IBM System z Hardware Management Console (HMC) 2.12.0

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SHARE in San Francisco

Brian Valentine
HMC Development
bdvalent@us.ibm.com
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HMC System support

- The new HMC Version 2.12.0 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.

<table>
<thead>
<tr>
<th>Machine Family</th>
<th>Machine Type</th>
<th>Firmware Driver</th>
<th>SE Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>zEC12</td>
<td>zEC12</td>
<td>12</td>
<td>2.12.0</td>
</tr>
<tr>
<td>z114</td>
<td>2818</td>
<td>93</td>
<td>2.11.1</td>
</tr>
<tr>
<td>z196</td>
<td>2817</td>
<td>93</td>
<td>2.11.1</td>
</tr>
<tr>
<td>z10 BC</td>
<td>2098</td>
<td>79</td>
<td>2.10.2</td>
</tr>
<tr>
<td>z10 EC</td>
<td>2097</td>
<td>79</td>
<td>2.10.2</td>
</tr>
<tr>
<td>z9 BC</td>
<td>2096</td>
<td>67</td>
<td>2.9.2</td>
</tr>
<tr>
<td>z9 EC</td>
<td>2094</td>
<td>67</td>
<td>2.9.2</td>
</tr>
<tr>
<td>z890</td>
<td>2086</td>
<td>55</td>
<td>1.8.2</td>
</tr>
<tr>
<td>z990</td>
<td>2084</td>
<td>55</td>
<td>1.8.2</td>
</tr>
<tr>
<td>z800</td>
<td>2066</td>
<td>3G</td>
<td>1.7.3</td>
</tr>
<tr>
<td>z900</td>
<td>2064</td>
<td>3G</td>
<td>1.7.3</td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Largest Central Storage Amount Specified (Initial and Reserved)</th>
<th>Storage Granularity Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCSA ≤ 128 GB</td>
<td>256 MB</td>
</tr>
<tr>
<td>128 GB &lt; LCSA ≤ 256 GB</td>
<td>512 MB</td>
</tr>
<tr>
<td>256 GB &lt; LCSA ≤ 512 GB</td>
<td>1024 MB (1 GB)</td>
</tr>
<tr>
<td>512 GB &lt; LCSA ≤ 1024 GB</td>
<td>2048 MB (2 GB)</td>
</tr>
</tbody>
</table>
zEC12 Hardware Support

- zEC12 Memory Boundary / Granularity (cont.)

![Image of Customize Image Profiles: P33 : LP1B : Storage window]

2 GB granularity
**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‘

Deleted for zEC12
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

![Outbound Connectivity Settings](image)
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
  - IE (Internet Explorer) – Version 8+
  - Firefox – Version 10+
  - Google Chrome – Version 20 ➞ New Browser Type supported
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
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)
Monitors Dashboard Support for Crypto
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

Support Element

New Icon

New Hardware Type
Crypto Express4S – Crypto Image View
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 GA1.
    - UDX for EP11 not part of initial zEC12 GA1.
Crypto Express4S – EP11

![Image of P0000p30: Cryptographic Configuration]

<table>
<thead>
<tr>
<th>Select</th>
<th>Number</th>
<th>Status</th>
<th>Crypto Serial Number</th>
<th>Type</th>
<th>Operating mode</th>
<th>TKE Commands</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑</td>
<td>0</td>
<td>Configured</td>
<td>990000680</td>
<td>X3 Coprocessor</td>
<td>IBM Default</td>
<td>Permitted</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Configured</td>
<td>990000677</td>
<td>X3 Accelerator</td>
<td>IBM Default</td>
<td>Not supported</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Configured</td>
<td>90006440</td>
<td>X3 Coprocessor</td>
<td>IBM Default</td>
<td>Permitted</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Configured</td>
<td>90006439</td>
<td>X3 Accelerator</td>
<td>IBM Default</td>
<td>Not supported</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Configured</td>
<td>16BAL102</td>
<td>X4 EP11 Coprocessor</td>
<td>IBM Default</td>
<td>Permitted</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Configured</td>
<td>16BA6153</td>
<td>X4 EP11 Coprocessor</td>
<td>IBM Default</td>
<td>Permitted</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Configured</td>
<td>16C22359</td>
<td>X4 CCA Coprocessor</td>
<td>IBM Default</td>
<td>Permitted</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Configured</td>
<td>16C22361</td>
<td>X4 Accelerator</td>
<td>IBM Default</td>
<td>Not supported</td>
</tr>
</tbody>
</table>

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

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

Zeroize All Test RNG/CIS on All UDX Configuration... Refresh Cancel Help
Crypto Express4S – EP11

- **Displayed via Crypto Type Configuration pushbutton**

- **Displayed via UDX Configuration pushbutton**

- **Up to 4 UDX files allowed**

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

UDX Configuration - P0000P30

- **Select Import UDX File**
- **Image Time Stamp**
- **Image Name**

- **Import**
- **Erase**

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

<table>
<thead>
<tr>
<th>Select</th>
<th>Number</th>
<th>Type</th>
<th>Status</th>
<th>Image Activated</th>
<th>Image Time Stamp</th>
<th>Image Name</th>
<th>Pending Reset to IBM Default</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>X3 C coprocessor</td>
<td>Configured</td>
<td>IBM Default</td>
<td>1/19/12 5:00 PM</td>
<td>4.30z CCA</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>X3 C coprocessor</td>
<td>Configured</td>
<td>IBM Default</td>
<td>1/19/12 5:00 PM</td>
<td>4.30z CCA</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>X4 C coprocessor</td>
<td>Configured</td>
<td>IBM Default</td>
<td>3/16/12 6:42 PM</td>
<td>4.30z CCA</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>X4 C coprocessor</td>
<td>Configured</td>
<td>IBM Default</td>
<td>3/16/12 6:42 PM</td>
<td>4.30z CCA</td>
<td>No</td>
</tr>
</tbody>
</table>

UDX file to activate: IQVY3430.UDX_430zrc27_30mar2012.CCA.UDX

- **Activate**
- **Reset to IBM Default**

- OK
- Refresh
- Cancel
- Help
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 not 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

New “Bundle level” field
Install and Activate by MCL Bundle Target

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

  - 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
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 of the current day not displayed on initial display
Environmental Efficiency Statistics Task - zEC12

- Selection made at 11 AM on July 11<sup>th</sup>, initial displays includes most recent 24 hours data
- 11 AM of current day to 11 AM of previous day

![Image showing Environmental Efficiency Statistics interface]

**New “Starting Time” field**

<table>
<thead>
<tr>
<th>Date and Time</th>
<th>Power Consumption (kW)</th>
<th>Power Consumption (Btu/hr)</th>
<th>Temperature (°C)</th>
<th>Temperature (°F)</th>
<th>CP Utilization (%)</th>
<th>Blade CPU Utilization (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jul 10, 2012 11:00:00 AM</td>
<td>0.961</td>
<td>3279</td>
<td>25.0</td>
<td>77.0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Jul 10, 2012 12:00:00 PM</td>
<td>1.000</td>
<td>3412</td>
<td>26.0</td>
<td>78.8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Jul 10, 2012 01:00:00 PM</td>
<td>1.000</td>
<td>3412</td>
<td>26.0</td>
<td>78.8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Jul 10, 2012 02:00:00 PM</td>
<td>1.000</td>
<td>3412</td>
<td>26.0</td>
<td>78.8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Jul 10, 2012 03:00:00 PM</td>
<td>1.000</td>
<td>3412</td>
<td>26.0</td>
<td>78.8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Jul 10, 2012 04:00:00 PM</td>
<td>1.000</td>
<td>3412</td>
<td>26.0</td>
<td>78.8</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Total: 25

**Chart Content:** Power Consumption (kW)
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):
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

Customize Image Profiles: P92:ZAWARE1 : ZWARE1 : Firmware

- Host name: zAware1
- Master user ID: admin
- Master password: 
- Confirm master password: 

Network Adapters

Select | CHPID | VLAN | IP address | Mask/Prefix
-- | -- | -- | -- | --
| | 12 | | 9.12.41.185 | 24
| | 16 | | fec0::11.22.33.44.242 | 116
| | 16 | | 192.168.50.242 | 24

Default gateway: 9.12.41.1

DNS Servers

Select | IP address
-- | --
| | 9.12.16.2
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
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

zEC12 GA1
- BAU
- Data saved via save upgrade data
- Model 2 -> Model 3 conversion

zbX comes in as Model 3
Technology Exchange / Migration Offering (different CEC S/N)

zBX sourced from same z196

### 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
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

► February 5th, 11:00 AM – 12:00 PM
  ● 13035: BCPii Programming Beyond the Basics for the z/OS System Programmer

► February 5th, 12:15 – 1:15 PM
  ● 12255: The HMC Is a Fantastic Feature of the zEnterprise, but What Mistakes Are You Making Securing It?

► February 5th, 1:30 – 2:30 PM
  ● 13086: zFlash Introduction, Uses, and Benefits

► February 5th, 3:00 – 4:00 PM
  ● 12807: HMC Security Basics & Best Practices

► February 5th, 3:00 – 4:00 PM
  ● 13057: zFlash Setup, Management and Configuration

► February 6th, 9:30 – 10:30 AM
  ● 13063: IBM zAware – Using Analytics to Improve System z Availability

► February 6th, 11:00 AM – 12:15 PM
  ● 13066: Setting up IBM zAware – Step by Step
Other SHARE Sessions of Related Interest

► February 6th, 3:00 – 4:00 PM
  ● **12749 & 12750**: *Unified Resource Manager: HMC Ensemble Hands-on Labs*

► February 7th, 3:00 – 4:00 PM
  ● **12948**: *z/OS Tuning Basics: Exploring the World of Hybrid, Blades, and the zManager*

► February 7th, 3:00 – 4:00 PM
  ● **12859**: *zEnterprise System - z/OS IEDN Network Design & Implementation*

► February 7th, 4:30 – 5:30 PM
  ● **13091**: *zBX Capacity Sizing using IBM zBladeSizer and IBM zBladeEXTR*
### POWER Blade Required Configurations


<table>
<thead>
<tr>
<th>PS701 Express blade</th>
<th>Feature Code</th>
<th>Config 1</th>
<th>Config 2</th>
<th>Config 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor 3.0 GHz@150W</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processor Activations</td>
<td>8411</td>
<td>4</td>
<td>4</td>
<td>4</td>
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<tr>
<td>(quantity should equal 8 total)</td>
<td>8412</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Memory kits</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>8 GB (2 x 4GB)</td>
<td>8208</td>
<td>4</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>16 GB (2 x 8GB)</td>
<td>8209</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>HDD 300GB</td>
<td>8274</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>CFFh 10Gb QLogic Ethernet</td>
<td>8275</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>CIOv 8Gb QLogic FiberChannel</td>
<td>8242</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>PowerVM™ Enterprise Edition</td>
<td>5228</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Required SW PID</th>
<th>Feature Code</th>
<th>Config 1</th>
<th>Config 2</th>
<th>Config 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW License PID 5765-PVE</td>
<td>0001</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>1 YR SWMA PID (5771-PVE) or</td>
<td>1191</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 YR SWMA PID (5773-PVE)</td>
<td>0999</td>
<td></td>
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</tr>
</tbody>
</table>

Choose quantity of eight for either one year or three year (8 equates to one per activated processor).
## System x Blade Required Configurations


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

- 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 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
Reference Documentation (cont.)

- SHARE Conference in Orlando, August 2011
  - “IBM System z Hardware Management Console (HMC) 2.11.0 (including some 2.11.1 Updates)”
  - Presenter: Brian Valentine
  - Presentation url:
    - http://www.share.org/d/do/4297

- SHARE Conference in Orlando, August 2011
  - “IBM zBX (System z BladeCenter Extension) HMC (Hardware Management Console) Hardware & Operational Management”
  - Presenter: Brian Valentine
  - Presentation url:
    - http://www.share.org/d/do/4218
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<tr>
<td>ECKD</td>
<td>Redbooks*</td>
<td>z10</td>
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<tr>
<td>FICON*</td>
<td>System x*</td>
<td>z10 Business Class</td>
</tr>
<tr>
<td>GDPS*</td>
<td>System z*</td>
<td>z10 EC</td>
</tr>
<tr>
<td>GPFS</td>
<td>System z9*</td>
<td>z/OS*</td>
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<tr>
<td>HiperSockets</td>
<td>System z10*</td>
<td>z/VM*</td>
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<tr>
<td>IBM*</td>
<td>Tivoli</td>
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<td>IBM (logo)*</td>
<td>WebSphere*</td>
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