

IBM zBX (System z BladeCenter Extension) HMC (Hardware Management Console) Hardware & Operational Management

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Introduction

- ▶ Hardware/Operational Management
 - zBX Integration will attempt to provide the System z value propositions of each of the Management disciplines covered today by HMC and SE
 - Concurrency
 - Security
 - Automatic configuration

- ▶ **zBX blades truly integrated into system**
 - Not seen as an external control unit
 - Logically seen as processor, but more like a Network Attached service device.
 - From a packaging perspective, the analogy is that Blade Centers should be considered like an I/O Cage in System z, and blades are similar to channels within that I/O cage.
 - 95 % target of task via GUI or API function is for CPC (system)
 - 5 % (or less) uses a specific target of z Blade Extension object

- ▶ **z Blade Extension Types**
 - Acceleration:
 - **ISAOPT (IBM Smart Analytics Optimizer)**
 - ◆ DB2 assist offload processing
 - **DataPower XI50z (IBM WebSphere DataPower Integration Appliance XI50 for zEnterprise)**
 - ◆ XML offload processing
 - Virtualization Workloads:
 - Virtualized Image applications having strong affinity to System z workloads
 - ◆ **POWER Blade**
 - ◆ **System x Blade (2.11.1)**

zBX Hardware Integration

- ▶ zBX blades integrated into System z via Blade Centers (BladeCenter H)
 - Can have up to 14 blades in BC (BladeCenter)

- ▶ Up to 2 Blade Centers per additional zBX rack
 - **zBX racks(s) physically next to System z frame(s) (for service reasons)**
 - 25 meter cable limit
 - zBX Blades network attach to SE internal mgmt network (HMC/SE Mgmt)
 - zBX Blades also have separate physical network attachment for functional connection to System z operating systems
 - No additional cooling for racks containing Blade Centers

- ▶ **1 to 4 additional racks (max of 8 BCs) per system (z196)**
 - ISAOPT Limits:
 - Lower: 0 or 7 blades and Upper 56 blades
 - Multiple Config Offerings: blade number/intended to handle x amount of DB2 data
 - ◆ XS: 7/0.5 TB, S: 14/1 TB, M: 28/2 TB, L: 42/3 TB, XL: 56/4 TB
 - POWER Blade Limits: 0 to 112
 - DataPower XI50z Limits: 0 to 28 (Double wide blade)
 - System x Blade: 0 to 28
 - ISAO homogeneous within BladeCenter
 - POWER Blade, DataPower XI50z, & System x Blade heterogeneous within BladeCenter

zBX Hardware Integration (cont.)

- ▶ **Blade Center power not integrated into system power**
 - Blade Center power comes off wall power and should always be on
 - **Blade power is associated with System z power (or to Repair or MES scenario)**
 - Default is blade power disjoint to system power on. (shared CEC support).
 - ◆ Single System z system owns/manages zBX hardware in shared CEC environment.
 - ◆ Default changed in 2.11.1.
 - Configuration option to allow CPC and Blade power to be tied together.

- ▶ zBX hardware is defined for redundancy (n+1)

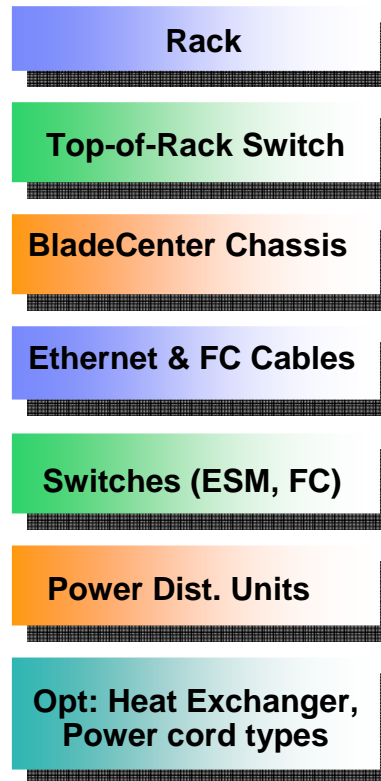
- ▶ HMC Console: used for both System z Hardware/Images, and zBX hardware/Virtual Servers
 - Generally, actions taken to zBX blades are done by targeting System z system object (zBX blades just another component of the system).
 - Not a blade server farm
 - Some initial customer concern for increased number of users of HMC
 - Two new Ensemble default userids: **ENSADMIN** and **ENSOPERATOR**
 - New zManager Task Roles and Resource roles
 - Details in Appendix A of IBM SC27-2606: *zEnterprise System Hardware Management Console Operations Guide for Ensembles*
 - **Discussions with customers on security and audit ability of HMC console**
 - No major issues found
 - ◆ Enhancements in area of data offload/audit and userid template definitions (HMC 2.11.0)
 - HMC Security Whitepaper available on IBM Resource Link Tech Notes section
 - ◆ See Additional Materials section for abbreviated presentation

System z196 and zBX Hardware Components

System z



zBX Infrastructure



Blades



HS22 Blade (ISAOPT)



DataPower XI50z Blade



POWER Blade



System x Blade

Change Management

▶ Same Base Functions as System z

- View Firmware Information (Blade Center and Blades)
- Retrieve Firmware Changes
- Change Firmware Levels
- Backup/Restore Critical Data (zBX configuration data backed up as part of System z SE backup and restored on replacement of zBX)

▶ Benefits of zBX Firmware packaged with System z Firmware

- Tested together with System z Firmware GA and MCL/fix bundle releases
- Retrieve code as same integrated process of System z (IBM RETAIN or media)
 - No need to use separate tools and connect to websites to obtain code
- Utilize System z firmware features such as Digitally Signed Firmware
- Infrastructure incorporates System z concurrency controls where possible.
 - BC Firmware update fully concurrent, blades similar to Config Off/On controls
- Audit trail of all code changes in security log
- Automatic back out of changes to previous working level on code apply failures.

▶ zBX Firmware

- All zBX 'Firmware' repackaged as System z Firmware
- Blade Center: all code for BC chassis (Mgmt Module, power controls, fans, etc.) is firmware
- ISAOPT (zBX Blade FW example):
 - HS22 Subcomponents: BIOS (uEFI), IMM, I/O Adapter FW, Diagnostics
 - SE Management Agent
 - ISAOPT operating system (SLES) and ISAOPT application released as SW
 - ◆ 1st entitlement from SE media, subsequent download from DS5020 DASD
 - ◆ Exception to architecture: usually base zBX Blade OS is considered as System z FW
- External (Top Of Rack) Switches & BC Switches: vendor code in switches (Juniper, BNT, Q-Logic)
- **System z technical analysis of when and what to include with System z Base GA/Fixes**

Additional Firmware Details

- ▶ POWER Blade
 - Must have **PowerVM Enterprise Edition feature preloaded including license**
 - Lower Layer FW: PHYP, Partition FW, FSP, I/O Adapter
 - Image FW: VIOS (Virtual I/O Server) (AIX, Virtualization, IVM)
 - Component FW: SE Agent, HPM, FFDC, Auth, RAS, Tools, Surveillance Daemon
 - VIOS (4 GB) will drive a new media only MCL release for new release
 - Hopefully, only one per GA, if any
 - Other components are expected to be managed by MCLs via RETAIN or media
 - OSes running in Virtual Servers considered SW

- ▶ DataPower XI50z
 - 4 Loads (completely considered as FW)
 - Base
 - Base + DataDirect (Database Connectivity (ODBC) feature from DataDirect)
 - Base + Tibco (Tibco-EMS feature)
 - Base + DataDirect + Tibco
 - Loads consist of
 - Lower Layer FW: uEFI, IMM, I/O Adapter, Diagnostics
 - MCP
 - AMP Server
 - DP Application

Additional Firmware Details (cont.)

- ▶ System x Blade
 - Lower Layer FW: uEFI, IMM, I/O Adapter, Diagnostics
 - Image FW: RHEV-H (XHYP & Redhat)
 - Component FW: SE Agent, HPM, FFDC, Auth, RAS, Libs, Tools, Surveillance Daemon
 - OSes running in Virtual Servers considered SW

Additional Firmware Details (cont.)

- ▶ Separation of MCL EC streams
 - zBX Firmware: separate EC streams from zEnterprise legacy firmware (CFCC, LPAR, channels, etc.)
 - zEnterprise FW (legacy & zBX) MCLs: recommend apply all
 - Controls allow separate apply if desired or exception
 - ◆ Provided no dependency (generally the case)
 - zBX FW download/apply shouldn't gate zEnterprise legacy FW
 - zBX Firmware EC streams hidden until Ensemble Management feature (w & wo zBX) applied
 - zEnterprise systems won't be downloading zBX FW until the system is included in an Ensemble
 - zBX FW towers in HMC and SE won't be started until configured for Ensemble Management
- ▶ zBX Blade Disruptive FW requires specific action by user to truly apply
 - Manage zBX Blade Internal Code task
 - Similar to Channel Config Off/On exception
 - Quiesce request always part of action
 - Can try on one or more blades first/then apply to rest later
 - zBX Concurrent FW applies to all hardware at time of install (no different than other zEnterprise FW)

System Information Change Management EC streams

The screenshot shows the IBM Support Element interface for system R15. The main window displays a table of system components with a context menu open over the 'R15' entry. The context menu includes options like 'CPC Details', 'Toggle Lock', 'Daily', 'CPC Recovery', 'Service', 'Change Management', 'CPC Remote Customization', 'CPC Operational Customization', 'CPC Configuration', 'Channel Operations', 'Energy Management', and 'Monitor'. The 'Change Management' option is selected, showing a sub-menu with tasks such as 'Alternate Support Element', 'Authorize Internal Code Changes', 'Check Dependencies', 'Define Clonable Internal Code Levels', 'Force Channel Internal Code Change', 'Manage zBX Blade Internal Code', 'Query Channel/Crypto Configure Off/On Pending', 'Query Coupling Facility Reactivations', 'Query Internal Code Changes Pending Power-on Reset', 'Selective Channel Patch Controls', 'Specify Concurrent Upgrade Sync Point', and 'System Information'.

At the bottom, the 'Tasks: R15' pane is visible, showing a list of tasks categorized into 'CPC Details', 'Service', and 'CPC Configuration'. The 'Service' category includes tasks like 'Checkout Tests', 'Delete LPAR Dump Data', 'Dump LPAR Data', 'Global OSA Status', 'InfiniBand multiport Status and Control', 'Offload Virtual RETAIN Data to HMC Removal', 'Perform Problem Analysis', 'Report a Problem', 'Service Status', 'Transmit Service Data', and 'View Service History'. The 'CPC Configuration' category includes tasks like 'Channel PCHID Assignment', 'Cleanup Discontinuance', 'Cryptographic Configuration', 'Cryptographic Management', 'Display Adapter ID', 'FCP Configuration', 'Input/output (IO) Configuration', 'Manage zBX Hardware', 'Perform Model Conversion', 'Prepare System For Discontinuance', and 'System (Sysplex) Time'.

System Information Change Management EC streams

R15: System Information - Mozilla Firefox: IBM Edition

9.60.15.114 https://9.60.15.114:9950/hmc/content?taskId=4&refresh=3

i System Information - R15

Machine Information

EC number: N29802 LIC control level: 0009 Engineering Changes AROM
 Type: 2817 Model number: M15 Serial number: 000020040C75
 Version: 2.11.0

Internal Code Change Information

Select	EC Number	Retrieved Level	Installable Concurrent	Activated Level	Accepted Level	Description
<input type="radio"/>	N29789					CHANNEL DIAGS
<input type="radio"/>	N29790	2	2	2	2	PCX LIC
<input type="radio"/>	N29791	1	1	1		OSA Express3 ICC
<input type="radio"/>	N29792	3	3	3	2	OSA Express3 Networking
<input type="radio"/>	N29793					OSA Express3 CDLC
<input type="radio"/>	N29794	12	12	12	11	FCS Ficon Express4 LIC
<input type="radio"/>	N29795	12	12	12	11	FCS Ficon Express8 LIC
<input type="radio"/>	N29796	5	5	5	5	CFCC LIC
<input type="radio"/>	N29797	7	7	7	6	LPAR HV LIC
<input type="radio"/>	N29798	1	1	1	1	ESCON CHANNEL CODE LIC
<input type="radio"/>	N29799	71	71	71	71	I390/PU-ML LIC
<input type="radio"/>	N29800					SE LIC Alert

EC Details...

Pending Actions

There may be some pending actions. Click "Query Additional Actions..." for more information.

Query Additional Actions...

OK Help

Done

System Information Change Management EC streams

R15: System Information - Mozilla Firefox: IBM Edition

9.60.15.52 https://9.60.15.52:9950/hmc/content?taskId=63&refresh=182

System Information - R15

Machine Information

EC number: N29802 LIC control level: 0009 Engineering Changes AROM
 Type: 2817 Model number: M15 Serial number: 000020040C75
 Version: 2.11.0

Internal Code Change Information

Select	EC Number	Retrieved Level	Installable Concurrent	Activated Level	Accepted Level	Description
<input type="radio"/>	N29802	314	314	314	262	SE Framework
<input type="radio"/>	N29766	21	21	21	21	CRYPTO EXPRESS3
<input type="radio"/>	N29767	2	2	2		DataPower XI50z Base + SQL-ODBC + TIBCO-EMS
<input type="radio"/>	N29768	2	2	2		DataPower XI50z Base + TIBCO-EMS
<input type="radio"/>	N29769	2	2	2		DataPower XI50z Base + SQL-ODBC
<input type="radio"/>	N29770	2	2	2		DataPower XI50z Base
<input type="radio"/>	N29771	56	56	56	45	zVM Management Guest Firmware
<input type="radio"/>	N29772	6	6	6	5	POWER Blade Disruptive Components
<input type="radio"/>	N29773	59	59	59	46	POWER Blade Concurrent Components
<input type="radio"/>	N29774	11	11	11	10	POWER Blade Operating System
<input type="radio"/>	N29777	3	3	3	3	BladeCenter Enablement
<input type="radio"/>	N29778	6	6	6	6	BladeCenter Switches

EC Details...

Pending Actions

There may be some pending actions. Click "Query Additional Actions..." for more information.

Query Additional Actions...

OK Help

Done

Problem Management

- ▶ **Automatic Error Logging and FFDC Data Collection**
 - Registering for traps and messages from BladeCenters, Switches, & zBX blades
 - SE analysis of that information
 - FFDC (First Failure Data Capture) automatic for errors
 - Translation to System z SRCs (which may be displayed as Hardware Messages)

- ▶ Problem Analysis and Call Home Reporting
 - **Electronically open a problem**
 - **CE Dispatch with FRUs**

- ▶ **View Hardware Messages**

- ▶ **View Open Problems**
 - Problems opened for zBX hardware
 - Same view for any other zEnterprise hardware

- ▶ Manual Problem Reporting and Data Collection
 - User perceived problems can also be reported manually
 - HMC/SE Report a Problem task selecting zBX entry
 - HMC/SE Transmit Service Data task

Serviceability Management

▶ Guided Repair and Verification

- SSR (Support Services Representative) driven, **not customer service**

▶ Process

- SSR arrives on site with FRUs in hand prior to service action
- Prepare for Service
 - Quiesece operator request and SE validation, Power Off blade(s) if required
- SE Graphical Online Guided Mechanical Replacement
 - All under System z SE direction
- Validate after Service
 - If required, Power On blade(s), Load zBX blade code, Restore config data (DP)
 - Specific automatic verification depending on which FRUs serviced
- Infrastructure incorporates System z concurrency controls where possible.

Problem Management Example

Support Element

sysprog | Help | Logoff

System Management

System | Topology

Select	Name / ID	Status	CP Status	Channel Status	Crypto Status	Activation Profile	Last Used Profile
<input checked="" type="checkbox"/>	P00MAUI7	Operating	Operating	Operating	Operating	DEFAULT	

Max Page Size: 500 | Total: 1 | Filtered: 1 | Selected: 1

Tasks: P00MAUI7

- CPC Details
 - Toggle Lock
- Daily
 - Activate
 - Deactivate
 - Grouping
 - Hardware Messages
 - Operating System Messages
- CPC Recovery
- Service
 - Change Management
 - CPC Remote Customization
 - CPC Operational Customization
- CPC Configuration
 - Channel Operations
 - Energy Management
 - Monitor

Status: Exceptions and Messages

Problem Management Example

Support Element
sysprog | Help | Logoff

Welcome

System Management

- P00MAUI7
 - Channels
 - Cryptos
 - BladeCenters
 - B.1
 - B.2
 - C.1
 - C.2
- SE Management
- Service Management
- Tasks Index

System Management

System | Topology

+ + + + + + + + + +

Filter

Tasks ▾ Views ▾

Select ^	Name / ID ^	Status ^	CP Status ^	Channel Status ^	Crypto Status ^	Activation Profile ^	Last Used Profile ^
<input checked="" type="checkbox"/>	P00MAUI7	✖ Operating	✔ Operating	✔ Operating	✔ Operating	DEFAULT	

Max Page Size: 500 Total: 1 Filtered: 1 Selected: 1

Tasks: P00MAUI7

- CPC Details
- Toggle Lock
- Daily**
 - Activate
 - Deactivate
 - Grouping
 - Hardware Messages
 - Operating System Messages
- CPC Recovery**

- Service**
- Change Management**
- CPC Remote Customization**
- CPC Operational Customization**

- CPC Configuration**
- Channel Operations**
- Energy Management**
- Monitor**

Status: Exceptions and Message

☰
✖
📄
🗑️

Problem Management Example

Hardware Messages - P00MAUI7

Select	Date	Time	Message Text	P00MAUI7
<input type="checkbox"/>	February 15, 2011	12:40:34 PM	zBX Problem [Problem # 15]	

Problem Analysis - P00MAUI7

System name: Local
 Date: Feb 15, 2011
 Time: 12:37:32 PM
 Blade Center Location: C10B
 Source: POWER_O1

Problem Description

A DC fault has occurred in the specified power module, and the power module is shut down. Power module 01 is off. DC fault.

Corrective Actions

Service is required.

Impact of Repair

The repair of this problem can most likely be performed concurrent with CPC operations.

Problem Management Example

Hardware Messages - P00MAUI7

Select	Date	Time	Message Text	P00MAUI7
<input type="checkbox"/>	February 15, 2011	12:43:33 PM	Service authorization complete	

Problem Analysis - P00MAUI7

System name: P00MAUI7
 Date: Feb 15, 2011
 Time: 12:37:32 PM

Service information was transmitted successfully. The following information is associated with this problem.

Problem number: 15.
 Problem management hardware number: 25743.

Problem Management Example

Service History - P00MAUI7

Select	Date	Time	System Name	Problem Number	Status	Description
<input type="radio"/>	Feb 15, 2011	12:37:32 PM	P00MAUI7	15	Open	zBX Problem
<input type="radio"/>	Feb 15, 2011	12:03:21 PM	P00MAUI7	14	Open	Licensed internal code has detected a problem.

Service History - P00MAUI7

System name: P00MAUI7
 Machine type: 2458
 Machine model: 002
 Machine serial number: 00000MNXK4BC
 Problem management hardware (PMH) number: 25743
 Problem number: 15
 Problem type: 1
 Problem data: 39Y7349,1, 34F3991,1

Date	Time	Problem State
Feb 15, 2011	12:40:34 PM	Problem detected
Feb 15, 2011	12:40:34 PM	Customer notified

Problem Management Example

☰
i
Problem Analysis - P00MAUI7

Due to the user mode that you are currently logged on as, service cannot be requested for this problem.

Machine type:	2458	Refcode:	28BC0274
Machine model:	002	Extension:	7BB00001
Machine serial number:	00000MNXK4BC	Secondary Extension:	FF000000
Problem number:	15	Status:	

Problem Data

39Y7349,1, 34F3991,1

Parts List

Part Location	Part Number	Fix Percentage	Serial Number	Quantity
C10BPM01	39Y7349	70.0	K143400B001	1
C06ZPDUC	34F3991	20.0		1
C10BJ.P1-C06ZJ.01	26R0001	10.0		1

OK
Cancel
Help

Configuration Management

- ▶ VPD (Vital Product Data)
 - Physical configuration of Blade Center and Blades
 - **Stored into System z VPD records (for each FRU)**

- ▶ Edit Frame Layout (Configuration controls for unsensed hardware location)
 - Racks, switches, Blade Centers (identification of location for Service reasons)
 - Add/Remove of physical blades via 'Manage zBX Hardware' task
 - Separate controls for which blades to enable (see below)

- ▶ MES Support
 - Fully populate BladeCenter consecutive blade slot plugging strategy
 - No known issues with power, cooling, and availability

- ▶ **zBX Blade per Type Management Enablement paid feature**
 - Definition of maximum number of blades per zBX blade type
 - HMC/SE 'Perform Model Conversion' task 'Manage zBX Blade Entitlement' option allows SSR/Customer to define which blades should be managed up to the defined maximums
 - LICCC controls define high water marks

- ▶ Capacity On Demand
 - LICCC asset control approach (same as system processors)
 - CIU (Customer Initiated Upgrade) permanent
 - Temporary processor upgrade currently not seen as requirement

Operations Management

- ▶ Power On and Power Off Blades
 - On system power off/on, all blades powered off/on
 - **Individual blade power controls for service**
 - **Optional Disjoint power control for system power off**

- ▶ Upstream SNMP/CIM API Automation Management

- ▶ Event Notification (based on logged events or state change)
 - Pager, email, etc.

- ▶ Scheduled Operations (Firmware Update, Activate, Deactivate, etc.)

- ▶ Time Synchronization
 - BC/zBX Blade sync time with SE/System z

- ▶ Network Settings for Operational Network
 - GUI for setting TCP/IP address, Group Name, etc.

- ▶ Launch Full Device Console
 - “Launch in Context” zBX blade GUI
 - Similar to HMC Single Object Operations of SE GUI
 - Example is DataPower XI50z GUI for editing XML Style sheets
 - Provided as a convenience feature for single console entry point to zBX blade
 - **“Launch in Context” Blade Center Management Module GUI (Service)**

DataPower WebGUI Launch

CPC Configuration -> Manage DataPower XI50z

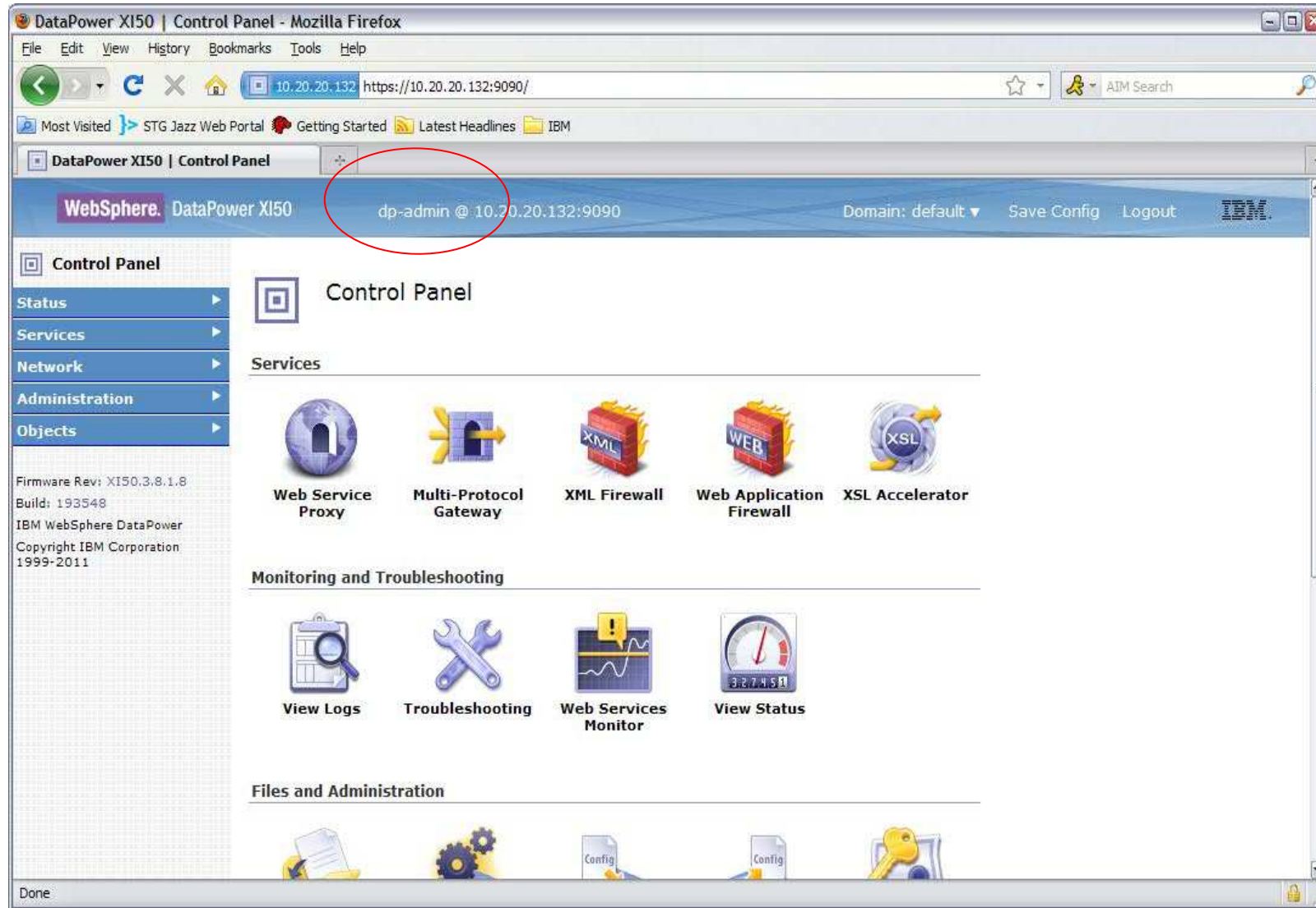
The screenshot displays the IBM HMC WebGUI interface. The main content area shows a table of blade centers under the path 'System Management > R93 > BladeCenters'. The table has columns for Name, Status, Power Usage (W), Location, Machine Type - Model, and Serial Number. The row for 'C.2.13' is selected. Below the table, a task pane is visible with the title 'Tasks: C.2.13'. A blue arrow points to the task 'CPC Configuration Manage DataPower XI50z'.

Select	Name	Status	Power Usage (W)	Location	Machine Type - Model	Serial Number
<input type="checkbox"/>	B.1	Operating		B10B	8852 - PER	KQNGDX
<input type="checkbox"/>	B.2	Operating		B01B	8852 - PFM	KQRZTD
<input type="checkbox"/>	C.1	Operating		C10B	8852 - PHD	99E1460
<input type="checkbox"/>	C.2	Operating		C01B	8852 - PHD	99E1490
<input type="checkbox"/>	C.2.01	Operating	114	C01BBS01	4195 - 4BX	6800451
<input type="checkbox"/>	C.2.03	Operating	115	C01BBS03	4195 - 4BX	6800394
<input type="checkbox"/>	C.2.05	Operating	115	C01BBS05	4195 - 4BX	6800326
<input type="checkbox"/>	C.2.07	Operating	117	C01BBS07	4195 - 4BX	6800342
<input type="checkbox"/>	C.2.09	Operating	118	C01BBS09	4195 - 4BX	6800373
<input type="checkbox"/>	C.2.11	Operating	115	C01BBS11	4195 - 4BX	6800443
<input checked="" type="checkbox"/>	C.2.13	Operating	139	C01BBS13	4195 - 4BX	6800363

Tasks: C.2.13

- zBX Blade Details
- Daily
- CPC Configuration Manage DataPower XI50z**

DataPower WebGUI



Performance Management

- ▶ SAD (System Activity Display):
 - Performance data for zBX blades:
 - CPU usage
 - Memory usage
 - Storage I/O usage
 - Networking usage

- ▶ Energy Monitoring of Consumption and Temperature
 - Blade Center information
 - Also shown on SAD
 - Aggregate data to IBM Director AEM (Active Energy Manager)

- ▶ Reporting Performance Data to IBM, TSAD (Transmit System Availability Data)
 - Include energy information
 - Include performance information
 - Include firmware levels
 - IBM Resource Link to provide
 - Alternative customer display of data
 - any alert notifications based on analysis

Monitoring ISAOPT, DataPower XI50z, Power Blades

Monitors Processor and Memory usage, POWER Blade also monitors Network & Storage

R93HMC1: Monitors Dashboard - Mozilla Firefox

9.12.16.234 https://9.12.16.234/hmc/content?taskId=142&refresh=336

Monitors Dashboard

R93 [redacted] 18 0 29.961 102,231.174 21.5 70.7

Page 1 of 1 Max Page Size: 100 Total: 2 Filtered: 2 Displayed: 2 Selected: 0

Details

R91

R93

Power Consumption

--- Select Action --- Filter

Select	Name	Power Consumption (kW)	(Btu/hr)
<input type="checkbox"/>	R93	29.961	102,231.174
<input type="checkbox"/>	zCPC	15.953	54,433.895
<input type="checkbox"/>	BladeCenter B01B	4.716	16,091.660
<input type="checkbox"/>	zBX Blade B.2.01	0.246	839.387
<input type="checkbox"/>	zBX Blade B.2.02	0.243	829.150

Page 1 of 1 Max Page Size: 100 Total: 55 Filtered: 55 Displayed: 55 Selected: 0

zBX Blades

--- Select Action --- Filter

Select	Name	Type	Processor Usage (%)	Memory Usage (%)	Network I/O Usage (%)	Storage (kBytes/second)
<input type="checkbox"/>	C.2.09	DPXI50z	7	32		
<input type="checkbox"/>	C.1.11	PWRBLADE	8		0	34
<input type="checkbox"/>	C.1.09	PWRBLADE	12		0	22
<input type="checkbox"/>	C.1.02	PWRBLADE	13		0	30
<input type="checkbox"/>	B.2.12	ISAOPT	25		12	

Page 1 of 1 Max Page Size: 100 Total: 49 Filtered: 49 Displayed: 49 Selected: 0

Close Help

Business Management

- ▶ User Management
 - automatically creates/manages userid and passwords for Service Network connectivity
 - Launch in context GUI password validation as part of SE validation
 - Strong password rules supported
 - LDAP Server User Authentication
 - DataPower XI50z customer defined users/passwords

- ▶ Security Auditing
 - Audit trail of important changes (ie., firmware, configuration, etc.)
 - Same infrastructure of security logs as is used for Common Criteria EAL6
 - More investigation needed to understand where zBX stands with EAL6

- ▶ Device Status and Details
 - Showing BladeCenter and zBX blade Objects and status (power, quiesce, operational, error)
 - Objects for launching specific actions to zBX blades
 - New zBX Blades view (similar to processors, channels, cryptos)

- ▶ **Service Network Automatically configured/managed**
 - More to come on zBX Networks

- ▶ Legal
 - Copyright, license agreements included on HMC

- ▶ Documentation
 - Physical planning, installation , operation and service

BladeCenters along with Processors, Channels, Cryptos, z Images

R15: Primary Support Element Workplace (Version 2.11.0) - Mozilla Firefox: IBM Edition

9.60.15.52 https://9.60.15.52:9950/hmc/connects/mainuiFrameset.jsp

Support Element SYSPROG | Help | Logoff

System Management

System | Topology

Filter: Tasks: Views:

Select	Name / ID	Status	CP Status	Channel Status	Crypto Status	Activation Profile	Last Used Profile
<input type="checkbox"/>	R15	Operating	Operating	Exceptions	Exceptions	VM2TEST	VM2TEST
<input type="checkbox"/>	Processors	OK					
<input type="checkbox"/>	Channels	Exceptions					
<input type="checkbox"/>	Cryptos	Exceptions					
<input type="checkbox"/>	Partitions	Exceptions					
<input type="checkbox"/>	BladeCenters	OK					
<input type="checkbox"/>	B.1	Operating					
<input type="checkbox"/>	B.2	Operating					

Max Page Size: 500 Total: 9 Filtered: 9 Selected: 0

Tasks: System Management

Grouping

Status: Exceptions

Read 9.60.15.52

Blades view within the BladeCenters

R15: Primary Support Element Workplace (Version 2.11.0) - Mozilla Firefox: IBM Edition

9.60.15.52 https://9.60.15.52:9950/hmc/connects/mainuiFrameset.jsp

Support Element SYSPROG | Help | Logoff

← → Home Refresh

- Welcome
- System Management
 - R15
 - Custom Groups
- SE Management
- Service Management
- Tasks Index

Status: Exceptions

System Management

System Topology

Select	Name / ID	Status	CP Status	Channel Status	Crypto Status	Activation Profile	Last Used Profile
<input type="checkbox"/>	BladeCenters	OK					
<input type="checkbox"/>	B.1	Operating					
<input type="checkbox"/>	B.1.01	Operating					
<input type="checkbox"/>	B.1.02	Operating					
<input type="checkbox"/>	B.1.03	Operating					
<input type="checkbox"/>	B.1.04	Operating					
<input type="checkbox"/>	B.1.05	Operating					
<input type="checkbox"/>	B.1.06	Operating					
<input type="checkbox"/>	B.1.07	Operating					
<input type="checkbox"/>	B.1.08	Operating					
<input type="checkbox"/>	B.1.11	Operating					
<input type="checkbox"/>	B.1.13	Operating					
<input type="checkbox"/>	B.2	Operating					
<input type="checkbox"/>	B.2.01	Operating					
<input type="checkbox"/>	B.2.02	Operating					
<input type="checkbox"/>	B.2.03	Operating					

Max Page Size: 500 Total: 33 Filtered: 33 Selected: 0

Transferring data from 9.60.15.52...

Details of POWER Blade

R15: zBX Blade Details - Mozilla Firefox: IBM Edition

9.60.15.52 https://9.60.15.52:9950/hmc/content?taskId=57&refresh=167

B.1.01 Details - B.1.01

Instance Information	Acceptable Status	Product Information	Energy Management Information	Hypervisor Information
-----------------------------	-------------------	---------------------	-------------------------------	------------------------

Status: Operating
 Number of processors: 8
 Memory size: 32768 MB

Apply Cancel Help

Done

R15: zBX Blade Details - Mozilla Firefox: IBM Edition

9.60.15.52 https://9.60.15.52:9950/hmc/wd/T3b6f

B.1.01 Details - B.1.01

Instance Information	Acceptable Status	Product Information	Energy Management Information	Hypervisor Information
----------------------	--------------------------	---------------------	-------------------------------	------------------------

Acceptable Status

- Operating
- No power
- Stopped
- Status check
- Definition error
- Not operating

Save as default

Apply Cancel Help

Done

Details of POWER Blade

R15: zBX Blade Details - Mozilla Firefox: IBM Edition

9.60.15.52 https://9.60.15.52:9950/hmc/wcd/T3b6f

B.1.01 Details - B.1.01

Instance Information Acceptable Status **Product Information** Energy Management Information Hypervisor Information

Type: POWER Blade
 Name: B.1.01
 Machine type - model: 8406 - 71Y
 Serial number: 109F32A
 Location: B10BBS01

Apply Cancel Help

Done

R15: zBX Blade Details - Mozilla Firefox: IBM Edition

9.60.15.52 https://9.60.15.52:9950/hmc/wcd/T3b6f

B.1.01 Details - B.1.01

Instance Information Acceptable Status Product Information **Energy Management Information** Hypervisor Information

Power rating: 382 W
 Power consumption: 164 W
 Power saving: High performance
 Power capping: Disabled
 Cap range: 277 W - 382 W
 Current cap: 382 W

Apply Cancel Help

Done

Details of DataPower XI50z Blade

R15: zBX Blade Details - Mozilla Firefox: IBM Edition

9.60.15.52 https://9.60.15.52:9950/hmc/wcl/T3b99

B.1.11 Details - B.1.11

Instance Information Acceptable Status **Product Information** Energy Management Information

Type: DataPower XI50z
 Name: B.1.11
 Machine type - model: 4195 - 4BX
 Serial number: 6800243
 Location: B10BBS11

Apply Cancel Help

Done

R15: zBX Blade Details - Mozilla Firefox: IBM Edition

9.60.15.52 https://9.60.15.52:9950/hmc/content?taskId=58&refresh=169

B.1.11 Details - B.1.11

Instance Information Acceptable Status Product Information Energy Management Information

Status: Operating
 Number of processors: 2
 Memory size: 12288 MB
 Licensed software features: MQ, TAM, DataGlue, JAXP-API, PKCS7-SMIME, WebSphere-JMS, RaidVolume, iSCSI, LocateLED, AppOpt, zBX

Apply Cancel Help

Done

Details of ISAOPT Blade

R15: zBX Blade Details - Mozilla Firefox: IBM Edition

9.60.15.52 https://9.60.15.52:9950/hmc/content?taskId=59&refresh=171

B.2.01 Details - B.2.01

Instance Information	Acceptable Status	Product Information	Energy Management Information
Status:	Operating		
Node type:	Coordinator		
Number of processors:	2		
Memory size:	49152 MB		

Apply Cancel Help

Done

R15: zBX Blade Details - Mozilla Firefox: IBM Edition

9.60.15.52 https://9.60.15.52:9950/hmc/wd/T3bb3

B.2.01 Details - B.2.01

Instance Information	Acceptable Status	Product Information	Energy Management Information
Type:		IBM Smart Analytics Optimizer	
Name:		B.2.01	
Machine type - model:		7870 - PEL	
Serial number:		KQWALGX	
Location:		B01BBS01	

Apply Cancel Help

Done

Blades View with Unsorted Power Usage

R15: Primary Support Element Workplace (Version 2.11.0) - Mozilla Firefox: IBM Edition

9.60.15.52 https://9.60.15.52:9950/hmc/connects/mainuiFrameset.jsp

Support Element SYSPROG | Help | Logoff

System Management

System Topology

Filter Tasks Views: Blades

Select	Name / ID	Status	Power Usage (W)	Location	Machine Type - Model	Serial Number
<input type="checkbox"/>	BladeCenters	OK				
<input type="checkbox"/>	B.1	Operating		B10B	8852 - PFM	KQYXRLF
<input type="checkbox"/>	B.1.01	Operating	163	B10BBS01	8406 - 71Y	109F32A
<input type="checkbox"/>	B.1.02	Operating	177	B10BBS02	8406 - 71Y	10AA3EA
<input type="checkbox"/>	B.1.03	Operating	177	B10BBS03	8406 - 71Y	10AA36A
<input type="checkbox"/>	B.1.04	Operating	154	B10BBS04	8406 - 71Y	10AA33A
<input type="checkbox"/>	B.1.05	Operating	153	B10BBS05	8406 - 71Y	10AA31A
<input type="checkbox"/>	B.1.06	Operating	155	B10BBS06	8406 - 71Y	10AA1EA
<input type="checkbox"/>	B.1.07	Operating	155	B10BBS07	8406 - 71Y	10A9FCA
<input type="checkbox"/>	B.1.08	Operating	159	B10BBS08	8406 - 71Y	10A9A0A
<input type="checkbox"/>	B.1.11	Operating	112	B10BBS11	4195 - 4BX	6800243
<input type="checkbox"/>	B.1.13	Operating	114	B10BBS13	4195 - 4BX	6800327
<input type="checkbox"/>	B.2	Operating		B01B	8852 - PFM	KQYXRLG
<input type="checkbox"/>	B.2.01	Operating	164	B01BBS01	7870 - PEL	KQWALGX
<input type="checkbox"/>	B.2.02	Operating	162	B01BBS02	7870 - PEL	KQWALHC
<input type="checkbox"/>	B.2.03	Operating	162	B01BBS03	7870 - PEL	KQWALHM

Max Page Size: 500 Total: 33 Filtered: 33 Selected: 0

Status: Exceptions

Transferring data from 9.60.15.52...

Blades View with Sorted Power Usage

R15: Primary Support Element Workplace (Version 2.11.0) - Mozilla Firefox: IBM Edition

9.60.15.52 https://9.60.15.52:9950/hmc/connects/mainuiFrameset.jsp

Support Element SYSPROG | Help | Logoff

System Management

System | Topology

Filter: Tasks: Views:

Select	Name / ID	Status	Power Usage (W)	Location	Machine Type - Model	Serial Number
<input type="checkbox"/>	B. 1.11	Operating	112	B10BBS11	4195 - 4BX	6800243
<input type="checkbox"/>	B. 1.13	Operating	118	B10BBS13	4195 - 4BX	6800327
<input type="checkbox"/>	B. 2.09	Operating	122	B01BBS09	7870 - PEL	KQTKYLT
<input type="checkbox"/>	B. 2.13	Operating	123	B01BBS13	7870 - PEL	KQVNCWH
<input type="checkbox"/>	B. 1.05	Operating	153	B10BBS05	8406 - 71Y	10AA31A
<input type="checkbox"/>	B. 1.04	Operating	154	B10BBS04	8406 - 71Y	10AA33A
<input type="checkbox"/>	B. 1.07	Operating	155	B10BBS07	8406 - 71Y	10A9FCA
<input type="checkbox"/>	B. 1.06	Operating	155	B10BBS06	8406 - 71Y	10AA1EA
<input type="checkbox"/>	B. 2.05	Operating	155	B01BBS05	7870 - PEL	KQYGBWF
<input type="checkbox"/>	B. 2.14	Operating	155	B01BBS14	7870 - PEL	KQYGBVZ
<input type="checkbox"/>	B. 2.07	Operating	157	B01BBS07	7870 - PEL	KQYGBWG
<input type="checkbox"/>	B. 1.08	Operating	159	B10BBS08	8406 - 71Y	10A9A0A
<input type="checkbox"/>	B. 2.06	Operating	159	B01BBS06	7870 - PEL	KQYGBWL
<input type="checkbox"/>	B. 2.11	Operating	161	B01BBS11	7870 - PEL	KQWALHB
<input type="checkbox"/>	B. 2.12	Operating	161	B01BBS12	7870 - PEL	KQWALGW
<input type="checkbox"/>	B. 2.08	Operating	162	B01BBS08	7870 - PEL	KQWALHF

Max Page Size: 500 Total: 33 Filtered: 33 Selected: 0

Status: Exceptions

Transferring data from 9.60.15.52...

Blades View with Type Field Added (User Customized Views)

The screenshot shows the IBM HMC System Management interface in a Mozilla Firefox browser. The main content area displays a table of blades under the 'System Management' tab. The table includes columns for 'Name / ID', 'Status', 'Power Usage (W)', 'Location', 'Machine Type - Model', 'Serial Number', and 'Type'. The 'Type' column is a user-customized field that lists specific blade models like 'DataPower XI50z' and 'IBM Smart Analytics Optimizer'. The interface also features a left-hand navigation menu, a top toolbar with a filter and view options, and a status bar at the bottom.

Select	Name / ID	Status	Power Usage (W)	Location	Machine Type - Model	Serial Number	Type
<input type="checkbox"/>	B.1.11	Operating	114	B10BBS11	4195 - 4BX	6800243	DataPower XI50z
<input type="checkbox"/>	B.1.13	Operating	118	B10BBS13	4195 - 4BX	6800327	DataPower XI50z
<input type="checkbox"/>	B.2.09	Operating	123	B01BBS09	7870 - PEL	KQTKYLT	IBM Smart Analytics Optimizer
<input type="checkbox"/>	B.2.13	Operating	125	B01BBS13	7870 - PEL	KQVNCWH	IBM Smart Analytics Optimizer
<input type="checkbox"/>	B.1.05	Operating	153	B10BBS05	8406 - 71Y	10AA31A	PowerVM
<input type="checkbox"/>	B.1.04	Operating	154	B10BBS04	8406 - 71Y	10AA33A	PowerVM
<input type="checkbox"/>	B.1.07	Operating	155	B10BBS07	8406 - 71Y	10A9FCA	PowerVM
<input type="checkbox"/>	B.1.06	Operating	155	B10BBS06	8406 - 71Y	10AA1EA	PowerVM
<input type="checkbox"/>	B.2.05	Operating	156	B01BBS05	7870 - PEL	KQYGBWF	IBM Smart Analytics Optimizer
<input type="checkbox"/>	B.2.14	Operating	156	B01BBS14	7870 - PEL	KQYGBVZ	IBM Smart Analytics Optimizer
<input type="checkbox"/>	B.2.07	Operating	157	B01BBS07	7870 - PEL	KQYGBWG	IBM Smart Analytics Optimizer
<input type="checkbox"/>	B.1.08	Operating	159	B10BBS08	8406 - 71Y	10A9A0A	PowerVM
<input type="checkbox"/>	B.2.06	Operating	159	B01BBS06	7870 - PEL	KQYGBWL	IBM Smart Analytics Optimizer
<input type="checkbox"/>	B.2.12	Operating	161	B01BBS12	7870 - PEL	KQWALGW	IBM Smart Analytics Optimizer
<input type="checkbox"/>	B.2.03	Operating	162	B01BBS03	7870 - PEL	KQWALHM	IBM Smart Analytics Optimizer
<input type="checkbox"/>	B.2.08	Operating	162	B01BBS08	7870 - PEL	KQWALHF	IBM Smart Analytics Optimizer

Tasks for ISAOPT Blades

R15: Primary Support Element Workplace (Version 2.11.0) - Mozilla Firefox: IBM Edition

9.60.15.52 https://9.60.15.52:9950/hmc/connects/mainuiFrameset.jsp

Support Element

SYSPROG | Help | Logoff

System Management

System Topology

Filter Views: Blades

Select	Name / ID	Status	Power Usage (W)	Location	Machine Type - Model	Serial Number	Type
<input type="checkbox"/>	B.1.11	Operating	114	B10BBS11	4195 - 4BX	6800243	DataPower XI50z
<input type="checkbox"/>	B.1.13	Operating	117	B10BBS13	4195 - 4BX	6800327	DataPower XI50z
<input checked="" type="checkbox"/>	B.2.09	Operating	122	B01BBS09	7870 - PEL	KQTKYLT	IBM Smart Analytics Optimizer
<input type="checkbox"/>	B.2.13	Operating	125	B01BBS13	7870 - PEL	KQVNCWH	IBM Smart Analytics Optimizer
<input type="checkbox"/>	B.1.05	Operating	153	B10BBS05	8406 - 71Y	10AA31A	PowerVM
<input type="checkbox"/>	B.1.06	Operating	154	B10BBS06	8406 - 71Y	10AA1EA	PowerVM
<input type="checkbox"/>	B.1.04	Operating	154	B10BBS04	8406 - 71Y	10AA33A	PowerVM
<input type="checkbox"/>	B.1.07	Operating	155	B10BBS07	8406 - 71Y	10A9FCA	PowerVM

Max Page Size: 500 Total: 33 Filtered: 33 Selected: 1

Tasks: B.2.09

- zBX Blade Details
 - Daily
 - Activate
 - Deactivate
 - Grouping
 - Hardware Messages
 - Service
 - Transmit Service Data
- Change Management
 - Manage zBX Blade Internal Code
- CPC Operational Customization
 - Manage zBX LEDs
- CPC Configuration
 - Customize Network Settings
 - Manage ISAOPT Cluster Size
- Energy Management
 - Set Power Cap
 - Set Power Saving

Status: Exceptions

Transferring data from 9.60.15.52...

Tightly Integrated/Loosely Coupled

- **Tightly Integrated** (zBX Infrastructure, ISAOPT, DataPower XI50z)
 - ▶ **System z Order Process and Mfg**
 - ▶ HMC/SE Managed Code
 - ▶ HMC/SE Call Problem Call Home and Guided Repair
 - ▶ Treated like all other System z integrated hardware

- **Loosely Coupled** (POWER Blade, System x Blade)
 - ▶ No System z Order Process and Mfg
 - **Customer obtains POWER Blade and/or System x Blade hardware by own means**
 - ▶ **Tightly Integrated after HMC/SE validation**
 - Validation step for correct hardware config and no functional hardware problems found during entitlement
 - Other 3 Tightly Integrated points apply
 - ▶ Created for potential of pricing discounts by Mass Distributors

POWER Blade Required Configurations

- <ftp://public.dhe.ibm.com/common/ssi/ecm/en/zsy03019usen/ZSY03019USEN.PDF>

PS701 Express blade	Feature Code	Config 1	Config 2	Config 3
Processor 3.0 GHz@150W		1	1	1
Processor Activations	8411	4	4	4
(quantity should equal 8 total)	8412	4	4	4
Memory kits		32 GB	64 GB	128 GB
8 GB (2 x 4GB)	8208	4	8	0
16 GB (2 x 8GB)	8209	0	0	8
HDD 300GB	8274	1	1	1
CFFh 10Gb QLogic Ethernet	8275	1	1	1
CIOv 8Gb QLogic FiberChannel	8242	1	1	1
PowerVM™ Enterprise Edition	5228	8	8	8
Required SW PID	Feature Code	Config 1	Config 2	Config 3
SW License PID 5765-PVE	0001	8	8	8
1 YR SWMA PID (5771-PVE) or 3 YR SWMA PID (5773-PVE)	1191 0999	Choose quantity of eight for either one year or three year (8 equates to one per activated processor)		

System x Blade Required Configurations

- <http://public.dhe.ibm.com/common/ssi/ecm/en/zsl03128usen/ZSL03128USEN.PDF>

HX5 (7873) blade	Feature Code	Config 1 (7873-A4x)	Config 2 (7873-A5x)
Blade base - HX5 (7873)	A16M	1	1
Initial Processor 2.13 GHz 105W (E7-2830 8C)	A16S	1	1
Additional Processor 2.13 GHz 105W (EZ-2830)	A179	1	1
# Intel Processors (Sockets)	--	2	2
Blade Width	--	Single	Single
Total Cores	--	16	16
Memory DIMM 8 GB 1333 Mhz	A17Q	8	16
GB/Core	--	4	8
Speed Burst Card	1741	1	1
SSD Exp Card	5765	1	1
50GB MLC SSD	5428	2	2
No Internal Raid	9012	1	1
Broadcom 10Gb virtual fabric CFFh	0099	1	1
Qlogic 8 Gb Fibre Channel Expansion Card CIOv	1462	1	1

2458 zBx Machine Type

- ▶ System z current hardware under System z MTM/SN (Machine Type Model/Serial Number) Service Contract

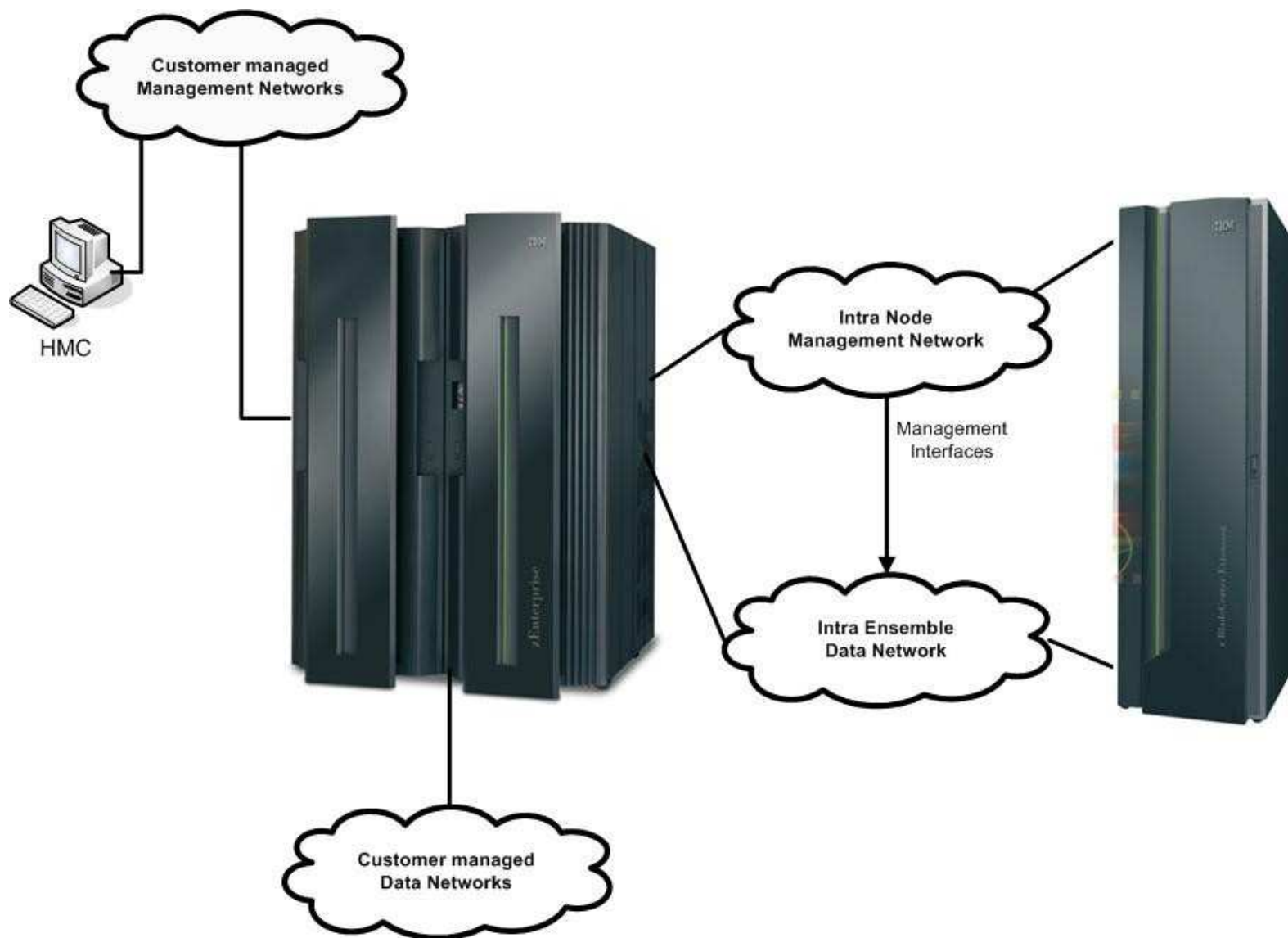
- ▶ zBX hardware under separate zBX MTM/SN (Machine Type (2458)/Model/Serial Number) Service Contract
 - Single contract for all zBX hardware
 - Exception for DataPower XI50z blade
 - Own warranty under 2462 Service Contract per blade
 - Order Process generated zBX MTM/SN delivered via VPDC media process.
 - OEM field updated to System z unique identifier for BC, Blade, & Switch
 - System z Mfg process
 - Loosely Coupled Validation
 - System x field stock updated during System z Field Repair/Replacement

- ▶ Hardware validation/guidelines
 - Only predefined hardware configs and OEM System z IDs are supported
 - Only given System z Blade Extension types can execute in that hardware
 - Only user enabled blades not exceeding LICCC high watermark per type will execute
 - Otherwise, powered off
 - zBX is **not** a Blade Server farm

zBX Networks Overview

- ▶ zBX Automatically Configured/Managed Networks
 - **IEDN (Intra Ensemble Data Network)**
 - Functional Data network
 - ◆ Connections from System z OS to accelerator type zBX blades (ie., ISAOPT)
 - ◆ Connections between Virtual Servers within zBX blades to System z OS
 - Can span multiple zBXes
 - 10 Gb Ethernet network
 - **INMN (Intra Node Management Network)**
 - System z Unified Resource Manager Management network
 - ◆ Hardware and Operational Management
 - ◆ Virtualization Life Cycle Management
 - ◆ Platform Performance
 - Limited to single zBX
 - 1 Gb Ethernet network
- ▶ See additional materials section for other SHARE sessions that go into more detail on zBX networks

zBX Networks Overview



zBX Switch Interconnection

▶ IEDN

- Physical Separation of network switches from INMN
 - TORs (Top Of Rack switches)
 - ESMs (IBM BladeCenter Electronic Switching Modules)
- Automatic detection and configuration of switches
- New CHPID type (OSX) when connecting from LPAR in CPC for DataNetwork connections to zBX
- See red network on next chart
 - OSX to 10 Gb TOR switch to 10 Gb ESM to blade

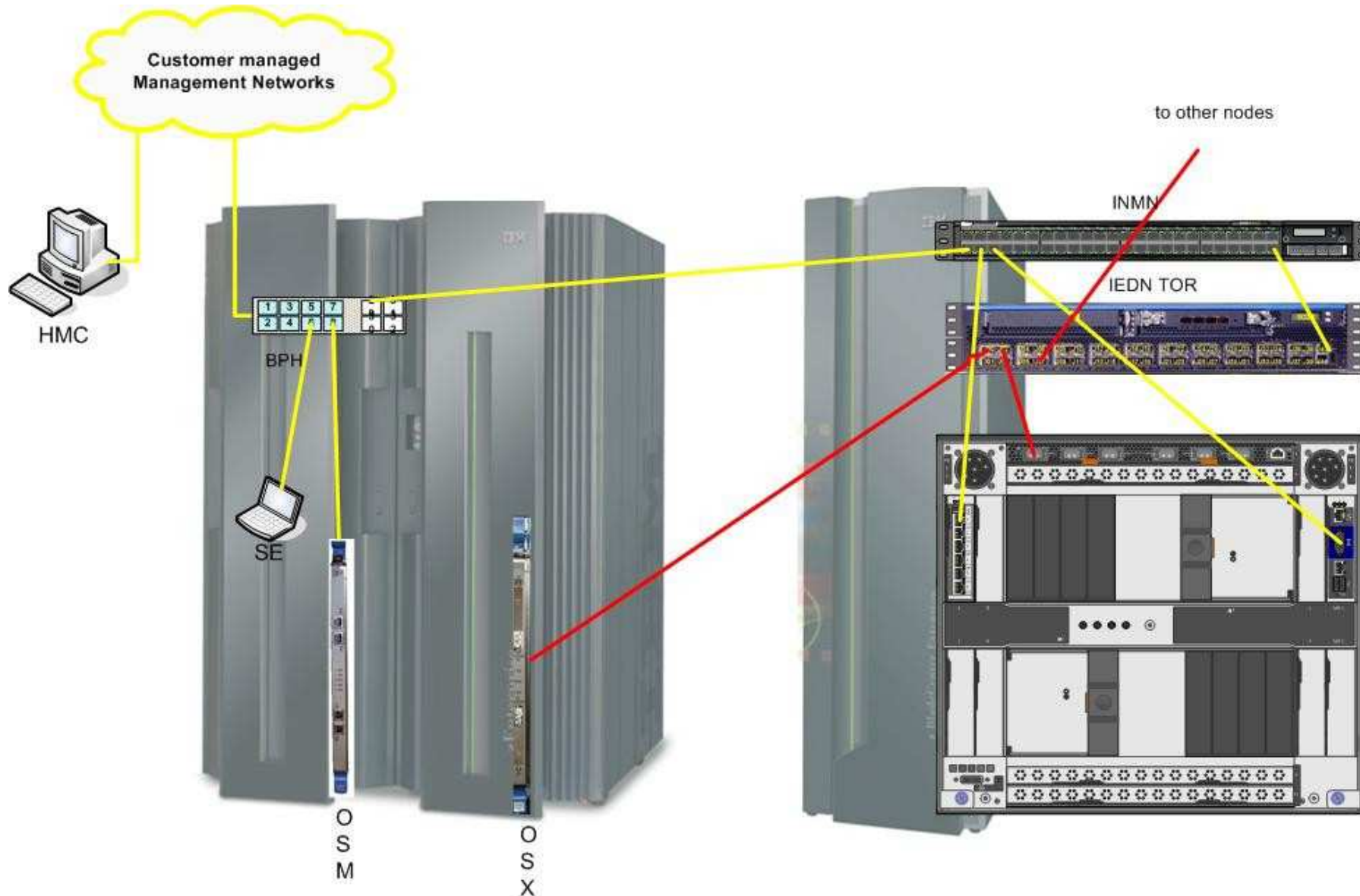
▶ INMN

- Physical Separation of network switches from IEDN
- Automatic detection and configuration of switches
- New CHPID type (OSM) when connecting to Virtual Server in CPC (ie, zVM) for Unified Resource Management purposes
- See yellow network on next chart
 - HMC to SE to BPH
 - BPH to OSM
 - BPH to 1 Gb TOR switch to 1 Gb ESM to blade

▶ Next chart notes:

- Omits redundancy
- Only shows one node in Ensemble

zBX Networks Overview



Summary

- ▶ zBX Integration to provide the **System z value propositions** of each of the Management disciplines covered today by HMC/SE
 - Concurrency
 - Security
 - Automatic configuration

- ▶ zBX Hardware truly integrated into System z
 - Generally not to be managed as individual objects
 - Just another component in the system

Thank you for your time and consideration....

**Brian Valentine
HMC/SE Team**

Contact for any Questions:

- ***Brian Valentine, (607) 429-4382, bdvalent@us.ibm.com***



Additional Materials (Backup)

- **Other SHARE Sessions of Related Interest**
- **HMC Security**
- **Registering for IBM Resource Link Access**
- **Notable HMC/SE Publications**

Additional Materials (Backup)

- **Other SHARE Sessions of Related Interest**
- HMC Security
- Registering for IBM Resource Link Access
- Notable HMC/SE Publications

Other SHARE Sessions of Related Interest

- ▶ August 8th, 4:30 – 5:30 PM
 - **9674**: A Mainframe Guy Discovers Blades - as in zEnterprise "Blade" Extension
- ▶ August 9th, 11:00 AM – 12:15 PM
 - **9245**: zEnterprise System - Network Architecture & Virtualization Overview - Part 1 of 3
- ▶ August 9th, 1:30 – 2:30 PM
 - **9690**: IBM zEnterprise BladeCenter Extension (zBX) Overview and Update
- ▶ August 9th, 1:30 – 2:30 PM
 - **9246**: zEnterprise System - z/OS IEDN Network Design & Implementation - Part 2 of 3
- ▶ August 9th, 3:00 – 4:00 PM
 - **9534**: zEnterprise System - Secure Networking with the zEnterprise Ensemble - Part 3 of 3
- ▶ August 9th, 4:30 – 5:30 PM
 - **9686**: [IBM System z Hardware Management Console \(HMC\) 2.11.0](#)

Other SHARE Sessions of Related Interest (cont.)

- ▶ August 10th, 9:30 – 10:30 AM
 - **9738**: zEnterprise Unified Resource Manager
- ▶ August 10th, 11:00 AM – 12:15 PM
 - **9709**: zManager: Platform Performance Management
- ▶ August 10th, 3:00 – 4:00 PM
 - **9635**: zEnterprise Unified Resource Manager: What's in it for z/VM?
- ▶ August 11th, 8:00 – 9:00 AM
 - **9711**: Unified Resource Manager Hands-On Lab - Part 1 of 2
- ▶ August 11th, 9:30 – 10:30 AM
 - **9818**: Unified Resource Manager Hands-On Lab - Part 2 of 2

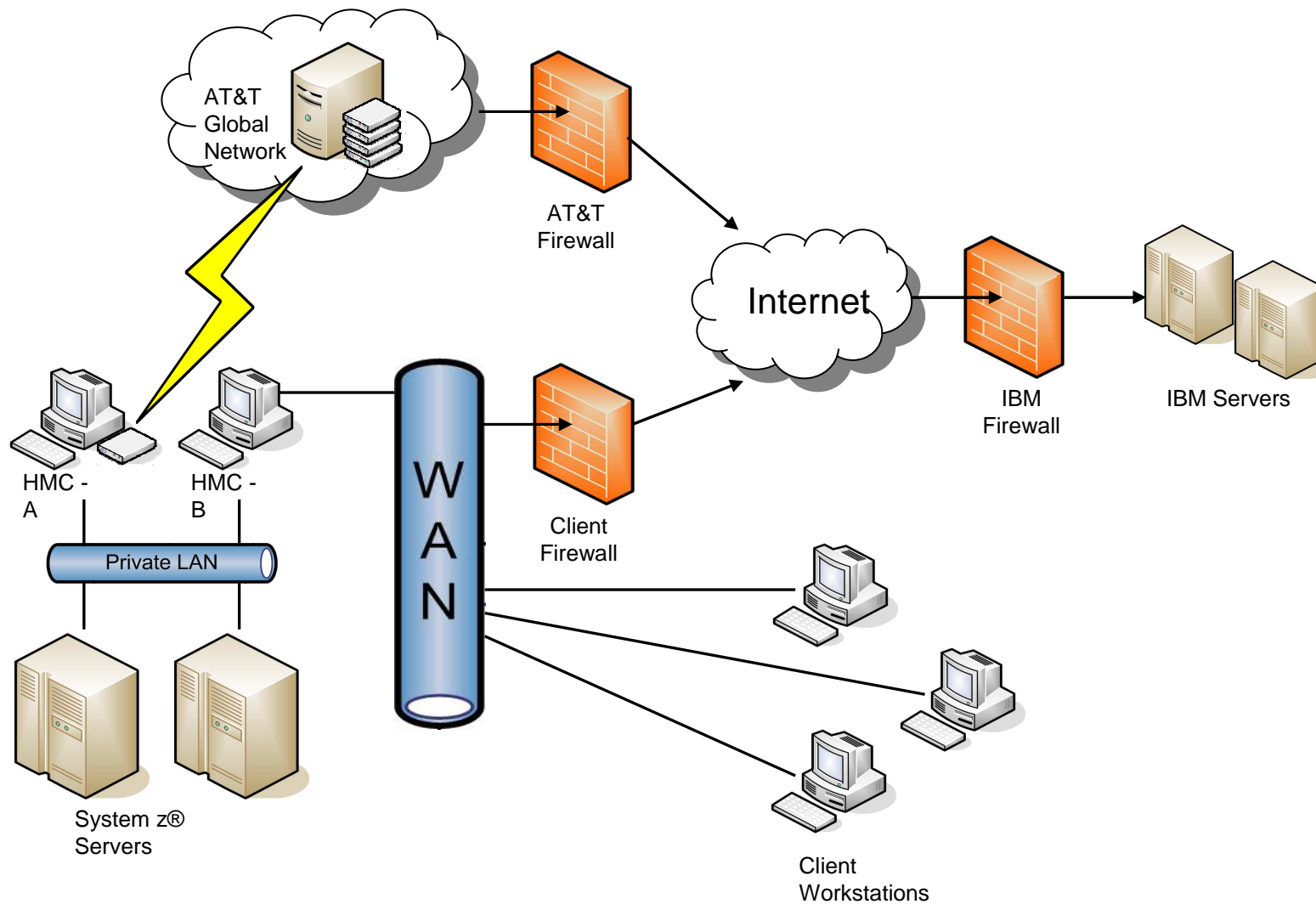
Additional Materials (Backup)

- Other SHARE Sessions of Related Interest
- **HMC Security**
- Registering for IBM Resource Link Access
- Notable HMC/SE Publications

What is the HMC?

- **Is** an orderable feature of a System z® server consisting of a standard PC hardware platform
- **Is** a closed platform
- **Is** intended and required to be a network attached device
- **Is** serviced by IBM service personnel
- **Is not** an open operating platform
- Should be considered an **appliance**, not a server

Connectivity Options



Best Practices

- Make sure the System z servers and other System z resources are physically located in a secure location, preferably an area that has physical access controlled and monitored, such as a raised floor.
- When possible install the HMC in the same type of physically secure environment as previously described for the System z resources.
- Connect the System z server and other resources only to a private, physically separate network; for example, connect all System z resources on a private raised floor network.
- Connect the HMC to the previously described private System z resources network. If connectivity to the HMC is needed from other networks in the customer's enterprise, provide this connectivity by connecting the second HMC network adapter to the appropriate customer network. (Remember: the HMC never routes network traffic, so the private System z network is still secure and isolated.)

Best Practices (continued...)

- Make sure the automatic logon capability of the HMC is not enabled in order to prevent the HMC from being logged on while unattended.
- Unless required, make sure that remote access to the HMC is disabled. If remote access is required, make sure to only allow remote access for the specific userids that require this type of access.
- At a minimum, change the passwords for all the default HMC userids. A more secure approach is to remove all of the default userids and define a userid for each individual user of the HMC.
- Do not share HMC userids among multiple people.
- Define password rules that adhere to the guidelines for the customer enterprise and make sure each userid is configured to use this password rule. If no guidelines exist, then make sure each userid is configured to use the “Standard” password rule.
- Make sure each userid is only permitted access to the tasks and managed resources needed to perform their job responsibilities.

Best Practices (continued...)

- Use data replication to make sure that User Profile information (userids, roles, password rules, etc.) are automatically kept in sync among all HMC installed in the enterprise.
- Unless required, make sure all automation interfaces of the HMC are disabled. If automation is required, then make sure to configure each of these interfaces in a secure manner (for example, do not use common authentication tokens or world-write types of access).
- Implement procedures that offload and analyze the HMC security logs for any suspicious activity.
- When feasible, automate notification of security log events for the HMC.

End user operational control

- **Secure SSL based remote access (optional)**
- **Full complement of certificate management capabilities**
- **Complete user management suite**
 - ▶ **Full function user definition**
 - ▶ **Highly flexible password rule definition**
 - ▶ **Centralized authentication using LDAP**
 - ▶ **Full access controls for tasks and resource allowed for each user (i.e. User Roles)**
- **Automatic replication of configuration data**

Network

- Full function embedded firewall
- Completely closed by default; services opened as enabled
- SSL encrypted communications
- Secure outbound communications for problem reporting and patch retrieval
- **No** inbound communications
- Passes with flying colors IBM Research “*ethical hacking*” attacks

Security Logging

- Logging of all security related events
 - ▶ **User access and changes**
 - ▶ **Disruptive actions**
 - ▶ **Configuration changes**
 - ▶ **Change management activity**
 - ▶ **Remote support calls**
- Off load capabilities

HMC Security Summary

- **Standard PC based appliance used to manage System z® resources**
- **Default configuration provides for maximum security (i.e. remote access disabled, ...)**
- **Full complement of application level security features (i.e. user and certificate management, ...)**
- **Complete auditing capabilities**
 - ▶ configuration changes,
 - ▶ user access,
 - ▶ disruptive actions, ...
- **Intended to be a network device**
 - ▶ SSL encrypted communications
 - ▶ Full function firewall
- **Allows for complete physical security**

HMC Security Paper Available On IBM Resource Link

- **Resource link url:** <http://www.ibm.com/servers/resourceLink/>
- **Sign into resource link with your registered id**
- **Select "Library" from the set of links on the left**
- **Select "z196"**
- **Select the "Technical Notes" by clicking on the tab'**
- **Select "System z Hardware Management Console Security"**

Additional Materials (Backup)

- Other SHARE Sessions of Related Interest
- HMC Security
- **Registering for IBM Resource Link Access**
- Notable HMC/SE Publications

Registering for IBM Resource Link Access

- **To view the documents on the Resource Link Web site, you need to register your IBM Registration ID (IBM ID) and password with Resource Link.**

- **To register:**
 - ▶ **Open the Resource Link sign-in page:** <http://www.ibm.com/servers/resourcelink/>

 - ▶ **You need an IBM ID to get access to Resource Link.**
 - **If you do not have an IBM ID and password, select the "Register for an IBM ID" link in the "Your IBM Registration" menu. Return to the Resource Link sign-in page after you get your IBM ID and password.**
 - **Note: If you're an IBM employee, your IBM intranet ID is not an IBM ID.**

 - ▶ **Sign in with your IBM ID and password.**

 - ▶ **Follow the instructions on the subsequent page.**

Additional Materials (Backup)

- Other SHARE Sessions of Related Interest
- HMC Security
- Registering for IBM Resource Link Access
- **Notable HMC/SE Publications**

Reference Documentation

- Available from “Books” group of Classic Style UI and the Welcome page of the Tree Style UI (& IBM Resource Link: Library->z196->Publications)
 - ▶ **IBM SC27-2606: zEnterprise System Hardware Management Console Operations Guide for Ensembles** (Version 2.11.0)
 - **IBM SC27-2615:** (Version 2.11.1)
 - ▶ **IBM SC28-6895: Hardware Management Console Operations Guide** (Version 2.11.0)
 - **IBM SC28-6905:** (Version 2.11.1)
 - ▶ **IBM SC28-6896: Support Element Operations Guide** (Version 2.11.0)
 - **IBM SC28-6906:** (Version 2.11.1)
 - ▶ **IBM GC27-2607: zEnterprise System Ensemble Performance Management Guide**
 - ▶ **IBM GC27-2608: zEnterprise System Ensemble Planning and Configuring Guide**
 - ▶ **IBM GC27-2609: zEnterprise System Introduction to Ensembles**
- Available from IBM Resource Link: Library->z196->Technical Notes
 - ▶ **System z Hardware Management Console Security**

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