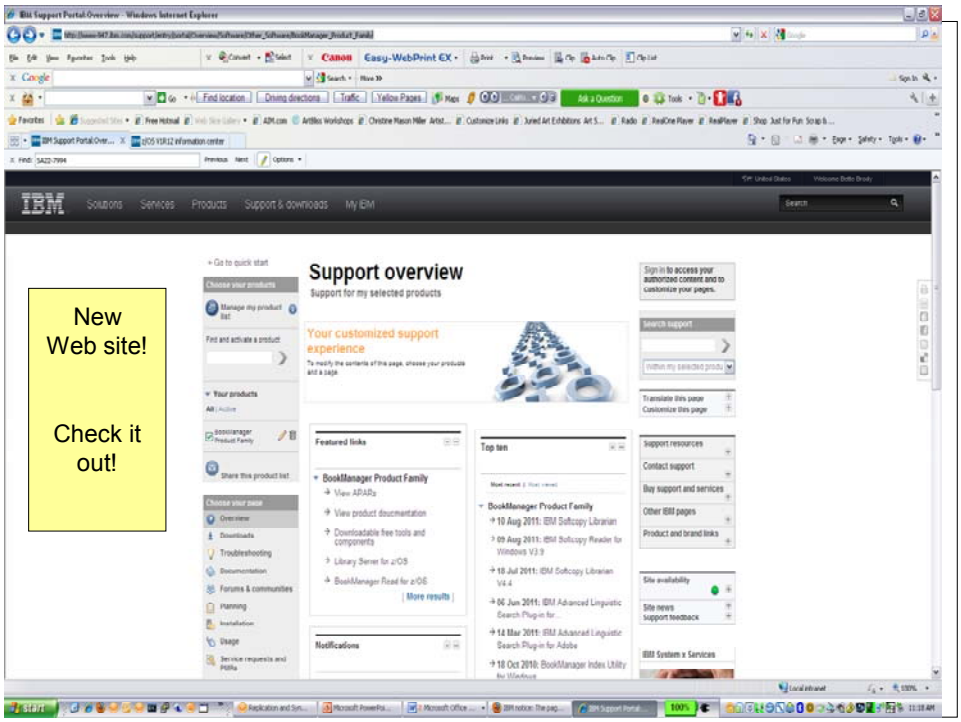

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Education

z/OS Basics Skills Info Center
IBM Education Assistant
Parallel Sysplex Training Environment

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z/OS Basics Skills Info Center

- **Information for "on-the-job" training**
  - z/OS Basics
  - Application Development Basics
  - Systems Programmer Basics
  - Networking Basics
  - Security Basics
  - Currently working on
    - Software maintenance
    - Enhances Security Basics
- **Interactive exercises to reinforce learning and test knowledge**
- **http://publib.boulder.ibm.com/infocenter/zos/basics/index.jsp**

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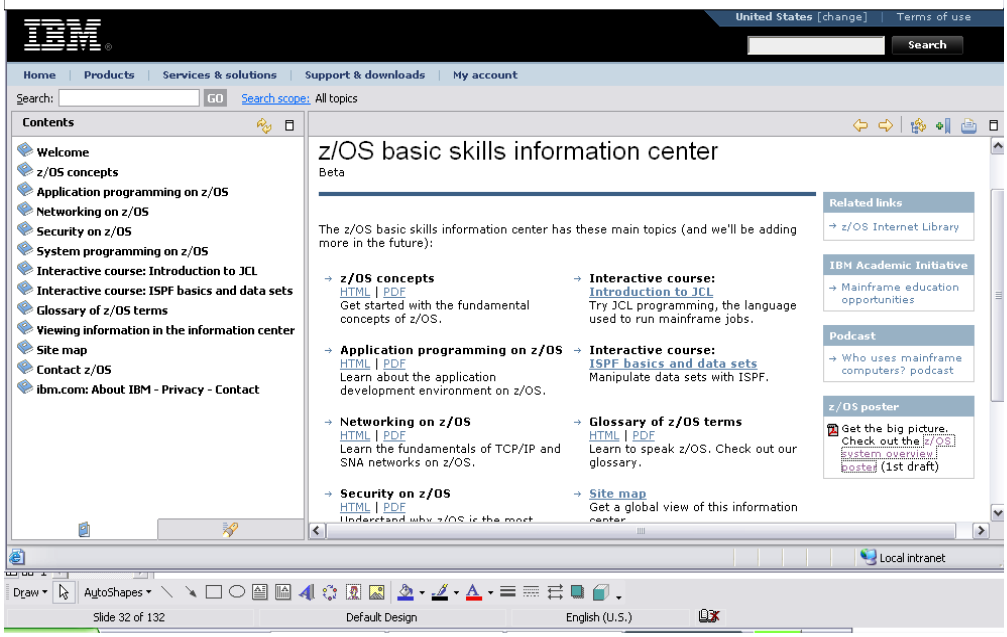
With the information center, users can view, browse, and search online information. The information center is built upon open source software developed by the Eclipse Project (www.eclipse.org). It can display content that has been packaged as an Eclipse documentation plug-in.

The information center uses an embedded web application server to handle content requests in the system. This embedded web server uses a random port to avoid port conflicts between applications.

Product or application developers can create their own documentation plug-ins and integrate them in the information center for viewing by their users. To learn about creating and packaging documentation plug-ins, see the Eclipse Project's Web site: www.eclipse.org

http://publib.boulder.ibm.com/infocenter/zoslnctr/v1r7/index.jsp



From this page you can learn about:

z/OS Concepts: Introduction to z/OS and the mainframe environment

Application Programming: Introduce the tools and utilities for developing a simple program to run on z/OS. The topics that follow guide the student through the process of application design, choosing a programming language, and using a runtime environment.

Networking on z/OS: In this course, we use simplified examples and focus mainly on basic system functions. Hands-on exercises are provided throughout the course to help students explore the mainframe style of computing.
At the end of this course, you will know:

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- Concepts of mainframe-based data communications
- Methods for implementing TCP/IP on the z/OS operating system
- Methods for implementing SNA on the z/OS operating system
- Basic skills in network problem determination

z/OS Security: In this part we examine the mechanisms in z/OS that provide security for its users and applications.

Systems Programming on z/OS: In this part we reveal the inner workings of z/OS with discussions of system libraries, change management, and procedures for starting (IPLing) and stopping a z/OS system. This part also includes topics on hardware details and virtualization, and the clustering of multiple z/OS systems in a sysplex.

The **Introduction to JCL** course consists of several units to help you learn about and use JCL on the job.

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IBM Education Assistant

- **Collection of multimedia educational modules**
- **Modules consist of the following types of content:**
  - Presentations (many with audio) - provide an overview of a product or technology or a more in-depth look at a particular product component or feature.
    - Presentations are available in both Flash and PDF formats
  - Demonstrations - show you how to complete a specific task or configuration (in Flash format) and provide background information to help you understand the options available
  - Tutorials - provide instructions and all files necessary to complete a practice lab scenario in your own environment
  - Additional resources - provide links to relevant external content

http://www-306.ibm.com/software/info/education/assistant

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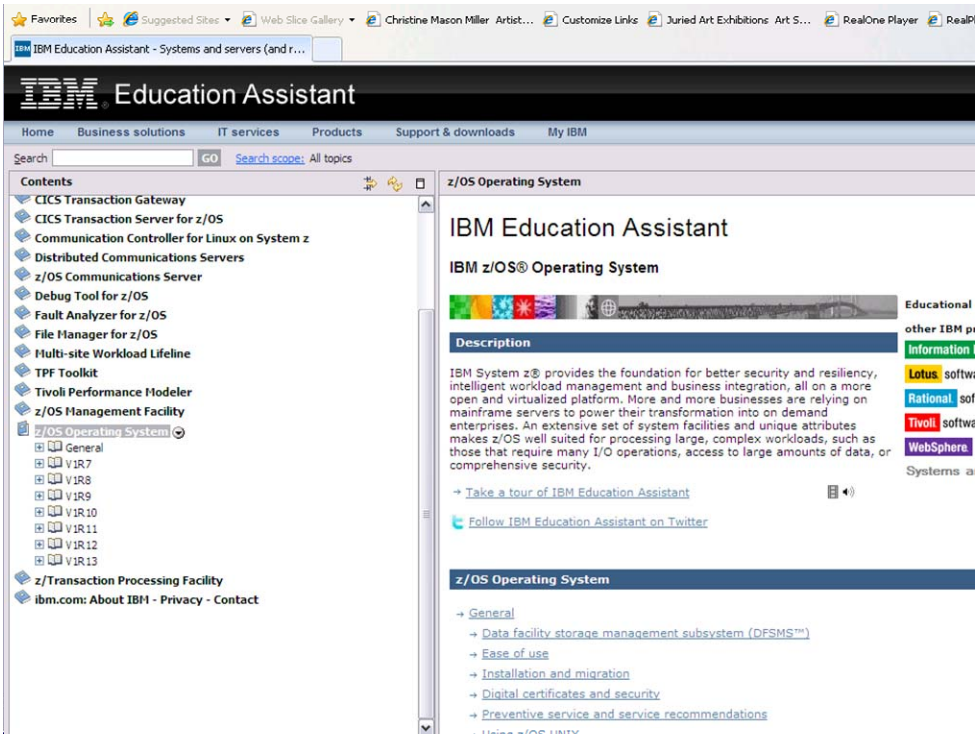

z/OS R13 now has 108 presentations. Check it out!

If you are looking to learn about all the new functions in z/OS V1R13, it's just gotten much easier! We are doing something slightly different for z/OS R13 in the IBM Education Assistant. In the past, we've only had a limited number of presentations available in IBM Education Assistant. What we had was good, however it certainly didn't offer a comprehensive view of what the release contained. Many of the important functions for previous releases were not covered on IBM Education Assistant.

Now for z/OS V1R13, we've moved into a different direction. We've included detailed technical presentations prepared by the component experts themselves, on IBM Education Assistant. If you are looking for practically all the technical details you can get about a certain function (or even just wanting to know what all the functions are), check out what we've got now

A couple of hints when using IBM Education Assistant:
1) There is an "Overview" session that is succinct (30 minutes) and can point you specifically to other education modules that you may want to investigate. This is a great starting place if you want to see a very short description of what the other modules are in IBM Education Assistant. There is voiceover for this Overview presentation.
2) The individual technical presentations are sorted by theme: Availability, Simplification, Hardware Support, Economics and Platform Efficiency, Workload Enablement, Installation, and Security. You should use the "Overview" session to see what the enhancements are in each area, then search for that presentation within the theme that is was classified with.
3) Most of the presentations do not have voiceovers. A very few number of them do, but most do not. The technical material on the slides in the presentations should suffice for giving you

adequate information about the enhancement. Some presentations are very short, some are longer -- depending on how big the enhancement is. This is what is different in IBM Education for z/OS V1R13 vs. prior z/OS releases.
4) The intended audience is technical professionals. There is no marketing information here, and the material is intended to give you important, technical details that you immediately need to understand what an enhancement is. If you are looking for marketing material, you can get that from the z/OS home page.
5) As always, if you want to give your feedback on these presentations in IBM Education Assistant, use the "Provide feedback on this material" link on the web page.

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Parallel Sysplex Training Environment

- **Education offering from IBM Training**
  - designed to improve understanding of how a Parallel Sysplex works
    - Operations
    - Systems programmers
- **Provides a load-and-go working Parallel Sysplex**
  - workloads
  - documentation
- http://www-304.ibm.com/jct03001c/services/learning/us/pdfs/catalog/parallelsysplex.pdf

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Parallel Sysplex Training Environment
An education offering to augment your Parallel Sysplex training! Now, System Programmers and Operators can have their own "sand box" to play in as they learn and understand, in a risk-free environment, how a Parallel Sysplex works.
What is it?
The Parallel Sysplex Training Environment (PSTE) is an education offering from IBM Training which provides a load-and-go working Parallel Sysplex, complete with workloads and documentation. The offering is designed to improve understanding of how a Parallel Sysplex works, both for Operations personnel and System Programmers. The Parallel Sysplex Training Environment:

- Provides Operators and System Programmers with an environment where they can do destructive testing and do things they would never do in a production or even in a normal test environment
- Provides detailed exercises, stepping the user through various management and failure scenarios related to the use of Coupling Facility structures

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- Helps the user understand why things happen the way they do in a Parallel Sysplex.

What are the benefits?
An IBM analysis of multi-system outages indicates roughly 40% of outages are caused by Operator or System Programmer error. It is critical that the people managing the system have a thorough understanding of how the sysplex works. Even in highly automated installations, there will always be a requirement for highly skilled individuals to design the automation and intervene in situations that the automation cannot handle. Because the PSTE provides a real Parallel Sysplex with real z/OS operating systems (no simulations), you can do anything on the PSTE that you could to in a real sysplex.

- The PSTE provides excellent descriptions of how things actually work
- The PSTE provides access to new facilities faster than you would normally have, and with minimal work on behalf of the System Programmers
- The PSTE may be used to drive further sysplex exploitation in all your sysplexes
- The PSTE can be used for basic Operator training.

Technical Documentation

Flashes
White Papers
Technical Documents

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IBM

WSC Flashes

Flash	Title
10780	SMP/E Internet Service Retrieval and Shopz download servers will change hostname and public internet IP addresses
10337	z/OS CPENABLE Settings for IBM zEnterprise 196, zEnterprise 114, System z10, IBM System z9, and eServer zSeries Processors
10760	Cryptographic Support for z/OS V1R11-V1R13 (HCR7790)
10761	SYNCHDEST and Synchronous WTOR Processing
10769	IBM Infoprint AFP Transform Products Update
10768	Avoiding Potential Data Loss When Using z/OS Disk Device Swap Functions and FlashCopy
10764	CCA Master Key ReEncipher Problem
10765	DS8000 HyperPAV - Why is there IOSQ time with HyperPAVs

80

FLASH10780: Public internet IP address and hostname changes will take place on August 26, 2012 which may affect downloads of z/OS products and service through Shopz and service through SMP/E Internet Service Retrieval. Customer action may be required to ensure uninterrupted downloads of products and service.

FLASH10337: This document has the recommended settings for the z/OS CPENABLE parameter.

FLASH10760: The newest version of ICSF, FMID HCR7790, was announced on July 12, 2011 and was available for download on Sept. 9, 2011 at the z/OS Download website (http://www.ibm.com/systems/z/os/zos/downloads/). This flash provides highlights of this updated component of z/OS. This new version of ICSF provides support for the latest updates to the IBM Common Cryptographic Architecture (CCA). The CCA as been updated to provide new functionality and to meet updated cryptographic standards. Some of the CCA updates are implemented directly in ICSF, others are implemented in the most current IBM cryptographic hardware, both the new zEnterprise 114 and the enhanced (GA2) level of the z196.

FLASH10761: The routing of "synchronous WTOR" messages to consoles is under the control of the SYNCHDEST parameter for each z/OS system. An understanding of how these messages are routed can be very important to help ensure that the messages will be visible to the appropriate operations staff when they are issued. This Flash will explain the processing of synchronous WTORs and the availability implications associated with them, using a particular

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Parallel Sysplex example. However, the concepts discussed are generally applicable to any synchronous WTOR message.

FLASH10769: IBM Infoprint AFP Transforms products will soon have enhancements designed to help extend your production printing capabilities. On March 22, 2011 IBM (IBM United States Software Announcement 211-078) announced new IBM Infoprint Transform products to provide a highly available, well-integrated output solution to support business communications. These products are designed to deliver multiple output formats, to help convert AFP output into PDF for delivery via email, and to facilitate website publication and central print management.

FLASH10768: IBM has identified an issue which could affect z/OS users who are using the combination of disk device swap functions (HyperSwap or P/DAS) and FlashCopy replication and who have certain IBM disk subsystem logical configurations. Specifically, there is a small timing window in which a FlashCopy replication command executing during a disk swap operation could be redirected to the other disk subsystem (i.e., the PPRC partner disk subsystem) and incorrectly overwrite data on this disk subsystem that was not intended to be overwritten. This issue is not specific to any particular release or level of z/OS, nor any particular release or level of IBM disk subsystem hardware or licensed internal code (LIC), nor any particular release or level of disk swap enablement software (GDPS or IBM Tivoli Storage Productivity Center for Replication).

FLASH10764: Two problems have been discovered with the CCA microcode related to the reenciphering of master keys. Although similar, the two problems are slightly different and exist in different levels of the microcode. These problems could lead to a loss of operational private keys after a master key change. Symmetric keys are not affected. Although it is expected few customers will be impacted this document describes the problems and how to recover.

FLASH10565: There is a possibility customers could see IOSQ time with HyperPAV. This FLASH will explain why there is IOSQ time with HyperPAVs.

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WSC Flashes

Flash	Title
10741	IBM zEnterprise BladeCenter Extension Top of Rack Switch (TOR)
10753	IBM GTS Offers Several System z Implementation Services
10749	Activation of Cryptographic Coprocessors and Cryptographic Algorithms with ICSF, HCR7780
10747	z/OS Security and Integrity Service Currency
10668	High Performance FICON (zHPF) for DS8000 System z Attached Analysis: AG Storage ATS Offering

76

FLASH10741: With the IBM zEnterprise 196, IBM introduced many new terms (ie. IBM zEnterprise BladeCenter Extension, IBM zEnterprise Unified Resource Manager, and top-of-rack switch). This document is intended to clarify what exactly is meant by the term top-of-rack switch when talking about the zEnterprise products.

FLASH10753: IBM Global Technical Services offers several implementation services for System z so you can leverage IBM experience and deep technical skills to implement quicker. These services include, but are not limited to:

- Capacity Provisioning
- Server Time Protocol (STP)
- z/VM and Linux performance assessment
- Migration Services for System z
- zBX and Unified Resource Manager Implementation Services

FLASH10749: Beginning with HCR7780, ICSF has changed the process for activating crypto functions on the cryptographic coprocessors. Earlier versions of ICSF required a DES-MK to be loaded to activate a card, and then as other master keys were loaded those algorithms would be enabled on the cards. With HCR7780 we recognize that customers may choose to implement only a subset of the supported algorithms and specifically choose not to implement others, so the logic for activating cryptographic functions has changed. This document will describe the considerations for ensuring that the proper algorithms are enabled across the crypto cards and system changes will not cause a loss of functionality.

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FLASH10747: IBM strongly recommends users of the z/OS Operating System validate the currency of security and system integrity service and take action to promptly install all security and integrity PTFs. Security and system integrity fixes are included in Recommended Service Upgrades (RSUs) and maintaining RSU currency minimizes exposure to security and integrity issues.

IBM also recommends customers subscribe to the System z Security Portal. The portal enables you to receive the latest critical service information on security and system integrity APARs for z/OS and z/VM. If you are not subscribed to this portal, instructions are located at URL: **http://www.vm.ibm.com/security/aparinfo.html**

FLASH10668: In October 2008 IBM announced a new data transfer protocol for DS8000 System z attached customers. High Performance FICON for System z (zHPF) is a new FICON protocol and system I/O architecture which is optionally utilized for accessing data from the IBM DS8000 Storage Subsystem. Storage ATS is offering a free data analysis for America's DS8000 System z customers who are considering implementing zHPF.

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IBM

WSC Flashes

Flash	Title
10736	CCF with PCICC CKDS HCR7770/780 Reencipher problem Cryptographic Support for z/OS V1R10-V1R12 (HCR7780)
10733	Configuring z/OS to Ensure Successful DASD Swap Using the CRITICALPAGING Function
10731	zFS R11 APAR OA33451 Storage Requirements
10451	Withdrawal of z/OS Function Beginning with z/OS Release 5 Through Current z/OS Release
10692	zFS R11 zFS Performance Considerations V2
10729	Changes to the CSNDSYG API on the Crypto Express3 on zEnterprise 196

77

FLASH10736: With the restructuring work implemented in HCR7770 a problem was introduced into the process for reenciphering the CKDS. If performing a reencipher of the CKDS

- on a CCF based machine - z800 (2066) / z900 (2064) or earlier
- that also has a PCICC card (FC #0861) installed
- and running with either HCR7770 (Cryptographic Support for z/OS V1R9-VR11) or HCR7780 (Cryptographic Support for z/OS V1R10-V1R12) some key tokens stored in the CKDS could

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be reenciphered incorrectly. This flash will describe the environment where the problem may have been introduced, and the steps to recover from the problem.

FLASH10733: Enable CRITICALPAGING function in DASD Swap environments. IBM DASD Swap environments are Basic HyperSwap and GDPS HyperSwap Manager.

FLASH10731: zFS APAR OA33451 on z/OS V1R11 (PTF UA55765) fixes a performance problem which occurs because of too many storage obtains and releases in zFS.

FLASH10451: This flash lists those items IBM has announced intention for removal in a specific z/OS release. These items have already been announced in previous IBM z/OS announcement letters. This is a collection of those items being removed. Consideration should be given to this list when planning your migration to a z/OS release.

FLASH10692: z/OS Release 11 contains a new feature to enable the zSeries File System (zFS) to run sysplex-aware for zFS read-write mounted file systems. This article outlines the conditions which will enable significant performance and management benefits for the zFS and avoid performance issues. Additionally, enhanced support is provided by APAR OA29619 and is the preferred method of running zFS in a shared file system environment. IBM recommends running zFS with sysplex=filesys on all systems in your z/OS V1R11 shared file system environment, even if you don't want to mount any zFS read-write file systems as sysplex-aware.

FLASH10729: The Driver 86 microcode that supports the Crypto Express3 card on the zEnterprise 196 introduced a change to the Symmetric Key Generate API which MAY require application changes. This Flash is for account teams and customers that plan to install a zEnterprise as it describes the applications and products that need to be reviewed before migrating to the 196.

Washington Systems Center flashes, technical papers and presentations all can be found at URL: **www.ibm.com/support/techdocs**

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Interesting Papers

- **Hiperdispatch and SAP DB Servers**
  - **TD105930** @ http://www.ibm.com/support/techdocs
  - March 2012
- **IBM Modern Batch - Feature Pack and Compute Grid**
  - WP101783 @ http://www.ibm.com/support/techdocs
  - May 2012
- **Planning for the IBM Tivoli zEnterprise Monitoring Agent**
  - TD105969 @ http://www.ibm.com/support/techdocs
  - June 2012
- **Restore Server Time Protocol configuration information across a Power on Reset**
  - TD105103 @ http://www.ibm.com/support/techdocs
  - May 2012
- **IBM Tivoli Monitoring Self-Describing Agents: z/OS Considerations**
  - TD105959 @ http://www.ibm.com/support/techdocs
  - May 2012

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TD105930: Typically, customers run SAP DB Servers in their own z/OS LPARs. Because of SAP for System z DB Server's use of DRDA, it has some unique recommendations with respect to HiperDispatch.

WP101783: The term "modern batch" encompasses many things. In this Techdoc we're going to take a look at the IBM solutions for modern batch that center around Java and the two solutions IBM provides built on WebSphere Application Server -- the Feature Pack for Modern Batch and WebSphere Compute Grid.

This Techdoc will serve as a central repository for documents related to modern batch. When other documents outside this Techdoc exist and are deemed important, we will cross-link to them from this Techdoc.

TD105969: The IBM Tivoli zEnterprise Monitoring Agent integrates the monitoring of the zEnterprise system into the IBM Tivoli Monitoring Infrastructure for both real time monitoring

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and historical reporting. This document describes the key planning considerations for implementing and using the agent.

TD105103: Enhancements to STP Licensed Internal Code (LIC) delivers system management improvements by saving the STP configuration across PORs and power failures for a single server and a two server STP-only CTN. The documents outline the prerequisites, set up required, and steps needed to enable this functionality. Please make sure you refer to the appropriate document pertaoning to your configuration, since the considerations are different between a single and two server CTN.

TD105959: Self-Describing Agents are a new feature of IBM Tivoli Monitoring that can improve agent installation and maintenance activities for IBM Tivoli Monitoring components. This technote covers the z/OS considerations for enabling and using this feature.

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Interesting Papers

- STP Enhancement to Block Disruptive Actions
  - **WP102019** @ http://www.ibm.com/support/techdocs
  - February 2012
- IBM System z DS8000 I/O Priority Manager
  - **WP102074** @ http://www.ibm.com/support/techdocs
  - February 2012
- Best Practices Upgrading a Coupling Facility Version 2
  - **WP101905** @ http://www.ibm.com/support/techdocs
  - January 2012
- Mission: Available - How to Achieve High Availability in Parallel Sysplex
  - **WP101966** @ http://www.ibm.com/support/techdocs
  - August 2011
- Leap Seconds and Server Time Protocol
  - **WP102081** @ http://www.ibm.com/support/techdocs
  - March 2012
- Parallel Sysplex Coupling Facility Dumps
  - **WP102174** @ http://www.ibm.com/support/techdocs
  - August 2012

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WP102019: This Server Time Protocol whitepaper describes a change to STP and supplies the MCL information where the enhancements apply. The enhancements are intended to prevent a user from accidentally disrupting the availability of the Coordinated Timing Network.

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WP102074: In a system z environment, I/O priority manager collaborates with the z/OS Workload Manager (WLM) to handle specified performance requirements and to achieve the desired QoS. The authors of this paper are:
Azeem Mohammed (amohamme@us.ibm.com) and Stefan Wirag (stefan.wirag@de.ibm.com). Questions should be directed to Stefan Wirag.

WP101905: Planning for an upgrade of a parallel sysplex to z196 or z114 or an upgrade which requires a POR? Need to install maintenance which requires a coupling facility to be reactivated? This paper documents the best practices for installing a new CF, doing a POR of a CEC with a coupling facility image on it and reactivating a coupling facility image. IBM strongly recommends that the best practices be followed to prevent unplanned down time, other adverse impacts to applications and minimize the maintenance upgrade window.

Version 2 of the Best Practices: Upgrading a Coupling Facility procedures simplify the removal of the last coupling facility link which is also the last timing link, or ensure STP timing will not be disrupted. Version 2 procedures have been updated to use the CF SHUTDOWN command instead of the DEACTIVATE command. SHUTDOWN is safer as it will not complete if there are still structures in the coupling facility. SHUTDOWN was specifically added to avoid a sysplex outage as a result of the incorrect coupling facility being DEACTIVATEd. Finally, with the understanding of time constraints during upgrades a streamlined procedure was added for the specific situation of a POR of a CPC on which a coupling facility resides with no physical or logical changes to the coupling facility.

WP101966: Seeking high availability? This paper details all of the latest z/OS functions and features, as well as new functions of the System z196 hardware platform that promote parallel sysplex high availability. Your mission, should you choose to accept it, is to configure your sysplex infrastructure for high availability so that the full benefits of the sysplex environment can be realized in your enterprise. Good luck, Sysprogs! Once each item on the Sysplex High Availability Checklist has been reviewed and implemented in your environment, your mission will be complete.

WP102081: Leap Seconds are coming! Should I care?

IBM often gets the question about what to do regarding leap seconds in the mainframe environment. As usual, the answer "depends". This white paper will attempt to answer this question.

WP102174: Parallel Sysplex Coupling Facility Dumps
There are situations when a serialized dump of a coupling facility is required to diagnose an issue. The ability to disruptively collect a serialized coupling facility dump has always existed. A disruptive dump of a coupling facility requires the coupling facility to stop, dump and then restart. All of the structures in the coupling facility at the time of the disruptive dump were "lost" when the coupling facility restarted. With the z196, IBM enhanced first failure data capture (FFDC) with the introduction of the capability to take a non-disruptive serialized dump of a coupling facility (ND CF dump). For this type of dump, the CF image does not stop, is not restarted, and structures in the CF are not "lost." This paper discusses Non-disruptive serialized dumps, system programmer action and how to initiate the dump.

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Interesting Papers

- Using Generic RACF Profiles with WebSphere on z/OS V7
  - **WP101427** @ http://www.ibm.com/support/techdocs
  - March 2012
- IBM System zEnterprise, System Storage, and DB2 10 for z/OS: SAP Banking Services 7.0 150 Million Accounts Measurements
  - **WP101978** @ http://www.ibm.com/support/techdocs
  - February 2012
- z/OS Management Facility Resource Requirements
  - WP101779 @ http://www.ibm.com/support/techdocs
  - December 2011
- Important Considerations for STP server role assignments
  - WP101833 @ http://www.ibm.com/support/techdocs
  - December 2011
- z/OS Positioning Software for zEnterprise EC12 Server
  - **TD106006** @ http://www.ibm.com/support/techdocs
  - August 2012

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WP101427: The installation and configuration of WebSphere Application Server on z/OS creates RACF profiles in a mixture of discrete and generic forms, most of the important ones discrete. This can sometimes present an obstacle to expanding the configuration at a later time. This document will describe an alternative method for defining the profiles that is more generic and allows expansion of the configuration without subsequent involvement of the security administration personnel.

WP101978: This paper describes a set of measurements we did with 150 million loaded accounts, SAP AG's most recent SBS 7.0, our most recent DB2 10 for z/OS, our largest current zEnterprise system, and our System Storage DS8800, the most advanced model in our high-end disk portfolio. Our goal was, within schedule and other resource limits, to reach significantly higher business transaction processing rates in the more stressful 150 million-account environment using SAP's latest Banking release.

WP101779: z/OS Management Facility (z/OSMF) is a new browser based interface for system management of z/OS. It was first introduced in z/OS V1.11 and runs on z/OS V1.10 and above. It is designed for systems programmers to easily manage z/OS by simplifying administration and day to day operation. It is especially useful for increasing the productivity of new and experienced systems programmers.

This collection of white papers provides performance and resource usage information about z/OSMF for z/OS V1.12 and z/OS V1.13.

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WP101833: The recommendations in this White Paper apply only if you have configured a Server Time Protocol (STP) Coordinated Timing Network (CTN) with three or more servers, and have assigned the roles listed below. Recommendations for reassigning STP server roles when any of the assigned role servers has a planned or unplanned outage are documented.

The recommendations, if not followed, MAY result in all the servers in the CTN becoming unsynchronized, a condition that results in a sysplex wide outage. NOTE! Some aspects of this information is outdated. You must also review white paper WP102037, http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP102037

TD106006: The new IBM zEnterprise EC12 (zEC12) offering consists of the IBM zEC12 Central Processor Complex (CPC), the new IBM zEnterprise BladeCenter(R) Extension (zBX) Model 003, and the IBM zEnterprise Unified Resource Manager. The IBM zEC12 CPC is designed with improved scale, performance, availability, and security, making the IBM zEC12 an ideal platform for cloud computing, running integrated OLTP and data warehousing, and deploying IBM's smarter computing industry solutions. The new 120-core design delivers massive scale across all workloads and enables cost saving consolidation opportunities. The IBM zEC12 is designed to be a worldwide leader as a fast and scalable enterprise system and is based on IBM's newest hexa-core 5.5 GHz application-tuned out-of-order superscalar chip, delivering over 78,000 millions of instructions per second (MIPS) in a single zEC12 footprint. The new microprocessor design delivers a boost to performance for all workloads.

Several new architectural facilities have been added to the hardware. IBM zEC12 will be the first general-purpose large-scale enterprise server with a Transactional Execution Facility, designed to help eliminate software locking overhead that can impact performance. Transactional Execution will offer increased scalability and parallelism to drive higher transaction throughput. IBM's Java Runtime Environment is planned to exploit the Transactional Execution Facility in an upcoming maintenance roll-up (see Statement of general direction). The XL C/C++ compiler is planned to provide hardware built-in functions to enable applications to use the Transactional Execution Facility with a PTF at general availability. In z/OS V1.13, the XL C/C++ support is intended to be used for development and testing. The new IBM Enterprise PL/I compiler is planned to exploit the new Decimal-Floating-Point Zoned-Conversion Facility for increased efficiency to improve performance. The Enhanced-DAT2 facility will enable exploitation of new 2 GB page frames by Java and others, offering increased efficiency for large memory structures to improve performance. The new Runtime Instrumentation Facility is designed to provide managed runtimes and just-in-time compilers with enhanced feedback on application behavior, allowing for improved self-tuning. Java is planned to exploit a significant set of the new instructions available on IBM zEC12 servers. These changes to Java are designed to enhance array bounds checking, and help the system fetch data and instructions operate more efficiently.

The software support for the zEC12 servers like the IBM z1196 and z114, differs by z/OS release level and is provided by a combination of FMIDs and PTFs.

The zEC12 servers requires a Systems Assurance and the Systems Assurance Confirmation Form (filled out by IBM) must be completed before the System zEC12 will ship. See your IBM Representative for details.

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Interesting Papers

- **STP Enhancement - Recovery Voting**
  - WP102037 @ http://www.ibm.com/support/techdocs
  - December 2011
- **Solid State Drive FLASHDA Analysis Case Study**
  - **WP101948** @ http://www.ibm.com/support/techdocs
  - July 2011
- **A Synopsis of System z Crypto Hardware**
  - **WP100810** @ http://www.ibm.com/support/techdocs
  - July 2011
- **z/OS: Planning Considerations for HiperDispatch Mode**
  - **WP101229** @ http://www.ibm.com/support/techdocs
  - May 2011
- **IBM HyperSwap Technology**
  - WP101289 @ http://www.ibm.com/support/techdocs
  - February 2012

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STP Enhancement - Recovery Voting : An STP enhancement is available to the z10, z196 and z114, described in this white paper. The enhancement affects how recovery works and can protect the environment from an entire Coordinated Timing Network (CTN) outage.

Solid State Drive FLASHDA Analysis Case Study: A customer recently acquired two IBM DS8800's with new Solid State Drives (SSD) Technology. The customer wanted to know if IBM Storage Advance Technical Skills (ATS) could assist identifying which of their volumes and datasets are good candidates for placement on SSD drives. Easy Tier is available at no cost to the customer however they choose the option to migrate the volumes manually to the SSD drives.

A Synopsis of System z Crypto Hardware: The IBM System z cryptographic hardware provides a rich array of encryption capabilities. The functionality available depends on the specific platform and the hardware that has been installed. This document begins with a brief introduction of crypto functions and issues common to all the platforms, and then provides a synopsis of the System z crypto hardware, including the z114 announcement on July 12, 2011.

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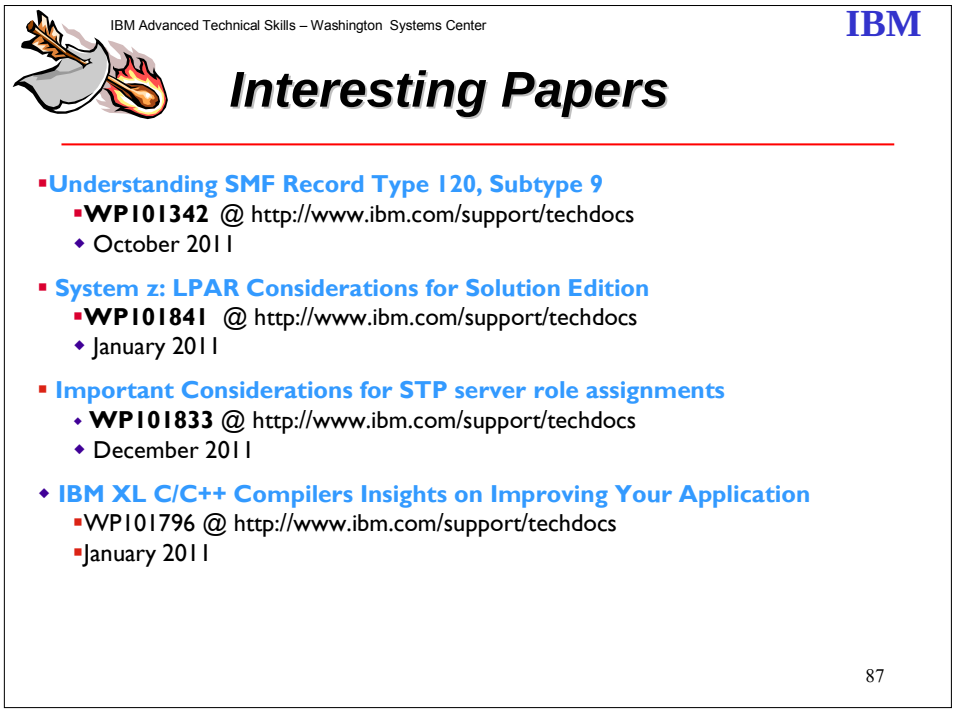
z/OS: Planning Considerations for HiperDispatch Mode: z/OS workload management and dispatching have been enhanced to take advantage of the System z hardware design. A new mode of dispatching called HiperDispatch has been implemented to provide additional processing efficiencies. This White Paper describes planning considerations related to HiperDispatch. This paper describes planning considerations for z/OS environments using hiperdispatch. This document has been updated to contain information on the benefits of hiperdispatch for the z10 and z196 processors.

IBM HyperSwap Technology: This white paper discusses the 4 different HyperSwap options: z/OS Basic HyperSwap, TPC-R HyperSwap, GDPS/PPRC HyperSwap Manager and the full function GDPS/PPRC HyperSwap solution.



Understanding SMF Record Type 120, Subtype 9: In WebSphere Application Server for z/OS Version 7, we introduce subtype 9, a new subtype that presents a unified picture of the server activity. The subtype 9 record collects most of the data currently spread across the other subtypes, plus new information, such as how much zAAP CPU the server uses in processing a request. WebSphere creates one subtype 9 record for every request that the server processes — for both external requests (application requests) and internal requests, such as when the controller "talks to" the servant regions.

In designing the subtype 9 record, we consulted many z/OS customers. Most of you told us that

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you would prefer to have all of the server activity data collected in one record. Thus, was born the subtype 9 record, which is intended to provide you with all of the server activity data you need in one place. The other record 120 subtypes still work as before, but we hope you will not need them any longer.

In this IBM White Paper, we take a closer look at the new subtype 9 record. We examine its structure and content, its related operational issues, and explain how you can make the best use of it.

System z: LPAR Considerations for Solution Edition: This document describes the considerations needed to implement IBM z/OS Solution edition in an LPAR environment.

Important Considerations for STP server role assignments: The recommendations in this White Paper apply only if you have configured a Server Time Protocol (STP) Coordinated Timing Network (CTN) with three or more servers, and have assigned the roles listed below. Recommendations for reassigning STP server roles when any of the assigned role servers has a planned or unplanned outage are documented.

NOTE: The recommendations, if not followed, MAY result in all the servers in the CTN becoming unsynchronized, a condition that results in a sysplex wide outage.

IBM XL C/C++ Compilers Insights on Improving Your Application: This document is for a technical C/C++ application programmer audience and is intended to explain some of the newest performance characteristics of the z/OS® XL C/C++ V1R12 compiler, an optionally priced feature of z/OS V1R12. This document is not meant to be a comprehensive guide to tuning applications and it does not cover runtime/ Language Environment related tuning either.

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Interesting Papers

- z/OS Automatic SET of Cryptographic Master Keys
  - **TD105724** @ http://www.ibm.com/support/techdocs
  - January 2011
- ATS zEnterprise Experiences and Usage Document
  - **WP101857** @ http://www.ibm.com/support/techdocs
  - August 2011
- z/OS: ICSF Version and FMID Cross Reference
  - **TD103782** @ http://www.ibm.com/support/techdocs
  - Last update: January 2012
- Server Time Protocol (STP) System (Sysplex) Time Warning Message
  - **TD105740** @http://www.ibm.com/support/techdocs
  - February 2012
- Crypto Express3 Operating System Support Requirements
  - **TD105435** @ http://www.ibm.com/support/techdocs
  - November 2011

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z/OS Automatic SET of Cryptographic Master Keys: Current release of ICSF provide a means to automatically SET the Cryptographic Master Keys without requiring a manual CHANGE or SET. This is especially useful when using a TKE to load keys to a Control Domain of a yet unused LPAR.

ATS zEnterprise Experiences and Usage Document: The purpose of this document is to provide a collection of the early installation and usage experiences, tips and guidance from ATS representatives. Early hands-on experience has been gathered in internal early support programs and by working with customers who received the product during external customer early support programs. In general, this document is not meant to repeat information that is readily available in product documentation, announcement letters, and marketing level presentations.

Crypto Express3 Operating System Support Requirements: This document is intended to describe the operating system changes that may be required to support the new Crypto Express3 hardware and has been updated for the new CCA support for Linux on System z.

z/OS: ICSF Version and FMID Cross Reference: ICSF is a component of z/OS and ships with the base product. It is the software component that provides access to the System z crypto hardware. As new hardware becomes available, updates and functionality are added to ICSF outside of the z/OS release cycle. This document provides a history of the ICSF versions, the supported hardware and operating system releases and highlights the new capability within each version, through z/OS 1.12.

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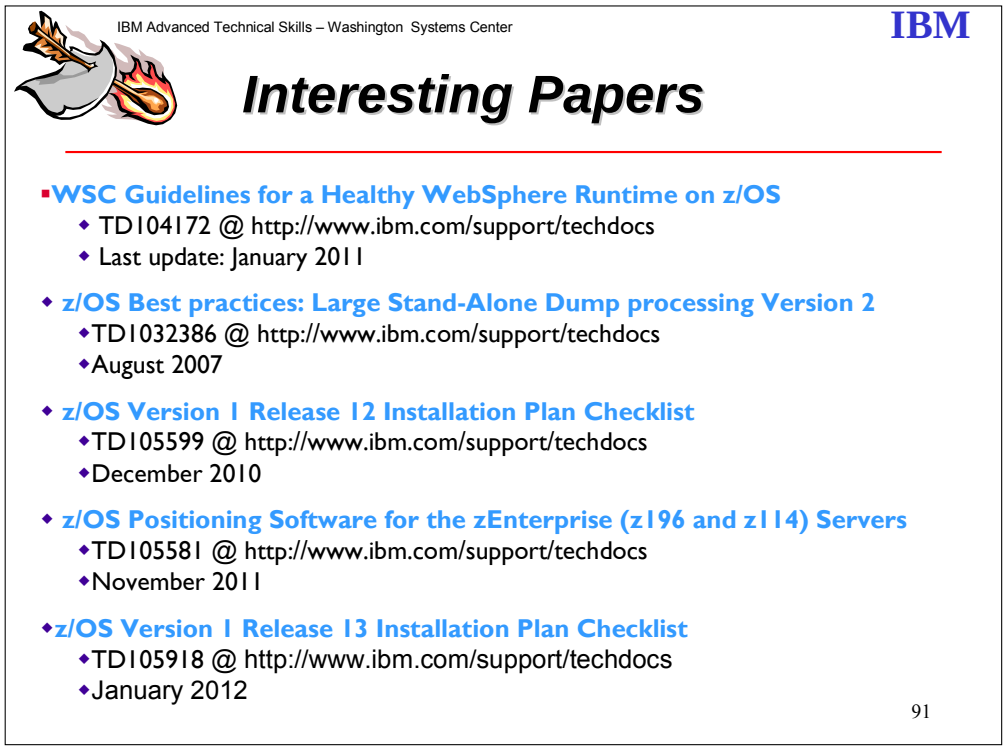
Server Time Protocol (STP) System (Sysplex) Time Warning Message: SG24-7281 Redbook STP Implementation Guide
Although invoking the System (Sysplex) Time task is not disruptive to logical partitions, the Secondary Object Notification for Disruptive Task message displays whenever the task is called (Figure 4-1). This message reminds the user that time configuration commands can potentially be disruptive to operating system images on the target server.

The reason for this Techdoc/TIP is to clarify the wording on the message panel.



WSC Guidelines for a Healthy WebSphere Runtime on z/OS
This paper is a high-level guide to help you configure WebSphere Application Server (WAS), and improve the management, reliability, security, and performance of your runtime on z/OS. It provides general recommendations based on our experiences and provides a roadmap to other papers for detailed information, with hyperlinks to access them directly on the web.

Included are both the PowerPoint presentation and PDF document to help you access these hyperlinks.

z/OS Best Practices: Large Stand-Alone Dump Processing Version 2
This document defines comprehensive "current best practices" when taking and handling large stand-alone dumps in the z/OS environment. The document focuses on optimizing stand-alone dump data capture and optimizing problem analysis time. This information is critical for large

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z/OS environments reporting problems to IBM. The ability to handle large stand-alone dumps appropriately will speed IBM problem resolutions.

z/OS Version 1 Release 12 Installation Plan Checklist: z/OS 1.12 Installation Plan checklist is for installing and migrating to z/OS 1.12 from z/OS release 10 or release 11. To be used as a supplement to existing product publications.

z/OS Positioning Software for the zEnterprise (z196) Server: IBM zEnterprise System is a first-of-a-kind workload-optimized multi-platform technology offering. The system consists of the IBM zEnterprise 196 (z196) central processor complex (CPC), the IBM zEnterprise Unified Resource Manager, and built-in support for the IBM zEnterprise BladeCenter Extension (zBX) Model 002. The IBM zEnterprise 196 is designed with improved scalability, performance, security, resiliency, availability, and virtualization. The z196 Model M80 provides up to 1.6 times the total system capacity of the z10 EC Model E64, and all z196 models provide up to twice the available memory of the z10 EC. The zBX deliver an integrated hardware platform spanning System z mainframe and POWER7 technologies. The IBM zEnterprise Unified Resource Manager, delivered with the z196, is designed to deliver end to-end virtualization and management along with the ability to optimize technology deployment according to individual workload requirements.

The software support for the z196 server, like the IBM z10 EC and z10 BC, differs by z/OS release level and is provided by a combination of FMIDs and PTFs.

The z196 servers requires a System z196 Systems Assurance and the Systems Assurance Confirmation Form (filled out by IBM) must be completed before the System z196 will ship. See your IBM Representative for details. Chapter 2 in the z196 Systems Assurance Guide describes all software considerations and can be obtained from your IBM Representative.

z/OS Version 1 Release 13 Installation Plan Checklist: z/OS 1.13 Installation Plan checklist is for installing and migrating to z/OS 1.13 from z/OS release 11 or release 12. To be used as a supplement to existing product publications.

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Interesting Papers

- **Coupling Facility Configuration Options**
  - ftp://ftp.software.ibm.com/common/ssi/sa/wh/n/zsw01971usen/ZSW01971USEN.PDF
  - Last update: August 2010
- **System-Managed CF Structure Duplexing**
  - ftp://ftp.software.ibm.com/common/ssi/sa/wh/n/zsw01975usen/ZSW01975USEN.PDF
  - Last update: September 2010
- **Parallel Sysplex Test Report**
  - http://www-03.ibm.com/systems/services/platformtest/servers/systemz_library.html
  - **Last update: January 2012**
- **Parallel Sysplex Training Environment**
  - http://www-304.ibm.com/jct03001c/services/learning/us/pdfs/catalog/parallelsysplex.pdf
- **Parallel Sysplex Implementation Services (z/OS , DB2, CICS, WebSphere)**
  - http://www-03.ibm.com/systems/z/advantages/pso/services.html
- **Parallel Sysplex InfiniBand (PSIFB)**
  - http://www-03.ibm.com/systems/z/advantages/pso/ifb.html

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Coupling Facility Configuration Options
Learn how configuration options for the coupling facility can make the most of resource and data sharing with improved availability and performance. In this paper, various *Coupling Facility* technology alternatives will be examined from several perspectives. Characteristic comparisons of each CF option in terms of function, inherent availability, performance and value will be made. We will also look at CF structure placement requirements based on an understanding of CF exploitation by z/OS® components and subsystems.

System-Managed CF Structure Duplexing
Find out how coupling facility duplexing can help you manage your Parallel Sysplex and improve recovery. System-Managed Coupling Facility (CF) Structure Duplexing is designed to provide a general purpose, hardware assisted, easy-to-exploit mechanism for duplexing CF structure data. This can provide a robust recovery mechanism for failures such as loss of a single structure or CF, or loss of connectivity to a single CF, through rapid failover to the other structure instance of the duplex pair.

Parallel Sysplex Test Report: IBM test reports offer information based on IBM experiences with installing, migrating, and testing new releases of z/OS and Linux for System z and various elements, features, and products that run on each.

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Parallel Sysplex Training Environment
An education offering to augment your Parallel Sysplex training! Now, System Programmers and Operators can have their own "sand box" to play in as they learn and understand, in a risk-free environment, how a Parallel Sysplex works.

IBM Implementation Services for Parallel Sysplex
To assist with the assessment, implementation, operation, and maintenance of a System z Sysplex environment, IBM Global Technology Services is releasing today the IBM Implementation Services for Parallel Sysplex. IBM Implementation Services for Parallel Sysplex is designed with eight selectable modules to help you with your System z Sysplex environment. Each is a stand-alone module that can be individually acquired. The first module is an infrastructure assessment module, followed by seven modules which address the following System z Sysplex disciplines:

1. Infrastructure planning, design, and implementation
2. Availability and performance assessment
3. Configuration and migration assistance
4. Operator training
5. Maintenance strategy
6. Maintenance environment design and implementation
7. Production cut over and deployment planning

Parallel Sysplex InfiniBand (PSIFB)

Parallel Sysplex InfiniBand (PSIFB) links are the latest Coupling Facility links. They were announced in February 26, 2008 in US Hardware Announcement 108-154, "IBM System z10 Enterprise Class – The forward-thinking mainframe for the twenty-first century" as well as in the May 6, 2008 US Hardware Announcement 108-269, "IBM System z10 Enterprise Class: Helping to meet global 24x7 demands for information services with improvements for Internet access and coupling," IFB3 protocol is described in the July 12, 2011 hardware announcement 111-121, "zEnterprise 196 enhancements deliver faster access to data."

There are several ways of classifying IFB links. It can be Double Data Rate (DDR) or Single Data Rate (SDR). The IFB links can also be characterized by the amount of lanes of communication within each physical link. For example, 12x links provide 12 lanes of communication within each physical link. 1x links provide a single lane of communication within each physical link.

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Interesting Presentations

- **CPU MF - 2012 Update and WSC Experiences**
  - TC000066 and TC000108 @ http://www.ibm.com/support/techdocs
  - June 2012
- **zPCR Capacity Sizing Lab - Part 1 Introduction and Overview**
  - TC000109 @ http://www.ibm.com/support/techdocs
  - April 2012
- **Better Batch: Exploiting New Features**
  - TC000098 @ http://www.ibm.com/support/techdocs
  - March 2012
- **Server Time Protocol Overview Presentation**
  - PRS2398 @ **http://www.ibm.com/support/techdocs**
  - May 2012

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TC000066 and TC000108: This document contains a recent SHARE presentation that overviews the CPU Measurement Facility: what it is, how to enable it, why you should use it, along with the latest updates for z10 and z196. The session covers recent 2012 WSC performance experiences and uses of CPU MF COUNTERS, and how CPU MF is now the preferred method to match your workloads to the latest IBM LSPR with the Relative Nest Intensity metric.

Also an additional attachment is included which provides the detailed instructions for enabling collecting CPU Counters on z/OS.

TC000109: zPCR is a productivity tool designed to provide capacity sizing insights for IBM System z processors. It can help accurately estimate the capacity sizing impact from configuring System z processors. Capacity results are based on IBM's LSPR data. zPCR is available as a free download available from IBM. This session provides an introduction to the zPCR capabilities to help estimate the impact of capacity sizing challenges, but will utilize the latest version (V7) for z196 / z114 support including the Advanced Functions. It will utilize z196 processor sizing examples to demonstrate its capabilities. This session is intended for someone new to capacity sizing/planning with no zPCR experience or for the experienced person who has never used zPCR. A suggested pre-req for the inexperienced zPCR user is to run Exercise 1 under Education - zPCR Exercises (Exercise Book) on the zPCR site http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS1381

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TC000098: This session describes new z/OS and JES2 enhancements to improve batch processing.

PRS2398: This overview will provide you with an introduction to Server Time Protocol (STP) and enhancements. The Server Time Protocol feature is designed to provide the capability for multiple servers and Coupling Facilities to maintain time synchronization with each other, without requiring a Sysplex Timer.

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Interesting Presentations

- **z/OS CPU MF Enablement Education**
  - PRS4922 @ http://www.ibm.com/support/techdocs
  - May 2012
- **zSoftCap (Replaces SoftCap) - Software Migration Capacity Planning Aid for IBM System z**
  - PRS268 @ http://www.ibm.com/support/techdocs
  - April 2012
- **z196 and z114 Hardware Management Console**
  - PRS4582 @ http://www.ibm.com/support/techdocs
  - April 2012

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PRS4922: Included here is all of the information presented during the two part z/OS CPU MF Enablement Webinar. The first part of the webinar provides general information on CPU MF and the z/OS HIS Component. Included with this section are detailed implementation instruction for enabling CPUMF. The second part of the webinar is a detailed education webinar giving in-depth training on the HIS data using 40 different samples of HIS data to illustrate concepts and usage.

Included in this document is an overview of the program including how to register, an implementation guide for turning on the z/OS HIS facility, and FTP directions for sending data to IBM if you want to participate in the data portion of the program.

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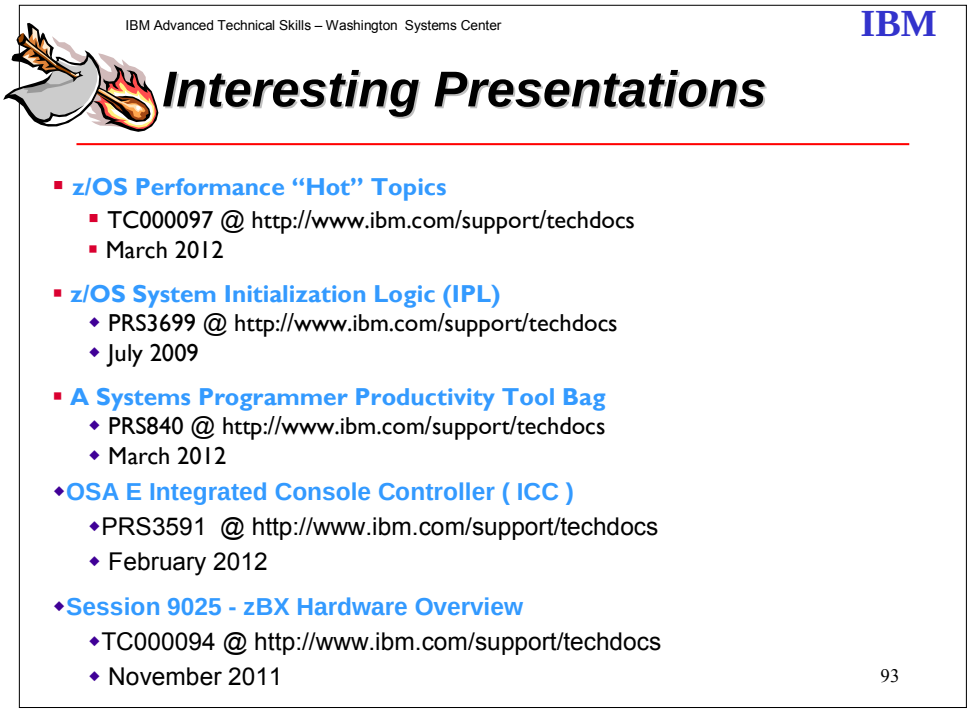
PRS268: zSoftCap is a PC-based productivity tool designed to assess the effect on capacity for IBM System z processors, when migrating to more current releases of the operating system or major subsystems. zSoftCap assumes that hardware remains constant while software releases change.

PRS4582: This presentation was given at Share in Orlando on August 9, 2011. It covers the features and functions of the 2.11.0 HMC (Driver 86) and the 2.11.1 level HMC (Driver 93) for the z196 and the z114.



z/OS Performance "Hot" Topics: This presentation covers current Hot Topics in System z and the z/OS environment.

z/OS System Initialization Logic (IPL): This presentation describes general processing involved initializing z/OS System from the IPL process until the system is ready to start JES2 or JES3.

A Systems Programmer Productivity Tool Bag: This is a presentation given at SHARE in August 2012. It is designed to point to and describe various information to assist in planning, aid in finding pertinent information, tools which are available to make a systems programmer job a bit easier.

OSA E Integrated Console Controller (ICC): OSA-Express Integrated Console Controller (OSA-ICC) Implementation for System z - This presentation covers OSA ICC description, requirements, how to define the OSA-ICC, OSA Adapter Port Setup, comparisons to the 2074, references and terminology.

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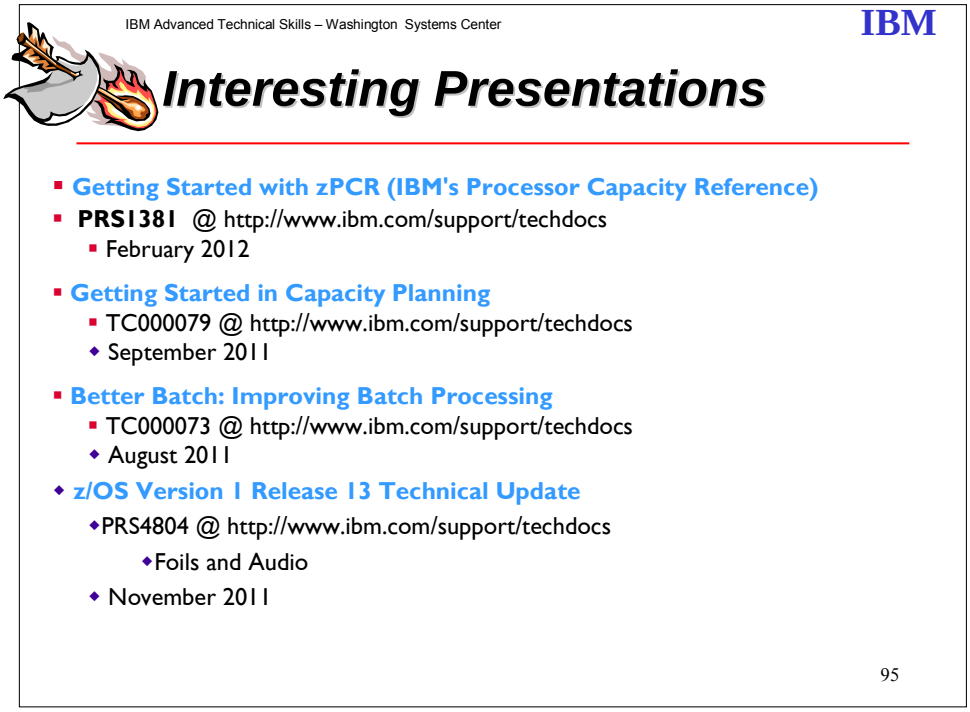
Session 9025 - zBX Hardware Overview: This presentation discusses valuable planning information for those interested in the unique, IBM® zEnterprise™ BladeCenter® Extension (zBX) Hardware.

You will be introduced to the zBX components, ordering options, important physical network connectivity options, disk attachment requirements and options, Hardware Management Console requirements, and related documentation references.



Getting Started with zPCR (IBM's Processor Capacity Reference): This is the Getting Started page for those interested in using IBM's Processor Capacity Reference (zPCR) to capacity plan for IBM System z and eServer zSeries processors. It includes links for accessing related educational materials and downloading the tool itself.

Getting Started in Capacity Planning: This tutorial is a two part introductory level session designed to introduce the student to the concepts required for Performance Analysis and Capacity Planning. Emphasis is placed on large processor systems and examples will be largely drawn from z/OS but the concepts apply to all operating systems and hardware.
Topics:
- Conceptual and Perceptual structures for performance analysis and capacity planning,
- Using the Forced Flow law in PA & CP

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- Performance Analysis queries for capacity planning
- Processor performance data (ITRRs & MIPS),
- Resource Metrics for use in the Balance System model,
- Using the utilization growth process in capacity planning,
- A simple view of analytic modeling in CP

Better Batch: Improving Batch Processing: This presentation reviews some of the latest z/OS enhancements to improve batch processing.
z/OS Version 1 Release 13 Technical Update: IBM® z/OS® V1.13 and IBM z/OS Management Facility V1.13 include many new capabilities designed to address systems management and operations, batch programming and performance, as well as usability and optimization functions. Your data, applications, and systems are critical; z/OS and z/OSMF can help you manage your systems and optimize your staff.

Click on the links for the presentation foils and audio. This presentation was given at IBM System z Technical University 2011 in October by Riaz Ahmad (IBM ATS Washington Systems Center).

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STP Presentations

- Server Time Protocol Presentations
  - STP Overview
    - http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS2398
  - Server Time Protocol (STP) Recovery Considerations
    - http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS2233
    - Last Update: December 2010
  - Server Time Protocol Planning Considerations
    - http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS2400
    - Last Update: December 2011
  - Server Time Protocol z/OS Considerations
    - http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS2243
  - Server Time Protocol (STP) Implementation Enhancements
    - http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS3845
    - Last Update: February 2011

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The Server Time Protocol feature is designed to provide the capability for multiple servers and Coupling Facilities to maintain time synchronization with each other, without requiring a Sysplex Timer. The servers and Coupling Facilities that are capable of supporting Server Time Protocol are the z890, z990, and later servers.

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Server Time Protocol is a server-wide facility that is implemented in the Licensed Internal Code (LIC) and presents a single view of time to Processor Resource/Systems Manager™ (PR/SM™). STP uses a message-based protocol in which timekeeping information is passed over externally defined Coupling Links - InterSystem Channel-3 (ISC-3) links configured in peer mode, Integrated Cluster Bus-3 (ICB-3) links, Integrated Cluster Bus-4 (ICB-4) links. and Parallel Sysplex InfiniBand (PSIFB) links. These can be the same links that already are being used in a Parallel Sysplex for Coupling Facility (CF) message communication.
By using the same links to exchange timekeeping information and Coupling Facility messages in a Parallel Sysplex, STP can scale with distance. Servers exchanging messages over short distance links such as ICB-3 and ICB-4 are designed to meet more stringent synchronization requirements than servers exchanging messages over long distance links such as ISC-3 (distances up to 100 km, longer distances possible with RPQ 8P2263), where the synchronization requirements are less stringent. This is an enhancement over the current Sysplex Timer implementation, which does not scale with distance.

The STP design has introduced a new concept called Coordinated Timing Network (CTN). A Coordinated Timing Network (CTN) is a collection of servers and Coupling Facilities that are time synchronized to a time value called Coordinated Server Time.
STP supports the following functions:

- Initialize the time manually or by dialing out to a time service, so that Coordinated Server Time can be set to within 100 milliseconds of an international time standard such as Coordinated Universal Time (UTC).
- Schedule periodic dial-outs to a time service so that Coordinated Server Time may be gradually steered to an international time standard.
- Initialize Time Zone offset, Daylight Saving Time (DST) offset, Leap seconds offset.
- Schedule changes to offsets listed above. STP can automatically schedule Daylight Saving Time, based on the selected Time Zone, a capability that did not exist on the Sysplex Timer.
- Adjust Coordinated Server Time by up to +/- 60 seconds. This improves upon the Sysplex Timer's capability of adjusting time by up to +/- 4.999 seconds.

STP FAQs can be seen at:
ftp.software.ibm.com/common/ssi/sa/st/n/zsq03004usen/ZSQ03004USEN.PDF (49.3KB)

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New Face of zOS

z/OS Management Facility (ZOSMF)

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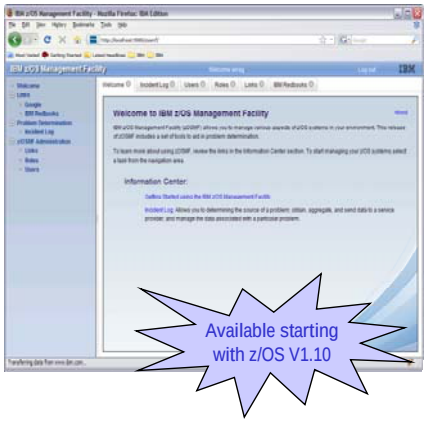
IBM z/OS Management Facility (5655-S28)

- **The IBM z/OS Management Facility helps system programmers to more easily manage and administer a mainframe system.**
- **More than a 'screen scraper' or an 'installation shield', the z/OS Management Facility is more:**
  - Automated tasks can help reduce the learning curve and improve productivity.
  - Embedded active user assistance (such as wizards) guides you through tasks and helps provide simplified operations.
- **A separate product from z/OS, but a new release of z/OSMF with every release of z/OS**



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The z/OS Management Facility (5655-S28), available since z/OS V1R11, is the new face of z/OS and it provides support for a modern, Web-browser based management console for z/OS. More than just a screen scraper or an install shield, the z/OS Management Facility (z/OSMF) is intelligent and delivers real value. Automated tasks can help reduce the learning curve and improve productivity. For example, system programmers may require only a few weeks to become proficient on z/OSMF management tasks. In addition, embedded active user assistance, such as wizards, can guide users through tasks and provide simplified operations, potentially reducing hours of tasks down to minutes, or minutes worth of tasks down to seconds.

Who should use the z/OS Management Facility? Everyone. The z/OS Management Facility is intended to enable system programmers to more easily manage and administer a mainframe system by simplifying day to day operations and administration of a z/OS system. It is more than just a graphical user interface, the z/OS Management Facility is intelligent. Automated tasks can help reduce the learning curve and improve productivity. In addition, embedded active user assistance (such as wizards) guides users through tasks and helps provide simplified operations.

IBM z/OS Management Facility (z/OSMF), a new product, and will simplify, optimize and modernize the z/OS **system programmer** experience. The intent is to reduce the number of manual steps required to perform a task and where possible also provide end to end flow, preferably automated or guided, with the end user task in mind.

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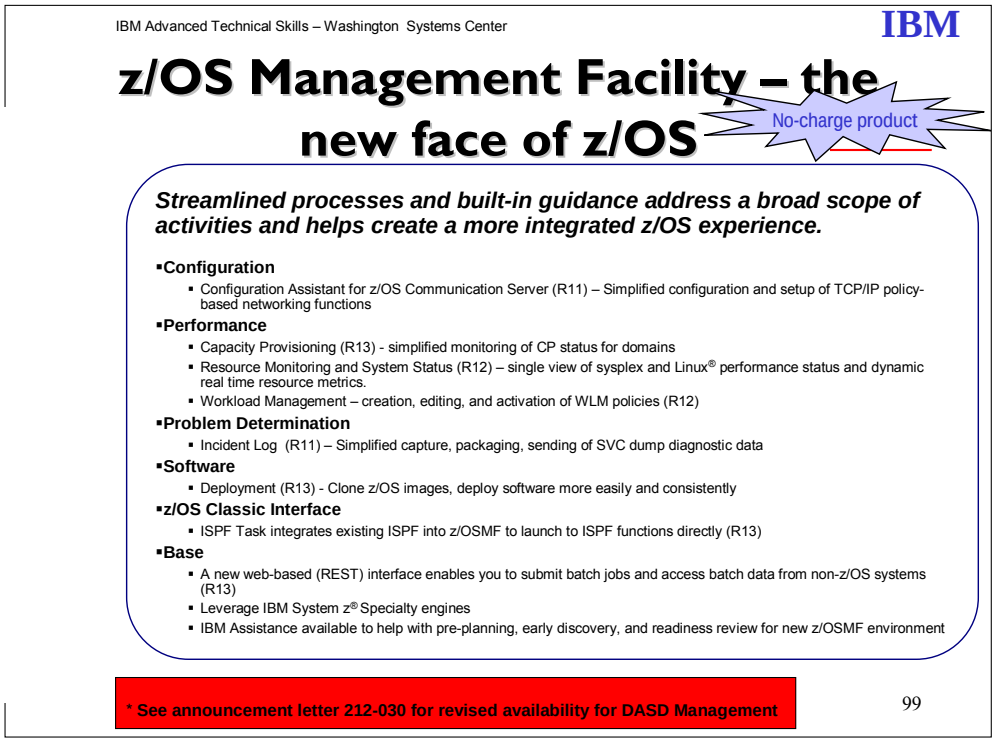
z/OSMF V1.13 is the next release and available. For R13, z/OSMF adds several new tasks (Capacity provisioning, Software deployment, and Storage Management) as well as new base capabilities, and other z/OSMF enhancements.

z/OSMF V1.13 is the current release.

z/OSMF Version 1 Release 11 was the first release, announced and available with z/OS V1.11, in 2009. z/OSMF is aligned very closely with z/OS itself -- it leverages the function and capabilities of that release as well as the same naming convention.



<u>V1.13 of z/OSMF adds valuable **new** system management tasks</u>
A new Software Deployment task is designed to provide the functions needed to create and deploy a copy, or clone, of an existing SMP/E-installed software image, including IBM software as well as ISV or your own software. The function is intended to help enhance or even replace many of the home-grown, manual, or error-prone software deployment applications and processes that may be in place today. z/OSMF Software Deployment simple and easy to use, a checklist guides you though the process. It also incorporates select best practices to help make software deployment more safe. The end result is an IBM developed and supported process for deploying z/OS.

IBM System z On/OFF Capacity on Demand can give you the ability to add or remove IBM system z hardware capacity as needed. The z/OS Capacity Provisioning Mananger (in the base

of z/OS) can automate the OOCoD process. In z/OSMF R13, a new Capacity Provisioning task is designed to support easier monitoring of z/OS Capacity Provisioning Manager status, which can simplify the work of an administrator by reducing the amount of time to do select procedures.

The new Classic Interfaces task enables you to open up and launch classic z/OS (ISPF) sessions directly from z/OS. Open multiple sessions in multiple panes and navigate to virtually anywhere in z/OS from z/OSMF.

V1.13 of z/OSMF **updated** several existing tasks.
The Incident Log (introduced with z/OSMF R11) is updated with improved incident management and data send capabilities with a new APAR search, new view job status (via SDSF launch), and utilization of the new Problem Documentation Upload utility in base of z/OS V1.13.

The Configuration Assistant for the z/OS Communications Server (introduced with z/OSMF R11) is updated with: new Intrusion Detection Services for improved network protection; reusable rules for IP Security (IPSec) to enable you to define one and use in multiple stacks; ability to import of local IP addresses from active systems; and support for configuration of both z/OS V1.12 and V1.13 stacks for larger network configurations.

Workload Management (introduced with z/OSMF R12) is updated with the ability to define fine-grained authorization and giving users persistent settings and preferences between sessions.

Resource Monitoring (System Status and Resource Monitoring, introduced as Sysplex Status and Monitoring Desktops in R12) are updated with new, integrated performance data gatherers for Linux on System z, Linux on System x, and AIX systems to provide a consistent monitoring solution for zEnterprise ensembles.

New interfaces
New z/OSMF application linking and launching capabilities can provide a more seamless experience for system programmers as they work with different tools and tasks on the z/OS system. A new API is designed to improve the integration of z/OS tasks by enabling application launching not only between z/OSMF applications, but between z/OSMF applications and other browser-based applications as well. Application launching may support two-way context-sensitive connections or simple links. For example, between z/OSMF applications context-sensitive launching might be used to enter an application at a point where actions can be taken immediately to simplify complex task flows, while simple links would open another application so you could navigate to needed tasks. For example, link directly from z/OSMF Incident Log to LookAt on the Web.

In addition to systems management tasks, z/OSMF V1.13 also delivers a new API for z/OS itself. A new RESTful API together with the web services in z/OSMF can enable any distributed, non-z/OS system to submit batch jobs, and access batch job information anytime. This API is enabled on z/OS V1.13 and later. PLACEHOLDER need to add more on Modern Batch here.

z/OSMF R12
IBM® z/OS® Management Facility (z/OSMF) V1.12 (5655-S28) provides the potential for some real time saving capabilities for system programmers:

- A new system management task, Workload Management (policy editor), can simplify the creation, modification, and review of z/OS WLM service definitions, potentially reducing many hours of manual tasks down to minutes.
- A new application, Sysplex Status and Monitoring Desktops tasks, can provide real-time status of resources of all your servers, sysplexes, as well as Linux® images from one location, enabling you drill down in just seconds to see the detailed health of all monitored systems.
- The Configuration Assistant for the z/OS Communications Server (available since z/OSMF V1.11) is updated with support for IP security: Internet Key Exchange (IKE) version 2, new cryptographic and authentication algorithms, and enhancements to the support for Application Transparent Transport Layer Security.
- The Incident Log capability (available since z/OSMF V1.11) adds support for encrypted parallel FTP dumps to be sent to IBM, and allows you to customize information for individual incidents. These enhancements are intended to help you manage problem data more easily.
- To effectively store and share information with your team, you have the ability to add non-z/OSMF launch points and links to any category in the navigation tree.
- z/OSMF V1.12 supports browsers running on Microsoft Windows XP, Windows VISTA, and Windows 7 Professional Edition (32-bit). Supported browsers are Microsoft Internet Explorer 7 and 8, as well as Mozilla Firefox 3.0 and Firefox 3.5.

Economics

A large portion of the z/OSMF application is written in Java™ and is, therefore, eligible for the IBM System z Application Assist Processor (zAAP). Some functions in z/OSMF use the Common Information Model (CIM) Server. As of z/OS V1.11, portions of this workload are eligible for zAAP. Some functions in z/OSMF use the CIM Server, and as of z/OS V1.11 portions of this workload are eligible for the IBM System z Integrated information Processor (zIIP). As of z/OS V1.11, IBM also introduced a zAAP on zIIP capability, where zAAP-eligible workloads may run on the zIIP processor. For the new zAAP on zIIP capability, refer to Software Announcement 209-242, dated August 18, 2009.

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zOSMF: System Management

- **New in z/OSMF 1.13:**
  - **z/OSMF Software Deployment**
    - New task designed to make deployment of installed software simpler and safer
  - **z/OSMF and ISPF**
    - Enables system programmer to perform tasks from one interface
  - **z/OSMF Capacity Provisioning**
    - view the status of z/OS capacity provisioning domains
  - **Application Linking**
- **New in z/OSMF 1.12**
  - **z/OSMF Workload Management**
    - Consolidated inventory of service definitions
  - **Resource Monitoring**
    - Snapshot of the performance of workloads running on your systems
  - **Integrated z/OS and Linux resource monitoring**
    - Monitoring solution for multi-tier workloads
- **New in z/OSMF 1.11**
  - **z/OSMF Config. Assist. for z/OS Communications Server**
  - **z/OSMF Incident Log**

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zOSMF: System Management

- **IBM z/OS Management Facility education modules available in IBM Education Assistant**
  - Check it out!
- **zOSMF Home Page:**
  http://www-03.ibm.com/systems/z/os/zos/zosmf

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Downloads

CFSIZER / SIZER
Logrec Viewer
Cryptographic Support
IBM Configuration Assistant for z/OS Communications Server
Dumpwrite Utility

http://www.ibm.com/server/eserver/zseries/zos/downloads

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CFSizer / SIZER

- **S/390 Coupling Facility Structure Sizer (CFSIZER)**
  - web based application
  - The purpose of the application is to provide an easy to use interface that will calculate the structure sizes for you based on some minimum input data that you provide
    - provides structure sizes based on the latest CFLEVEL for the IBM products exploiting the Coupling Facility
- **SIZER**
  - Utility program
  - Takes existing, allocated structures as input
  - Determines their detailed structure attributes and reports on them
  - will size currently-allocated structures for each of the online /accessible CFs in a customer's CFRM policy
  - Can be used to re-size structures across CFLEVEL migrations
- **These tools are available for download via the web at:**
  - http://www.ibm.com/systems/support/z/cfsizer

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Improvements in z/OS V1R12

CFSizer is a web-based application returning structure sizes based on the latest CFLEVEL for the IBM products exploiting the coupling facility.

Any use of the CFSizer Coupling Facility Sizer Tool indicates you have read the disclaimer and accept the terms.

The purpose of the application is to provide an easy-to-use interface which calculates the structure sizes based on some minimum input data provided representing your expected usage of the structure-owning product. The inputs supplied should correspond to your expected peak usage of the product. It is generally good practice to slightly overspecify your peak values, to produce a sizing recommendation slightly larger than absolutely necessary. This will provide some room for growth, and help avoid failures caused by insufficient structure sizes.

CFSizer uses your input to calculate the number of structure objects the structure must contain, based on algorithms provided by the structure owners modeling their use of the structure. Using these results and structure attribute information provided by the structure owners, CFSizer then submits a calculation request to a coupling facility, using the IXLCSP interface. The coupling facility itself calculates the structure size required to accommodate the specified input.

Structure sizes therefore correspond to the CFLEVEL installed on the coupling facility performing the calculations. The CFLEVEL for which the recommendations were calculated is displayed on the output page and is not selectable. Structure sizes are displayed in units of 1KB, as they would be entered in your CFRM policy.
To size a structure, click on one of the product links in the left side navigation bar (e.g. XCF, Tape, JES, etc.) to access that product page. From that product page, select one or more

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structures to size by clicking the product's checkbox. At least one structure must be checked to submit a request for a structure size.

For product help, click on the help link provided on each product page. A help window will open providing some additional detail about the product and the input fields.

If you are upgrading your CFCC microcode on one or more CFs, and your existing structures appear to be adequately sized, you may be able to use the current structure sizes to calculate the sizes required by the new CFLEVEL. However, IBM recommends periodically recalculate structure sizes through CFSizer, based on expected usage and structure attributes.

CFSizer Alternate Sizing Techniques

The following methods can be used to calculate required structure sizes based on existing structure sizes :
If a CF at the new CFLEVEL is accessible in your configuration and is defined in the CFRM policy, and OW54685 is applied (or you are running z/OS V1R5 or above), then structure rebuilds from lower level CFs to higher level CFs will re-size the structure automatically based on its current structure object counts. The CFRM policy can then be adjusted according to the size of the structure when it is actually allocated in the higher level CF.

Rebuild will not re-size the structure (i.e., will attempt to allocate it at the size specified in the CFRM policy or by the structure connectors) under the following circumstances:
When a CFRM policy change is pending
When a connector has changed the structure attributes on its IXLCONN REBUILD request.

There is a utility called SIZER available for download as a zipped package containing the following files:

sizer.obj	Sizer utility executable (binary, FB 80)
runsize.jcl	JCL to invoke the utility, as a started task (binary, FB 80)
linksize.jcl	Linkedit JCL (binary, FB 80). Update this JCL to install the utility in an authorized library.
The Sizer Utility Program.doc	Utility documentation (Microsoft Word document)

This utility, provided as is and not supported by IBM, will size currently-allocated structures for each of the online /accessible CFs in a customer's CFRM policy.

The utility is useful in an upgrade scenario similar to the following:

1. Move all structures out of the first CF to be upgraded.
2. Upgrade the CF to the desired CFLEVEL.
3. Run the Sizer utility with all structures allocated in a CF at the original CFLEVEL.
4. Using the utility output, update the CFRM policy to reflect the sizes required at the higher CFLEVEL.
5. Upgrade the rest of the CFs and distribute the structures as desired.

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Logrec Viewer

- **View logrec through ISPF**
  - View a summary of the LOGREC data
  - Display detailed software records
- **REXX exec**
- **Download from:**
  - http://www.ibm.com/systems/z/os/zos/downloads/logrec_viewer.html

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The Logrec Viewer is an ISPF application that obtains an EREP report for the Logrec stream (for a Logger-resident stream, or SYS1.LOGREC). From the panel, you can navigate to view a summary of the LOGREC data, or display detailed software records. The logrec source is based on the EREP JCL (SERLOG DD statement). From the ISPF panel, you can enter one of the following options:

S = Summarize LOGR LOGREC data
D = Detailed LOGR Software Records
I = LOGR Logrec Inventory
O = User EREP Input from dataset

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IBM Configuration Assistant for z/OS Communications Server

- **IBM Configuration Assistant for z/OS Communications Server is a GUI tool providing centralized configuration of Policy Agent configuration flat-files for:**
  - Application Transparent Transport Layer Security (AT-TLS)
  - IP Security (IPSec)
  - Network Security Services (NSS)
  - Policy Pased Routing (PBR)
  - Quality of Service (QoS)
  - Intrusion Detection Services (IDS)
- **Reduces configuration complexity**

z/OS 1.13 is the LAST release this will be offered as a web download

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IBM Configuration Assistant for z/OS Communications Server provides centralized configuration of AT-TLS, IP Security, NSS, PBR, QoS, and IDS policies.

IBM provides a configuration Graphical User Interface (GUI) that you can use to generate configuration files for Application Transparent-Transport Layer Security (AT-TLS), IP Security (IPSec), Network Security Services (NSS), Policy Based Routing (PBR), Quality of Service (QoS), and Intrusion Detection Services (IDS). The Configuration Assistant is a stand-alone application that runs on the Windows® operating system and requires no network connectivity or setup to begin using it. Through a series of wizards and on-line help panels, you can use the Configuration Assistant to create configuration files for any number of z/OS images with any number of TCP/IP stacks per image.

The Configuration Assistant can dramatically reduce the amount of time required to create configuration files, contributing to ease of configuration and maintenance. Because of the inherently complex nature of z/OS, use of the Configuration Assistant is encouraged to ensure you have a consistent and easily manageable interface for implementing AT-TLS, IPSec, NSS, PBR, QoS, and/or IDS. If you plan to configure manually, you cannot take advantage of the Configuration Assistant.

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Dumpwrite Utility

- DUMPWRITE is a utility program to extract the captured SVC DUMP(s) from a Stand Alone Dump (SADUMP)
- An IPCS user can issue the command VERBX DMPWRITE against the SADUMP to identify whether any captured SVC dumps exist
- DMPWRITE will display the dump titles from all of the captured dumps found in the SADUMP
- Code is on an "as is" basis
- http://techsupport.services.ibm.com/390/dmpwrite/dumpwrite.html

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DUMPWRITE is a utility program to extract the captured SVC DUMP(s) from a Stand Alone Dump (SADUMP).

There are two levels of DUMPWRITE depending upon your level of OS/390 or z/OS:

- DMPWRITE for systems prior to OS/390 Release 10.
- DMPWRIT2 for OS/390 Release 10 and z/OS.

There are two steps to required to use the DUMPWRITE utility:

1. Download file for the appropriate z/OS or OS/390 Release.
2. Install the utility.

Once DUMPWRITE (DMPWRITE or DMPWRIT2) is installed, you need to utilize a steplib, TSOLIB or LNKLSTxx to make this dataset accessible on the system.

Once the DUMPWRITE program is in the normal module search list, an IPCS user can issue the command VERBX DMPWRITE against the SADUMP to identify whether any captured SVC dumps exist. DMPWRITE will display the dump titles from all of the captured dumps found in the SADUMP.

If one of the captured dumps is needed, the following steps should be used to extract the dump:

1. Allocate a dataset with RECFM=FB LRECL=4160 BLKSIZE=4160 DSORG=PS with CYL PRI=100 SEC=100 (i.e &SYSUID..DUMPZn).

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2. Associate the DDNAME DUMPDD to the dataset allocated in step 1. (i.e ALLOC FI(DUMPDD) SHR DA('&SYSUID..DUMPZn')).
3. Issue VERBX DMPWRITE 'n' where n is the nth dump entry listed in VERBX DMPWRITE output.

If more than one captured dump is needed, repeat the above steps changing the value for 'n'.

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Cryptography

- **Cryptographic Support for z/OS V1R12-V1R13**
  - This download will provide support for new encryption functions in the IBM zEnterprise EC12 and the new Crypto Express4S card.
  - This includes support for Enterprise Security PKCS #11 Hardware Security Module (HSM) support for Crypto Express 4S, DUKPT for MAC and Data Encryption, Wrapping keys with strong keys, a new cipher text translate CCA verb, improved I/O performance for the public key data set (PKDS) and PKCS #11 token key data set (TKDS), providing a random number cache to help improve performance for applications that use random number generation functions, a new Health Check, and FIPS on Demand.
- http://www.ibm.com/systems/z/os/zos/downloads

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Available September 19, 2012.

This latest download (ICSF FMID HCR77A0) will provide support for new encryption functions in the IBM zEnterprise EC12 and the new Crypto Express4S card.

This includes support for Enterprise Security PKCS #11 Hardware Security Module (HSM) support for Crypto Express 4S, DUKPT for MAC and Data Encryption, Wrapping keys with strong keys, a new cipher text translate CCA verb, improved I/O performance for the public key data set (PKDS) and

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PKCS #11 token key data set (TKDS), providing a random number cache to help improve performance for applications that use random number generation functions, a new Health Check, and FIPS on Demand.

The following Integrated Cryptographic Service Facility (ICSF) books document this web deliverable:

- z/OS Cryptographic Services ICSF: System Programmer's Guide, SA22-7520-17.

The optional Trusted Key Entry Workstation is described in:

- z/OS Cryptographic Services ICSF: Trusted Key Entry Workstation User's Guide, SA23-2211-08

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Cryptography

- **Cryptographic Support for z/OS V1R11-V1R13**
  - **Provides support for new encryption functions in the IBM zEnterprise 114 and the enhanced (GA2) level of the IBM System z196.**
  - **Includes support for ANSI TR-31, X9.8 PIN Security, PKA RSA OAEP w/SHA 256, ECC Support Phase 2, Dynamic RSA MK, AES Key Type Support, 4096 RSA FP, Dynamic CKDS Administration**
- http://www.ibm.com/systems/z/os/zos/downloads

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This download provides support for new encryption functions in the IBM zEnterprise 114 and the enhanced (GA2) level of the IBM System z196. This includes support for ANSI TR-31, X9.8 PIN Security, PKA RSA OAEP w/SHA 256, ECC Support Phase 2, Dynamic RSA MK, AES Key Type Support, 4096 RSA FP, Dynamic CKDS Administration.

The Integrated Cryptographic Service Facility (ICSF) books are updated and available from the web download site along with this FMID.

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Cryptography

- **Cryptographic Support for z/OS V1R10-V1R12**
  - **Provides support for new encryption functions in the IBM System z196**
  - **Includes support for enhanced z196 CPACF support, CCA ECC, CKDS Constraint Relief, AP Interrupts, 64 Bit, CBC Key Wrap, PCI Audit, x9.8 Pin.**
- http://www.ibm.com/systems/z/os/zos/downloads

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This version of ICSF, FMID HCR7770, adds new and enhanced crypto functionality to z/OS:

- Crypto Express3 and Crypto Express3-1P hardware support
- Protected key support
- Elliptical Curve Cryptography (ECC) support
- Extended PKCS #11 support
- Improve product performance and stability
- New Query Algorithm function

Crypto Express3 (CEX3) and Crypto Express3-1P (CEX3-1P) hardware support: This new version of ICSF provides support for the Crypto Express3 and Crypto Express3-1P that were announced on October 20, 2009. These new features provide similar functionality to the CEX2 and CEX2-1P with improved performance, reliability and serviceability.

Protected key support: Protected key is a new capability on the z10 GA3 that relies on a wrapping key to provide additional security over clear keys, but without the performance penalty of secure keys. This new version of ICSF provides support for using a secure key as the source for a protected key.

Elliptical Curve Cryptography (ECC) Support: This version of ICSF adds support to comply with RFC4869 'Suite B Cryptographic Suites for IPSEC' as well as new clear key algorithms: Galois/Counter Mode encryption for AES (GCM), Elliptic Curve Diffie-Hellman key derivation (ECDH), Ellipc Curve Digital Signature Algorithm (ECDSA) and HMAC.

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In February 2005, the U.S. National Security Agency defined a set of cryptographic algorithms that are intended to provide an interoperable cryptographic base for unclassified and classified information. These are known as Suite B (not to be confused with Suite A which is an unpublished list of algorithms intended for highly sensitive communication and critical authentication systems). This suite of algorithms is then used by IETF RFCs to support various protocols (such as IPSEC, TLS, SSH, etc.).

The new support in ICSF is designed to comply with NIST requirements to support a FIPS 140-2 mode of operation for IPSEC.

Extended PKCS #11 support: A new software cryptographic engine embedded in ICSF will allow PKCS11 processing even if no cryptographic coprocessors are available. Since the cryptographic coprocessors are optional hardware, ICSF will determine their availability before routing work and if the hardware is not available, use its own internal routines to accomplish the function.

Additional algorithms that are supported with PKCS11 include Digital Signature Algorithm (DSA), Diffie-Hellman (DH), Elliptic Curve, Galois/Counter Mode encryption for AES (AES GCM), Blowfish and RC4.

Improve product performance and stability: A number of changes have been implemented within ICSF to provide better performance and stability:

- Non-cancellable, non-swappable region
- More consistent, simpler routing of ICSF console messages
- Improved software paths and routine

ICSF is being made non-swappable and non-cancelable using standard z/OS conventions. Prior versions of ICSF are non-swappable however this new support is implemented using standard conventions. Current versions of ICSF are cancelable via an operator command. If the operator issues the cancel command multiple times, the address space may be terminated before cleanup can be completed and this can sometimes cause problems to other ICSF started tasks that are sharing the key data sets (CKDS, PKDS, TKDS). By making ICSF non-cancelable, operations will have to issue an explicit command to stop the address space, driving it through normal termination routines.

Making the ICSF started task non-cancelable and non-swappable requires that the ICSF initialization module be added to the Program Properties Table (PPT). To avoid impacting prior versions of ICSF this main module name is being changed from CSFMMAIN (PGM=CSFMMAIN for HCR7751 and earlier) to CSFINIT. Simply adding CSFMMAIN to the PPT, would cause current versions of ICSF to work differently than they do today (i.e. cancel operations would fail).

The CSFINIT entry in the PPT will be automatically generated as part of the install of HCR7770, however existing users of ICSF will need to modify the ICSF started task to use the new initialization module. CSFMMAIN will still exist with HCR7770, however it will simply generate error message CSFM022E explaining that CSFINIT is required and then ICSF will terminate.

Since this version of ICSF can be installed on older versions of z/OS, the migration from CSFMMAIN to CSFINIT will need to be carefully coordinated in shops running multiple versions of z/OS and ICSF. Systems that require earlier versions of ICSF will have to continue to use //CSF EXEC PGM=CSFMMAIN,REGION=0M,TIME=1440 in the started task. However, to use HCR7770, the started task will need to be modified to specify
//CSF EXEC PGM=CSFINIT,REGION=0M,TIME=1440

Installations that are running multiple LPARs with various versions of ICSF across those LPARs, might want to consider using a system variable for the startup program name. For example, the ICSF started task could be modified to specify
//CSF EXEC PGM=&ICSFPROG,REGION=0M,TIME=1440

and the system symbolic ICSFPROG could be set to
SYMDEF(&ICSFPROG='CSFINIT') on the HCR7770 systems and
SYMDEF(&ICSFPROG='CSFMMAIN') on the earlier systems. No matter whether you change the started task directly to point to the new startup module, or use system symbols, the change will have to be made before HCR7770 can be started. If using system symbols, the system symbol will have to be refreshed before ICSF can be restarted.

Alternatively, the ICSF started task could be moved to a release specific PROCLIB. On the HCR7770 systems the version of ICSF that uses
//CSF EXEC PGM=CSFMINIT,REGION=0M,TIME=1440
would come before the library that contains the JCL with
//CSF EXEC PGM=CSFMMAIN,REGION=0M,TIME=1440. On the pre-HCR7770 systems, the concatenation order would be reversed.

To improve operational efficiency, ICSF is also being simplified to be more consistent in where it sends operational messages. In prior versions of ICSF, messages would be written to the console as well as data sets. Some messages could be read immediately on the console, while other records were written to the CSFLIST DD. Starting with HCR7751, most ICSF messages will be written to the job log. Messages that require operator action (ROUTCDE=1) will display on the operator console, and messages related to system security (ROUTCDE=9) will display on the security console. Some of those messages will be written to the job log as well. Because of this change, the CSFLIST DD is no longer required in the ICSF started task, however if it is not removed, ICSF will simply ignore it.

Instruction pathlengths for invoking the hashing algorithms on the CPACF, via the ICSF APIs have been tightened to provide better performance. Some operations routed to the CEX2 card have also been improved, providing better CPU utilization for those algorithms.

New Query Algorithm Function: ICSF provides a new Query Algorithm API that returns a summary of supported cryptographic algorithms. This API can be used by applications and middleware to programmatically determine how best to satisfy crypto requirements. For example, the middleware program could determine whether its first choice of AES is available via hardware. If hardware support for AES is available, the middleware would invoke the appropriate APIs or instructions to take advantage of that hardware. And if the support is not available via hardware, it could use the TDES hardware support instead.

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Miscellaneous

IEARELCN
IXCDLUT
SoftCap
zPCR
CHPID Mapping Tool
SMB
zFS to HFS Conversion Tool
AMATERSE
JZOS
WLM Tools
ISPF Productivity Tool
D XCF
Requirements
IBM Fix Category Values & Descriptions

ISPF 3.17
SDSF REXX
DFSMSrmm Shared PARMLIB
WLM Group Capacity
IBM Software pricing
CFCC Levels
BPMTEXT
LE Syntax checking
Websites
ISPF SWAPBAR

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SWAPBAR

- **Available in z/OS 1.10 and higher**
- **Turn on: SWAPBAR**
  - Stays on until turned off: SWAPBAR OFF
  - SWAPBAR is maintained in the system profile member and applies across logons
- **Documented in *ISPF User's Guide***
- **Create multiple sessions by specifying start on the command line**
- **Can use the mouse to toggle between logical sessions**

1

The entry for each logical session is the screen name if assigned or, if a screen name is not available, it is the panel name of the current panel displayed for the logical session.

The entry for the active logical session has an asterisk (*) in the first character position and, if the name is 8 bytes long, the last character is not displayed. Also, the alternate logical session has a "-" in the first position and the 8th character is not displayed.

The list remains active until you enter the SWAPBAR or SWAPBAR OFF command. The setting for the SWAPBAR is maintained in the system profile member and applies across logons.

If the list is longer than the width of the screen, a ">" appears at the right of the list to indicate there are more entries and you can scroll right by either positioning the cursor on the ">" and pressing Enter, or by positioning the cursor on an entry and pressing PF11 which scrolls to the entry indicated. When the start of the list is not displayed, a "<" is displayed at the left of the visible part of the list to indicate that you can scroll left on the list by positioning the cursor on the "<" and Pressing Enter or by positioning the cursor on an entry and pressing PF10.

The active logical session can be changed by positioning the cursor on an entry and pressing Enter. This logical session then becomes the active logical session. The SWAPBAR entries use the same physical attribute as the action bar choices and, if in the options settings Tab to action bar choices is selected, then tabbing to swapbar entries also occurs.

If the cursor is positioned on the swapbar entry for the currently active session and Enter is pressed, this is treated the same as Enter being pressed within the active logical session panel. When the SWAPBAR is activated, the Always show split line option is deactivated and you are not able to reactivate it until the SWAPBAR is deactivated.

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SWAPBAR

```
  Menu  Utilities  Compilers  Options  Status  Help

                         ISPF Primary Option Menu
Option ===>    SWAPBAR

0  Settings      Terminal and user parameters          User ID . : BRODY
1  View          Display source data or listings       Time. . . : 09:16
2  Edit          Create or change source data          Terminal. : 3278
3  Utilities     Perform utility functions             Screen. . : 1
4  Foreground    Interactive language processing       Language. : ENGLISH
5  Batch         Submit job for language processing    Appl ID . : ISR
6  Command       Enter TSO or Workstation commands     TSO logon : ADFLOGON
7  Dialog Test   Perform dialog testing                TSO prefix: BRODY
8  LM Facility   Library administrator functions       System ID : SYSB
9  IBM Products  IBM program development products      MVS acct. : D999
                                                  r   Release . : ISPF 6.3
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 US Government Users Restricted Rights -          s
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 by GSA ADP Schedule Contract with IBM Corp.

MA    b                                                  04/014
```

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SWAPBAR

```
  Menu  Utilities  Compilers  Options  Status  Help

                         ISPF Primary Option Menu
Option ===> _

0  Settings      Terminal and user parameters          User ID . : BRODY
1  View          Display source data or listings       Time. . . : 09:16
2  Edit          Create or change source data          Terminal. : 3278
3  Utilities     Perform utility functions             Screen. . : 1
4  Foreground    Interactive language processing       Language. : ENGLISH
5  Batch         Submit job for language processing    Appl ID . : ISR
6  Command       Enter TSO or Workstation commands     TSO logon : ADFLOGON
7  Dialog Test   Perform dialog testing                TSO prefix: BRODY
8  LM Facility   Library administrator functions       System ID : SYSB
9  IBM Products  IBM program development products      MVS acct. : D999
10 SCLM          SW Configuration Library Manager      Release . : ISPF 6.3
11 Workplace     ISPF Object/Action Workplace
W  BCRS Mods     BCRS WSC180 Custom Options

     Enter X to Terminate using log/list defaults

  *ISR@PRI
MA    b                                                  04/01
```

Name of session

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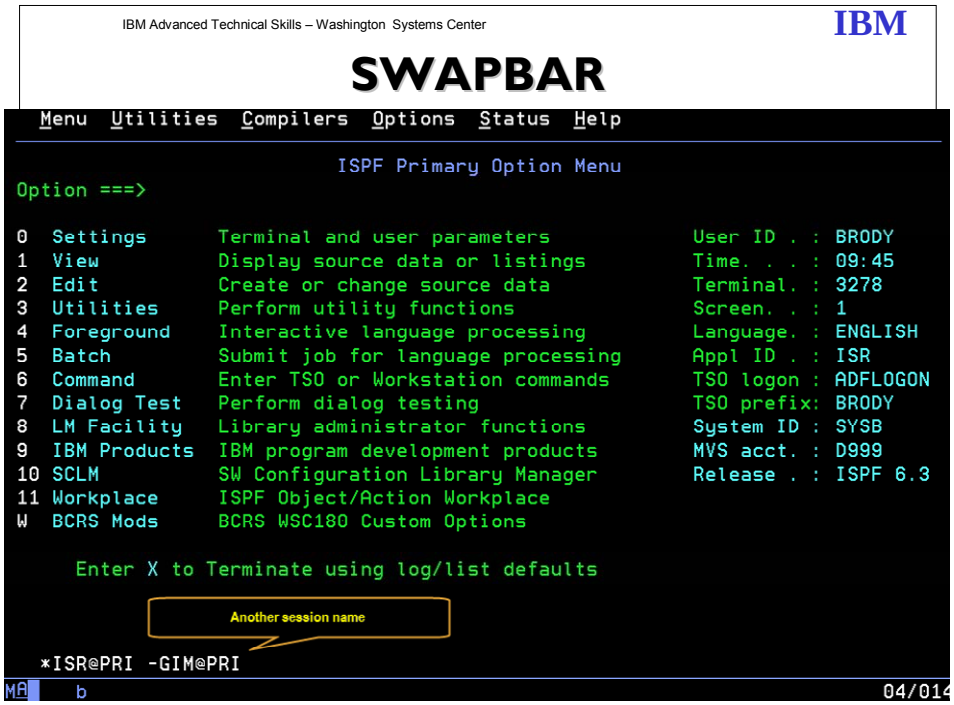
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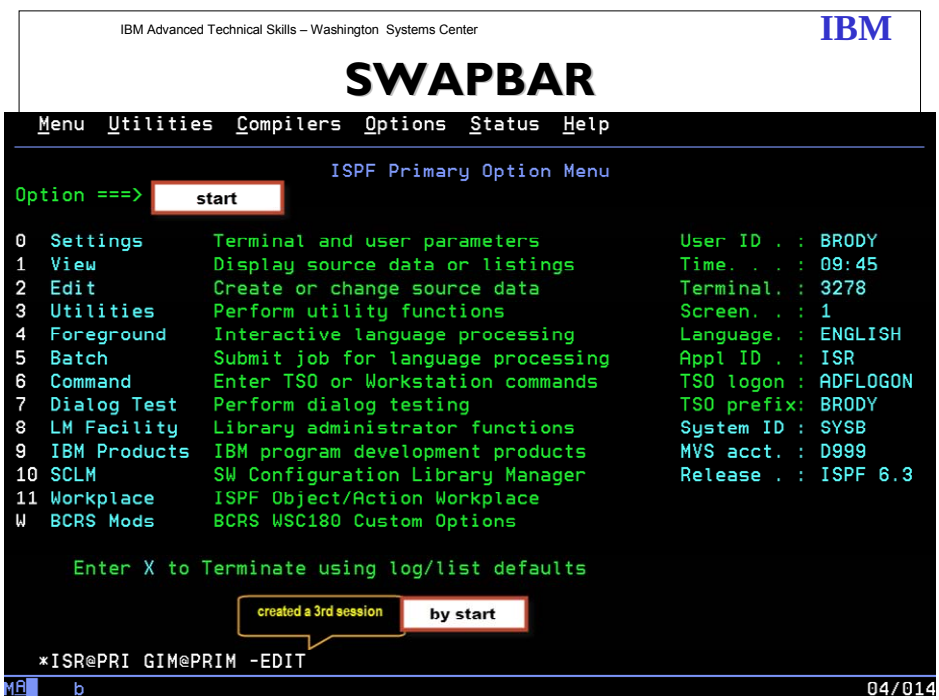
IBM
SWAPBAR
Menu Utilities Compilers Options Status Help
ISPF Primary Option Menu
Option ===>
0 Settings Terminal and user parameters User ID . : BRODY
1 View Display source data or listings Time. . . : 09:45
2 Edit Create or change source data Terminal. : 3278
3 Utilities Perform utility functions Screen. . : 1
4 Foreground Interactive language processing Language. : ENGLISH
5 Batch Submit job for language processing Appl ID . : ISR
6 Command Enter TSO or Workstation commands TSO logon : ADFLOGON
7 Dialog Test Perform dialog testing TSO prefix: BRODY
8 LM Facility Library administrator functions System ID : SYSB
9 IBM Products IBM program development products MVS acct. : D999
10 SCLM SW Configuration Library Manager Release . : ISPF 6.3
11 Workplace ISPF Object/Action Workplace
W BCRS Mods BCRS WSC180 Custom Options
Enter X to Terminate using log/list defaults
Another session name
*ISR@PRI -GIM@PRI
b
04/014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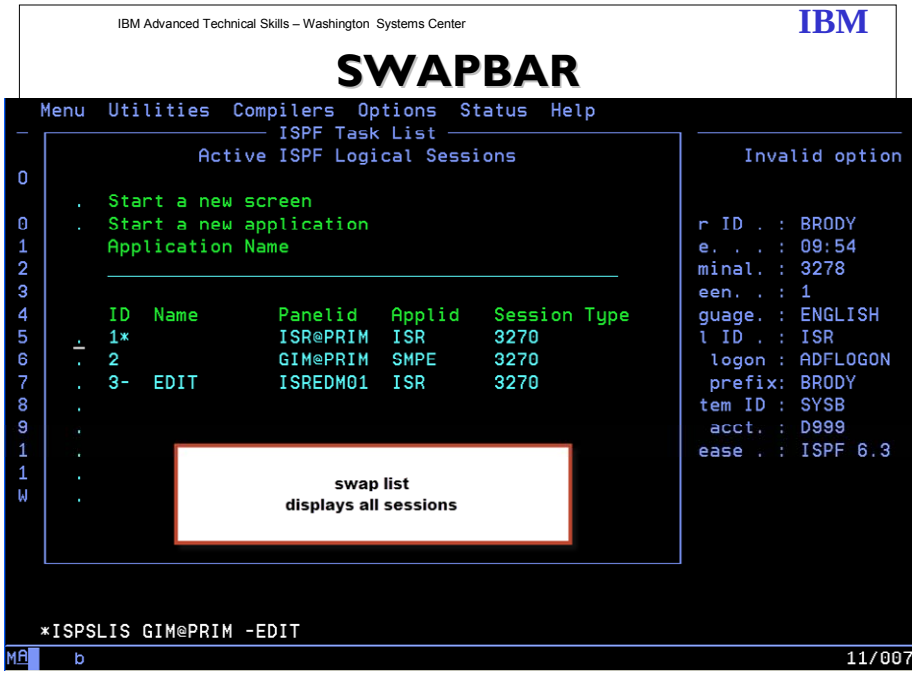
IBM
SWAPBAR
Menu Utilities Compilers Options Status Help
ISPF Primary Option Menu
Option ===>
start
0 Settings Terminal and user parameters User ID . : BRODY
1 View Display source data or listings Time. . . : 09:45
2 Edit Create or change source data Terminal. : 3278
3 Utilities Perform utility functions Screen. . : 1
4 Foreground Interactive language processing Language. : ENGLISH
5 Batch Submit job for language processing Appl ID . : ISR
6 Command Enter TSO or Workstation commands TSO logon : ADFLOGON
7 Dialog Test Perform dialog testing TSO prefix: BRODY
8 LM Facility Library administrator functions System ID : SYSB
9 IBM Products IBM program development products MVS acct. : D999
10 SCLM SW Configuration Library Manager Release . : ISPF 6.3
11 Workplace ISPF Object/Action Workplace
W BCRS Mods BCRS WSC180 Custom Options
Enter X to Terminate using log/list defaults
created a 3rd session
by start
*ISR@PRI GIM@PRIM -EDIT
b
04/014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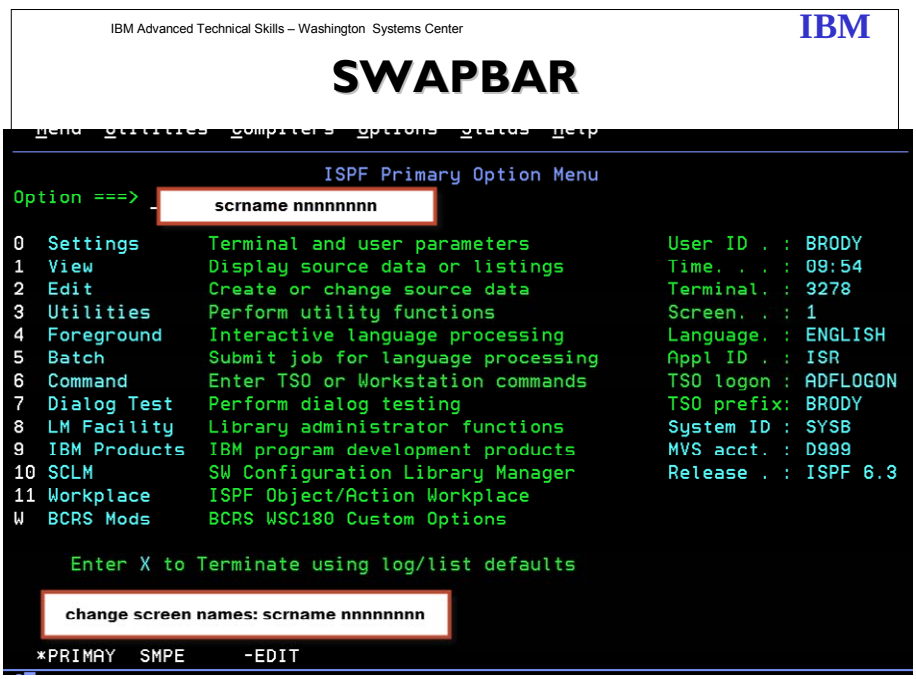
SWAPBAR
Menu Utilities Compilers Options Status Help
ISPF Task List
Active ISPF Logical Sessions
Invalid option
Start a new screen
Start a new application
Application Name
ID Name Panelid Applid Session Type
1* ISR@PRIM ISR 3270
2 GIM@PRIM SMPE 3270
3- EDIT ISREDM01 ISR 3270
r ID . : BRODY
e. . . : 09:54
minal. : 3278
een. . : 1
guage. : ENGLISH
l ID . : ISR
logon : ADFLOGON
prefix: BRODY
tem ID : SYSB
acct. : D999
ease . : ISPF 6.3
swap list
displays all sessions
*ISPSLIS GIM@PRIM -EDIT
11/007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SWAPBAR
ISPF Primary Option Menu
Option ===>
scrname nnnnnnnn
0 Settings Terminal and user parameters
1 View Display source data or listings
2 Edit Create or change source data
3 Utilities Perform utility functions
4 Foreground Interactive language processing
5 Batch Submit job for language processing
6 Command Enter TSO or Workstation commands
7 Dialog Test Perform dialog testing
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9 IBM Products IBM program development products
10 SCLM SW Configuration Library Manager
11 Workplace ISPF Object/Action Workplace
W BCRS Mods BCRS WSC180 Custom Options
User ID . : BRODY
Time. . . : 09:54
Terminal. : 3278
Screen. . : 1
Language. : ENGLISH
Appl ID . : ISR
TSO logon : ADFLOGON
TSO prefix: BRODY
System ID : SYSB
MVS acct. : D999
Release . : ISPF 6.3
Enter X to Terminate using log/list defaults
change screen names: scrname nnnnnnnn
*PRIMAY SMPE -EDIT

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IBM Fix Category Values & Descriptions

- **Fix category is an identifier to group and associate PTFs to a particular category**
- **SMP/E RECEIVE processing translates fix category values into SOURCEIDs**
- **This URL identifies all FIXCAT categories**
  - Last update: October 19, 2011
  - http://www-03.ibm.com/systems/z/os/zos/smpe/fixcategory.html
- **SMP/E Dialogs: Explorer function**
  - Can quickly determine "new" categories introduced.

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What is a fix category?
A fix category is an identifier used to group and associate PTFs to a particular category of software fixes. A fix category might be used to identify a group of fixes that are required to support a particular hardware device, or to provide a particular software function, similarly to how a preventive service planning bucket (PSP-bucket) identifies a group of PTFs. Fix categories are supplied to you in the form of SMP/E FIXCAT HOLDDATA statements. Each FIXCAT HOLDDATA statement associates an APAR and its related fixing PTF to one or more fix categories.

During SMP/E RECEIVE command processing, SMP/E translates fix category values into source IDs and assigns them to the resolving (fixing) PTFs identified on the HOLDDATA. You can then use the fix category values as source IDs when selecting a set of PTFs to be applied.

There are several categories: **Go to the web site for a complete description.**

Installation categories: Identify recommended fixes when installing or deploying new software product release levels.

Function categories: The following fix categories identify fixes that are required or recommended for selected functions.

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Storage device categories: The following IBM.Device fix categories identify fixes that provide software support to enable the specified storage hardware devices, where a descriptive short name is followed by the device model number

Communication device categories: The following IBM.Device fix categories identify fixes that provide software support to enable the specified communication hardware devices, where a descriptive short name is followed by the device model number.

Server device categories: The following IBM.Device.Server fix categories identify fixes that provide basic software support for the specified hardware server devices, where a descriptive short name is followed by the device model number.

The following IBM.Device.Server fix categories identify fixes that provide the support required for optional server functions. The format is the server fix category followed by a short descriptive name for the optional function. Not all optional server functions have a corresponding fix category.
z196
z114
zBX
z10 EC and BC
z9 EC and BC
z990
z890

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IEARELCN

- Sample program to remove a console definition(s) from a single system or a sysplex
  - invokes service (module IEAVG730)
- Sample code located in SYS1.SAMPLIB
  - Additional information can be found in *z/OS MVS Planning: Operations* (SA22-7601)
- IEARELCN is implemented as a reentrant program
- It must be APF authorized.

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Before you remove a console definition, issue DISPLAY CONSOLES to determine if the console is defined as an alternate. If you delete the definition for a console that is defined as an alternate for another console, you remove the alternate console as back up. If a console switch to the alternate is required, the system cannot switch because the alternate has already been removed. Use VARY CN to change the list of potential alternates for a console (ALTGRP).

The following restrictions for removing a console definition apply:

- Dynamic I/O reconfiguration can be performed for a device that has been defined as an MCS console in CONSOLxx. If you want to change the I/O configuration of a device which is defined as a console, you must first delete the console definition. The sample program IEARELCN can be used to do this. After the definition has been removed, the device can be dynamically reconfigured, but it cannot be used as a console again, until a re-IPL. For more information about dynamic I/O reconfiguration, see *z/OS HCD Planning*.
- The console must be defined in CONSOLxx.
- The console must not be active.
- A subsystem console that is in use must first be released. (See *z/OS MVS Using the Subsystem Interface*.)
- You cannot remove the console definition for a console when a no-consoles condition exists.
- When a no master console condition exists, you cannot remove a console that is the last active master console.

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FUNCTION:
The IEARELCN utility described above will remove an MCS console and free its slot for future use.

This program is an example of how to use the service removing a console definition from a system or a sysplex. The parameter passed to this program is the name of the console whose console definition is to be removed.

The parameters are as follows:

CONSNAME(xxxxxxxx)

where xxxxxxxx: is the name of the console whose definition is to be removed from the system or sysplex.

IEARELCN is implemented as a reentrant program. It must be APF authorized.

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IXCDELUT

- **Sample program to remove a member from an XCF group**
  - invokes service (module IXCMIDEL)
- **Sample code located in SYS1.SAMPLIB**
- **Requires update access to Facility Class Resource MVSADMIN.XCF.IXCM2DEL**

XCF Group Name

```
D XCF,G,GRPxyz

IXC3321  15.22.45  DISPLAY XCF 087

GROUP GRPxyz:  MEM01     MEM02
```

```
IXCDELUT  JOB
//S1  EXEC PGM=IXCMIDEL,PARM=GRPxyz,MEM01
//SYSPRINT   DD  SYSOUT=A
```

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Use the IXCDELET utility to delete XCF group members that are created, quiesced, or failed. Sample JCL to run the utility is described here and is shipped in SYS1.SAMPLIB.

Use discretion when considering whether to use the IXCDELET utility. Do not use the utility unless you understand the use of the member by its owning XCF application.

A user of the IXCDELET utility must be defined with UPDATE access to the FACILITY CLASS resource MVSADMIN.XCF.IXCM2DEL.

Identify the XCF group member to be deleted by its group name and its member name. The member to be deleted must be in one of the following states: created, quiesced, or failed. If the member is not in one of those states, the utility program fails.

XCF group members can be deleted one at a time. To delete multiple members, the IXCDELET utility must be run multiple times.

Sample JCL to run the IXCDELET utility to delete created, quiesced, or failed XCF group members is shipped in SYS1.PARMLIB member IXCDELUT.

The utility parameters are:

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GRPXYZ
XCF group name of the member to be deleted.
MEM01
Member name of the member to be deleted.

Documented in *Setting up a Sysplex* manual. `SA22-7625-14`

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D XCF, REALLOCATE

- **New DISPLAY XCF,REALLOCATE,TEST option to simulate the reallocation process**
  - **Run "What-If" scenarios for Coupling Facility structure reallocations**
    - **Provides information about changes the REALLOCATE command would attempt to make and any errors that might be encountered if an actual REALLOCATE were to be performed**
- **New DISPLAY XCF,REALLOCATE,REPORT** command
  - Provide detailed information on the results produced by a previously executed REALLOCATE command
  - Intended to help you find such information without searching through syslogs for REALLOCATE-related processing and exception messages

New in z/OS V1R12

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DISPLAY XCF,REALLOCATE,REPORT | TEST command displays information about the REALLOCATE process.

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Software Migration Capacity Planning Aid

- **zSOFTCAP Tool**
  - PC-based - available to customers and business partners via the web
  - can access the effect on capacity on IBM System z servers
  - results are presented in tables
  - covers z/OS migrations
  - covers IMS and CICS software migrations

Customers: http://www.ibm.com/support/techdocs/atsmastr.nsf/PubAllNum/PRS268
Business Partners: http://www.ibm.com/partnerworld/sales/systems

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zSoftCap is a PC-based productivity tool designed to assess the effect on capacity for IBM System z processors, when migrating to more current releases of the operating system or major subsystems. zSoftCap assumes that hardware remains constant while software releases change.

Runs on Windows XP and Windows 7.

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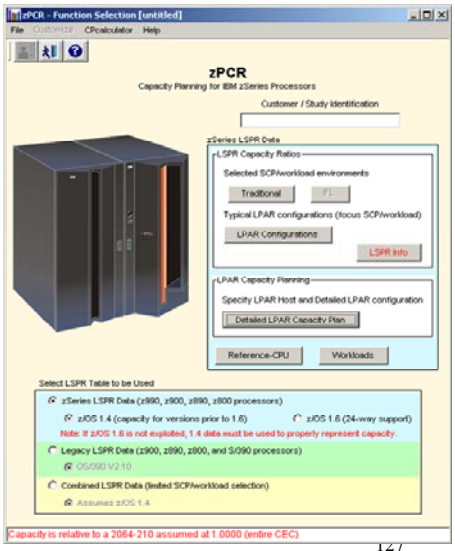
zPCR

- **A Java based PC tool**
- **Windows XP and Windows 7**
- **Provides the capacity relationship of zSeries and System zEC12, z196, z114, z10 or z9 Servers**
  - LSPR workloads determine the capacity ratio
  - Includes impact of LPAR configurations
  - Expected accuracy of + or – 5%
- **The IBM tool to properly size zSeries z196, z114, z10 and z9 server upgrades**
- **Last Update: September, 2012**



http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS1381

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The zPCR tool was released for customer use on October 25, 2005. zSeries customer now have new capabilities to develop comprehensive capacity planning scenarios for their environments. Introduction of the IBM Processor Capacity Reference for zSeries (zPCR), provides in-depth information on the relative processor capacities of zSeries processors and includes the capability to size and plan for the impacts of PR/SMtm on overall capacity. The tool will also help zSeries customers plan their entire zSeries environment, including the addition of specialty processors like zAAPs, ICFs and IFLs.

The tool, downloadable and useable by customers, is provided on an "as is" basis. Support is being provided by IBM's Washington Systems Center who has provided easy to use training materials and is providing both "how to" support and FAQ support for the tool. The WSC will also be providing defect support for the tool.

What can zPCR do for you? First and foremost it means you can now and forever burn those misleading MIPS charts. Now an easy to use tool is provided, based on LSPR benchmark data, to quickly assess relative processor capacity. The tool provides information on individual LSPR primitives but also provides data on common blended workloads such as LoIO. This allows the capacity planner to quickly identify the relative capacity relationships among different zSeries hardware configurations. Secondly, it allows the user to enter an LPAR environment, (either proposed and/or current), and determine the impacts on capacity of the specific LPAR environment. This gives capacity planners new capabilities to evaluate and size proposed zSeries configurations. And lastly zPCR can help understand the impacts of adding specialty processors to the environment. Only zPCR can do the complete job of estimating the impacts of adding a

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zAAP processor to the configuration, the impacts of adding CF engines, and the impacts of adding Linux or VM partitions using IFLs.

Getting Started

It's easy to get started using the zPCR tool. We've created a single getting started page to make everything easy. At this site you will be able to:

- Download the zPCR tool
- Get training materials (prerecorded lectures and handouts)
- Print a copy of the Users Guide
- Find links to the zPCR newsgroups
- Get information on how to request defect support for zPCR
- Information on zPCR Registration

Visit the zPCR URL:

http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS1381

Get started today.

A zPCR newsgroup has been created for all the latest information on zPCR. The newsgroup information is listed below:

Server name: news.software.ibm.com

Newsgroup name: ibm.servers.zseries.zpcr

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CHPID Mapping Tool

- **The CHPID Mapping Tool allows you to assign CHPID numbers for the channels on your IBM zEnterprise EC12, z196, z114, z9, z10 and zSeries processor.**
- **You can assign CHPID numbers by either of two methods:**
  - Manual - you enter the new CHPID values individually.
  - Availability Mapping - CHPID Mapping tool assigns CHPIDs for maximum system availability.
- **Available for download from Resource Link**
- **Education available as well**
  - HTML or PDF
- **System z CHPID Mapping Tool User's Guide**
  - Resource Link: Select Server – Select Library
    - Last update September 2012

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The CHPID Mapping Tool allows you to assign CHPID numbers for the channels on your IBM Server zSeries processor. You can assign CHPID numbers by either of two methods:

- **Manual** - you enter the new CHPID values individually. The CHPID Mapping tool checks your input for errors.
- **Availability Mapping** - CHPID Mapping tool assigns CHPIDs for maximum system availability.

In either case, the CHPID Mapping tool provides the necessary output and reports.

There is an educational online course available as well. This course is on the same page as the description for the Chipped Mapping Tool.

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SMB - Distributed File Service

- **Provides for the sharing of HFS files on z/OS and your workstation**
  - allows access from workstation to files on z/OS remotely
  - provides support for Sequential, PDS, PDS(E), VSAM
- **Support through SMB protocol via TCP/IP on z/OS**
- **Allows clients access to shared directory paths and shared printers**
- **Files can be shared with local z/OS - OS/390 UNIX System Services applications**

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The z/OS Distributed File Service Server Message Block (SMB) support provides a server making Hierarchical File System (HFS) files available to SMB clients. It supports the SMB protocol through the use of TCP/IP on z/OS. This communication protocol allows clients to access shared directory paths and shared printers. Personal Computer (PC) clients on the network use the file and print sharing functions included in their operating systems. Supported SMB clients include Windows 95, Windows 98, Windows NT 4.0 Workstation, Windows 3.11 (Windows for Workgroups), and OS/2 Version 4 (for file access only). At the same time, these files can be shared with local z/OS UNIX System Services applications and with DCE DFS clients.

z/OS SMB support allows PC users to be able to access files that reside on an z/OS system remotely. That is, PC users can access files that are not located on their computer. Remote files simply appear to the PC user on one or more separate drive letters. PC users can "connect" an unused drive letter to a "shared resource" on a remote computer. This is sometimes referred to as "mapping a network drive". This capability is provided by software residing on the PC (the client), in combination with software residing on the remote computer (the server). There must also be a TCP/IP network connection between the PC and the remote computer.

z/OS SMB support allows Windows PC users to be able to use remote printers attached to an z/OS system. Remote printers simply appear to be additional printers available to the PC user. Remote printers are installed on PCs using existing commands or install utilities.

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In addition, Windows SMB clients can make remote print requests to z/OS printers connected to the Infoprint Server for z/OS. The SMB server provides print serving support for Windows™ clients. By allowing the SMB protocol to be used to send print requests to the z/OS Infoprint® Server, it removes the need for additional print client code or unique printer setup steps on the user workstation.

The SMB server support is integrated within the Distributed File Service (DFS) element which also provides DCE DFS client and server support. The SMB support does not require DCE but the same server can optionally support DFS clients, SMB clients, or both.

In Release 10, in addition to its support for workstation access to OS/390 data stored in HFS using SMB protocols, the OS/390 DFS/SMB Server now supports workstation access z/OS data stored in SAM, PDS(E), and VSAM files to further expand the S/390 support for application development.

The Release 10 SMB server now supports the NT LM 0.12 level of the SMB protocol dialect used by the Windows NT™ networking support, thereby providing additional password encryption, file sizes greater than 32 bits (4 GB), and other capabilities allowed by this level of the SMB protocol.

Reference material: *Distributed File Service SMB Administration Guide and Reference*, SC24-5882.

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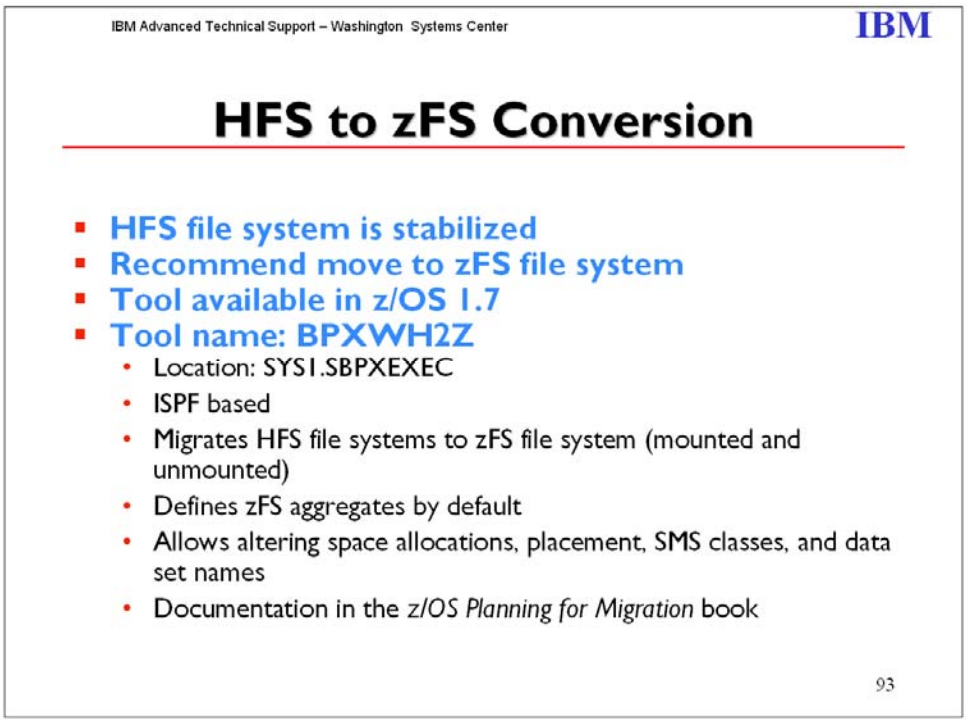

Before z/OS V1R7, the HFS file system was the primary hierarchical file system. As of z/OS V1R7, you can use any combination of HFS and zFS file systems. Because zFS has higher performance characteristics than HFS and is the strategic file system, you should migrate your HFS file systems to zFS.

The HFS and zFS file system types in mount statements and command operands are now generic file system types that can mean either HFS or zFS. Based on the data set type, the system will determine which is appropriate.

Steps to take: Before beginning the migration, follow these steps:

1. Establish backout procedures.
2. Decide on naming conventions.
3. Decide on unavailability.
4. Perform the conversion from an HFS to zFS file system.

Tip: Use the BPXWH2Z tool to perform the conversion. It is an ISPF-based tool that migrates HFS file systems to zFS file systems. It has a panel interface that enables you to alter the space allocation, placement, SMS classes, and data set names. A HELP panel is provided. With this tool, you can:

- Migrate HFS file systems (both mounted and unmounted) to zFS file systems. If the HFS being migrated is mounted, the tool automatically unmounts it and then mounts the new zFS file system on its current mount point.

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- Define zFS aggregates by default to be approximately the same size as the HFS. The new allocation size can also be increased or decreased.
- Have the migration run in TSO foreground or UNIX background.

BPXWH2Z is located in partitioned data set SBPXEXEC (usually called SYS1.SBPXEXEC). When you run the BPXWH2Z tool on your z/OS V1R7 system, it uses the z/OS V1R7 level of the **pax** command. This level has been enhanced for sparse file support and other characteristics that are of concern when migrating from an HFS to zFS file system. You can manually migrate from an HFS to zFS file system without using the tool. When doing that, the z/OS V1R7 level of the **pax** command is recommended. However, you would need to allocate and format the target zFS file systems.

5. Change policies and scripts, and so forth, to reflect the change from the HFS file system to zFS file system.

   Tip: Use the RMF Monitor III option to report on zFS activity.

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AMATERSE

- Service aid shipped in z/OS 1.9
  - Rolled back to z/OS 1.8 and 1.7 via APAR OA19194
  - Located in SYS1.MIGLIB
  - Can be used instead of TRSMAIN utility
- Creates a compact image of diagnostic data sets
- Used to pack a data set before transmitting a copy to another site
- Create a similar data set at the receiving site by using the complementary unpack service
- Documentation in the *z/OS V1R9.0 MVS Diagnosis: Tools and Service Aids* (GA22-7589-11) book

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AMATERSE is a service aid program operating in problem state. Use AMATERSE to pack a data set before transmitting a copy to another site, typically employing FTP as the transmission mechanism. A complementary unpack service is provided to create a similar data set at the receiving site.

AMATERSE is an application which prepares diagnostic materials, such as z/OS dumps and traces, for transmission to IBM and vendor sites. When the materials arrive, AMATERSE also provides a means to create similar data sets to support diagnosis of problems.

If you have previously used the TRSMAIN utility (see http://techsupport.services.ibm.com/390/trsmain.html), you will find the following changes have been made to prepare AMATERSE for formal inclusion in z/OS:

- AMATERSE is used as the preferred application program name rather than TRSMAIN. TRSMAIN is shipped as an alias entry point to AMATERSE.

- The ddnames INFILE and OUTFILE that were required by the TRSMAIN utility are replaced by SYSUT1 and SYSUT2 respectively. When the TRSMAIN entry point of AMATERSE is invoked, ddnames INFILE and OUTFILE remain as the defaults.

- AMATERSE is placed into MIGLIB, a library that is part of the link list. No STEPLIB ddname is needed to invoke AMATERSE.

- You can use AMATERSE, the TRSMAIN utility, and VM terse interchangeably in nearly all cases. See “Restrictions” in the MVS Diagnosis Tools and Services Aids for exceptions to this rule.

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ISPF Productivity Tool

- Turns IBM ISPF into a centralized, object-oriented development center
- Integrates enhanced functionality into the standard ISPF browse, edit, view, member list and data set list functions
- Extends the standard member lists with powerful search functionality that provides instantaneous results so that you can search through multiple members or libraries
- Helps you locate volumes, data sets, members and text
- Includes an interactive or automated interface to the change functionality and offers you the option to save changes into copies of modified members, leaving the originals intact
- Consolidates native ISPF and additional tools to provide automatic and integrated access to VSAM files, Panvalet® libraries, Librarian files, IBM DB2® tables, HFS files, PC files, catalog levels and other objects
- Uses proprietary technology for fast results

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ISPF Productivity Tool V6.1

- Announcement letter: 209-053
- Redbook: SG24-7710
- Video: http://video.google.com/videosearch?source=ig&hl=en&rlz=&q=ispf+productivity+tool&um=1&ie=UTF-8&ei=04R4SsrwBcvAlAeg7oiZBQ&sa=X&oi=video_result_group&ct=title&resnum=4#

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A System Programmer Productivity Tool Bag

This IBM® Redbooks publication introduces the Interactive System Productivity Facility (ISPF) Productivity Tool (IPT) Version 6, Release 1 for z/OS®. IPT operates as a seamlessly integrated front end to ISPF. IPT functionality is available from any panel without a need to modify any ISPF Primary Options Menu. All IPT functions are totally integrated. IPT can perform almost any activity within ISPF, or internally invoke the function to perform the task. IPT combines separately provided ISPF utility functions and new ISPF Productivity Tool features into the Object List (OLIST) and Member Selection List (MSL). The resulting member, dataset, and object lists become powerful platforms where to perform many tasks without navigating to other utilities.

IPT relates objects to applications in a similar manner to the way that a PC performs Object Linking and Embedding (OLE). By extending the dataset objects used by ISPF to other object classes, IPT lets you specify the object to be processed and the action to be performed (such as EDIT or BROWSE). The facility that is appropriate to the object class for the action you have requested is invoked automatically. IPT provides extensive search capabilities that are both rapid and intuitive. You can easily search for volumes, datasets, members, and text within members. ISPF Productivity Tool also furnishes automatic drill-down system navigation to examine volumes, datasets, and members.

IPT provides a menu-driven facility to display and recover all of the deleted members of a partitioned dataset (PDS) library.

IPT extends the ISPF Action Bar with options providing access to new functionality so not to learn new commands or syntax. In addition to the ISPF point-and-shoot capabilities, IPT provides new concepts, such as hotbars (user-defined fields that execute commands), field-sensitive areas in MSLs and OLISTs, automatic recognition of a dataset name on any ISPF panel as a parameter to BROWSE, EDIT, or VIEW, or parameters within any Time Sharing Option (TSO) command.

IPT provides integrated and enhanced IBM Software Configuration and Library Manager (SCLM) support within the standard member and dataset lists. SCLM is a source library management component of ISPF providing change control, multiple source versions, auditing, a built-in make facility, and automatic check-in/sign-out using standard libraries (PDS and partitioned dataset extended (PDSE)). IPT includes built-in interfaces to various IBM and ISV products.
This book is intended as a supplement to existing product manuals. It starts with an overview of the main IPT concepts and facilities. It then follows with detailed chapters, each dedicated to a major IPT functions.

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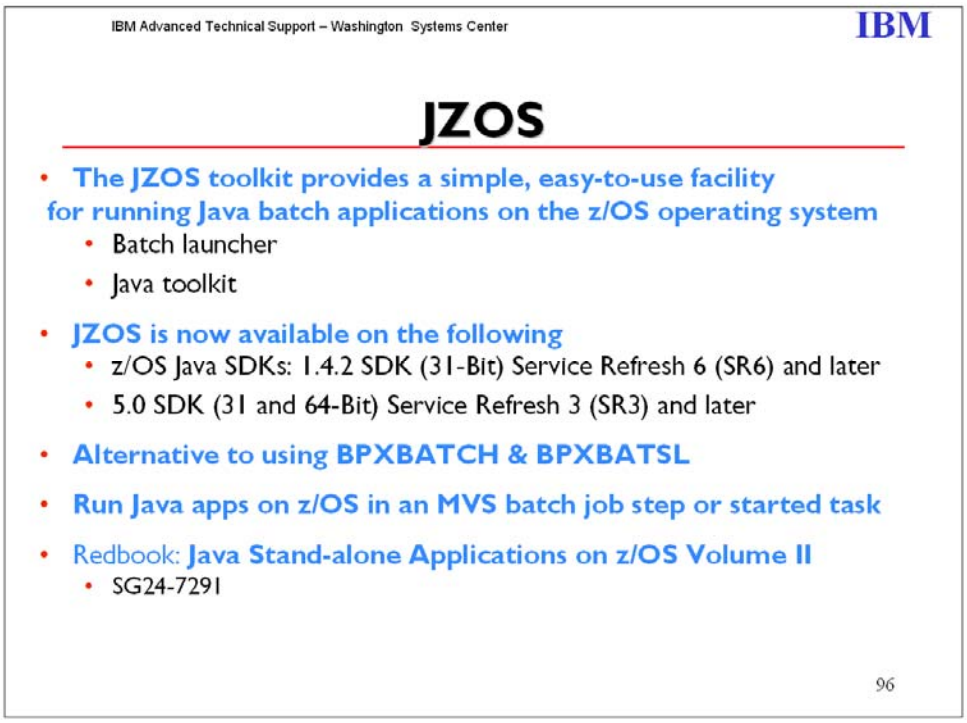

The IBM JZOS Batch Toolkit for z/OS SDKs is a set of tools addressing many of the functional and environmental shortcomings in current Java batch capabilities on z/OS. It includes a native launcher for running Java applications directly as batch jobs or started tasks, and a set of Java methods providing access to traditional z/OS data and key system services directly available from Java applications. Additional system services include console communication, multiline WTO (write to operator), and return code passing capability. In addition, JZOS provides facilities for flexible configuration of the run-time environment, and it allows intermediate data to be seen via z/OS System Display and Search Facility (SDSF). Java applications can be fully integrated as job steps in order to augment existing batch applications.

The combination of the launcher, data access, added system services, and environmental enhancements make running Java on z/OS as batch jobs easier, particularly for traditional z/OS programmers. The net result of these enhancements is the look and feel of running Java applications is much closer to other z/OS batch jobs, and the way Java batch can be managed is now like other z/OS batch applications written in COBOL, PL/I, or other compiled languages.

The batch launcher and toolkit extends the z/OS J2SE products with a set of Java classes and additional C++ code. Java applications can be launched directly as batch jobs on z/OS along with using the custom launcher. The JZOS set of Java class libraries extends the function available in the standard Java product. The extensions provide APIs for Java access to z/OS operating system services and access to z/OS-specific data types, including VSAM data.

Redbook: SG24-7291 Java Stand-alone Applications on z/OS Volume II - **Using JZOS to develop, deploy and runJava applications.**

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DFSMSrmm Shared Parmlib Support

- Provides:
  - sharing of parmlib members
  - Use of system symbols
  - indirect parmlib member is supported
- Enablement is handled on a system-by-system basis
  - specify a second parmlib member to be used
  - use the MEMBER operand on the OPTION command to identify the second parmlib member

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You can now easily share DFSMSrmm settings in SYS1.PARMLIB. System symbols are supported in parmlib member EDGRMMxx. You may also concatenate members and may use indirection to an additional parmlib member containing system specific options. Use the memberxx operand on the OPTION command to identify.

Use the RMM LISTCONTROL subcommand to display RMM control data set record information and EDGRMMxx parmlib settings.

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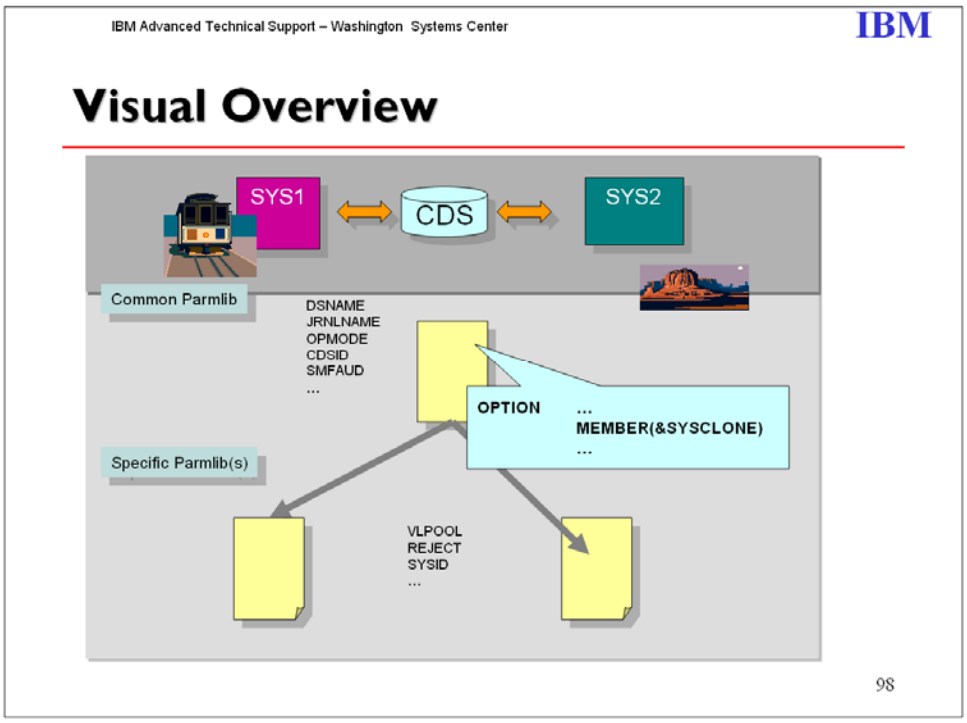

Some information in the EDGRMMxx parmlib may need to be specific to a subset of your systems. For example, the REJECT or VLPOOL entries may need to be different. To enable this information to be handled on a system by system basis you can specify a second parmlib member to be used. Use the MEMBER operand on the OPTION command to identify the second parmlib member.

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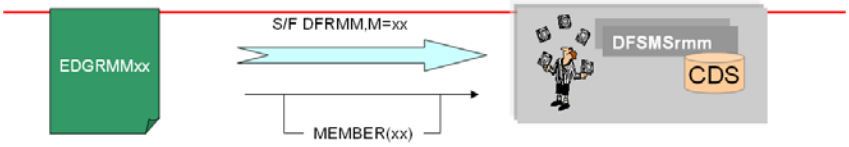
OPTION MEMBER(xx)



MEMBER(xx)

Use the MEMBER operand in the primary DFSMSrmm parmlib to identify a second parmlib member containing overrides or additional parmlib options. For example you might use the second parmlib member for system specific options or parmlib statements.

Parmlib_suffix must be any 2 characters used as the suffix of the EDGRMMxx parmlib member name.

The MEMBER operand is ignored if it is also specified in the second parmlib member.

There is no default value.

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LPAR Group Capacity

- Ability to manage the processor resource for a group of z/OS LPARs (members) on a single CEC
  - Sets a limit in MSUs for total usage by all LPARs in group
    - member which does not want its share will donate to the other members
  - Can have more than one group on a CEC but an LPAR may only be a member of one group
  - Target share for each LPAR based on its weight as % of total weight for all members
- LPARs must share engines and specify WAIT COMPLETION = NO
- LPARs must be at z/OS 1.8 or later running on z9 EC GA3 or z9BC GA2 processor
- LPARs may or may not be in the same sysplex or LPAR cluster
- LPARs may also have a defined capacity limit
  - Target share will not exceed defined capacity
- LPARs may be WLM-managed as part of WLM LPAR CPU management (IRD)

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Group capacity is an extension of the defined capacity. Allows an installation to define a "softcap" for multiple LPARs on the same CEC. It limits RSU resources for a group. LPAR group capacity allows you to specify 1 or more groups of LPARs on a server, each with its own capacity limit. This is designed to allow z/OS to manage the groups in such a way the sum of the LPARs CPU utilization within a group will not exceed the groups defined capacity.

LPAR group capacity limit requires all LPARs to be managed are on z/OS 1.8 or higher. LPAR group capacity limits may help provision a portion of the server to a group of LPARs allowing the CPU resources to float more readily between the LPARs resulting in more productive use of "white space".

Group limit is always met on average.

It uses the weight definitions of the partitions and their actual demand to decide how much CPU can be consumed by each partition in the group. Based on weight definitions, each partition gets an entitled share of the group capacity. The entitled share is important to decide how much MSU can be used by each partition if the 4 hour rolling average of the group exceeds the group capacity limit.

Where is information reported?
RMF type 70 PR/SM Partition Data Section addition
RMF Monitor III CPC report addition
SMF 99 subtype 11 record - new

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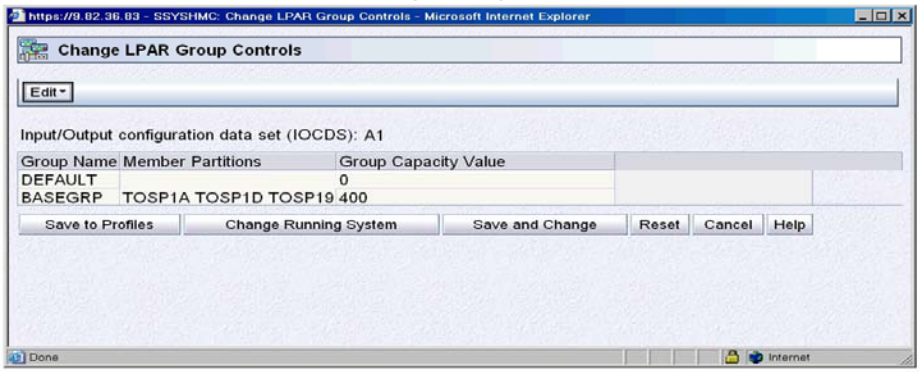
Where is it defined?

- **Capacity groups are defined on the HMC Change LPAR Group Controls panels**
  - Specify a group name, a limit in MSUs and which LPARs belong to the group
  - Members can be added or removed dynamically



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How does it work?

- **Uses rolling 4 hour average MSU measurements computed by WLM to manage the group capacity limit**
  - ~~Capping enforced by PR/SM when the group rolling 4 hour average exceeds the limit~~
  - Each member is aware of other members' usage and determines its share based on its weight as a percentage of the total weight for all members of the group
    - **NOTE: When using IRD the weights can change and therefore the target MSU value can change for the LPARs**
    - The defined capacity limit, if also specified, is never exceeded
- **Example shows how many MSUs each LPAR would get if they all wanted their share. Assume GROUPA group limit is 200. The total group weight is 500.**

LPAR	WEIGHT	SYSPLEX	CAPACITY GROUP	TARGET MSU SHARE
LPAR1	150	PLEX1	GROUPA	(30%) 60
LPAR2	300	PLEX2	GROUPA	(60%) 120
LPAR3	500	PLEX1	n/a	n/a
LPAR4	50	PLEX1	GROUPA	(10%) 20

- **Capping is not enforced during the time period that the members are "learning" about the group and building a history,**
  - May take up to 4 hours (48 measurements at 5 minute intervals are maintained for rolling 4 hour average) for capping to start
  - Similar to bonus period with defined capacity
  - When new member joins the group, it has to build its history and during this time the group usage may exceed the capacity limit
  - Capping removed when group rolling 4 hour average drops below group limit

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RMF Monitor I CPU report new section

```
G R O U P   C A P A C I T Y   R E P O R T
                                    G R O U P   C A P A C I T Y   R E P O R T

   z/OS V1R8                 SYSTEM ID PRF1              DATE 06/18/2007            INTERVAL
04.59.989
                                    RPT VERSION V1R8 RMF        TIME 16.35.00
CYCLE 1.000 SECONDS

GROUP-CAPACITY  PARTITION    SYSTEM   -- MSU --   WGT   -CAPPING--    - ENTITLEMENT -
NAME      LIMIT                       DEF   ACT        DEF   WLM%    MINIMUM MAXIMUM
BASEGRP     400  TOSP1A       PRF2      0   133   250   NO     0.0       100     400
                 TOSP1D       PRFA      0   183   500   NO     0.0       200     400
                 TOSP19       PRF1      0   133   251   NO     0.0       100     400
-----------------------------------   ----------------------------------------------
                              TOTAL        449  1001
```

Actual MSUs used. The total may be higher than the Group capacity limit because enforcement begins when the rolling 4 hour average reaches the limit not the total MSUs used in an interval.

Minimum entitlement MSUs will change as the weights (WGT) change in an IRD environment

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RMF Monitor III CPC report new fields

```
                    RMF V1R8   CPC Capacity                    Line 1 of 20
Command ===>                                                 Scroll ===> CSR
 Samples: 100     System: PRF1  Date: 05/02/07  Time: 16.53.20  Range: 100   Se
 Partition:   TOSP19     2094 Model 750
CPC Capacity:    2295   Weight % of Max: ****   4h Avg:   99   Group: BASEGRP
Image Capacity:   184   WLM Capping %:    0.0   4h Max:  164   Limit:   400

Partition  --- MSU ---  Cap  Proc    Logical Util %   - Physical Util % -
             Def   Act  Def   Num    Effect   Total   LPAR  Effect  Total
*CP                                                     0.2    33.0   33.2

TOSP1A         0   157  NO    4.0      85.7    85.8    0.0     6.9    6.9
TOSP1B         0   157  NO    4.0      85.7    85.8    0.0     6.9    6.9
TOSP1C         0    46        1.0       100     100    0.0     2.0    2.0
TOSP1D         0     1  NO    4.0       0.5     0.6    0.0     0.0    0.1
TOSP1E         0     1  NO    4.0       0.5     0.7    0.0     0.0    0.1
TOSP19         0   164  NO    4.0      89.3    89.3    0.0     7.1    7.1
```

The 4h Avg is PRF1's view of its rolling 4 hour average. It can use up to 184 MSUs during its bonus period.

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SDSF REXX

- z/OS V1R9 SDSF adds support for the REXX programming language
- Use REXX to quickly develop scripts to perform complex and repetitive tasks
- Little or no training needed if you already know SDSF
- Simpler and more powerful alternative to SDSF batch
  - Lets you include logic

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REXX support provides an alternative to using SDSF batch and opens up SDSF's strengths to a wider user base.

SDSF batch supports only simple programs that issue action characters and (with the ISFAFD flavor of batch) modify values. With REXX you can include logic that does things like examine values and make decisions based on the values. You can access almost all of SDSF's function. And you can do things that are impossible to do with SDSF interactively (as will be shown in some examples at the end of this presentation).

REXX with SDSF integrates your REXX executable by executing commands and returning the results in REXX variables. The API mimics the interactive use of the product.

This support is rolled back to z/OS 1.8 as a web download.

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SDSF REXX - Highlights

- **With SDSF's REXX, you can perform most of the tasks you can perform interactively, such as:**
  - Display and modify jobs
  - Display and modify resources and devices
  - Browse SYSOUT data sets
  - Print SYSOUT data sets
- **Use the same panel commands, action characters and column overtypes as with interactive SDSF**

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REXX support includes all of the SDSF panels that are supported interactively, with the exception of SYSLOG and Output Descriptors (which is displayed with the Q action character from job and output panels).

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Getting Started

In a basic SDSF REXX exec, you:

1. **Add the REXX host command environment; before issuing any SDSF commands, using ISFCALLS**
2. **Issue an SDSF command to access a panel, using ISFEXEC**
3. **Issue an action character or "overtype" a column using ISFACT**

- **Data is returned in stem variables**
- **Use new special variables to control results**
  - These correspond to SDSF commands such as PREFIX and OWNER

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References

- Issue the REXXHELP command while using SDSF under ISPF
- See *SDSF Operation and Customization*: http://publibz.boulder.ibm.com/epubs/pdf/isf4cs70.pdf
- SDSF Web page, which will include examples for use with ISPF's MODEL command: http://www.ibm.com/servers/eserver/zseries/zos/sdsf/
- New Redbook!
  - Loaded with interesting examples and experiences
  - *Implementing REXX Support in SDSF* (SG24-7419-00)

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To display help on using REXX with SDSF, use a new REXXHELP command when running SDSF under ISPF.

The SDSF book, *SDSF Operation and Customization*, contains a chapter on using REXX with SDSF.

ISPF models for REXX, available for download from the SDSF Web page, allow you to work with fully annotated sample execs in ISPF Edit. (In edit, type MODEL on the command line.)

SDSF REXX Redbook - Topics
Chapter 1. Issuing a system command
Chapter 2. Copying SYSOUT to a PDS
Chapter 3. Bulk job update processor
Chapter 4. SDSF support for the COBOL language
Chapter 5. Searching for a message in SYSLOG
Chapter 6. Viewing SYSLOG
Chapter 7. Reviewing execution of a job
Chapter 8. Remote control from other systems
Chapter 9. JOB schedule and control
Chapter 10. SDSF data in graphics
Chapter 11. Extended uses

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zSeries Software Pricing Website

- **The zSeries Software Pricing Website is designed to help you understand IBM's software licensing/pricing terms and conditions.**
- **The site focuses on software pricing metrics:**
  - New Advanced Workload License (AWLC)
  - Advanced Entry Workload License (AEWLC)
  - Integrated Workload Pricing (IWP)
  - Workload License Charges (WLC)
  - zSeries Entry License Charges (zELC)
  - System z New Application License Charges (zNALC)
  - Entry Workload License Charges (EWLC) for z9 BC, z890, z800 customers
  - Select Application License Charges (SALC) – applies to MQ Series
  - PSLC
  - System z IPLA
  - SzLC (System z Lifecycle Charge) -- z/OS 1.8, z/OS 1.9, z/OS 1.10, z/OS 1.11
- **Tool downloads**
  - Sub-Capacity Planning Tool
  - Sub-Capacity Reporting Tool 20.2.0 – April 2012

http://www.ibm.com/servers/eserver/zseries/swprice/

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28 August 2012

Today, IBM announced three Technology Transition Offerings, consisting of Technology Update Pricing for Advanced Workload License Charges (AWLC) and two revised Transition Charges for Sysplexes programs, in support of the announcement of the IBM zEnterprise EC12 (zEC12) server. Technology Update Pricing for AWLC provides additional price performance on zEC12 servers compared to AWLC on older generations of servers. The enhancements to Transition Charges for Sysplexes provide additional price performance to a parallel sysplex which includes a zEC12 server but which is not yet made up entirely of zEC12 servers. More information on AWLC is available on the web.

April 10, 2012 - **(Version 20.2.0)**

- Updated the product name of one existing sub-capacity MLC product:
  - IMS V12 (5635-A03)
    Note: Since the IMS V12 Quality Partnership Program has ended, SCRT will no longer append "(QPP)" to the product name in the SCRT report for product 5635-A03.
- Updated the product name of one existing sub-capacity IPLA product:
  - Optim pureQuery Runtime for z/OS V2 (5655-V80)
- Added four new Execution-based sub-capacity IPLA products to SCRT product list:
  1. IBM Multi-site Workload Lifeline V1 (5655-U24)
  2. Optim pureQuery Runtime for z/OS V3 (5655-W92)
  3. IBM CPLEX Optimizer for z/OS V12 (5655-Y21)

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    4. WebSphere Message Broker for z/OS V8 (5697-P44)
- Made the following changes and enhancements to SCRT (see details in the SCRT Users Guide):
    - Enhanced SCRT to verify the format of the Customer_Number parameter value on the PARMS DD statement and to terminate SCRT processing when the format is incorrect
    - Changed the format for the identities of z/OS guest systems
- Added the following fixes to SCRT (since V20.1.0) (see details in the SCRT Users Guide):
    - Fix SCRT loop (S322 ABEND) when processing GSSP-eligible products
    - Fix SCRT S0C4 ABEND when using GSTRACE DD
    - Fix SCRT S0C7 ABEND when Excluding data from z/TPF LPARs which provide no SCRT89 records
    - Correctly process positive date/time offsets for GSSP products
    - Report IWP control statement for CPCs that do not support IWP
    - Correctly assign LPAR group membership when SMF data is split across multiple records
- Made the following enhancements to the documentation in the SCRT Users Guide:
    - Revised the recommendation for using the spreadsheet method to change the sub-capacity report file prior to uploading the file to LMS
    - Updated several topics to describe the level of double-byte character set (DBCS) support provided by SCRT and the sub-capacity reporting process
    - Clarified the differences between a machine replacement and a machine model upgrade
    - Added new SYSPRINT message explanations
- Customers who are affected should download the new SCRT V20.2.0 deliverable

Please see the SCRT Users Guide (PDF, 2.2MB) for information about all of these changes and more. Please see the "Summary of Changes" section.

October 26, 2011 - (Version 20.1.1)

- Corrects three problems with SCRT V20.1.0:
    1. SCRT loop (S322 ABEND) when processing GSSP-eligible products
    2. SCRT S0C4 ABEND when using GSTRACE DD
    3. SCRT S0C7 ABEND when Excluding data from z/TPF LPARs which provide no SCRT89 records
- The ONLY customers affected are the following:
    - z/OS customers who use products eligible for Getting Started Sub-capacity Pricing (GSSP)
    - z/TPF customers who attempt to Exclude data under certain conditions
- If you are z/OS customer without any GSSP-eligible products then you are NOT AFFECTED.
- If you are z/TPF customer who does not use the Exclude control statement then you are NOT AFFECTED.
- If you are a z/VSE customer then you are NOT AFFECTED.

Customers who are affected should download the new SCRT V20.1.1 deliverable

Advanced Workload License Charges (AWLC)

Advanced Workload License Charges (AWLC) is a monthly license pricing metric designed to support today's on demand business requirements. AWLC may be applied to IBM zEnterprise EC12 (zEC12) and IBM zEnterprise 196 (z196) servers running z/OS or z/TPF in z/Architecture (64-bit) mode when stand-alone or when in a Parallel Sysplex. IBM zEnterprise 114 (z114) servers may have AWLC when in a fully qualified Parallel Sysplex consisting entirely of zEnterprise servers.

AWLC enables customers to:

- Grow hardware capacity without necessarily increasing your software charges
- Pay for key software, such as DB2, CICS, IMS, WebSphere MQ, and z/OS with LPAR-level granularity
- Experience a low cost of incremental growth
- Manage software cost by managing workload utilization

Once a customer chooses to adopt AWLC, then neither PSLC nor Usage License Charges (ULC) will apply. There are two types of charges involved: AWLC, which vary based upon server size and/or utilization, and Flat Workload License Charges (FWLC), a flat charge per server. AWLC apply to products such as z/OS, DB2, IMS, CICS, WebSphere MQ, and Lotus Domino. FWLC apply to legacy products such as less current compilers and older MVS/VM/VSE utilities. Once AWLC is adopted, applicable AWLC and FWLC charges are applied

Advanced Entry Workload License Charges (AEWLC)

Advanced Entry Workload License Charges (AEWLC) is a monthly license pricing metric designed to support today's on demand business requirements. AEWLC may be applied to IBM zEnterprise 114 (z114) servers running z/OS, z/TPF, or z/VSE in z/Architecture (64-bit) mode. AEWLC enables customers to:

- Grow hardware capacity without necessarily increasing your software charges
- Pay for key software, such as z/OS, z/TPF, z/VSE, DB2, CICS, and WebSphere MQ with LPAR-level granularity
- Experience a low cost of incremental growth
- Manage software cost by managing workload utilization

AEWLC and TWLC on z114 Standalone Servers
z114 standalone customers will have AEWLC pricing. All sub-capacity eligible products will be priced using the AEWLC pricing metric. The remaining, non-sub-capacity eligible products will be priced using the Tiered EWLC (TWLC) price structure. The TWLC price structure, for non-subcapacity products, offers flat pricing based on server capacity using a tiered structure. The TWLC price structure is exclusive to the z114, z10 BC, z9 BC and z890 servers. Note: the smallest z114, capacity setting A01, is priced using zELC.

z114 Servers in a Qualified Parallel Sysplex
Customers operating a z114 in a qualified Parallel Sysplex may elect to have their server priced as a stand-alone machine (AEWLC and TWLC) or may elect aggregated PSLC or aggregated AWLC pricing, subject to applicable terms and conditions. If the customer selects aggregated pricing then AEWLC and TWLC price structures do not apply. While AEWLC is MSU-based, aggregation of MSUs is not permitted if AEWLC is selected.

Integrated Workload Pricing

IBM provides Integrated Workload Pricing (IWP) to enhance utilization reporting capabilities of systems running IBM z/OS®, which can improve the price/performance for eligible Monthly License Charge (MLC) programs running within the same logical partition (LPAR) as select defining programs. The IWP enhancements to the reporting capabilities in z/OS enable the IBM Sub-capacity Reporting Tool (SCRT) to calculate the general purpose processor time consumed

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by eligible defining programs and adjust the reported MSU values for eligible MLC programs running in the same LPAR.
The WebSphere® family of programs for z/OS can help you modernize and extend existing business applications to drive business agility. Significant performance and operational benefits can be achieved when WebSphere middleware is collocated with System z® MLC programs within the same LPAR instead of separate LPARs. However, collocating these programs can have the effect of increasing MLC software charges due to the incremental processing in the LPAR attributable to the running of WebSphere programs. IWP has the potential to adjust and significantly improve the software price performance for certain z/OS programs when they are running in a collocated LPAR with WebSphere IWP Defining Programs, compared to running the programs in a collocated LPAR without IWP.
IWP enhances IBM sub-capacity Advanced Workload License Charges (AWLC) described in the IBM sub-capacity pricing announcement for z/OS. For additional information, refer to Software Announcement 210-238, dated July 22, 2010.

Advanced Workload License Charge

Advanced Workload License Charges (AWLC) is a monthly license pricing metric designed to support today's on demand business requirements. AWLC may be applied to IBM zEnterprise 196 (z196) servers running z/OS or z/TPF in z/Architecture (64-bit) mode. AWLC enables customers to:

- Grow hardware capacity without necessarily increasing your software charges
- Pay for key software, such as DB2, CICS, IMS, WebSphere MQ, and z/OS with LPAR-level granularity
- Experience a low cost of incremental growth
- Manage software cost by managing workload utilization

Once a customer chooses to adopt AWLC, then neither PSLC nor Usage License Charges (ULC) will apply. There are two types of charges involved: AWLC, which vary based upon server size and/or utilization, and Flat Workload License Charges (FWLC), a flat charge per server. AWLC apply to products such as z/OS, DB2, IMS, CICS, WebSphere MQ, and Lotus Domino. FWLC apply to legacy products such as less current compilers and older MVS/VM/VSE utilities. Once AWLC is adopted, applicable AWLC and FWLC charges are applied.

Workload License Charge

Workload License Charges (WLC) is a monthly license pricing metric designed to support today's on demand business requirements. WLC may be applied to a z990, a z900 or a z800 (z800 must participate in a fully qualified Parallel Sysplex to be eligible for WLC) server running z/OS in z/Architecture (64-bit) mode. WLC enables customers to:

- Grow hardware capacity without necessarily increasing your software charges
- Pay for key software, such as DB2, CICS, IMS, MQSeries and z/OS with LPAR-level granularity
- Experience a low cost of incremental growth
- Manage software cost by managing workload utilization

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Once a customer chooses to adopt WLC, then neither PSLC or Usage License Charges (ULC) will apply. .WLC is broken into two types of charges: Variable WLC and Flat WLC. Variable WLC apply to products such as z/OS, DB2, IMS, CICS, MQSeries, System Automation, NetView and Domino. Flat WLC apply to legacy products such as less current compilers and older MVS/VM/VSE utilities. Once WLC is adopted, applicable VWLC and FWLC charges are applied.

Effective 1 July 2003, IBM is making the base charges for Variable Workload License Charges more granular, by reducing the base from 45 MSUs to 3 MSUs. Since the base charge is reduced to 3 MSUs, a Level 0 has also been introduced to cover the MSUs between 4 MSUs and 45 MSUs. The more granular base provides customers with a lower cost of entry for VWLC products, requiring a minimum of 3 MSUs rather than a minimum of 45 MSUs. Customers with workloads smaller than 45 MSUs may license as little as 3 MSUs of VWLC software.

zSeries Entry License Charge

zSeries Entry License Charge (zELC) is a new base pricing metric designed especially to support the new zSeries 800 server. IBM introduced zSeries Entry License Charge to deliver appropriate software price performance for a variety of z800 customer needs. Customers who are migrating from a Multiprise 3000 server into a small z800 may find price performance similar to Growth Opportunity License Charge. Customers who are migrating from an S/390 Enterprise Server to a larger z800 server may find price performance similar to Parallel Sysplex License Charge.

zSeries Entry License Charge is determined based on the particular z800 model (0A1, 0B1, 0C1, 001, 0A2, 002, 003, 004) where the software is licensed. zELC is only offered on z800 machines.

On 27 Apr 2006, IBM announced zSeries Entry License Charge (zELC) pricing for the smallest z9 BC server, z9 BC capacity setting A01.

Entry Workload License Charges (EWLC)

In support of an on demand operating environment, IBM is now announcing Entry Workload License Charges (EWLC) for z800 customers. EWLC enables qualifying z800 customers to pay for EWLC-eligible IBM software based on the utilization of the LPAR or LPARs where that product executes. This sub-capacity pricing provides the potential to lower software charges on the z800. Qualifications include a z800 server with z/OS or z/OS.e licensed and operating in z/Architecture (64-bit) mode.

Select Application License Charge (SALC)

Select Application License Charges (SALC) is available solely for MQSeries and only on machines with either Workload License Charges or Entry Workload License Charges. SALC is an excellent price/performance option on very-low utilization installations of MQSeries. SALC is available for either Sub-Capacity or Full Capacity WLC/EWLC machines. For an MQSeries installation with the SALC pricing metric, software charges are based upon the utilization of MQSeries.

zNALC

System z New Application License Charges (zNALC) offers a reduced price for the z/OS operating system on LPARs where you are running a qualified 'new workload' application

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(Qualified Application) such as Java language business applications running under WebSphere Application Server, Domino, SAP, PeopleSoft, and Siebel.

The zNALC offering extends the IBM commitment to sub-capacity pricing, allowing customers with a Qualified Application to obtain a reduced price for z/OS where charges are based on the size of the LPAR(s) executing a Qualified Application, assuming all applicable terms and conditions are met.

z/OS with zNALC provides many benefits over previous 'new workload' pricing offers. It provides a strategic pricing model available on the full range of System z servers for simplified application planning and deployment. zNALC provides similar pricing benefits to both z/OS.e pricing and z/OS with NALC pricing. zNALC allows for aggregation across a qualified Parallel Sysplex, which can provide a lower cost for incremental growth across 'new workloads' that span a Parallel Sysplex. zNALC is the IBM strategy, replacing the z/OS.e operating system and the NALC pricing metric.

System z Lifecycle Extension Charge (zLEC)

The System z Lifecycle Extension Charge (zLEC) metric is used for pricing of the IBM Lifecycle Extension for z/OS V1.7. While zLEC is not actually a Monthly License Charge (MLC) metric which is used for product pricing, it is a support charge for z/OS which is an MLC product.
IBM Lifecycle Extension for z/OS V1.7 is a fee-based corrective service offering for users who have not completed their migration from z/OS V1.7 to either z/OS V1.8 or V1.9. For more information about IBM Lifecycle Extension for z/OS V1.7 see the announcement.
IBM Lifecycle Extension for z/OS 1.7 is priced based on the total permanent MSU capacity of each server running z/OS V1.7 using the following zLEC tier structure:

zLEC Structure

Tier	Machine Capacity
Tier A	4 – 11 MSUs
Tier B	12 – 21 MSUs
Tier C	22 – 43 MSUs
Tier D	44 – 71 MSUs
Tier E	72 – 128 MSUs
Tier F	129 – 214 MSUs
Tier G	215 – 357 MSUs
Tier H	358 – 714 MSUs
Tier I	715+ MSUs

System z Lifecycle Charge (SzLC)

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The IBM System z Lifecycle Charge (SzLC) metric is used for pricing of the IBM Lifecycle Extension for z/OS V1.8. While SzLC is not actually a Monthly License Charge (MLC) metric which is used for product pricing, it is a support charge for z/OS which is an MLC product.
IBM Lifecycle Extension for z/OS V1.8 is a fee-based corrective service offering for users who have not completed their migration from z/OS V1.8 to either z/OS V1.9 or V1.10. For more information about Lifecycle Extension for z/OS V1.8 see the announcement.
System z Lifecycle Charges are based upon the following MSU tier structure. The MSU tier that applies is determined by the total permanent MSU capacity of the server for which the Lifecycle Extension is ordered. The SzLC tier for a qualified Parallel Sysplex will be based on the sum of the total permanent MSUs of the servers in the Parallel Sysplex running z/OS V1.8.

SzLC Structure

Tier	Machine Capacity
Tier A	4 – 11 MSUs
Tier B	12 – 21 MSUs
Tier C	22 – 43 MSUs
Tier D	44 – 71 MSUs
Tier E	72 – 128 MSUs
Tier F	129 – 214 MSUs
Tier G	215 – 357 MSUs
Tier H	358 – 714 MSUs
Tier I	715 – 1111 MSUs
Tier J	1112 – 1528 MSUs
Tier K	1529 – 1944 MSUs
Tier L	1945+ MSUs

WLC Tool
The WLC tool allows you to determine the MSU capacity of your current LPARs.

SCRT Tool
The Sub-Capacity Reporting Tool allows you to report your sub-capacity license requirements for qualifying zSeries mainframes with Workload License Charges.

Value Unit Converter Tool

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The Value Unit Converter Tool converts between MSUs and Value Units. Value Units are the unit of measure for licensing select application development and data management tools on the mainframe.

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Coupling Facility Control Code (CFCC) levels

http://www-03.ibm.com/systems/z/advantages/pso/cftable.html

- **To support migration from one coupling facility level to the next, you can run different levels of the coupling facility concurrently as long as the coupling facility LPs are running on different CPCs.**
  - CF LPs running on the same CPC share the same coupling facility control code EC level.
  - A single CPC *cannot* support multiple coupling facility levels.
- **When migrating coupling facility levels, lock, list and cache structure sizes might need to be increased to support new function**
- **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 and takes into account the amount of space needed for the current CFCC levels.**

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The following table summarizes CPC support for the different coupling facility code levels.

CPC Models	Coupling facility code level Level 17	Level 16	Level 15	Level 14	Level 13	Level 12
2817 z196	EC N26886 (Ver 2.11.0) MCL 001	NA	NA	NA	NA	NA
2098 z10™ BC	NA	EC N24403 (Ver 2.10.2) 006	EC F85900 (Ver 2.10.0) MCL 006	NA	NA	NA
2097 z10 EC	NA	EC N24403 (Ver 2.10.2) 006	EC F85900 (Ver 2.10.0) MCL 006	NA	NA	NA
2096 z9® BC	NA	NA	EC G40953 (Ver 2.9.2) MCL 014	EC J99670 (Ver 2.9.1) MCL 008	NA	NA
2094 z9 EC	NA	NA	EC G40953 (Ver 2.9.2) MCL 014	EC J99670 (ver 2.9.0) MCL 008	NA	NA
2084 z990	NA	NA	NA	EC J13481 (Ver 1.8.2) MCL 026	EC J13481 (Ver 1.8.2) MCL 003	EC J12555 (Ver 1.8.0) MCL 007
2086 z890	NA	NA	NA	EC J13481 (Ver 1.8.2) MCL 026	EC J13481 (Ver 1.8.2) MCL 003	NA

Notes:
1. The EC number refers to the SE D partition EC number.
2. All MCLs cited in the table are current as of the publication date of this edition and can be superseded by later MCLs. For the latest EC and MCL information, use IBM Service Link to view the appropriate PSP bucket subset ID for hardware and software maintenance information.

For a list of the software levels exploiting the new function and levels coexisting with each CF level, see the Summary of CFLEVEL Functions in the latest copy of the "PR/SM Planning Guide" on IBM ResourceLink, and the "z/OS MVS Setting Up a Sysplex" reference guide.

Level 15 Coupling Facility
A level 15 coupling facility (CFLEVEL=15) provides the following enhancements:
Increasing the allowable tasks in the Coupling Facility (CF) from 48 to 112.
RMF Measurement Improvements
Note: When migrating CF levels, lock, list, and cache structure sizes may need to be increased to support the new function. This adjustment can impact the system when it allocates structures or copies structures from one coupling facility to another at different CF levels. The coupling

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facility structure sizer tool is designed to size structures for you, and takes into account the amount of space needed for the current CFCC levels.

Level 16 Coupling Facility

A level 16 coupling facility (CFLEVEL=16) provides the following enhancements:

- Improved service time for CF duplexing
- List notification improvements for IMS and MQ shared
- Increasing the structure increment size from 512 KB to 1 MB

Level 17 Coupling Facility

A level 17 coupling facility (CFLEVEL=17) provides the following enhancements:

- Up to 2047 structures
- Up to 247 connectors to a lock structure, 127 connectors to a serialized list structure, and 255 connectors to an unserialized list structure. Previously there was a maximum of 32 connectors
- Non-disruptive dumps of CF data

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BPXMTEXT

- **Utility to interpret z/OS UNIX errnojr values**
- **Located in data set SYS1.SBPXEXEC**
- **Can be invoked via z/OS UNIX Shell, TSO/E, or IPCS**
- **Additional information in z/*OS UNIX System Services Messages and Codes* (SA22-7807)**
- **Unrelated: INFO APAR II08038 contains general guidelines for collecting documentation in the z/OS UNIX world**

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The BPXMTEXT utility can quickly interpret z/OS UNIX errnojr values. Find BPXMTEXT in SYS1.SBPXEXEC and copy it to SYSEXEC or SYSPROC to use it. You can invoke it from TSO/E, IPCS, or the z/OS UNIX shell. In z/OS V1R8, you can use BPXMTEXT to interpret errnojr values from zFS (reason code qualifier=EFxx) and TCP/IP (reason code qualifier=7xxx). In z/OS V1R9, you can also interpret errnojr values from the C/C++ run-time library (reason code qualifier=Cxxx). For more details about interpreting errno and errnojr values, see z/*OS UNIX System Services Messages and Codes*, SA22-7807.

Message prefixes
z/OS UNIX messages have the prefix BPX and are described in z/*OS MVS System Messages, Vol 3 (ASB-BPX)*, SA22-7633. z/OS UNIX shell and utilities messages are prefixed by either FSUM or FOM, and are described in z/*OS UNIX System Services Messages and Codes*, SA22-7807. Alternatively, you can use LookAt to locate the explanation for a message at ibm.com/**systems/z/os/zos/bkserv/lookat**.

Abends
BPXMTEXT cannot interpret z/OS UNIX abend reason codes, but you can find the explanations for abends and their associated reason codes in z/*OS MVS System Codes*, SA22-7626. Here are two abend codes that you might encounter:

- ABENDEC6 during processing of a z/OS UNIX syscall request (the reason code provides more details about the specific error)
- ABEND422 with a reason code of *xxxx*01zz (note the 01 in the third byte) is also z/OS UNIX specific.

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Syntax Checking for CEEPRMxx

- **Syntax checking of new and/or changed CEEPRMxx parmlib member from batch or TSO**
  - Use new CEEPRMCC program
    - The CEEPRMCC program reads and parses the CEEPRMxx member for syntax errors.
    - The CEEPRMCC program displays the run-time options report if no errors are found.
  - Can specify concatenated members
- **Available in z/OS 1.10 and is not rolled back**
- **Documentation is in** *z/OS Language Environment Customization* book

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Syntax checking tool for CEEPRMxx parmlib members
Language Environment is enhanced to provide a tool for syntax checking of one or more CEEPRMxx members of PARMLIB before attempting to activate them. CEEPRMxx members can be syntactically checked for errors under z/OS batch or TSO/E. Before calling the syntax checker, a CEEPRMxx member must be created and placed in a PDS or PDSE.

Note: IBM Statement of Direction – February 2010 – 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.

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WLM Tools

- **WLM Service Definition Editor**
  - This tool helps to maintain WLM service definition. It offers different views to analyze and edit WLM service definitions
- **WLM Service Definition Formatter**
  - This tool displays WLM service definition.
- **WLM Work Queue and OPT Parameter Viewing Tools**
  - WLMQUE
    - ISPF based tool to display application environments currently being used on a z/OS system
  - WLMOPT
    - Displays current IEAOPT settings
    - Identifies currently active OPT member
- **LPAR Design Tool**
  - Assists in planning a logical partition layout of your CECs
  - Supports hiperdispatch and offload processors

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http://www-304.ibm.com/jct03004c/servers/eserver/zseries/zos/wlm/tools/

WLM Service Definition Editor
The WLM Service Definition Editor is a workstation-based tool designed to maintain your WLM service definition. It integrates a FTP download/upload mechanism allowing transfer of WLM service definitions in ISPF format between host and workstation. The WLM Service Definition Editor provides different views to analyze, edit, and print workload management definitions.

WLM Service Definition Formatter
The Service Definition Formatter tool assists in displaying your WLM service definition. To use the tool download the WLM service definition to a workstation and load it into the spreadsheet. Then use the various worksheets to display parts of your service definition to get a better overview of the workload management definitions.

The tool is *not* a service definition editor. All modifications to the WLM service definition must be entered through the WLM Administrative Application.

WLM Work Queue and OPT Parameter Viewing Tools
WLMQUE, the WLM Work Queue Viewer is an ISPF based tool designed to display the application environments currently being used on your z/OS system. This can be helpful for using Websphere Application Servers when specifying minimum and maximum limits for the number of server address spaces to be started. The number of started and active server address spaces can be viewed, and the service classes being used as work queues for the application environments with the help of the REXX command list. The tool can be used for any kind of application environment from WebSphere, DB2 or user specified types and applications.

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The WLMOPT, the WLM OPT parameter viewer assists in displaying the current OPT settings of the z/OS system. The tools helps to quickly obatin information about the currently active OPT member, when it was installed and the settings of all OPT parameters.

WLM LPAR Design Tool

The LPAR Design tool assists you in planning the LPAR layout of your Central Processor Complexes. The tool allows you to specify all partitions, the number of logical processors and their weights. It then calculates the MIPS capacity (*) for the partition. If you run your system in Hiperdispatch mode it also assist you in displaying the number of high, medium and low processors as definition. This will help you to easily identify definition errors. In addition offload processors like zIIPs and zAAPs are also supported.

zServers

Software Summary
Alert Notification
Power Estimation Tool (z10)
z/OS ICSF Cross reference

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z/OS Software Positioning for a zEC12 Server

Summary: z/OS Software Support for IBM zEC12 Servers

Release	zEC12 PSP Bucket – 2827DEVICE 2827/z/OS																		
	Base Support								Exploitation Support										
	Base zEC12 Support	OSA-Express4S (Gbe LX and SR, 1000BASE-T, 10 Gbe LR and SR)	FICON Express8S (CHPID FC)	IFB Coupling Links	Crypto Express4S Toleration[2]	High Performance FICON (zHPF)	CPU Measurement Facility (HIS)	GRS FICON CTC Toleration	New z/Architecture Instructions	CF Level 18	Crypto Express4S Exploitation[3]	XL C/C++ ARCH(10)/TUNE(10)	IBM zAware (z/OS Monitoring)	Java exploitation of the Transactional Execution Facility	Flash Express (Storage Class Memory - SCM)	Pageable Large Pages	Dynamic reconfiguration support for Flash Express[4]	2 GB Large Page[4]	Optional PLPA/ COMMON page data set support[4]
z/OS V1.10[1]	P	P	P	P	W P	P	P	P	P	N	N	N	N	N	N	N	N	N	N
z/OS V1.11[1]	P	P	P	P	W P	P	P	P	P	N	N	N	N	N	N	N	N	N	N
z/OS V1.12	P	B	B	B	W P	P	P	P	P	P	W	N	N	N	N	N	N	N	N
z/OS V1.13	P	B	B	B	W P	P	P	P	P	P	W	P	P	P	W P	W P	W P	W P	W P
z/OS V2.1[4,5]	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B

[1] – The Lifecycle Extension for z/OS V1.10 (5656-A01) is required to acquire toleration PTFs and for support. The Lifecycle Extension for z/OS V1.11 (5657-A01) is required for support after September 30, 2012
[2] –A Crypto Web Deliverable (HCR7770 or higher) AND a PTF is required for toleration. Support differs depending on the Crypto Web Deliverable installed
[3] – Crypto Exploitation differs based on the Crypto Web Deliverable installed
[4] - Planned target 1Q2013. All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice.
[5] - z/OS V2.1 announced as an IBM Statement of Direction

B – FMID shipped in Base product P – PTF is required W – FMID shipped in a Web Deliverable

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zEC12: Software requirements differ depending on z/OS release and functions exploited. Support is provided via a combination of web deliverables and PTFs. The zEC12 required PTFs are documented in zEC12 PSP Bucket:

Upgrade = 2827DEVICE, Subset = 2827/ZOS

PTFs are broken out by z/OS release, identifying required and exploitation which can be identified by SMP/E commands (REPORT MISSINGFIX, LIST, or APPLY)

Fix Categories:

- **IBM.Device.Server.zEC12-2827**
- **IBM.Device.Server.zEC12-2827.Exploitation**
- **IBM.Device.Server.zEC12-2827.ParallelSysplexInfiniBandCoupling**
- **IBM.Device.Server.zEC12-2827.ServerTimeProtocol**
- **IBM.Device.Server.zEC12-2827.zHighPerformanceFICON**
- **IBM.Device.Server.zEC12-2827.UnifiedResourceManager**

zBX Required PTFs are documented in zBX PSP Bucket:

Upgrade = 2458DEVICE, Subset = 2458/ZOS

- Broken out by z/OS release, identifying required and exploitation
- Can be identified by SMP/E commands (REPORT MISSINGFIX, LIST, or APPLY)
  - Fix Categories: IBM.Device.Server.zBX-2458

Summary - z/OS Support for IBM zEnterprise (z196 or z114)

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z196 PSP Bucket – 2817DEVICE 2817/ZOS and z114 PSP Bucket – 2818DEVICE 2818/ZOS

Release	Base Support																			Exploitation Support														
	Base z196 and z114 Support	OSA-Express3 (Gbe LX and SR, 1000BASE-T, 10 Gbe LR and SR)	FICON Express8 (CHPID FC)	PCIe-based I/O Infrastructure – FICON Express8S and OSA Express4S	New z/Architecture Instructions[3]	IB Coupling Links CHPIDs	Up to 128 Coupling Link CHPIDs	HiperDispatch Cache/Affinity Changes	IFAURP Reporting	>64 CPs per Server[5]	Crypto Toleration[4]	OSA-Express3 CHPID OSD max ports	RMF Postprocessor Crypto Activity report - 4096-bit[5]	CPU Measurement Facility (HS)	> 64 CPs per LPAR[5]	Three Subchannel Sets[5]	HiperDispatch Serviceability	LE High Register Resolution	Up to 32 HiperSockets	Power Save Mode[5]	CF Level 17	Removal of 64K byte data transfer limit for zHPF multitrack operations	Crypto Exploitation[6]	IBM zEnterprise BladeCenter Extension (zBX) support	Unified Resource Manager (zManager)	IPL for alternate subchannel set	zHPF Performance improvements for FICON Express 8S	Nondisruptive CF Dump	zDAC Support	New OSA Display Command	OSA-Express3 Inbound Workload queueing (IWQ)	XL C/C++ ARCH(9) Tune(9)	IWQ for Enterprise Extender	OSA-Express4S checksum offload for IPv6 and LPAR to LPAR traffic	Large Send for IPv6	HiperSockets optimization for intraensemble data networks[7]
z/OS V1.8[1]	P	P	P	P	P	P	P	B P	P	P	P	P	P	P	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
z/OS V1.9[1]	P	P	P	P	P	P	P	B P	P	P	P	P	P	P	N	N	N	N	N	P-[4]	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
z/OS V1.10[2]	P	P	P	B	P	P	P	P	P	P	P	B	P	P	P	P	P[1]	P	P	P	P	P	W P	P	P	N	N	N	N	N	N	N	N	N
z/OS V1.11	P	P	P	B	P	P	P	P	P	B	P	B	P	P	B	P	P[1]	P	P	P	P	P	W P	P	P	P	P	N	N	N	N	N	N	N
z/OS V1.12	P	B P	B	B	B P	B	B P	B	B	B	P	B	B	B	B	B	B	B	B	B	B P	B	W P	B	B	P	P	B	B	B	B	B	N	N	N	N
z/OS V1.13	B P	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	W P	B	B	B P	B P	B	B	B	B	B P	B P	B P	B P

[1] – The Lifecycle Extension for z/OS V1.8 or z/OS V1.9 is required for support
[2] - The IBM Lifecycle Extension for z/OS V1.10 will be required after 9/30/2011 for support
[3] – Does not include XL C/C++ support for ARCH(9) and TUNE(9) Options
[4] – A Crypto Web Deliverable is NOT required, but toleration PTF is needed even if a web deliverable is installed. Support differs depending on the Crypto Web Deliverable installed
[5] – Function available on z196 only
[6] – Crypto Exploitation differs based on the Crypto Web Deliverable installed
[7] – Statement of Direction. All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice.

B – FMID in Base product
W – FMIDs shipped in a Web Deliverable
P – PTFs are required, P[1] – Support differs by release
P[2]- PTF required for toleration, N – Not Supported

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z196: Software requirements differ depending on z/OS release and functions exploited. Support is provided via a combination of web deliverables and PTFs. The z196 required PTFs are documented in z196 PSP Bucket: **Upgrade = 2817DEVICE, Subset = 2817/ZOS**

PTFs are broken out by z/OS release, identifying required and exploitation which can be identified by SMP/E commands (REPORT MISSINGFIX, LIST, or APPLY)

Fix Categories:

- IBM.Device.Server.z196-2817
- IBM.Device.Server.z196-2817.ParallelSysplexInfiniBandCoupling
- IBM.Device.Server.z196-2817.ServerTimeProtocol
- IBM.Device.Server.z196-2817.zHighPerformanceFICON
- IBM.Device.Server.z196-2817.UnifiedResourceManager

zBX Required PTFs are documented in z196 PSP Bucket: **Upgrade = 2458DEVICE, Subset = 2458/ZOS** and are broken out by z/OS release, identifying required and exploitation. The PTFs can be identified by SMP/E commands (REPORT MISSINGFIX, LIST, or APPLY)

Fix Categories:

- IBM.Device.Server.zBX-2458
- IBM.Device.Server.zBX-2458.ISAOPT

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z114: Software requirements differ depending on z/OS release and functions exploited. Support is provided via a combination of web deliverables and PTFs. All PTFs in the z196 PSP Bucket are required PLUS the z114 required PTFs are documented in z114 PSP Bucket: **Upgrade = 2818DEVICE, Subset = 2818/ZOS**
PTFs are broken out by z/OS release, identifying required and exploitation which can be identified by SMP/E commands (REPORT MISSINGFIX, LIST, or APPLY)
Fix Categories:

- IBM.Device.Server.z114-2818
- IBM.Device.Server.z114-2818.ParallelSysplexInfiniBandCoupling
- IBM.Device.Server.z114-2818.ServerTimeProtocol
- IBM.Device.Server.z114-2818.zHighPerformanceFICON
- IBM.Device.Server.z114-2818.UnifiedResourceManager

zBX Required PTFs are documented in z196 PSP Bucket: **Upgrade = 2458DEVICE, Subset = 2458/ZOS** and are broken out by z/OS release, identifying required and exploitation. The PTFs can be identified by SMP/E commands (REPORT MISSINGFIX, LIST, or APPLY)
Fix Categories:

- IBM.Device.Server.zBX-2458
- IBM.Device.Server.zBX-2458.ISAOPT

Machine Alerts are notifications of problems that may affect your zSeries server's operation.

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Hardware Alerts

- **Available from ResourceLink**
- **Select Fixes – left navigation panel**
  - Alerts
    - Machine alerts
    - Hiper alerts
    - Product support alerts
    - Red alerts (Software)
- **Ability to Subscribe / unsubscribe**

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Hiper Alerts are notifications of highly pervasive problems that may affect your zSeries server's microcode operation. These alerts are important because without the HIPER MCL installed the processor may encounter an unscheduled outage.

This service provides technical information for IT professionals who maintain zSeries servers. As these support bulletins are released, subscribers receive email containing links to the bulletins.

Red Alerts for the past year are listed.
This service is a companion to the Alert services for zSeries offering, which provides PE and HIPER notifications.

You can also use the Enhanced HOLDDATA for simplified identification and management of PEs and HIPERs.

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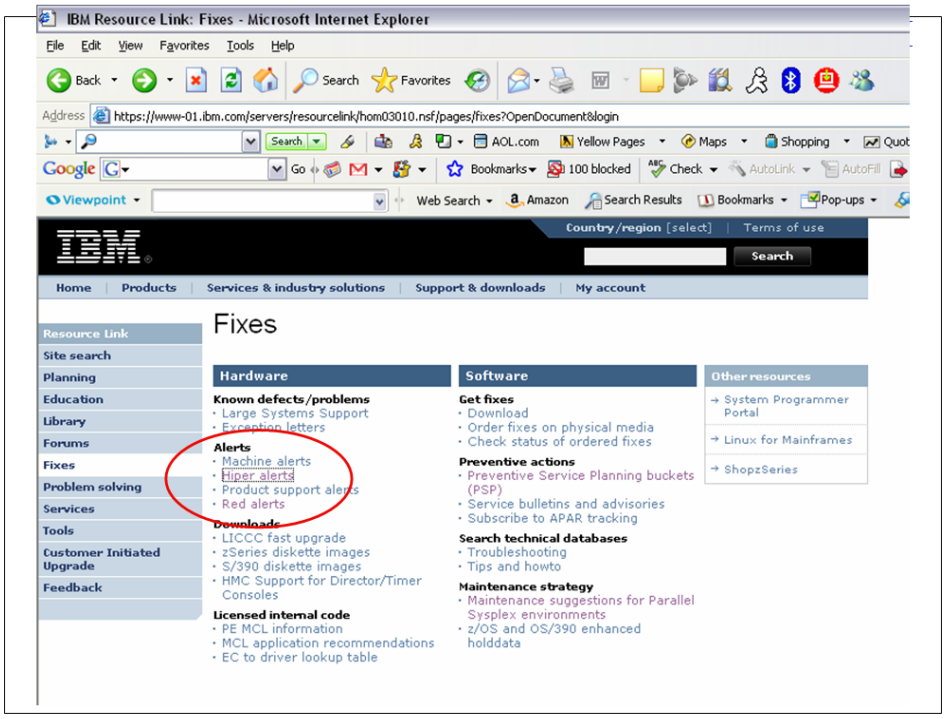

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z/OS ICSF Version - FMID XREF

FMID	External Name	Support Highlights	Applicable z/OS Releases*	Availability	Planned EoS	Supported Servers
HCR770B*	z990 and z890 Enhancements to Cryptographic Support *	Operational Key Entry; CSFIQF API; z890/z990 PKE/PKD Enhancements; DUKPT; EMV 2000 Support	OS/390 2.10; z/OS 1.2; z/OS 1.3; z/OS 1.4; z/OS 1.5; z/OS 1.6	May 2004	Sep 2007	G5; G6; z800; z900; z890; z990; z9
HCR7750*	Cryptographic Support for z/OS V1R7-z/OS V1R9 and z/OS.e V1R7-V1R8 *	Support ISO Format 3 PIN Blocks and RSA Keys up to 4096-bits; Enhanced TKE Auditing Support; New Random Number Generate Long API; Enhancements to CPACF; CEX2 Dynamic Add; Add support for AES-192 & AES-256, SHA-512;	z/OS 1.7; z/OS 1.8; z/OS 1.9	Nov 2007	Sep 2011	z800; z900; z890; z990; z9; z10**, z196**
	z/OS 1.10		z/OS 1.10	Sep 2008		
HCR7751*	Cryptographic Support for z/OS V1R8-z/OS V1R10 and z/OS.e V1R8	Support for 13-Digit through 19-Digit PAN data; New Crypto Query Service; Keystore Policy; Secure Key AES; TKE 5.3	z/OS 1.8; z/OS 1.9; z/OS 1.10	Nov 2008	Sep 2012	z800; z900; z890; z990; z9; z10**, z196**
	z/OS 1.11		z/OS 1.11	Sep 2009		
HCR7770	Cryptographic Support for z/OS V1R9-V1R11	Protected Key CPACF; Crypto Express3; Extended PKCS #11 Support; Elliptic Curve Cryptography (ECC) Support	z/OS 1.9; z/OS 1.10; z/OS 1.11	Nov 2009	Sep 2013	z800; z900; z890; z990; z9; z10, z196**
	z/OS 1.12		z/OS 1.12	Sep 2010		
HCR7780	Cryptographic Support for z/OS V1R10-V1R12	z196 Support (MSA-4 Instructions); CCA Elliptic Curve (ECDSA, ECDH); ANSI X9.8 & ANSI X9.24 Enhancements; HMAC (with OA33260); TKE 7.0; 64-bit support for all APIs; Enhance logging for PCI Audit; CKDS constraint relief	z/OS 1.10; z/OS 1.11; z/OS 1.12	Sep 2010	Sep 2014	z800#; z900#; z890; z990; z9; z10; z196 ; z114 #Variable Length CKDS with OA33260 is not supported on z800 or z900
	z/OS 1.13		z/OS 1.13	Sep 2011		
HCR7790	Cryptographic Support for z/OS V1R11-V1R13	Expanded CCA key support for AES algorithm; Enhanced ANSI TR-31 Interoperable secure key exchange; PIN block decimalization table protection; PKA RSA OAEP with SHA-256 algorithm; Additional ECC functions; TKE 7.1	z/OS 1.11; z/OS 1.12; z/OS 1.13	Sep 2011	Sep 2015	z800#; z900#; z890; z990; z9; z10; z196 ; z114 #Variable Length CKDS with OA33260 is not supported on z800 or z900

Pink => Older version, but still available for download
Orange => Web download, or z/OS release no longer available
Yellow => planned
Green => Version shipped with current z/OS
Green => Most current version, available via web download

*Available for download but provided without service
**Older versions of ICSF may need toleration maintenance installed to support newer hardware

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Available crypto web downloads at:

http://www.ibm.com/servers/eserver/zseries/zos/downloads/

Cryptographic Support for z/OS V1R11-V1R13

This download provides support for new encryption functions in the IBM zEnterprise 114 and the enhanced (GA2) level of the IBM System z196. This includes support for ANSI TR-31, X9.8 PIN Security, PKA RSA OAEP w/SHA 256, ECC Support Phase 2, Dynamic RSA MK, AES Key Type Support, 4096 RSA FP, Dynamic CKDS Administration

Cryptographic Support for z/OS V1R10-V1R12

This download provides support for new encryption functions in the IBM System z196. This includes support for enhanced z196 CPACF support, CCA ECC, CKDS Constraint Relief, AP Interrupts, 64 Bit, CBC Key Wrap, PCI Audit, x9.8 Pin.

Cryptographic Support for z/OS V1R9-V1R11

This download provides support for new encryption functions in the IBM System z10 EC and BC. This support includes new support for the new Cryptographic Express3 Coprocesser (CEX3C) and new Protected Key CPACF Support. Additional software support includes enhanced PKCS#11 support and ECC Support.

A program directory is available.

Cryptographic Support for z/OS V1R7-V1R9 and z/OS.e V1R7-V1R8

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This download provides support for new encryption functions in the IBM System z9 EC and z9 BC. This support includes ISO-3 PIN block support, support for larger RSA keys, long random number support, and enhanced support for TKE auditing. This download is meant for customers who need Cryptographic Support and are running z/OS V1R6 or z/OS.e V1R6.

This download is installable on V1R6, V1R7 and V1R8, but not supported. Customers running z/OS V1R9 or later should install the Cryptographic Support for z/OS V1R9-V1R11 Web deliverable.

A program directory is available.

ServerPac

ServerPac: ServerPac is a software package (available free of charge with your z/OS and OS/390 license) that creates or replaces a z/OS, OS/390, z/OS.e, or MVS system.

ServerPac is the only entitled system-replacement deliverable for OS/390 or z/OS. ServerPac is installed with the dialog that is currently used to install products and service in the CustomPac family.

To actually install your ServerPac, you will use the CustomPac Dialog which will allow you to tailor the default ServerPac configuration to match your own configuration. The dialog will generate a customized installation jobstream based on your tailored configuration.

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To plan and order your ServerPac over the Web use ShopzSeries. Its capabilities include the ability to submit your existing installed inventory to the tool, and it will analyze this to prefill the checklist. It also automates processing of orders that do not require license changes. Orders that include new or changed licenses will be routed to the IBM Sales Center.

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ServerPac

- **ServerPac checklist updated monthly**
- **Numerous enhancements over several z/OS releases**
  - **Most recent:**
    - DVD support
    - Default file system type is zFS
    - Default volume is 3390-9
    - SMP/E archive segmentation used for Internet delivery
    - Tivoli monitoring products can be ordered w/o z/OS
- **Package Version Number (cover of Install Your Order)**
  - identifies ServerPac level
  - correlation to ServerPac PSP entries
- **Internet Delivery of ServerPac**
  - Must order via ShopzSeries
  - Requires SMP/E 3.3 or higher
- **Frequently Asked Questions (FAQ)**
  - On the z/OS Support web site
  - http://www-03.ibm.com/systems/z/resources/faq/
    - ServerPac FAQs located in *Software and Solutions* section
- **Installation documents provided in PDF format**

See WSC FLASH10780@www.ibm.com/support/techdocs

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z/OS ServerPac R13 Enhancements:

- Improved handling for user-supplied installation jobs by preserving their placement in the list of jobs generated by the CustomPac Installation Dialog.
- You can now merge IBM data sets into target user-defined data sets. They can be used as target data set to merge eligible IBM component data sets. However, user-defined data sets are not eligible for merge component data sets.
- **Data Set Origin** (IBM or User-Defined) is a new attribute off of Modify System Layout "View and change data sets by selected attributes".
- Support for WebSphere products that use IBM Installation Manager, and for additional z/OSMF plug-ins.
- Barcoded labels on 3590 and 3592 tape cartridges designed to enable them to be used in IBM Automated Tape Libraries (ATLs) without first having to label them locally.

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- Program Directories and *ServerPac: Installing Your Order* in Adobe PDF format on DVD for orders on tape, so they can be read immediately from an optical drive on a workstation without the need to download them from z/OS data sets after the RECEIVE job has been run.

z/OS ServerPac R12 Enhancements:

- DVD delivery support for product offerings.
- Allows SDSF and JES SMP/E zones to be merged, without having to merge either into the z/OS BCP zone.
- Propagation of your zone names into the mlq of the SMP/E CSI data set names in Modify System Layout.
- A number of jobs, which are no longer needed, are removed.
- Several z/OSMF setup improvements have been made, including new tasks for z/OSMF applications new in z/OSMF V1.12

z/OS ServerPac R11 Enhancements:

- Default file system type is zFS
- Default volume is 3390-9
- SMP/E archive segmentation used for Internet Delivery
- Tivoli monitoring products can be ordered without z/OS

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ServerPac

- **Hints**
  - Save your configuration - doing so will carry forward data set names, merges, volume assignments, space changes, etc.
  - Use recommended System Layout option
    - will tell you quickly how much DASD is required to install the ServerPac
    - use the NEW option will tell you how much free space each volume will have
  - Use PARMLIB concatenation
  - Do things in order in Modify System Layout
  - Work with groups of data sets
  - Use OFILE command to save lists of data sets, volumes they reside on, plus more
  - Pick good qualifiers for data set names
  - Set secondary space to zero for several data sets
  - Turn PANELID on
  - ISPF data sets names - only specify the names of SISP* allowed to your TSO session
  - Save the configuration before you are finished
    - take a checkpoint
  - Data entry fields are always RED
  - Reserve space with Recommended System Layout
  - Use CH PVOL command to create new volumes
  - Pick unique zone names
  - Combine installation jobs
  - Run GENSKEL

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Starting with z/OS V1R2, there is a new variable called &PRODLVL. This variable is in the form: UU.GF.FF, where UU is the upgrade number, G is zero before GA and one after GA, and F.FF is the three-digit fix pack number. This variable will be printed on the cover of IYO, where it will be called the "Package Version." Example: 14.10.42, which represents Upgrade 14, which is GA, and for which the latest fix pack number is 42 or so.

Starting with z/OS V1R2, each GA PSP entry describing a problem that is fixed by a fix pack (or on a date that corresponds to a fix pack) should contain the Package Versions to which the entry applies. This information can be in the PSP entry when it is first created, or added later once the fixing fix pack is known. This way, customers can quickly determine which PSP entries are applicable to their orders and which can be ignored because the problems they described were fixed before their packages were built.

Hints:

ServerPac tip #1: Saved configurations are your friends.
Remember all the work you did the last time you installed a ServerPac order? Don't do it over! Use a saved configuration from your last order when you create the configuration for your new order. Doing so will carry forward the same data set names, merges, volume assignments, space changes you made, and so on. If you did not save the configuration the last time you installed an order, it's not too late. Just go back into the old order and save it. Then use it to create the new configuration. (Worried that you won't know what's new? Look at the New Data Set selection in Modify System Layout's View and Change option.)

ServerPac tip # 2: Use the Recommended System Layout option (even if you don't use the recommended system layout).
The Recommended System Layout Option will quickly tell you how much DASD you need to install your order. If you use the NEW option, it will also tell you how much free space each volume in your saved layout will have with the new order's data set sizes, and whether some volumes will become over allocated. To do this without changing anything else, just enter and exit the Variables and Zones options (don't bother changing anything), select Modify System Layout, use the Recommended System Layout option to get the information you need, and then re-create the configuration.

ServerPac tip #3: Use parmlib concatenation.
A ServerPac order includes up to three different parmlib data sets. Using them the right way can save you work. In particular, you should concatenate the SMP/E-managed z/OS parmlib and place it on a target volume so you don't have to remember to copy the release specific members to your production systems. (These are the xxxIPCSx, BLSCxxxx, CNLxxxxx, and default CTIxxxxx members, which you probably use unchanged.) After this is set up, you will never be able to forget to copy the members during migration again.

ServerPac tip #4: Do things the easy way in Modify System Layout.
To avoid doing things over, do things in this order (just skip any you don't plan to do):
1. Merge data sets
2. Change data set space
3. Specify Reserved Space on volumes
4. Specify Existing Data for volumes (only if existing online volumes will be used)
5. Do everything else.

This avoids volume over allocation problems when a data set merge operation "relocates" space assigned to one volume to a different volume, or when increasing data set space causes the space required to exceed a volume's size, and other potential problems.

ServerPac tip #5: Work with groups of data sets as much as possible.

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The more changes you make to groups of data sets, the less time you will spend making changes to individual data sets. Use the View and Change option of Modify System Layout to find data set views that display groups of data sets to which you want to make common changes, and use the dialog's CHANGE command to make the changes. You can change high level qualifiers, data set names, volume assignments, data set types, SMS status, space allocation amounts, and more for groups of data sets at a time.

ServerPac tip #6: How to actually use the incredibly useful OFILE command.

You can save lists of data sets, the volumes on which they reside, and other information about data sets with the OFILE command for later use during migration. Particularly useful are lists of data sets that are new, require APF authorization, are eligible for the link list, or are required in LPA. You can use these lists during migration as a guide for production system parmlib changes, or even to create the parmlib members.

To create a new data set with a data set list in it, you need to enter three OFILE commands. The first creates the data set, the second saves the list, and the last closes the data set, so that other applications can read it:

1. OFILE OPEN data set name NEW
2. OFILE
3. OFILE CLOSE

You can find the record format in ServerPac: Using the Installation Dialog.

ServerPac tip #7: Pick good qualifiers.

CustomPac Dialog data sets have two distinct kinds of qualifiers. One kind is the "master qualifier." It's for CustomPac Dialog data sets that are not related to a particular order. Pick qualifiers for these data sets that do not include any information about an individual ServerPac order. The other kind is for the CustomPac Dialog data sets that come with each order. Choose names for these data sets that include the order number as one qualifier. That way, the names will never conflict with either the master qualifier or the names of dialog data sets for other orders.

ServerPac tip #8: How to set secondary space to zero for a lot of data sets quickly (like link list data sets).

Pick the best data set list in the View and Change option of Modify System Layout (for example, "LNKLST Eligible" and "Yes") and enter the CH SP * P0 command. When you do so, consider increasing the primary space at the same time. For example, to increase the primary space by 20% while setting secondary space to zero, enter the CH SP 20 P0 command.

ServerPac tip #9: Turn on PANELID.

Enter the PANELID command from any command line to see the panel IDs in the upper left corner. You can find information about the panel and how it works very quickly in ServerPac: Using the Installation Dialog by doing a softcopy search for the panel ID or by looking for it in the index.

ServerPac tip #10: What ISPF data set names to give the dialog?

The dialog prompts you for ISPF data set names from time to time. Specify only the names of the
SISP* data sets that are already on your system (the ones allocated to your TSO/E session), one per DD name. Don't put anything on the second line for any of the DD names!

ServerPac tip #11: Save the configuration before you are done with it.

Take a checkpoint! After you have selected all the prior options and have no configuration warnings, you can save the configuration with the Save option and use it to re-create the same configuration, even for the same order. You do not need to submit any jobs to enable the option and save the configuration. So, if there are things you are not sure you want to try, save

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the configuration and go ahead and try them! If they don't work out, re-create the configuration using the saved one to get right back to where you were.

ServerPac tip #12: If it's red, it's a data entry field.

Data entry fields are always red. So if you are not sure where to type, look for the red! (If you have difficulty seeing red text on your terminal, redefine the colors in your ISPF settings.)

ServerPac tip #13: Reserving space with Recommended System Layout.

After you get to the Current Volume Configuration panel in the Recommended System Layout option, you can select each volume and reserve space as needed. You can also predefine volumes in Recommended System Layout and reserve space on them. (Any volumes that are not needed will "disappear" at the end of automatic assignment.)

ServerPac tip#14: Creating new volumes the easy way.

Use the CH PVOL command from a data set list containing the data sets you want to move, specifying a new volume serial, and exclude those you don't want to move on the next panel. Then, use the Physical Volume Summary option to change the device type (if necessary) and specify the device number. Or, use the Recommended System Layout option to place new data sets (it will create volumes automatically if needed), and make the necessary changes in the Physical Volume Summary.

ServerPac tip #15: Pick unique zone names.

When you are in the Zones option of the dialog, choose SMP/E zone names that are unique for your entire installation, ones that are not used on any system you have. Doing so will give you the most information from the reports created by the SMPREP installation job.

ServerPac tip #16: Combining installation jobs.

You can use the block Select (SS) line command in the installation job list display to combine many of the ServerPac installation jobs. This can save time by letting more work run automatically when prior work was successful. For example, if there are a lot of jobs left to run late in the day, you can combine as many as possible and check the results in the morning.

ServerPac tip #17: Run GENSKEL.

It's the easy way to get copies of all the jobs in a data set so you can save your changes, look at them later, or copy them if you need to repeat a task later (for example, on another system).

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@server Websites

- www.ibm.com/servers/eserver/zseries/zos/zos_products.html
  - Links to ISV websites
  - scroll down to Vendor Software Products for z/OS -- click on the z/OS level you are interested in
- www.ibm.com/servers/eserver/zseries/zos/
  - z/OS is a new, robust operating system based on the new z/Architecture (64-bit) mode
- www.ibm.com/servers/eserver/zseries/zos/bkserv/
  - z/OS Internet library

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@server Websites

- www.ibm.com/servers/eserver/zseries/zos/zos_products.html
  - Links to ISV websites
  - scroll down to Vendor Software Products for z/OS -- click on the z/OS level you are interested in
- www.ibm.com/servers/eserver/zseries/zos/
  - z/OS is a new, robust operating system based on the new z/Architecture (64-bit) mode
- www.ibm.com/servers/eserver/zseries/zos/bkserv/
  - z/OS Internet library
- z/OS Statement of Direction and notable changes
  - Consolidated @ http://www.ibm.com/servers/eserver/zseries/zos/zos_sods.html

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zFavorites for zSeries

- **Collection of links to helpful zSeries Web sites**
  - links to various interest categories, such as
    - products,
    - product documentation,
    - software and solutions,
    - support and more

http://www.ibm.com/servers/eserver/zseries/zos/zfavorites/

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The zFavorites for zSeries contains links to Web sites for zSeries. You will find links to:

- Hardware
- Operating Systems
- Software
- Language and Tools
- ISV Development and Applications
- Product Documentation
- Marketing Information
- Education
- Support

Links to FREE downloads

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Useful Internet Sites

www.ibm.com/servers/eserver/zseries/swprice/	**IBM Software Pricing**
www.ibm.com/servers/eserver/zseries/zos/zos_products.html	ISV Page Links
www.ibm.com/servers/eserver/zseries/zos/	**z/OS Home Page**
www.ibm.com/servers/eserver/zseries/zos/bkserv	z/OS Internet Library
techsupport.services.ibm.com/s390/support	**IBM S/390 Software Support**
www.ibm.com/servers/eserver/zseries/zos/servicetst	IBM Consolidated Service Test
www.search390.techtarget.com	**Search 390**
www.ibm.com/servers/eserver/zseries/zos/zos_sods.html	z/OS Statement of Direction
www.ibm.com/servers/eserver/zseries/pso/cftable.html	**Coupling Facility Level Table**
www.ibm.com/s390/pso	IBM Parallel Sysplex Home Page
www.ibm.com/support/techdocs	**Washington Systems Center Flashes**
www.ibm.com/software/shopzseries	ShopzSeries
service.software.ibm.com/software_order_status	Check software order status
service.boulder.ibm.com/390holddata/390holddata.html	Download Enhanced HOLDDATA
www.s390.ibm.com/products/le	**IBM Language Environment Home Page**
www.redbooks.ibm.com	**IBM Redbooks**
www.ibm.com/s390/pma	Planning & Migration Assistant

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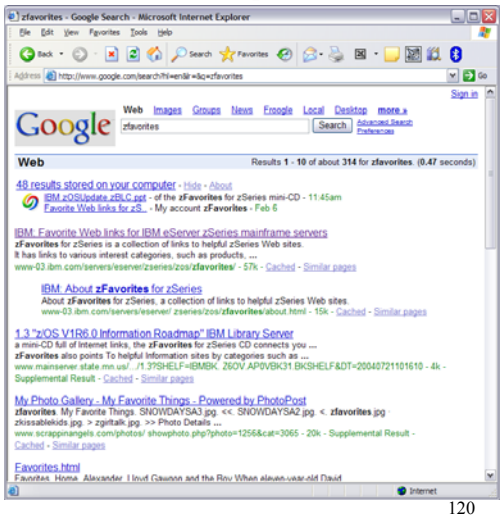
Quick Search Tip

- **When looking for anything System z related, go to GOOGLE, and enter "zfavorites"**
- **Google will take you to the online version of zFavorites which provides a master index of all things "z"**



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System z Social Media

- System z official Twitter handle:
  - @ibm_system_z
- Top Facebook pages related to System z:
  - Systemz Mainframe
  - IBM System z on Campus
  - IBM Mainframe Professionals
  - Millennial Mainframer
- Top LinkedIn Groups related to System z:
  - Mainframe Experts Network
  - Mainframe
  - IBM Mainframe
  - System z Advocates
  - Cloud Mainframe Computing
- YouTube
  - IBM System z

- Leading Blogs related to System z:
  - Evangelizing Mainframe (Destination z blog)
  - Mainframe Performance Topics
  - Common Sense
  - Enterprise Class Innovation: System z perspectives
  - Mainframe
  - MainframeZone
  - Smarter Computing Blog
  - Millennial Mainframer

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Tools "AS IS"

Key Transfer Utility
zlosf
rangelks2
VVDS Fix Catalog
PAV Analysis Tool
PUTDOC
FLASHDA
RACF Sample Utilities
IPLSTATS
wjsfsmon
fscp
Fsq
KEYXFER
tsocmd

Delinuse
wjsigshl
ARM Wrapper
XISOLATE
USSTools
CPPUPDTE
IBMRRAP
z/OS DFSMSrmm
Customization Wizard
zFS Large Directory Utility

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z/OS DFSMSrmm Customization Wizard

- **Designed to help set up DFSMSrmm by selecting a standard setup**
  - Uses DFSMSrmm default values or a customized setup
  - Tailor for your installation
  - Builds the EDGRMMxx parmlib member
  - Provides JCL jobs to setup RACF for DFSMSrmm
  - Jobs to allocate and initialize the datasets needed by DFSMSrmm
- **z/OS releases: z/OS V1R7 – z/OS V1R12**

http://www-03.ibm.com/systems/z/os/zos/downloads

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This interactive tool will guide you through the steps.

Before you begin... Read me first to understand how the tool works and what you can expect.

This interactive version of the z/OS V1R11 DFSMSrmm Implementation and Customization Guide publication helps you find information you can use to plan your implementation of the latest z/OS V1R11 DFSMSrmm functions and features.

To get started, answer a series of questions about your z/OS environment. We will use this information to explain what you need to do to enable the DFSMSrmm customization.

Wizard available for z/OS releases V1R7 – V1R11.

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IPLSTATS

- **Used to report on the time taken by z/OS to initialize various parts of the operating system**
- **IPLSTATX program writes the report to a standard data set**
  - writes the report as messages to the z/OS SYSLOG

http://www-03.ibm.com/servers/eserver/zseries/zos/unix/bpxa1ty2.html

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The IPLSTATS.ZIP file contains the following files and may be unZIPped using the standard PKUNZIP utility.

IPLSTATX.OBJ -- writes the IPL start-up statistics to a SYSOUT data set
IPLSTATZ.OBJ -- writes the IPL start-up statistics as WTOs to SYSLOG

The *.OBJ files contain the IPL start-up statistics program in MVS object deck format. It must be uploaded to your MVS system in -BINARY- form and placed into a fixed-block (FB) partitioned data set (PDS) with a logical record length (LRECL) of 80 bytes. (For example, using ISPF option 3.2, create data set IPLSTATS.OBJ with a blocksize of 16000, a logical record length of 80 and 10 directory blocks. Upload IPLSTATX.OBJ and place it as member IPLSTATX in the IPLSTATS.OBJ data set).

Once on your MVS system, the IPLSTATX object deck must be link-edited or bound into a load library using the MVS linkage editor or binder before you can run it. You can do this by using ISPF option 4.7 which allows you to invoke the MVS binder or linkage-editor programs under TSO. From the example above, just specify IPLSTATS.OBJ(IPLSTATX) on the "Other Partitioned Data Set: Data Set Name" line. Specify LET,LIST,MAP on the "Linkage editor/binder options" line and press ENTER. You will be shown the results of the binding/linkage-editing step and the output of the process will be placed into a LOAD data set which may have the name IPLSTATS.LOAD or userid.LOAD depending on your installation's options.

Either program can be run as a batch job or started task or you can run the program under TSO. Both programs run in problem program state and neither uses any authorized services or requires any special security considerations.

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The IPLSTATX program writes its report to a standard SYSOUT data set. For batch and started tasks, you will need a //OUTPUT DD SYSOUT=A,DCB=(RECFM=FB,LRECL=133) specification.

If you run the program under TSO, issue ALLOC FI(OUTPUT) DS(*) before invoking the program. (Or alternatively, you could have the output go to a data set).

The IPLSTATZ program writes its report to the SYSLOG using WTOs with hardcopy-only specified (the WTOs will not appear on any console). Each line of the report is written as a single-line WTO and each WTO is prefaced by an IPLSTnnnI message ID.

Either program can be run at any time after the first TCP/IP stack comes up (not all of the start-up statistics are considered complete until the first TCP/IP stack comes up). The start-up statistics persist until the next IPL, so you can run the report programs long after the IPL has occurred.

Please send the output data and any questions to: Kevin Kelley kkelley@us.ibm.com

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fscp

- Copies and compares file systems.
- This utility should be run in an ISPF environment.
- See the fscp prolog for documentation on use.

http://www-03.ibm.com/servers/eserver/zseries/zos/unix/bpxa1ty2.html

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fsq

- Lists summary or detailed information about one or more file systems
- Combines similar information you might see from the ls, zfsadm, and confighfs commands.
- See the fsq prolog for documentation on use and install.

http://www-03.ibm.com/servers/eserver/zseries/zos/unix/bpxa1ty2.html

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KEYXFER

- **PA Key Transfer Utility is a REXX exec that runs on MVS**
- **Utility to transfer ICSF PKA key tokens from one MVS system to another.**
  - KEYXFER facilitates the transfer of PKDS or CKDS key tokens between systems using the Integrated Cryptographic Services Facility (ICSF)

http://www-03.ibm.com/servers/eserver/zseries/zos/unix/bpxa1ty2.html

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The key transfer tool (KEYXFER) is a REXX exec that runs on MVS. KEYXFER facilitates the transfer of PKDS or CKDS key tokens between systems that use the Integrated Cryptographic Services Facility (ICSF).

The KEYXFER tool assumes the following:
1. ICSF is running on the systems involved in the key transfer
2. ICSF has an active Key Data Set (CKDS/PKDS)

For a PKA key token transfer the tool retrieves the token from the active PKDS and writes it to a data set (file). For a symmetric key token transfer the tool retrieves the token from the active CKDS and writes it to a data set (file).

The data set can then be transmitted to any number of systems. On each system the tool can be used to read the key token from the transmitted file and store it into the active PKDS or CKDS. The tokens are referenced by label.

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tsocmd

- This version of the tsocmd command matches the version of the tsocmd command shipped with z/OS V1R12.0.
- This should run on z/OS V1R10 and up.
- tsocmd is a shell command that creates a full batch Terminal Monitor Program (instead of using your TSO session) and runs a TSO command.
- This command supports authorized TSO commands, which the tso shell command does not.

http://www-03.ibm.com/servers/eserver/zseries/zos/unix/bpxa1ty2.html

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wjsfsmon

- **Tool helps identify file systems which may perform better when configured using zFS sysplex support**
  - z/OS V1R11

http://www-03.ibm.com/servers/eserver/zseries/zos/unix/bpxa1ty2.html

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wjsfsmon is a monitor facility which collects some file system usage data in intervals, aggregates the interval data, and is the view dialog for this data. The primary function of the viewer is to show which file systems have the greatest amount of remote access and from which systems. This tool should be able to run on z/OS 1.10 and above. It is intended to help you decide how zFS sysplex enablement could help and could provide additional insight into how you might place your file systems and UNIX workloads with or without zFS sysplex enablement.

When using the z/OS UNIX shared file system support for read-write access, it is important to locate the applications using a file system on the system owning that filesystem. The shared file system support enables access to the data from all systems but uses a function shipping model to access the data from non-owning systems for filesystems mounted read-write. XCF services are used as the network between the systems. Most observe the performance of this remote access to be far inferior to local access. This performance difference can become problematic as volume of access increases or throughput requirements increase.

One of the difficulties in managing this is determining which file systems are accessed from each system and by what applications. With that understanding, the next problem is to manage the location where the applications run and where the file system is owned. This is further complicated when systems are brought up and down and file system ownership changes. It is possible to manage some file system placement through the use of the SYSNAME parameter on the mount statements, prioritizing which systems should take ownership of which file systems. In z/OS V1R11 it is possible to reduce these system management challenges. The zFS file system can be enabled to help with this by using the zFS sysplex=on parameter setting.

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Although this does not eliminate the need to balance your workload, zFS will monitor usage and dynamically move its local access to the system with the most access. On remote systems, zFS will perform aggressive caching which should improve performance over the prior functionality of zFS and HFS.

The SMF type 92, subtype 5 records contain file system read and write counts. If type 92 subtype 5 is active when a file system is mounted, this data will be accumulated and written to the record when the file system is unmounted. Accessing this information on each system should let you know to what degree the file system is used on each system.

An alternative to collecting and analyzing this SMF data is use of the wjsfsmon tool. This tool uses some of the same counters used to collect this SMF data. If SMF is not active for type 92 subtype 5, the tool will enable tabulation of some of the same data while it is running but does not enable recording of the SMF data. You may be able to observe these counts in fields using the w_getmntent service or through the file system attribute display in ISHELL.

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zFS Large Directory Utility

- **This utility identifies zFS directories which may potentially cause a performance issue by searching for zFS directories greater than 1 MB**

http://www-03.ibm.com/servers/eserver/zseries/zos/unix/bpxa1ty2.html

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The largedir.pl utility identifies zFS directories that might potentially cause a performance issue by searching for zFS directories which are 1 MB or larger. A performance issue is particularly noticeable when a zFS directory is 3 MB or larger.

Note: The size of a directory is independent of the size of the contents of that directory.

This utility supports the following options:

```
largedir.pl [-v] [directory [...]]
```

When you specify a directory, the utility searches that directory and any directory below it within the same file system. If you do not specify a directory, the utility automatically searches every available zFS directory on your system.

When you specify the -v option, the utility provides verbose output. Without this the -v option, the utility displays only directories meeting the above criteria. Failures always display on standard error.

For example, if you have three file systems mounted at: /zfs1, /zfs1/foo/hfs, and /zfs1/foo/bar/zfs2

```
You run: largedir.pl /zfs1/foo
```

The utility searches foo and bar, but not hfs or zfs2.

Example of output when largedir.pl is successful:

```
sandbox $ ./largedir.pl .
        Minor Exception: Large Directory: ./tmp
        sandbox $ echo RC=$?
        RC=1
        sandbox $ rm -r tmp
        sandbox $ ./largedir.pl .
        sandbox $ echo RC=$?
        RC=0
```

Notes:
1. Transfer largedir.pl as text to a z/OS machine.
2. Set largedir.pl to run as executable (chmod +x largedir.pl).
3. Install Perl for z/OS. (Perl for z/OS is an unpriced feature of the IBM Ported Tools for z/OS.)

Documentation: For more information, see Chapter 4, "Minimum and maximum file system sizes" in *z/OS V1R11 zFS Administration Guide*, SC24-5989-10.

Trademarks: Trademark or registered trademark of International Business Machines Corporation in the United States, other countries, or both.

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INJERROR

- Coupling facility structure error injector tool
- Tool injects an error into a CF structure to simulate damage to the structure
- Tool should only be used on test systems
- Tool only works with genuine IBM coupling facilities

http://www-03.ibm.com/servers/eserver/zseries/zos/integtst/injerror.html

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To help in testing recovery from coupling facility problems, we are making available our coupling facility structure error injector tool, INJERROR. The INJERROR tool injects an error into a CF structure to simulate damage to the structure. If there are two instances of a structure allocated (for instance, during a rebuild or when the structure is in the duplex-established phase), the tool allows you to specify which instance(s) of the structure you want to affect.

This tool should only be used on test systems. Although the tool provides a way to simulate a coupling facility structure failure, the element that owns the structure (for example, IRLM or JES2) cannot distinguish the simulated error from a real error and, thus, reacts to the simulation as though it is an actual failure. This may not be desirable in a production environment.

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Key Transfer Utility

- Utility to transfer ICSF PKA key tokens from one MVS system to another using Integrated Cryptographic Services Facility (ICSF)
- KEYXFER - REXX exec
- For more information on usages, view the Readme file

http://www-03.ibm.com/servers/eserver/zseries/zos/unix/bpxa1ty2.html

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PA Key Transfer Utility. Utility to transfer ICSF PKA key tokens from one MVS system to another. For more information on usages, view the Readme file.

The key transfer tool (KEYXFER) is a REXX exec that runs on MVS. KEYXFER facilitates the transfer of PKA key tokens between systems that use the Integrated Cryptographic Services Facility (ICSF). The KEYXFER tool assumes the following:

- ICSF is running on the systems involved in the key transfer
- ICSF has an active PKA Key Data Set (PKDS)

The tool retrieves a PKA key token from the active PKDS and writes it to a data set. The data set can then be transmitted to any number of systems. On each system the tool can be used to read the key token from the transmitted data set and store it into the active PKDS. The tokens are referenced by PKDS label.

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FLASHDA

- **FLASHDA**
  - **Use the FLASHDA SAS®-based tool to manage your transition to Solid State Drives (SSD)**
- **Tool provides DASD and data set usage reports using SAS code to analyze SMF 42 subtype 6 and SMF 74 subtype 5 records to identify good candidates (volumes or datasets) to reside on SSD**
- **Read the FLASHDA tool description**

http://www-03.ibm.com/systems/z/os/zos/downloads/flashda.html

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The purpose of FLASHDA SAS ® based tool is to provide users planning to exploit Solid State Drives (SSD) with a knowledgeable plan to manage the transition. The goal is to identify the volumes and datasets to be most beneficial residing on SSD. FLASHDA will help in making the best use of new SSD feature in the IBM DS8000 storage subsystem with the IBM System z platform and z/OS operating system.

FLASHDA provides on report for dataset usage, DASD usage and a final merged data report showing final recommendations.

FLASHDDA is run with JCL using the SMF record as input. FLASHDA requires SAS.

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IBMRRAP

- **IBMRRAP code, documentation, and utilities for WebSphere Application Server (WAS) 6.0 and WAS 6.1**
  - IBMRRAP adds RACF authorization to the WebSphere container for J2EE applications
  - IBMRRAP is designed to enable non-z/OS Websphere servers to use RACF services on z/OS to provide authorization and audit capabilities
    - allows for centralization of authorization and audit functions to z/OS

http://www-03.ibm.com/systems/z/os/zos/downloads

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IBMRRAP adds RACF authorization to the WebSphere container for J2EE applications. IBMRRAP is designed to enable non-z/OS Websphere servers to use RACF services on z/OS to provide authorization and audit capabilities, allowing for centralization of authorization and audit functions to z/OS.

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RACF Samples

- **RACF Sample utilities**

http://www-03.ibm.com/servers/eserver/zseries/zos/racf/goodies.html

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- CDT2DYN, a utility to help change installation-defined RACF classes into dynamic classes.
- CUTPWHIS, a utility which removes non-usable passwords from the RACF password history. Non-usable passwords are created when the password history (SETROPTS PASSWORD(HISTORY(xxx)) value is reduced.
- DBSYNC, a utility which compares two RACF data bases and creates the commands to make them similar. Can also assist in merging RACF databases from different systems.
- DBU2MSXL, a set of scripts which loads the output of the RACF Database Unload Utility (IRRDBU00) into Microsoft® Excel spreadsheet.
- DBU2MSAC, a set of scripts which loads the output of the RACF Database Unload Utility (IRRDBU00) into Microsoft Access.
- IRRHFSU, a utility which unloads the UNIX System Services Hierarchical File System file security information in a manner compatible with with IRRDBU00.
- KMIGRATE, a tool for migrating existing DCE and MVS users to a Kerberos registry managed ay an OS/390 or z/OS Network Authentication Service server.

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- LISTCDT, a tool which analyzes and reports on your RACF Class Descriptor Table (CDT).
- OS390ART, the OS/390 Audit Reporting Tool, a DB2 based auditing application that is described in *OS/390 Security Server Audit Tool and Report Application (SG24-4820)*.
- PKISERV, a sample web application that uses RACF's digital certificate support to enable clients to create and retrieve certificates using a web browser. Requires OS/390 V2R10 with supporting PTFs.
- PWDCOPY, a utility which which copies passwords from one RACF data base to another RACF data base.
- RAC, an z/OS UNIX System Services utility which allows RACF commands to be executed from a z/OS UNIX environment and writes the output to stdout. Note that this utility uses existing command authorization along with authorization to a FACILITY class resource.
- RACFDB2, a utility which helps you migrate your DB2 access control from DB2 to RACF.
- RACKILL, a utility which which unconditionally deletes profiles from the RACF data base.
- RACSEQ, a TSO command which uses the extract functions of the R_admin callable service (IRRSEQ00) to display user and group information in a format conducive to use by REXX.
- REXXPWEXIT, a sample new password exit which uses System REXX to call an exec in which password quality rules are coded.

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zlosf

- zlsof
- This utility lists users or processes using files or file systems and lists files or file systems in use by users or processes.
- See the readme file for install and usage information

http://www-03.ibm.com/servers/eserver/zseries/zos/unix/bpxa1ty2.html

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This utility lists users or processes using files or file systems and lists files or file systems in use by users or processes. See the readme file for install and usage information.

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rangelks2

- **Rangelks2**
  - This is an update to rangelks
- **List processes holding byte range locks and locked files**
- **For z/OS 1.6 and above, rangelk2 will also list byte range lock waiters as well as backup locks in a system**
- **See the readme file for install and usage information**

http://www-03.ibm.com/servers/eserver/zseries/zos/unix/bpxa1ty2.html

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This lists the processes holding byte range locks and the files that are locked. This is an update to rangelks. For z/OS 1.6 and above, rangelk2 will also list byte range lock waiters as well as backup locks in a system.

rangelks: This utility lists processes currently holding byte range locks and the file names that are locked. See the readme file for install and usage information.

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PAV Analysis Tool

- **Tool provided to understand the PAV-alias utilization in a dynamic PAV environment**
- **Provides information on the I/O activity to all the PAV-alias devices for each logical subsytem**
  - data is written to a sequential dataset to be processed by a graphical tool
  - The graphical tool sums up data over all the time interval and displays the utilization per time interval in the 3 dimensional graph, busiest device to least busiest device
  - display can be used to determine whether or not the number of PAV-alias devices can be reduced without impacting the work

http://www-03.ibm.com/servers/eserver/zseries/zos/unix/tools/

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The IBM z/OS PAV Analysis Tool is a new tool provided to understand the PAV-alias utilization in a dynamic PAV environment and to assist customers in analyzing their I/O configuration. It provides information on the I/O activity to all the PAV-alias devices for each logical subsytem. The data is written to a sequential dataset to be processed by a graphical tool. The graphical tool utilizing SAS application sums up data over all the time interval and displays the utilization per time interval in the 3 dimensional graph, busiest device to least busiest device. This display can be used to determine whether or not the number of PAV-alias devices can be reduced without impacting the work.

Release			
Download			
1.7	SYNCEXIT	ENFEXIT	PAVMONTR
1.8	SYNCEXIT	ENFEXIT	PAVMONTR
1.9	SYNCEXIT	ENFEXIT	PAVMONTR
1.10 and above	SYNCEXIT	ENFEXIT	PAVMONTR

Please also download the PAV Analysis Documentation.
Contact: JStaubi@us.ibm.com

PAV Analysis Documentation is available for download from this same location.

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wjsigshl

- Displays shared library information on currently loaded shared libraries
- Runs under IPCS or in a shell
- Requires superuser authority

http://www-03.ibm.com/servers/eserver/zseries/zos/unix/bpxa1ty2.html

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wjsigshl will show information on what is loaded in the shared library region. It shows the number of processes actively referencing a module, the number of 1MB slots the module takes, the actual number of pages the module takes and the number of unused pages in the slots it is loaded in. The first 64 bytes of pathnames to the modules are also displayed. Contact: wjs@us.ibm.com

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USSTools

- **Collection of useful functions and extensions for the current UNIX System Services Environment**
- **This package includes several z/OS UNIX tools which are especially useful in the following situations:**
  - Editing IBM-1047 UNIX files
  - Working in the OMVS Shell
  - Working with UNIX System Services as a BPX.SUPERUSER

http://www-03.ibm.com/servers/eserver/zseries/zos/unix/bpxa1ty2.html

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These tools build a collection of useful functions and extensions for the current UNIX System Services environment. Support is included for for the OMVS shell in systems running with German or US Host Emulation Code pages. Editing of UNIX files is supported for all emulation code pages supported by **iconv** (conversion to and from IBM-1047). To get detailed information how to install the package click on Installation.

Introduction	Introduction and comments to the tools contained in this package
AOBROWSE	OBROWSE USS files available in ASCII converted to a specified code page if conversion is supported by ICONV
AOEDIT	OEDIT USS files available in ASCII converted to a specified code page if conversion is supported by ICONV>
GO	Get back to the ISPF/TSO session(s) while OMVS shell session(s) are kept active
GOBROWSE	OBROWSE USS files converted to the German code page
GOEDIT	OEDIT USS files converted to the German code page
OMVS	Run OMVS with a specified OMVS conversion table
PSINFO	Get information about active processes
REXX	Run a REXX command processor to process SYSCALL, Shell, TSO and REXX commands
RXSHELL	Run UNIX commands interactively from TSO foreground or in TSO batch jobs
RXSUSH	Switch to SU mode if possible and run UNIX commands in TSO foreground and TSO batch jobs
SAOEDIT	OEDIT USS files available in ASCII converted to a specified code page if conversion is supported by ICONV in SU mode
SGOEDIT	OEDIT USS files converted to the German code page in SU mode
SOEDIT	OEDIT USS files in SU mode

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SU	Run commands in ISPF/TSO foreground or TSO batch in SU mode
SUOEDIT	OEDIT USS files converted to the **US** code page in SU mode
"SU - "Support	Support full shell initialization for the Standard and the C Shell environment when switching to another userid using the "su" command
SWSU	Switch to SU mode (temporary) or just run one command with superuser authority in a USS shell environment
SXOEDIT	OEDIT USS files converted to a specified code page supported by ICONV in SU mode>
UOBROWSE	OBROWSE USS files converted to the **US** code page
UOEDIT	OEDIT USS files converted to the **US** code page
XOBROWSE	OBROWSE USS files converted to a specified code page supported by ICONV
XOEDIT	OEDIT USS files converted to a specified code page supported by ICONV
HintsTips	Additional Hints and Tips how to use these USS tools
Installation	Detailed information how to install the package

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IOSSPOFD

- A Tool for discovering single points of failure in an I/O configuration
- z/OS 1.10 or higher

http://www-03.ibm.com/servers/eserver/zseries/zos/unix/bpxa1ty2.html

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IOSSPOFD can be used to determine if volumes have a singular hardware component common to all paths to the device. It can also be used to determine if a primary volume and an alternate volume have any common hardware components. If such a hardware component were to fail, then the volume would not be available. The messages issued are documented in z/OS MVS System Messages, Vol 9 (IGF-IWM) under the IOSPF messages section.

In z/OS V1.10, XCF and XES plan to extend and enhance their existing health checks to provide new and improved checks to detect single points of failure for all types of couple data sets using the new ***IOSSPOF*** service, check for appropriate separation of different types of couple data sets, and check XCF signaling paths and structure sizes. Improved CF structure and duplexing checks help you avoid sysplex-related problems. New checks for Sysplex Failure Manager action specifications help you improve sysplex availability.

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delinuse

- This tool will find files in a file system that have been deleted yet are still in use and consuming space
- It will show:
  - the process and user using the file
  - the space in use
  - and at least a portion of the name used to open the file.

http://www-03.ibm.com/servers/eserver/zseries/zos/unix/bpxa1ty2.html

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This tool will find files in a file system that have been deleted yet are still in use and consuming space. It will show the process and user using the file, the space in use, and at least a portion of the name used to open the file.

Author: Bill Schoen wjs@us.ibm.com

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Purpose
=======

It is fairly common practice for a program to open a temporary file, delete the file, and continue to use it as a temporary file. By doing so, other programs will not be able to open and read or corrupt the data this program is using. However, since no name appears in a directory, it becomes difficult to determine space being used by these types of files. For example, a file system can become full yet looking at the files that appear to be in the file system, it may appear that the file system should have considerable space available.

This tool will find files in a file system that have been deleted yet are still in use and consuming space. It will show the process and user using the file, the space in use, and a portion of the name used to open the file.

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PUTDOC

- **Tool for sending documentation files to IBM**
  - uses FTP
  - software is provided AS IS
- **Highlights**
  - TSO CLIST
  - Supports sequential and partitioned data sets.
  - Supports compressed (via TRSMAIN) and TSO transmit formats.
  - Requires TRSMAIN
    - see http://techsupport.services.ibm.com/390/trsmain.html
  - Optionally encrypts files - requires encryption tool
    - see http://www.ibm.com/de/support/ecurep/mvs_encryption.html
  - Converts files to requested format before sending.
  - Supports HFS files.
  - Logs all activity.
  - Splits very large tersed files into multiple parts.
- **http://techsupport.services.ibm.com/server/nav/zSeries/putdoc/putdoc.html**

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The PUTDOC CLIST executes on your OS/390 and z/OS systems and automates some of the steps in sending documentation (dumps, traces, etc) to IBM via the Testcase server. The user supplies an input data set name (usually from the 3.4 panel within ISPF) and responds to a few prompts. The CLIST submits a batch job that runs locally and performs the steps necessary to send this data set in the desired format to the Testcase server.

The instructions for downloading the CLIST are at:
http://techsupport.services.ibm.com/server/nav/zSeries/putdoc/putdoc.html

The CLIST greatly reduces errors in handling very small to very large data sets. It guides the user through recommended actions, manages space to minimize failures, retains information about destinations on the Testcase server and reduces the chance items will be sent to the wrong destination.

Send questions and feedback to tcpdoc@us.ibm.com and include PUTDOC on the subject line of the note.

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Problem Documentation Upload Utility

- **Tool for sending documentation files to IBM**
  - uses FTP
- **Highlights**
  - Splits source file into multiple (up to 20) Parallel FTP sessions to improve throughput
    - shorter transmission time for very large data sets
  - In-line hardware compression
    - Optionally uses 192-bit Triple DES hardware encryption can be requested by using the **CIPHER_KEY** keyword
    - z890/z990, z9 EC/BC, z10 EC/BC, z196, z114
- **http://www14.software.ibm.com/webapp/set2/sas/f/zaids/pduf.html**

As of R13, this is part of the operating system release. Migration action required.

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The IBM® z/OS® Problem Documentation Upload Utility is a parallel File Transfer Protocol (FTP) utility designed to send documentation in a more efficient manner to IBM FTP sites. This utility sections the input file into smaller files that are sent in parallel resulting in shorter transmission time for very large data sets (such as stand-alone dumps).

There are two work files for each parallel FTP session (the .A. file and the .B. file). Each .A. work file is filled by copying records from the input file. When the .A. file is full, the FTP sessions are started in parallel. At the same time, each .B. work file is filled by copying records from the input file. When the .B. file is full and the transfer of the .A. file is complete, transfer of the next .B. file starts. This process continues between the .A. and the .B. files, until everything in the input file is sent.

There are two work files for each parallel FTP session (the .A. file and the .B. file). Each .A. work file is filled by copying records from the input file. When the .A. file is full, the FTP sessions are started in parallel. At the same time, each .B. work file is filled by copying records from the input file. When the .B. file is full and the transfer of the .A. file is complete, transfer of the next .B. file starts. This process continues between the .A. and the .B. files, until everything in the input file is sent.

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You can have up to 20 parallel FTP sessions running simultaneously. The work data sets are dynamically allocated and can range in size from 1 MB to 9,999 MB. You can experiment to see what works best in your environment, but here are some guidelines:

- Start with three or four parallel FTP sessions. Too many parallel FTP sessions can saturate the network link.
- Use medium size work data sets.

If the work data sets are very small in relationship to the input data set, you can end up with too many files on the IBM FTP sites. For example, if you are sending a 100 GB z/OS stand alone dump and make the work data set size 1 MB, you create 100,000 files on the IBM FTP site, which exceeds the IBM limit of 999 files. This also causes a lot of delay by starting and stopping the FTP sessions for each file.

If the work data sets are very large in relationship to the input file size, the amount of overlap time is decreased. When the program first starts, it must fill the .A. work files before it starts transmitting any data, which means the copy time is not overlapping with data that needs to be sent through FTP. For example, if you were sending a 1 GB dump and you set the work data set size to 1 GB (1,000 MB), there is no overlap between copying the records and sending the work files.

The parallel FTP program always compresses the input data before it is written to the work data sets, therefore it is not necessary to use a tool such as AMATERSE or TRSMAIN to compress the input data set before using the parallel FTP program to send it to the IBM FTP site. In addition, 192-bit triple DES encryption can be requested by using the **CIPHER_KEY** keyword. Without the keyword, the data is just compressed. With the keyword, the data is compressed, and then encrypted.

Encryption is provided by the CP Assist for Cryptographic Functions, DES/TDES Enablement (CPACF, feature 3863) and is available on all processors starting with the z990 (2084) and z890 (2086). CPACF, feature 3863 enables clear key DES and TDES instructions on all supported CPs. The encryption algorithm used for 3DES is documented in *z/Architecture Principles of Operation*, SA22-7832.

z/OSMF Release 12 implemented Parallel FTP.

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ARM Wrapper

- **ARMWRAP program allowing ARM support to be added to tasks that have not implemented ARM**
  - support provided by APAR OW32480
  - this support is included in the base at OS/390 V2R9 and higher
- **z/OS Automatic Restart Manager Redpaper**
  - describes the ARMWRAP program
  - Publish Date: 28-January-2002
  - Last Update: 15-February-2002
  - IBM Form Number: REDP0173

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The ARMWRAP program simplifies the APIs so any subsystem or job can easily exploit the Automatic Restart Manager (ARM). It provides ARM capability to any subsystem or job. This support is included in the base OS/390 V2R9 and above. This function is included in APAR OW32480. This APAR addresses unauthorized callers of the IXCARM APIs. Unauthorized applications needing to run alongside authorized applications need to be able to register with ARM. Applications need to be able to register with ARM using the ARM APIs, without code changes.

The "wrapper" addresses the need for unauthorized programs to be able to exploit ARM, and allows subsystem/application to use the APIs.

It is documented in IBM manuals how to use the ARM APIs by using the concept of an ARM WRAPPER. This old code, called ARMDRVR is documented to run out of an APF library (authorized) since ARM did not support unauthorized callers. Now with the introduction of ARMWRAP the wrappers themselves can run unauthorized allowing for full integrity and better security controls. Besides being supported, ARMWRAP allows greater flexibility in use along with the application being able to tell ARM when it is able to go ARM READY.

This purpose of the ARMWRAP is to allow jobs or started tasks to take advantage of ARM without modifying existing software to use the ARM APIs. Changes are only required in the JCL, be it a PROC or batch job, invoking the existing application. These changes are the addition of JCL EXEC statements signifying the different ARM functions. ARMWRAP executes unauthorized, that is KEY 8 PROBLEM PROGRAM. This allows installations to have better control over their security environment. The allowable ARMWRAP functions are:

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ARM REGISTER
ARM WAITPRED
ARM READY
ARM DEREGISTER

Notes :
One subsystem that may see a lot of benefit from this is the ICLI address space used for communication between DB2 and SAP R/3. ICLI by itself does not exploit ARM and a failure of this address space will cause a loss of communication between a front-end processor and SAP on OS/390. With this code, the ICLI will be restarted quickly to minimize the time users are affected.

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CPPUPDTE

- **CPPUPDTE is a program allows you to search for a string across all the members of a PDS and replace that string with another string**
- **CPPUPDTE is loaded into the LOADLIB data set (hlq.order_number.LOADLIB) during ServerPac installation**
  - It also has an alias name of IPOUPDTE
    - the job is actually the same job that was shipped with CBIPO
  - All references to IPOUPDTE are equally applicable to the CPPUPDTE program provided with ServerPac.
- http://www.ibm.com/servers/s390/os390/installation/cppupdte.htmlCode
- **is on an "as is" basis**

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CPPUPDTE program for ServerPac is a program that enables you to search for a string across all the members of a PDS and replace that string with another string. CPPUPDTE is loaded into the LOADLIB data set (hlq.order_number.LOADLIB) during ServerPac installation. It also has an alias name of IPOUPDTE because the job is actually the same job that was shipped with CBIPO.

The following information about how to use CPPUPDTE is an excerpt from the "CBIPO Design Reference" (© IBM Corporation 1983,1991). All references to IPOUPDTE are equally applicable to the CPPUPDTE program provided with ServerPac.

Important: For CPPUPDTE and IPOUPDTE to work, each PDS to be searched MUST contain a member named **$$$COIBM.**

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Software Service

Boulder Service Status
Consolidated Software Test
SMP/E
HOLDDATA
Cross Product / Cross System Requisites
DOC APARs
RedAlerts

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Boulder Service Status

- **New WEB site providing Boulder Server status**
- Visit this site to check on server's status if your service retrieval job/command fails
- **http://www14.software.ibm.com/webapp/set2/sas/f/gdbm/home.html**

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Download server status

- Current status
- Current issues or problems
- Planned outages
- Maintenance window

This information page will be updated whenever issues arise. Please click your browser's Refresh or Reload button to ensure you have the latest status.

[Last updated 18th August, 2009 @ 3:26 p.m EDT]

Current status

Server/function	Status
Fix Service Provider	Green

Current issues or problems

None at this time

Green: = system fully available; Amber: = some problems, but system usable; Red = system unavailable or similar major problem; Blue: planned outage (see Outage section below)

Planned outages

First Sunday of every month, FSP does reboot all the production servers during the maintenance window from 12:00 a.m. to 6:00 a.m. MT.

8/22/2009: 6:00 p.m. MT through 7:00 p.m. MT.

8/21 - 8/23/2009: Friday, Aug 21 at 3:00 p.m. MT through Sunday, Aug 23 at 6:00 p.m. MT, A small subset of fixes will be unavailable during this time.

Maintenance window

Standard maintenance window for Fix Service Provider is Sundays midnight to 6 am MT. It is not used every week, nor will maintenance take the full window. Refer to the Planned outages section for specific information about upcoming maintenance.

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Software Service Strategy

- **IBM Software Maintenance Strategy for z/OS Referred to as Consolidated Service Test (CST)**
  - New, additional intensive z/OS and major subsystems service test
  - Maintenance is tested first before recommendation
    - Provides a consistent, installable, maintenance recommendation - (the new RSU)
  - Service recommendations updated on a monthly and quarterly basis as testing continues.
- http://www.ibm.com/servers/eserver/zseries/zos/servicetst

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Consolidated service test is a team that installs, tests, and recommends service levels for key z/OS software products. The list below shows the products tested together.

As part of IBM's commitment to quality and continuous improvement, we established an additional service testing environment called Consolidated Service Test (CST). As a result, we're redefining our RSU (Recommended Service Upgrade) for the z/OS platform so that it contains service that has been through CST testing. Now, the CST team tests all the current PTFs for these products together, so that we can recommend PTF service for z/OS and key subsystems together in one RSU sourceid, free of charge to all z/OS customers. That means that when you order the current service deliverable (ShopzSeries) you'll receive and install tested service for all of the following products:

- CICS Transaction Gateway for z/OS
- CICS Transaction Server for z/OS
- DB2 for z/OS
- DB2 Connect
- Geographically Dispersed Parallel Sysplex (GDPS/PPRC)
- IMS
- IRLM
- JAVA
- WebSphere Application Server for z/OS
- WebSphere MQ for z/OS
- z/OS
- z/OS Problem Determination Tools
- IBM DB2 and IMS Tools
- IBM Tivoli
- IBM Tivoli Composite Application Manager for Transactions
- TKLM (Tivoli Key Lifecycle Manager)

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SMP/E

- **SMP/E is its own separate product as of z/OS 1.2**
  - remains a base element in z/OS
    - no longer an exclusive element
- **SMP/E V3 Release 5 (latest release)**
  - Integrated in z/OS R10 and R11
  - General availability September 26, 2008
- **SMP/E V3 Release 4**
  - Integrated in z/OS 1.7
  - General availability September 30, 2005
  - Internet Service Retrieval
    - Request z/OS platform service order using the SMP/E RECEIVE command
    - No longer requires ICSF
    - Improvements in SMP/E commands: APPLY, RESTORE and LINK LMODS

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SMP/E V3R5
IBM SMP/E for z/OS V3.5 provides the following enhancements:

- New FIXCAT HOLDDATA will be provided by IBM that can be processed by SMP/E. This new function is designed to make it easier to determine what PTFs are needed for new hardware, software, and functions. This is expected to help you eliminate much of the manual effort formerly needed to work with Preventive Service Planning (PSP) buckets. A new REPORT MISSINGFIX command is also introduced to identify required fixes that are not yet installed.
- The SMP/E RECEIVE ORDER command and GIMGTPKG service routine have added reconnect and retry capabilities for HTTPS and FTP operations that fail due to network outages and anomalies.
- The SMP/E RECEIVE ORDER command has been enhanced to ensure the latest HOLDDATA is obtained, even for PTF orders that cannot be completely satisfied.
- The SMP/E 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. The PRINT subentry of the UTILITY entry may also be added using ZONEEDIT.
- Changes have been made to the SMP/E HOLDDATA reports produced by the APPLY and ACCEPT commands to consolidate and reduce the report output, as well as offer an alternate destination for the HOLDDATA reports.
- Multiple additional enhancements simplify various tasks for acquiring, installing, and maintaining software.

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SMP/E V3R4

RECEIVE FROMNETWORK support of SOCKS firewalls and secure FTP operations

The RECEIVE FROMNETWORK command has been enhanced to use the z/OS Communications Server FTP Client. This can allow SMP/E to:

- Access remote FTP servers through a local SOCKS firewall server.
- Provide secure transfers between the client and FTP server of the user and password, as well as file data. A secure transfer refers to encryption and authentication using Transport Layer Security (TLS).
- Access FTP servers using IPv6 addressing.
- Use the FTP.DATA configuration file to specify local site options for the FTP client. The FTP.DATA configuration file is optional, but must be used to specify the options for SOCKS firewall navigation and secure transfer.

Note: z/OS Communications Server V1.2 is required in order to enable SOCKS firewall navigation, secure transfers, and IPv6 addressing.

Support for Internet delivery of ServerPac

Internet packaging enhancements in GIMZIP and GIMUNZIP: Formerly GIMZIP packages could contain archive files only for sequential and partitioned data sets. The GIMZIP and GIMUNZIP service routines have been enhanced to allow archive files to also contain VSAM ESDS, KSDS, LDS, and RRDS data sets, as well as UNIX files and directories. Additionally, when building a package using GIMZIP, a unique ID value may be assigned to each archive file. This ID value may then be used to identify a specific archive that is to be processed by GIMUNZIP, as opposed to using the archive file¢s name. When extracting data from an archive file, formerly the GIMUNZIP service routine would only extract data from a GIMZIP archive into a new data set allocated directly by GIMUNZIP. GIMUNZIP has been enhanced to support extracting archive file data into existing data sets. GIMUNZIP will now determine if the output data set already exists. If the data set already exists, then GIMUNZIP will copy the data from the archive file into the existing data set. If the data set does not already exist, then GIMUNZIP will allocate a new data set and then copy the data into the new data set.

New service routine to transfer GIMZIP packages: A new service routine, GIMGTPKG, has been created to get GIMZIP packages independently of the RECEIVE FROMNETWORK command. Using GIMGTPKG, the ServerPac installation can transport a GIMZIP package of archive files from a remote FTP server to a local z/OS system. GIMGTPKG uses the same techniques as the RECEIVE FROMNETWORK command to transport the package, but it does so without the infrastructure required to run an SMP/E command. GIMGTPKG stores the files of a GIMZIP package in the SMPNTS directory for later use.

RECEIVE assignment of SOURCEID values to existing SYSMODs

The RECEIVE command has been enhanced to assign the source ID value specified on the SOURCEID operand of the command to SYSMODs found in the SMPPTFIN input stream, even if they are already received. Formerly, the source ID value was not assigned to SYSMODs that are already received. This allows SYSMODs to be assigned a more consistent set of source ID values regardless of when and from what actual source the SYSMODs were received.

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SMP/E usage of IEBCOPY COPYMOD statement when copying load modules

To allow reblocking of load modules to the destination data set's block size, SMP/E will use the IEBCOPY COPYMOD statement whenever copying load modules. This reblocking helps provide more efficient use of space in SMPTLIB data sets produced by the RECEIVE command and in target and distribution libraries updated by the APPLY, ACCEPT, and RESTORE commands.

REJECT command addition of the CHECK operand

The CHECK operand is now allowed on the REJECT command. The CHECK operand indicates whether REJECT should perform a trial run of the command without actually updating the global zone or any data sets. This provides a way to test for errors that might occur during actual command processing and to receive reports on the changes that would be made.

Entry name wildcard allowed for CSI Query dialog

The CSI Query dialog will allow a wildcard (pattern) for the entry name specification. A selection list of all entry names that match the specified pattern will be displayed when using a wildcard. Patterns of the form ABC* or *DEF may be specified, where ABC and DEF are strings from 0 to 7 characters long.

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SMP/E 3.5

- IBM SMP/E for z/OS V3.5 (5655-G44) is available as of September 26, 2008
  - Included in z/OS V1.10 and z/OS 1.11
- SMP/E V3.5 provides
  - Programmatic Processing of PSP Buckets
    - New FIXCAT HOLDDATA support to relate PTFs to Fix Categories
    - Long (64 character) SOURCEID support with extensive wildcarding capabilities
    - A new REPORT MISSINGFIX command to identify required fixes not yet installed.
    - New Fix Category Explorer to help manage the list of fix categories with interest
  - Extensions to SMP/E's Internet delivery infrastructure
    - Network reconnect capabilities for HTTPS and FTP operations
    - Support for user-specific FTP client parameters
    - More complete PTF order fulfillment for RECEIVE ORDER
  - Various enhancements to simplify the use of SMP/E
    - *ZONEEDIT command enhancements*
    - *HOLDDATA report changes*
    - *BYPASS (HOLDSYS) message severity changes*
    - *SMP/E dialog enhancements*
    - *UNIX file utility input for LMODs*

IBM Education Assistant: http://publibz.boulder.ibm.com/zoslib/pdf/IEA-PDF-SMP35-SimplifyingPSPBuckets.pdf

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++HOLD FIXCAT

- A HOLDDATA type FIXCAT (fix category) to associate an APAR to a particular category of fix for target system PTFs identified as minimum levels
  - PSP buckets
  - Coexistence PTFs
- 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
- FIXCAT type ++HOLDs will be included with ERROR ++HOLDs:
  - Delivered with ***all*** existing IBM product and service offerings
  - Included in the same file (SMPHOLD)

Detailed presentation available through IBM Education Assistant

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Programmatic Help with Coexistence PTFs for z/OS Release 10

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 new Fix Category (FIXCAT) HOLDDATA to identify those fixes. For helping with coexistence verification for z/OS R10, the fix category of interest is IBM.Coexistence.z/OS.V1R10. 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 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 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 systems.

Create Metadata that Associates PTFs with Fix Categories

SMP/E will support new HOLDDATA constructs (FIXCAT type HOLDDATA) which will be delivered in existing IBM service delivery offerings. The FIXCAT HOLDATA will specify an APAR (REASON) that provides a fix for the held SYSMOD (FMID) that is associated with one or more Fix Categories. Similar to ERROR HOLDs, the RESOLVER operand identifies the SYSMOD that resolves the held SYSMOD. More specifically, the resolving SYSMOD supersedes the reason ID APAR that caused the SYSMOD to be held.

Unlike ERROR HOLDs, it is optional whether the APAR identified in FIXCAT HOLDs will affect processing for the held SYSMOD (FMID). The user has to explicitly express an interest in a Fix Category for it to affect subsequent SMP/E processing. If one or more Fix Categories for the APAR match any of those that are of interest to the user, then the FMID will not be APPLYd or ACCEPTed until the APAR is resolved. The APAR is resolved when a SYSMOD that matches the APAR name, or a SYSMOD that supersedes the APAR, is APPLYd or ACCEPTed.

SMP/E will support new HOLDDATA constructs (FIXCAT type HOLDDATA).
Specifically,

- RECEIVE processing is updated to process FIXCAT HOLDs
- SMP/E commands will allow users to express interests in one or more fix categories

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- SMP/E APPLY, ACCEPT, and REPORT commands will conditionally process the FIXCAT HOLDs based on user's interest and what is currently installed.
- A new REPORT command will identify missing fixes in one or more fix categories

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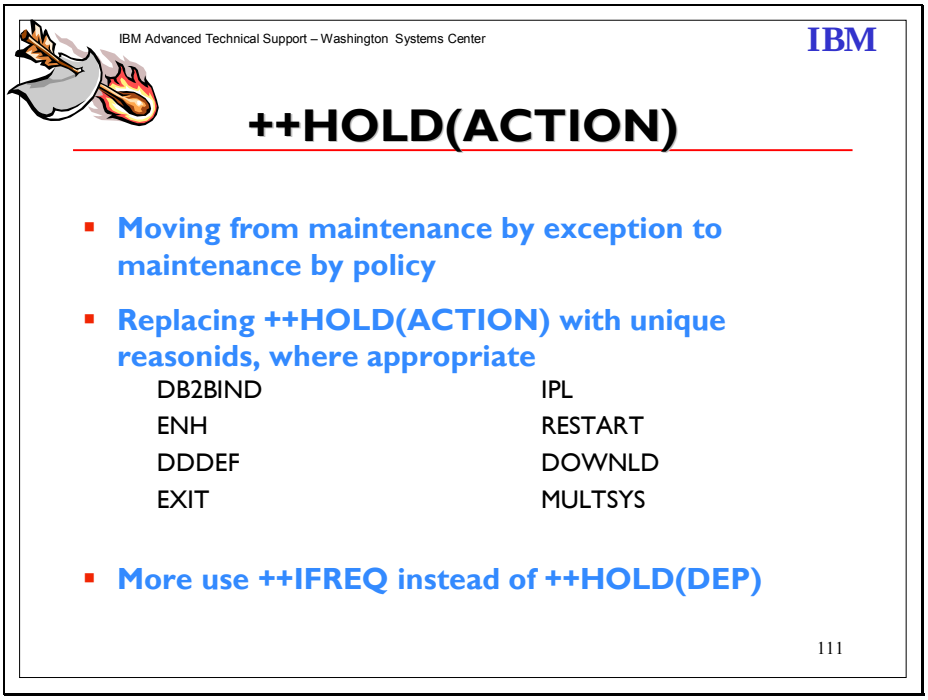

Structured HOLDDATA

The COMMENT portion of the existing ++HOLD MCS is structured so it is easier for customers to read and determine what action is needed and when the action needs to be performed. This will improve usability of the HOLDDATA and cut down on the time it takes to research HOLDs.

The structured HOLD format is loosely based on, and similar to the structure imposed for PTF coverletters. The focus is on making it easier for a human to read and understand the information for a system HOLD. The following standard sections will be used:

Function Affected

The Function Affected field will identify the functional entity affected by the information in the ++HOLD statement. The function identified will be meaningful to the system programmer that has to read and interpret the information, and does not necessarily need to correspond to product "components", Change Team boundaries, etc. It will identify functional entities which the user may decide to use, or not.

This field will provide a kind of hierarchy of components (functional entities), with the product (or, element of z/OS) at the top level, and with various levels of subcomponents at lower levels. These subcomponents would likely be product specific. The intent is to clearly describe what part of the user's system is affected by the ++HOLD information, starting at a high level, and going to the lowest level reasonable.

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Description

The Description field is a short description of the detail described by the hold, with a quick glance, the system programmer should get some idea what the hold is about, what type of action needs to be performed, etc. Key phrases and words should be used by all change teams for the sake of consistency. The description values will be categorized by the type of hold. That is, each hold reasonID will have a defined list of description keywords. This will be a dynamic list, which can (and should) be added to as necessary. Below is a list of valid hold reasons and the description values for each reason.

ACTION
Allocate new data set
Reallocate existing data set
Update configuration
Update security definition
Update Parameter
Execute utility
Recompile/relink application
Client/workstation update
File Tailor
Installation notes
Other (A catch-all category for actions which do not fit with the existing descriptions.)

ENH
Enhancement/Exploitation (Timing)

EXIT
Change to sample user exit or interface

IPL
Special instructions regarding the need for an IPL.

RESTART
Special instructions regarding subsystem and started tasks restart, (e.g coldstart). The sample short description could be 'coldstart'

DDDEF
A library or path is being added, deleted or requires reallocation.

DOWNLD
Client code needs to be downloaded (e.g. to a workstation)

MULTSYS
This PTF identifies fixes needing to be applied to multiple systems for one or more of the following reasons:
Preconditioning: to identify maintenance that requires other maintenance to be installed on other systems in a complex before this maintenance can be installed or deployed.
Coexistence (toleration): to identify maintenance requiring other maintenance to be installed on other systems in a complex, before the new function in this PTF can be installed or deployed. In exception conditions, a PTF may be considered a coexistence PTF if it is used to identify other maintenance to be installed on other systems in a complex, before function originally shipped in the product (FMID) can be deployed. This would be limited to cases where the need for coexistence service wasn't known when the product (FMID) was originally made available.

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Complete fix (exploitation): to identify maintenance that needs to be installed and deployed on multiple systems before the change can be made effective.

Timing

This section contains some information to further qualify the hold. For example, is the action a pre- or post-APPLY action? Does the action enable exploitation of new function? More than one characteristic value may be specified for each hold. For example, Post-APPLY and Exploitation. Timing *may* only appear on ACTION holds.

In textual form (for human readability), the hierarchy could be specified as a list of component levels. Each level appears on a separate line, the first line being the highest in the hierarchy, and the last level specified corresponds to the scope of the action.

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Enhanced Holddata

- **HOLDDATA with additional information to identify the reason for the HOLD and identify a fixing PTF**
- **Used in conjunction with the ERRSYSMODS Report**
- **Report identifies:**
  - missing PE and/or HIPER fixes
  - identify if a fixing PTF is available (RECEIVE Status)
  - reason indicator for the HIPER
  - report arranged by FMID
- **Generate SMPPUNCH output which includes all resolving sysmods**
  - held SYSMODS
  - uninstalled SYSMODS
  - resolving SYSMODs not received
- **Download from Internet**
  - http://service.boulder.ibm.com/390holddata.html

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To display the Enhanced HOLDDATA, use the SMP/E REPORT ERRSYSMODS command. The SMP/E report, when used with Enhanced HOLDDATA, identifies missing critical service that applies to your specific system. This allows you to identify any missing PE, HIPER, and year 2000 fixes for any target zone. Additionally, the report identifies whether a corrective PTF is available, whether the corrective PTF is already in RECEIVE status, and the reason indicator for a HIPER.

Enhanced HOLDDATA is available through ESO packages, with CBPDO orders, through the S/390 Service Update Facility (SUF), and from the World Wide Web. For more information, see the ESO Memo to Users Extension, the CBPDO Memo to Users Extension, or the Enhanced HOLDDATA Web site at: http://service.boulder.ibm.com/390holddata.html

Enhanced HOLDDATA can be processed and reported on by any release of OS/390, but displaying the additional (enhanced) information provided with Enhanced HOLDDATA is only possible starting with OS/390 R3. (OS/390 R3 and R4 require SMP/E PTF UR49243. Starting with OS/390 R5, the PTF is integrated.) The REPORT ERRSYSMODS command continues to support nonenhanced HOLDDATA. For details about the REPORT ERRSYSMODS command, see z/OS SMP/E Commands.

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Cross Product & Cross System Requisites

- **Coexistence Service**
  - Product FMIDs will contain ++IFREQ for all known coexistence service
  - All service introducing additional coexistence (or preconditioning) service will have:
    - ++IF REQs for coexistence (or preconditioning) service
    - ++HOLD REASON(MULTSYS)
  - The coexistence (or preconditioning) service will have the XSYSTEM flag turned
  - PSP entries in the ZOSGEN subset
- **Cross product dependencies**
  - Product FMIDs will contain ++IF REQs for all known cross product dependency service
  - All service introducing additional cross product dependencies will have:
    - ++IF REQs for cross product dependencies
    - Document the dependency in the PSP bucket
- **Use SMP/E to resolve cross product – cross system requisites**
  - Refer to the *SMP/E Users Guide*

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In OS/390 Release 3, SMP/E introduced the capability to automate the checking of cross-zone requisites. These cross zone requisites can be for cross product dependencies on the same system, as well as for cross system "Preconditioning", "Coexistence" ("toleration"), or "Completing a fix" ("exploitation") PTFs. Product packagers can and will use ++IF REQs to identify these requisites.

There are different methods that can be used for cross-zone processing. However, customer setup is required. A default zone group can be defined or the XZGROUP operand can be added to the install jobs. Once set up, SMP/E can identify cross-zone requisites needed in the 'set-to zone' which are in effect for the current APPLY/ACCEPT commands, as well as any cross-zone requisites in other zones for SYSMODs currently being installed. SMP/E checks if the requisite is already installed, or if it needs to be installed as part of the same SMP/E APPLY/ACCEPT command. Once products use ++IF REQs for MULTSYS PTFs, SMP/E will be able to be used to verify and install cross-zone requisites, thereby satisfying the ++HOLD REASON(MULTSYS) exception condition.

Note: If SYSMODs being installed into the set-to zone have requirements against the other cross-zones, that service must be APPLY'd to those zones before installation can be completed into the set-to zone.

See the *SMP/E Users Guide* for setting this up.

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Latest DOC APARs

- z/OS and z/OS.e DOC APAR and PTF ++HOLD Documentation (Web only)
- **Updated weekly (with closures from prior week)**
  - DOC APARs and ++HOLD for documentation changes from PTF cover letters
  - Facilitates:
    - Searching for changes (IBM BookManager BookServer Search facility)

http://publibz.boulder.ibm.com/cgi bin/bookmgr_OS390/BOOKS/ZIDOCMST/CCONTENTS

Or from the z/OS library page:

Latest z/OS DOC APARs and PTF ++HOLD DOC data

Obtain the latest updates to z/OS elements and features documentation.

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Sample List

CONTENTS "APAR and ++HOLD Documentation" via IBM BookManager BookServer - Netscape

File Edit View Go Communicator Help

Back Forward Reload Home Search Netscape Print Security Shop Stop

Bookmarks Location: http://www3.s390.ibm.com/bookmgr-cgi/bookmgr.cmd/BOOKS/IDDOCMST/CCONTENTS What's Related

Instant Message Internet Lookup New&Cool

```
603.0   APAR NUMBER: PQ33308 (DOC)
  603.1     THE C/C++ PROGRAMMING GUIDE SHOULD INDICATE THAT A UCS2 TO IBM-874 CONVERTOR IS PROVIDED.

604.0   APAR Number: PQ33356 (UR1)
  604.1     ADD AN ADDITIONAL VALUE FOR THE  ICONV UCS2 ENVIRONMENT VARIABLE

605.0   APAR Number: PQ33358 (UR1)
  605.1     DOWNWARD COMPATIBILITY TOLERATION

606.0   APAR NUMBER: PQ33363 (DOC)
  606.1     EXAMPLE PROGRAM INVOCATION FOR CEEPIPI IS INCORRECT WHEN USING PREINITIALIZATION SERVICES UNDER VM

607.0   APAR Number: PQ33407 (PER)
  607.1     ABEND0C4 USING ICONV AFTER PQ24648

608.0   APAR NUMBER: PQ33504 (DOC)
  608.1     MSGEWXLH1005I-THE MAXIMUM NUMBERS OF QUEUES HAS BEEN REACHED

609.0   APAR Number: PQ33614 (UR1)
  609.1     NEW FUNCTION - ROLLBACK OF SUPER USER HANDLER SUPPORT

610.0   APAR NUMBER: PQ34401 (DOC)
  610.1     POTENTIAL CEEMOUT TRUNCATION NOT DOCUMENTED

611.0   APAR Number: PQ34464 (PER)
  611.1     UNRESOLVED REFERENCE FOR @@EDCIPK AFTER UQ38327

612.0   APAR Number: PQ34816 (UR1)
  612.1     NEW FUNCTION - ALLOW CEEENTRY TO CREATE A NEW ENCLAVE FOR MAIN=YES

613.0   **APAR Number: PQ34823 (PER)
  613.1     DGW TERMINATES WHEN EMOHLDBLOCK ERROR IS RETURNED FROM OFFLOAD
```

Document: Done

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RedAlerts

- The place for extremely important HIPERs
- Ability to subscribe

https://www14.software.ibm.com/webapp/set2/sas/f/redAlerts/home.html

NEW POSTINGS since last SHARE
June 2012
March 2012

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June 29, 2012
Abstract:

JES2 Potential Loss of Spool data on z/OS 1.11 and 1.12

Description:

The fix for APAR OA36256 (RSU1112 PTFs UA61942, UA61943 UA61944 on HJE7760, HJE7770, and HJE7780 respectively) widened a timing window during JES2 initialization processing such that an initializing JES2 member may not obtain the correct status of other multi-access spool (MAS) members. As a result, this system's view of a spool volume may differ from the rest of the MAS. Consequently, later HALTING or DRAINING actions against the spool volume may result in incomplete cleanup.

PE APAR OA39737 will address the timing window and ensure the initializing member has the most accurate status of the MAS during initialization. In addition, APAR OA38016 will address spool errors caused by the timing window that may result in potential loss of spool data. These types of spool errors are already corrected in z/OS 1.13.

Please see OA39737 and OA38016 for more details or updates.

Recommended Actions:

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- If PTF for OA36256 is applied, please avoid putting a spool volume into DRAINING or HALTING state. New volumes can be added or started without exposure.
- If a Spool Drain or Halt must be done, Level 2 can check dumps of JES2 to determine if the spool volume is exposed.
- If OA36256 is applied and a spool volume is already in DRAINING or HALTING state, please remove OA36256 and then (rolling) WARM start each JES2 member.

March 15, 2012

Abstract:

PTF UK76697 (APAR PM51093) is required for DB2 10 for z/OS NFM (New Function Mode) customers executing data recovery in a Data Sharing environment.

Description:

IBM has become aware of potential data loss when executing data recovery in a DB2 10 Data Sharing environment.

The problem is related to Fast Log Apply processing when LRSN values are used for log record sequencing and may result in some log records not being processed when duplicate LRSN values are encountered. This situation applies to the RECOVER and RESTORE SYSTEM utilities and LPL and GRECP recovery. The REORG utility and DB2 restart processing are not exposed to this issue.

Possible symptoms include ABEND04E RC00C90102 DSNIBHRE:0C22 accompanied by MSGDSNI012I PAGE LOGICALLY BROKEN or other consistency errors during log apply. Other abends or errors may be encountered following log apply processing, including errors reported by CHECK INDEX or CHECK DATA.

Customers may validate their data by using CHECK INDEX or CHECK DATA utilities and any issues should be reported to IBM Software Support to determine root cause.

March 7, 2012

Abstract:

Possible data loss for EAV Users on releases z/OS 1.11, 1.12 and 1.13 using DSS Logical Dump or HSM Migrate and Backup processing

Description:

DSS may skip some of the user's data set during dump processing and result in a failure when attempting to Restore, Recall or Recover these data sets. This failure will prevent any of the data set from being restored. The problem can occur when using EAV volumes with data sets in the EAS region (Extended Addressability Space - cylinder managed region) where the addresses

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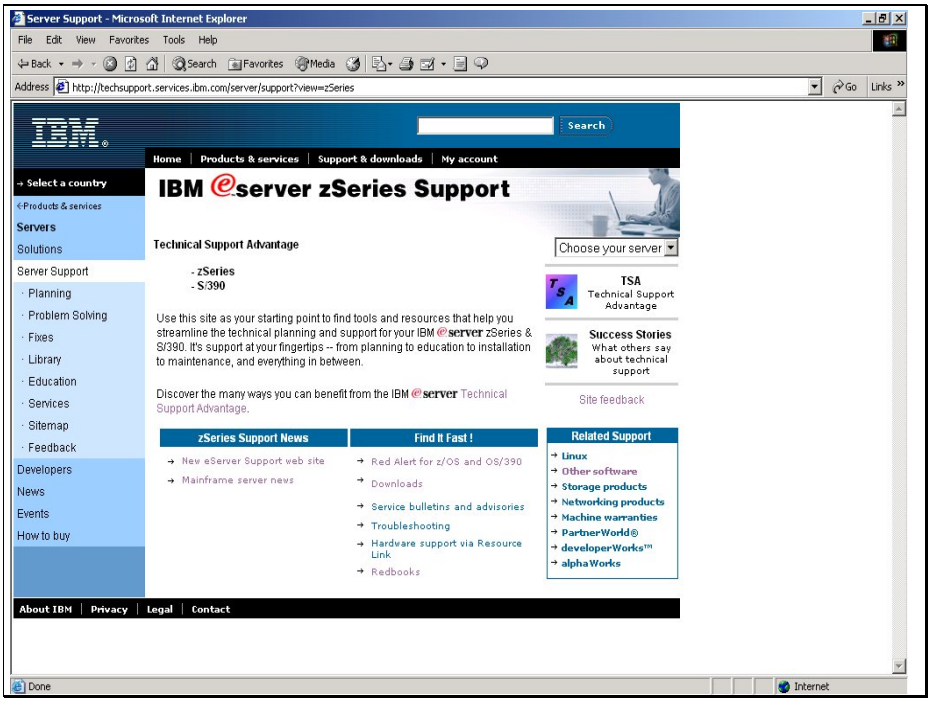
of the data set extents are not in ascending cylinder order, ie. the CCCH address of a later extent is less than a previous extent.

Please see APAR OA38942 for additional information and actions to determine exposure.

Recommended Actions:

Apply ++APAR for OA38942



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Time for...

Presentation located at:
http://www.ibm.com/support/techdocs/atsmastr.nsf/Web/Techdocs
Document number: PRS840

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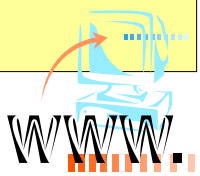
Old Information,
but still useful



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BPXPRMxx Syntax Checker

- **Provides capability to verify the syntax of the BPXPRMxx member prior to using it**
- **Available since OS/390 R9**
- **Issue a SETOMVS command**
  - SETOMVS SYNTAXCHECK=(XX)
    - messages sent to console for success or failure
    - errors will be in the log
  - command documented in MVS System Commands
- **Syntax only checks syntax - does not validate HFS mount points**

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You can use the SETOMVS SYNTAXCHECK operator command to check the syntax of a BPXPRMxx parmlib member before doing an IPL.

SYNTAXCHECK=(xx)
Specifies that the operator wishes to check the syntax of the designated parmlib member. For example, to check the syntax of BPXPRMZ1 the operator enters:

SETOMVS SYNTAXCHECK=(Z1)

The system returns a message indicating either that the syntax is correct or that syntax errors were found and written into the hard copy log. This command parses the parmlib member in the same manner and with the same messages as during IPL.

Note: SYNTAXCHECK checks only syntax and does not verify that HFS datasets or mount points are valid.

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SMF Records at a Glance

- **Programs for Viewing SMF Records**
  - ERBSCAN
    - shipped in OS/390 R6
    - exec invokes module ERBMFSCN to scan SMF data set
    - output displayed in an ISPF edit screen - use
  - ERBSHOW
    - display a single RMF record
    - record is formatted (broken into data sections) in a nice readable format
    - supplied in CLIST form in SYS1.SERBCLS
  - ERBCHGMT
    - relate all SMF records, no matter where they came from, to one specific timezone
    - changes GMT offsets to a common value
- **Documented in z/OS RMF Newsletter and in Techdocs**
  - http://www.ibm.com/servers/eserver/zseries/zos/rmf/
  - http://www.ibm.com/support/techdocs/atsmastr.nsf/PubAllNum/TD100161

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The first program, **ERBSCAN** shipped in OS/390 Rel 6. The ERBSCAN exec invokes module ERBMFSCN to scan an SMF dataset. The output listing of ERBMFSCN is then displayed in an ISPF EDIT screen. The user may then display a single RMF record by entering the command "ERBSHOW recno" in the EDIT command line. In this case the ERBSHOW exec is invoked as an EDIT macro, which will then re-invoke this exec with the specified record number. The corresponding record is formatted (broken into its data sections) and displayed in another EDIT window. ERBSHOW in supplied in CLIST form in SYS1.SERBCLS.

ERBCHGMT

Found in SYS1.SAMPLIB. This program provides a function to change GMT offsets to a common value. This function is needed when you have systems in a sysplex with different timezones and want to create postprocessor Sysplex reports.

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Console ID Tracking

- **IBM will begin removing support for 1-byte console ids in the release following z/OS V1R6**
- **Console names or the 4-byte console id (introduced in MVS/ESA 4.1.0) must be used instead**
- **The 1-byte Console Id Tracking Facility purpose is to identify legacy code that continues to use 1-byte console ids or migration ids (instead of console names or 4-byte console ids) in z/OS interfaces**
  - included with the BCP element of z/OS in both the Console Availability Feature (JBB7727) and in z/OS Version 1 Release 5
  - See Appendix A in *z/OS MVS Planning: Operations (* SA22-7601-03)
- **Looking for help to identify additional areas, not only in IBM products, but Vendor and Customer products**
  - Refer to informational APAR II13752

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The Console ID Tracking facility is designed to assist with the identification and removal of one-byte console IDs and one-byte migration IDs. In future releases, only four-byte IDs will be accepted. While four-byte IDs have generally replaced one-byte IDs, some services still accept one-byte IDs. The users of services that still accept one-byte console and migration IDs are known as violators, and instances of one-byte ID usage are known as violations.

Because no interfaces are being changed, the Console ID Tracking facility does not present any compatibility issues. To prepare for the removal of one-byte console IDs, the Console ID Tracking facility will provide the following new functions:

- The SETCON operator command, which is used to activate and deactivate the Console ID Tracking facility.
- The DISPLAY OPDATA,TRACKING operator command, which is used to display the current status of the Console ID Tracking facility, along with any recorded instances of violations.
- The CNIDTRxx parmlib member, which is used to list violations that have already been identified in order to prevent them from being recorded again.
- The CNZTRKR macro, which is used to invoke the Console ID Tracking facility.

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z/OS consoles 1-byte tracker exclusion list

- **Console Id Tracking facility Exclusion List**
  - SYS1.PARMLIB member sample for z/OS 1.4.2 (console enhancement feature) or z/OS 1.5, z/OS 1.6
- **Function: provides exclusion statements to be used by the Console Id Tracking facility so violation instances which match an exclusion statement will not be recorded by the facility.**
- **Refer to information APAR II13752**

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