IBM Washington Systems Center

z/OS 1.7
Software Update

Riaz Ahmad
IBM Washington Systems Center
Gaithersburg, Maryland

Trademarks

The following are trademarks of the International Business Machines Corporation in the United States and/or other countries.

CICS*
DB2*
DB2 Connect
DB2 Universal Database
DFSMSdss
DFSMShsm
DFSMSrmm
DFSORT
DRDA*
Enterprise Storage Server*
ESCON*
FICON*
GDPS*
HiperSockets
HyperSwap
IBM*
IBM eServer
IBM logo*
IMS
Language Environment*
Multiprise*
MVS
OMEGAMON*
OS/390*
Parallel Sysplex*
PR/SM
Processor Resource/Systems Manager
RACF*
RMF
S/390*
Sysplex Timer*
System z9
Tivoli*
TotalStorage*
WebSphere*
z/Architecture
z/OS*
z/VM*
zSeries*

* Registered trademarks of IBM Corporation

The following are trademarks or registered trademarks of other companies.

Java and all Java-related trademarks and logos are trademarks of Sun Microsystems, Inc., in the United States and other countries

Linux is a trademark of Linus Torvalds in the united States and other countries..

UNIX is a registered trademark of The Open Group in the United States and other countries.

Microsoft and Excel are registered trademarks of Microsoft Corporation in the United States and other countries.

* All other products may be trademarks or registered trademarks of their respective companies.

Notes:

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

IBM hardware products are manufactured from new parts, or new and serviceable used parts. Regardless, our warranty terms apply.

All customer examples cited or described in this presentation are presented as illustrations of the manner in which some customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics will vary depending on individual customer configurations and conditions.

This publication was produced in the United States. IBM may not offer the products, services or features discussed in this document in other countries, and the information may be subject to change without notice. Consult your local IBM business contact for information on the product or services available in your area.

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

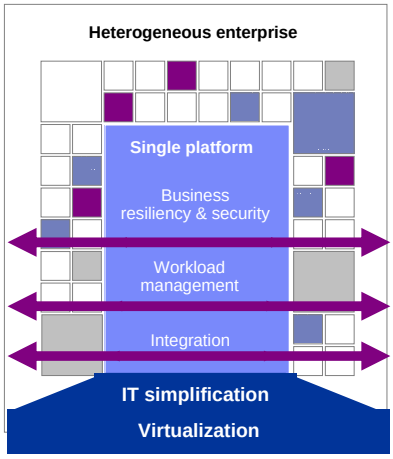
Information about non-IBM products is obtained from the manufacturers of those products or their published announcements. IBM has not tested those products and cannot confirm the performance, compatibility, or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

Prices subject to change without notice. Contact your IBM representative or Business Partner for the most current pricing in your geography.

ENABLING BUSINESS. A THROUGH Z.

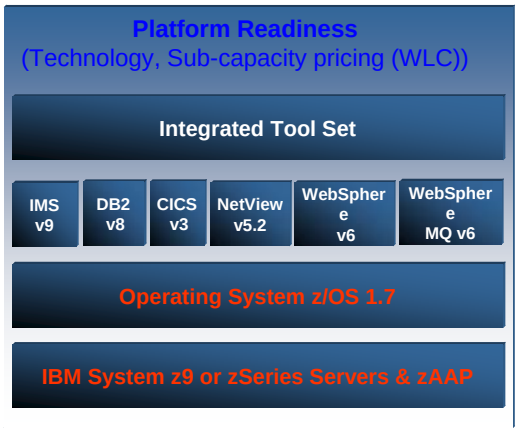
z/OS – IBM's flagship mainframe operating system
Providing the difference for On Demand Business

- z/OS® – the mainframe operating system that delivers
  - A highly available and secure base for integrating applications
  - Resources optimized to meet business priorities
  - Scalability for data and transaction growth
  - Robust and resilient networking
  - Business resiliency
- With new directions
  - Simplifying z/OS management
  - Extending z/OS to help manage your mixed environment



Platform readiness …
Be ready for the next business opportunity!

- Be positioned for a competitive edge
  - Business resiliency
  - Security compliance
  - Business process integration
  - Rapid deployment of enterprise-wide solutions
  - Reuse of skills and resources
  - Leverage, extend and integrate core applications



IBM announces the IBM System z9
Delivered via a holistic approach to systems design

- Built on IBM's industry-leading mainframe technologies
  - Virtualization of key resources
  - Resiliency and security
  - Intelligent workload management
  - Data, transaction and application integration

- An all-new server designed to be more:
  - Secure
  - Available
  - Scalable
- Supported by the current releases z/OS
  - Compatible with:
    - z/OS 1.4 (Exploitation Support)
    - z/OS 1.5
  - Exploited by z/OS 1.6 and 1.7
- Working with networking and storage to help deliver:
  - Improved responsiveness
  - Lower costs
  - Higher availability
  - Better recoverability

z/OS Support for IBM System z9-109

- I/O advancement in scale and performance
  - Improved FICON performance
- Modified Indirect Addressing Words (MIDAW) support
  - New system architecture designed to improve FICON performance for extended format data sets
    - DB2 queries, utilities and logs
    - VSAM, HFS, zFS, PDSE, IMS Fast Path, SAME
  - Can improve channel utilization
  - Can significantly improve I/O response times
- Multiple Subchannel Sets
  - Provides second set of subchannels for PAVs
  - Can help provide relief from 64K device limit by allowing PAV aliases definitions without making device numbers unavailable
- z/OS 1.4 - compatibility support
  - 60 logical partitions
  - 63.75K Subchannels
  - OSA-Express2 1000BASE-T Ethernet
  - OSA-Express2 CDLC support
  - FICON Express2.5
- z/OS 1.6 – exploitation
  - Modified Indirect Addressing (MIDAWs)
  - HipeSockets support of IPv6
  - CPACF Enhancements
  - Crypto Express2
  - Single System Image – up to 32 engines
- z/OS 1.7 provides further exploitation
  - Multiple subchannel sets
  - FICON link incident reporting
  - Statement of direction*: z/OS 1.7 is planned to support Server Timer Protocol

z/OS 1.7 Exploits System z9 Multiple Subchannel Sets

- **Multiple Subchannel Sets**
  - zSeries processors have only one set of 63K subchannels
  - For z9-109, two subchannel sets are now available per LCSS, enabling a total of 63.75K subchannels in set-0 and adding 64K-1 subchannels in set-1
  - Multiple subchannel sets provides growth for I/O device configuration
- Operating System Exploitation Requirements
  - z/OS 1.7 and later
  - z/OS will only allow Parallel Access Volume Alias (PAV-alias) devices in the second subchannel set.
  - Sub Channels for any other devices not allowed in subchannel Set-1

System z9 – Increased Subchannels

- zSeries can address a maximum of 64K subchannels
  - 1024 (1K) of these previously reserved for system use
- IBM has made available 768 of these 1K reserved subchannels for customer use
- Increases the storage attachment capability of the z9-109 Processor.
- For example, In the largest case, using 3390 volumes with 54GB/volume and 768 additional volumes, you could have 41 Terabytes of additional disk storage addressability" (i.e., 54GB/volume * 768 volumes = 41 TB)
- The IBM Total Storage DS8000 can be defined to attach 65,280 unit addresses.
  - With 65,280 in the host, there is symmetry between the server and storage subsystems.
- z/OS 1.4 (with applicable PTFs) and later

z/OS 1.7 - Display Support for RNID

- Remote Node ID (RNID)
  - The Remote Node ID (RNID) data is stored in HSA for each control unit attached to FICON (Native) and ESCON channels.
  - z/OS 1.4 or higher executing on a System z9, the RNID data is now:
    - Formatted and displayed on the SE "Analyze Control Unit Header" IOPD panel.
    - z/OS 1.7 will display it on the "D M=DEV" (Display Device Matrix) command to help debug configuration/cabling problems.
- FICON Link Incident Reporting
  - Now you can avoid LPAR routing of link incidents to non-participating operating systems by displaying it on the operator console or saving in the system log. Requires z/OS 1.7 or later.

z9-109 MIDAW
Modified-Indirect-Data-Address Word facility

- Modified-Indirect-Data-Address Word facility
  - At minimum z/OS R6 is required for exploitation
  - New and separate CCW-indirect-data-address word (IDAW) facility
  - MIDAW and IDAW will coexist and offer, for FICON and ESCON channels, alternative methods for a channel program to be constructed
  - The MIDAW facility is adopted architecture
- Capability
  - Reduces latency and system overhead for I/O requests using extended format datasets
- Scalability
  - Improved efficiencies of work on the FICON channel allow the customer to increase work. This will allow the software to drive future faster FICON channel at line speed for DB2 sequential prefetch I/O operations.

z/OS 1.7 Support for z9-109

- Improved FICON recovery
- Wild branch diagnosis improvement
  - In z/OS 1.7 Base
- Cryptographic support
  - Support provided via WEB download
- Improved RMF support for CPU activity and system address space analysis
- TCP/IP connectivity enhancements
- OSA CDLC for CCLs
  - Support provided by z/OS 1.4 and later

Server Time Protocol (STP) - Preview

- Designed to provide capability for multiple System z9 and zSeries platforms to maintain time synchronization with each other
  - Does not require the 9037 Sysplex Timer if all servers STP capable
- Timing information transmitted over ISC-3 links (Peer mode), ICB-3 and ICB-4 links
- Supports a multi-site timing network of up to 100 km (62 miles)
  - Allows a Parallel Sysplex cluster to span up to 100 km
- May reduce the cross-site connectivity required for a multi-site Parallel Sysplex clusters
- Can coexist with an External Time Reference (ETR) network (9037 based)
  - Mixed Timing Network
- Designed to allow use of dial-out time services to set the time to international time standard (UTC) as well as adjust to UTC
- Planned to be available as a feature on z9-109, z990 and z890
- Prerequisites
  - z9-109 HMC Code load
  - z/OS V1.7

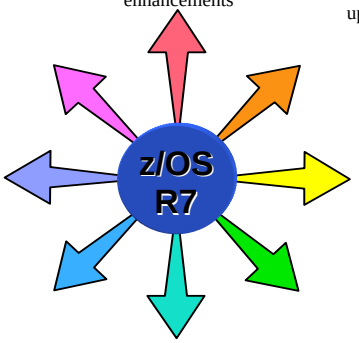
All statements regarding IBM future direction and intent are subject to change or withdrawal without notice, and represents goals and objectives only.

z/OS R7 - Meeting the *Future* challenges of on demand

Scalability
32-way support, XES locks, 64-bit virtual RLS, >64K Track support, >255 extents per VSAM component, CICS® Sockets enhancements

Improving Availability
Dynamic service activation for z/OS UNIX® System Services, JES2 and Unicode recovery, Dynamic capacity upgrade/downgrade, GDPS® Logger enhancements with XRC+

Improving Usability and Skills
TCP/IP Configuration changes via new operator commands, automatic table loading for Unicode



Integrating new Applications and Supporting Industry and Open Standards
C/C++ hex floating point support for AMODE 64, C99

Self-Managing Capabilities
Health Checker as a new base function, more health checks, OAM immediate recall to disk, Sysplex Distributor

Extending the Network
FTP, IPv6 sysplex support, Load Balancing Advisor, Enterprise Extender, Linux® Appliance support for NCP, DVIPA reclamation, Sysplex Distributor enhancements, Support for JES2 NJE over TCP/IP – Planned 1Q06

Enhancing Security
IPSec and NAT, Transparent TLS, IP filtering, Internet Key Exchange, and Virtual Private Network enhancements, Mixed-case passwords

Supporting the Heterogeneous Infrastructure
DFSMSrmm™, Virtualization Engine™, Common Information Model, EWLM ARM agent integration

Scalability

- 32-way processor single-image support on IBM System z9 and eServer™ zSeries® 990 servers
  - Also available for z/OS R6
  - 24-way support has been available on z/OS Release 6
- Support for larger data sets
  - Support for non extended format sequential data sets larger than 64K tracks
    - Tracks use larger disk volumes more effectively by allocating larger data sets
    - Includes support for larger JES spool data sets
    - New DD statement for new DSNTYPE
    - New data set size limit is 16,777,215 Tracks
  - More than 255 extents per VSAM component
    - Can help reduce out-of-space failures as data sets grow
    - Can allow you to redefine/reorganize data sets less often
    - New design limit is 7,257 extents per component

Scalability

- RSM frame allocation improved below the 16MB line
  - Help prevent storage shortages below the line as the systems grow
- More Logger DASD-only logstream connections
  - Limit increased from 1K to 16K
- New IODF format
  - Less IODF data set utilization for the same configuration
  - Should allow larger configuration definitions
  - Designed to improve performance
- XES (Cross System Extended Services) locking constraint relief
  - More locks per lock structure connector
  - Relief for workloads that obtain huge number of locks concurrently
    - SAP workloads using DB2

Scalability

- DFSMShsm, DFSMSrmm, and DFSMSdss scale
  - Larger DFSMShsm journal data sets
  - DFSMShsm limit on data sets per tape raised to over 1,000,000
  - Large journal, journal backup and certain temporary data sets for DFSMSrmm
  - DFSMSdss exploitation for Format-1 CCWs

Scalability – VSAM RLS 64 Bit Support

- All VSAM RLS index and data control interval buffers and most of the RLS control blocks currently reside in an SMSVSAM data space that can be up 2 GB in size
  - Users with a high rate of transactions could encounter virtual storage constraint with current 31 bit design
- VSAM RLS 64 bit virtual support will allow only the data buffers to reside above the 2 GB line
  - Support is optional
- New option in IGDSMSxx to allow users to specify the amount of real storage to be permanently fixed
  - To enhance performance

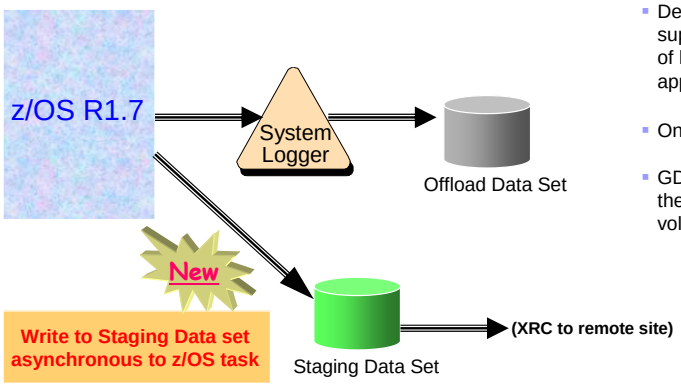
Scalability – Large Sequential Data Sets

- Removes the size limit of 65535 tracks (4369 cylinders) per volume for sequential data sets
  - BSAM, QSAM, and EXCP
    - Data sets do not have to be in SMS managed and in extended format
  - 16 extents is still the limit
  - Architectural limit is 16,777,215 tracks
  - JES2/JES3 spool can now be larger than 64K tracks
    - Must still be a single extent
- Changed APIs supports all sequential and partitioned data sets
- DFSMShsm support of migration/recall, backup/restore and ABACKUP/ARECOVER of large format data sets
- Addresses limits on capacity in customers' systems
  - Systems support up to 65,280 (63.75K) devices

XRC Plus

- Currently, if a user wishes to mirror a volume that has system logger data sets, they must have the logger write directly to disk rather than use the coupling facility and staging data sets
- XRC Plus allows a user to add a volume that has system logger staging data sets to a session and maintain consistency
  - By allowing the system logger to use the coupling facility, performance will be improved
  - Consistency of the data will not be more current than the last logger timestamp
- If staging data sets are being mirrored, XRC 'idle' processing is turned off
  - A volume can be added with LOGPLUS but not have active staging data sets
    - Idle processing will occur
  - Idle processing means that if nothing has been updated for a period of time, the current time is reported as idle in addition to the last data consistent time
  - If a system logger volume is added and active, 'idle' processing is turned off
    - Instead of DATA CONSISTENT(timestamp) and IDLE(timestamp), DATA CONSISTENT(timestamp) and DELAY(timestamp) are reported

GDPS Support for "XRC+"
Planned Performance Enhancement for z/OS R1.7 (3Q05)



- Designed to provide better support for remote mirroring of high volume logging applications
- Only with XRC
- GDPS support will include the options in the setup for volume management.

Improved throughput for high volume logging applications

XRC Plus XADDPAIR

- New LOGPLUS keyword for the XADDPAIR command
  - Specifies that the primary volume of the volume pair is to be explicitly written to by the z/OS System Logger. When using LOGPLUS, you can specify a single pair or a single pair and a utility pair, but the utility pair must be specified last. A unique storage control session number will be assigned to the primary volume
  - LOGPLUS is available only in z/OS DFSMS V1R7 and later
  - Mutually exclusive with the SCSESSION keyword

Availability

- Dynamic capacity can be changed without IPL on IBM eserver zSeries 890 (z890) processors
- Forced disconnect for System Logger logstreams with failed-persistent connections
- Console enhancements
  - z/OS 1.7 delivers next phase of enhancements to provide:
    - Better Reliability, Availability and Serviceability
    - Support for deleting unused EMCS consoles
    - Monitor COMMAND enhancement

Availability

- Integrated Catalog Forward Recovery Utility in z/OS 1.7 Base
  - ICFRU (5798-DXQ) incorporated in the Base
  - Catalog recovery solution
    - Allows you to recreate a current copy of a catalog from a backup copy and certain SMF records
- Captured UCB overlay protection
  - Captured UCB pages are page-protected by default in z/OS 1.7
  - May help in improved availability by avoiding unintentional overlays
  - New CAPTUCB PROTECT parm in IECIOSxx
  - New CAPTUCB,PROTECT on the SET IOS command
  - Protected captured UCBs cannot be modified using a capture view
    - To modify, programs must obtain the UCB's SQA address via the IOSCAPU or IOSCAPF services

Availability

- DEVMAN – New device manager address space to improve serviceability
  - Provides support for component trace (CTRACE) functions for:
    - The Common VTOC Access Facility (CVAF)
    - The DADSM component of DFSMSdfp
- JES2 checkpoint data corruption recovery
  - Designed to detect and correct certain additional kinds of checkpoint control block corruption when JES2 is restarted
    - This processing occurs with all types of start, including hot start
- Unicode recovery
  - Unicode services now maintain a copy of certain critical control blocks, and compares them periodically to those in use
  - When a problem is detected, Unicode will repair in-use control blocks automatically, without the need for an IPL

z/OS 1.7 - Security leadership continues

- Extending user authentication management
  - Support for mixed-case passwords in RACF, TSO/E, FTP, CONSOLES, and z/OS UNIX
  - RACF pass ticket support
- Innovative new technologies
  - Digital Certificate life-cycle management
    - –Improvements to z/OS PKI services
  - Cryptography
    - –64-bit cryptography support in ICSF
    - –AES support for TLS and SSL applications
- Simplifying RACF administration and compliance management with products from Vanguard Integrity Professionals,Inc.

CERTIFICATIONS:

COMMON CRITERIA
z/OS 1.6 with RACF is certified at EAL3+ for
- Controlled Access Protection Profile (CAPP)
- Labeled Security Protection Profile (LSPP)
z/OS 1.7 with RACF is under evaluation for certification at EAL4

IDENTRUS Public Key Infrastructure (PKI) Services, provided by z/OS V1 R5, has achieved Identrus compliance.

Learn more about System z9 and zSeries security:
ibm.com/zseries/security

Simplifying security management and compliance

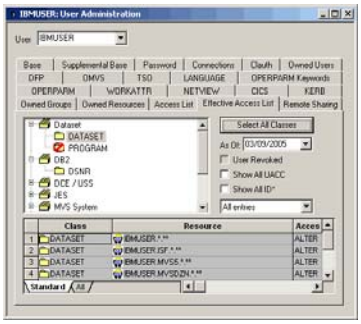
IBM is a reseller of *Vanguard Integrity Professionals, Inc*. products

Value

- Complete z/OS RACF security management solution, including administration, integrity auditing, and intrusion detection and management
- Helps organizations comply with security rules and regulations
- Helps reduce the complexities of RACF administration, eliminates user errors, and enforces best practices

IBM Reseller of Vanguard Solutions

- **Vanguard Administrator can help simplifies and enhances RACF security management**
- **Vanguard Analyzer is designed to assist with security system snapshots or full-scale mainframe security audits**
- **Vanguard Enforcer is designed to manage and enforce security policy in z/OS and RACF**
- **Vanguard Advisor is designed to provide Event Detection, Analysis and Reporting capabilities for z/OS and RACF**
- **Vanguard Security Center offers browser-based RACF and DB2 security administration on z/OS**

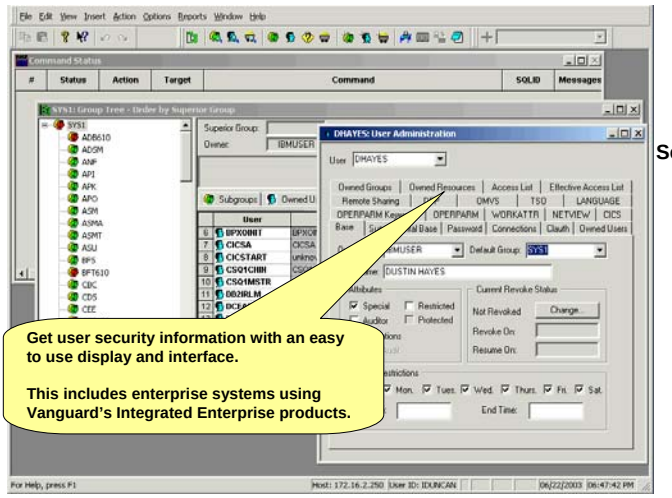


Vanguard Security Center

IBM Tivoli

- **IBM Tivoli Security Administrator for RACF provides low cost, rapidly deployable RACF management solution**

SecurityCenter*

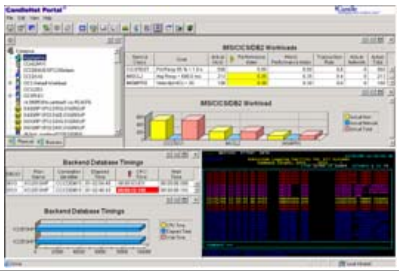


SecurityCenter is a product of Vanguard Integrity Professionals, Inc.

IBM is a reseller of *Vanguard Integrity Professionals, Inc.* products

Systems Management – Managing Complexity Through Simplification *COMING in Q4 2005 – new z/OS management console*

- **Business Value**
  - Simplify z/OS management for the new generation of IT professionals
  - Reduce problem identification and resolution by automating, eliminating, and streamlining tasks
  - Easily upgradeable to full OMEGAMON solutions



- **Planned Capabilities**
  - z/OS Health Checker data plus Tivoli Monitoring Services base capabilities
    - Expert Advice
    - Take Action
  - z/OS configuration status metrics for z/OS resources displayed using Tivoli Enterprise Portal
    - Improved ease-of-use of z/OS management
    - Promotes value-add upgrades to comprehensive Tivoli Monitoring Services products

Planned for Winter 2005!

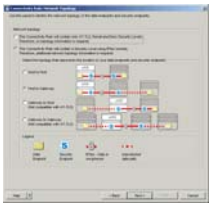
Intended to be available for no charge to z/OS customers

Simplifying software maintenance

SMP/E Internet Service Delivery

Value

- Can simplify and automate service acquisition
- Can help eliminate manual tasks currently required for ordering and delivery of IBM software maintenance
- Can improve availability by helping to ensure current service and service information is readily available



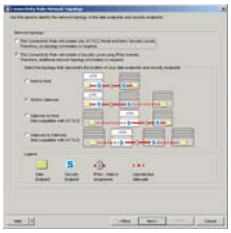
Latest enhancements

- **Allows you to automate ordering and delivery of PTFs and HOLDDATA**
- **PTFs and HOLDDATA can be processed in the same job step**
- **Can be triggered with a batch scheduling system (such as IBM Tivoli Workload Scheduler for z/OS) to retrieve service on a regular basis**

Simplifying network security management

Value

- Define TLS and SSL secure connections without anticipated application changes
- Easier to configure the latest networking security technologies
- Help ensure secure access to z/OS applications and data
- Easier to develop and maintain secure Web applications



Latest enhancements

- TLS and SSL support designed to be transparent to applications
  - Application Transparent TLS for TLS (Transport Layer Security) and SSL (Secure Sockets Layer)
  - A new function in z/OS 1.7 Communications Server
  - Support for C/C++, HL ASM, COBOL, PL/I, REXX, CICS C socket, and CICS and IMS CALL instructions
- z/OS Network Security Configuration Assistant (z/OS 1.7)
  - GUI for simpler and consistent configuration of IPSec and TLS technologies
  - Planned to be available Sept. 2005 via Web

Simplifying configuration – IBM Health Checker for z/OS

Value
• Configuring for best practices – Helping to reduce the skill level – Helping to avoid outages • Checks against active settings • Notifies when exceptions found • Runs on all supported releases of z/OS

Latest enhancements

- **Integrated as new base function in z/OS 1.7**
- **New SDSF panel to display and control the active checks**
  - Simplifies working with checks
  - SDSF provides scroll, search, sort, filtering and other customization functions
  - Browse check output
- **More checking of z/OS components**
  - Over 50 checks available[1]
  - New checks available in RRS, RACF, Consoles, GRS, RSM, UNIX® System Services
- **Framework to support IBM, ISV, and user-written checks**
  - Checks can be added dynamically
- **User-overrides for check defaults**

[1] Majority of these checks are available on prior releases

IBM Health Checker for z/OS – SDSF Support

```
Display  Filter  View  Print  Options  Help
-------------------------------------------------------------------------------
SDSF HEALTH CHECKER DISPLAY  SYSB                      LINE 1-33 (33)
COMMAND INPUT ===>                                        SCROLL ===> CSR
PREFIX=LOG*  DEST=(ALL)  OWNER=*  SYSNAME=*
NP   NAME                          State              Status             SysN
     CNZ_AMRF_EVENTUAL_ACTION_MSGS  ACTIVE(ENABLED)    SUCCESSFUL         SYSB
     CNZ_CONSOLE_MASTERAUTH_CMDSYS  ACTIVE(ENABLED)    SUCCESSFUL         SYSB
     CNZ_CONSOLE_MSCOPE_AND_ROUTCODE ACTIVE(ENABLED)   EXCEPTION-LOW      SYSB
     CNZ_CONSOLE_ROUTCODE_11        ACTIVE(ENABLED)    EXCEPTION-LOW      SYSB
     CNZ_EMCS_HARDCOPY_MSCOPE       ACTIVE(ENABLED)    SUCCESSFUL         SYSB
     CNZ_EMCS_INACTIVE_CONSOLES     ACTIVE(ENABLED)    SUCCESSFUL         SYSB
```

- One row per check
- Additional columns include information about scheduling, categories, and counts of exceptions and times the check has run
- Users can rearrange and resize columns (ARRANGE command)
- Checks that are running are highlighted

Ease of Use – RRS Multiple HLQ Support

- RRS ISPF panel users unable to allocate the userid.ATR.PROFILE data set under the installation's required data set naming conventions
  - userid.L.ATR.PROFILE was needed
- This support allows a user-specified eight characters high level qualifier for the PROFILE data set name
  - Users will be able to follow installation required data set naming conventions

Ease of Use – ISHELL Enhancements

- With the USS (Unix System Services) Utility Enhancements, you can use the following in ISHELL:
  - Option to specify logical or real path on the file list
  - Improve ISHELL entry messages when the user cannot access ISHELL
  - Allow specification of file attributes when creating a new file
  - Keep a path history similar to ISPF NRETRIEV (used on main panel)
  - Preserve file format and CCSID on copy
  - Support a refresh command on the file list
  - Add a group list panel similar to the user list panel
  - Capture and show zFS errors when trying to create a zFS file system
  - Do not exit execute dialog until execute main panel is dismissed
  - Do not save last pathname in profile until ISHELL exit

Ease of Use – ISHELL Enhancements

- OEDIT:
  - Increase maximum width for file edit to 32752
  - Give warning if extended attributes are set on a file being edited before oedit causes them to get reset. A confirmation panel will be shown before proceeding
- MOUNT Utility:
  - Add a wait option (with time) so the mount will wait for async mounts to complete.
  - Syntax of this optional flag is `-w n` (n is wait time in seconds). If n is specified as 0, the wait will be indefinite.
- TSO Utility:
  - Allow user to allocate SYSTSPRT
  - A user can allocate SYSTSPRT with the environment variable: TSOOUT

Ease of Use – ISHELL Enhancements

- BPXWDYN:
  - Add SVC99 info retrieval capability to be able to determine the DD names and data set names, and path names for current allocations. Allocation attributes will not be supported at this time.
  - Add keys for tape processing: position, label, retpd, trtch
  - Allow resetting of S99NOMNT
- REXX
  - Change readfile to return the last line it processes when it ends in error due to line length too long

Ease of Use – Mounting File Systems

- Currently, there is no direct way to execute a list of mounts from the operator's console. z/OS Unix Systems Services supports only a subset of the commands that are used during an IPL with the SET OMVS command
- Obtaining a summary of prior mount or move filesystem failures from the console would be helpful
- In z/OS 1.7 you can now change their mount configuration from the console using a BPXPRMxx parmlib member
- Information about prior mount or file system move failures can be displayed with DISPLAY OMVS
- Mount configurations can be changed with console command

Ease of Use – Mounting File Systems

- This support provides a console interface to add files to the filesystem configuration
- Failure status can be viewed using the console interface
- Using the z/OS 1.7 enhancements for SET OMVS and D OMVS commands, you can:
  - Execute MOUNT commands
    - This includes mounting the root file system
  - Execute filesystype, subfilesystype, and network commands
  - See console messages indicating success or failure of the mount requested

z/OS UNIX System Services Dynamic Service Activation

- New keywords in BPXPRMxx parmlib member, will allow customers to identify service libraries for LINKLIB and LPALIB
- Upon OMVS RESTART, modules will be loaded from the service libraries
  - For example BPXINPVT and BPXINLPA
- Background:
  - In z/OS 1.3, we allow the OMVS address space to be RESTARTed.
  - However, the modules used to build the OMVS address are not "*redriven*" to re-establish the OMVS address space
  - Dynamic linklist and Dynamic lpalist does not affect the restart process.

Ease of Use – ServerPac Enhancements

- Concurrent with z/OS 1.7 GA, ServerPac will provide support for:
- Merging z/OS Unix File systems
  - This support can allow you to merge z/OS Unix file systems in zFS and HFS data sets in a way similar to the support for PDS and PDSE data sets, when the merge would result in a usable mount point
    - This can help you simplify file system configurations and management
- IBM Healthchecker for z/OS
  - At the completion of the ServerPac install, IBM Healthchecker will be enabled reducing the setup required for use
    - This can help you use its new functions quickly to identify potential problems in your installation
- The Customized Offering Driver (5655-M12)
  - Will support the installation of z/OS 1.7 with SMP/E V3.4
  - This driver is available on tape media for 3380-3 and 3390-3 DASD
  - 4mm media support is planned to be withdrawn effective September 15, 2005

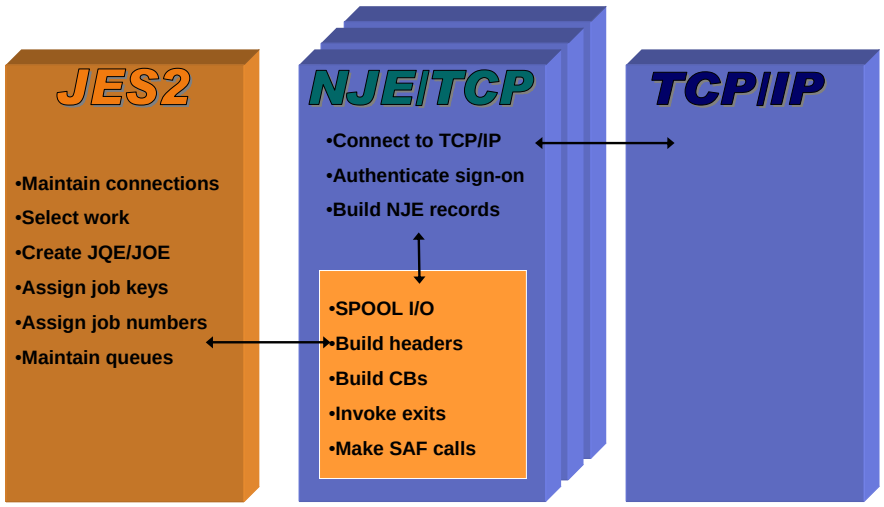
NJE over TCP/IP

- Currently JES2 supports NJE over SNA and BSC networks
- TCP/IP is the industry standard for networking today
- Requirements for JES2 support from many sources
  - SHARE
  - Customer Requests
- Solutions involving SNA over IP (such as Enterprise Extender) have fallen short due to
  - Performance
  - Interoperability
- Availability is planned for 1Q 2006

NJE over TCP/IP *(Cont…)*

- Will support established TCP/NJE protocol
- Enhancements to protocol will also be included for
  - IPv6 connections
  - Enhanced security (SSL/TLS)
  - Large LRECL SYSIN data streams
- Overall better RAS characteristic will be designed in
  - Fewer outages than current NJE
  - Better performance

NJE over TCP/IP Flow



NJE Security

- Support for SSL/TLS to be included in NJE over TCP/IP
  - Application Transparent TLS support in z/OS 1.7 (AT-TLS) used
    - –All definitions for SSL/TLS are in TCP/IP policy definitions, not JES definitions
    - –Future standards for TLS will automatically be supported
  - Only JES2 control is SECURE=YES/NO on SOCKET statement
- Secure form of NJE sign-on now supported
  - Exchanges DES-encrypted passwords in I/J sign-on records
  - Controlled by SIGNON=SECURE|COMPAT on NODE statement
  - Uses APPCLU class in RACF/SAF
  - Can be used by SNA or BSC nodes as well as TCP/IP

RAS – Unix Systems Services

- At times, z/OS Unix Systems Services file system code appears to be deadlocked across multiple systems
  - Problems tend to center on contention for the mount latch and waiting for message responses from other systems
- Some display capabilities are needed to identify the reason for which the mount latch is being held
  - Similar information is needed for outstanding cross system messages

RAS – Unix Systems Services

- z/OS 1.7 provides display capabilities to help determine the cause of *hung* users and systems
- DISPLAY OMVS, now provides additional filesystem mount information
- When a system gets hung, the display will help in determining which task needs canceling or what actions need to be taken to alleviate the system hang condition

RAS – Unix Systems Services

- Using latch contention analysis, you can:
  - Display information about the holder of the LFS mount latch and tasks that are waiting on that latch
  - View outstanding cross system messages
  - Show mounts in progress information, date time of file system mounts as well as file system latch numbers
- These enhancements should improve, Reliability and Availability in diagnosing and correction of the hang conditions
- Contention information can be viewed using a console command

Application Development

- Integrating New Applications and Supporting Open Standards
  - z/OS XL C compiler is designed to comply with ISO C99 Standards
    - Addition of complex and floating point APIs
    - IEEE and HFP Math functions
    - Debugger support
    - Also meets ANSI standard
  - Performance improvements
    - z/OS UNIX services
    - zSeries File System (zFS) can be used at all levels within hierarchy, including root filesystem support
    - z/OS 1.7 users can create zFS aggregate/file systems with special characters (@ # $)
    - zFS recovers from EOM (End-of-Memory) condition
      - No zFS file systems will be unmounted

Application Development

- Support for authorized pre-initialization facility for C/C++ programs in Language Environment®
  - IBM-supported API to support authorized C/C++ and conforming assembler code
  - Requires a pre-initialized environment created with new CELAAUTH service
    - System-managed and user-managed environments
    - Each environment is self-contained
  - Runs in primary (home) address space via CELAAUTH call
  - Support for supervisor state, task mode, SRB mode, cross-memory mode
  - Termination via CELAAUTH call
- Other application development improvements:
  - Binder support for relative immediate instructions with external operand symbols
  - Support for /dev/zero and /dev/random “devices” in z/OS UNIX System Services
- LE run-time options
  - Specifying run-time options in a file or data set
  - Specifying system defaults in PARMLIB

Application Development

- ISPF provides debugging capability for ISPF File Tailoring and Panel processing in applications
- Trace started and stopped using ISPFTTRC command
- Traces the File Tailoring service calls
  - FTOPEN, FTINCL, FTCLOSE, and FTERASE
- Traces ISPF processing of skeleton statements
- Trace output written to dynamically allocated variable blocked data set
- Documented in Appendix C of the ISPF Dialog Developer’s Guide

Building IPv6 on z/OS

z/OS V1R4 Basic IPv6 Support:

- TCP/IP Stack protocol Layers
- Socket API's-USS/LE and TCP/IP
- Connectivity with OSA Express QDIO
- Resolver and DNS
- FTP and Unix applications
- Netstat and messages

z/OS V1R5 and up: Platform-specific with latest standards

- CICS Sockets
- Enable SNA applications over IPv6:
  - -Enterprise Extender
  - -Tn3270
- Connectivity with support for Point-Point links (MPC,XCF,SAMEHOST)
- OMPRoute support for RIPng
- QOS Policy Agent (differentiated services) and SLAP MIB
- MVS applications (remote execution applications)
- SNMP standard TCP/IP MIBs (network management)
- Additional SMF records
- More applications (sendmail,tftpd,dcas)

z/OS V1R6

- Sysplex Functions (DVIPA, Distributor)
- OMPRoute support of OSPFv3
- SNMP Enterprise-specific Mib and standards update

z/OS V1R7

- **SNMP UDP standard MIB**
- **Updates to MVS TCP/IP Enterprise-specific MIB for UDP**
- **IPv6 Advanced Socket Options**
- **Maintain 2 IPv6 Routers in Default List**

Library Center for z/OS

Library Center for z/OS

- The Library Center offers:
  - Easier navigation of the z/OS DVD Collection
  - Advanced search features:
    - The entire repository, a particular shelf, specific book
    - Search by information type such as only messages or commands
  - Available single frame navigation:
    - Integration of BookManager® with PDF
  - A portal to other information
  - Built-in handheld support
- New publication: z/OS Basics
  - Overview of z/OS environment
  - Developed from the z/OS Academic curriculum

For z/OS Basics: *publibz.boulder.ibm.com/zoslib/pdf/zosbasic.pdf*

z/OS Support Summary Dates

		G5/G6 Multiprise 3000	z800	z890	z900	z990	z9109	DS8000 DS6000	End of Service	Coexists with z/OS...	Planned Ship Date
z/OS	1.1	x	x		x				3/04	1.4	
	1.2	x	x	x^c	x	x^c			10/04	1.5	
	1.3	x	x	x^c	x	x^c			3/05	1.6	
	1.4	x	x	x	x	x	x^1	x	3/07	1.7	
	1.5	x	x	x	x	x	x	x	3/07	1.8	
	1.6		x	x	x	x	x	x	9/07	1.8	
	1.7		x	x	x	x	x	x	9/08*	1.9*	9/05*
	1.8*		x	x	x	x	x	x	9/09*	1.10*	9/06*

x^c - Compatibility support only
x^1 – z990 compatibility or exploitation feature required
There is no IBM Bimodal Accommodation Offering available for z/OS 1.5 or higher releases.
- 1.1 was withdrawn from service in March 2004
- 1.2 was withdrawn from service in October 2004
- 1.3 was withdrawn from service in March 2005.

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

z/OS.e Support Summary Dates

		z800	z890	End of Service	Coexistence Migration Policy	Planned Ship Date
z/OS.e	1.3	x	x^c	3/05	1.6	
	1.4	x	x^e	3/07	1.7	9/02
	1.5	x	x	3/07*	1.8	3/04
	1.6	x	x	9/07*	1.8	9/04
	1.7	x	x	9/08*	1.9*	9/05*
	1.8*	x	x	9/09*	1.10*	9/06*

Bimodal Accommodation offering is not available for z/OS.e

X^c - Compatibility support – does not exploit z890 features: 30 LPARs, 2 LCSS
X^e - Requires exploitation support feature

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

System z9: z/OS Software Support Summary

Release
Legend
B – FMID in Base product
F – FMIDs shipped in a Feature
W – FMIDs shipped in a Web Deliverable
P – PTFs required
P* - z990 PTFs required
+ - Same as above "plus" more
N – Not Supported

Release	Z9109 Compat	63.75K Subchannel	FICON RAS	CDLC Support	OSA-E2 GbE	OSA-E2 1KBASE-T	OSA-E2 10GbE	CEX2C	CEX2A	MIDAW Support	Subchannel Sets	SSKE Support	VLAN or IPv6 QDIO	XLC C/C++
z/OS 1.4 Base	N	N	N	N	N	N	N	N	N	N	N	N	N	N
z/OS 1.4 Compat	P	P	N	N	P*	P	P*	W P	W P	N	N	N	N	N
z/OS 1.4 Compat (31-bit)	P	P	N	N	P*	P	P*	W P	W P	N	N	N	N	N
z/OS 1.4 Exploit	P	P	P	P	P*	P	P*	W P	W P	N	N	N	N	N
z/OS 1.4 Exploit (31-bit)	P	P	P	P	P*	P	P*	W P	W P	N	N	N	N	N
z/OS 1.5	P	P	P	P	P*	P	P*	W P	W P	N	N	N	N	N
z/OS 1.6	P	P	P	P	P*	P	P*	W	W	P	N	N	N	N
z/OS 1.7	B	B	P	P	B	P	B	W	W	BP	BP	P	P	P

z/OS Release Coexistence and Migration/Fallback

Release	General Availability (GA) of Release Identified in Column 1	Service Support of Release Identified in Column 1 is Available Through	Releases Coexistence and Migration/Fallback supported with Release Identified in Column 1
R10	Sept 2000	Sept 2004	R10, R9, R8, R7, R6 **(1)**
z/OS R1	March 2001	March 2004	{z/OS R1/R10}, R9, R8, R7, R6 **(1,2)**
z/OS R2	October 2001	Oct 2004	z/OS R2, {z/OS R1/R10}, R9, R8 **(2)**
z/OS R3	March 2002	March 2005	z/OS R3, z/OS R2, {z/OS R1/R10}, R9 **(2)**
z/OS R4	Sept 2002	March 2007	z/OS R4, z/OS R3, z/OS R2, {z/OS R1/R10} **(2)**
z/OS R5	March 2004	March 2007**(4)**	z/OS R5, z/OS R4, z/OS R3, z/OS R2
z/OS R6	Sept 2004	Sept 2007 **(4)**	z/OS R6, z/OS R5, z/OS R4, z/OS R3 **(5)**
z/OS R7	Sept 2005 **(3)**	Sept 2008 **(4)**	z/OS R7, z/OS R6, z/OS R5, z/OS R4
z/OS R8	Sept 2006 **(3)**	Sept 2009 **(4)**	z/OS R8, z/OS R7, z/OS R6, z/OS R5 **(6)**
z/OS R9	Sept 2007 **(3)**	Sept 2010 **(4)**	z/OS R9, z/OS R8, z/OS R7

Legend:
Where no product name is indicated in the table, OS/390 should be assumed
z/OS R7 - z/OS R9 used for illustrative purposes, release numbering not a guarantee of actual release number
(1) OS/390 R6 -> OS/390 R10 provided as an exception
(2) OS/390 R10 & z/OS R1 treated as one coexistence level
(3) Represents projected GA date
(4) Represents projected end of service support date (GA+3 years)
(5) z/OS R2 excluded since service for z/OS R2 ends within 1 mo. of z/OS R6 GA
(6) z/OS R4 is not planned to be coexistence, migration, or fallback supported with z/OS R8

Statements of Direction Effective with z/OS 1.7

- The following support will be withdrawn:
  - Support for ISAM data sets
  - Support for JES2 compatibility mode
  - z/OS Optional Source Code media will not be offered
  - Support for JOBCAT and STEPCAT JCL statements
- OS/390 2.10 C/C++ Complier is planned to be removed from the C/C++ feature

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

Prior Statements of Direction Effective with z/OS V1.7

- The Hierarchical File System (HFS) functions have been stabilized. zSeries File System (zFS) is the strategic UNIX Systems Services file system for z/OS.
- Support for ISAM data sets are removed
- Support for the OS/390 R10 C/C++ compiler is removed. (The ISO C/C++ Compiler is not removed.)
- With z/OS V1.7, support for 1-byte Console IDs and external interfaces supporting migration console IDs are removed from the WTO, WTOR, and MCSOPER macros; and from operator commands. (Programs compiled using older versions of the macros will continue to work.)

z/OS Statements of Direction

- Simplify z/OS management
  - Provide a new user interface for z/OS management that is planned to help the new generation of IT professionals
    - Planned for 4Q 2005
- Improve price performance
  - Version of New Application License Charges (NALC) intended to help improve the price performance of z/OS in certain new workload environments by delivering subcapacity pricing
    - Targeted for availability in 2H2006.
- Optimize new workloads
  - Introduce a new system component called z/OS XML System Services (z/OS XML). This component will be designed to provide an optimized set of services for parsing XML documents.
    - Planned for a future release of z/OS
      - It is expected to be of use to IBM, ISV, and customer middleware and applications having high performance or unique environmental XML parsing requirements, such as the ability to run in cross-memory and SRB modes.
      - Initial support is planned to provide an assembler language interface; later, IBM plans to add C/C++ high-level language support

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

z/OS Statements of Direction

- Msys for Setup
  - Withdraw the following plug-ins for msys for Setup in the release following z/OS 1.7.
  - You will no longer be able to use msys for Setup for function enablement, setup or configuration for the following:
    - TCP/IP Services
    - z/OS UNIX System Services
    - Language Environment
    - Parallel Sysplex
    - ISPF
    - RMF
  - **NOTE:** DB2 plug-in is not affected and TCP/IP plug-in will be available via the web and will not require Msys for Setup
- Msys for Operations
  - z/OS msys for Operations element will be removed from the release following z/OS 1.7.
  - Many of the current functions will be transitioned to a new user interface and infrastructure.

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

Statements of Direction*

Reducing ordering interfaces and delivery mechanisms

- **SMP/E Internet Service Retrieval intended to simplify z/OS Service acquisition** Availability September 2005
- **Service Update Facility (SUF) was discontinued effective January 15, 2005**
- **New ESO and CBPDO physical delivery subscriptions no longer accepted -** Effective March 2006
- **CBPDO product orders will only include service for the products ordered -** Effective June 2006
- **Service-Only CBPDO orders no longer accepted -** Effective June 2006
- **Existing ESO and CBPDO physical delivery subscriptions discontinued –** Effective September 2006

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

Statements of Direction* - Beyond z/OS V1R7

- z/OS Communications Server will remove support for BIND DNS 4.9.3 function in a future release.
- VSAM support for IMBED, REPLICATE, KEYRANGE will be removed in a future release.
- DFSORT ISPF panels will be removed in a future release.
- z/OS V1.7 is planned to be the last release to include the Firewall Technologies component of the Integrated Security Services element.
- z/OS V1.7 is planned to be the last release in which z/OS Communications Server will support:
  - Configuration profile block definition statements (ASSORTEDPARMS and KEEPALIVEOPTIONS)
  - The PAGTSNMP subagent
  - Defining EE TGs with multiple SAP addresses
  - AnyNet
- z/OS V1.7 is planned to be the last release to support 1-byte Console IDs.
- Support for zFS multi-file system aggregates will be withdrawn in a future release.

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

Changed Statements of Direction

- VSAM Java Database Connectivity (JDBC) Connector will now be provided in the future, not in 2005 as previously stated
  - Previously stated in announcement letter 204-180, dated August 10, 2004.

For more information, and for all previously announced statements of direction affecting z/OS V1.7 and future releases, visit

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

Additional Information

- **z/OS Web site**
  - **ibm.com**/servers/eserver/zseries/zos
  - **ibm.com**/servers/eserver/zseries/zose
- **z/OS Migration and Installation Web pages**
  - **ibm.com**/servers/eserver/zseries/zos/installation/zos_migration.html
- **Order z/OS online**
  - **ibm.com**/software/ShopzSeries/
- **z/OS Hot Topics Magazine**
  - **ibm.com**/servers/s390/os390/bkserv/hot_topics.html
- **IBM Washington Systems Center flashes**
  - **ibm.com**/support/techdocs
  - **w3.ibm.com**/support/techdocs