IBM System z Hardware Management Console (HMC) 2.12.0 (with beginning preview of 2.12.1)

August 12, 2013

SHARE in Boston

Brian Valentine
HMC Development
bdvalent@us.ibm.com
File Updated: 08-08-13

IBM Systems

SHARE Session 13704

Topics

Topics (cont.)

HMC System support

- **The new HMC Version 2.12.1 will support the systems/SE (Support Element) versions shown in the table.**

  - ► **9672 G5/G6 (Driver 26, SE version 1.6.2) systems are no longer supported.**

- **User Interface**

  - ► **Classic and Tree styles continue to be supported.**

Machine Family	Machine Type	Firmware Driver	SE Version
zBC12	2828	15	2.12.1
zEC12	2827	15 & 12	2.12.1 & 2.12.0
z114	2818	93	2.11.1
z196	2817	93	2.11.1
z10 BC	2098	79	2.10.2
z10 EC	2097	79	2.10.2
z9 BC	2096	67	2.9.2
z9 EC	2094	67	2.9.2
z890	2086	55	1.8.2
z990	2084	55	1.8.2
z800	2066	3G	1.7.3
z900	2064	3G	1.7.3

zEC12 Hardware Support

- **zEC12 Processor Limits**

  ▶ The Physical Processor limits in the HMC/SE were updated to reflect the new zEC12 hardware. The Plan of Record values are:
    - maximum PUs = 120
    - maximum CPs = 101
    - maximum SAPs = 16

  ▶ The Logical Processor limits in the HMC/SE were also updated. The Plan of Record value is:
    - maximum CPs = 101 (z196 was limited to 80)

zEC12 Hardware Support

- **zEC12 Memory Boundary / Granularity**

  ► On zEC12, all partitions must be allocated on 2 GB (2048 MB) boundaries.

  - If a **user specified origin** is defined for a logical partition's **central storage**,
    - the **origin**, **initial**, and optional **reserved** (additional) central storage values for the logical partition must all use **2 GB (2048 MB) granularity**.
  - If a user specified origin is **not** defined for a logical partition's central storage (system determined),
    - following **table defines the granularity requirement** for the logical partition's initial and optional reserved central storage values. This is driven off the larger of the initial and reserved values: (LCSA in the table):

  - Note: **Expanded Storage granularity always 256 MB**.

Largest Central Storage Amount Specified (Initial and Reserved)	Storage Granularity Required
LCSA ≤ 128 GB	256 MB
128 GB < LCSA ≤ 256 GB	512 MB
256 GB < LCSA ≤ 512 GB	1024 MB (1 GB)
512 GB < LCSA ≤ 1024 GB	2048 MB (2 GB)

zEC12 Hardware Support

- **zEC12 Memory Boundary / Granularity (cont.)**

SHARE Session 13704

zEC12 Hardware Support

- **Remove support for the 'Coprocessor Group Counter Sets'**

  ► In zEC12 each physical processor has its own crypto coprocessor, and no longer has to share this coprocessor with another PU.

  ► The **'coprocessor group counter sets'** of the **'counter facilities'** will not be available.

    ● All of the necessary crypto counter information will be available in the **crypto activity counter sets directly**.

  ► The check-box selection for the '**Coprocessor Group Counter Sets**' was **removed** from the **Image profile** definition and the **Change Logical Partition Security** task.

zEC12 Hardware Support

- **Remove support for the 'Coprocessor Group Counter Sets'**

SHARE Session 13704
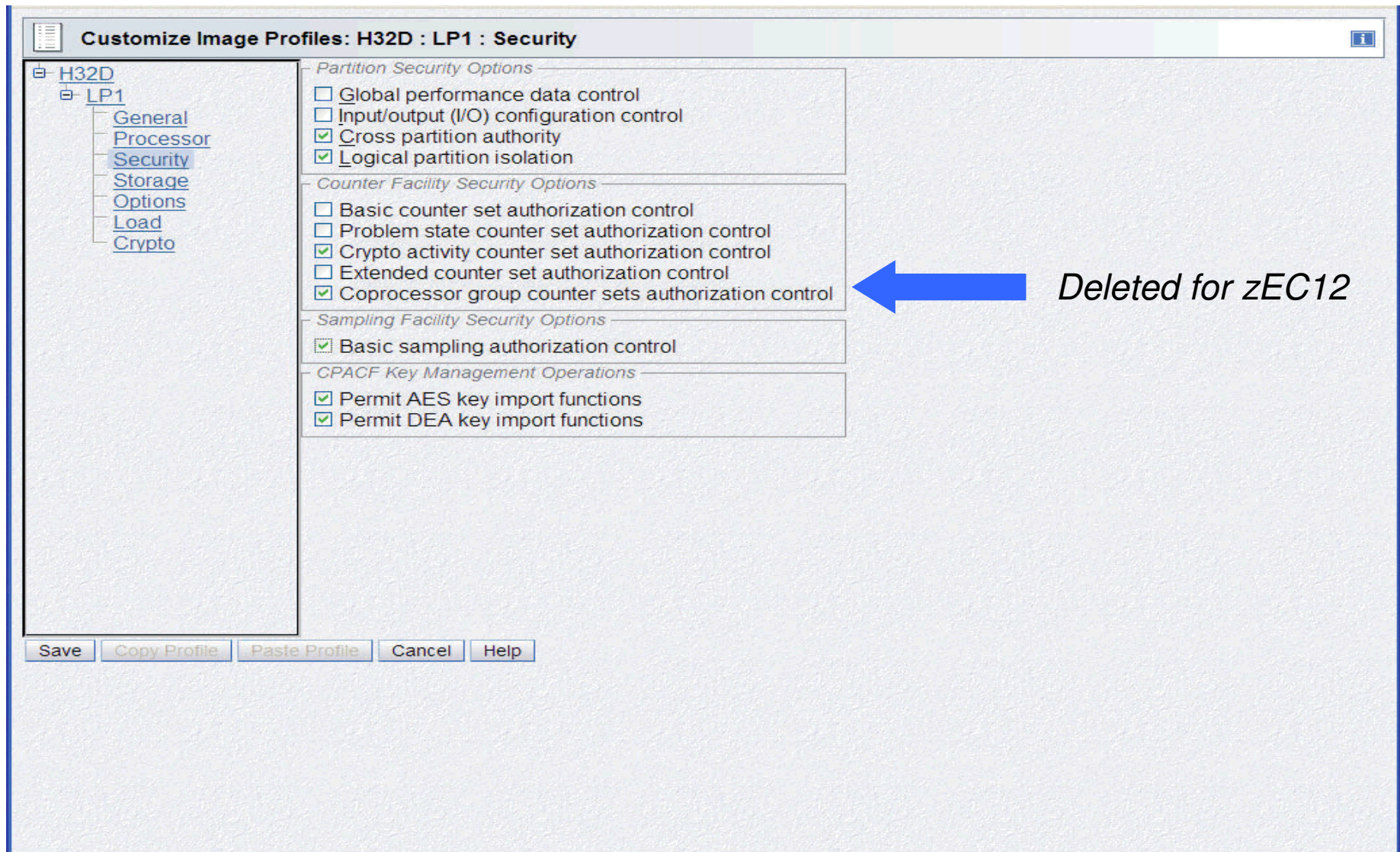
Remote Support Facility Updates

- **Removal of Modem Support from the HMC**
  - ► This change impacts customers that may have set up the modem for
    - Problem Call Home (RSF, Remote Support Facility) or
    - STP (Server Timer Protocol)

  - ► The HMC updates include:
    - Deletion of the Customize Modem Settings

    - Modification of the Customize Outbound Connectivity task to remove
      - Local Modem and External Time Source tabs
        - ♦ Modem configuration options

    - Modification of the Customize Outbound Connectivity task (Internet Settings tab) with a new option for external addressing mode: **Hostname** or IP (Pre zEC12 IP addressing mode is default)
      - If IP Addressing is selected,
        - ♦ choices are provided for: ipv4, ipv6 or both.
      - Hostname addressing only used with RSF Proxy Box having access to a DNS server
        - ♦ Several customer requirements drove this new feature
        - ♦ May ease transition for some customers as they migrate to broadband.

Remote Support Facility Updates

- **Removal of Modem Support from the HMC**
  - ► Resolve IBM IP addresses on console
    - Checked (default): use IP addressing
    - Unchecked: use Hostname addressing

Local Modem & External Time Source tabs removed

IP or Hostname adressing

SHARE Session 13704

Remote Support Facility Updates

- **Removal of Modem Support from the HMC**

  - ► Migration from pre-zEC12 HMC to a zEC12 HMC
    - At HMC startup checks are made of the persisted settings for Outbound Connectivity.

      - – If the HMC is set as a call home server
        - ♦ If the local modem is enabled, and internet is not enabled,
          -- Hardware Message displayed indicating a problem
          -- HMCs ability to call home will be disabled.
        - ♦ If both local modem and internet are enabled,
          -- local modem will be removed internally

      - – If the HMC was configured as an External Time Source using modem,
        - ♦ Hardware Message displayed indicating a problem
        - ♦ ETS (using modem) will be disabled
        - ♦ **Note:** External Time Source available via broadband
          -- Customize Date/Time and STP panels

Remote Support Facility Updates

- **Older Routes to IBM Service Infrastructure are no longer supported**

  ▶ As of zEC12 GA1 these ARE THE ONLY ipv4 addresses to IBM remote support:

  - 129.42.26.224:443

  - 129.42.34.224 :443

  - 129.42.42.224:443

  ▶ The following older legacy IP Addresses are no longer supported and will fail:
  - 207.25.252.200:443 - all
  - 129.42.160.48:443 - all
  - 207.25.252.204:443 - americas
  - 29.42.160.49:443 - americas
  - 207.25.252.205:443 - emea
  - 129.42.160.50:443 - emea

Marketing Requests (FITS)

- **The following requests have been implemented in zEC12.**

  ▶ MR0607116937 – Add a Confirmation panel before processing an "Alt-Ctrl-Delete" request

  ▶ MR022311243 – Add the capability to modify the time of the Alternate SE mirror scheduled operation.
    - **Previously, fixed at 10 AM.**
    - **Can now be changed, but once daily is still required**

  ▶ MR0330097054 – Allow mass delete of messages from the Operating System Messages task.
    - **Previously, only single select**

  ▶ MR1108114550 – Updates to the Network Settings task to order of the routing table entries based on decreasing NetMask value.
    - **Previously, static order based on how entered on task**

Browser Support

- The Internal Console Browser (Firefox) is considerably newer, so there might be a slightly different feel to the local HMC, SE, TKE console panels.

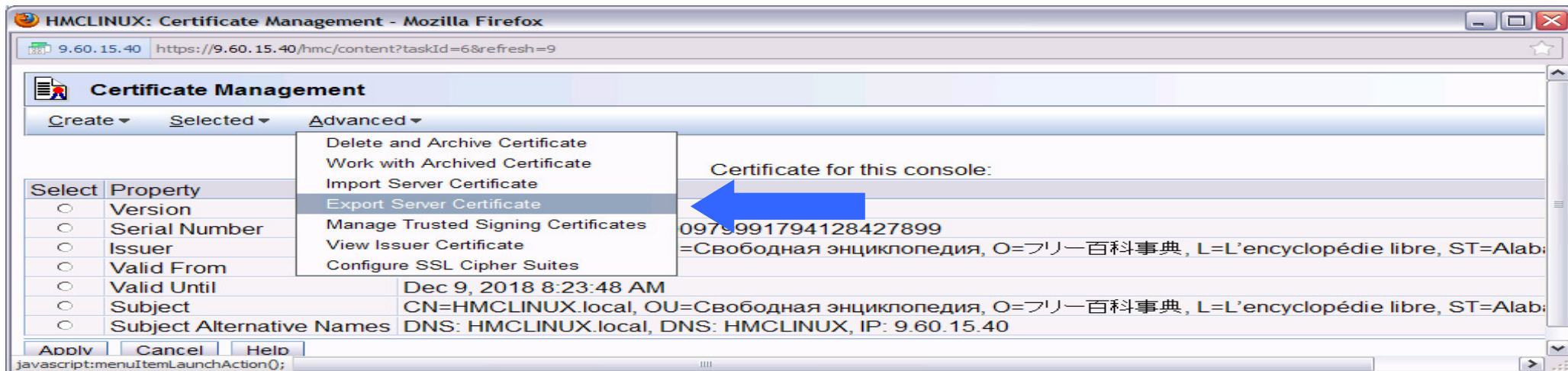| Remote Browser	HMC 2.12.1	HMC 2.12.0
IE (Internet Explorer)	Version 8, 9, & 10	Version 8 & 9
Firefox	Version 17.5 & 21	Version 10
Google Chrome	Version 26	Version 20

New Browser Support !!! →

Certificate Management – Export/Import Server Certificate

- Support added to export the current HMC certificate
  - ▶ Certificate for remote browser access
  - ▶ To USB Flash Drive (UFD) or the file system of a remote browser

- Support added to **import and replace** the current HMC certificate
  - ▶ Again for remote browser access & from UFD or the file system of a remote browser
  - ▶ The certificate imported must match that exported
    - ● The public key in the certificate must be associated with the private key on the HMC

- Benefit for Self Signed Certificates
  - ▶ Certificate can be imported into browser from UFD media (not by simply recognizing it on browser exception, especially if not on Dedicated Network)

- Benefit for CA (Certificate Authority) Signed Certificates
  - ▶ Customer can modify a property of certificate (ie., expiration date) without having to enter all the information on the HMC to regenerate the certificate
  - ▶ Pre zEC12, to modify HMC Certificate
    - ● Export info for signing request (filling several panels of info for CA Certificate request)
    - ● Get CA to create certificate
    - ● Import CA certificate
  - ▶ zEC12
    - ● Export HMC Certificate (no additional panel input needed)
    - ● Get CA to update certificate
    - ● Import CA certificate

SHARE Session 13704

Certificate Management – Export/Import Server Certificate

STP (Sever Time Protocol) Broadband Security

- **Authentication**
  - ▶ Added to the HMC's NTP communication with external NTP time servers.

- NTP (Network Time Protocol) authentication
  - ▶ Vital to giving a **secure route** for STP to obtain an accurate time for the CPC.

- Two forms of authentication supplied by NTP:

  - ▶ **Symmetric key authentication**
    - ● described in RFC-1305 (made available in NTP Version 3.)
  - ▶ **Autokey** which uses public key cryptography
    - ● described in RFC-5906 (made available in NTP Version 4).

- The Configure NTP Settings tab of the Customize Console Date and Time panel now allows configuration of both

  - ▶ symmetric key and autokey authentication

- **NTP Command** support

  - ▶ added to display the status of remote NTP servers and the current NTP server (HMC)
  - ▶ Can be used for initial route validation and for debugging purposes

STP Broadband Security

- Available Actions include: Add Server, Edit Server, Remove Server or Query Server

Three new options

STP Broadband Security

- Pushbuttons from Customize Console Date/Time panel result in the following panels being displayed:
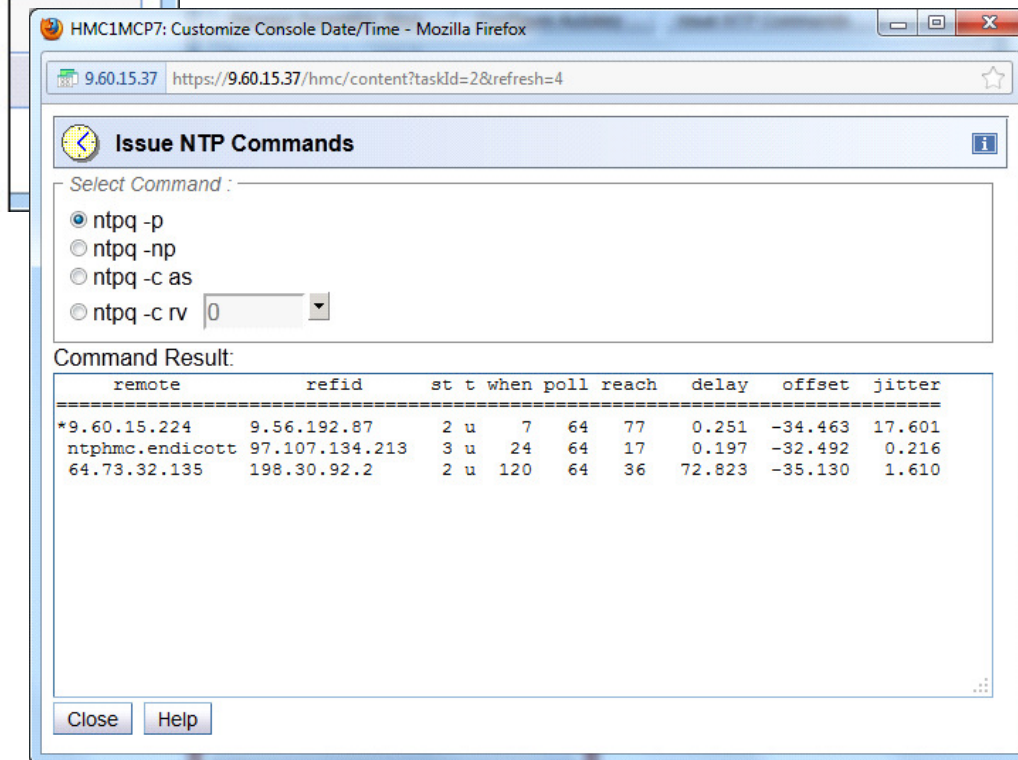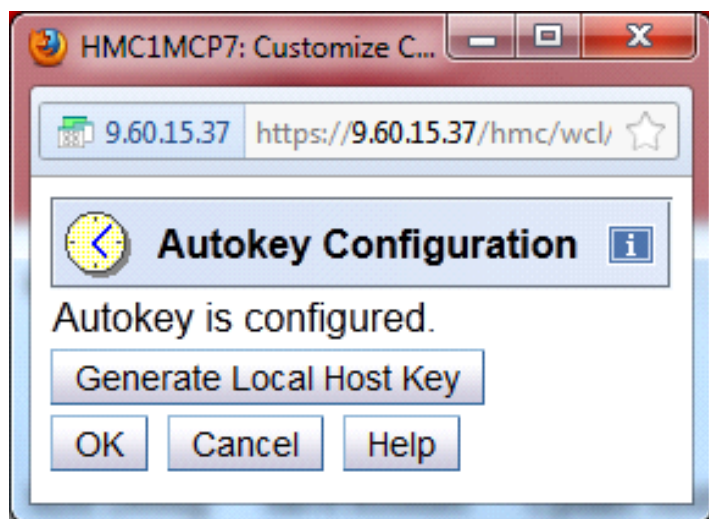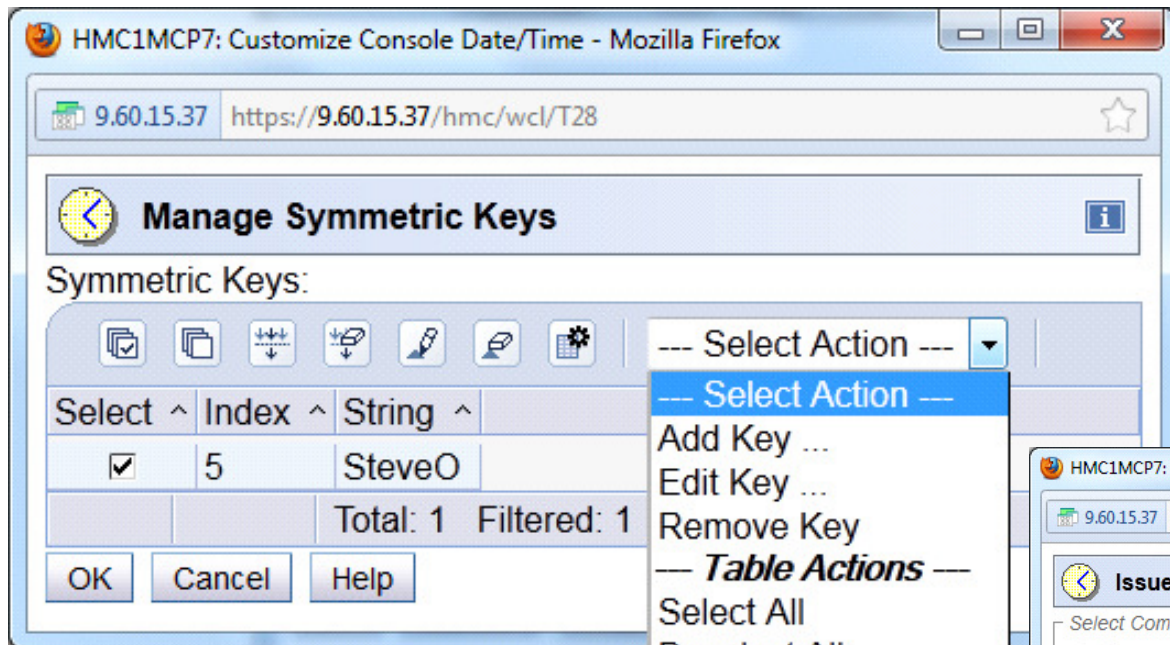
Monitors Dashboard Support for Crypto

- **Monitors Dashboard on the HMC and SE was enhanced with a new Adapters table for System zEC12**

- **Will provide Information about Utilization rate per Crypto Processor**
  - ► **System wide utilization (not LPAR specific)**
  - ► **Shown per Crypto#**

- **Source: collected Crypto performance measurement data (as used by RMF)**

Adapters

Select	Channel ID	Type	Adapter Usage (%)	
☐	0280	Crypto (ID = 3)		0
☐	0281	Crypto (ID = 4)	████████████	96
☐	0304	Crypto (ID = 7)	████████	57
☐	0324	Crypto (ID = 8)	█████████	68
☐	032C	Crypto (ID = 5)		0

Page 1 of 1   Max Page Size: 100   Total: 8 Filtered: 8 Displayed: 8 Selected: 0

--- Select Action ---   Filter

Monitors Dashboard Support for Crypto

SHARE Session 13704

Crypto Express4S

- The Crypto Express4S is the next generation Crypto Express card

  ▶ Plugs into the PCIe I/O drawer.

  ▶ Contains only one crypto adapter per card.

  ▶ Supports the EP11 functionality (also known as IBM Enterprise PKCS#11)
    - New mode for zEC12 (only for Crypto Express 4S)

  ▶ Capable of running in the following modes:
    - Accelerator
    - CCA Coprocessor
    - EP11 Coprocessor

  ▶ Appears on the SE's user interface as a unique hardware type - '4S' for Crypto Express4S. The Crypto work area (image view) further designates the crypto icons with:
    - "A" - Accelerator
    - "C" – CCA Coprocessor
    - "E" – EP11 Coprocessor

- zEC12 continues to supports Crypto Express3

  ▶ appears in the Crypto work area as a hardware type '3'.

  ▶ 2 adapters per card

  ▶ Only Accelerator & CCA Coprocessor modes supported (EP11 not supported)

Crypto Express4S – Crypto PCHIDs View

New Hardware Type

New Icon

Crypto Express4S – Crypto Image View

P0000P30: Primary Support Element Workplace (Version 2.12.0) - Mozilla Firefox: IBM Edition

Support Element

| Help | Logoff

System Management > P0000P30 > Partitions > LP4 > **Cryptos**

Cryptos | Topology

Filter | Tasks ▼ | Views ▼

Select	Crypto ID	PCHID	Status	State	Type
☐	00	0500	🟩 Operating	Online	Crypto Express3 Coprocessor
☐	01	0501	🟩 Operating	Online	Crypto Express3 Accelerator
☐	03	0280	🟩 Operating	Online	Crypto Express3 Coprocessor
☐	04	0281	🟩 Operating	Online	Crypto Express3 Accelerator
☐	05	032C	🟩 Operating	Online	Crypto Express4S EP11 Coprocessor
☐	06	0334	🟩 Operating	Online	Crypto Express4S EP11 Coprocessor
☐	07	0304	🟩 Operating	Online	Crypto Express4S CCA Coprocessor
☐	08	0324	🟩 Operating	Online	Crypto Express4S Accelerator

Max Page Size: 500   Total: 8 Filtered: 8 Selected: 0

Tasks: Cryptos

Status: Exceptions and Messages

Read 9.152.150.67

Left navigation tree: CSTSAK4, CSTSAK5, CSTVMMG, HYB1, HYB2, HYB3, HYB4, HYB5, HYBBIG, HYBZOS, LP1, LP2, LP3, LP4 (Proces, CHPIDs, Cryptos), LP5, LP6

Crypto Express4S – EP11 Additional Info

- EP11: Industry standardized set of services that adhere to the PKCS specifications
  - ► Based on PKCS #11 specification v2.20 and more recent amendments

- Supports secure PKCS #11 keys
  - ► Keys that never leave the secure boundary of the coprocessor unencrypted

- Designed to meet Common Criteria (EAL 4+) standards and FIPS 140-2 Level 4 requirements
  - ► Targets the public sector where industry standard services are required
  - ► Certifications tailored to meet requirements of this market place

- Conforms to the Qualified Digital Signature (QDS) Technical Standards
  - ► Becoming a mandate by the European Union
  - ► High quality electronic signatures
    - Trusted to the same extent as hand written signatures
  - ► Uses: Smart passports, national id cards, …

- The customer is now **required** to have a **TKE (Trusted Key Entry) workstation** in order to administratively set up their **EP11 crypto**.

Crypto Express4S/Crypto – Panel Updates

- Cryptographic Configuration panels were extended for Crypto Express4S:
  - ▶ Added EP11 Coprocessor mode
  - ▶ Accelerator & CCA Coprocessor modes also available
  - ▶ **Default:** CCA Coprocessor

- Other Cryptographic Configuration panel updates include:
  - ▶ Support for a Customer Initialize Selftest (CIS) for Cryptos running EP11 Coprocessor mode
    - RNG (Random Number Generator): Selftest for Accelerator & CCA
  - ▶ Support is now provided for up to 4 UDX files.
    - UDX (User Defined Extension)
      - Customize specific Crypto verbs/functions to customer unique requirements
    - Pre zEC12
      - Only 1 UDX file supported at one time
    - zEC12
      - Supports up to 4 UDX files loaded onto SE
      - Can switch between active UDX without reloading from media
    - UDX for CCA is supported for zEC12/zBC12.
    - UDX for EP11 is currently not supported on zEC12/zBC12.

Crypto Express4S – EP11

P0000P30: Cryptographic Configuration

Cryptographic Configuration - P0000P30

Cryptographic Information

Select	Number	Status	Crypto Serial Number	Type	Operating mode	TKE Commands
●	0	Configured	99000680	X3 Coprocessor	IBM Default	Permitted
○	1	Configured	99000677	X3 Accelerator	IBM Default	Not supported
○	3	Configured	90006440	X3 Coprocessor	IBM Default	Permitted
○	4	Configured	90006439	X3 Accelerator	IBM Default	Not supported
○	5	Configured	16BAL102	X4 EP11 Coprocessor	IBM Default	Permitted
○	6	Configured	16BA6153	X4 EP11 Coprocessor	IBM Default	Permitted
○	7	Configured	16C22359	X4 CCA Coprocessor	IBM Default	Permitted
○	8	Configured	16C22361	X4 Accelerator	IBM Default	Not supported

Select a Cryptographic number and then click the task push button.

View Details... | Test RNG/CIS | Zeroize | Usage Domain Zeroize | TKE Commands... | Crypto Type Configuration...

Zeroize All | Test RNG/CIS on All | UDX Configuration... | Refresh | Cancel | Help

Crypto Express4S – EP11

P0000P30: Cryptographic Configuration

Crypto Type Configuration - P0000P30

The selected Crypto is currently configured as an EP11 Coprocessor.
Cryptographic number: 6
Status: Deconfigured

Select a configuration for the Crypto
- ○ CCA Coprocessor
- ● EP11 Coprocessor
- ○ Accelerator

Note: The Crypto must be deconfigured to change the Crypto type configuration.

[OK] [Refresh] [Cancel] [Help]

- ▪ *Displayed via Crypto Type Configuration pushbutton*

P0000P30: Cryptographic Configuration - Mozilla Firefox: IBM Edition

9.152.150.67 https://9.152.150.67/hmc/wcl/T3688

UDX Configuration - P0000P30

UDX File Import

Click Import to copy UDX images from a DVD or click Erase to remove the currently stored UDX images.

IBM Common Cryptographic Architecture

Select	Imported UDX File	Image Time Stamp	Image Name
●	IQYV3431.UDX_430zrc27_30mar2012.CCA.UDX	3/27/12 2:28 PM	UDX 0300 Toolkit 43027 Y4 Test V2 Z
○	IQYV3430.UDX_430zrc27_30mar2012.CCA.UDX	3/27/12 10:49 AM	UDX 0300 Toolkit 43027 Y4 Test R1 Z

[Import] [Erase]

UDX Configuration

Select a Cryptographic number to Activate or Reset for the Segment 3 area.

Select	Number	Type	Status	Image Activated	Image Time Stamp	Image Name	Pending Reset to IBM Default
●	0	X3 Coprocessor	Configured	IBM Default	1/19/12 5:00 PM	4.3.0z CCA	No
○	3	X3 Coprocessor	Configured	IBM Default	1/19/12 5:00 PM	4.3.0z CCA	No
○	5	X4 CCA Coprocessor	Configured	IBM Default	3/16/12 6:42 PM	4.3.0z CCA	No
○	7	X4 CCA Coprocessor	Configured	IBM Default	3/16/12 6:42 PM	4.3.0z CCA	No

UDX file to activate: IQYV3431.UDX_430zrc27_30mar2012.CCA.UDX

[Activate] [Reset to IBM Default]

[Cancel] [Help]

- ▪ *Displayed via UDX Configuration pushbutton*
- ▪ *Up to 4 UDX files allowed*

Install and Activate by MCL Bundle Target

- Currently MCLs are released to the field in mandatory sequential order within EC streams.

- System z has a quality focused approach to firmware fix release in that only critical fixes are released to the field

  ► fixes are grouped together and released to RETAIN in a logical bundle.

- IBM is <u>not</u> changing our recommendation to install to the latest available patch bundle when upgrading the lead system of a customer

  ► BUT zEC12 now provides support to allow Install and Activate to a patch bundle level. Provided on the HMC, SE, and TKE via:

    • Change Internal Code - Install and Activate options panel
    • Single Step Internal Code Changes task.

Install and Activate by MCL Bundle Target

- The System Information panel shows summary bundle level for the activated levels
  - ▶ provided that all applicable EC streams' MCL information match to a bundle level.
  - ▶ If they don't match, then 'Not Available' displayed

System Information - P0LXSM37

Machine Information

EC number: C48168   LIC control level: 0001   Engineering Changes AROM
Type: 2827   Model number: H23   Serial number: 000000LXSM37
Version: 2.12.0   Bundle level: 1

New "Bundle level" field

Internal Code Change Information

Select	EC Number	Retrieved Level	Installable Concurrent	Activated Level	Accepted Level	Description
○	C48168	001	001	001		SE Framework
○	N48128	000	000			Enablement of new functions
○	N48123	000	000			Ficon Express8S LIC
○	N48122	000	000			OFCP Express8S LIC
○	N48121	000	000			OSA Express4S Networking
○	N48120	000	000			OSA Express4S Intra-Ensemble Data
○	N48119					OSA Express4S Intra-Ensemble Management
○	N48118					OSA Express4S ICC
○	N48117					Express4S Crypto
○	N48127					Enablement of new functions
○	N48126	000	000			Enablement of new functions
○	N48125	000	000			Enablement of new functions

EC Details...

Pending Actions

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

Query Additional Actions...

OK   **Help**

Install and Activate by MCL Bundle Target

- Single Step – new selection allowing CE to process MCLs on a bundle level

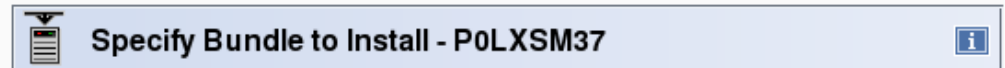**Select Internal Code Changes - P0LXSM37**

Select Internal Code Changes

- ⦿ All internal code changes
- ○ Bundle of internal code changes

OK   Cancel   Help

- New panel allowing the CE to input the bundle level

Specify Bundle to Install - P0LXSM37

Type the bundle level number to be installed.

Bundle Level : [   ]

☐ Include internal code changes which will inhibit the Concurrent Upgrade Engineering Changes (EC) task from being used to apply the next Licensed Internal Code EC level.

OK   Cancel   Help

- Change Internal Code – new selection allowing CE to install MCLs on a bundle level

Select Internal Code Changes - P0LXSM37

Select Internal Code Changes

- ⦿ All internal code changes
- ○ Specific internal code changes
- ○ Bundle of internal code changes

OK   Cancel   Help

Environmental Efficiency Statistics Task - Usability Improvement

- Updated based on customer feedback

- Prior to zEC12 when the data is first shown (default being one day),
  - ▶ the chart displays Midnight of the prior day to Midnight of the current day
  - ▶ Not displaying recent data of current data
- In zEC12
  - ▶ the initial chart display shows the 24 hours preceding the current time
  - ▶ full 24 hours of recent data is displayed.

- The panel was also enhanced with the ability to specify a "Starting time"

Environmental Efficiency Statistics Task – Pre-zEC12

► Selection made at 11 AM on July 11th, displays Midnight of the prior day to Midnight of previous day

► Midnight to 11 AM on current day not displayed on initial display

SHARE Session 13704

IBM Systems
© 2013 IBM Corporation

Environmental Efficiency Statistics Task - zEC12

► Selection made at 11 AM on July 11th, initial displays includes most recent 24 hours data

- 11 AM of current day to 11 AM of previous day

HMC 2.12.1 - RSF Infrastructure Changes

► **Introduction of <u>enhanced IBM Support System</u>** for RSF (Remote Support Facility) call-home

- Modernizing IBM support infrastructure for **capacity and reliability**
- Scope of supported functions in HMC 2.12.1 limited to:
  - Problem Management (report, transmit service data, problem close via repair
  - Transmit System Availability Data (scheduled operation)
  - Transmit VPD
  - Functionally equivalent to traditional IBM Service infrastructure

► Enhanced IBM support system used when requesting system and HMC are both at 2.12.1

► *Traditional IBM support system* used <u>as backup</u> during migration period

► Enhanced Infrastructure always attempted first if possible

► Currently Enhanced and Traditional support have equivalent functionality for supported functions

► Fix and eBoD (eBusiness on Demand) RSF functionality continues to use Traditional IBM support system

DNS resolution of addressing to enhanced IBM Support structure

DNS host name resolution is required for connectivity to the Enhanced IBM infrastructure.

- ►If RSF connection is not configured to use an SSL Proxy Server
  - ●Network Settings on call-home HMCs must include DNS configuration
  - ●Recommend a backup DNS for reliability
- ►If RSF connection uses an SSL Proxy Server, customer has choice where the ip address resolution is done:
  - ●Can be resolved on HMC, using Network Settings on HMC
  - ●Can be resolved at SSL Proxy, if Proxy has DNS available

Note: Use of hostnames usage facilitates dynamic management of redundant servers.

Customize Outbound Connectivity Panel: Proxy usage

Indicates if proxy required to connect to the internet, and how to reach it

Resolve setting dictates whether hostnames or ip addresses passed to SSL Proxy

✓ if checked, DNS is required on HMC

❑ if unchecked, DNS is required from SSL Proxy

Outbound Connectivity Settings

☑ Enable the local console as a call-home server

Configure Internet Options

☑ Use SSL Proxy Connection to Internet
Address: * 9.60.14.42
Port: * 3128

☐ Resolve IBM IP addresses on console
☐ Use SSL Proxy Authentication
User: *
Password: *
Confirm Password: *
Internet Protocol * IPv4

Test...

OK   Cancel   Help

Network Setting customized on HMC for DNS

- **Name Services is defined using Customize Network Settings Task**
- **Select DNS enabled**
- **One or more DNS Servers must be defined in search order**
  - **Recommendation that at least 2 be defined to avoid single point of failure**
- **Domain Suffix Search Order is not used by RSF, can be configured for other reasons**

Potential firewall changes required

If using ipv4, outbound connectivity must permitted to port 443 to the following destinations:

129.42.26.224 (traditional)

129.42.34.224 (traditional)

129.42.42.224 (traditional)

129.42.56.189 (enhanced)

129.42.58.189 (enhanced)

129.42.60.189 (enhanced)

If using ipv6, outbound connectivity must permitted to port 443 to the following destinations:

2620:0:6c0:1::1000

2620:0:6c1:1::1000

2620:0:6c2:1::1000

2620:0:6c0:200:129.42.56.189 (enhanced)

2620:0:6c1:200:129.42.58.189 (enhanced)

2620:0:6c2:200:129.42.60.189 (enhanced)

If using an SSL Proxy, and plan for it to resolve host names, it must accept the following host names:

www-945.ibm.com (traditional)

esupport.ibm.com   (enhanced)

Enhancements to Logging of RSF Events

- **RSF Security events moved from Security to Audit Logs to meet Common Security Criteria**

- **New log entry includes hostname, hostname on certificate, and cipher suite in RSF connection**

- **Below is a sample of the new format, and new connection message**

HMC 2.12.1 - RSF Infrastructure Changes Summary

▶ Introduction of new, "enhanced", IBM infrastructure

▶ Outside of initial setup, functionality is equivalent and transparent

▶ Depending on your current installation, there may be changes required to exploit this:

- DNS enablement
- Additional firewall rules

▶ This is the first rollout, currently dual support is available, but IBM recommends you make changes to enable this now.

▶ RSF Event Logging changes

▶ Full description for RSF setup can be found in:

- **SC28-6927-01**: *zEnterprise System Integrating the Hardware Management Console's Broadband Remote Support Facility into your Enterprise*

HMC 2.12.1 - Changes to Link Incident Records Management

- **Link Incident**
  - ▶ Problem detected when an attached device (e.g., Control Unit, DASD) connected with a FICON channel is not connected to the CPC
  - ▶ Optical Error Analysis in HMC is enabled.

- In the past, each link incident was automatically called home if Optical Error Analysis was enabled.
  - ▶ These were mostly ignored by service as "noise".

- As of HMC 2.12.1 Link Incidents will continue to create hardware messages, but they will require manual intervention to create a RETAIN PMR using Hardware Messages

IBM Systems
© 2013 IBM Corporation
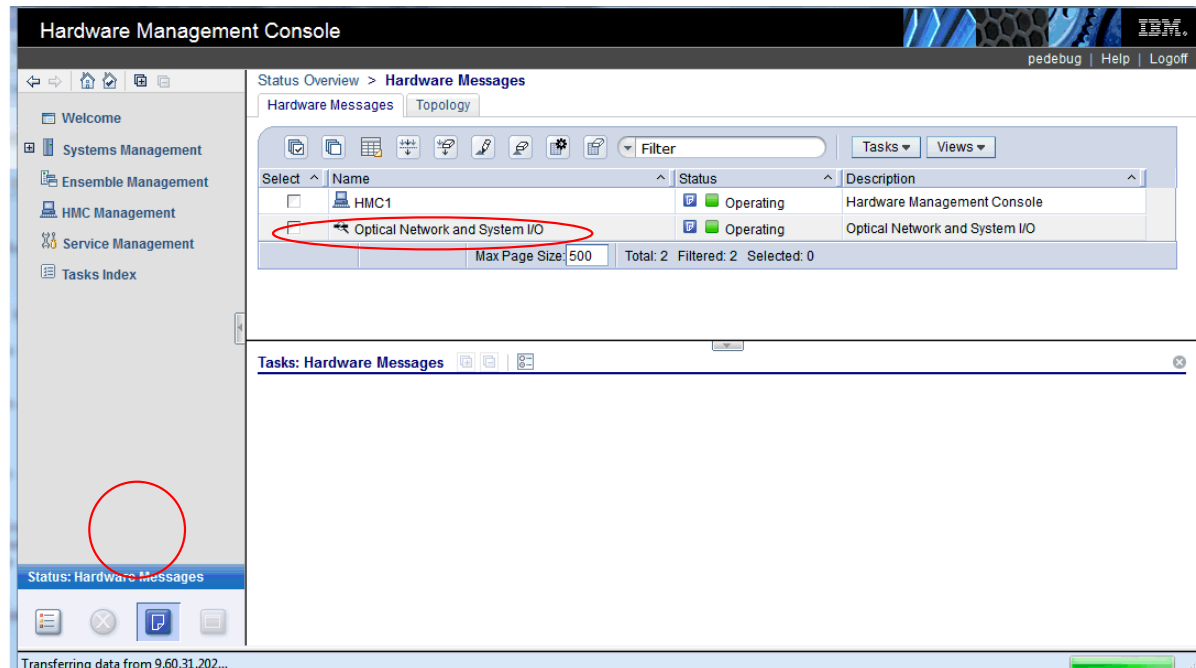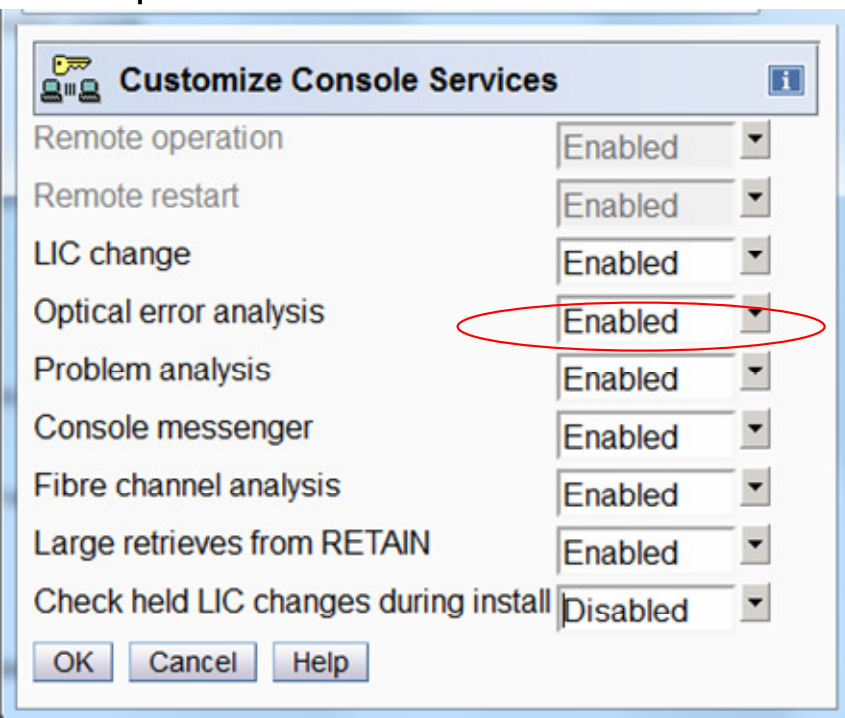
Calling home a Link Incident error

HMC1: Hardware Messages - Mozilla Firefox: IBM Edition

9.60.31.202:8080/hmc/content?taskId=3&refresh=4

Hardware Messages - Optical Network and System I/O

Select	Date	Time	Message Text	
☐	July 29, 2013	1:26:15 PM	Optical link problem. [Problem # 6]	

Optical Network and System I/O

[Details...] [Delete] [Select All] [Deselect All] [Cancel] [Help]

Done

Problem Analysis - Optical Network and System I/O

System name: Optical Network and System I/O
Date: Jul 29, 2013
Time: 1:26:15 PM

Problem Description

An Optical link failure was detected. Note: Information is not available for one or more nodes.

Node 1

Machine: 3990-006
Serial: IBM130094394
Physical Interface: 0010
Logical Interface: 0000

Node 2

Machine: 2084-C24
Serial: IBM000016FCA
Physical Interface: 8000
Logical Interface: 00AA

Corrective Actions

Service is required.

[Request Service...] [No Service] [Delete Message] [Cancel] [Help]

Done

HMC 2.12.1 - Additional Feature list

- ► HMC/TKE 3270 Certificate Management

- ► HMC/SE Help Infrastructure Changes/Availability on IBM Product Information Centers

- ► Absolute Capping of Logical Partitions

- ► Shared Memory Communications-RoCE

- ► zCompression

- ► Migration of OSA Support Facility (OSA/SF) to HMC/SE

- ► Ensemble Availability Manager

- ► User workstation JAVA levels/HMC Remote Browsing

- ► GDPS automated multisite recovery for zBX

- ► z/OS 2.1/HMC 3270 Security Recommendation

- ► **Intent is to provide detailed HMC 2.12.1 update at next SHARE session**

- ► Some Information available in Release Information urls for zEC12 & zBC12
  - http://www-01.ibm.com/common/ssi/ShowDoc.wss?docURL=/common/ssi/rep_ca/9/897/ENUS113-119/index.html&lang=en&request_locale=en
  - http://www-01.ibm.com/common/ssi/ShowDoc.wss?docURL=/common/ssi/rep_ca/1/897/ENUS113-121/index.html&lang=en&request_locale=en

What's New for zEnterprise Monitoring and Discovery

zEnterprise Monitoring Agent (v6.2.3.2)
TADDM (IBM Tivoli Application Dependency Discovery Manager)7.2.2

Released 1H2013

zEnterprise Monitoring Agent v6.2.3.2 - New Content

- **Visibility of zAware LPAR Health –** The zEnterprise Monitoring Agent monitors the availability and key performance metrics, such as CPU utilization, of zAware logical partitions. Historical CPU utilization measurements can be used for capacity planning to evaluate the need of additional CPU utilization before bringing on-line more zAware clients.

- **End-to-end visibility of all virtualized workloads running across both zBX and the zCPC** – The zEnterprise Monitoring Agent can now monitor the availability and key configuration settings for all Logical Partitions defined in the Ensemble. Detailed monitoring information about the z/OS or z/VM virtual servers is available for each LPAR. This addition completes the detailed monitoring of all hypervisor and virtual server types supported by the zEnterprise platform.

- **Intra-ensemble data network monitoring** – The zEnterprise Monitoring Agent provides a summary of all Virtual Networks and Uplinks defined in an Ensemble. Monitoring of key performance metrics can be used to quickly see overall utilization and health of the intra-ensemble data network (IEDN).

- **Dynamic workspace linking to OMEGAMON zVM and Linux for faster problem resolution** – As with Linux, AIX, and Windows agents, the zEnterprise monitoring agent also links to OMEGAMON for z/VM and Linux to provide more detailed information about z/VM configuration settings and performance metrics.

- **Visiblity to the health of zEnterprise Monitoring Agent** - Monitors the availability of the Hardware Management Console (HMC) connection and notifies operations if the agent is no longer able to monitor resources managed by that HMC.

- The zEnterprise Monitoring Agent ships with IBM Tivoli Monitoring (ITM).
- Utilizes HMC WebServices APIs.

zEnteprise Discovery with TADDM 7.2.2

- TADDM (IBM Tivoli Application Dependency Discovery Manager) - **Provides robust and automated discovery and application mapping for building an inventory of applications, configurations and dependencies**

- Agent-less Discovery of zEnterprise resources **- Discover and create new zEnterprise resource objects and their associated configuration using "agent-less" System z Hardware Management Console (HMC) API and TADDM sensor technology**

- Extend and complement existing System z discovery **– Extend investments in TADDM, z/OS DLA and z/VM DLA installations to include zEnterprise physical and logical resource configuration.**

- Extend and complement existing distributed discovery **– Extend investments for operating systems that can be hosted on zEnterprise zBX virtual servers (i.e. Linux, AIX and Windows®)**

- Create relationships between resources **within the zEnterprise ensemble and the associated System z environment workload topology**

- Visibility into configuration setting for zEnterprise Systems -**Track high level configuration data provided by the System z HMC**

Ensemble entities discovered with TADDM zEnterprise sensor

- **Physical:**

  - ► **CPC (zEC12, z196, z114)**

  - ► **zBX**

  - ► **Rack**

  - ► **BladeCenter**

  - ► **IBM System x Blade**

  - ► **IBM POWER7 Blade**

  - ► **IBM WebSphere® DataPower® Integration Appliance XI50 for zEnterprise**

  - ► **Virtualization Host Storage Resource**

- **Logical:**

  - ► **Ensemble**

  - ► **z/VM Virtualization Host**

  - ► **PowerVM® Virtual Server**

  - ► **xHyp Virtual Server**

  - ► **PR/SM™ Virtual Server**

  - ► **z/VM® Virtual Server**

  - ► **Logical Partition**

  - ► **Virtual Network**

  - ► **Workload Resource Group**

SHARE Session 13704
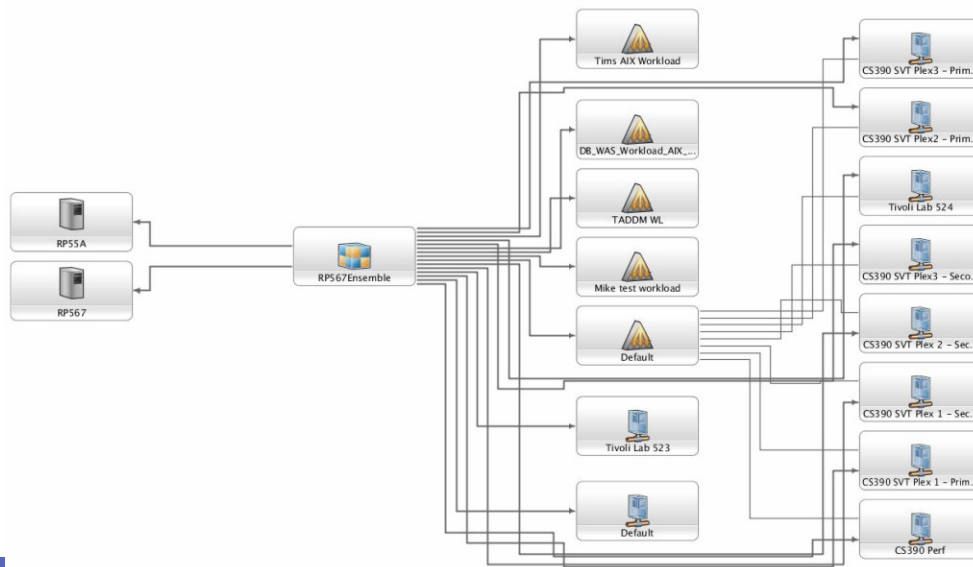
zFlash

- **zFlash Basics**
  - ▶ Solid State Drive (SSD) technology integrated into zEnterprise
  - ▶ z/OS access blocks of flash storage as storage locations within a logical partition (typically used for Page Store for better performance)

- **zFlash card displayed on the User Interface (UI) in a new Flash work area as a PCHID.**
  - ▶ No corresponding CHPID or IOCDS entry for a flash adapter. The cards must be paired up in order to provide adequate protection.

- **Four new tasks:**
  - ▶ Flash Status and Controls (Available on the SE)
    - ● Displays the list of adapters that are installed in the system and their state.
    - ● Detailed status and most operations for flash PCHIDs are available through this panel

  - ▶ Manage Flash Allocation (Available on both the HMC and SE)
    - ● Display the amount of Flash memory on the system
    - ● Create, change or remove the allocation of flash increments to a partition.

  - ▶ View Flash Allocations (Available on the SE)
    - ● Displays a table of flash information for one partition: Partition Increment Number, Adapter A PCHID, Adapter B PCHID and Logical Block Address.

  - ▶ View Flash (Available on the SE)
    - ● Displays information for one pair of flash adapters. The PCHID, Serial number, and card location is displayed for each PCHID in the pair. The increment size is also displayed. In addition, there is a table containing the following information for the pair: Logical Block Address, Partition Name and Partition Increment Number.

- **HMC Monitors Dashboard task updated to show utilization of zFlash**

Manage Flash Allocation - Change zFlash Allocation

- **Allocated can only be changed for inactive partitions (APIVM2) or undefined partitions (NEWPARTN)**

- **Changing Allocated results in loss of data**

- **Changing allocations for an inactive partition:**

Manage Flash Allocation - Change zFlash Allocation

- **Changing allocations for an active partition (notice only the maximum can be altered):**

SHARE Session 13704

zAware

- zAware Overview
  - ► Integrated, robust set of Firmware and analytic applications that provide out-of-band monitoring and machine learning of operating system health.

- Customer-visible logical partition
  - ► could be more than one partition
  - ► However, considered monitoring program
    - Can tolerate short outages
    - Generally expect to only define one zAware partition

- Similar in many ways to Coupling Facility
  - ► zAware application loaded from the Support Element Hard Disk
  - ► zAware application is firmware
    - Separate EC stream
    - Updated like all other firmware

- Initial setup as Activation Image Profile (see next slide)
- Dynamic changes possible through Image Details panel (see slide 40)

Image Profile – Firmware tab (zAware options)

- *Define Master user ID and password*
- *Define I/O access for zAware partition to be able to monitor other LPARs in one or more CPCs*

SHARE Session 13704

Activate the Partition / Dynamic Changes to the zAware configuration

- **Activate the partition using the** Activate **task, just like all other partitions.**

- **Dynamic changes to the zAware partition can be made by using a new tab on the image details:**

- Running system always updated
- Can also update the image profile or not ("Save to Profile" checkbox)
- If you just want to change just the image profile, you must use the **Customize Activation Profiles** Task or equivalent (such as WebServices APIs).

zBX 2458 Model 003

► zBX 2458 Model 002

- Current model supported on z196 and z114

- zBX 2458 Model 002 not supported on zEC12

► zBX 2458 Model 003

- Enables potential of 20 Gb Ethernet bandwidth via link aggregation
  - Doubled 10 Gb cables between BladeCenter 10Gb switch and 10 Gb TOR (Top of Rack) switch
  - Doubled 10 Gb cables between BC 10 GB switches

- Only supported on zEC12, not z196 or z114

- ISAOPT (IBM Smart Analytics Optimizer) not supported on Model 003
  - Migration to IBM DB/2 Analytics Accelerator
    - ♦ Not part of zBX

► Separate LICCC controls for System Processors (CPs, IFLs, etc.) and zBX blade high water marks

- FoD (Feature on Demand)
  - Entitlement controls for each blade type
  - POWER Blade, System x Blade, DataPower XI50z

- Should help with MESes being installed

- Only supported with Model 003

zBX Hardware LifeCycle

► AMMe support

- New version of Advanced Mgmt Module in IBM BladeCenter
- BladeCenter H AMM End of Life

► Cobia3

- Broadcom 10 Gb Ethernet adapter Cobia2 End of Life
- Only in System x Blade

► Currently, no new blade hardware supported

- Same Model 002 blade hardware for
  – System x Blade
  – POWER Blade
  – DataPower XI50z
- See Backup charts for configs

SHARE Session 13704

zBX Firmware LifeCycle

► All zBX Firmware changed from Model 002 to Model 003

- 2 exceptions
  - Recent MCL on Model 002
- Intent is to release updated code with each new GA
  - Stay current for support
  - Includes problem fixes
- Strategy to limit change post GA
  - Limit MCLs
  - Will release MCLs for critical field problems
  - DataPower XI50z to have more frequent updates
    - ♦ Periodic refreshes of selected minor code releases
    - ♦ Major code release to come 4 months post GA
      -- Allows flexibility to roll back to previous major level from previous GA

zBX Firmware Changed for zEC12 GA1

► IBM BladeCenter

- AMM
- BNT 1 Gb Ethernet switch
- BNT 10 Gb Ethernet switch
- QLogic Fiber Channel switch

► Juniper TOR (Top Of Rack) Switches

- 1 Gb Ethernet (**didn't change, exception 1**)
- 10 Gb Ethernet

► POWER Blade

- Hypervisor environment
- Platform FW (FSP, PHYP, Partition FW)
- QLogic Fiber Channel adapter
- QLogic Converged Network Ethernet adapter (**didn't change, exception 2**)

zBX Firmware Changed for zEC12 GA1 (cont.)

► System x Blade

- Hypervisor environment

- Platform FW (uEFI, IMM, Diagnostics, FPGA)

- Broadcom Ethernet adapter

- QLogic Fiber Channel adapter

► DataPower XI50z

- 4 Loads Types

  – Base

  – Base + DataDirect (Database Connectivity (ODBC) feature from DataDirect)

  – Base + Tibco (Tibco-EMS feature)

  – Base + DataDirect + Tibco

zBX Movement

► Support to carry zBX Virtualization / Configuration data to new location in same ensemble

  ● New zEC12 HMC process for all zBX or DataPower XI50z data

► Variations (pictures to follow)

  ● Upgrade from z196/z114 to zEC12

    – Most likely scenarios

      ♦ MES Upgrade z196 (with zBX) to zEC12 (with zBX).
        -- Frame roll, MES upgrade with zBX moving forward with CEC. (Same serial #)

      ♦ Technology Exchange (TE) or Migration Offering (MO) for z196 (with zBX) to zEC12 (with zBX).
        -- zBX moves forward immediately.
        -- CEC has different serial number.

    – Other scenarios

      ♦ MES Upgrade z196 (with zBX) to zEC12 (w/o zBX).
        -- Donor zBX to different system
        -- zBX moves to an existing or new build zEC12.

      ♦ MES Upgrade z196 (without zBX) to zEC12 (with zBX).
        -- Donor zBX from another system or Mfg
        -- zBX either new or moving from another z196 or zEC12.

  ● zBX Movement from zEC12 to zEC12

► Similar scenarios for DataPower XI50z blade(s)

CEC MES Upgrade (same S/N)
zBX sourced from same z196 S/N or new Model 3

z196 **zBX**   **zEC12** **zBX**

S/N 1   **2**   S/N 1   **3**

z196   **zEC12** **zBX (new build)**

S/N 1   S/N 1   **3**
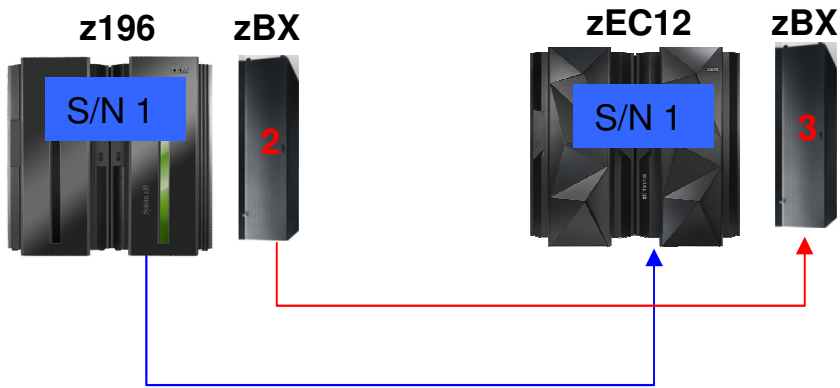
zEC12 GA1
- BAU
- Data saved via save upgrade data
- Model 2 -> Model 3 conversion
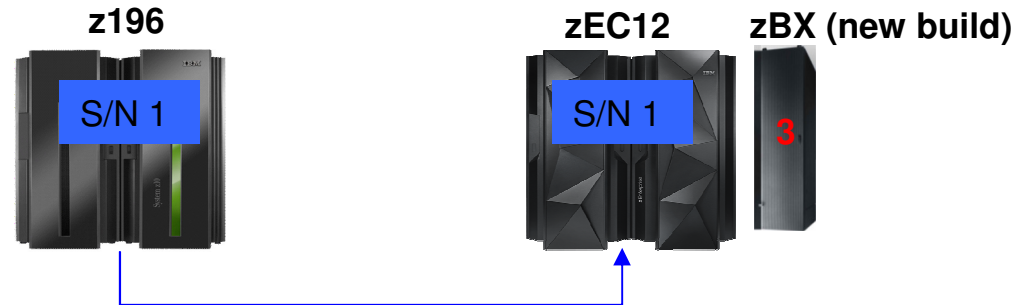
zEC12 GA1
- BAU
- zBX comes in as Model 3

Technology Exchange / Migration Offering (different CEC S/N) zBX sourced from same z196

zEC12 S/N 2

zEC12 S/N 5

zEC12 S/N 5 **zBX** 3

z196 S/N 1 **zBX** 2

zEC12 S/N 2 **zBX** 3

z196 S/N 3 **zBX** 2

zEC12 S/N 4
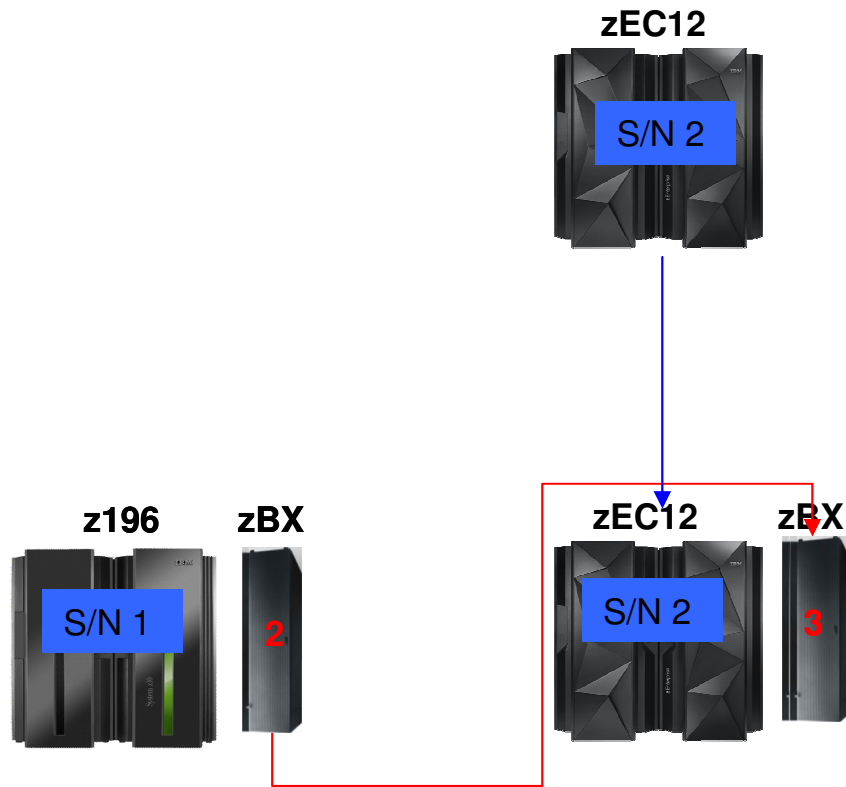
zEC12 GA1
- zEC12 HMC task moves zBX Model 2 to zBX Model 3
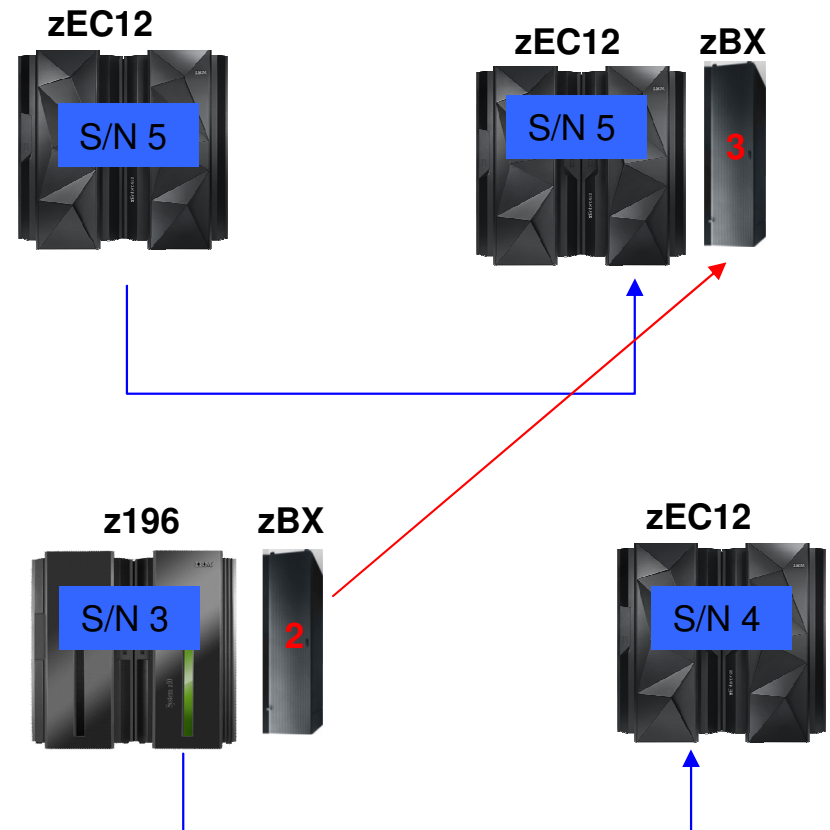
zEC12 GA1   (Donor)
- zEC12 HMC task moves zBX Model 2 to zBX Model 3 on another zEC12

zBX Movement: zEC12 -> zEC12

SHARE Session 13704
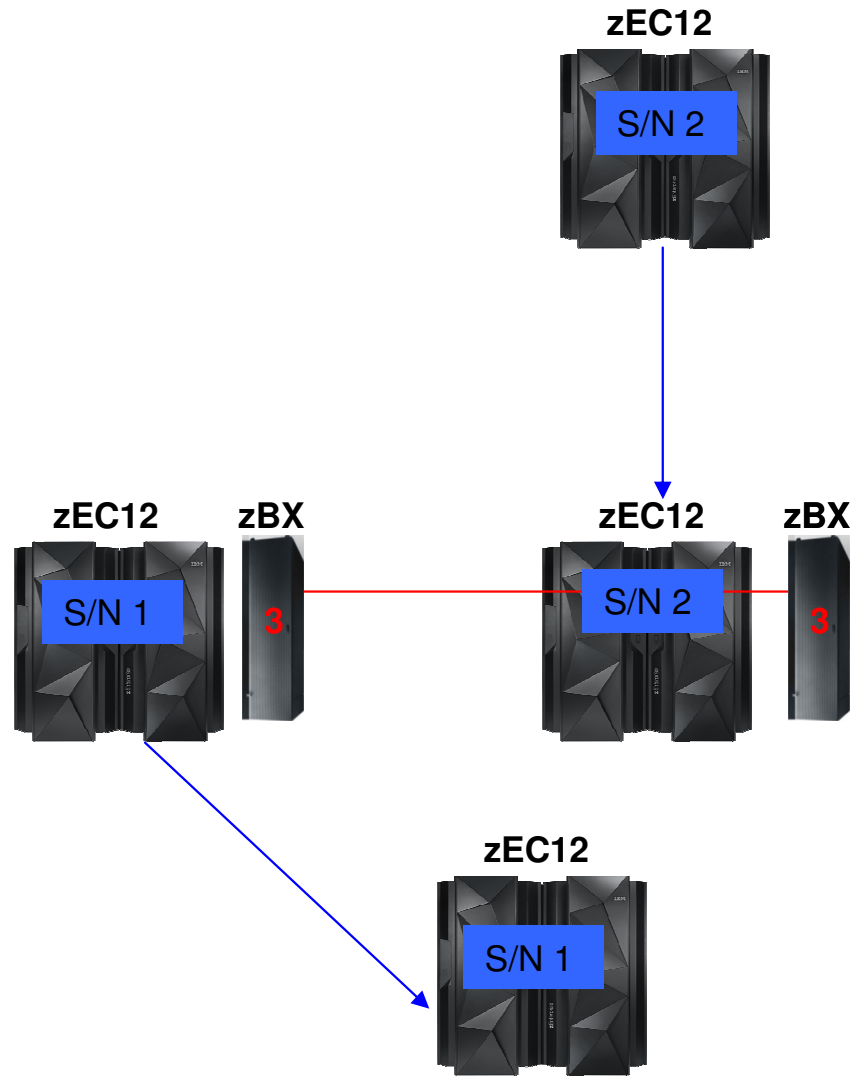
Thank you for your time and consideration….

Brian Valentine

HMC/SE Team

Contact for any Questions:

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

Additional Materials

- **Other SHARE Sessions of Related Interest**

- **zBX POWER & System x Blade Configurations**

- **Registering for IBM Resource Link Access**

- **Notable HMC/SE Publications**

Other SHARE Sessions of Related Interest

- ► August 13th, 12:15 – 1:15 PM

  - **14263**: *Roundtable Discussion: The Many Faces of System Z*

- ► August 13th, 3:00 – 4:00 PM

  - **13836**: *What's New in BCPii in z/OS 2.1? Full REXX Support and Faster Data Retrieval*

- ► August 14th, 8:00 – 9:00 AM

  - **13707**: *Introducing the new IBM zEnterprise BC12 (zBC12) and EC12 Updated Hardware: Processor, Memory, System Structure, and Installation Planning*

- ► August 14th, 9:30 – 10:30 AM

  - **14211**: *Workload Management Update for z/OS 2.1 and 1.13*

- ► August 14th, 1:30 – 2:30 PM

  - **13584**: *zFlash Setup, Management and Configuration*

- ► August 14th, 3:00 – 4:00 PM

  - **13569**: *IBM zAware - Using Analytics to Improve System z Availability*

- ► August 14th, 3:00 – 4:00 PM

  - **14246**: *z/OS 2.1 CPC-wide Dynamic Activate*

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

Registering for IBM Resource Link Access

- **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.**

Reference Documentation

- **Available from "Books" group of Classic Style UI and the Welcome page of the Tree Style UI (& IBM Resource Link: Library->zEC12->Publications)**
  - ▶ **IBM SC28-6919: Hardware Management Console Operations Guide (Version 2.12.0)**
  - ▶ **IBM SC28-6920: Support Element Operations Guide (Version 2.12.0)**
  - ▶ **IBM SB10-7030: Application Programming Interfaces**
  - ▶ **IBM SC28-2605: Capacity on Demand User's Guide**
  - ▶ **IBM SB10-7154: Common Information Model (CIM) Management Interfaces**
  - ▶ **IBM SB10-7156: PR/SM Planning Guide**
  - ▶ **IBM SA22-1088: System Overview**
  - ▶ **IBM SC27-2623: Advanced Workload Analysis Reporter (IBM zAware) Guide**
- **Available from IBM Resource Link: Library->zEC12->Technical Notes**
  - ▶ **System z Hardware Management Console Security**
  - ▶ **System z Hardware Management Console Broadband Remote Support Facility**
  - ▶ **System z Activation Profile Update and Processor Rules**

Trademarks

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

DS8000	PR/SM	Z9*
ECKD	Redbooks*	z10
FICON*	System x*	z10 Business Class
GDPS*	System z*	z10 EC
GPFS	System z9*	z/OS*
HiperSockets	System z10*	z/VM*
IBM*	Tivoli	zEnterprise
IBM (logo)*	WebSphere*	
InfiniBand*		
Parallel Sysplex*		

The following are trademarks or registered trademarks of other companies.

Adobe, the Adobe logo, PostScript, and the PostScript logo are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States, and/or other countries.
Cell Broadband Engine is a trademark of Sony Computer Entertainment, Inc. in the United States, other countries, or both and is used under license therefrom.
Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.
Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.
Intel, Intel logo, Intel Inside, Intel Inside logo, Intel Centrino, Intel Centrino logo, Celeron, Intel Xeon, Intel SpeedStep, Itanium, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.
UNIX is a registered trademark of The Open Group in the United States and other countries.
Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.
ITIL is a registered trademark, and a registered community trademark of the Office of Government Commerce, and is registered in the U.S. Patent and Trademark Office.
IT Infrastructure Library is a registered trademark of the Central Computer and Telecommunications Agency, which is now part of the Office of Government Commerce.

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

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

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

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

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

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

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

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

Please see http://www.ibm.com/legal/copytrade.shtml for copyright and trademark information.