z/OS V1.12, z/OS Management Facility V1.12, and more!

5/17/2011

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z/OS

✓ Advantages to your operations through performance improvements, less workload disruptions, and improved diagnostics.

✓ Advantages to your business by taking advantage of a new era for integrated computing, providing faster, highly secure connectivity, supporting end-to-end workload management, and leveraging a whole new class of workload 'optimizers'

✓ Advantages to your organization with improved productivity. Automatic, real time capabilities mean less operator intervention and built-in expert guidance reduces time to perform tasks. New capability for FICON® disk and tape.

**z/OS®
Version 1
Release 12**

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

Available September 24, 2010

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IBM z/OS Management Facility

NEW

- **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

- **The IBM z/OS Management Facility helps system programmers to more easily manage and administer a mainframe system.**

- **More than a 'screen scraper' or an 'installation shield', the z/OS Management Facility is more:**

    – Automated tasks can help reduce the learning curve and improve productivity.

    – Embedded active user assistance (such as wizards) guides you through tasks and helps provide simplified operations.
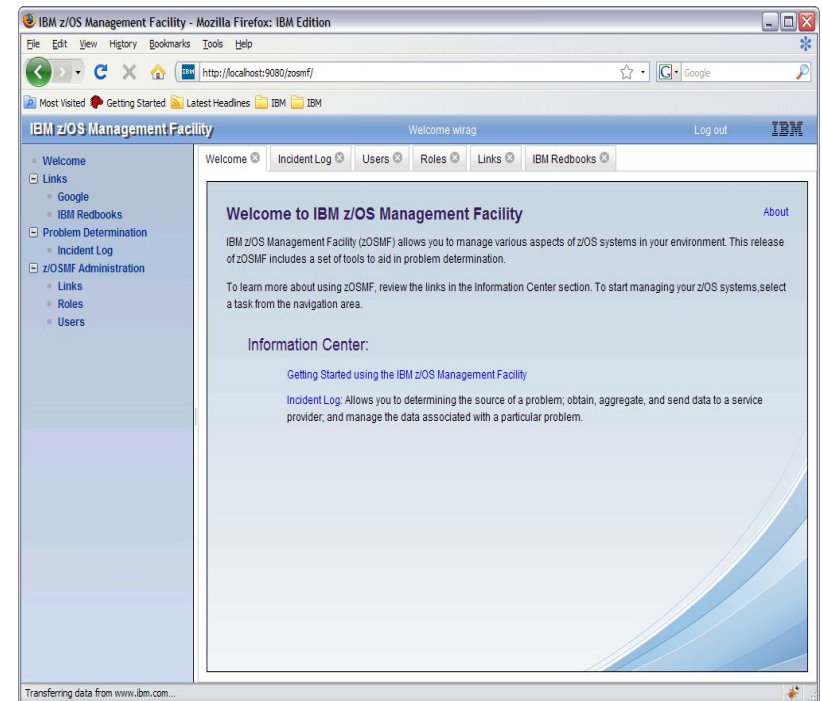
IBM z/OS Management Facility
Manages z/OS from z/OS
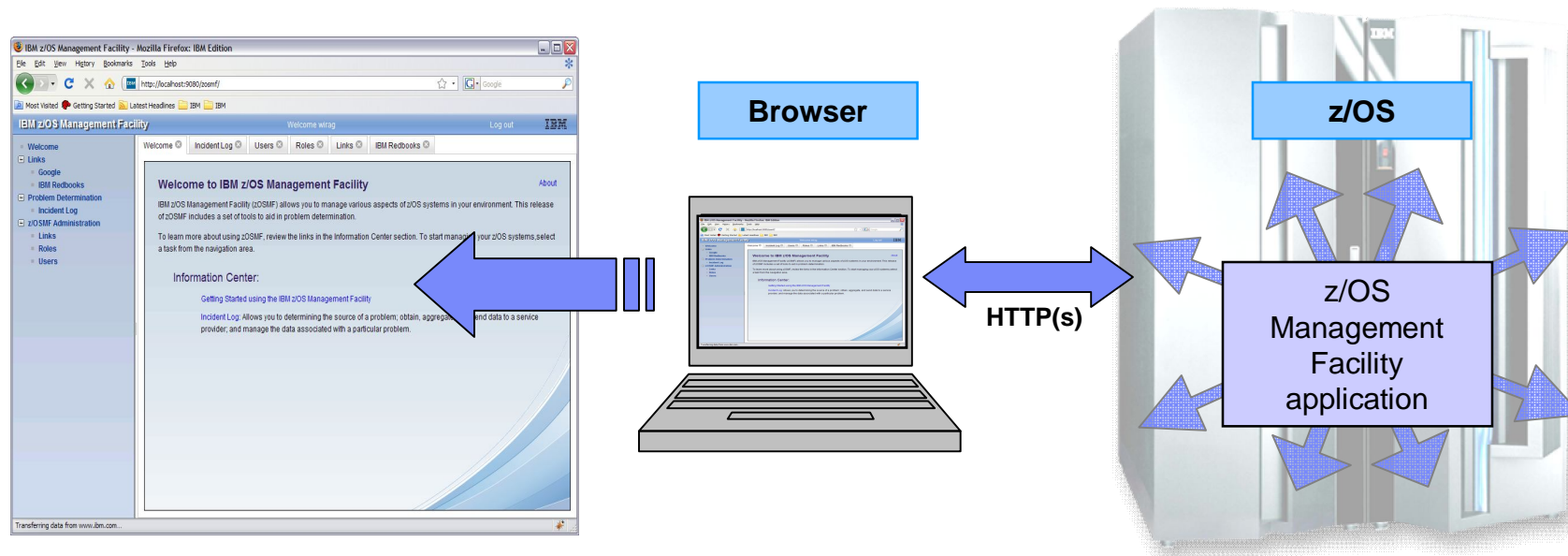
- **z/OS Management Facility is an application on z/OS**
  - Browser communicates with z/OSMF via secure connection, anywhere, anytime
  - Uses industry standards, such as Java™, DOJO, and CIM
  - Parts of z/OS Management Facility use the z/OS CIM Server (this workload eligible for zIIP, as of z/OS V1.11) and Java (the workload eligible for zAAP, or zIIP with the zAAP on zIIP capability introduced with z/OS V1.11)

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IBM z/OS Management Facility
Welcome page

Configuration
- **Configuration Assistant for z/OS Communication Server** – Simplified configuration and setup of TCP/IP policy-based networking functions (with z/OS V1.11)

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

Performance (with z/OS V1.12)
- **Sysplex status** – single view of sysplex and Linux® performance
- **Monitor desktops** – dynamic real time metrics for system performance,
- **Workload Manager Policy Editor** – Simplified creation, editing, installation, and activation of WLM service definitions and policies

Problem Determination
- **Incident Log** – Simplified capture, packaging, and sending of SVC dump diagnostic data. (Available with z/OS V1.10)

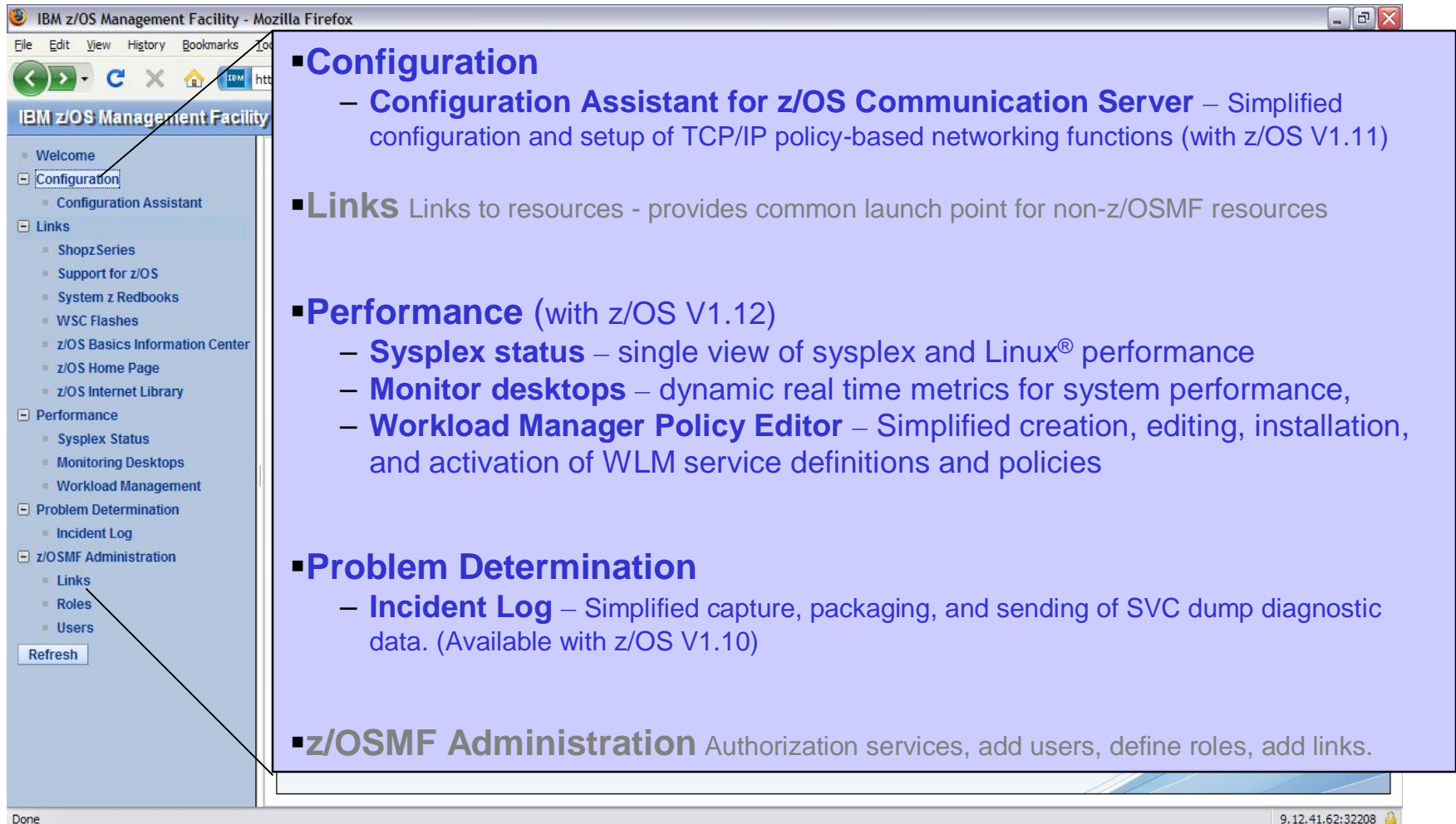**z/OSMF Administration** Authorization services, add users, define roles, add links.

IBM z/OS Management Facility - Mozilla Firefox

File   Edit   View   History   Bookmarks

IBM z/OS Management Facility

- Welcome
- Configuration
  - Configuration Assistant
- Links
  - ShopzSeries
  - Support for z/OS
  - System z Redbooks
  - WSC Flashes
  - z/OS Basics Information Center
  - z/OS Home Page
  - z/OS Internet Library
- Performance
  - Sysplex Status
  - Monitoring Desktops
  - Workload Management
- Problem Determination
  - Incident Log
- z/OSMF Administration
  - Links
  - Roles
  - Users

Refresh

Done   9.12.41.62:32208

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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
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
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: ▪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

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

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

Incident Log – Summary Information

Many fields, set tracking IDs

Select incident, get popup with actions

For z/OSMF V1.12: Add additional comments and diagnostic data

For z/OSMF V1.12 :
• Encrypted parallel FTP of the incident files, to IBM .
• Sending additional user-defined data with an incident

z/OSMF Config Assistant for z/OS Comm Server
Benefits

	Without Configuration Assistant** (Policy Agent only)	**With** Configuration Assistant** in z/OSMF

Filter unwanted network traffic from your z/OS system	▪Learn how to set up IP filters
	▪Review the IP Configuration Guide
	  – 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
	
	Hours (or even days for initial setup)
		▪ **Configuration Assistant guidance**
		  – 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
		
		As little as 30 minutes

Secure your TN3270 server connections with SSL	▪**Manual process**
	▪**Review the IP Configuration Guide**
	  – 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
	Hours (or even days for initial setup)
		▪**Configuration Assistant guidance**
		  – 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
		
		As little as 30 minutes

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 as part of 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**

Create configuration files for any number of z/OS images with any number of TCP/IP stacks per image.

Click on "Action" and select "Configure" to begin configuring that technology.

Select the TCP/IP stack that you want to configure and the technology, such as AT-TLS or IPSec.

Configuration Assistant for z/OS Comm. Server
Example, support for IKEv2 (for V1.12)
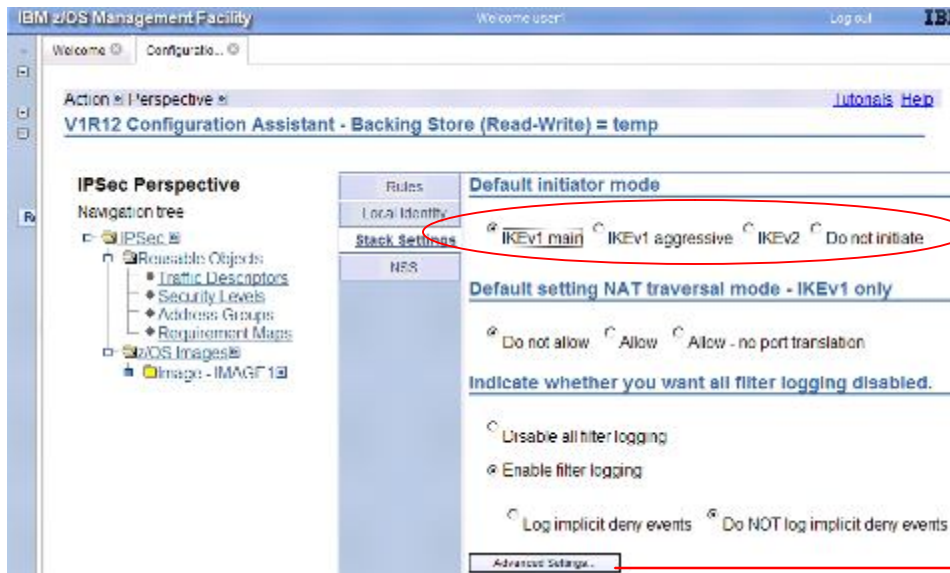
- **New networking security features in z/OS V.12 are updated with and included in z/OSMF V1.12**

- **Such as ...**
  - Support for FIPS 140 (V1.12)
  - Support for IKEv2 (V1.12)
  - Support for certificate revocation lists. (V1.12)
  - Support for many new cryptographic capabilities (V1.12)
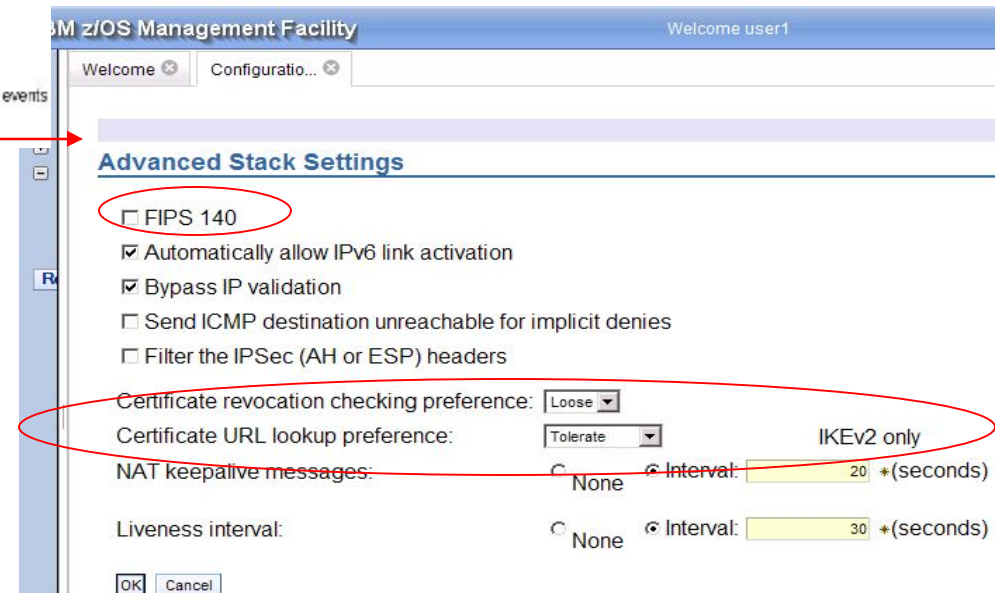
z/OSMF Workload Management (V1.12)
Benefits

	Without WLM Policy Editor** (WLM Administrative Application only)	With WLM Policy Editor** in z/OSMF
Optimization of a service definition based on best-practices	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. Hours (or days when done initially)	Check the best-practice hints the GUI displays for policy elements. If required, modify the policy elements correspondingly. Minutes (or hours when done initially)
Review of service definitions for daily changes, migration, consolidation	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. 5-10 minutes until review can start	Open a service definition from the service definition repository. Navigate through it using links. Filter and sort policy elements in the tables. Seconds until review can start
Transfer policy elements from a test service definition to a production service definition	Print out the test service definition and update the production service definition by typing in the changes. Up to several minutes per policy element	Open the test and production service definition simultaneously and copy over the changed policy elements via copy&paste operations. Seconds per policy element

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

z/OSMF Workload Management (V1.12)

- **WLM Policy Editor is available on the z/OS Management Facility**
  - All the same function as in the Web-download tool and many new features
  - Direct access to the WLM Couple Data Set to install/extract service definitions. No need to FTP WLM policy files!
  - Activation of service policies and monitoring of the WLM status in the sysplex

- **Requires z/OSMF V1.12 and z/OS V1.12**

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z/OSMF Resource Monitoring (V1.12)
Benefits

	Without z/OSMF Resource Monitoring (using RMF™ ISPF Monitor III Reporter)	With z/OSMF Resource Monitoring
Checking the performance status for several sysplexes	You need a Monitor III Reporter session on each sysplex, and manually consolidate data from different reports. (Monitoring of Linux resources has to be done with other tools) Up to 15 minutes to look up each sysplex and high degree of skill needed to interpret reports	Cross-sysplex performance monitoring from a single point of control with a quick red-yellow-green health indicator for your systems on a single panel. (Linux monitoring features are fully integrated.) Just seconds to see the health of all your sysplexes (and Linux images)
Explore and compare the processor usage of specifics jobs	Tabular reports are a fixed layout and can be viewed only one at a time with limited ability to customize and filter the data presentation. You have to manually consolidate data from different reports A long time, depending on data required and correlations needed. In some cases, generating reports is not possible.	The monitoring desktops are fully customizable. Specific metrics of selected resources can be added to a desktop and are presented as charts. Multiple desktops can be started in parallel in different tabs. Advanced filtering features allow you to conduct more sophisticated performance analysis. About 5 minutes to set up a custom monitoring desktop, 3 key clicks to view real-time statistics

This task, which requires the optionally priced RMF feature of z/OS, uses RMF distributed data servers (DDSs) running on any supported z/OS release, to gather data to display, including most of the data available in RMF Monitor III.

Resource Monitoring: Sysplex Status

A snapshot of the performance of workloads running on your sysplexes. The Sysplex Status task also provides a single location where you can define sysplexes and Linux images to be monitored in the Monitoring Desktops task.
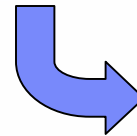
Why is this status red? Drill down into the details with the Monitoring Desktops task.

Resource Monitoring: Monitoring Desktops

Monitor most of the metrics supported by the Resource Measurement Facility (RMF) Monitor III, create and save custom views of the metrics, and display real-time performance data as bar charts.

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Simplified FICON I/O configuration
NEW! z/OS FICON discovery and auto-configuration (zDAC)

- **Automatic discovery and configuration for FICON disk and tape devices**
  - Reduces level of IT skill and time required to configure new devices
  - Uses intelligent analysis to help validate server and storage definitions are compatible with each other
  - Uses built-in best practices to help configure for high availability, helps avoid single points of failure

- **Transparent to existing configurations and settings**
  - Invoked through, integrated with z/OS Hardware Configuration Definition (HCD) and z/OS Hardware Configuration Manager (HCM)
  - Use with single systems or sysplexes
  - No migration actions required

zDAC Value

	Without I/O discovery and auto configuration, using HCD **	**With** I/O discovery and auto configuration**
Defining the fibre channel network	Control unit address and ports specified on paper; requires many people and transcribing from paper to HCD. Steps: multiple iterative steps HCD: several panels per control unit Time: hours	Discover the connections in the fiber channel network. HCD invokes IOS to discover I/O hardware in the current configuration based on autoconfiguration policies. Steps: 1 HCD : 5 panels for whole fibre channel network; policy definition and running auto discovery. Time: a few minutes
Defining the control units: building the I/O configurations	Control Unit addresses and ports are specified manually one at a time with 'new' or ''new based on' function in HCD. Steps: multiple iterative steps HCD: 10 panels per control unit Time: hours	From the discovered control units, HCD retrieves and proposes control unit and device types and numbers, channel path assignments, partition access and OS device parameters. Definitions are automatically written into a specified target work IODF which is created as a copy of the active or accessed IODF. Steps: 1 HCD : 5 panels for whole fibre channel network
Error checking	Errors not found until IODF is activated or device is brought online, requiring rework. Manual error checking	Addresses and ports discovered and defined electronically, using best practices ad existing configurations. Errors discovered in working IODF and can be corrected before activation

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

Simplified FICON configuration definitions
z/OS FICON discovery and auto configuration (zDAC) can …

1) … Automatically discover what is new or updated

2) … Propose a channel configuration based on:
- High availability best practices
- Customer configuration policies
- Existing configurations

3) … Attempt to make a symmetric configuration
- when repeated for each server in a sysplex

- **Requires**:
  - IBM zEnterprise™ 196 (z196) server with FICON Express8 or FICON Express4
  - Any FICON-attachable, fabric-attached storage (disk or tape) that registers with the FICON name server.
    - DS8000® has new features with licensed machine code level 6.5.15.xx (bundle version 75.15.xx.xx), or later.
    - see IBM PSP buckets
  - z/OS V1.12 (at least 1 LPAR for Dynamic I/O capability)
  - Suggested: FICON DCM (z/OS dynamic channel management) to help manage performance

We Need to Hear From You!

Consumability survey

- Rate z/OS over its lifecycle

- **Web survey**: multiple choice questions that typically take 25 minutes. Rate z/OS on:

  - Acquiring z/OS
  - Installing and configuring z/OS
  - Using and administering z/OS
  - Troubleshooting problems
  - Updating the product (e.g. installing fix packs)

- **Audience**: Anyone, Sysprogs, administrators, managers, and higher level executives. Any number of persons from your company can participate in the survey.

- **If interested**: email name and company, to Linda Jorgensen ljorgen@us.ibm.com IBM will email you a link to the online survey

- https://www-950.ibm.com/survey/oid/wsb.dll/s/ag2a4?renderlang=eng&icode=SHARE&product=2&brand=8&vrm=&crit=18dc8dcfa3a35c@55&group=stg
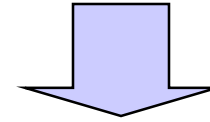
System z focus area [stakeholder] feedback

- Help us to capture deeper system-level requirements for z/OS, such as:

  - Simplification, z/OS Management Facility
  - Security
  - Hardware Configuration Data (and HCM)
  - Hardware Management Console
  - Workload Management

- **One-on-one** with IBM developers and can encompass: roundtable discussions, design and interface evaluations, and task scenario reviews.

- Anyone, not anonymous. Opportunities to provide design feedback can arise at any time.

- **If interested**: email your name, company, and phone number to Laura Bostian lbostian@us.ibm.com

z/OS V1.12 - Performance for Many Key Workloads

- **Up to 44% improvement for VSAM-based workloads (batch and online)***
  - Applications using VSAM KSDSs (such as CICS®, VSAM, VSAM RLS IMS VSAM, and Catalog) are anticipated to benefit.

- **Up to 30-50% improvement for z/OS XML System Services validating parsing***
  - Applications that use z/OS XML System Services validation (such as DB2® 10, Enterprise COBOL V4.2, and those that use the IBM XML Toolkit for z/OS) are anticipated to benefit.
  - **ALSO** Revolutionary XML fragment validation - By revalidating only the XML fragments being updated, for example DB2 10 for z/OS pureXML™ can avoid the costly revalidation of entire XML documents, which without this function can take many times longer.

- **Up to 50-90% for SVC dump capture time***

- **Up to 11% performance improvement for z/OS V1.12 XL C/C++ workloads*** with new z196 instructions

* **Based on IBM Lab results, your results will vary.**
  - VSAM performance improvement is through the use of VSAM CA Reclaim; actual benefit may be more or less and will depend on the degree of VSAM data fragmentation and how the data is accessed. It is anticipated that VSAM key sequenced data sets (KSDS) that are severely fragmented or rarely reorganized will see the most benefit. For applications that delete a large number of records from a narrow key range and then immediately re-insert them, CA Reclaim could result in some performance degradation.
  - z/OS XML System Services validation parsing performance will depend on the amount of data being parsed and the degree of complexity of the schema.
  - Actual SVC dump time will depend on amount of data being captured and the amount of that data dumped from auxiliary storage.
  - Performance improvements are based on internal IBM lab measurements, and the performance improvement of over 11% was observed using compute-intensive integer workload code generated by the z/OS V1.12 XL C/C++ compiler with high optimization when compared to code generated using the z/OS V1.11 XL C/C++ compiler, on a z196 server.

z/OS Performance Enhancements (R12)

- **Network performance is improved.**
  - Processing overhead for Application Transparent -- Transport Layer Security (AT-TLS) can be improved by **30%*.**
  - Network throughput for **interactive** workloads can be improved by **30-50%*** using the new Inbound Workload Queuing (IWQ) function, which is exclusive to OSA-Express3 on IBM zEnterprise 196 (z196) and IBM System z10™ servers.
    - In addition, it is anticipated that IWQ will provide benefit for **streaming** workloads by reducing the number of costly network retransmissions due to out-of-order packets, and will benefit **Sysplex Distributor** traffic by providing a more streamlined processing path.

- **Shorter DB2 9 for z/OS restart time***

- **Performance improvement for string manipulative-intensive workloads** (such as Perl) on z10™ and z196 servers, results will vary depending on application language and degree of string manipulation)

- **Data error? Recover a previous version of your data faster –** Significant DFSMSdss™ Dump/Restore/Copydump performance improvements - Use 256K blocks rather than 64K blocks… keep an eye on it.

* Based on IBM Lab results, your results will vary.
  - The AT-TLS CPU consumption results were obtained on System z10, model 2097-E64. Actual AT-TLS CPU consumption improvement will depend on the amount of data being transmitted and whether the workload is interactive or streaming. Throughput gain due to this improvement in CPU consumption is likely, but would vary depending on overall utilization of the z/OS image.
  - The interactive networking throughput measurements were obtained on System z10, model 2097-E64 with OSA Express 3 Inbound Workload Queuing function. Actual benefit will depend on amount of data being transferred, presence of bulk-data traffic in the mix, and whether communication is z/OS to z/OS, or z/OS to distributed system.
  - DB2 9 for z/OS startup time reduction is through z/OS Allocation, DFSMSdfp, and GRS improvements; actual benefit will depend on number of data sets opened. It is anticipated that address spaces opening up many thousands of data sets will see more benefit.

z/OS V1.12 Availability Enhancements

- **VSAM Control Area (CA) Reclaim** –Improve application performance, storage utilization, and availability by avoiding the planned outages used for defragmenting and reorganizing VSAM KSDSs to eliminate empty Control Areas.
  - Applications that use VSAM KSDS (such as IMS, CICS, Catalog) can benefit.

  Smart!

- **z/OS Run Time Diagnostics** – Helps you reduce the time spent deciding what actions to take to resolve a problem. This function is designed to analyze and help identify possible problem areas in as little as one minute, whereby an experienced operator might take up to 20 minutes.

- **Smart components** (GRS and XCF) have the ability / option to automatically preserve sysplex availability by taking themselves off line before small problems can turn in to big ones.

- **Timed Auto Reply** – Gives z/OS the option to respond automatically to certain messages when you cannot, preventing small incidents from cascading to larger ones.
  - Depending on operator workload, it can take up to 30 minutes to respond to a message, in which time the incident may be cascaded through multiple images and systems. Now, optional ability to respond in seconds!

z/OS Predictive Failure Analysis

SMART!

- **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 helps 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 updates (R12)

- **Sysplex function**
  - NEW zDAC – simplifies FICON tape and disk configuration – can attempt to configure a symmetric configuration for a sysplex
  - z/OS Management Facility – New Sysplex Status function provides a quick simple consolidated view of resources in a sysplex
  - Option for SFM to automatically partition systems with malfunctioning critical members to preserve sysplex availability
  - New health checks for Coupling facility structures and sysplex-aware zFS
  - Updated CFSIZER tool, support for larger CF structures

- **Sysplex distributor**
  - Sysplex Distributor Hot Standby capability
  - Sysplex Distributor self-healing capabilities with problem detection and recovery, event notification, and stack isolation
  - Inbound workload queuing (OSA-Express3) can help improve Sysplex Distributor throughput
  - 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

- **Synergy with z196 server**
  - Up to 80 Coupling Links
  - Up to 128 coupling CHPIDs
  - Up to 255 connectors to cache structures (247 to lock structures)
  - Up to 2047 structures per CF image
  - Non disruptive data capture

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)
    - Also, IBM plans to pursue an evaluation to the Federal Information Processing Standard (FIPS) 140-2 using National Institute of Standards and Technology's (NIST) Cryptographic Module Validation Program (CMVP) for the PKCS #11 capabilities of the Integrated Cryptographic Service Facility (ICSF) component of the Cryptographic Services element of z/OS (Statement of Direction)

- **System SSL**:
  - Elliptic Curve Cryptography (ECC), ECDSA (Elliptic Curve Digital Signature Algorithm).
    - ECC for PKI and RACDCERT too
  - PKCS#11 token that have RSA key sizes up to 4096-bits, DSA keys and Diffie-Hellman keys.
- **ICSF**
  - Support for translation of external RSA tokens wrapped with key encrypting keys into smart card format. - you will need an IBM System z9® or System z10 server with the Crypto Express2 feature
  - planned to exploit the enhancements made to the CPACF in support of separate key wrapping keys for DES/TDES and AES. This is designed to provide the same functions available using the PCI card, but with the advantage of CPACF performance.

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

- <u>**z/OS R10 is IPv6 certified!**</u>
  - "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", US government, Defense Information Systems Agency, Joint Interoperability Test Command
    - (http://jitc.fhu.disa.mil/adv_ip/register/certs/ibmzosv110_dec08.pdf)

- **For z/OS V1.11**
  - 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

- **For z/OS V1.12**
  - Health checks for IPv4 and IPv6 routing
  - Support for 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

Enhancements with z/OS R12

- **RACF® functionality (**RACF RACDCERT)
  - Support for long certificate names – integrate with other certificate authorities easier
  - Create certificates with expiration dates far in the future.
  - 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
  - The Command Prefix Facility (CPF) is planned to support security checking similar to that provided for the ROUTE operator command

- **Tivoli Directory Server for z/OS (LDAP)**
  - More 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
  - Syntaxes and matching rules similar to IBM Tivoli® Directory Server (distributed)

** 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.

z/OS Simplifying Operations and Programming (R12)

- **z/OS XML System Services**
  - XML validation parsing performance improvements
  - New fragment validation

- **Language Environment**® – support for non-over-rideable options – avoid user modifications, simplify migration

- **SDSF** – New Java classes to access SDSF information from Java apps, new REXX™ interface simplify access to the system log for SDSF REXX

- **New health checks:**
  - Write checks in METAL C (in addition to HLASM and SYSREXX™)
  - Parallel Sysplex® CF structures, configuration data sets, CFRM protocols
  - SMB, DFSMS™, IOS, IPv6
  - Additional migration checks are planned

- **SMF**
  - z/OS can record the CPU time consumed for job steps in initiator address spaces using new fields in SMF Type 30 records. To help improve the accuracy of chargeback programs.
  - Also, fields containing processor capacity data are added to the type 30 and type 89 records.
  - New FLOOD option in SMFPRMxx and SETSMF
    - Specify threshold and action to be taken in SMFPRMxx:
    - Issue console message
    - Suppress record and fail SMF(E)WTM request

Today's Mainframe Development Environment
Leveraging ISPF and Rational Developer for System z (RDz)

RDz user · RDz user · RDz user · ISPF user · ISPF user · ISPF user
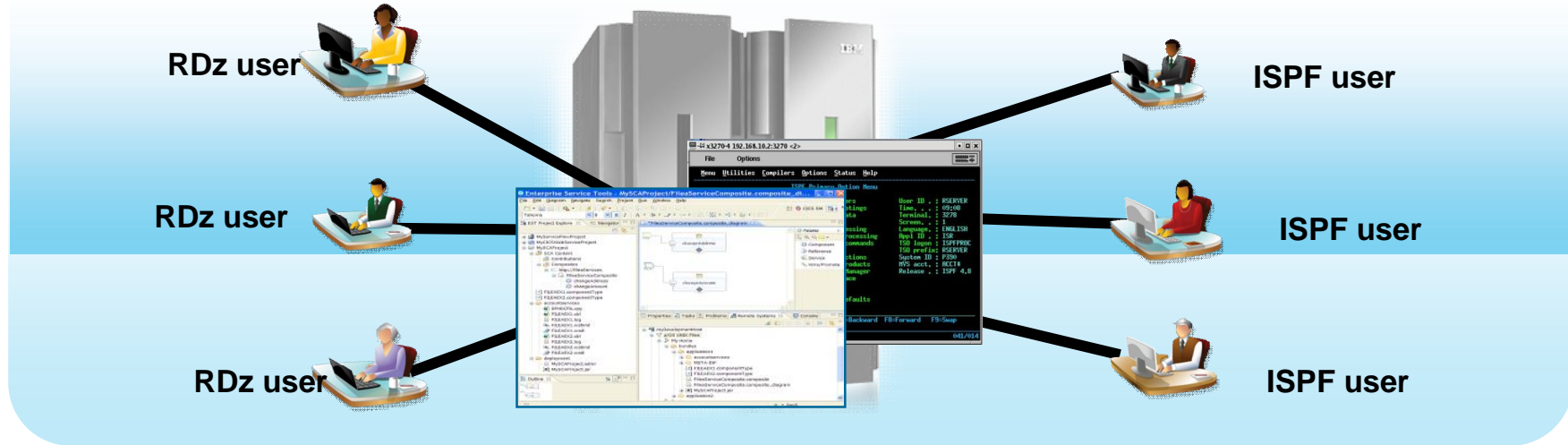
Modern Integrated Development Environments add value

- Higher productivity; more attractive for new developers
- Ability to offload some development MIPS
- Integration with complete application lifecycle tools

Challenges remain

- Constant connection to mainframe is required
- Development shares processor with production use; gets lower priority
- Inability to create cross-platform components
- Business pressures to reduce development MIPS further
- Test delays caused by dependencies on operations team, thus hurting productivity

The IBM System z Personal Development Tool (zPDT)
Look at application development for IBM System z in a new way

- The IBM System z Personal Development Tool (zPDT) is the technology behind several new application development tools

- The zPDT technology can enable a virtual System z architecture environment that allows certain mainframe operating systems, middleware and software to run unaltered on x86-compatible platforms **(Such as, Lenovo Thinkpad W Series or IBM System x® 3500 or 3650 server, or systems otherwise approved by IBM).**

- Develop applications for System z without the System z hardware.

zPDT
Freedom
Flexibility
Affordability

IBM System z Personal Development Tool (zPDT)
Now available as feature for Rational Developer for System z (RDz UT)

Rational. software

COBOL, PL/I, C++, Java, EGL, Batch, Assembler, Debug Tool

IMS™ CICS® DB2®

WAS MQ

z/OS

x86 PC running Linux

RDz user

RDz user

RDz user

ISPF user

RDz & ISPF user

SMART!
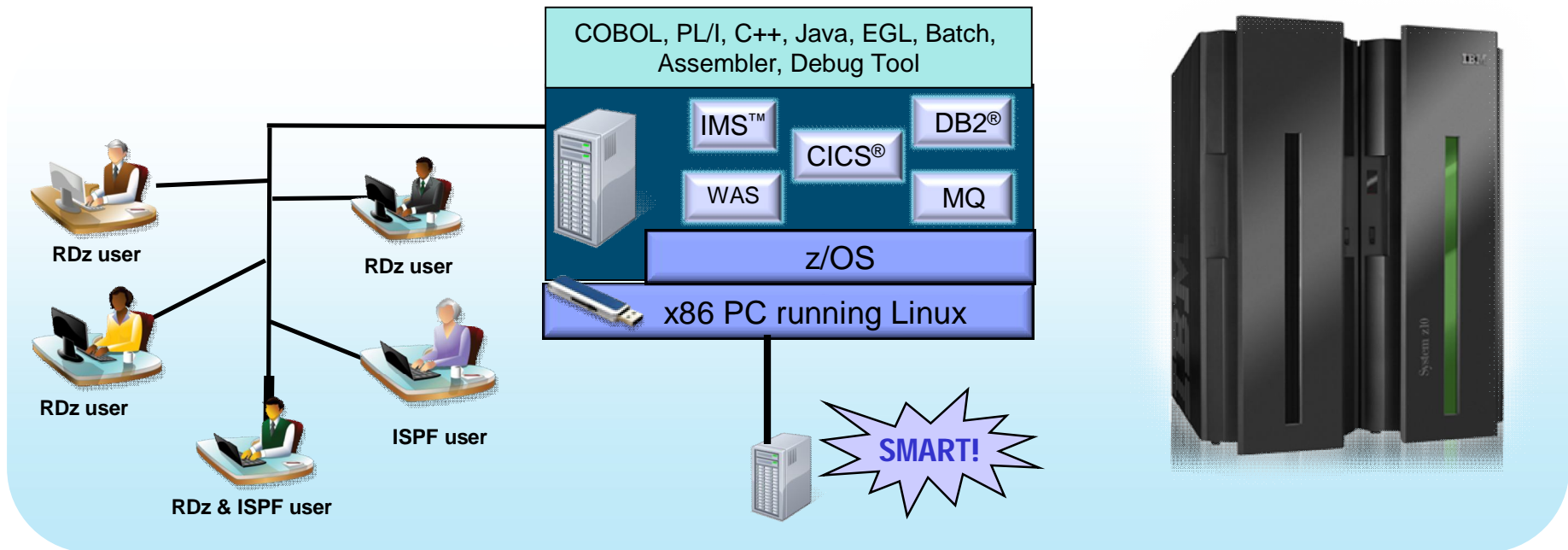
- Liberate developers to rapidly prototype new application
- Develop and test System z applications anywhere, anytime
- Free up mainframe development MIPS for production capacity
- Eliminate costly delays by reducing dependencies on operations staff

Note: This Program is licensed only for development and test of applications that run on IBM z/OS. The Program may not be used to run production workloads of any kind, nor more robust development workloads including without limitation production module builds, pre-production testing, stress testing, or performance testing.

ISVs – Rational Developer for System z Unit Test

- **Rational Developer for System z Unit Test Feature**

  ### Benefits:
  - Simple sandbox environment for z/OS
  - Available world wide, includes :
    - Select zPDT technology (and defect zPDT support)
    - Rational Developer for System z tool suite
    - Select IBM z/OS feature and z/OS software product stack

  ### NOTE :
  - Terms and conditions limit the usage of zPDT technology
  - Available as virtual 1- and 3-way - BUT only 1 z/OS image
  - Capable of supporting multiple users - priced and licensed per user
  - Not licensed for additional IBM or 3rd party SW
  - May not be used for production workloads including without limitation production module builds, pre-production testing, stress testing, or performance testing.
  - October 26, 2010 Rational announced:
    - Rational Developer for System z V8 (along with Unit Test feature)
    - updated Unit Test feature terms and conditions to allow product demonstration

Rational. software

Ordering IBM RDz-UT

- **To build your own RDz-UT system contact IBM Passport Advantage,**
    - **http://www-01.ibm.com/software/howtobuy/passportadvantage/index.html**
    - **Physical media only (DVD and security key)**
- **Or Order RDz UT from selected business partner reseller (SW and USB key)**

US	ClearBlade, LLC 2006 Indian Trail Austin TX 78703 http://www.clearblade.com/	Eric Simone Phone: 512.686.3037
EMEA	QGrp http://qgrp.com/index.php	Contact info: http://qgrp.com/index.php?show=kontakt

- For a complete pre-built system, contact IBM Sales for an authorized solution provider:

Worldwide	Nick Losole Rational Enterprise Modernization Sales Executive	Phone: 1-602-248-7555 E-mail: losole@us.ibm.com
US	Andy Sykes Rational Software Sales Leader, US and Canada	Phone: 1-781-929-0756 E-mail: amsykes@us.ibm.com

IBM zEnterprise System

A system of systems that unifies IT for predictable service delivery

The world's fastest and most scalable system:
IBM zEnterprise 196 (z196)

Unified management for a smarter system:
zEnterprise Unified Resource Manager

Scale out to a trillion instructions per second:
IBM zEnterprise BladeCenter® Extension (zBX)

- Ideal for large scale data and transaction serving and mission critical applications
- Most efficient platform for Large-scale Linux consolidation
- Leveraging a large portfolio of z/OS and Linux on System z applications
- Capable of massive scale up, over 50 Billion Instructions per Second (BIPS)

z/OS and zEnterprise 196 functions and features

Left features	Right features
Five hardware models	Three subchannel sets per LCSS (R10)
Increased capacity processors	Platform Management from HMC (R10)
Up to 15 subcapacity CPs at capacity settings 4, 5, or 6	CFCC Level 17 enhancements (R10)
	Up to 128 Coupling Link CHPIDs (R10)
Improved availability with Redundant Array of Independent Memory (RAIM)	Improved processor cache design (R10)
Up to 3 TB RAIM (1 TB per LPAR)	Power save functions (R10)
8 slot, 2 domain I/O drawer - Concurrent I/O drawer add, remove, replace	Crypto Express3 enhancements (R10)
	Secure key HMAC Support (R10)
Optional water cooling	Elliptic Curve Cryptography (ECC) Digital Signatures (R10)
Optional High Voltage DC power	
Optional overhead I/O cable exit	CPACF enhancements (R10)
Up to 80 processors CPs, zAAPs, zIIPs, IFLs, ICFs, or SAPs (R11) (R9,R10= 64way) (R7,R8 = 32-way)	Instruction optimization (XL C/C++ R12)
	z/OS discovery and auto-configuration (zDAC) (R12)
New and enhanced instructions (R7)	OSA-Express-3 Inbound Workload Queuing (IWQ) (R12)
Capacity Provisioning enhanced (R9)	

(z/OS toleration/ exploitation in blue)

▪**The minimum z/OS requirements:**

– zEnterprise System with zBX - z/OS V1.10 and later

– zEnterprise System toleration and no zBX - z/OS V1.7, V1.8, V1.9 (Oct) with IBM Lifecycle Extension for z/OS with PTFs.

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IBM zEnterprise System

A system of systems that unifies IT for predictable service delivery

The world's fastest and most scalable system:
IBM zEnterprise 196 (z196)

Unified management for a smarter system:
zEnterprise Unified Resource Manager

- Provides platform, hardware and workload management
- Unifies management of resources, extending IBM System z qualities of service across the infrastructure

Scale out to a trillion instructions per second:
IBM zEnterprise BladeCenter Extension (zBX)
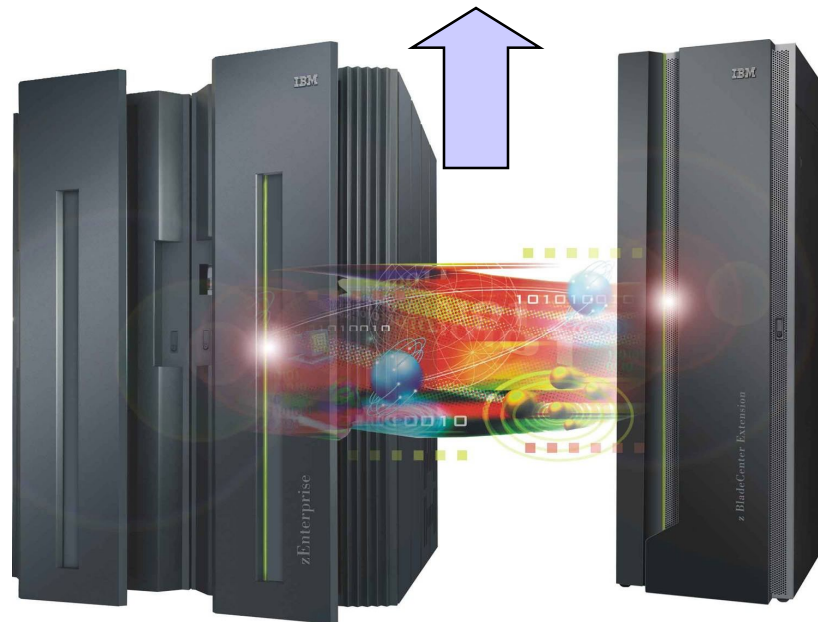
z/OS and the IBM zEnterprise Unified Resource Manager

- **z/OS integrates with zEnterprise 196 and zEnterprise BladeCenter Extension seamlessly**

- Unified Resource Manager defines the ensemble and provisions the new management and data networks

- New HCD (and HCM) definitions for the new management and data networks
  – New OSA CHPIDs: OSM for management network and OSX for data network

- z/OS Comm Server configuration to enable z/OS to participate in a zEnterprise ensemble

System z Hardware Management Console (HMC) with Unified Resource Manager

zEnterprise 196 — z/OS — Linux on System z — z/VM — System z PR/SM™ — z HW Resources — Support Element

zBX — Linux on x86 ¹ — AIX® on POWER7™ — DataPower* — IBM Smart Analytics Optimizer — Future Offering — Blade Virtualization — Blade HW Resources

Private data network (IEDN)

- **IBM zEnterprise Unified Resource Manager:**

  – Can <u>manage</u> 'virtual server' (z/VM and blade) resources
  – Can <u>monitor</u> 'virtual server' (z/VM and blade) workloads and z/OS workloads.
  – **New** z/OS agent (Guest Platform Management Provider (GPMP)) can send high level z/OS WLM data to zEnterprise Unified Resource Manager
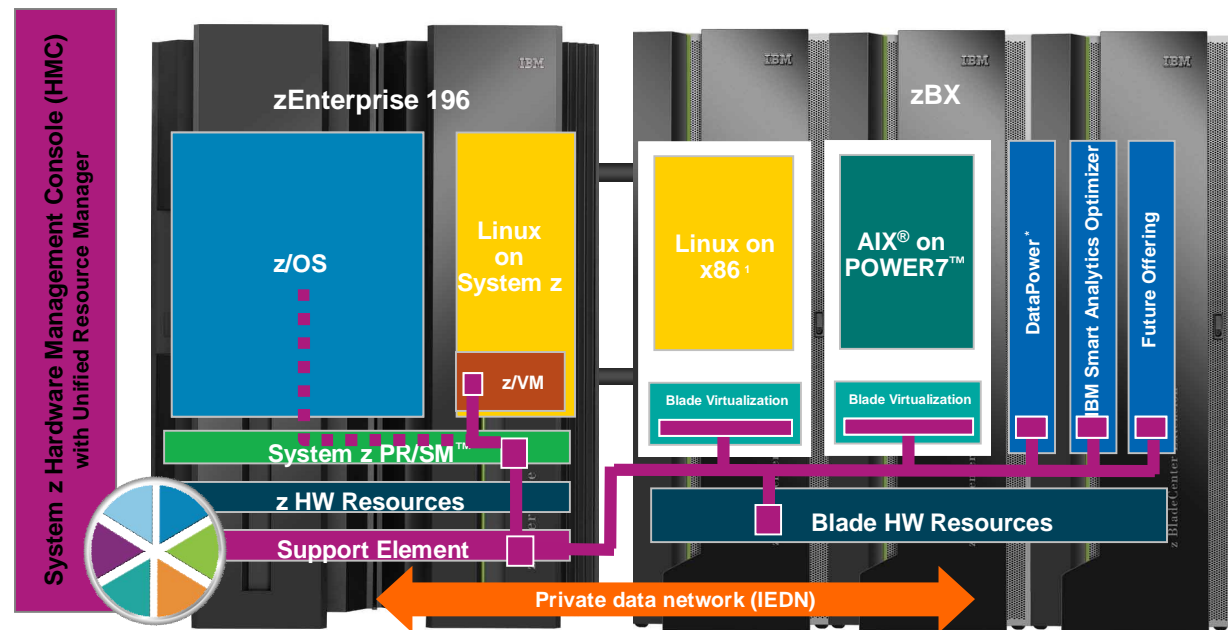   • Agent also in z/OS Management Facility

IBM zEnterprise System

A system of systems that unifies IT for predictable service delivery

| The world's fastest and most scalable system: **IBM zEnterprise 196 (z196)** | Unified management for a smarter system: **zEnterprise Unified Resource Manager** | Scale out to a trillion instructions per second: **IBM zEnterprise BladeCenter Extension (zBX)** |

- Selected IBM POWER7™ blades and IBM System x® Blades* for tens of thousands of AIX® and Linux applications

- High performance optimizers and appliances to accelerate time to insight and reduce cost

- Dedicated high performance private network

* All statements regarding IBM future direction and intent are subject to change or withdrawal without notice, and represents goals and objectives only.
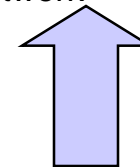
IBM zEnterprise System – Targeting the Systems That Rely on z/OS

- **z/OS provides …**
  - High availability components, subsystems, sysplex
  - Disaster recovery with GDPS.
  - z/OS Workload Management, IRD
  - Image, server, storage scalability
  - User, resource, and network security and auditability
  - New simplification and productivity
  - DB2 synergies: scale, data sharing, data compression, WLM of DB2 bufferpools, XML, zIIP specialty engine.

- **zEnterprise System provides …**
  - Helps provide centralized provisioning, monitoring, management, and consistent quality of service for non-z/OS virtual servers

- **Together**

  …. co-locating new applications with z/OS
  - Throughput for interactive workloads (as well as batch and FTP) with OSA-Express3 IWQ
  - Highly secure isolated data network
  - Insight for multi-tier workloads –
  - Simplified infrastructure for multi-tier workload

  …. New class of 'specialty engine' introduced with the IBM Smart Analytics optimizer
 - zBX runs High-speed CPU-intensive queries

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z/OS on DVD

- **z/OS is no longer available on 3480, 3480 Compressed (3480C), and 3490E tape media. (Statement of Direction August 2008)**

- **BUT z/OS Customized Offerings (such as ServerPac, CBPDO, Customized Offerings Driver, SystemPac®, ProductPac®) and service orders are available on DVD media. (SOD August 2009)**

- **z/OS delivery media is now:**
  - **Over the Internet**.
  - Did you know there are now more shipments of z/OS over the Internet than by tape? For more information see :

    http://www-03.ibm.com/systems/z/os/zos/serverpac_internet_delivery.html
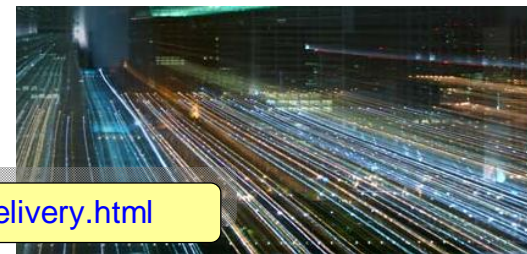
 - **With IBM 3590 and 3592 Enterprise Tape or IBM System Storage TS1120 Tape**
  - Using high-density media makes it much easier to handle and install z/OS because there are much fewer tapes to manage!

  - **Via DVD**
  - Installing software using DVD requires a workstation with a DVD drive that can read discs in DVD-5 (single-sided, single layer) format and a network connection to your z/OS system
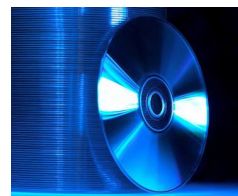
z/OS Version 1 Release 12 ...

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

….. Advantages to your operations through performance improvements and fewer workload disruptions.

- Up to 40% performance improvement for VSAM-based online and batch workloads*

- Avoiding data fragmentation and outages for VSAM data reorganizations

- Up to 50-90% performance improvement for SVC dump capture time*

- Up to 30 to 50% performance improvement for XML validation workloads*

- Up to 30-50% networking throughput improvement*

- Up to 11% performance improvement for C/C++ workloads*

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

…. Advantages to your organization with improved productivity, automatic real time capabilities, and built-in expert guidance that reduces time to perform tasks

- Reduce time for system management tasks by hours with z/OS Management Facility

- Configure disk and tape in a fraction of the time with z/OS FICON Discovery and Auto Configuration

- Predictive Failure Analysis can monitor z/OS system trends and can warn you of a potential problem, potentially avoiding an outage. New z/OS Run Time Diagnostics can help you quickly identify possible problems in as little as one minute.

…. Advantages to your business: exploiting a new era for integrated computing; faster, highly secure connectivity; supporting end-to-end workload management, leveraging a whole new class of workload 'optimizers'

- Synergies with the NEW IBM zEnterprise System
- Revolutionary application development tool for z/OS

* Based on IBM Lab results, your results will vary.
- VSAM performance improvement is through the use of VSAM CA Reclaim; actual benefit may be more or less and will depend on the degree of VSAM data fragmentation and how the data is accessed. It is anticipated that VSAM key sequenced data sets (KSDS) that are severely fragmented or rarely reorganized will see the most benefit. For applications that delete a large number of records from a narrow key range and then immediately re-insert them, CA Reclaim could result in some performance degradation.
- z/OS XML System Services validation parsing performance will depend on the amount of data being parsed and the degree of complexity of the schema.
- Actual SVC dump time will depend on amount of data being captured and the amount of that data dumped from auxiliary storage.
- The interactive networking throughput measurements were obtained on System z10, model 2097-E64 with OSA Express 3 Inbound Workload Queuing function. Actual benefit will depend on amount of data being transferred, presence of bulk-data traffic in the mix, and whether communication is z/OS to z/OS, or z/OS to distributed system.
- Performance improvements are based on internal IBM lab measurements, and the performance improvement of over 11% was observed using compute-intensive integer workload code generated by the z/OS V1.12 XL C/C++ compiler with high optimization when compared to code generated using the z/OS V1.11 XL C/C++ compiler on z196 server

And more … previewed February 15:
z/OS and z/OS Management Facility Release 13* …

….. get more value from your workloads with performance, programming, and operations improvements.

z/OS V1.13 plans several enhancements designed to:

- **Help you shorten batch windows** using JCL improvements in JES2 environments.

- **Simplify application programming** with a new z/OS base component, z/OS Batch Runtime environment, designed to enable COBOL and Java to interoperate for DB2 with transactional integrity so you can enhance and extend existing COBOL batch application programs using Java.

- **Improved performance for z/OS UNIX workloads** in a Parallel Sysplex using direct I/O with fully-shared zFS file systems, and improve zFS availability with a new zFS internal restart function.

- **Help you get early warning of system issues** before they become obvious to help you act quickly and decisively with updated z/OS Predictive Failure Analysis and Runtime Diagnostics functions.

- **Provide more options you can use to secure your data** with newer, faster, and more scalable encryption and security capabilities incorporated in IBM Tivoli Directory Server for z/OS (LDAP), RACF, z/OS System SSL, and z/OS PKI Services.

…. become more responsive and efficient with built-in expert guidance to reduce time to perform tasks

The z/OS Management Facility V1.13 plans several enhancements designed to:

- **Clone z/OS images and deploy software** more easily and consistently, using a new z/OS Management Facility (z/OSMF) software deployment task.

- **Define new storage volumes quickly** and easily using a single UI, using a new z/OSMF disk management task.

- **More easily maintain highly secure network** connections with an updated z/OSMF-based Configuration Assistant for z/OS Communications Server.

- **Integrate the z/OS experience** with the ability to link and launch between z/OSMF applications and between z/OSMF and other browser-based applications.

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Thank you