z/OS
Installation Planning Checklist

z/OS Version 1 Release 3
(contains some z/OS V1R1 and V1R2 information)

Installation Plan Checklist

March 2002

This checklist should be used as a **supplement** to available publications. It is not intended to replace publications for planning your installation and migration.

There is an Installation Plan Skeleton in Appendix A of the *z/OS and z/OS.e Planning for Installation*. Use this if you do not have a tool to create an installation / migration plan for z/OS.

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Planning

__ Understand coexistence and fallback policy for z/OS

- See the *z/OS and z/OS.e Planning for Installation, Chapter 5*
- Consistent policy beginning with z/OS V1R1
- Coexistence of MVS releases with OS/390 releases is no longer supported as of OS/390 Release 9.
- The migration forward and back out should be made within four consecutive releases.

OS/390 and z/OS Coexistence Levels and Service Support Dates			
OS/390 z/OS Release	**General Availability of OS/390 -z/OS Release Identified in column 1**	**Service Support of OS/390 - z/OS Release Identified in Column 1 is Available Through**	**OS/390 Releases which can coexist with the OS/390 Release and z/OS release Identified in Column 1**
R8	September 1999	September 2002	R8, R7, R6, R5
R9	March 2000	March 2003	R9, R8, R7, R6
R10	September 2000	September 2004	R10, R9, R8, R7, R6
z/OS V1R1	March 2001	March 2004	z/OS V1R1, OS/390 R10, R9, R8, R7, R6 (1)
z/OS V1R2	October 26, 2001	October 2004	z/OS V1R1,OS/390 R10, R9, R8
z/OS V1R3	March, 2002	March 2005	z/OS R2, z/OS R1, OS/390 R10, R9
Table Notes: *1*. z/OS V1R1 and OS/390 R10 are treated as one coexistence release. *2*. OS/390 Release 1-7 have service support withdrawn.			

__ Understand integration test, as performed by IBM.
Notes:
1. Customers must still test their applications.
2. Quarterly test reports are produced. They are available on the Internet.
IBM Integration Test home page ⇨ http://www.ibm.com/servers/eserver/zseries/zos/integtst/

__ Read *z/OS V1R3.0 Introduction and Release Guide*, *GA22-7502*

__ Planning and Migration Assistant (PMA)
Use this tool to create reports of what's currently installed on your s/390 system and what changes you can expect when you go to a new release.
http://www.ibm.com/servers/eserver/zseries/zos/smpe/pma/
Note: PMA can help determine which USERMODs need to be reworked and which just need to be reinstalled. Use the Top or Intermediate Product Migration Changes Report to determine the product migration impacts reviewing the "changed" FMIDs. Then using the LIST SYSMOD USERMOD FORMID(listing the "changed" FMIDs) command.

__ Read *z/OS and z/OS.e Planning for Installation*, *GA22-7504*.

- Optionally, create an interactive edition of this book to create a tailored installation checklist at: http://www.ibm.com/servers/eserver/zseries/zos/wizards

__ Review summary of changes.

__ Review base elements and optional features (figures 1 and 2) in Chapter 1.
These figures provide indicators for:
a.) whether an element is exclusive or non-exclusive
b.) identifies the last release the element changed

__ Review software requirements in Appendix B.

__ Read ServerPac: *Using the Installation Dialog,* SA22-7815. Applicable to ServerPac users.

__ Obtain redbook "*z/OS Version 1 Release 2 Implementation*, SG24-6235-00. PDF available at http://publib-b.boulder.ibm.com/Redbooks.nsf/Portals/S390

__ Understand z/OS system replacement delivery vehicles:
- ♦ ServerPac (entitled)
- ♦ SystemPac (fee) (http://www.can.ibm.com/custompac) .

__ Understand *Software Upgrade* install path via the ServerPac.

__ Understand enable/disable support for elements in z/OS.
__ Ensure IEASYSxx used for IPL points to the proper IFAPRDxx for z/OS and reflect the program number for z/OS
__ Make appropriate changes for Infoprint Server for z/OS V1R3

Note: When IBM License Manager is production ready - enable/disable is specified in the product certificate for those products which are ILM enabled.

__ Understand terms and conditions when enabling elements/features of z/OS.

__ Understand service integration levels.
Note: Documented in *z/OS and z/OS.e Planning for Installation*, Chapter 1.
Service integration levels are identified by a unique SOURCEID assigned to each PTF. The integration-tested service level is tagged with a SOURCEID of ZOSV1Rn. Where "n" is the z/OS release.

__ Understand Recommended Service Upgrade (RSU).
An RSU is a regular service upgrade (++ASSIGN statements with a sourceid=RSUyymm) IBM recommends for installation.
Note: RSU is redefined. Referred as Consolidated Service Test (CST). See http://www.ibm.com/servers/eserver/zseries/zos/servicetst

__ Plan and schedule z/OS education.
IBM courses are available for z/OS. The existing curriculum is updated as needed. For schedules and enrollments:
- ♦ Call 1-800-IBM-TEACH, extension ESA.
- ♦ World Wide Web - IBM Global Campus URL: http://www.ibm.com/services/learning/

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__ Identify product library requirements:

- *The z/OS V1R3 Information Roadmap, SA22-7500*, contains titles and order numbers for books, for all elements and products, which are part of z/OS.
- Books are available in softcopy on CD-ROM and through the Internet at http://www.ibm.com/servers/eserver/zseries/zos/bkserv/
- Unpriced publications no longer available on tape

__ Review planning books:

- *z/OS V1R3 Migration, GA22-7580*, (formerly *MVS Conversion Notebook*)
- Applicable element/feature specific planning and migration books, as pointed to in the *z/OS and z/OS.e Planning for Installation*.
- *ServerPac: Using the Installation Dialog, SA22-7815*:

__ Identify non-IBM (ISV) product requirements.

__ Contact Vendors

Notes:

1.) Review ISV product support with z/OS

- ISV Developer Solution
  http://www.ibm.com/servers/eserver/zseries/solutions/s390da/applications/index.html
- Vendor Product Compatibility with z/OS
  http://www.ibm.com/servers/eserver/zseries/solutions/s390da/osnp.html
- Global Solution Directory of ISVs
  http://www.ibm.com/servers/eserver/zseries/solutions/s390da/applications/guide.html

2.) Fee offerings (SystemPac) include some ISV product(s) integration via the product checklist

__ Identify toleration and coexistence service.

__ See *z/OS and z/OS.e Planning for Installation*, *Chapter 5*
Note: Some service requires installation prior to IPL.

__ Review PSP bucket for additions

__ Review zSeries PSP bucket for required z/Architecture (64-bit) service

__ Program directories for all elements and products are included in both ServerPac and CBPDO orders. They are located in data set "hlq.PGMDIR". Member $INDEXPD is an index pointer to locating the correct program directory for each element/product.

- Some are available from internet at:
  http://www.ibm.com/servers/eserver/zseries/zos/installation/#resource

__ Ensure correct levels of IBM non-z/OS products

__ See *Appendix C* in *z/OS and z/OS .e Planning for Installation* for a list of minimum levels of product which run with z/OS.

__ Identify software requirements for z/OS elements and features. Review *Appendix B* in *z/OS and z/OS.e Planning for Installation*

__ Identify usermods and user exits to be installed.
See *z/OS MVS Installation Exits, SA22-7593*

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__ Identify user SVCs to be installed.

__ Obtain PSP upgrades:
Note: PSP buckets can be obtained from URL: (requires an IBM common registration userid) http://techsupport.services.ibm.com/server/planning
UPGRADE=ZOSV1R3 SUBSET=exclusive element name by FMID, or
=FMID/yymm, or
=descriptive name

UPGRADE=ZOSV1Rx SUBSET=ZOSGEN Note: x = Release of z/OS

ServerPac dialogs: UPGRADE=ZOSV1Rx SUBSET=SERVERPAC

Non-exclusive elements: Located in product specific program directory.

__ Review hardware configuration:
__ Ensure the planned hardware configuration is reflected in the IODF and IOCP

__ Ensure any hardware requisites are satisfied.
__ Configure LPARs to use only central storage when z/OS is on a zSeries. z/OS on a z900 server does not support expanded storage.
__ 2105 Enterprise Storage Server requires EC level F22584 or later

__ Identify system software parameter and procedural updates:
- SYS1.PARMLIB (OS/390 R2 supports PARMLIB concatenation)
- SYS1.PROCLIB
- SYS1.VTAMLST
- JESPARMS

__ Identify required updates to program language options.
Note: IBM-supplied default language options will be used.

__ Identify changes to system commands

__ Identify changes to messages
Note: See *z/OS Summary of Message Changes, SA22-7505.* Contains new, changed and deleted.

__ Identify changes to macros

__ Identify changes to SMF records

__ Identify changes to Callable Services

__ Identify changes to MVS control blocks

__ Identify changes to IPCS commands

__ Identify required updates to operational procedures.

__ Identify required updates to system automated operations.

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__ Identify Custom-Built FCBs to be installed.

__ Identify required updates to administrative procedures.
Some areas you should examine are:
- Security procedures
- Procedures for adding, deleting, and changing user IDs
- Application implementation procedures
- Problem management procedures
- Change management procedures
- Test procedures
- Recovery procedures
- Data management procedures.

__ Identify subsystem migration requirements.
- Identify any hardware/software changes required to accommodate existing subsystems such as CICS, IMS, DB2, and JES on the new z/OS system.

__ Run an SMP/E REPORT CROSSZONES command and review the resulting report to ensure other product service dependencies are met.
Note: This report can also be set up to ensure coexistence/toleration service is installed when migrating from one version/release to another.

__ Determine how source-maintained products will handle macro level incompatibilities.
Note: SPLEVEL=6. (SPLEVEL has not changed since OS/390 R2.)

__ Identify changes affecting applications.

__ Review or establish backup and recovery procedures.

__ Review or establish testing environment.

__ Review or establish service procedures.

__ Obtain DASD volumes for installation.
- Total DASD space is documented in *z/OS and z/OS.e Planning for Installation*, GC28-1726
- Root HFS size increased significantly in z/OS 1.2
- 3350 device not supported

__ Satisfy driving system requirements:
- See *z/OS and z/OS.e Planning for Installation*
  - HFS unload from the Target System is no longer supported or provided for
  - HFS unload from Driving System (Release 7 and higher)
- A Customized Offerings Driver, 5665-343, is available when you cannot meet driving system requirements. This driver is entitled for z/OS customers.
- Minimum driving system level is OS/390 R8 with PTFs.

__ Review and update existing standards based on new or changed functions, interfaces

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__ Identify variables required for ServerPac Installation Dialogs
Note: Description of variables is located in Using the Installation Dialog, SA22-7815

__ Develop plans for exploiting new z/OS functions.

__ Create an installation and migration plan.
- Use the *z/OS Installation Planning Wizard*. It will guide you through the z/OS installation planning tasks. http://www.ibm.com/servers/eserver/zseries/zos/wizards/ipw/ipwv1r1/

__ Identify product/element customization tasks.

__ Obtain a product checklist for the chosen delivery vehicle.
Note: The product checklist is available at:
http://www.ibm.com/servers/eserver/zseries/software/swinfo/os390.htm

__ Identify additional required IBM products not on the checklist for reinstallation when selecting ServerPac.

__ Determine the JES level to bring forward - if required.
Notes for ServerPac:
1. Both JES2 and JES3 are installed.
2. Both JES2 and JES3 are installed into separate target and distribution libraries from the BCP.
3. JES2 and SDSF are installed in a separate zone from the other MVS products.
4. JES3 is installed in its own zone.
5. Job is provided to remove the JES not being used.

Ordering

ShopzSeries is a web-based ordering tool. Access from web site: https://www14.software.ibm.com/webapp/ShopzSeries/ShopzSeries.jsp or off the z/OS "How to Buy" home page: http://www.ibm.com/servers/eserver/zseries/zos/buy.html under the z/OS Ordering Information section.

__ Place an order for z/OS using ShopzSeries.
- Strong encryption features available outside North America
- Features still requiring US Export regulations are: IBM HTTP Server NA Secure, OCSF Security Level 3, SecureWay Communications Server Security Level 3 and System SSL Security Level 3.

__ Track software order via the internet: http://service.boulder.ibm.com/software_order_status

__ Order all non-priced optional features
- Cannot order separately, must reorder z/OS to receive, if needed later

__ z/OS V1R3 msys for Operations contains parts of Tivoli Netview V1R4 (5697-B82) and System Automation V2R1 (5645-006)
Note:

1. *If you want to use full-function of these products at these levels, include them in your order.*
2. *If you are using lower levels of these products, they must be kept in a separate SMP/E zone from z/OS V1R3.*

Note: OS/390 R10 is orderable through December 17, 2002.

Prepare for System Replacement

There are several tasks to be done to establish an environment for easing in a new system. They are:

__ Separate IBM code from user code. This includes:
- Non-IBM products
- IBM products not available in checklist
- User modifications
- User exits.

__ Install additional required IBM products into their own set of target distribution libraries.
- Install required IBM products which are not available in the ServerPac checklist into their own set of libraries, if at all possible. These libraries should not reside on the IPL volume.

  Note: Use the BUILDMCS command to copy products from one pair of target and distribution libraries into another pair of target and distribution libraries. See z/OS SMP/E Commands, SA22-7771, for a full description of BUILDMCS.

__ (**R10**) AFP Fonts no longer shipped with OS/390

__ (**R9**) BTAM no longer shipped with OS/390. Service withdrawn for BTAM/SP (5665-279) and BTAM ES (5746-RC5) on March 31, 2002[1]. Both products are withdrawn from Marketing. See WSC FLASH10084 for supporting documentation at http://www.ibm.com/support/techdocs

__ Install non-IBM products in their own set of libraries, excluding the nucleus.

__ Use an alternate LPA libraries for non-ServerPac products.

Notes:
1. These non-ServerPac products should use alternate LPALIB through the LPALSTxx parmlib member.
2. Dynamic LPALST is available with OS/390 R4. It requires conversion to PROGxx parmlib member.

__ Use an alternate LINKLIB for non-ServerPac products.

Notes:
1. Linklist libraries can be added to parmlib member LNKLSTxx or PROGxx.
2. Dynamic Linklist is available with OS/390 R3. It requires conversion to PROGxx parmlib member.

[1] Announcement Letter 900-040.

__ Consider using dynamic exit service for user exits.

__ Standardize data set names and placement.

__ Review current procedures and processes for system installation to determine applicability.

__ Determine SYS1.PARMLIB usage.

ServerPac Installation

Note: ServerPac ships recommended data set layout as the default. Many enhancements to ServerPac with z/OS 1.2 and z/OS 1.3.

__ Install CustomPac Installation dialogs.

__ Invoke CustomPac Installation Dialogs.

__ Run installation jobs and check output.
Note: These jobs are documented in the ServerPac: Installing Your Order and are submitted via the CustomPac Dialogs.

__ Use the following recommended blocksizes:
- non-RECFM=U: use system determined blocksize (BLKSIZE=0)
- RECFM=U: use BLKSIZE=32760

__ Review integrated SYSTEM HOLDs for possible required actions.

Note: HOLDDATA information is located on the RIM tape. The customized installation guide will provide a pointer to the appropriate data set.

SYSTEM HOLD Information

To get a complete view of the system HOLDDATA incorporated into a ServerPac, the following must be reviewed:

> Unresolved SYSTEMHOLD Report
> Pre-Analyzed SYSTEMHOLD Report
> SYSTEMHOLD Analysis Report

__ Run required post-installation jobs from dialogs.

__ Identify regressed service, if applicable.
The CustomPac dialogs provide an SMP/E Report SYSMODS job and IFREQ checker.

__ Download code to other platforms, if applicable.

CBPDO Installation

__ Read the Program Directory for z/OS and other program directories.

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__ Clone all applicable volumes/data sets (includes HFS)

__ Review PSP buckets
- UPGRADE: ZOSV1R3
- Subset: ZOSGEN and one for each element

__ Follow the steps in the program directories to prepare for installation; to SMP/E RECEIVE, APPLY, and ACCEPT the z/OS FMIDs and service; to run installation and post-installation jobs; and to verify installation.
Notes:

1. Elements are grouped together based on driving and target system requirements, element dependencies, and natural separation points, called waves and ripples. **Ripples must be processed in the order specified, with all FMIDs in a ripple installed.**
   - Wave 0: FMIDs which should be available on driving system for subsequent wave installs.
     - SMP/E, HLASM and the binder
     - Wave 0 requires OS/390 R8 with SMP/E PTF UR52320 (service level 27.19)
   - Wave 1: All FMIDs, except JES2 and JES3, and FMIDs providing full function mode and connectivity for Wave 2 install.
     - UNIX System Services Application Services and IBM Communication Server's HFS FMID is moved to Wave 1.
     - Requires OS/390 R7 SMP/E or higher and OS/390 R10 HLASM
   - Wave 2: FMIDs installing into a HFS which may need to use shell and utility commands.
     - Wave 2 **must** be separate from Wave 1 if the driving system, the system being used to install the waves or elements, doesn't meet the requirements listed in *z/OS and z/OS.e Planning for Installatio*n. In this case, once Wave 1 is completed, that system can be IPLed and used as the driving system for Wave 2.
   - Wave 3: JES2 and/or JES3
     - May be combined with Wave 1 or Wave 2, but cannot occur prior to Wave 1.

1. When HFS files are already present, you must ensure these HFS files are available for Wave 1 processing.
1. OS/390 R10 DFSMS must be installed before IPL. Failure to do so will result in a disabled Wait State.
2. The optional dummy function delete job for OS/390 Release 10 DFSMS is mandatory in Release 10.
   - BCP is shipping loader code and if DFSMS is not completely deleted prior to the install, the ACCEPT will fail. A sample job is provided.

__ Use the following recommended blocksizes:
- non-RECFM=U: use system determined blocksize (BLKSIZE=0)
- RECFM=U: BLKSIZE=32760

__ Download code to other platforms (for example, onto workstations).

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Perform Pre-IPL Customization

This includes performing migration actions which must be completed prior to IPLing the target system.

ServerPac Installation

The following jobs are documented in the *ServerPac: Installing Your Order* and can be run from the CustomPac Installation Dialogs:

__ Create IPL text.

__ Build stand-alone dump text.

__ Set up a new IPCS environment.
Note: SEZAMIG is no longer used by IP as of z/OS 1.2

__ Set up an ISPF environment.
- Ensure proper libraries are concatenated.
- Modify ISPF libraries to enable products and elements to be invoked.

__ Perform initial customization for individual elements.

__ Rework any usermods and user exits required to IPL z/OS.

CBPDO Installation

The following tasks are documented in Program Directory for z/OS and other program directories:

__ Create IPL text.

__ Build stand-alone dump text.

__ Set up a new IPCS environment.
Note:
1. SEZAMIG is no longer used by IP as of z/OS 1.2
2. Concatenate the JES2 or JES3 IPCS data sets

__ Set up an ISPF environment.
- Ensure proper libraries are concatenated.
- Modify ISPF libraries to enable products and elements to be invoked.

__ Verify IKJTSOxx member points to your desired Broadcast data set

__ Remove Broadcast reference in MSTRJCLxx

__ Add SYS1.SDWWDLPA to LPALSTxx (wait state 40 if not)

__ Perform initial customization for individual elements.

__ Update the master catalog (CBPDO).

__ Rework any usermods required to IPL z/OS.

Perform Migration Actions

The required migration actions depend on what software levels you are coming from and whether you plan to exploit new function.

__ Create or migrate IODF, if necessary.

__ Modify system control files:
- SYS1.PARMLIB
- SYS1.PROCLIB
- SYS1.VTAMLST
- JES initialization deck

__ Review *z/OS UNIX System Services Planning*

__ Set up the proper UNIX System Services environment for z/OS.
Notes:
1. The OMVS address space starts automatically since OS/390 R3.
2. Must run full function mode

__ Remove ARCHLVL from IEASYSxx. Will default to correct level when running z/OS. The processor determines the appropriate z/OS architecture mode.

Verify the New System

__ IPL the system as the target system and log on.
Note:
1. This system is not customized beyond what was required to IPL the system and does not exploit any of the new function.
2. IPLing z/OS on a z800 in an LPAR or as a guest under VM - **ensure** LPAR name is not ZOSExxxx

__ Run the Installation Verification procedures
- See *ServerPac: Installing Your Order for information* on how the jobs can be run from the CustomPac Installation Dialogs.
- See Program Directory for z/OS and other program directories for information on how to run these jobs, if using CBPDO to install.

Customize the System

__ Redo customization (update and merge system control files).

Note: See conversion notebooks and migration guides in product libraries.

__ Set up the security environment.

__ Reinstall user exits and usermods, if required.

__ Install any new required products and service (including ISV products).

__ Reconnect subsystems (DB2, CICS, IMS, etc.)

Verify the Customized New System

__ IPL the target system.
Note: This system is customized but does not exploit any of the new function.

__ Perform function and stress test.
Note: IBM's comprehensive system testing does not replace the need for this testing in your own environment.

Testing might include:

- Initializing the system.
- Initializing JES.
- Logging on to TSO/E.
- Running the installation verification programs (IVPs), if supplied with the element or feature. The IVP jobs are listed in *z/OS and z/OS.e Planning for Installation*.
- Submitting a job.
- Checking the job's output.
- Starting customizing z/OS.
- If CICS or IMS is installed, initializing a region and signing on to a terminal.
- Bringing your independent software vendor products (ISVs) into the test environment.
- Running critical production jobs.
- Supporting a representative interactive workload.
- Communicating with all networks.
- Testing critical functions in applications.
- Checking some of the paths not often taken.
- Checking for completeness of accounting records.
- Testing all non-IBM product functions.
- Bringing your applications into the test environment.
- Ensuring performance goals stated in service level agreements can be met.

Migrate to Production

__ Cut the first system image to Production.

__ Prepare to clone the system (unit and volser on DDDEFs).

__ Roll the IPL across remaining system images, if applicable.

Exploit New Function

__ Determine functions to exploit.

__ Create a plan for exploiting new function.
Note: See conversion notebooks and migration guides in product libraries.

__ Execute the plan.

Maintenance after Installation

__ Understand Recommended Service Update (RSU) - changes made
Note: Review information at: http://www.ibm.com/servers/eserver/zseries/zos/servicetst

__ Service information - S/390 Software Support
http://techsupport.services.ibm.com/server/support
Note: From this site you can submit problems, review problems, search APARS, pull PSP buckets and link to other sites to download fixes and enhanced holddata.

__ ShopzSeries https://www14.software.ibm.com/webapp/ShopzSeries/ShopzSeries.jsp
An internet based S/390 software service tool to obtain preventive and corrective maintenance. In 2002 will be able to receive service and products via internet.

__ Retrieve current holddata. May be obtained from internet. Enhanced HOLDDATA improves the content of HOLDDATA by providing ERROR ++HOLDs for PE APARs and for HIPER (High Impact and Pervasive) APARs. The ++HOLD includes the fixing PTF number, when available, and any HIPER reason flags such as:

- IPL
- data loss
- major function loss
- performance
- pervasive

Enhanced HOLDDATA: http://service.boulder.ibm.com/s390holddata.html

New or Changed Elements in z/OS V1R3

This section identifies new, changed or deleted elements in z/OS V1R3.

Changed Base Elements

__ BCP

__ Cryptographic Services
__ DFSMSdfp
__ Distributed File Service
__ Language Environment
__ TSO/E
__ z/OS UNIX System Services

Changed Optional Elements

__ DFSMSdss
__ DFSMShsm (and DFSMSdss)
__ DFSMSrmm
__ Security Server

Withdrawn (as of z/OS V1R3)

Note: See the *z/OS Planning for Information* for removed elements in prior releases)

__ LANRES
__ WLM compatibility mode
__ KEYRANGE specification - (in DFSMSdfp)

Withdrawn (as of z/OS V1R4)

__ Application Development Support
(Headers, source, and samples for Application Support Class & Collection Class libraries)
__ RDBM DB2 Backend (in LDAP Server)

Withdrawn in a future z/OS release

__ JOBCAT and STEPCAT facilities in DFSMSdfp. See WSC FLASH10102.
__ OS/390 R10 C/C++ compilers from C/C++ with and without Debug Tool
__ C++ IBM Open Class Library - (Run time Support)

Element Migration Information

z/Architecture (64-bit)

__ Review *z/OS MVS Programming: Assembler Services Reference* and *z/OS MVS Programming: Authorized Assembler Services Reference for* 64-bit Virtual Addressing Support

__ Contact ISVs for 64-bit requirements

__ Obtain PSP bucket for 64-bit service requirements
UPGRADE: 2064DEVICE SUBSET: 2064/ZOS

__ DFSORT considerations - Possible system performance impact (paging) when using in 64-bit mode.

__ Check DFSORT maintenance using the search D/T2064

The DFSORT Installation and Customization Release 14 publication (SC33-4034) describes the hiperspace installation options referenced below. DFSORT users who specify any one of the following ICEMAC (installation) options:

HIPRMAX=OPTIMAL EXPMAX=MAX EXPOLD=MAX EXPRES=MAX
HIPRMAX=p% EXPMAX=p% EXPOLD=p% EXPRES=p%

may see an increased usage of hiperspace on the z/900 CPU. This is due to calculations now being based on central storage values instead of expanded storage values. Increased paging may occur.

The customer can take one of the following actions appropriate to their site (see DFSORT publication for an explanation of "n" value referenced below):

a. change their MAX setting to p% value or an "n" value

b. change their p% value to a smaller p% value or an "n" value

c. specify HIPRMAX=0 to turn off hipersorting

__ Configure expanded storage to all Central Storage. (Expanded Storage is ignored in z/Architecture mode.)

__ Understand how to evaluate an all central storage environment. See WSC White Paper WP100269 at http://www.ibm.com/support/techdocs/atsmastr.nsf/PubAllNum/WP100269

__ Understand Load Real Address (LRA) instruction considerations
> cannot return an address larger than 2GB
> can be used if the virtual is known to be backed below 2GB

__ Understand paging environment on the images migrating to 64-bit mode
__ WSC Flash 10086 outlines the capacity planning methodology
__ Use the SOFTCAP Tool to evaluate the effect on z/Architecture and S/390 processor capacity when migrating to newer levels of software. Obtain from:
http://www.ibm.com/support/techdocs/atsmastr.nsf/PubAllNum/PRS268

__ Understand enhancements in RMF
All metrics related to expanded storage are obsolete

__ Understand 64-bit Virtual Restrictions
- Data spaces > 2GB not supported
- Hiperspaces > 2GB not supported
- Subspace capability not extended to virtual above 2GB
- DIV not extended to virtual above 2GB
- Sharing virtual above 2GB not supported
- Copy-on-Write not supported for virtual above 2GB
- DAT tables for virtual above 2GB are not pageable

__ Review IEFUSI exit for 64-bit virtual
Historically, users could limit program storage below 16 megabytes in virtual storage by using IEALIMIT. IEALIMIT can still be used to limit program storage in the non extended region; however, IEFUSI is the preferred exit routine. See *MVS Installation Exits*, SA22-7593-02, for details on the advantages over IEALIMIT.

__ Understand which facilities are removed
- SWAP data sets
- ADSM
- Virtual Fetch
- Asynchronous Data Mover

- Program Call Fast
- Vector Facility
- Asynchronous Paging

__ Move to new High Level Assembler (High Level Assembler for MVS, VM &VSE V1R4) which supports 64-bit instructions

__ Use of MEMLIMIT keyword
A new parameter has been added to the SMFPRMxx parmlib member. MEMLIMIT specifies the default value used by SMF jobs that do not have an explicit memory limit.

Communications Server

Communications Server – TCP/IP (z/OS V1R2)

Although z/OS V1R2 Communications Server is part of the z/OS V1R2 base and is installed together with that base, the VTAM and TCP/IP for z/OS system programmer will want to develop his own planning, implementation and testing plan for the Communications Server components. The following checklist will be of use in creating and carrying out these plans.

For the IP Services Component of Communications Server:

1. Obtain the "Planning and Migration Checklist" from Appendix B of the *Communications Server IP Migration V1R2, GC31-8773-01.* Follow all steps in this planning checklist, including obtaining a copy of the "Program Directory for z/OS V1R2" and a copy of the Preventive Service Planning (PSP) bucket for the VTAM and/or TCP/IP components.

2. Review at a minimum the following sections of the *Communications Server IP Migration V1R2, GC31-8773-01.*

Chapter 1: Overview of Communications Server
Chapter 2: Migration Roadmap (List of changes and reference pages)
Chapter 3: New and Changed Interfaces

Take into special account the changes made to the **System Resolver** (a Common Resolver) and those made to setting aside ECSA and private storage (GLOBALCONFIG ECSALIMIT and POOLLIMIT) for TCP/IP usage and decide to what extent you wish to take advantage of these in your migration path.

Other Chapters:
All chapters dealing with Release Summaries for releases of Communications Server newer than the release from which you are migrating. For example, if you are migrating from V2R7, read the Release Summary information for V2R8, V2R10, z/OS V1R1, and z/OS V1R2 as described in chapters 4, 5, 6, and 7.

Other Considerations:
Read any chapters dealing with specific IP servers to which you will be migrating.

3. Keep at hand Appendix D of the *IP Migration manual*, which lists SNA and IP Information APARs relating to the implementation documentation crucial to your successful migration.

4. Obtain or know where to find the IP manuals important to your implementation of V1R2. These are documented in the *IP Migration Manual, GC31-8773-01*.

5. Develop an education plan, using as a basis the information from Appendix B of the *Communications Server IP Migration V1R2, GC31-8773-01*: "Learning about Implementation of TCP/IP and z/OS Communications Server V1R2."

6. The installation process for z/OS V1R2 includes an Installation Verification Procedure (IVP) for Communications Server. You may want to review what was verified and how it was verified by consulting the appropriate pages of the "Program Directory for z/OS V1R2."

For the SNA Services Component of Communications Server:

1. Review at a minimum the following sections of the *Communications Server SNA Migration V1R2, GC31-8774-01*

Chapter 1: z/OS V1R2 Communications Server Release Summary

Other Chapters: The chapter on Upgrading from your current release to z/OS V1R2 Communications Server. For example, if you are migrating from V2R7, read Chapter 5: "Upgrading from Communications Server for OS/390 V2R7 to z/OS V1R2 Communications Server."

Chapter 7: Post-Installation Considerations for z/OS V1R2 Communications Server

2 . Keep at hand *Appendix C of the SNA Migration* manual, which lists SNA and IP Information APARs relating to the implementation documentation crucial to your successful migration.

3. Obtain or know where to find the SNA manuals important to your implementation of V1R2. These are documented in the *SNA Migration* Manual, GC31-8774-01.

BCP

BCP (z/OS V1R3)

__ Review “red alerts” regarding GRS at http://techsupport.services.ibm.com/390/redalerts.html

- Removal of Workload Management compatibility mode
  - System ignores parmlib members IEAICSxx and IEAIPSxx
  - In SCHEDxx, the PGMNAME(name) statement with PRIV keyword is no longer valid
  - In IEASYSxx, the ICS= and IPS= parameters are ignored and can be removed.
  - Most options in IEAOPTxx are no longer valid.
- System Logger enhancements
  - Allows dynamic changing policy attributes for log streams and structures. The primary LOGR couple data set must be at least at the z/OS 1.2 format level.
  - There are release coexistence limitations when a new LOGR couple data set is brought into a sysplex. Review *z/OS MVS Setting Up a Sysplex*.
- TSO/E Dynamic Broadcast Support
  - Allows for a flexible broadcast data set processing

__ Specify the IKJTSOxx member to use on the IKJTSO= parameter in IEASYSxx.
__ Specify the broadcast data set on the BROADCAST parameter on the SEND statement.
__ MSTJCLxx no longer used to specify the broadcast data set.

- 64-bit Virtual Addressing Support
  - Additional authorized and unauthorized services. Review *z/OS MVS Programming: Assembler Services Reference* and *z/OS MVS Programming: Authorized Assembler Services Reference.*

BCP (z/OS V1R2)

- Review the z900 PSP bucket for latest information and service related to z/Architecture (64-bit). UPGRADE=2064DEVICE
- IRD - Intelligent resource Director requires WLM goal mode
  __ See PSP bucket UPGRADE: 2064DEVICE Subset: 2064/IRD for service recommendations
  __ Minimum micro code level required is Driver 38
- Coupling Facility Duplexing
  - Delayed - see announcement letter 102-060 dated March 5, 2002. Announcement will be made end of June 2002 with additional information on availability.
- WLM - Last release to support compatibility mode.
  - LPAR CPU Management for Linux - shipped disabled in z/OS 1.2 .

    __ Enabling APAR OW50221

SYS1.PARMLIB Changes

See *z/OS MVS Migration, GA22-7580*, Appendix A for a complete description of change.

z/OS SYS1.PARMLIB Member Changes		
BPXPRMxx	z/OS 1.3 Z/OS 1.2 z/OS 1.1	For specific information see *z/OS UNIX System Services Planning*
GRSRNLxx	Z/OS 1.2	Changed
SMFPRMxx	z/OS 1.2 z/OS 1.3	New parameter added, MEMLIMIT New Keyword: MULCFUNC or NOMULCFUNC
CONFIGxx	z/OS 1.1	Changed. New parameters on the CHP statement
CONSOLxx	z/OS 1.1	New parameters
IEAICSxx	Z/OS 1.3	Ignored - WLM goal mode required
IEAIPSxx	Z/OS 1.3	Ignored - WLM goal mode required
IEAOPTxx	z/OS 1.1 z/OS 1.3	New statement VARYCPU Changed member
IEASYSxx	z/OS 1.1 z/OS 1.3	New parameters: ILMLIB and ILMMODES Several changes
IKJTSOxx	z/OS 1.3	Changed. New BRODCAST keyword and new value for LOGNAME
LOADxx	z/OS 1.2	ARCHLVL statement should be removed
MSTJCLxx	z/OS 1.3	Changed
SCHEDxx	z/OS 1.3	Changed

System Command Changes

z/OS
Installation Planning Checklist

See *z/OS MVS Migration, GA22-7580*, Appendix A for a complete description of change.

z/OS System Command Changes		
CMDS	z/OS 1.2	New. Displays executing and waiting MVS commands
DUMP	z/OS 1.2	Changed options
DUMPDS	z/OS 1.2	New function
SLIP	z/OS 1.2	New Options: ACTION=STOPGTF: and MSGID=:
VARY	z/OS 1.2	New Option: REFRESH|QUIESCE on vary wlm,applenv=applenv_name
CONFIG	z/OS 1.1	config chp(xx),offline has changes associated with SMCS consoles
CONTROL	z/OS 1.1	New options and changed information
DISPLAY	z/OS 1.1 z/OS 1.2 z/OS 1.3	New options
LOGOFF	z/OS 1.1	Additional information
LOGON	z/OS 1.1	Additional information
MODIFY	z/OS 1.3	New and changed options
RESET	z/OS 1.1 z/OS 1.3	New options Changed options
SET	z/OS 1.3	New Option
SETIOS	z/OS 1.1	New option
SETSMF	z/OS 1.3	New options
SETOMVS	z/OS 1.3	New option
SWITCH	z/OS 1.1	Additional information
VARY	z/OS 1.1 z/OS 1.2	New options

SMF Record Changes

See *z/OS MVS Migration, GA22-7580*, Appendix A for a complete description of change.

z/OS 1.3

- Type 30
- Type 90, 99

z/OS 1.2

- Type 30
- Type 70, 71, 72, 73, 74, 78, 79
- Type 82
- Type 119 (new record)

z/OS 1.1

- Type 70, 71, 72, 73, 74, 78, 79
- Type 99

Exits

See z/OS *MVS Installation Exits*, SA22-7593, for detailed information.

z/OS 1.2

- Installation exit ISGGREX0 is deleted and replaced by new dynamic exit ISGNQXIT
- IEFUSI updated to support MEMLIMIT

z/OS 1.3 - New

- ISGNQXITBATCH

- ISGNQXITQUEUED1
- ISGENDOFLQCB
- ISGDGRSRES

SMP/E (z/OS V1R2)

- First change in function since OS/390 Release 7
- No longer exclusive to z/OS. See *SMP/E V3R1.0 Licensed Program Specifications, GI10-0681*
  - No charge product - requires a software license for OS/390 or z/OS
- Must convert the SMPLTS to a PDSE data set. Required due to LE shipping a PDSE target library.
- Check COMPAT binder level in SMP/E Utility Options for the correct PM level.
- Crypto and ISCF required when using RECEIVE from Network function
- New data sets
  - CLIENT
  - SERVER
  - SMPDIR
  - SMPNTS
  - SYSIN
- NUCID subentry has been deleted from OPTIONS Entry
- New REASONIDs added - See Appendix A in SMP/E Reference, SA22-7772

UNIX System Services

Summary of Updates for z/OS UNIX V1R3

___ Review the z/OS UNIX System Service Planning, GA22-7800-02, for details on migration actions for each enhancement.

- Access control lists (ACLs)
  - ACLs are supported by the HFS and zFS file systems.
  - You must know whether your security product supports ACLs and what rules are used when determining file access.

  __ Until you want ACLs to be used in access checks, make sure FSSEC is inactive.

- Automount enhancements
  - System symbolics are supported
  - HFS file systems can be allocated if they do not already exist
  - The current automount policy can be displayed

__ Change automount policy containing an "&" in the file system or parmlib statements, to conform to the same statement rules as parmlib statements

- copytree (new member for /samples)
  - REXX sample showing how to use a number of useful z/OS UNIX capabilities

    __ download from z/OS UNIX Tools and Toys URL:
    http://www.ibm.com/servers/eserver/zseries/zos/unix/bpxa1ty2.html

- ISHELL enhancements
  - Enhancements when working with a directory list
  - Issue TSO commands from the directory list with path substitution
  - With the **su** command, change the user ID to a user other than 0

- Create an HFS file system on non-SMS storage
- View time stamps as local time
- Edit fixed-length records

- Monitoring the mount table limit used by Shared HFS
  - a message will be displayed when the limit is almost reached

  ___ Take action if the system limit message is received, such as defining a larger alternative couple data set and switching to its use

- msys for Setup for z/OS UNIX
  - Used to customize USS

- Shutting down z/OS UNIX without re-IPLing

- Starting colony address space outside of JES
  - include additional start parameters with the ASNAME keyword in order for JES to be shut down and then started again without affecting the NFS or DFS Client

  ___ APAR OW48709 is required

- Unmounting file systems leaving the sysplex
  - May specify file systems are to be automatically unmounted whenever a system leaves the sysplex.

Language Environment

Language Environment (z/OS V1R3)

- msys for Setup to configure default system-wide run-time options
- msys for Setup to create region-wide run-time options for CICS and IMS
- No specific migration actions

Language Environment (z/OS V1R2)

- New data sets
  - SCEEBND2
  - SCEEH
  - SCEEH.T

__ Review *Language Environment Customization, SA22-7564*

__ Migration actions required

DFSMS

- See *DFSMS Migration for z/OS V1R3* (GC26-7398**)**

__ Use z/OS Wizards to create an interactive edition of the *DFSMS Migration for z/OS*.

__ **Review information APAR II13183 prior to IPLing z/OS 1.3**.

APAR OW45781 integrated in z/OS 1.3.

- Summary of changes:

Advanced copy services
Capacity utilization and performance enhancements
Catalog customer satisfaction
Dynamic volume count
CONFIGHFS enhancements
Large volume support

OAM multiple object backup
RLS coupling facility caching enhancements
RLS lock table CF duplexing
SMS miscellaneous enhancements
VSAM large real storage
DFSMSdss changes
DFSMSdss COPY command enhancement
DFSMSdss HFS logical copy
DFSMShsm changes
Capacity utilization and performance enhancements
DFSMShsm common recall queue
Large volume support
DFSMSrmm changes
DFSMSrmm ACS pooling control enhancements
DFSMSrmm macro enhancements
DFSMSrmm bin management enhancements
DFSMSrmm reporting enhancements
DFSMSrmm report generator
DFSMSrmm special character support
DFSMSrmm support for using storage locations as home locations
DFSMSrmm TSO/E help packaging enhancement

LDAP

LDAP (z/OS V1R2)

- Configuation Utility to configure the LDAP Server (ldapcnf)
  - Generates JCL - output members of a PDS
  - PTF to OS/390 R10 (OW47594)
- AFP authorized
  - Libraries dynamically loaded by LDAP Server
  - LDAP Server programs and libraries
  - LDAP Server
- Userid performing installation must have AFP facility class defined and authority to it
- Frontend performance
  - Supports approximately 65500 concurrent client connection
    - Listens on multiple secure and non-secure ports
  - No longer use *maxThreads* and *waitingThreads* parameters in configuration file
  - New configuration parameters
    - commThreads
    - listen
    - IdleConnectionTimeout
  - Command line option changes due to listen
- SDBM Support (RACF data storage)
  - Additional user segments
    - LNOTES
    - NDS
    - KERB
- Documentation
  - z/OS SecureWay Security Server LDAP Server Administration and Use (SC24-5923)
  - z/OS SecureWay Security Server LDAP Client Programming (SC24-5924)

Security Server

___ Review the *z/OS Security Server RACF Migration*, GA22-7690-02, for details on migration actions for each enhancement.

RACF (z/OS 1.3)

- Access Control Lists (ACLs)
  __ Until you want ACLs to be used in access checks, make sure FSSEC is inactive
- PKI Services
- Policy Director Authorization Services Support
  ___ Run the IRRMIN00 utility with PARM=UPDATE
  ___ Run the dynamic parse utility
  ___ Ensure the LRECL on the OUTDD statement of the JCL is changed to 8192 when using IRRADU00
- Release FMID Update
  - FMID HRF7706 is used as the RACF level, and is represented by the value 7706.
  - The ICHEINTY, ICHETEST, ICHEACTN and RACROUTE macros are updated to accept the RELEASE=7706 parameter
    ___ Specifying RELEASE=7706 on the RACROUTE macro requires assembling the application on a system running z/OS Version 1 Release 3.
    ___ If the application contains any other keywords on the RACROUTE macro requiring RELEASE=7706, you must execute the application on a z/OS V1R3 system
- Service Updates
  - APAR OW49124 modifies the RACF SMF Data Unload utility (IRRADU00) to store Relocate 47 data in the IRRADU00 utility output record.
  - APAR OW46174 modifies the logic in callable service check_access to check the UNIXPRIV Class (superuser.filesys) for read authority when doing a directory search. Also, Open will check for read authority, instead of update, when doing a search and Opendir will check for read authority.

RACF (z/OS 1.2)

- RACF accepts profile names in the case in which they are typed (upper and lower)
- Removed DNS Configuration Support

__ IRRMIN00 utility to update the production RACF databases with the database templates for the current release level

__ Check for duplicate class names

__ OW45152 required for RACF support for new DB2 V7 CONSTRUCTS

RACF Support for new DB2 V7 CONSTRUCTS - OW45152		
z/OS V1R1 OS/390 R10	HRF7703	UW77394
OS/390 Release 9	HRF2608	UW77393
OS/390 Release 8	HRF2608	UW77393
OS/390 Release 6	HRF2260	UW77392

- Support for Enterprise Java Beans includes two new classes - APAR OW46859
  - **EJBROLE**

- **GEJBROLE**

RACF Support for Enterprise Java Beans - OW46859		
z/OS V1R1 OS/390 R10	HRF7703	UW78361
OS/390 Release 9	HRF2608	UW78360
OS/390 Release 8	HRF2608	UW78360

__ Ensure programs processing the output CLIST created by the SEARCH command properly handle the new statement

__ Install Compatibility APAR OW46269

RACF Compatibility APAR - OW46269		
z/OS V1R1 OS/390 R10	HRF7703	UW79593
OS/390 Release 9	HRF2608	UW79592
OS/390 Release 8	HRF2608	UW79592

JES2

JES2 z/OS V1R2

- Coexistence policy enforced in a MAS environment.
- Default middle level qualifier removed
- New **$ACTIVATE** level (LEVEL= R4 or z2)
  - Two modes: Compatibility(R4) and Exploitation(z2)
    - Compatibility mode supports existing limits
    - Exploitation mode supports increased limits
  - Allows switching between modes
- JOE, JQE, JQA and JOT control blocks significantly changed for z2 mode

___ Review Exits

___ Make appropriate changes

- JQE fields moved
- JQE and JOE offsets converted to indexes
- Affected fields renamed to cause assembly errors
- Refer to JES2 Migration (GA22-7538)
- Command translation exit 5 moved to SHASSAMP
- Exits 14 and 49
  - PITCLASS and QGTCLST are changed

- JOBID format changed
- Dynamic PROCLIB

___ Review your JES2 startup PROC

___ Review/Update your JES2 initialization statements approprately

___ Review/Update any automation affecting JES2 startup

___ Understand how to use the initialization parm to use absolute or relative track addressing for the SPOOL

___ Take advantage of the PROCLIB and INCLUDE initialization statements to create dynamic PROCLIB concatenations and include initialization streams into your JES2 startup

- New Commands
- HASP443 message clarified

___ Automation
- Examine and change your automation with respect to commands, messages, and job numbers

___ Support for large SPOOL
- Rollback to OS/390 R10
- Understand how to use the SPOOLDEF initialization keyword, to specify use absolute or relative track addressing for the SPOOL.
- Understand how to use the new interface to read records from the JES2 SPOOL
- Examine your code to ensure it reads the JES2 SPOOL consistent with this function

___ MAS coexistence with HJE6607 - HJE7703

___ Requires OW47328

PTF numbers for OW47328		
HJE6607	HJE6608	HJE7703
UW99361	UW99362	UW99363

- ALLLCOPY support is eliminated

SDSF

SDSF z/OS V1R2

- End user commands and syntax in HELP panels
  - SDSF Guide and Reference eliminated

JES3 (z/OS V1R2)

- Coexistence policy enforced

__ Review *JES3 Migration, GA22-7553*

- Default middle level qualifier removed
- New, changed and deleted messages
- Entire complex must be z/OS 1.2 prior to implementing job numbers > 64K
- Migration APAR OW47435 required
- BDT APAR OW47953

z/OS
Installation Planning Checklist

APAR	PTF	FMID	Compatibility/Migration
OW47953	UW79524 UW79523	JBD6202 HBD6602	BDT
OW47435	UW90713 UW90714 UW90715	HJS6608 HJS6609 HJS7703	JES3 2.8 JES3 2.9 JES3 2.10

Reminders

- Exploiting functions in some areas may require an implementation plan of their own.
- z/OS licensed documentation in PDF format is available on the IBM Resource Link Web site: http://www.ibm.com/servers/resourelink
- **IBM License Manager is still restricted from production use.**
- **IBM will make an announcement in June 2002 regarding Systems Managed Coupling Facility Structure Duplexing availability.**

Internet sites

http://www.ibm.com/servers/eserver/zseries/zos	IBM z/OS home page
http://www.ibm.com/s390/os390/	IBM OS/390 home page
http://www.ibm.com/s390/os390/support/os390tst	OS/390 Integration Test web page
Http://www.can.ibm.com/custompac or http://www.ibm.com/ca/custompac	CustomPac (including SystemPac) web page
http://www.ibm.com/servers/eserver/zseries/zos/bkserv/	z/OS Library
http://www.ibm.com/s390/os390/plug1.html	Architectural Enhancements
http://www.ibm.com/servers/eserver/zseries/zos/ilm/	IBM License Manager (ILM) web page
http://www.ibm.com/servers/eserver/zseries/swprice/	Workload License Charges web page
http://www.ibm.com/servers/eserver/zseries/wlc_lm/products.html	IBM Product exploitation of ILM web page
http://www.ibm.com/support/techdocs	IBM Systems Center Flashes
http://www.ibm.com/s390/support/	System/390 Technical Support
http://www.ibm.com/servers/eserver/zseries/zos/bkserv/wizards.html	z/OS Wizards
http://www.listserv.uga.edu/cgi-bin/wa?SUBED1=ibmlm-l&A=1	ILM LISTSERVer (Discussion Group)
http://www.ibm.com.servers/eserver/zseries/rmf	RMF home web page