

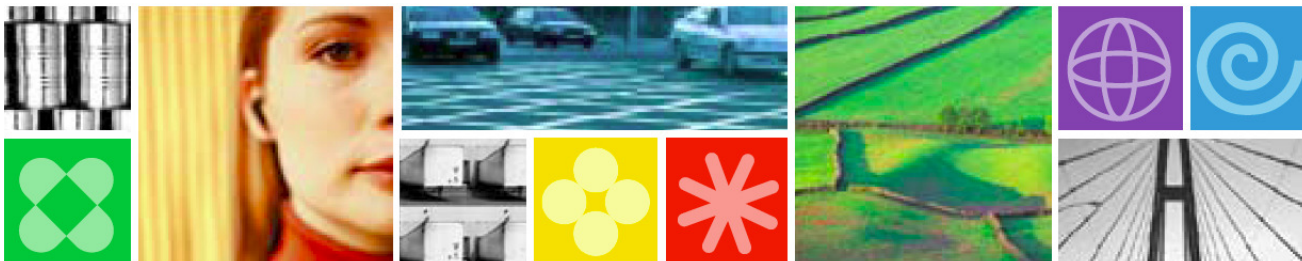


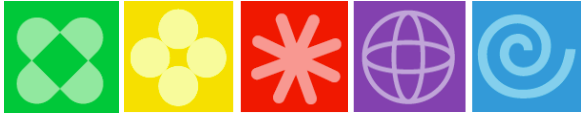
z/OS Update

z/OS V1.11 and z/OS Management Facility V1.11

z/OS V1.12 and z/OS Management Facility V1.12 Preview

- Click to edit Master subtitle style





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z/OS Version 1 Release 11

- **Efficient** – New user interface helps system programmers to more easily manage and administer a mainframe system
- **Trusted** - the latest encryption technologies, centralized security certificates, and foundation for unified enterprise-wide identity and access management reduce risk of fraud.
- **Smart** - a system that learns heuristically from its own environment and is able to anticipate and report on potential issues for predictive analysis
- **Responsive** - communications that improve network recoverability, availability, and reduce complexity and latency of transactions
- **Accountable** - enhanced measurement to support comprehensive control, analysis, risk management, audit, and compliance plans
- **Synergies** - with new IBM System Storage DS8000 to make the most of your information asset



Availability September 2009

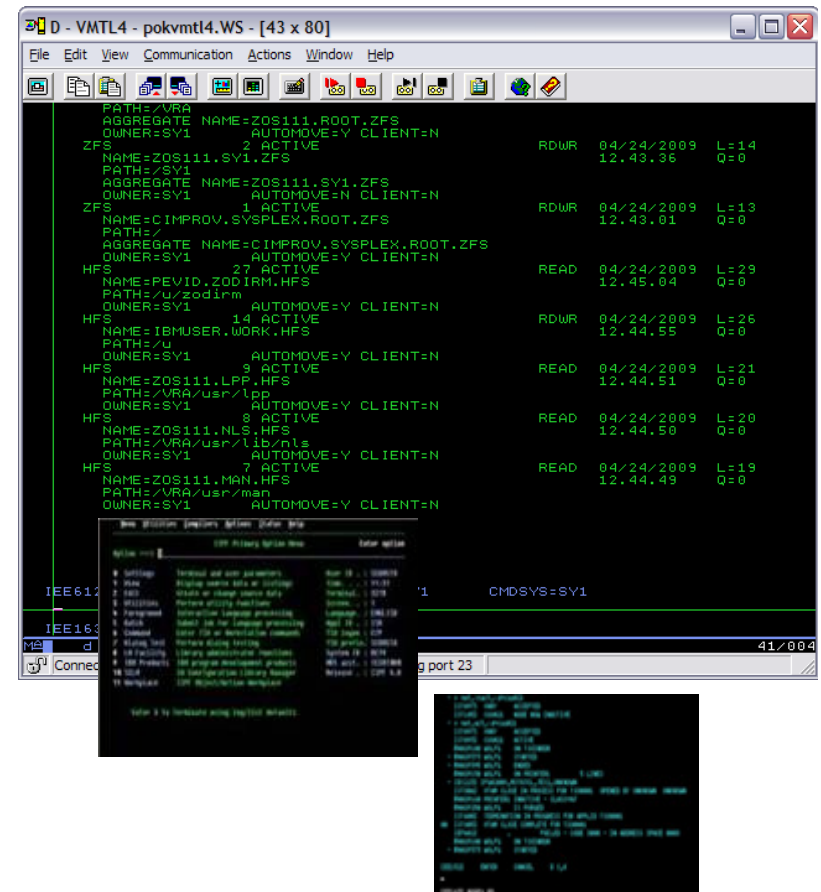


IBM z/OS Management Facility V1.11



Needs :

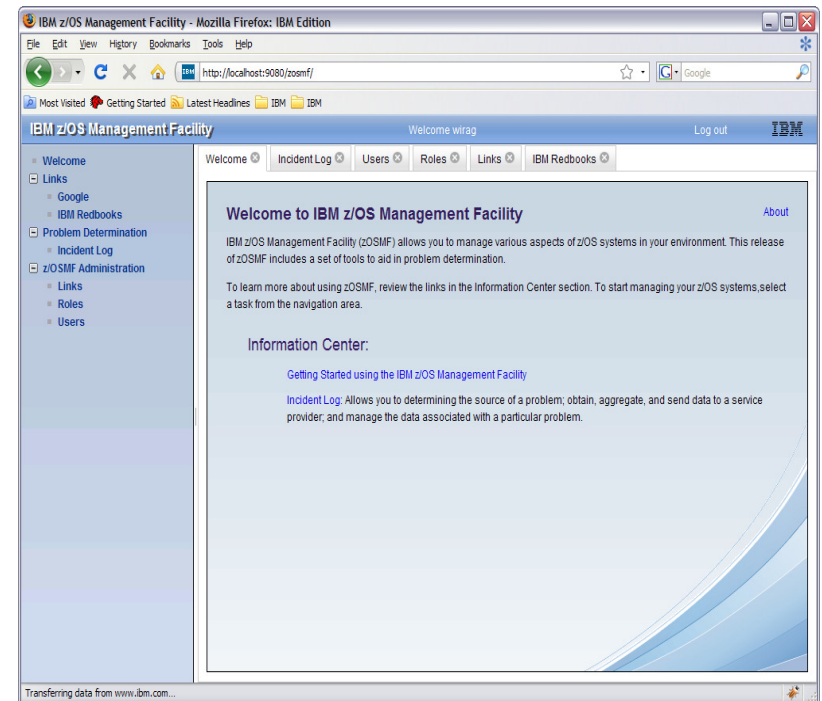
- There was no central system management portal for z/OS
- There are many interfaces foreign to users new to platform
- There are manual tasks requiring extensive documentation
- Requires years of z/OS experience to be productive





IBM z/OS Management Facility V1.11

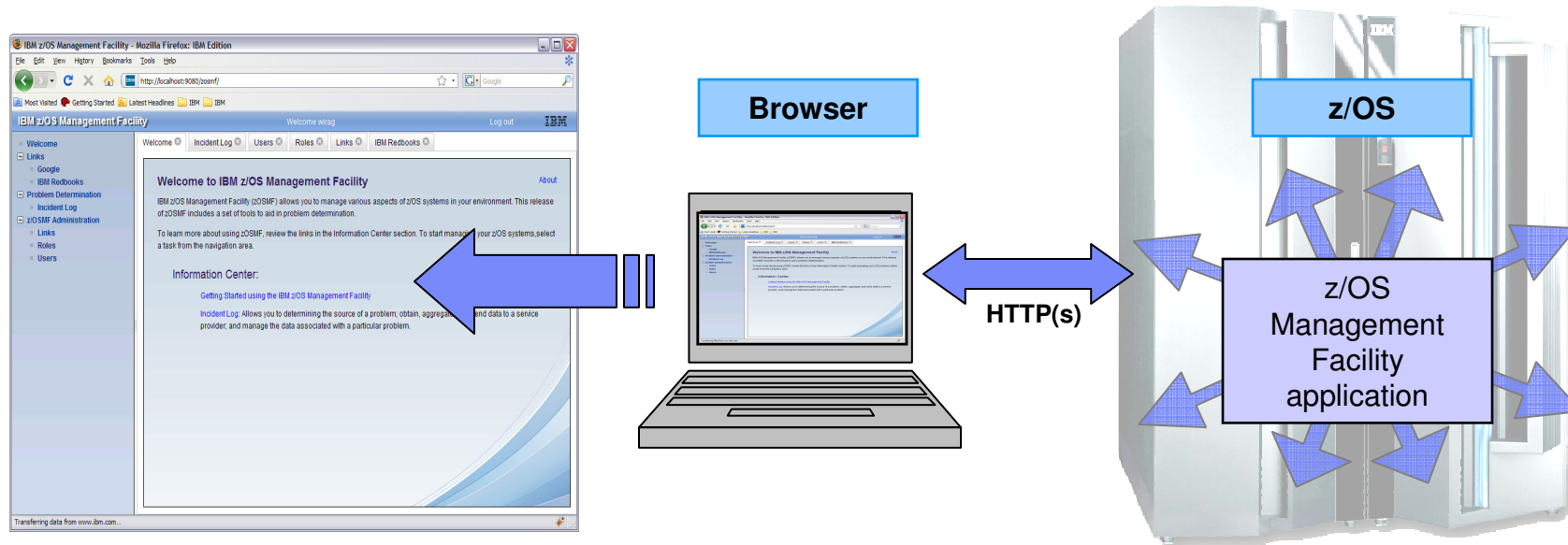
- **The IBM z/OS Management Facility is a new product for z/OS that provides support for a Web-browser based management console for z/OS.**
- Helps system programmers to more easily manage and administer a mainframe system by simplifying day to day operations and administration of a z/OS system.
- More than just a graphical user interface, the z/OS Management Facility is the infrastructure for addressing the needs of your workforce
 - Automated tasks can help reduce the learning curve and improve productivity.
 - Embedded active user assistance (such as wizards) guides you through tasks and helps provide simplified operations.





IBM z/OS Management Facility

Industry standards



▪ z/OS Management Facility is an application on z/OS

- Manages z/OS from z/OS
- Browser communicates with z/OSMF via secure connection, anywhere, anytime
- Parts of z/OS Management Facility, such as the Incident log capability (R11) and WLM Policy Editor (R12)*, use JAVA and CIM (eligible for zAAP and zIIP)



IBM z/OS Management Facility

Welcome page



- **Configuration** category

- **Configuration Assistant for z/OS Communication Server** application (R11)
- Simplified configuration and setup of TCP/IP policy-based networking functions

- **Links** category (Avail on z/OS V1.10)

- Links to resources - provides common launch point for accessing resources beyond z/OSMF

- **Performance** category

- **Workload Manager Policy Editor** application_(R12)*
- Facilitate the creation and editing of WLM service definitions, installation of WLM service definitions, and activation of WLM service policies

- **Problem Determination** category (Avail on z/OS V1.10)

- **Incident Log** application
- The Incident Log provides a consolidated list of SVC Dump related problems, along with details and diagnostic data captured with each incident. It also facilitates sending the data for further diagnostics.

- **z/OSMF Administration** category (Avail on z/OS V1.10)

- z/OSMF authorization services for administrator: add users, define roles, dynamically add links to non-z/OSMF resources.



z/OSMF Problem Determination – Incident log

Benefits

	Without z/OSMF**	With z/OSMF**
Recognizing a system-detected (dumped) problem occurred	Requires 5 to 7 manual steps, plus skill on effective use of IPCS to extract data from each of the dumps. Up to 5-6 minutes	Display in 1 click. Greatly reduced skill required As little as 5 seconds
Collecting and sending diagnostic data	Requires 7 to 15 manual steps, plus skill to locate the right log files, build and run jobs, rename the output datasets, and use an FTP job to send the different data sets to the target destination. Up to 20 minutes Up to 30 minutes for sysplex components	Send the material in 8 clicks: <ul style="list-style-type: none"> ▪ Select the incident materials ▪ Specify the FTP destination information ▪ Send the material ▪ Check whether the information was FTP'd successfully As little as 30 seconds
Allow new dump to be taken for the same symptom	Requires 7 to 12 manual steps, plus skill on effective use of IPCS to locate the dump data set, obtain the symptom string, get into the IPCS DAE display, locate the matching symptom string (could be non-trivial) and indicate TakeNext on the IPCS display Up to 15 minutes	Make the update happen in 3 mouse clicks As little as 10 seconds

“So easy, even Marketing professionals can use it!” – Gita Grube Berg, IBM System z Marketing



Incident Log – Summary Information

IBM z/OS Management Facility - Mozilla Firefox: IBM Edition

File Edit View History Bookmarks Tools Help

https://mysystemz:32208/zosmf/ IBM w3

Most Visited Rochesters Popular Li... dogear this O'Reilly - Safari Books ... Books 24x7 Home - zMF Agile Proj... z/OSMF Exploiters Wik... getAbstract IBM

IBM z/OS Management Facility Welcome zmaadm Log out IBM

Welcome Incident Log

Incident Log

Many fields, set tracking IDs

Incident Type	Description	Problem Number	Tracking ID	Notes
	PID=SCPX1,ISSUER=BPXMIPCE 3,REASON=00080005		XR-8265745	Screen team analyzing
	PID=SCPX1,ISSUER=BPXMIPCE 3,REASON=04130007			
	COMPON=WEBSHERE Z/OS, IE BBOOOUTP	12345,001,001	8562(12)	Received ++APAR
	5N0200,ISSUER=BBORADMP,ABEND IE BBOOOUTP			
	IBSPHERE Z/OS, 5N0200,ISSUER=BBORLEXT,ABEND (NAME NOT KNOWN)		DB: 5868,Scr: XR-125	Application problem
	X,COMPID=SCPX1,ISSUER=BPXMIPCE =S0EC3,REASON=04130007			
	FTP Job Status COMPID=SCPX1,ISSUER=BPXMIPCE .REASON=00080005			
	COMPON=WEBSHERE Z/OS, COMPID=5655N0200,ISSUER=BBORFRR,ABEND IN BBOOSRBF			
	COMPON=ZTT TC=ZTTABND ISSUER=ZTTVDUMP - ABEND FOR PDWB 1			

Select incident, get popup with actions

Add comments

Total: 8, Filtered: 8, Selected: 0

Refresh Last refresh: Jan 21, 2010 5:25:52 PM local time (Jan 21, 2010 11:25:52 PM GMT)

Transferring data from localhost... localhost:9443



Incident Log – Send Diagnostic Data

IBM z/OS Management Facility - Mozilla Firefox

File Edit View History Bookmarks Tools Help

https://dceimgne.pdl.pok.ibm.com:32208/zosmf/

Welcome zmfusr1 Log out

Incident Log

Send Diagnostic Data

Use this wizard to prepare and send diagnostic data to a predefined FTP destination.

Select FTP Destination
Specify User Settings
Select FTP Profile
Define Job Settings
Review FTP Information

Incident Type	Description	Date and Time (GMT)
ABEND S0EC3	COMPON=WEBSPPHRE Z/OS, COMPID=5655N0200,ISSUER=BBORLEXT,ABEND IN (MODULE NAME NOT KNOWN)	Aug 4, 2009 9:26:29 PM

Data Type	Sysplex	System
SVC dump	CFCIMGNE	DCEIMGNE
Error log	CFCIMGNE	DCEIMGNE
Operations log	CFCIMGNE	DCEIMGNE
Error log summary	CFCIMGNE	DCEIMGNE

* Problem number:
12345,999,999 If the problem number is an IBM PMR number, check this box to verify the syntax.

< Back Next > Finish Cancel

Wizard guides you through

Planned for z/OSMF V1.12* Support for encrypted parallel dumps sent to IBM, send data faster



z/OSMF Configuration Assistant for z/OS CS

Benefits

	Without Configuration Assistant** With Policy Agent only	With Configuration Assistant** in z/OSMF GUI for Policy Agent
Filter unwanted network traffic from your z/OS system	<ul style="list-style-type: none"> • Learn how to set up IP filters • Review the IP Configuration Guide <ul style="list-style-type: none"> • Configure the Policy Agent application • Create configuration policy for IP Filter rules • Configure default filter rules in the TCP/IP profile • Configure the TRMD application • Configure the Syslogd application <p>Hours (or even days for initial setup)</p>	<ul style="list-style-type: none"> • Configuration Assistant guidance <ul style="list-style-type: none"> • Go to IP Security Perspective • Add a connectivity rule for an IP Filter • Use Application Setup Tasks to assist with the configuration and setup of the required applications • The Configuration Assistant will generate and help you deploy the configuration files to your z/OS system <p>As little as 30 minutes</p>
Secure your TN3270 server connections with SSL	<ul style="list-style-type: none"> • Manual process • Review the IP Configuration Guide <ul style="list-style-type: none"> • Configure the Policy Agent application • Configure TTLS in the TCP/IP profile • Configure the Syslogd application • Create configuration policy for AT-TLS for your TN3270 Server <p>Hours (or even days for initial setup)</p>	<ul style="list-style-type: none"> • Configuration Assistant guidance <ul style="list-style-type: none"> • Go to AT-TLS Perspective • Select the AT-TLS rule for the TN3270 server and enable • Use Application Setup Tasks to assist with the configuration and setup of the required applications • The Configuration Assistant will generate and help you deploy the configuration files to your z/OS system <p>As little as 30 minutes</p>

Get started faster! The Config. Assistant takes the rules and best practices found in various configuration publications and puts them under a single, simple user interface, saving you much time and effort.

**** Based on IBM laboratory results, your results may vary**



Configuration Assistant for z/OS Communications Server

As part the IBM z/OS Management Facility V1.11

- **Configuration Assistant for the z/OS Comm. Server is available on the z/OS Management Facility**

- All the same function as in the Web-download tool, but now on z/OS
- No need to FTP network configuration files!
- Requires z/OS V1.11 and later

IBM z/OS Management Facility - Mozilla Firefox

32208/zosmf

Welcome user1 Log out

Configuration Assistant - Backing Store (Read-Write) = MVS098

Main Perspective

Navigation tree

- z/OS Images
 - Image - MVS098
 - Stack - TCPCS
 - Stack - TCPCS2

z/OS Communication Server technologies

Select the technology you want to configure

--- Select Action ---

Select	Technology	Description
<input type="radio"/>	AT-TLS	Application Transp...
<input type="radio"/>	DMD	Defense Manager
<input type="radio"/>	IPSec	IP Security
<input type="radio"/>	IDS	Intrusion Detection Services
<input type="radio"/>	NSS	Network Security Services
<input type="radio"/>	QoS	Quality of Service
<input type="radio"/>	PBR	Policy Based Routing

Work with settings for z/OS images

Add a New z/OS Image...

To work with a specific z/OS image or TCP/IP stack, select the z/OS image or TCP/IP stack from the navigation tree.

Save Exit

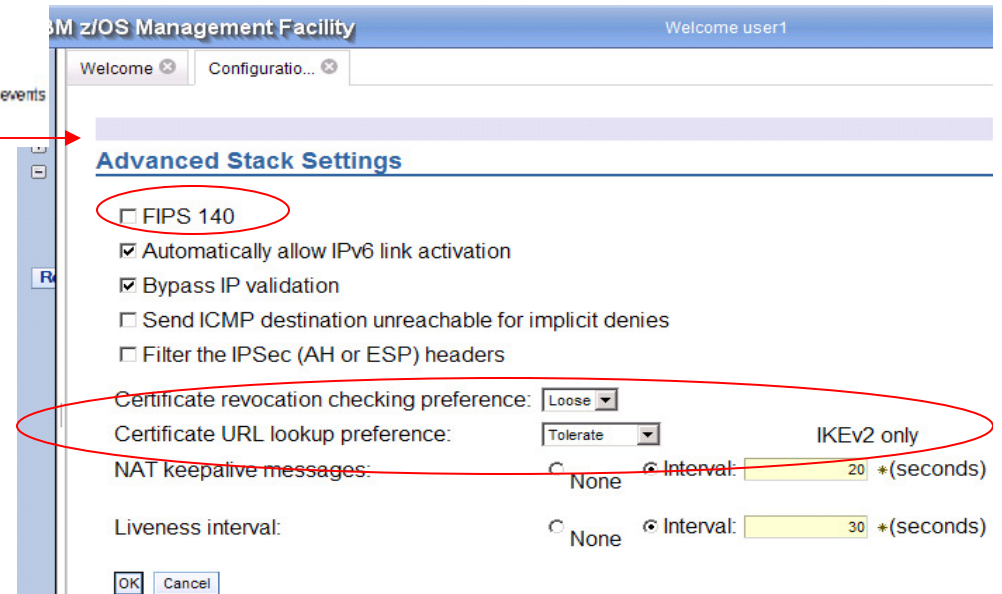
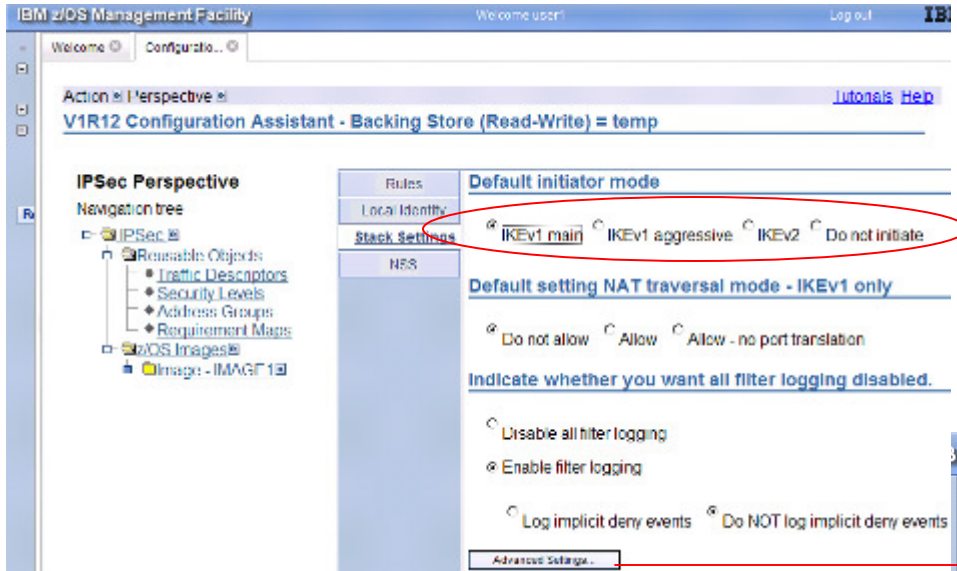
Done

Now: Partly Sunny, 77 °F Wed: 90 °F Thu: 88 °F



Configuration Assistant for z/OS Comm. Server Support for IKEv2 (planned for V1.12)*

- **Simplified dialogue for IPSec (V1.11)**
 - Support for FIPS 140 (V1.12)
 - Support for IKEv2 (V1.12)
 - Support for certificate revocation lists. (v1.12)





Centralized policy-based networking

- Define your network policies in one place (or read/ update existing policies) and apply them uniformly across the z/OS network....
- IPsec (1.7)
 - Encryption and authentication of IP packets in a data stream.
- Application Transparent -TLS (AT-TLS) (1.7)
 - (next generation SSL) Uses network cryptography and endpoint authentication designed to prevent eavesdropping, tampering, and message forgery.
- Quality of Services (QoS) (1.8)
 - QoS policies help maintain network traffic prioritization, improved workload mapping (1.11)
- Intrusion Detection Services (IDS) (1.8)
 - IDS policies help you detect and report suspicious network activities
- Network Security Services (NSS) (1.9)
 - NSS provides single, centralized certificate storage, monitoring, and managing services for IPsec cross-systems or cross-sysplex
- TCP/IP Policy-Based Routing (PBR) (1.9)
 - “customize your network” PBR allows TCP/IP stack to make routing decisions based on job name, ports, protocol (TCP or UDP), source IP address, NetAccess security zone, and security label
- Defensive filtering (1.10)
 - Defensive filters (temporary security policies) can be quickly deployed to defeat network attacks



z/OSMF WLM Policy Editor (V1.12)*

Benefits

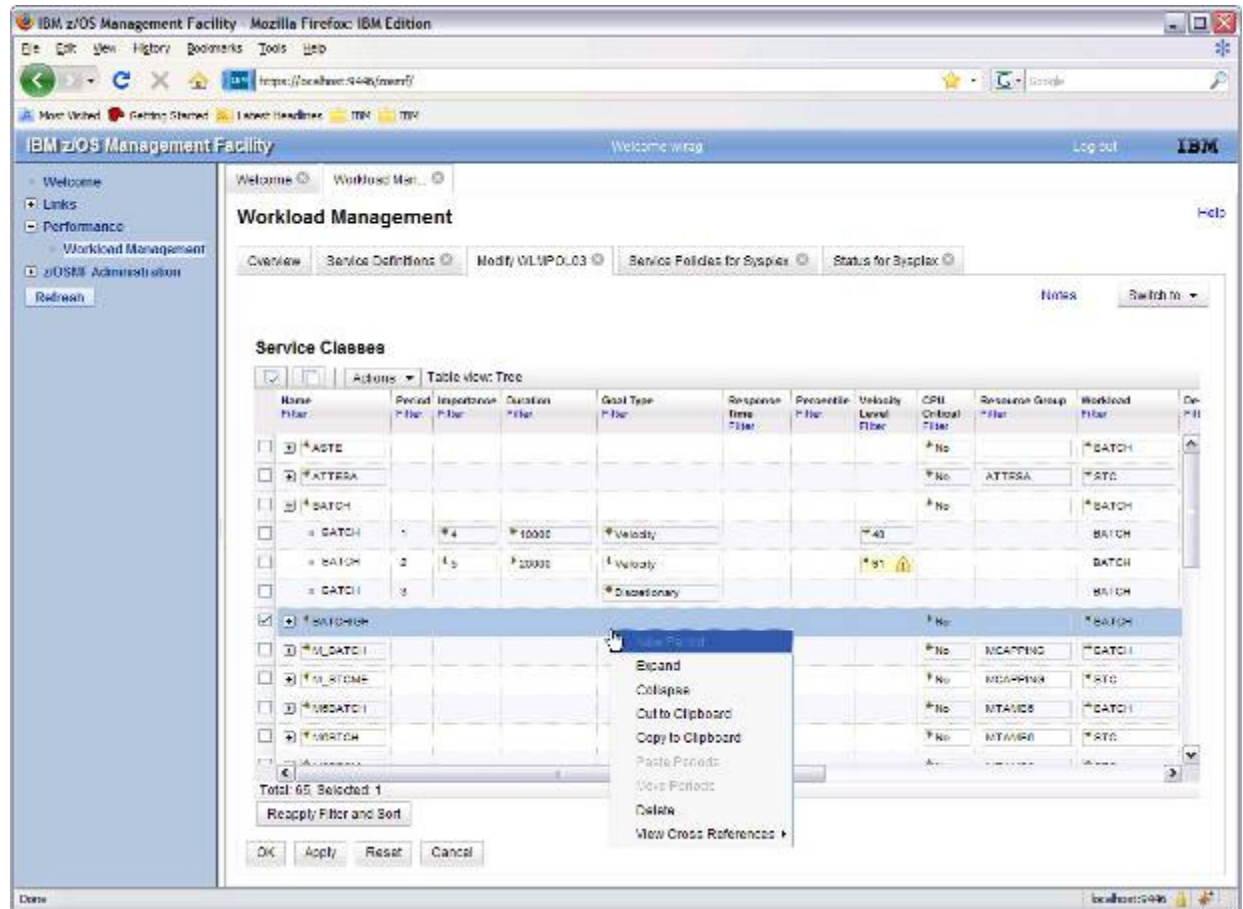
	Without WLM Policy Editor** using WLM Administrative Application	With WLM Policy Editor** in z/OSMF
Optimization of a service definition based on best-practices	<p>Read through WLM-related manuals and identify best-practices. Print out the service definition and investigate it with respect to proposed best-practices. If required, modify the policy elements correspondingly.</p> <p>Hours (or days when done initially)</p>	<p>Check the best-practice hints the GUI displays for policy elements. If required, modify the policy elements correspondingly.</p> <p>Minutes (or hours when done initially)</p>
Review of service definitions	<p>To get an overview of a service definition you have to print it to a data set, download the data set, and print it out or feed it into the Service Definition Formatter tool to filter and sort policy elements.</p> <p>5-10 minutes until review can start</p>	<p>Navigate through it using links. Filter and sort policy elements in the tables.</p> <p>Seconds until review can start</p>
Transfer policy elements from a test service definition to a production service definition	<p>Print out the test service definition and update the production service definition by typing in the changes.</p> <p>Up to several minutes per policy element</p>	<p>Open the test and production service definition simultaneously and copy over the changed policy elements via copy&paste operations.</p> <p>Seconds per policy element</p>

**** Based on IBM laboratory results, your results may vary**



z/OSMF WLM Policy Editor (V1.12)*

- **Simplified creation, modification and review of service definitions**
 - Policy elements are presented in tables
 - Tables can be filtered and sorted
 - Direct editing of policy elements within tables
 - Best-practice hints are displayed automatically while specifying policy elements
 - Several service definitions can be opened simultaneously
 - Cut, Copy, Paste of policy elements between service definitions





A window on your datacenter

Hardware Configuration Manager (HCM)

Value

- **Centralized I/O management** with one process for defining and documenting IBM System z® processors, switches, and devices.
- **Easy to use:** Define disk subsystems with a few mouse clicks; print configuration reports on demand.
- **Improves system availability** by helping to ensure data validity and configuration errors.
- Adds **real-time problem resolution** when coupled with System Automation I/O operations.

Examples of feedback

- HCM's Subsystem Creation Wizard reduces two hours of manual configuration to less than five minutes.
- HCM's Copy Wizards save hours of configuration time.
- New users find HCM easy to use and intuitive.

A z/OS optionally priced feature
Only one license required to manage the whole site !

Capabilities

Enhancements for z/OS 1.8

- Define controller in PDF format
- Search and filter capabilities
- View HCD compare reports in HCM diagram
- Automatic IODF activity logging
- Hiding selected connections in views and reports
- Performance data integrated w/ RMF™
- Generate cable labels
- STP link support
- **Wizards** that simplify complex configuration tasks

Enhancements in z/OS 1.9

- More reporting options
- Enhanced wizard
- New Vertical Processor View

Enhancements for z/OS V1.10

- New configuration packages
- I/O configuration dialogues/ statements
- Improved export capabilities

Enhancements for z/OS V1.11

- Support for Windows Vista and IPv6



Simplifying diagnosis and problem avoidance – *IBM Health Checker for z/OS*

Value

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

Latest enhancements

- **z/OS 1.8** - easier to write checks with improved parmlib, parsing, and display.
- **Checks:** Communications Server, GRS, storage management, RACF®, BAM, DFSMS™, and RRS
- **z/OS V1.9** – Write checks in System REXX™
- **Checks:** z/OS UNIX® System Services, TSO/E, z/OS BCP, and z/OS Communications Server
- **z/OS V1.10** - View historic data, save data across IPLs, integration with some migration checks
- **Checks:** ICSF, SFM, z/OS UNIX System Services, RACF, CINET, XCF/XES, Comm Server.
- **z/OS V1.11, checks** – AutoIPL, DFSMS, DAE, SDSF, SFM (for BCPii)
- **Migration checks:** zFS, IPsec, BIND9 DNS usage, DFSMSrmm, STP/ ETR, Message Flood Automation, Integrated Security Server (LDAP) usage, z/OS root file system space
- **z/OS V1.12***: Write checks in METAL C, **checks:** CF structures, configuration data sets, CFRM protocols, SMB, DFSMS, IOS. **Migration checks planned.**



Over 100 Checks with more planned

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

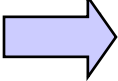


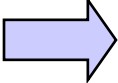
zAAPs and zIIPs – *Designed to help implement, integrate, optimize new technologies*

Enabled technologies, in order of introduction:

- **Java** – IBM z/OS JVM Java technology-based applications eligible for zAAP
- **Centralized data serving eligible for zIIP** - Portions of BI, ERP, and CRM remote connectivity to DB2 V8, as well as portions of long running parallel queries, and select utilities
- **Network encryption on zIIP** - IPSec network encryption/ decryption (with z/OS V1.8)
- **XML parsing** – z/OS XML System Services eligible on zAAP or zIIP (w/ z/OS V1.9, V1.8 and V1.7 w/ maint.)
- **Remote mirror**– zIIP assisted z/OS Global Mirror function (with z/OS V1.9)
- **HiperSockets™** Multiple Write operation for outbound large messages (w/z/OS V1.9) eligible for zIIP
- **Business Intelligence** - IBM Scalable Architecture for Financial Reporting™ provides a high-volume, high performance reporting – can be eligible for zIIP.

 Intra-server communications – **z/OS CIM Server** processing eligible for zIIP (with z/OS V1.11).

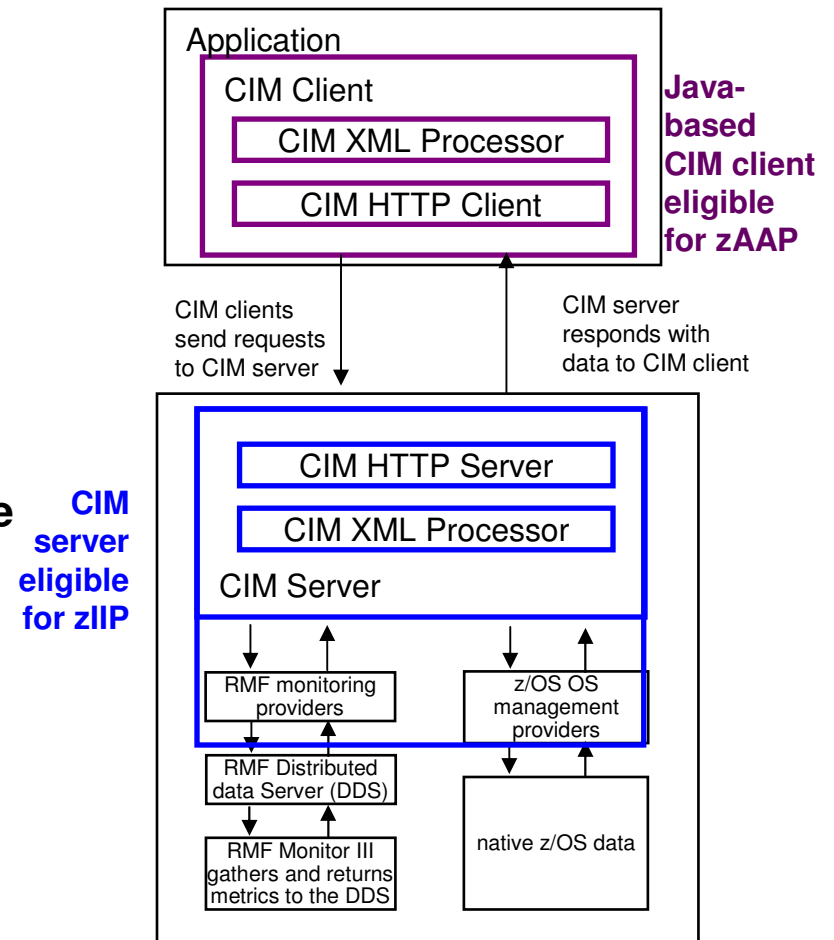
 **zAAP on zIIP capability** - Optimize the purchase of a new zIIP or maximize your investment in existing zIIPs.

 **DB2 sort utility** – DB2 utilities sorting fixed-length records using IBM's memory object sorting technique



z/OS CIM server workload eligible for zIIP

- **z/OS V1.11 is updated so z/OS CIM server processing is eligible to run on the zIIP**
 - Eligible workloads include CIM server and CIM provider
 - Other CIM-related workloads (such as CIM client and CIM-enabled resource systems processing) are not eligible for zIIP
- **Makes the development and deployment of z/OS systems management applications more attractive option**
- **Applications that access CIM-enabled resources and providers can benefit**
 - Information providers include RMF, WLM, DFSMS and BCP
 - Applications include z/OS Capacity Provisioning Manager and parts of z/OS Management Facility



An example with z/OS system data and RMF metrics



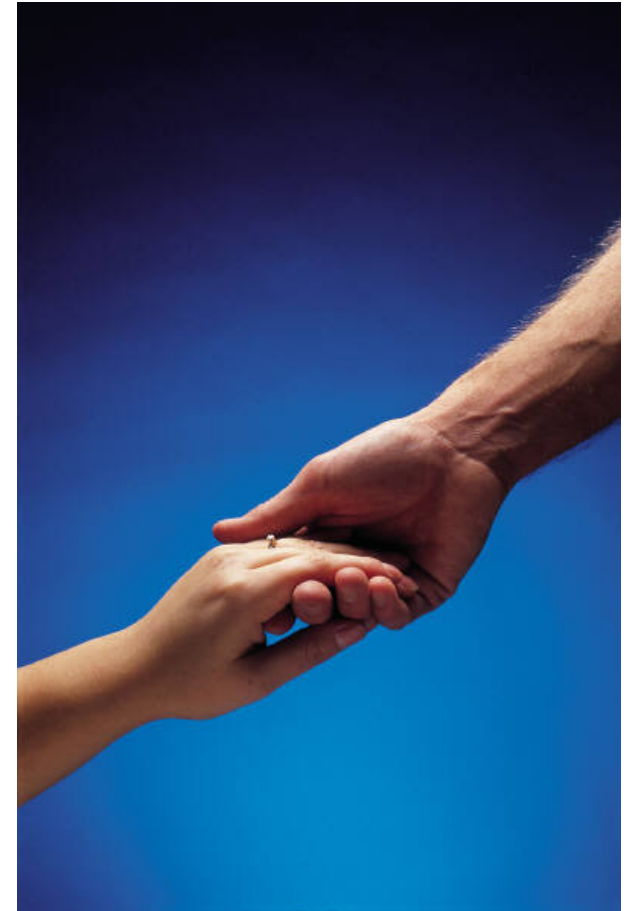
DB2 for z/OS V8 and DB2 9 for z/OS sort utility

- **IBM DB2 for z/OS Version 8 and DB2 9 DB2 utilities enables portions of utilities for sorting fixed-length records using IBM's memory object sorting technique to be eligible for the zIIP.**
 - It is anticipated that large, CPU-intensive sorts may benefit more than smaller sorts; Amount of workload eligibility is highly variable, your actual results can vary.
- **Prerequisites:**
 - You'll need PTF UK48911 for DB2 Version 8 or PTF UK48912 for DB2 9, at:
 - ibm.com/support/docview.wss?uid=swg1PK85889
 - and PTF UK48846 for z/OS V1.10, at :
 - ibm.com/support/docview.wss?uid=isg1PK85856
- **For more information, see:**
 - Utilities Mgt Solution Page:
 - ibm.com/software/data/db2imstools/solutions/utilities-mgmt.html
 - Utilities Page:
 - ibm.com/software/data/db2imstools/db2tools/db2utilsuite/



What is the zAAP on zIIP capability?

- **A new capability that can enable System z Application Assist Processor (zAAP) eligible workloads to run on System z Integrated Information Processors (zIIPs).**
 - For customers with no zAAPs and zIIPs
 - The combined eligible workloads may make the acquisition of a single zIIP cost effective.
 - For customers with only zIIP processors
 - Makes Java and z/OS XML System Services -based workloads eligible to run on existing zIIPs – maximizes zIIP investment.
 - Available September 25, 2009 with z/OS V1.11 and z/OS V1.9 and V1.10 (with PTF)
 - This new capability is not available for z/OS LPARS if zAAPs are installed on the server.

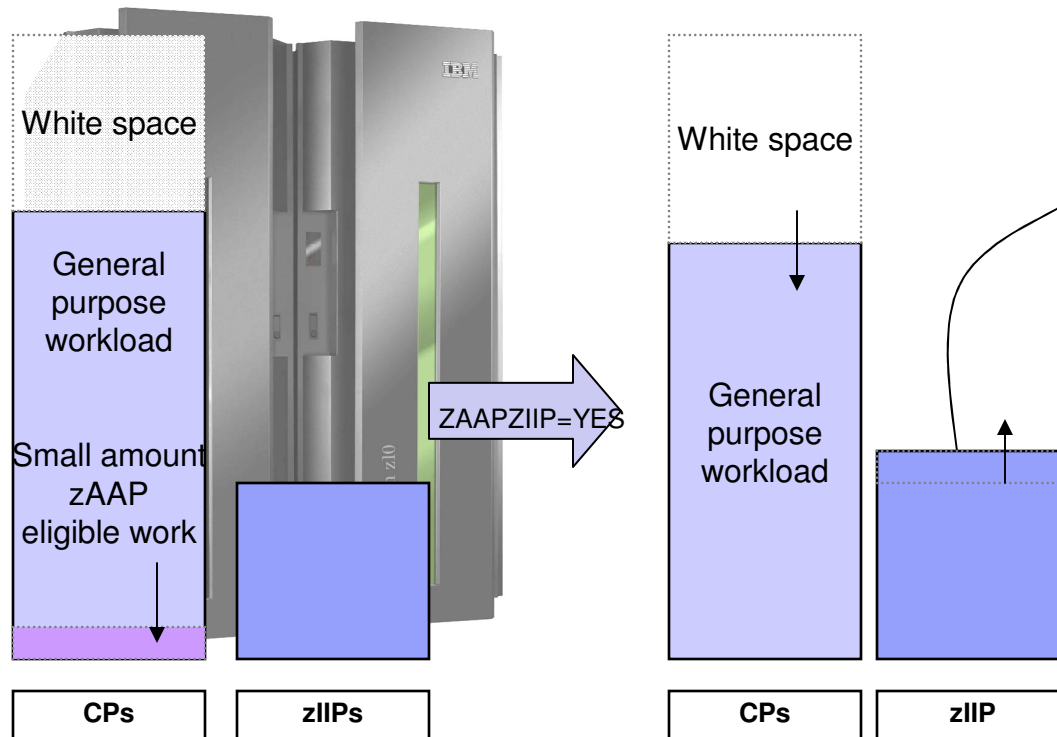




Example: zAAP on zIIP**

- Can enable you to run zIIP- and zAAP-eligible workloads on the zIIP.
 - ▶ Maximize your investment in existing zIIPs.

CPs and zIIPs



Potentially ADD the following workloads to your existing zIIPs

- Java via the IBM SDK (IBM Java Virtual Machine (JVM)), exploiters include portions of :
 - WebSphere® Application Server
 - IMS™
 - DB2
 - CICS®
 - Java batch
 - CIM Client applications
- z/OS XML System Services, exploiters include portions of:
 - DB2 9 (New Function Mode)
 - Enterprise COBOL V4.1
 - Enterprise PL/I V3.8
 - IBM XML Toolkit for z/OS
 - CICS TS V4.1

** For illustrative purposes only, your results will vary.
This new capability is not available for z/OS LPARS if zAAPs are installed on the server



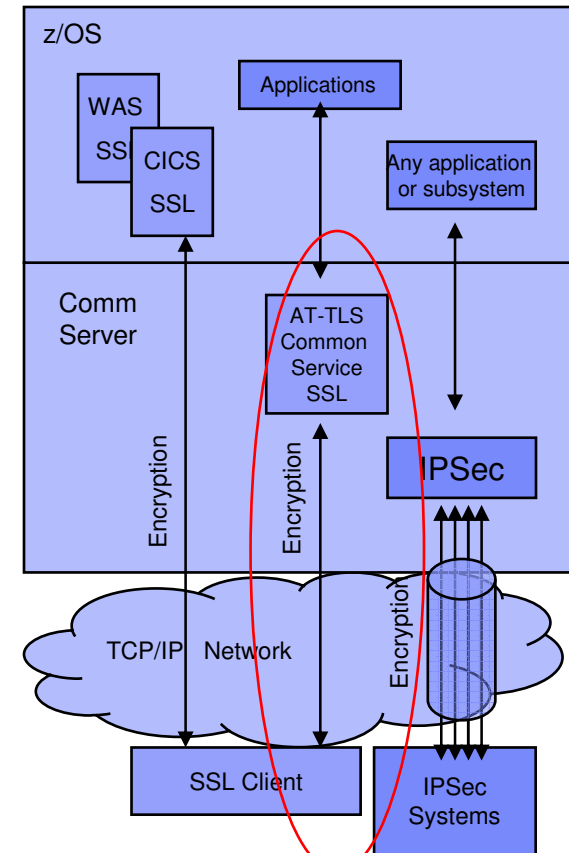
How to enable the zAAP on zIIP capability

- **This new capability is not available for z/OS LPARS if zAAPs are installed on the server, or defined in a configuration for that server/ sysplex.**
 - If there are any zAAPs installed on the server, then the ZAAPZIIP=YES cannot be honored for any z/OS partition on that server.
 - z/OS as a guest of z/VM = This new capability is not available if zAAPs are defined in the virtual machine for z/OS.
- **zAAP workloads can run on zIIP processors in z/OS LPARs when:**
 - Running on a z9 or z10 server , no zAAPs are installed on the server/ configuration
 - Using z/OS R11 or z/OS R10 or R9 with the PTF for APAR OA27495
 - ZAAPZIIP=YES is specified in an active IEASYSxx member of parmlib at IPL time
 - R10, R9 default (with OA27495) is ZAAPZIIP=NO
 - R11 default is ZAAPZIIP=YES
- **Use PROJECTCPU**
 - With zAAP on zIIP capability, PROJECTCPU will just register zIIP-eligible work. It will not distinguish between what was once zAAP-eligible workload and zIIP-eligible workload.
- **This new capability does not remove the requirement to purchase and maintain one or more general purpose processors for every zIIP processor on the server.**
 - This part of IBM terms and conditions for IBM System z specialty engines is unchanged.



Enhancements in networking security (R11)

- **z/OS System SSL**
 - Addressing requirements for NIST FIPS 140-2 Level 1 criteria.
 - TLS V1.1 protocol (RFC4346), TLS Extensions (RFC3546)
 - Certificate validation at the RFC3280 level, compatibility with RFC2459
- **Application Transparent Transport Layer Security (AT-TLS)**
- **TLS is next generation SSL**
 - Adding TLS V1.1 protocol support
 - Can now validate certificates as specified in RFC3280
 - Supports negotiation and use of a truncated HMAC (RFC3546), maximum SSL fragment size (RFC3546), handshake server name indication, and setting the CRL LDAP server access security level
 - Application access to System SSL design changes related to FIPS 140-2 level 1 criteria
- **IPSec**
 - IPSec performance improvements for Enterprise Extender traffic
 - Improved granularity in IPSec management information
 - Addressing the NIST requirements to support a FIPS-140-2
- **NSF**
 - Ability to use/apply numerous z/OS security capabilities



Transparent to application,
no application update needed



Enhancements in networking security (R12)*

- **NEW! Support for IKEv2**
 - Internet Key Exchange version 2 (IKEv2) is specified by RFC 4302. z/OS one of the early adopters.

- **IPSec and IKE :**
 - 256-bit AES Cipher Block Chaining (CBC), 128-bit and 256-bit AES Galois Counter Mode (GCM) and Galois Message Authentication Code (GMAC), AES128-XCBC-96
 - HMAC-SHA-256-128, HMAC-SHA-384-192, and HMAC-SHA-512-256
 - Support for elliptic curve digital signature algorithm (ECDSA) authentication and Diffie-Hellman (ECDH) key agreement
 - **Federal Information Processing Standard (FIPS) FIPS 140-2 (via System SSL and ICSF) - to be submitted for certification (SOD)***

- **System SSL:**
 - **Elliptic Curve Cryptography (ECC), ECDSA (Elliptic Curve Digital Signature Algorithm).**

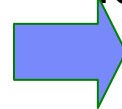
- **NEW ! Trusted TCP connections to**
 - Allows endpoints within a z/OS image, Sysplex, or Subplex to establish a trust relationship with no overhead and CPU-related costs of SSL/TLS with client authentication
 - Security information exchanged using secure XCF messaging
 - Requires no application protocol changes, transparent to the client application



Integrated security components working together

▪z/OS ICSF crypto functions can help with:

- Data Confidentiality – Symmetric/ Asymmetric Encryption
- Data Integrity -- Modification Detection, Message Authentication, Non-repudiation
- Financial/PIN processing (ATMs)
- Key Security and Integrity



▪Implementation and management of cryptography is vital to many of today's regulatory and compliance requirements

- HIPAA
- Sarbanes-Oxley
- PCI-DSS

ICSF enhancements with z/OS V1.11

- New **ICSF Query Algorithms** service enables middleware to determine what cryptographic implementations to use – helps your code be smart about when implementation to use (hardware vs. software, or, which algorithm to use.)
- New services for major credit card vendors, such as VISA and MasterCard, to help support the authenticity of credit cards.
- A new Key Store Policy is to provide a set of policy controls designed to specify further limits on application control of key material and provide a central point of control.
- **Planned for z/OS V1.12: support for FIPS-140-2 level 1**



z/OS and IPv6

- **Industry sources indicate we have about 2 years before IPv4 addresses run out!**
 - <http://www.potaroo.net/tools/ipv4/index.html>
- **z/OS R10 is IPv6 certified!**
 - See the “Special Interoperability Test Certification of the IBM z/OS Version 1.10 Operating System for IBM Mainframe Computer Systems for Internet Protocol Version 6 Capability”
 - From US government, Defense Information Systems Agency, Joint Interoperability Test Command
 - (http://jitc.fhu.disa.mil/adv_ip/register/certs/ibmzosv110_dec08.pdf)
- **z/OS R11**
 - Comm Server support for IPv6 temporary auto-configured addresses (RFC4941)
 - Comm Server support for IPv6 Type 0 Routing Headers (RFC5095)
 - ICSF provides new services to support the AES-based AES-XCBC-MAC-96 and AES-XCBC-PRF-128 algorithms - intended to meet new government IPv6 standards
- **Additional support for IPv6 planned for z/OS V1.12***
 - Health checks for IPv4 and IPv6 routing
 - DFSMSrmm
 - IKEv2
 - Ability to Send DNS Queries Over IPv6
 - Support for security-related RFC3484 and RFC5014

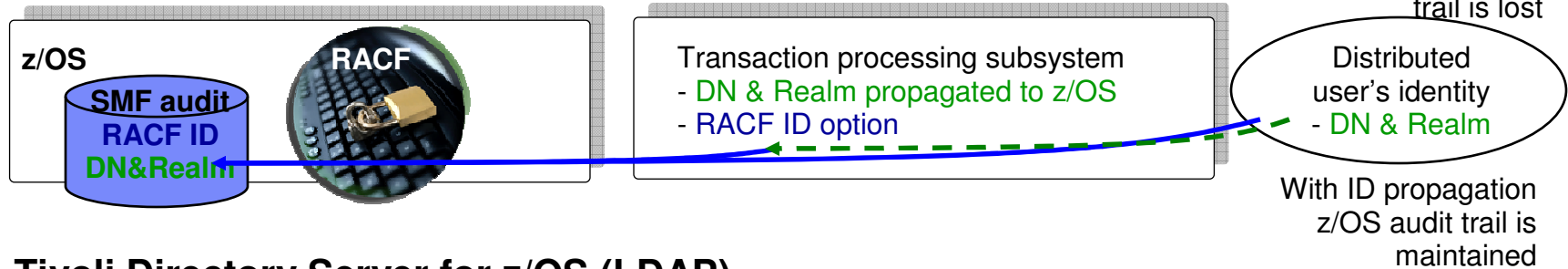


z/OS Security Server – RACF

*Helping to address security and compliance** guidelines*

RACF enhancements for z/OS V1.11

- Option to validate applications and other program downloads are signed
- Additional international language and character support for certificates
- Audit IBM WebSphere Application Server V7 and IBM Tivoli Key License Manager
 - RACF SMF update to support new audit infrastructure from WAS and TKLM
- Identity propagation
 - z/OS transactional subsystems will be able to associate users' distributed identities with RACF-controlled user IDs while maintaining the users' original identity information for audit purposes

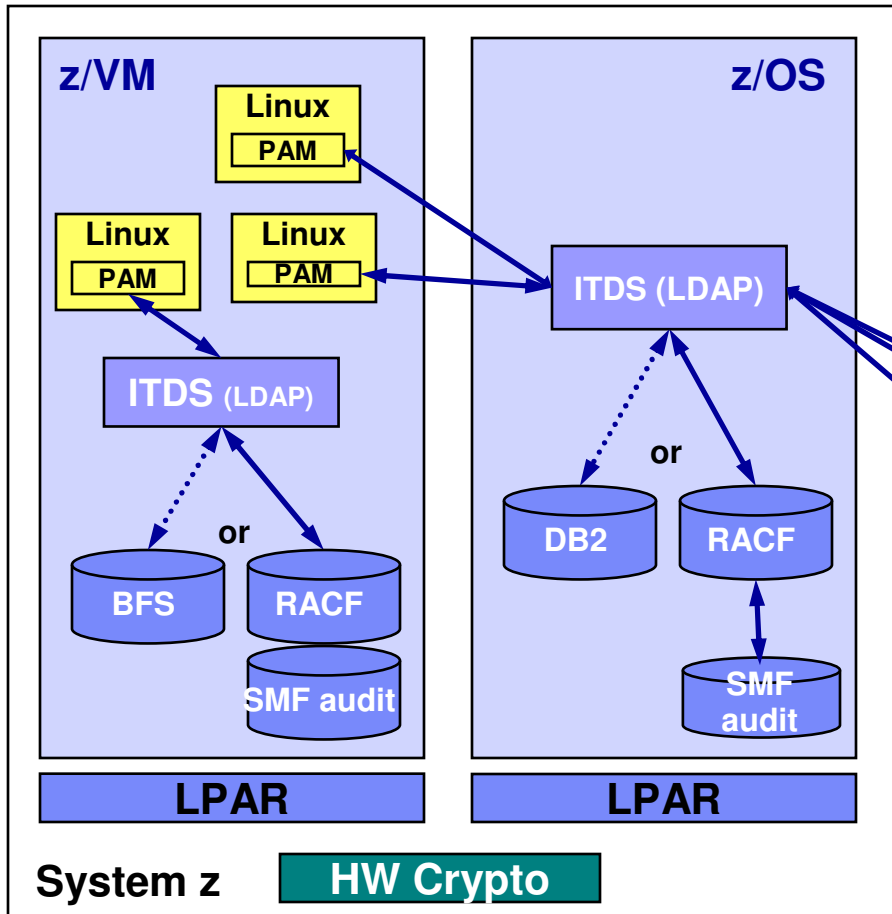


- Tivoli Directory Server for z/OS (LDAP)
 - Supports RACF group access checking in addition to user access checking (1.10)
 - Manage RACF User, Group, and Connect profiles
 - Directory replication function - helps allow easier migration of LDAP workloads to z/OS

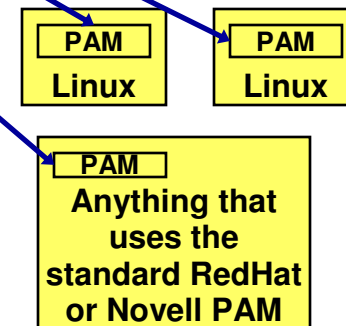
** It is the customer's responsibility to identify, interpret, and comply with laws or regulatory requirements that affect its business. IBM does not represent that its products or services will ensure that the customer is in compliance with the law.



Centralized authentication and user management

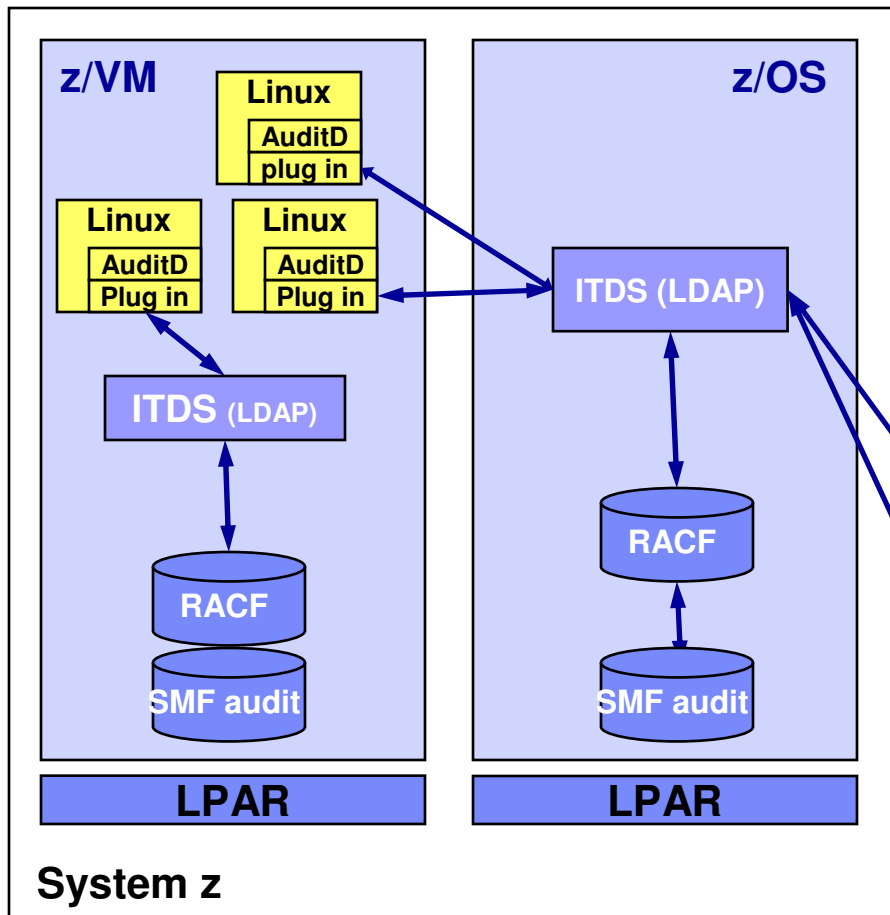


- **Password synchronization!**
- Consistency of user ID and passwords management across the user domain
 - Centralized, ID and passwords in one place, in RACF
 - No need for multiple servers each with its own LDAP and authentication table
- RACF reputation for security
 - Individual distributed authentication tables may be target or hacking
- Auditability of the entire user domain with SMF

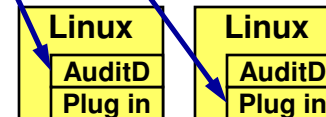




Centralized audit



- Common Client – auditD with plug-in
- Integrated LDAP Server on z/OS and z/VM®
- LDAP backed by RACF
- The Plug in is specific to IBM Tivoli Directory Server (LDAP)
 - Available today via Open Source
 - Plug in has to be specific – audit records much be translated into a form that ITDS / RACF can use
- See Redbook® on Enterprise Multiplatform Auditing (SG-247472)





z/OS Security Server – RACF

*Helping to address security and compliance** guidelines*

Enhancements planned with z/OS V1.12*

▪ **RACF functionality**

- Support for long certificate names – integrate with other certificate authorities easier
- RACF RACDCERT command is planned to allow you to create and sign certificates with ECC keys, in addition to RSA and DSA keys.
 - Elliptic Curve Cryptography (ECC), which is regarded as providing stronger cryptography with smaller key sizes than RSA cryptography

▪ **Integration with Tivoli Directory Server for z/OS (LDAP)**

- More sophisticated security management capabilities:
 - Configurable password policies
 - Ability to customize and expand on Access Control Lists
 - Continuous activity logging
 - Salted SHA for passwords - Help make dictionary attacks more difficult

** It is the customer's responsibility to identify, interpret, and comply with laws or regulatory requirements that affect its business. IBM does not represent that its products or services will ensure that the customer is in compliance with the law.



A complete digital certificate solution

z/OS PKI Services

- **Alleviate need to pay a third party Certificate Authority**

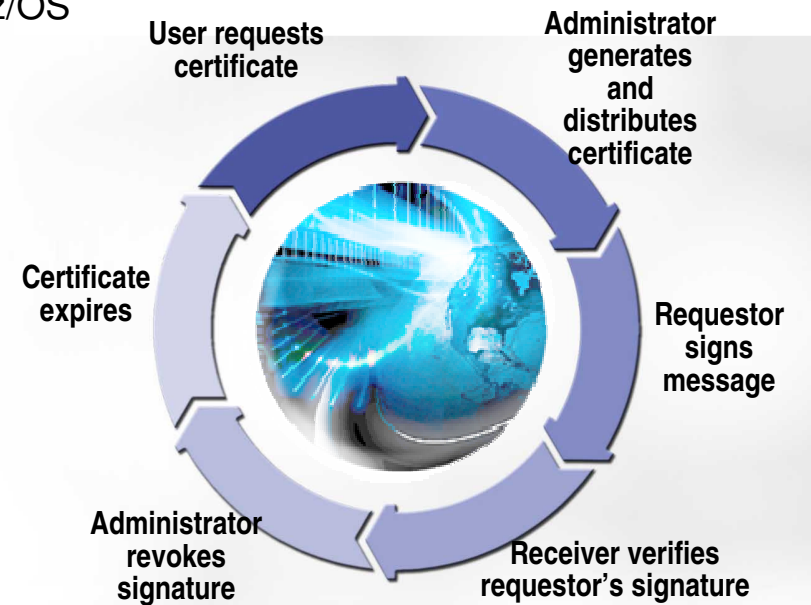
- z/OS PKI Services is a Certificate Authority solution in z/OS
- Leverage z/OS skills and resources to address your certificate needs

- **Provides full certificate life cycle management**

- Generate certificates for end users, network devices, browsers, and servers
- Administration, approval, renewal, and revocation processes can be automated

- **PKI Services, many updates over the years!**

- Improved automated e-mail notification for certificate requests, renewals, expirations (1.9)
- Support for Unicode (UTF8 subset) – helps improve compatibility with existing CAs. (1.10)
- New key archival/recovery capabilities – provides a backup process for recovery of keys (1.11)
- Support for ECC keys (in addition to RSA and DSA), automation to find unused cert. serial numbers, support for Certification Management Protocol (CMP) for integration with existing Certificate Authority solutions (planned, R12*)



Example of feedback

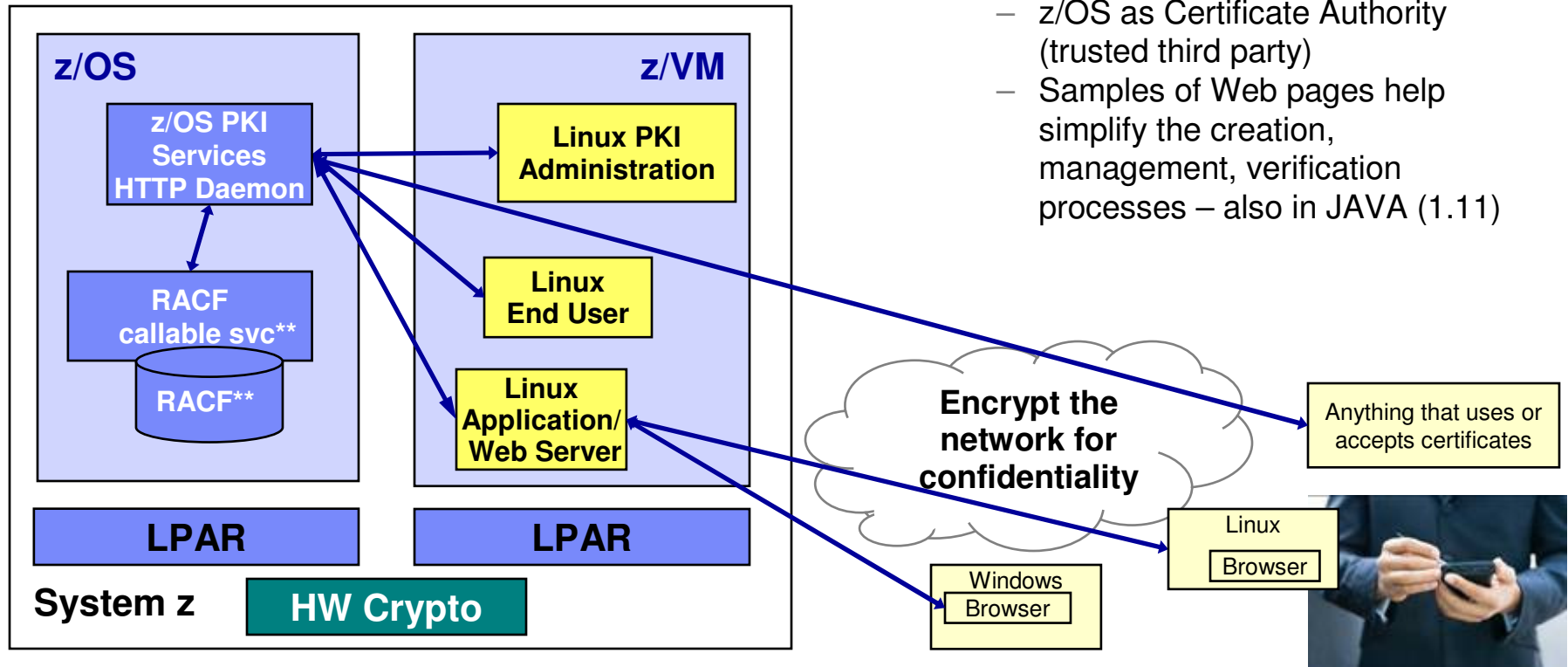
Used by a large bank to help secure connection between data center and branch offices - *Saved an estimated \$16M a year*



z/OS Public Key Infrastructure (PKI)

Certificates for Linux on System z and more!

- **Digital certificates can be managed in one place**
 - No need to buy a separate server and SW for a separate CA authority
 - No need to pay a third party to issue and manage certificates for you
- **z/OS PKI Services**
 - Confidentiality and data integrity with PKI public/private key pair
 - Full life cycle management of digital certificates
 - z/OS as Certificate Authority (trusted third party)
 - Samples of Web pages help simplify the creation, management, verification processes – also in JAVA (1.11)





z/OS availability enhancements

For z/OS V1.11

- Change Allocation settings without an IPL - New Allocation commands to modify and display Allocation settings.
- New latch identity service for improved diagnosis latch contention
- z/OS UNIX® System Services with System Call (syscall) Trace - intended to gather more information about program processing history to facilitate application debugging.
- Other availability improvements including IPL restart improvements and improved dump management

Planned for z/OS V1.12*

- CA (Control Area) Reclaim -- applications that use VSAM key-sequenced data sets (KSDS), can benefit from improved performance, minimized space utilization, and improved application availability through the avoidance of planned outages that used to be required to defragment and reorganize this data.
- z/OS Run Time Diagnostics – similar to real-time decision making, this function is designed to analyze and help identify possible problems in as little as one minute.
- GRS and XCF components are planned to automatically preserve sysplex availability to help reduce the incidence of sysplex-wide problems from unresponsive critical components.
- New Timed Auto Reply – allows the system to respond automatically to certain messages
- Significant improvement in SVC dump performance
- Significant improvement in z/OS and subsystem IPL



z/OS Predictive Failure Analysis

- **PFA can help you avoid ‘soft’ failures (available starting with R10)**
 - Hard failures have a clear start and a clear cause, but soft failures are caused by abnormal, but allowable behavior. Multiple atypical, but legal actions can cause soft failures.

- **z/OS system heuristically learns from its own environment and is able to anticipate and report on potential system issues (however rare) before they are an impact to your business.**
 - Common storage usage checking (V1.10) is designed to detect increased use of common storage – can help operators identify and respond to the top contributors of the change.
 - LOGREC arrival rate detection (V1.10) is designed to measure software failures using LOGRECs – can help you determine if the address space or the z/OS image is damaged.
 - Frame and slot usage checking (V1.11) is designed to detect increased usage of virtual storage – can enable operators and automation to respond to situations from storage leaks.
 - Message arrival rate detection (with z/OS V1.11) is designed to monitor the volume of messages of a system - can help you determine whether a problem exists and where.
 - SMF Message Arrival rate detection (planned for z/OS V1.12)* is designed to monitor volume of SMF records – is designed to issue an alert warning.

- **Additional customization for your environment - Ability to specify atypical jobs and address spaces to be excluded from learning algorithms (R12)***



z/OS availability enhancements

Parallel Sysplex (z/OS V1.11)

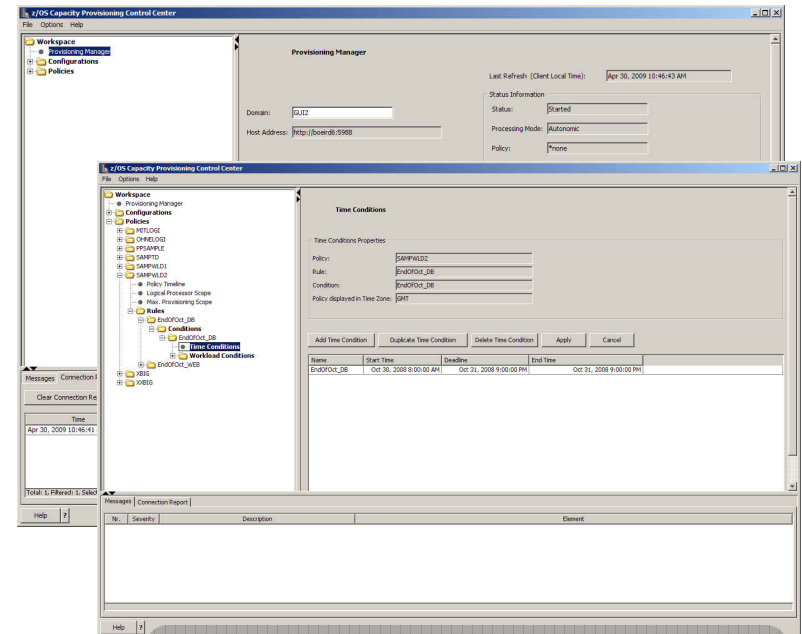
- **Networking (Sysplex Distributor)**
- **More intelligent routing and load balancing:**
 - better zIIP and zAAP workload routing
 - Connection routing accelerator for performance
 - Workload balancing capabilities extended to IBM WebSphere DataPower appliances
 - Intelligent routing for multitier z/OS applications
- **Availability**
 - Auto IPL works with SFM (R10)
 - SFM can use BCPii to query failed systems and automatically reset them (even without an operator)
 - GDPS control system can now complete Freeze or HyperSwap even when time source is out of synchronization
 - New health checks for DAE and STP
 - New migration checks for zFS in a sysplex
 - Alternate Sysplex root file system support
 - Enhancement to XCF and XES
- **Planned for z/OS V1.12***
 - Sysplex Distributor Hot Standby capability
 - Sysplex Distributor self-healing capabilities with problem detection and recovery, event notification, and stack isolation
 - Option for auto termination for critical members to preserve sysplex availability
 - New healthchecks



Simplified usage of On/Off Capacity On Demand

Efficient management of System z10 server capacity

- **Capacity management challenge**
 - Events and workload spikes can be unexpected
 - Manual capacity management may be time-consuming or subject to some error
- **z/OS Capacity Provisioning Manager**
 - Manual or automatic monitoring, activation, and deactivation of On/Off Capacity on Demand
 - You set the policies!
 - Flexibility - can activate OOCoD incrementally even in combination with CBU
 - Efficiency – policy based capacity management
 - Familiarity – modern GUI that uses RMF and CIM to gather system metrics
 - With z/OS V1.11 – now uses BCPii base component, TCP/IP connections not needed.
 - Planned for z/OS V1.12* -- Workload driven provisioning for CICS and IMS workloads.



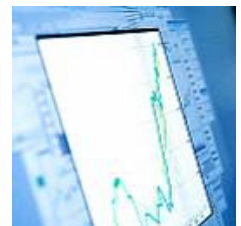
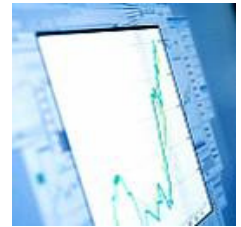
**Great Capacity Provisioning demo
at the IBM DEMOzone
www.demos.ibm.com**

<http://www-03.ibm.com/servers/eserver/zseries/zos/wlm/cp/>



Deep synergies help drive performance and efficiency, maximizing investment (z/OS V1.11)

- **Faster C/C++ applications** - z/OS V1.11 and z10 prefetch instructions avoid memory latency, and large page support improves memory management
 - For example, up to an 8% performance improvement with z/OS V1.11 XL C/C++ compiler over the z/OS V1.10 XL C/C++ compiler*
- Shorter batch windows - new IEFBR14 function avoids recalling migrated data sets only to delete them -- Some recalls taking minutes (from tape) now take seconds*
- **Faster Web-based applications** - improved system-wide caching of domain name server (DNS) responses, updated Fast Cache Accelerator function, and new intelligent sysplex networking for multi-tier z/OS applications
 - Up to 7 times the throughput for web-based transactions requiring frequent DNS resolving*
- **Faster bulk data transfers** in support of global operations or disaster recovery.
 - With TCP/IP dynamic right sizing, gain up to 3 times the data throughput.*
- **Faster high volume** interactive workloads with OSA-Express3
 - Transaction times can be reduced by up to 17%, average latency may be almost cut in half, and throughput improved up to 95%.*
- **Faster I/O** with System z High Performance FICON multitrack enables the transfer of more than a tracks worth of data in a single transfer.
 - Helps provide Improved channel performance, and reduced need for switches, channels, and control unit ports.





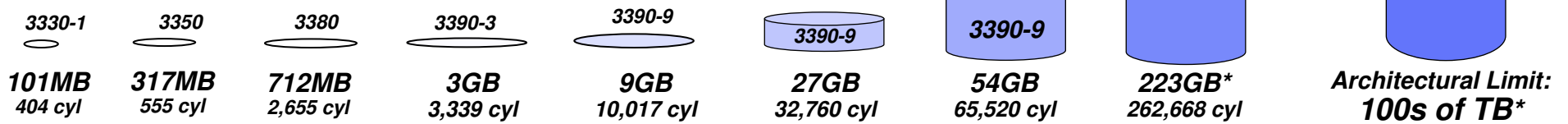
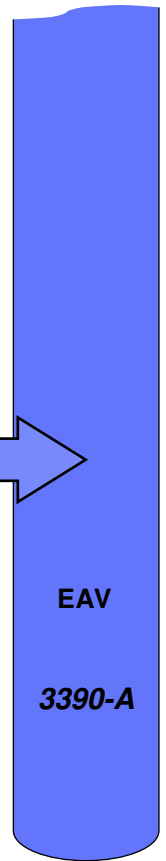
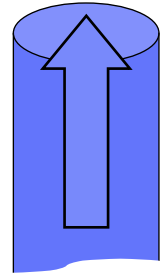
z/OS scalability/performance enhancements (V1.12)

- **Improved performance for CICS** – with VSAM RLS (record level sharing) striping - Striping spreads data on multiple volumes so it can be accessed much faster for improved I/O performance – any application that uses VSAM RLS, such as CICS, can benefit.
- **Reduced memory management overhead** with large (1MB) page support - Continued exploitation of large pages - extended to z/OS nucleus (like a UNIX kernel), in addition to AMODE 64 XL C/C++ Language Environment and the 64-bit SDK for z/OS, Java® Technology Edition, V6
- Significant performance improvements for **system level dumps**
- **Faster network encryption/ decryption** between AT-TLS and System SSL. Intended to provide improved performance in encrypted data handling and improve price/performance
- **Data error? Recover a previous version of your data faster** – Significant DFSMSdss Dump/Restore/Copydump performance improvements - Use 256K blocks rather than 64K blocks
- **Improved performance for Java** - Java pointer compression (PTF for APAR OA26294)



Taking z/OS storage volumes to the extreme

- **An Extended Address Volume (EAV) helps address storage constraints for very large storage environments**
- **EAV can help simplify storage management by enabling you to manage fewer, larger volumes, as opposed to many small volumes**
- **Available with z/OS V1.10 and IBM System Storage DS8000 Turbo (R4.1)**
 - Initially, 223 GB volumes supported by VSAM – applications that uses VSAM data sets (including DB2®, CICS®, zFS file systems, SMP/E CSI data sets, and NFS mounted data sets) can benefit.
 - **For z/OS V1.11**, EAV support for extended format sequential data sets
 - **Planned for z/OS V1.12***, EAV support for sequential (both basic and large) data sets, partitioned (PDS/PDSE) data sets, catalogs, BDAM data sets, JES spool and checkpoint data sets, Standalone Dump extended format dump data sets, DFSMSrmm data sets, Generation data groups (GDGs) and VSAM volume data sets.





Simplified software, service verification/ installation

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

Value

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



Capabilities

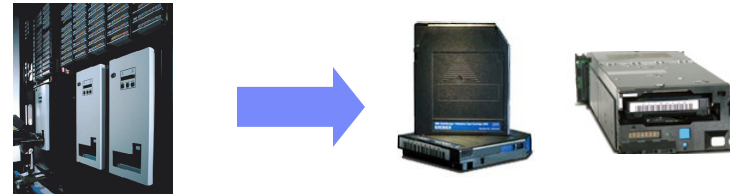
- IBM to create metadata that associates PTFs with one or more fix categories. Such as fixes needed for:
 - Specific hardware levels
 - New software FMIDs
 - Enabling new hardware/software functions
- IBM to deliver the metadata with existing PTF and HOLDDATA acquisition procedures.
- Integrate verification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

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



Statements of Direction*

- **IBM plans to discontinue delivery of software on 3480, 3480 Compressed (3480C), and 3490E tape media. (SOD August 2008)**
- IF you have IBM 3590 and 3592 Enterprise Tape or IBM System Storage TS1120 Tape drives in-house THEN please order z/OS on 3590 and 3592 tape media.
 - Using high-density media makes it much easier to handle and install z/OS because there are much fewer tapes to manage!



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

- Order z/OS over the Internet. Did you know there are now more shipments of z/OS via the Internet than by tape?
For more information see the Internet delivery website.



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



z/OS Version 1 Release 11 ...

... and z/OS Management Facility Version 1 Release 11

... simplified management

- A new face for z/OS, the z/OS Management Facility (5655-S28) helps improve administrator, operator, and developer productivity, and ultimately provide less opportunity for error.

... failure avoidance

- Predictive failure analysis is designed to help provide early warning about system trends that can cause system or application impacts, in many cases before they impact your business.

.... responsive networking

- New z/OS Communications Server designs improve networking in a Parallel Sysplex, enable more efficient workload distribution, and help improve the quality of the load balancing in multitiered z/OS server and application environments.

... trusted system

- The ability to implement centralized authentication, create a comprehensive audit and risk management plan, configure secure networks, and centrally manage digital certificate lifecycle can not only help reduce the risk from fraud and security breaches, but also help meet industry compliance guidelines.

... accountability

- Superior measurement and data collection and reporting capabilities are updated and can be used for comprehensive risk management, auditing, and compliance plans.
- A new identity propagation function can allow z/OS subsystems (like CICS TS V4.1) to associate distributed identities to RACF for improved cross-platform interoperability and accounting capabilities.

....improved economics and optimization

- Also, z/OS V1.11 is enhanced with a new function that can enable System z Application Assist Processor (zAAP) eligible workloads to run on System z Integrated Information Processors (zIIPs).
- z/OS CIM (Common Information Model) server processing eligible for System z Integrated Information processor (zIIP).
- IBM DB2 for z/OS Version 8 or DB2 9 DB2 utilities is updated to enable part of sort utility processing to run on a zIIP.



z/OS Version 1 Release 12* ...

... and z/OS Management Facility Version 1 Release 12*

... *simplified management*

- z/OS Management Facility provides more applications and function, and provides more value to operators and administrators.

... *Predicting problems*

- z/OS Predictive Failure Analysis (PFA) is planned to monitor the rate at which SMF records are generated. When the rate is abnormally high for a particular system, the system will be designed to issue an alert to warn you of a potential problem, potentially avoiding an outage.

... *Real-time decision making*

- A new z/OS Run Time Diagnostics function is planned to help you quickly identify possible problems in as little as one minute.

... *Automatic partitioning*

- sysplex components can automatically initiate actions to preserve sysplex availability to help reduce the incidence of sysplex-wide problems.

... *Avoiding data fragmentation and planned outages for data reorganizations*

- With the new CA (Control Area) Reclaim capability, applications that use VSAM key-sequenced data sets (KSDS), benefit from improved performance, minimized space utilization, and improved application availability.

... *Workload driven provisioning*

- Capacity Provisioning is planned to use CICS and IMS monitoring data to determine if additional resources are needed to meet service-level requirements for these workloads.

... *Storage management and scaling*

- Extended Address Volumes are planned to support additional data set types. Overall, EAV helps you relieve storage constraints as well as simplify storage management by providing the ability to manage fewer, large volumes.

... *Advanced cryptography*

- Support for Elliptic Curve Cryptography (ECC), Internet Key Exchange version 2 (IKEv2), Federal Information Processing Standard (FIPS) FIPS 140-2, and more.



Thank you