

# Paul Rogers ITSO Poughkeepsie

**Course Code:** 



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International Technical Support Organization

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#### z/OS V1R9 Overview



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#### **Trademarks**



eNetwork	DFSMS/MVS	IMS	RMF
geoManager	DFSMSdfp	IMS/ESA	RS/6000
AD/Cycle	DFSMSdss	IP PrintWay	S/390
ADSTAR	DFSMShsm	IPDS	S/390 Parallel Enterprise Server
AFP	DFSMSrmm	Language Environment	SecureWay
APL2	DFSORT	Multiprise	StorWatch
APPN	Enterprise System 3090	MQSeries	Sysplex Timer
BookManger	Enterprise System 4381	MVS/ESA	System/390
BookMaster	Enterprise System 9000	Network Station	System REXX
C/370	ES/3090	NetSpool	SystemView
CallPath	ES/4381	OfficeVision/MVS	SOM
CICS	ES/9000	Open Class	SOMobjects
CICS/ESA	ESA/390	OpenEdition	SP
CICS/MVS	ESCON	OS/2	VisualAge
CICSPlex	First Failure Support Technology	OS/390	VisualGen
COBOL/370	FLowMark	Parallel Sysplex	VisualLift
DataPropagator	FFST	Print Services Facility	VTAM
DisplayWrite	GDDM	PrintWay	WebSphere
DB2	ImagePlus	ProductPac	3090
DB2 Universal Database	Intelligent Miner	PR/SM	3890/XP
DFSMS	IBM	QMFr	z/OS
	IBM System z	RACF	z/OS.e

Domino (Lotus Development Corporation) Tivoli (Tivoli Systems Inc.) **DFS (Transarc Corporation)** Java (Sun Microsystems, Inc.) **Lotus (Lotus Development Corporation)** 

**Tivoli Management Framework** (Tivoli Systems Inc.) Tivoli Manger (Tivoli Systems Inc.) **UNIX (X/Open Company Limited)** Windows (Microsoft Corporation) Windows NT (Microsoft Corporation)



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#### z/OS Version 1 Release 9 Agenda



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<b>—</b>	$\sim$	V 11 10 C	, v Cı vı	

□ z/OS BCP enhancements

□ z/OS UNIX V1R8

□ IBM Health Checker for z/OS

□ Console Message Flood Automation

□ JES

□ SDSF

■ WLM and RMF

□ ISPF

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#### **ITSO Redbook**



# z/OS Version 1 Release 9 Implementation SG24-7427



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#### **Website to Download PDFs**



#### <u>IBM</u>

http://w3.itso.ibm.com/itsoapps/material.nsf/webbydate

#### **CUSTOMER**

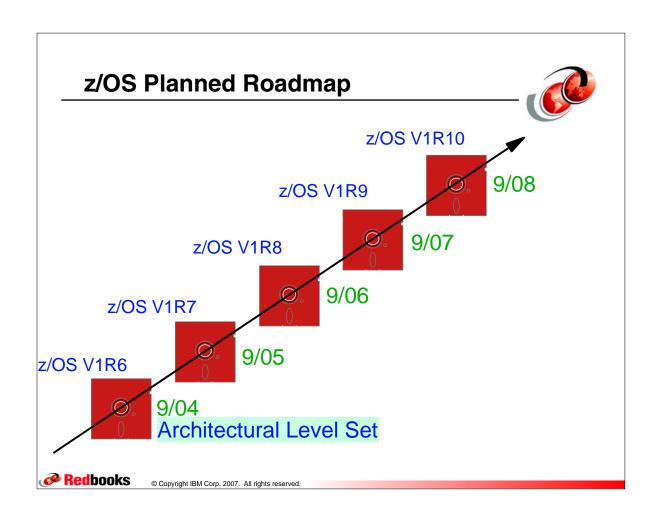
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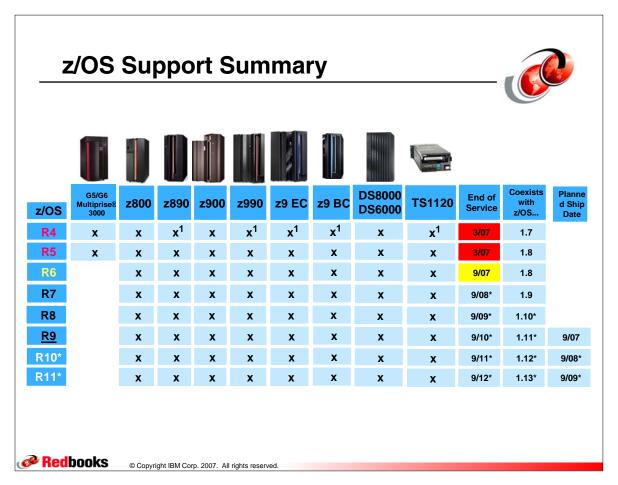
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/2007\_zSeries\_Workshop\_Materials







#### **Current JES2 Releases**



JES2 Rel.#	FMID	First Available	No Longer Available	End of Service
z/OS R. 1	HJE7703	3/01	10/01	3/04
z/OS R. 2	HJE7705	10/01	3/02	10/04
z/OS R. 3	HJE7705	3/02	9/02	3/05
z/OS R. 4	HJE7707	9/02	9/04	3/07
z/OS R. 5	HJE7708	3/04	9/04	9/07
z/OS R. 6	HJE7708	9/04	10/05	9/07
z/OS R. 7	HJE7720	9/05	9/06	9/08
z/OS R. 8	HJE7730	9/06	9/07	9/09
z/OS R. 9	HJE7740	9/07	9/08*	9/10*

See http://www.ibm.com/servers/eserver/zseries/zos/support/zos\_eos\_dates.html

\* = projected...



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#### **JES2/z/OS Compatibility**



☐ JES levels supported by a given z/OS release are the same as the JES levels that can coexist in a MAS, which are essentially all currently supported releases of JES2

z/OS Release	JES2 z/OS R.2 HJE7705	JES2 z/OS R.4 HJE7707	JES2 z/OS R.5 HJE7708	JES2 z/OS R.7 HJE7720	JES2 z/OS R.8 HJE7730	JES2 z/OS R.9 HJE7740
z/0S R2	X					
z/OS R3	X					
z/OS R4	Х	Х				
z/OS R5	Х	Х	Х			
z/OS R6	Х	Х	Х			
z/OS R7		Х	Х	Х		
z/OS R8			Х	Х	Х	
z/OS R9				Х	Χ	Χ

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#### **Active JES3 Releases**



- ☐ TCP/IP for NJE support in z/OS V1 R8 JES3 was made available 2/15/2007 via APAR OA16527
  - Support in z/OS V1 R8 JES3 was made available 2/15/2007 via APAR OA16527

Release	FMID	BCP req'd	Availability	End of Service
z/OSV1 R6	HJS7708	z/OS V1 R6	September 24, 2004	<b>September 30, 2007</b>
z/OS V1 R7	HJS7720	z/OS V1 R7	September 30, 2005	September 2008
z/OS V1 R8	HJS7730	z/OS V1 R8	<b>September 29, 2006</b>	September 2009
z/OS V1 R9	HJS7740	z/OS V1 R9	September 2007	n/a

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#### **JES3/BCP Compatibility**



	JES3 z/OS V1 R7	JES3 z/OS V1 R8	JES3 z/OS V1 R9
z/OS V1 R7			
z/OS V1 R8			
z/OS V1 R9			

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#### Ordering z/OS V1R9



- □ September 14, 2007: z/OS V1R9 planned general availability via ServerPac, CBPDO and SystemPac
- □ October 07, 2007: Recommended last date for submitting z/OS V1R8 orders via the entitled Customized Offerings (ServerPac and CBPDO)
  - > This date will allow for adequate order processing time
- No longer any ordering considerations for Tivoli NetView and System Automation:
  - msys for Operations (base element) has been removed in z/OS V1R8
- Order z/OS V1R9 electronically via ShopzSeries at GA
  - You can choose to have an electronic ServerPac



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### Ordering and Installing z/OS V1R8 Electronically



- ☐ In many countries can order z/OS electronically
  - ShopzSeries provides a self-service capability for ordering software (and service) upgrades over the Web
- In most countries, ShopzSeries provides electronic ordering and electronic delivery support for z/OS service
  - http://www.ibm.com/software/shopzseries
- □ Ordering the z/OS on ServerPac from ShopzSeries
  - Can choose to have it electronically delivered
- □ This electronic ability was made generally available on January 10, 2005



#### Web Deliverables



- □ Sometimes enhancements are provided as Web deliverables, and not integrated in your ServerPac, CBPDO, or SystemPac deliverable
  - For example, some of the ICSF enhancements are available this way
- z/OS Web deliverables are available from
  - http://www.ibm.com/eserver/zseries/zos/downloads/
  - They are packaged as two files that you download:
    - A readme file, which contains a sample job to uncompress the second file
    - A pax.z file, which contains an archive (compressed copy) of the FMIDs to be installed

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#### **Driving System Requirements**



- Mminimum driving system level for installing z/OS V1R9 is:
  - z/OS V1R7 or z/OS.e V1R7
    - (For installing z/OS V1R8, it was z/OS V1R5 or z/OS.e V1R5)
- If a Customized Offerings Driver (5655-M12) is being used to install z/OS V1R9, the level required is:
  - > V2.3.1.
    - V2.2 could be used to install z/OS V1R8

#### DASD Space Requirements - z/OS V1R9

- ☐ If you are migrating to z/OS V1R9 from a very old operating system release, or if you will have a different product set than your previous release, you will see increased need for DASD space
  - Amount depends on the levels of products you are running

#### z/OS V1R4 z/OS V1R5 z/OS V1R6 z/OS V1R7 z/OS V1R8 z/OS V1R9

Target	4840	5244	5277	5225	5625	6400
DLIB	6446	6930	7338	7286	7325	8900
HFS	2250	2200	2800	2800	2800	2900

\*\* Sizes in 3390 cylinders

All sizes include 15% freespace to accommodate the installation of maintenance.

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#### DASD Space Requirements - z/OS V1R9



- □ The total file system storage is as follows:
  - > 2,900 cylinders on a 3390 device for the ROOT file system
  - 50 cylinders for the /etc file system
  - 50 cylinders for the VARWBEM file system (new for CIM element)
- □ The total storage required for the SMP/E SMPLTS is 0 3390 cylinders (there are no load modules in z/OS V1R9 that are both cross-zone and use CALLLIBs, thus the SMPLTS is not needed for permanent storage)

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#### New Address Spaces with z/OS V1R9



#### ☐ The System REXX address space, AXR

- Non-cancelable, but can be terminated by invoking FORCE AXR,ARM
- When the AXR address space terminates, ENF signal 65 with a qualifier of 40000000x is issued
- AXR can be restarted by starting the AXRPSTRT proc, which can be found in SYS1.PROCLIB
- When the AXR address space initializes, an ENF signal of 80000000x is issued

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#### New Address Spaces with z/OS V1R9



#### □ Common event adapter (CEA)

- ➤ The common event adapter (CEA) provides the ability to deliver z/OS events to C-language clients, such as the z/OS CIM server
- The CEA address space is started automatically during z/OS initialization and does not terminate

#### ■ DSSFRDSR

- A DFSMSdss address space to recover up to 64 data sets concurrently from one or more copy pool backup versions
- Started automatically by DFSMShsm whenever a data set is recovered from DASD using the FRRECOV DSNAME command and terminates when DFSMShsm ends

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#### New Address Spaces with z/OS V1R9



#### □ ARCnXXXX

- A DFSMSdss address spaces is started automatically by DFSMShsm whenever a dump, restore, migration, backup, recover, or CDS backup function is invoked
  - A DFSMSdss address space is not started for recall tasks
  - Can reduce the storage used in the DFSMShsm address space, enabling more tasks to be started
- DFSMShsm invokes DFSMSdss and requests that DFSMSdss use a unique address space identifier for each unique DFSMShsm function and host ID where n is a unique DFSMShsm host ID and XXXX is an abbreviation of a DFSMShsm function



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#### New Address Spaces with z/OS V1R9



- xxxx is as follows:
  - > DUMP for dump
  - REST for restore
  - > MIGR for migration
  - BACK for backup
  - RCVR for recover
  - CDSB for CDS backup
- ☐ For instance, migration for DFSMShsm host ID 1 would result in a generated address space identifier:
  - > ARC1MIGR
- Address space terminates when DFSMShsm terminates



#### **DFSMShsm Address Spaces**



D A, DFSMSDSS

IEE115I 13.26.58 2007.131 ACTIVITY 219

JOBS M/S TS USERS SYSAS INITS ACTIVE/MAX VTAM OAS 00014 00025 80000 00038 00046 00008/00050 00027 DFSMSDSS ARC3MIGR IEFPROC NSW \* A=00A8 PER=NO SMC=000

PGN=N/A DMN=N/A AFF=NONE

CT=000.022S ET=01.05.11 WUID=STC03360 USERID=STC

WKL=STCTASKS SCL=STC P=1
RGP=N/A SRVR=NO QSC=NO

ADDR SPACE ASTE=78B1FA00

DFSMSDSS ARC3CDSB IEFPROC NSW \* A=0074 PER=NO SMC=000

PGN=N/A DMN=N/A AFF=NONE

CT=000.071S ET=104.695S WUID=STC03361 USERID=STC

WKL=STCTASKS SCL=STC P=

RGP=N/A SRVR=NO QSC=NO ADDR SPACE ASTE=78B20D00



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#### **DFSMShsm Address Spaces with SDSF**



#### ■ ABEND 878 reduction

- New address spaces reduce this possibility
- Reduces amount of storage in DFSMShsm address space



#### **Elements and Features Changes**



Alternate Library for REXX	New non- exclusive, base element. (FMID HWJ9143, JWJ9144 Japanese)	z/OS V1R9
BCP – new component for future functionality	Component of BCP base element (FMID HPV7740)	z/OS V1R9
Metal C Runtime Library	New base element (FMID HSD7740)	z/OS V1R9

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#### New Element - Alternate Library for REXX

- □ Alternate Library for REXX enables users to run compiled REXX programs as this function is now built into z/OS and makes the function easier to use
  - Contains a language processor that transforms compiled programs and runs them with the REXX interpreter which is shipped as part of the z/OS operating system
  - Software developers are no longer required to distribute the Alternate Library for REXX with their compiled REXX programs
  - Installations that have the REXX on zSeries Library installed may see the performance benefits of running compiled REXX

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#### **New Element - Metal C Runtime Library**



- Metal C Runtime Library
  - ➤ A set of LPA-resident C functions called from a C program created using the z/OS XL C compiler METAL option
  - Generates code that does not have access to the Language Environment support at run time
- ☐ The z/OS XL C compiler-generated object code relies on the support provided by the Language Environment
  - Also, depends on the C run-time library functions that are only available in the Language Environment
  - This dependency on the Language Environment prohibits using the XL C compiler to generate code to run in an environment where Language Environment does not exist



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#### **New Elements - System REXX**



- ☐ System REXX for z/OS (as part of BCP element)
  - Make possible execution of REXX routines in an authorized environment (in addition to TSO/E or Batch)
  - SYSREXX execs can be used to automate complex operator commands and other system functions and can be invoked by a program interface, and operator command

#### 54-Way Support with the z9 EC



- ☐ Up to 54-way single image support with z/OS V1R9
  - Support for up to 54 processors per z/OS image on System z9 EC servers
  - > Processors are the sum of CPs, zAAPs, and zIIPs
  - The IBM System z9 54-way is able to process 1 billion transactions per day, which is more than double the performance of its predecessor, the z990

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#### Functions Withdrawn from z/OS V1R9



Host communication between HCM and HCD with APPC (from HCM)	Priced Feature – Only TCP/IP for host communication between HCM and HCD will be allowed.	z/OS V1R9
LDAP protocol version 2 schema definition files for QoS and IDS policies in Policy Agent (from Communications Server)	Base Element – Use LDAP protocol version 3 schema definition files on the LDAP server instead	z/OS V1R9
In-stack version of TN3270E server (from Communications Server)	Base Element – Use standalone TN3270 Server instead	z/OS V1R9
APPC application Suite (from Communications Server)	Base Element – more full-featured alternative applications exist in modern integrated SNA/IP networks. (APPC itself remains an integral part of SNA functions, and no plans to remove APPC from z/OS.)	z/OS V1R9
Run-time support for C/C++ IBM Open Class (IOC) Dynamic Link Library (DLLs) (from C/C++ without Debug)	Priced Feature – Any application code that uses the IOC Library should migrate to use the Standard C++ Library	z/OS V1R9

## Functions Withdrawn in the Future (Planned)



English and Japanese panels from DFSORT	Priced Feature – No replacement for this limited interactive facility	Planned for release in 2008
Support for the configuration of Traffic Regulation (TR) policy as part of the Quality of Service (QoS) discipline from Communications Server	Base element - Implement the Intrusion Detection Services (IDS) policy configuration made available in z/OS V1.8	Planned for release in 2008
Bind DNS 4.9.3 (from Communications Server)	Base Element – implement BIND 9.2.0 as a replacement (available since z/OS V1R4)	Future
Support for VSAM data sets with IMBED, REPLICATE, or KEYRANGE attributes (from DFSMS)	Base Element – plan to redefine any affected VSAM data sets. Use tool to assist in identifying affected VSAM data sets	Future
zFS multi-file system aggregates (from Distributed File Service)	Base Element – zFS compatibility mode aggregates will still be supported	Future
RMF LDAP replacement (from RMF)	Priced Feature – RMF LDAP interface is planned to be replaced with a CIM Monitoring Interface that is part of z/OS V1R7	Future

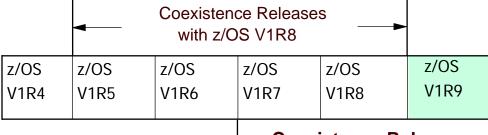
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#### Coexistence, Fallback, and Migration



- ☐ Coexistence of a V1R9 system with a V1R9, V1R8, or V1R7 system is supported
- □ Fallback from a V1R9 system to a V1R8 or V1R7 system is supported
- Migration to a V1R9 system from a V1R8 or V1R7 system is supported



\_\_Coexistence Releases\_ With z/OS V1R9

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#### Ordering z/OS Version 1 Release 9



- □ Program Number: 5694-A01
  - Ensure you order the optional priced and unpriced features that you were using before
  - Especially remember your export controlled features,
    - z/OS Security Level 3
    - Communications Server Security Level 3
- Ordering consideration for:
  - ICSF: since ICSF is integrated into z/OS R9 is \*not\* the highest level available after November 15, 2007 -Can add the Web deliverable to your z/OS system
- □ Order z/OS V1R9 electronically via ShopzSeries



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#### **Products Related to z/OS V1R9**



- ☐ IBM Debug Tool for z/OS V7 R1 (5655-R44)
  - Debug Tool no longer incorporated, as of z/OS R5
- □ IBM Ported Tools for z/OS (5655-M23) provides OpenSSH function
- □ IBM Ported Tools for z/OS: Perl Feature (5655-M23)port of the Perl (version 5.8.7)
- □ IBM Ported Tools for z/OS: PHP Feature (5655-M23)port of the PHP (version 5.1.2) scripting language
- ☐ IBM SMP/E for z/OS and OS/390, V3.4 (5655-G44)
  - Same as incorporated into R7, R8, and R9



#### **Products Related to z/OS V1R9**



- ☐ XML Toolkit for z/OS V1 R9 (5655-J51)
  - Contains XML V1R8 and V1R7 levels, as well
- □ IBM 64-bit SDK for z/OS, Java 2 Technology Edition V1 R4 (5655-M30)
  - Can be ordered and can coexist with IBM SDK for z/OS, Java 2 Technology Edition V1 R4 (5655-I56)
- ☐ IBM 64-bit SDK for z/OS, Java 2 Technology Edition, V5 (5655-N99)
  - Can be ordered and can coexist with IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V5 (5655-N98)



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# e-business





#### z/OS.e and zNALC



- zNALC replaces New Application License Charges (NALC) and z/OS.e, and is to be IBM's strategic z/OS offering for new workloads - (Qualified applications)
- zNALC is available in March 2007, only on IBM's z/Architecture servers
  - z900, z990, z9 EC, z800, z890, z9 BC, or later running z/OS (5694-A01) operating system
- □ zNALC is available only on LPARs where a Qualified Application is present, among other requirements



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#### zSeries Processors





z990



z9 EC



z900



z9 BC



z800



z890

z/OS.e New Applications



#### **Qualified Applications**



- □ An "Application" is a computer program that is used to accomplish specific business tasks:
  - Customer Relationship Management (CRM), Enterprise Resource Planning (ERP), Supply Chain Management (SCM), business information warehouse, accounting, and inventory control programs (including the database server)
- □ An Application is not a stand-alone database management system or systems management tool
  - Not related to the management or operation of the computer itself or of other computer programs
  - Not operating system software, database products (except those qualifying transaction managers, tools, utilities, and games)

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#### **Qualified Applications**



- □ An application is considered a Qualified Application if:
  - > It is currently generally commercially available
  - Supported by its manufacturer, and enabled to run under z/OS
  - Same Application (with substantially the same functionality) is simultaneously generally commercially available
    - Supported by its manufacturer on, and enabled to run under a UNIX operating system
    - For example, AIX, HP-UX, Linux, or Solaris), or Microsoft Windows (collectively "Distributed Platforms")

#### **Qualified Applications**



- It is a database server running under z/OS
  - > It is operating solely in support of a software program that is currently generally commercially available
  - It is supported by its manufacturer, and running in a client/server environment where the business logic (e.g., application server) is running on a Distributed Platform
- It is a Java language business application running under:
  - WebSphere Application Server (or equivalent)
- ☐ These do not include systems management tools



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#### **Qualified Applications**



- z/OS is eligible for zNALC pricing when running in an LPAR where the Qualified Application is executing
  - The only other products that may execute in this LPAR are those products that support the Qualified Application
  - The LPAR must be used exclusively for the Qualified Application and for programs that support the Qualified Application and for no other purpose
- □ IBM determines whether a particular program is a qualified application
  - > For a list of approved zNALC Qualified Applications

http://ibm.com/zseries/swprice/znalc.html



#### **Qualified Application Examples**



- □ Java language business applications running under WebSphere Application Server
- □ DB2 for z/OS in support of SAP
- □ DB2 for z/OS in support of PeopleSoft
- □ DB2 for z/OS in support of Siebel
- □ Lotus Domino

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#### zNALC and SCRT



- □ SCRT V14.1.0 is the first version of the program to support zNALC
  - Customers who wish to exploit the new LICENSE=ZNALC parameter made possible through
    - z/OS APAR OA20314
- □ The other changes coming with V14.1.0 are listed on the web at http:
  - //ibm.com/zseries/swprice/scrt/scrt\_new.html

#### zNALC and SCRT and APAR OA20314



- ☐ SCRT originanly only recognized zNALC environments when the LPAR is IPLed with a name that adheres to the form ZNALxxxx
- □ A system parameter LICENSE=ZNALC, is introduced with this APAR which provides an alternative method for taking advantage of zNALC subcapacity pricing
- SMF type 89 record is updated by this APAR, with a new bit indicator for recording when the system is IPLed with zNALC subcapacity pricing requested
- □ D IPLINFO command is enhanced to show
   LICENSE=zNALC when a system is IPLed with zNALC



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# IBM Migration Checker for z/OS





#### **IBM Migration Checker for z/OS**



- ☐ A tool that checks the applicability of certain migration actions on the currently running system
- ☐ First introduced for z/OS V1R8
  - Enhanced for z/OS V1R9
- Does not perform migration actions on your system
  - > Reports which migration actions you have to perform
  - ➤ The tool is best used to assist in creating a migration plan in conjunction with the z/OS Migration book
- ☐ IBM Migration Checker for z/OS is an "as is" download tool available from the z/OS download Web page at:

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



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#### **IBM Migration Checker for z/OS**



- □ Run the tool as often as you like even before ordering z/OS V1R9, after installing z/OS V1R9, and after each z/OS V1R9 image is IPLed
- Because the tool does not make changes to the system it can:
  - Alert you to migration actions that you should plan for in the future
  - Detect migration actions that you can do now to clear the way to z/OS V1R9
  - Verify that you've done the migration actions correctly when you're running z/OS V1R9



#### **IBM Migration Checker for z/OS V1R9**



- 1. DIAGXX Discontinue use of the DIAGXX ISGERQA parameter
- 2. GRSEXIT Ensure that the global resource serialization ISV-oriented exit routines run in a cross-memory environment
- □ 3. ZOSEMIG Migrate from z/OS.e to z/OS
- 4. JES2EXIT Update JES2 exit 8, 31, 42, and 45 routines (four migration actions consolidated into this one migration program)
- 5. SNMPDATA IP Services: Remove customization of SNMP sysObjectID MIB object in OSNMPD.DATA file



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#### **IBM Migration Checker for z/OS V1R9**



- □ 6. UNIX03N Ensure that \_UNIX03 is not set in system profiles
- ☐ 7. SDSFPARM Use dynamic statements for ISFPARMS to avoid reassembly
- 8. RMMCDSID Specify a DFSMSrmm control data set ID
- 9. PAGQOSTR IP Services: Migrate from QoS TR policy to IDS TR policy
- 10. PAGLDAP2 IP Services: Migrate from LDAP protocol version 2 to LDAP protocol version 3 for QoS and IDS policies in Policy Agent





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# z/OS V1R9 New Functions



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#### z/OS V1R9 Enhancements



