HMC V8R810 & V8R820 – for POWER8 adds new Management capabilities, Performance Capacity Monitor and much more.

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HMC V8 R8.1.0 agenda

- Introduce new features and enhancements
  - HMC V8.820 New GUI Tech Preview

- Upgrade Planning
  - HMC machine type model support
  - Supported upgrade paths

- Console Management
  - Classic or Enhanced
  - New install wizard

- PowerVM management

- LPAR management/Templates

- Performance and Capacity Monitor
PowerVM Management Stack

**Infrastructure as a Service with IBM SmartCloud**
- End-user self-service provisioning of IaaS with SCE
- Service catalog with virtual systems and applications
- Subscriber and account management (multi-tenancy)
- Delivered as Entry, Provisioning and Orchestration

**Virtualization Management with PowerVC**
- Leadership Virtual Systems Management for PowerVM
- Virtual Image Management and Deployment
- Resource Pooling and Dynamic VM Placement
- On-going optimization and VM resilience

**Power Systems Hardware Management Console**
- PowerVM Configuration – Virtualization Setup
- Hardware and firmware management for Power
- Hardware and firmware configuration and controls
- Service, support and update management

*Providing comprehensive and consistent management experience for rack server, blades and PureFlex*
Key Elements to Enhance Usability

Templates enablement – HMC 8.10 SP1 9/2014
Enable template capture and deploy for quick ‘best practice’ system and partition deploy. Allows for simplified / automated initial system deploy.

One-Touch VIOS Deploy HMC 8.10 SP1 9/2014
Simplify deploy of a VIOS. Aligned with System Templates, this allows automated system deploy.

Integrated Performance & Capacity Metrics HMC 8.10 SP1 9/2014
Provide full PowerVM performance and capacity metrics via a single touch-point (HMC).

Initial PowerVM REST-API - HMC 7.8 8/2013
Additional REST-APIs in HMC V8 providing rich access to most PowerVM function – including the VIOS

No-Touch VIOS Management – Full APIs HMC 8.10 SP1 9/2014
Full API-Based management interfaces for the VIOS. Removes need for VIOS inventory polling.
HMC / K2 Tasks

Deploy System Template
- Capture system virtualization configuration in a template from existing system
- HMC V8.820 system virtualization starter template library

Deploy Partition Template
- Use a starter partition template from the HMC template library
- Capture partition configuration from an existing partition and deploy on system

Manage PowerVM
- Create a new virtual IO server
- View all virtual networks and create a new internal or bridged network
- View the virtual network diagram mapping physical devices through virtual networks to partitions

Manage Partition
- Modify partition properties (general, memory, processor, physical IO)
- View all virtual network connections and add new connection
- View all virtual storage and add new device (virtual SCSI, FC)

Performance and Capacity Monitoring
- View the current system capacity and utilization (server trend, processor, and memory) (including partitions and virtual IO servers)
- View the virtual network and storage utilization
HMC V8 New Features

• POWER8 support

• Option for Classic or Enhanced interface
  ▪ Enhanced interfaced added with V8.810 SP1
    • New PowerVM management – No touch VIOS
    • Template support – capture and deploy

• Events Manager for Call Home – vet data sent to IBM

• More secure ciphers - NIST 800-131a

• New IBM i 5250 console emulator
  ▪ Now uses IBM i Access Client Solutions (ACS) 5250 emulator

• Performance and Capacity Monitoring" GUI
  • Reports on Managed System's resources (CPU, Memory, IO) utilization.
  • To view the System Firmware and IO utilization reports
    • VIOS 2.2.3 or later
    • For POWER7/7+ - System Firmware 780 or later
HMC V8 R8.1.1

- **Server Management**
  - HMC & IVM support for POWER 8 Servers (No SDMC)

- **Console Management**
  - New install wizard
  - 64 bit Linux (MCP 7)
  - Support added for Chrome browser
  - Improve log retention (through file system resizing, rotation changes & content reduction)

- **Virtualization Management**
  - Usability Enhancements in HMC V8 810 Service Pack 1
    - System and Partition Templates
      - Partition capture and deploy
    - New UI
      - GUI for PowerVM management of server, VIOS, and LPARs
    - GA of REST APIs
HMC Upgrade Planning

- HMC V8.810 supported upgrade paths – N-2
  - V7R7.8.0.0 plus PTF MH01402 or V7R7.8.0.1, or later - Or
  - V7R7.9.0.0 or later

- HMC V8.820 supported upgrade paths – N-2
  - V7 R7.9.0 or V8 R8.1.0 be upgraded to. This requirement is enforced at install.

- Machine-Type-Models (MTM) supported
  7042-CR5 or later model rack-mount HMC
  7042-C08 Deskside HMC

- Memory
  - Requires 2GB, 4GB min for Enhanced GUI, 8GB recommended. (CR7 and CR8 start with base 8GB)
    - **Note:** If the HMC has 2 GB memory installed it will not display the new User Interface.

- Maximum of 48 servers (non 595/795 models) / Max of 32 595/795 servers
- Maximum of 1024 VMs

- **POWER5 servers are not supported**
- Removed L2TP (Level 2 Tunneling Protocol) for modem support
## CR8 Comparison to CR7 & CR6

<table>
<thead>
<tr>
<th>Feature</th>
<th>CR6</th>
<th>CR7</th>
<th>CR8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Westmere-EP</td>
<td>Intel Xeon E5 (Sandy Bridge)</td>
<td>Intel Xeon E5 v2 (Ivy Bridge)</td>
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<tr>
<td>Memory</td>
<td>4 GB</td>
<td>8 – 16 GB</td>
<td>8 – 16 GB</td>
</tr>
<tr>
<td>DASD</td>
<td>500 GB</td>
<td>500 GB</td>
<td>500 GB</td>
</tr>
<tr>
<td>RAID 1</td>
<td>Optional in 4Q2012</td>
<td>Default</td>
<td>Default</td>
</tr>
<tr>
<td>Multitech Internal Modem</td>
<td>Defaulted</td>
<td>Optional</td>
<td>None</td>
</tr>
<tr>
<td>Integrated Networks</td>
<td>2 on Main Bus + 2 on expansion slot</td>
<td>4 x 1 GbE</td>
<td>4 x 1 GbE</td>
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<tr>
<td>I/O Slots</td>
<td>1 PCI Express 2.0 slot</td>
<td>1 PCI Express 3.0 slot</td>
<td>1 PCI Express 3.0 slot</td>
</tr>
<tr>
<td>USB Ports</td>
<td>2 front / 4 back / 1 Internal</td>
<td>2 front / 4 back / 1 Internal</td>
<td>2 front / 4 back / 1 Internal</td>
</tr>
</tbody>
</table>

CR5 is supported, and comes with 4 x 1GB dims. No option for RAID 1
## HMC Rack and Desk-side Models

<table>
<thead>
<tr>
<th>HMC Model</th>
<th>Base memory</th>
<th>Memory Feature ?</th>
<th>Disk Size</th>
<th>Last Supporting Release</th>
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<tr>
<td>7315-CR2</td>
<td>1 GB</td>
<td>No</td>
<td>40 GB</td>
<td>V7 R7.6.0 (2H 2012)</td>
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<td>7310-CR2</td>
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<tr>
<td>7315-CR3</td>
<td>1 GB</td>
<td>Yes (withdrawn)</td>
<td>80 GB</td>
<td>V7 R7.9.0 (1H 2014)</td>
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<tr>
<td>7310-CR3</td>
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<td></td>
<td></td>
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<tr>
<td>7310-CR4</td>
<td>1 GB</td>
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<td>80 GB</td>
<td>V7 R7.9.0 (1H 2014)</td>
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<tr>
<td>7042-CR4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7310-CR4 / 7042-CR4 (proc refresh)</td>
<td>1 GB</td>
<td>Yes (withdrawn)</td>
<td>250 GB</td>
<td>V7 R7.9.0 (1H 2014)</td>
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<tr>
<td>7042-CR5</td>
<td>4 GB</td>
<td>No</td>
<td>300 GB</td>
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<td>7042-CR8</td>
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<td>500 GB</td>
<td>TBD</td>
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<tr>
<td>7310-C05</td>
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<td>No</td>
<td>80 GB</td>
<td>V7 R7.9.0 (1H 2014)</td>
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<td>7310-C06</td>
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<td>V7 R7.9.0 (1H 2014)</td>
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<tr>
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<td>V7 R7.9.0 (1H 2014)</td>
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<tr>
<td>7042-C08</td>
<td>4 GB</td>
<td>No</td>
<td>250 GB</td>
<td>TBD</td>
</tr>
</tbody>
</table>
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**System i HMC updates: Corrective service**

- [Announcing PTF MH01455 Service Pack 1 for HMC Version 8 Release 8.2.0](#)
  Please click on the above link to read details about PTF MH01455.

- [Announcing PTF MH01456 Service Pack 7 for HMC Version 7 Release 7.3.0](#)
  Please click on the above link to read details about PTF MH01456.

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December 2014 – the Poodle Security exposure was addressed: includes fixes for the following security vulnerabilities:

HMC Fixes:
- V8.820.0 – MH01486
- V8.810.1 – MH01481
- V7.790.1 – MH01484
- V7.780.2 – MH01432

NOTE:
These PTFs disable SSLv3 on the HMC user interfaces. After applying the PTF, remote access to the HMC (Browser, ASM, GUI, vterm, and pegasus) will require clients that support TLSv1.0. IBM i secure remote 5250 console will require TLSv1.1 or higher. The PTF also disables all ciphers except TLSv1.2 on HMC/FSP connections where the server firmware level supports it.

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Summary
GNU C library (glibc) vulnerability that has been referred to as GHOST affects Power Hardware Management Console.

Vulnerability Details
CVEID: CVE-2015-0235

DESCRIPTION: The gethostbyname functions of the GNU C Library (glibc) are vulnerable to a buffer overflow. By sending a specially crafted, but valid hostname argument, a remote attacker could overflow a buffer and execute arbitrary code on the system with the privileges of the targeted process or cause the process to crash. The impact of an attack depends on the implementation details of the targeted application or operating system. This issue is being referred to as the "Ghost" vulnerability.

CVSS Base Score: 7.6
CVSS Temporal Score:
   See http://xforce.iss.net/xforce/xfdb/100386
CVSS Environmental Score*: Undefined
CVSS Vector: (AV:N/AC:H/Au:N/C:C/I:C/A:C)

Affected Products and Versions

<table>
<thead>
<tr>
<th>VRMF</th>
<th>APAR</th>
<th>Remediation/First Fix</th>
</tr>
</thead>
<tbody>
<tr>
<td>V7.7.3.0 SP7</td>
<td>MB03838</td>
<td>Apply PTF MH01456</td>
</tr>
<tr>
<td>V7.7.7.0 SP4</td>
<td>MB03874</td>
<td>Apply PTF MH01489</td>
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<tr>
<td>V7.7.8.0 SP2</td>
<td>MB03840</td>
<td>Apply PTF MH01458</td>
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<td>V7.7.9.0 SP1</td>
<td>MB03875</td>
<td>Apply PTF MH01490</td>
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<tr>
<td>V8.8.1.0 SP1</td>
<td>MB03879</td>
<td>Apply PTF MH01494</td>
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<tr>
<td>8.8.2.0 SP1</td>
<td>MB03883</td>
<td>Apply PTF MH01495</td>
</tr>
</tbody>
</table>
Supported combinations for HMC/Server code


View by Machine-Type-Model

POWER code matrix

IBM Systems with POWER7 processors

The following tables list currently supported firmware
POWER7 systems, as well as the compatibility of Hardware
Systems Director Management Console (SDMC) firmware
specific recommendations within a Release Level, per

NOTE:
N/A = Not Applicable - Release level is not applicable

For MTMs 9117-MMB and 9179-MHB

Important notice
The POWER code matrix “Latest release levels” web page has been removed from
this website.

IBM Fix Central provides access to product updates, fixes and readme files. Readme files
contain support information. Please update your bookmark to Fix central for product
downloads and readme information.

IBM Fix Central

The Fix Level Recommendation Tool (FLRT) provides cross-product compatibility information
and fix recommendations for IBM products. Use FLRT to plan upgrades of key components
or to verify the current health of a system.

FLRT (Fix Level Recommendation Tool)
New reference for HMC Support lifecycle information

[https://www-304.ibm.com/webapp/set2/flrt/liteTable?prodKey=hmc](https://www-304.ibm.com/webapp/set2/flrt/liteTable?prodKey=hmc) or firmware
[https://www-304.ibm.com/webapp/set2/flrt/liteTable?prodKey=fw](https://www-304.ibm.com/webapp/set2/flrt/liteTable?prodKey=fw)

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<th>Version</th>
<th>Recommended Update</th>
<th>Recommended Upgrade</th>
<th>Release Date</th>
<th>EoSPS Date</th>
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<tr>
<td>V8 R820</td>
<td>none</td>
<td>none</td>
<td>2014.11.18</td>
<td>NA</td>
</tr>
<tr>
<td>V8 R810 SP1</td>
<td>none</td>
<td>V8 R810 SP1</td>
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<td>V8 R810</td>
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<td>NA</td>
</tr>
<tr>
<td>V7 R790 SP1</td>
<td>none</td>
<td>V8 R810 SP1</td>
<td>2014.09.08</td>
<td>NA</td>
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<tr>
<td>V7 R790</td>
<td>V7 R790 SP1</td>
<td>V8 R810 SP1</td>
<td>2014.09.18</td>
<td>NA</td>
</tr>
<tr>
<td>V7 R780 SP1</td>
<td>none</td>
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<td>2014.03.10</td>
<td>2015.12.31</td>
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<td>V7 R780</td>
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<td>V7 R790 SP1</td>
<td>2013.12.06</td>
<td>2015.12.31</td>
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<tr>
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<td>2015.02.28</td>
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<td>V7 R770 SP4</td>
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<td>2013.12.11</td>
<td>2015.02.28</td>
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<td>V7 R770 SP4</td>
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<td>V7 R770</td>
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<td>V7 R790 SP1</td>
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<td>V7 R760</td>
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<td>2014.10.31</td>
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<td>V7 R750 SP2</td>
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<td>V7 R790 SP1</td>
<td>2013.02.28</td>
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<td>V7 R790 SP1</td>
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<td>V7 R790 SP1</td>
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<td>2014.05.31</td>
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<td>V7 R740 SP3</td>
<td>none</td>
<td>V7 R790 SP1</td>
<td>2012.10.18</td>
<td>2013.10.31</td>
</tr>
</tbody>
</table>
Fix Level Recommendation Tool
https://www-304.ibm.com/support/customercare/flrt/home#toggle
HMC V8 R8.1.0 New Install Wizard

Welcome to the Install and Upgrade Wizard.
Use this Wizard to install or upgrade HMC code.

Press 'Next' to continue, press 'Cancel' to exit and shutdown the system.

Select the operation you want to perform, then press 'Next' to continue.

- Upgrade to a new version.
- Install.

NOTE: Install will destroy any information on the HMC hard disk. Upgrade will also destroy information on the HMC hard disk, except for the partition profile, HMC user and HMC configuration that was stored by the Save Upgrade Data task.
Network Install is available


HMC network installation images

Available HMC network install images by HMC Release

The following links provide download options for Hardware Management Console (HMC) network installation images as well as instructions for using these images to perform an HMC installation via the network.

→ HMC Version 8 Release 8.1.0 images
→ HMC Version 7 Release 7.9.0 images
→ HMC Version 7 Release 7.8.0 images
→ HMC Version 7 Release 7.7.0 images

HMC 7.790 and earlier

<table>
<thead>
<tr>
<th>File name</th>
<th>Description</th>
<th>Destination path</th>
<th>Size (bytes)</th>
<th>Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>bziimage</td>
<td>Kernel image</td>
<td>/var/ftp/hmc</td>
<td>2730176</td>
<td>02364</td>
</tr>
<tr>
<td>intrd.gz</td>
<td>Ram Disk file system</td>
<td>/var/ftp/hmc</td>
<td>34185788</td>
<td>06816</td>
</tr>
<tr>
<td>disk1.img</td>
<td>Base Image</td>
<td>/home/hmc</td>
<td>817065984</td>
<td>55470</td>
</tr>
<tr>
<td>disk2.img</td>
<td>Base HMC Image</td>
<td>/home/hmc</td>
<td>1456427008</td>
<td>33312</td>
</tr>
<tr>
<td>disk3.img</td>
<td>Information Center Image</td>
<td>/home/hmc</td>
<td>873922560</td>
<td>45622</td>
</tr>
<tr>
<td>hmcnetworkfiles.sum</td>
<td>hmcnetworkfiles.sum</td>
<td>/home/hmc</td>
<td>78 bytes</td>
<td>n/a</td>
</tr>
</tbody>
</table>

File name         Description                             Destination path         Size (bytes) | Checksum |
img2a             Kernel image                            /home/hmc                4035696     | 51461    |
img3a             Ram Disk file system                    /home/hmc                38388726    | 13883    |
base.img          Base Image                              /home/hmc                879513600   | 46902    |
disk1.img         Base HMC Image and Service Documentation  /home/hmc                2624122880  | 03261    |
hmcnetworkfiles.sum | hmcnetworkfiles.sum                  | /home/hmc                | 55 bytes    | n/a      |
Step by step instructions for Network Install

NOTE: Skip step #1 if the HMC can access the IBM FTP site directly.

1. Download the appropriate HMC V8 network images and put them on an FTP server. Verify that the following files have been downloaded:
   `img2a`, `img3a`, `base.img`, `disk1.img` and `hmcnetworkfiles.sum`

2. On the HMC, you must first save upgrade data by running the following commands:
   - To save data to both usb and disk, insert a USB key into the HMC usb port:
     `saveupgdata -r diskusb`
   - To save to disk alone:
     `saveupgdata -r disk`

3. Next, run the `getupgfiles` command to copy the network image files over to the bootable disk partition on the HMC.

   ```
   getupgfiles -h public.dhe.ibm.com -u anonymous --passwd anonymous -d /software/server/hmc/network/ v8<release directory>
   ```

   or if the files are on a local FTP server

   ```
   getupgfiles -h <FTP server> -u <user id> --passwd <pwd> -d <directory>
   ```

4. After the files are copied over, run the following command:

   ```
   chhmc -c altdiskboot -s enable --mode upgrade
   ```

   Now the HMC is ready to be rebooted and automatically upgraded with the code copied to the bootable disk partition.

5. Finally, issue the `hmcshutdown -r -t now` command to reboot the HMC and start the upgrade.

Ensure you verify files size/checksum
New function added with SP1 – Sept 15

Service Pack 1 was available on the service website:

New logon panel
Event Manager for Call Home

- New feature in V8.810 with initial release

- First step is the HMC event manager mode must be set. Set via the command line.
  
  `chhmc -c emch -s {enable | disable} [--callhome {enable | disable}]`

To enable or disable the Events Manager for Call Home task, run the following command:

  `chhmc -c emch -s { enable | disable }`

**Note: Enabling the Events Manager for Call Home task turns off automatic call home.**

However, if you disable the Events Manager for Call Home task, it does not automatically enable call home. This setup prevents any unintended call home of data back to IBM.

To enable automatic call home, run the following command: `chhmc -c callhome -s {enable}`

- Enables system administrators to monitor and approve any data **before** being transmitted from a HMC to IBM.

  - Register other HMCs (running V8.810 or later) - Event Manager will query the registered HMCs for any events that are waiting to be called home to IBM.

  - User can see what data is pending to be sent and approve or hold these events. After approval, the Event Manager notifies the registered HMC that it can proceed with the call home.

  - The Event Manager is optional, shipped default is disabled. The user can still register HMCs and see the events on the Event Manager.

  - Can be run from any V8R8.1.0 HMC.

  - Turning on event manager mode will block the HMC from automatically calling home events as they occur
From Service Management panel

- **Events Manager for Call Home**: Manage events from registered management consoles.

### Registered Management Consoles
- Total consoles: 3
- Manage Consoles

### Event Criteria
- Approval state: Unapproved
- Status: Open
- Originating HMC: All

### Events Table
<table>
<thead>
<tr>
<th>Last Reported Time</th>
<th>Call Home Intended</th>
<th>Approval State</th>
<th>PMH #</th>
<th>Status</th>
<th>Failing MTMS</th>
<th>Reference Code</th>
<th>Originating HMC</th>
<th>Problem #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fri Nov 14 20:29:13 UTC 2014</td>
<td>Yes</td>
<td>Approved</td>
<td>8288-42A/1023D9V</td>
<td>Open</td>
<td>214EDF4</td>
<td>atshmc1</td>
<td>84</td>
<td></td>
</tr>
<tr>
<td>Mon Oct 21 20:06:49 UTC 2014</td>
<td>Yes</td>
<td>Unapproved</td>
<td>8288-42A/1023D9V</td>
<td>Open</td>
<td>355037</td>
<td>atshmc1</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Sun Sep 21 20:09:54 UTC 2014</td>
<td>Yes</td>
<td>Unapproved</td>
<td>8288-42A/1023D9V</td>
<td>Open</td>
<td>2E55-005</td>
<td>7042-CRS6/100</td>
<td>atshmc1</td>
<td>28</td>
</tr>
<tr>
<td>Thu Sep 18 22:14:19 UTC 2014</td>
<td>No</td>
<td>Unapproved</td>
<td>8288-42A/1023D9V</td>
<td>Open</td>
<td>B2003110</td>
<td>7042-CRS6/100</td>
<td>atshmc1</td>
<td>28</td>
</tr>
</tbody>
</table>
Add HMCs to be monitored by Event Monitor

Manage Registered Consoles
Manage the list of registered consoles. Consoles may be added or selected to be removed from the list.

Add Console

Registered Consoles

<table>
<thead>
<tr>
<th>IP Address or Host Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATSHMC2</td>
<td>backup HMC</td>
</tr>
</tbody>
</table>

Add Registered Console

Enter the information for the console to be added

<table>
<thead>
<tr>
<th>IP address or host name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATSHMC3</td>
<td>V7.790 HMC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>User name</th>
<th>Password</th>
</tr>
</thead>
<tbody>
<tr>
<td>hscroot</td>
<td>*********</td>
</tr>
</tbody>
</table>

OK Cancel
Enhanced interface - Manage PowerVM – GUI

Tasks: Server-8286-41A-SNTU20305

Properties
- Manage PowerVM

Templates
- Deploy System from Template
- Create Partition from Template
- Capture Configuration as Template
  - with Physical IO
  - without Physical IO
  - Template Library

Operations

- Configuration
- Connections
- Hardware Information
  - PCIe Hardware Topology
- Updates
  - Change Licensed Internal Code for the current release
  - Upgrade Licensed Internal Code to a new release
  - Check system readiness
  - View system information

Serviceability
- Capacity On Demand (CoD)
  - Enter CoD Code
  - View History Log

Processor
- Memory
- PowerVM
- Enterprise Enablement
- Other Advanced Functions
- Performance

Virtual I/O Servers
The table lists all the Virtual I/O Servers (VIOS) that is configured on the managed system. Select a VIOS from the list for which you want to view and edit the properties. Right-click an entry in the table to view additional tasks that you can perform for the selected VIOS. Click Add Virtual I/O Server Wizard to add a VIOS to the managed system.

Virtual I/O Servers

<table>
<thead>
<tr>
<th>Name</th>
<th>ID</th>
<th>RMC Connection</th>
<th>Status</th>
<th>Virtual Processors</th>
<th>Processor Entitlement</th>
<th>Memory in MB</th>
<th>VIOS Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>v005rsb</td>
<td>5</td>
<td>Active</td>
<td>Running</td>
<td>2.0</td>
<td>1.0</td>
<td>4096</td>
<td>VIOS 2.2.3.4</td>
</tr>
<tr>
<td>v006rsb</td>
<td>6</td>
<td>Active</td>
<td>Running</td>
<td>2.0</td>
<td>1.0</td>
<td>4096</td>
<td>VIOS 2.2.3.4</td>
</tr>
<tr>
<td>v199rsb</td>
<td>199</td>
<td>Active</td>
<td>Running</td>
<td>2.0</td>
<td>1.0</td>
<td>8192</td>
<td>VIOS 2.2.3.4</td>
</tr>
</tbody>
</table>
Add VIOS server - wizard

Provide the name of the VIOS that you want to add to the list of available VIOS(s). You can also enable the advanced capabilities for the VIOS.

VIOS Name: VIOS65
Partition ID: 6

This page displays the processor properties for the VIOS. Choose the processor mode for the VIOS and the VIOS. If the processor is in shared mode, the assigned value of the processing unit cannot be greater than the maximum value of the processing unit must be less than the desired virtual processor value. You can also

Processor Mode: Dedicated

Maximum: 1
Desired: 1
Minimum: 1
Add VIOS server - wizard

**Physical I/O**

Select one or more I/O adapters to provide the VIOS access to network storage. To successfully install and deploy the VIOS, you must select one or more I/O adapters that can provide network and storage connectivity to the VIOS. Otherwise, the wizard can create the VIOS partition, but cannot complete the VIOS installation and the VIOS deployment process fails.

**VIOS Installation Configuration**

Review the configuration setting for the VIOS you want to add to the template and click Finish.

<table>
<thead>
<tr>
<th>Name</th>
<th>ID</th>
<th>Dedicated Processors</th>
<th>Virtual Processors</th>
<th>Processor Entitlement</th>
<th>Memory in GB</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIOS612</td>
<td>6</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

Select any one of the following options to be performed on the managed system, after you click the Finish button.
- Apply Configuration
- Create Virtual I/O Server and Install Image
Install VIOS Server Image Repository

Hardware Management Console

- Manage Virtual I/O Server Image Repository

Import Virtual I/O Server Image

- Name: newimage
- Import From:
  - Management Console DVD

Virtual I/O Server Image Repository

- Available Space: 13.60 GB
- Import New Virtual I/O Server Image

Select Image Name | Size
--- | ---
VIOS_2233_GOLD_0723 | 4.90 GB
Install VIOS from HMC resources – from Classic view
Install VIOS from New Enhanced view

VIOS Installation Configuration
Select the installation method to install the VIOS image on the created VIOS.

Installation Method:
- NIM Server
- Management Console Image

Advanced Settings

Management Console Image
- Select IP Address
- Select Image
- VIOS Image: VIOS_2233_GOLD_0723
PowerVM – example of Virtual Network

The table lists all the virtual networks that are configured on the managed system. Each table represents the properties of the Virtual Networks, Virtual Switches, Virtual Bridges, and Link Aggregation Devices.

**Virtual Networks**

<table>
<thead>
<tr>
<th>Virtual Network Name</th>
<th>VLAN ID</th>
<th>802.1Q Tagging</th>
<th>Virtual Switch</th>
<th>Virtual Network Bridge</th>
<th>Load Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>VLAN4-ETHERNET0</td>
<td>4</td>
<td>Yes</td>
<td>ETHERNET0 (Default)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VLAN101-ETHERNET0</td>
<td>101</td>
<td>Yes</td>
<td>ETHERNET0 (Default)</td>
<td>NetworkBridge_101</td>
<td>LoadGroup_101</td>
</tr>
<tr>
<td>VLAN85-ETHERNET0</td>
<td>85</td>
<td>Yes</td>
<td>ETHERNET0 (Default)</td>
<td>NetworkBridge_85</td>
<td>LoadGroup_85</td>
</tr>
<tr>
<td>VLAN5-ETHERNET0</td>
<td>5</td>
<td>Yes</td>
<td>ETHERNET0 (Default)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Virtual Switches**

- ETHERNET0 (Default)

**Virtual Network Bridges**

- Virtual Network Bridge
- Failover
- Load Sharing
- Virtual I/O Servers
Add Virtual Network wizard

Add Virtual Network

Network Name
Network Bridge
VIOS And Adapters
Load Sharing
Summary

Advanced settings to configure an existing virtual switch or create a new virtual switch to the virtual network.

Virtual network name

Type of virtual network
- Bridged Network
- Internal Network

IEEE 802.1Q Tagging
No

VLAN ID
(valid range for ID: 1 - 4094)

Virtual Switch

Virtual Switch Name
ETHERNET0

Virtual Switch Settings
- Use an existing Virtual Switch

Virtual Network Settings
- Add new virtual network to all Virtu

Add Virtual Network

Network Bridge

Virtual network bridge is associated with one or more shared Ethernet adapters (SEAs) that bridge the internal network traffic to a physical network adapter. You can configure a network bridge for the virtual networks that you want to add to the managed system. If you are creating a tagged network, you can choose an existing network bridge or create a network bridge for the virtual network that you want to add to the managed system. If you are creating an untagged network, you must create a new network bridge.

- PowerVM Virtual Network: demo,Untagged
- PowerVM Virtual Switch: ETHERNET0

Network Bridge Settings
- Failover: Yes
- Load Group 1 PVID: 111
- Load Group 2 PVID: 222
- Load Group 2 Name: LoadGroup_222

Network Bridge Settings
- Jumbo Frame
- Large Send
- QoS: disabled
Add network wizard—cont.

Configured for a failover mode you must choose the primary and secondary VIOS, and its associated physical adapter location for specified VIOS. You can also configure advanced settings by providing the IP address, net mask, and the gateway details for the selected VIOS.

- PowerVM Virtual Network: demo, Untagged
- PowerVM Virtual Switch: ETHERNET0
- Network Bridge: NetworkBridge_111

<table>
<thead>
<tr>
<th>Primary</th>
<th>Virtual I/O Server</th>
<th>Physical Adapter Location - Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>v003rsb</td>
<td>(ent10)U78C9.001.WZS000R-P1-C9-T1_4-Port 10/100/1000 Base-TX PCI-</td>
</tr>
<tr>
<td></td>
<td>v004rsb</td>
<td>(ent0)U78C9.001.WZS000R-P1-C10-T1_4-Port Gigabit Ethernet PCI-</td>
</tr>
</tbody>
</table>

**Advanced VIOS Settings**

<table>
<thead>
<tr>
<th>Virtual I/O Server</th>
<th>Address to Ping</th>
<th>IP Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>v003rsb</td>
<td>9.9.9.10</td>
<td>9.9.9.100</td>
</tr>
<tr>
<td>v004rsb</td>
<td>9.9.9.9</td>
<td>9.9.9.109</td>
</tr>
</tbody>
</table>

Finish to add the virtual network to the managed system. Use the adapter view to see the network adapters that are associated with the virtual network and the specified VIOS settings can also be viewed.

**Virtual Networks**

<table>
<thead>
<tr>
<th>Virtual Network Name</th>
<th>VLAN ID</th>
<th>Virtual Switch</th>
<th>Network Bridge</th>
<th>Load Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>demo</td>
<td>111</td>
<td>ETHERNET0</td>
<td>NetworkBridge_111</td>
<td>LoadGroup_111</td>
</tr>
</tbody>
</table>

**Virtual Switches**

- ETHERNET0

**Network Bridges**

<table>
<thead>
<tr>
<th>Network Bridge Name</th>
<th>Failover</th>
<th>Load Sharing</th>
<th>Virtual I/O Servers</th>
</tr>
</thead>
<tbody>
<tr>
<td>NetworkBridge_111</td>
<td>YES</td>
<td>YES</td>
<td>v003rsb</td>
</tr>
</tbody>
</table>
vSCSI or vFC (NPIV) mappings – by adapter view

Toggle between Adapter and storage view

Virtual Storage Management

Virtual storage management can be used to manage the storage capabilities of your managed system. Modify the configuration of the virtual storage devices that are allocated for each Virtual I/O Server (VIOS) on the managed system. You can also add a VIOS to a shared storage pool cluster and manage all the shared storage pool clusters.

The table lists the Virtual I/O Servers for which the virtual storage configuration can be managed. Right-click on a row in the table to perform advanced tasks for the virtual storage management.

Virtual I/O Server | ID | RMC Connection | Status | VIOS Version | SSP Cluster Name | Number of Volume Groups | Media Repository
-------------------|----|----------------|--------|--------------|------------------|-------------------------|------------------------
vl003rsb | 3 | Active | Running | VIOS 2.2.3.3 | - | 1 | true
vl004rsb | 4 | Active | Running | VIOS 2.2.3.3 | - | 1 | false

Virtual SCSI Adapters

Virtual fibre Channel Adapters

The table lists the virtual SCSI adapters that are connected to the logical partition. The details of the Virtual I/O Servers that the IOPs are attached to is also displayed. You can also view the adapter location and its worldwide port name. Right-click an adapter in the table to remove the connected adapter.
HMC Enhanced interface

• The HMC Enhanced interface is an updated version of the HMC interface.

• Providing simplified paths to completing virtualization management tasks

• New function includes the use of templates to complete the following tasks:
  ▪ Deploying a system.
  ▪ Creating a partition.
  ▪ Capturing a system or partition configuration as a template.
  ▪ Running Template Library management functions, including edit, copy, import, and export.
Log in Options for Management Console
You can view the mapping between various tasks that are available when you log in to the software interface by using the classic, enhanced, or the enhanced + tech preview option.

<table>
<thead>
<tr>
<th>Table 1. Log in Options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Classic Login Tasks</strong></td>
</tr>
<tr>
<td><strong>Server Context</strong></td>
</tr>
<tr>
<td>• Server &gt; Configuration &gt; Virtual Resources</td>
</tr>
<tr>
<td>○ Shared Processor Pool Management</td>
</tr>
<tr>
<td>○ Shared Memory Pool Management</td>
</tr>
<tr>
<td>○ Reserved Storage Pool</td>
</tr>
<tr>
<td>○ Virtual Networks</td>
</tr>
</tbody>
</table>
Gui Interface Log in Options:

For the 8.820.0 release of the Hardware Management Console (HMC), you can choose to log into one of the three versions of the HMC software user interface. You can log in to either the Classic software interface, which is the traditional HMC software interface that you are familiar with from previous HMC releases, you can log in to the Enhanced software interface which provides a number of Classic tasks and new and redesigned functions, such as Templates and Manage PowerVM, or you can log in to the Enhanced+Tech Preview, which provides everything that the other interfaces provide and adds an early preview of an entirely redesigned HMC management interface that you can use to view and manage the resources on your systems more quickly and easily.

You can log in to the Classic software interface to access all traditional functions of the HMC to manage systems, and the partitions and hardware on those systems. The virtualization tasks, however, that you can access and that you can perform vary based on the software interface that you log in to.

The Enhanced software interface provides new tasks and functions, such as Templates, which you can use to configure and to deploy resources on a new system. You can use templates to configure new partitions and Virtual I/O Servers on systems and to deploy the resources that they need as part of a one task flow or template. The Enhanced software interface also provides redesigned tasks, such as Manage Power VM, which integrates a number of Classic tasks, such as Dynamic Logical Partitioning alongside some new function in a redesigned partition management environment.

The Enhanced + Tech Preview software interface provides a new navigation and interaction model that provides access to all tasks that are unique to the enhanced login option as well as all the tasks that are common to the classic and enhanced login options through new navigation paths. The software interface provides new tasks and functions, such as enhanced Activate task for partitions and Virtual I/O Servers with network boot and network install options, and graphical representation of the virtual network that represents the relationship between various components in the network for a system.
First time log on for a new user

Welcome to the Hardware Management Console

User name: newuser
Password: ********

Log in

Enhanced + Tech Preview

Review and accept Terms and process

I agree to the terms and

Login

Learn more about HMC software

Start using your Management Console now

Configure Systems from a Template
Create Partitions from a Template
View Managed Systems
HMC V8.820 – Enhanced Tech Preview (Pre-GA)
HMC V8.810 sp1 does not provide base templates 820 does

Template Library

Template defines the configuration for your system I/O, memory, storage, network, processor, and other system and partition resources. Click on the template name to see the details of the template. Select a template from the following list:

What is a Template? 

System

<table>
<thead>
<tr>
<th>Template Name</th>
<th>Description</th>
<th>Number of VIOS</th>
<th>Number of Virtual Networks</th>
<th>Physical I/O Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>QuickStart_with_2_VIOS</td>
<td>2 VIOS, 1 Virtual Network</td>
<td>2</td>
<td>1</td>
<td>No</td>
</tr>
<tr>
<td>QuickStart_with_4_VIOS</td>
<td>4 VIOSes, 1 Development Network, 1 Production Network</td>
<td>4</td>
<td>2</td>
<td>No</td>
</tr>
</tbody>
</table>

Partition
Exploring the Tech-Preview interface
See all VIO Servers on a single panel
Select your view

All Partitions

View and monitor the state, health, and capacity information of all the partitions that are connected to the management console.

- Select All
- Actions

Total: 18 Selected: 0

<table>
<thead>
<tr>
<th>Name</th>
<th>Partition State</th>
<th>Partition ID</th>
<th>IP Address</th>
<th>Attention</th>
</tr>
</thead>
<tbody>
<tr>
<td>i201rsb</td>
<td>Running</td>
<td>201</td>
<td></td>
<td>Off</td>
</tr>
<tr>
<td>i058rsb</td>
<td>Running</td>
<td>118</td>
<td></td>
<td>On</td>
</tr>
<tr>
<td>i057rsb</td>
<td>Running</td>
<td>10</td>
<td></td>
<td>On</td>
</tr>
<tr>
<td>i059rsb</td>
<td>Running</td>
<td>59</td>
<td>9.5.101.45</td>
<td>Off</td>
</tr>
<tr>
<td>i056rsb</td>
<td>Not Activated</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Easily see all the possible partition actions
### HMC V8.820 – more on the Enhanced Tech Preview

**Partitions**

View and monitor the state, health, and capacity information of all the partitions on the selected system. The relational view shows the virtual network and virtual storage served by the virtual I/O servers to their client partitions on this server.

<table>
<thead>
<tr>
<th>Partition Name</th>
<th>Virtual Networks</th>
<th>Virtual Storages</th>
</tr>
</thead>
<tbody>
<tr>
<td>a052rsb</td>
<td>VLAN101-ETHERNET0</td>
<td></td>
</tr>
<tr>
<td>a051rsb</td>
<td>VLAN101-ETHERNET0</td>
<td></td>
</tr>
<tr>
<td>i116rsb</td>
<td>VLAN101-ETHERNET0</td>
<td>1 Virtual Fiber Channel Device</td>
</tr>
<tr>
<td>i050rsb</td>
<td>VLAN101-ETHERNET0</td>
<td>2 Virtual Fiber Channel Devices</td>
</tr>
<tr>
<td>i055rsb</td>
<td>VLAN101-ETHERNET0</td>
<td>2 Virtual Fiber Channel Devices</td>
</tr>
</tbody>
</table>

**v006rsb** | Virtual I/O Server

<table>
<thead>
<tr>
<th>Partition Name</th>
<th>Virtual Networks</th>
<th>Virtual Storages</th>
</tr>
</thead>
<tbody>
<tr>
<td>a052rsb</td>
<td>VLAN101-ETHERNET0</td>
<td></td>
</tr>
<tr>
<td>a051rsb</td>
<td>VLAN101-ETHERNET0</td>
<td></td>
</tr>
</tbody>
</table>
Deploy system template – normally only on NEW system

Welcome

Use this wizard to configure systems and its I/O resources. You can use a template to create a new system by using the values from the template. When you finish the wizard, the newly configured system has the virtual hardware, installed software, and other properties as specified by the template.

You can use the wizard to select a target system or a template that you specifically configure for immediate deployment on that system.

In either case, the wizard guides you through completing the following steps:
1. Choosing a template or system.
2. Configuring the VIOS and system settings.
3. Configuring the I/O adapters, and the Host Ethernet Adapter, if applicable.
4. Creating Virtual I/O Server partitions and install the VIOS software.
5. Configuring network settings.
6. Configuring storage devices.
7. Reviewing a summary of all your selections and deploy the template.

The target system is updated during the process and is a long running task. When you are done, the system is ready for client partition configuration. Choose a server from the list and click Reset.

To start a status check, select a server from the list and click Reset. Attention: If you deploy the template, deployment destroys all partitions and system setting on the target system.

Caution!

The deployment wizard discovered one or more logical partitions on your system. If you deploy this template, deployment destroys all partitions and system settings on the target system.

To continue to deploy the template, click OK to return to the wizard, and click Next. To end the deployment of the template, click Cancel to return to the wizard, and click Cancel to exit the wizard.
System Template design - Edit to customize

Uses the same PowerVM Management wizard

Template Description

View or modify the template name and description for the template that you have selected.

Template Name: test_capture_with_no_IO

Template Description: Created by Al Walsh

Virtual Networks

<table>
<thead>
<tr>
<th>Virtual Network Name</th>
<th>VLAN ID</th>
<th>802.1Q Tagging</th>
<th>Virtual Switch</th>
<th>Virtual Network Bridge</th>
<th>Load Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>VLAN09-ETHERNET0</td>
<td>99</td>
<td>Yes</td>
<td>ETHERNET0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VLAN1-ETHERNET0</td>
<td>1</td>
<td>No</td>
<td>ETHERNET0</td>
<td>NetworkBridge_ETHERNET0_1</td>
<td>LoadGroup_ETHERNET0_1</td>
</tr>
</tbody>
</table>

Virtual Switches

<table>
<thead>
<tr>
<th>Virtual Switch</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETHERNET0</td>
<td>VEB</td>
</tr>
</tbody>
</table>

Virtual Network Bridge

<table>
<thead>
<tr>
<th>Virtual Network Bridge Name</th>
<th>Failover</th>
<th>Load Sharing</th>
<th>Virtual I/O Servers</th>
</tr>
</thead>
<tbody>
<tr>
<td>NetworkBridge_ETHERNET0_1</td>
<td>Yes</td>
<td>No</td>
<td>P8TVIO1,P8TVIO2</td>
</tr>
</tbody>
</table>
Create partition wizard – from Template
target system, Name & assign LPAR ID
Create the Network and Storage mappings – dual VIOS
Create LPAR from Template

Create Partition from Template

Summary

Review your configuration setting for the partition and its resources. You can either apply the configuration to the partition, activate a partition, or create a partition.

* indicates a field whose value was changed from the template value during the deployment operation.

<table>
<thead>
<tr>
<th>Name</th>
<th>a039raw</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partition ID</td>
<td>39</td>
</tr>
<tr>
<td>Partition Type</td>
<td>AIX/Linux</td>
</tr>
<tr>
<td>Processors</td>
<td>Shared</td>
</tr>
<tr>
<td>I/O</td>
<td>-</td>
</tr>
<tr>
<td>Virtual Networks</td>
<td>VLAN101-ETHERNET0</td>
</tr>
<tr>
<td>Virtual Storage</td>
<td>Virtual Fibre Channel Client adapters :2, Virtual SCSI Client Adapters :1</td>
</tr>
</tbody>
</table>

Select any one of the following options that are to be performed on the system, after you click the Finish button.

- Activate partition
- Create partition and Apply Configuration
The wizard creates the client and adds vFC in both VIOS

Create Partition from Template

Partition a039raw deploy progress status

Deployment of partition a039raw successful.

Partition Properties

Virtual Adapters

<table>
<thead>
<tr>
<th>Select</th>
<th>Type</th>
<th>Adapter ID</th>
<th>Server/Client Partition</th>
<th>Partner Adapter</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ethernet</td>
<td>2</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Ethernet</td>
<td>3</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Ethernet</td>
<td>4</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Ethernet</td>
<td>5</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Server Fibre Channel</td>
<td>10</td>
<td>a039raw(39)</td>
<td>5</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Server Fibre Channel</td>
<td>102</td>
<td>i09raw(102)</td>
<td>3</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Server Fibre Channel</td>
<td>109</td>
<td>i109raw(109)</td>
<td>N/A</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Server Fibre Channel</td>
<td>125</td>
<td>ratsibm(125)</td>
<td>3</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Server Fibre Channel</td>
<td>126</td>
<td>i126ibs(126)</td>
<td>3</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Server Fibre Channel</td>
<td>301</td>
<td>i201rsb(201)</td>
<td>301</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Server Fibre Channel</td>
<td>302</td>
<td>i202raw(202)</td>
<td>302</td>
<td>No</td>
</tr>
</tbody>
</table>
Client Partition with vFC (WWPNs) and vSCSI

### Logical Partition Profile Properties

<table>
<thead>
<tr>
<th>General</th>
<th>Processors</th>
<th>Memory</th>
<th>I/O</th>
<th>Virtual Adapters</th>
<th>Power Controlling</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Actions</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Virtual resources allow for the sharing of physical hardware between logical partitions. The current virtual adapter settings are listed below.

**Maximum virtual adapters:** 50

**Number of virtual adapters:** 0

### Virtual Fibre Channel Adapter Properties

**Virtual Fibre Channel adapter**
- **Adapter ID:** 4
- **Type of adapter:** Client
- **Required:** False
- **WWPNs:**
  - c05076079bb70056
  - c05076079bb70057
- **Server partition:** v004rsb(4)
- **Server adapter ID:** 11

**Virtual Fibre Channel adapter**
- **Adapter ID:** 5
- **Type of adapter:** Client
- **Required:** False
- **WWPNs:**
  - c05076079bb70058
  - c05076079bb70059
- **Server partition:** v003rsb(3)
- **Server adapter ID:** 10
### Power Systems Performance Monitoring - Overview

#### HMC 790 or earlier
- Disjointed set of tools (lslparutil, lshwres, nmon, topasm, iDoctor)
- Multiple agents need to be installed in OS
- Minimal or Lack of built in Visualization
- Gaps in instrumentation for vital metrics

#### HMC 810
- Integrated Visual Monitor in HMC
- Standard set of Interfaces (REST APIs) for external applications to consume data
Minimum features with all POWER6 & above models:
- Managed System CPU Utilization (Point In Time & Historical)
- Managed System Memory Assignment (Point In Time & Historical)
- Server Overview Section of Historical Data with LPAR & VIOS view
- Processor Trend Views with LPAR, VIOS & Processor Pool (no System
  Firmware Utilization, Dispatch Metrics will be shown as zero)
- Memory Trend Views with LPAR & VIOS view

These metrics were available via legacy HMC performance data collection
mechanisms and are picked up by the monitor. API is available
(reference in next slides).
Integrated Performance Monitoring Overview

• Provides utilization monitoring of resources in Power Systems via a single touch-point (HMC)

• Data collection and aggregation of performance metrics from Hypervisors (PHYP & VIOS) to provide Systems utilization view
  – New instrumentation to provide useful metrics of measurement for all resources

• Provides REST API (WEB APIs) for seam-less upward integration
  – Easy out-of-box access to the utilization data for monitoring tools e.g. Power VC, Tivoli, third party

• Trending of the utilization data

• Assists in first level of performance analysis & capacity planning
Performance Utilization Metrics Overview

• Physical System Level Processor & Memory Resource Usage Statistics
  – System Processor Usage Statistics (w/ LPAR, VIOS & Power Hypervisor usage breakdown)
  – System Dedicated Memory Allocation and Shared Memory Usage Statistics (w/ LPAR, VIOS & Power Hypervisor usage breakdown)

• Advanced Virtualization Statistics
  – Per LPAR Dispatch Wait Time Statistics
  – Per LPAR Placement Indicator (for understanding whether the LPAR placement is good / bad based on score)

• Virtual IO Statistics
  – Virtual IO Server’s CPU / Memory Usage (Aggregated, Breakdown)
  – SEA Traffic & Bandwidth usage Statistics (Aggregated & Per Client, Intra/Inter LPAR breakdown)
  – NPIV Traffic & Bandwidth usage Statistics (HBA & Per Client breakdown)
  – vSCSI Statistics (Aggregated & Per Client Usage)
  – VLAN Traffic & Bandwidth usage Statistics (Adapter & LPAR breakdown)

• SRIOV Traffic & Bandwidth usage Statistics (Physical & Virtual Function Statistics w/ LPAR breakdown)
FW 780 & VIOS 2.2.3, all function except for 770/780-MxB models
   - No support for LPAR Dispatch Wait Time
   - No support for Power Hypervisor Utilization
FW 780 or above with VIOS level below 2.2.3, then the following functions are not available (basically, no IO utilization):
   - Network Bridge / Virtual Storage Trend Data
   - VIOS Network / Storage Utilization
FW 770 or less with VIOS 2.2.3 or later then these are not provided:
   - Network Bridge Trend Data
   - LPAR Dispatch Wait Time
   - Power Hypervisor Utilization
FW 770 or less with VIOS level below 2.2.3, then the tool will not provide:
   - Network Bridge / Virtual Storage Trend Data
   - VIOS Network / Storage Utilization
   - LPAR Dispatch Wait Time
   - Power Hypervisor Utilization
From the HMC Management panel - Enable PCM

Settings for Performance Monitoring
Select the servers for which you want to collect Performance and Capacity Monitoring (PCM) data. Specify the number of days to retain PCM data.

Performance Data Storage

Number of days to store performance data (maximum 366):

180

Performance Monitoring Data Collection for Managed Servers

<table>
<thead>
<tr>
<th>Server</th>
<th>Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATS_S824</td>
<td></td>
</tr>
<tr>
<td>8205-E6DATS_740D</td>
<td></td>
</tr>
</tbody>
</table>
Starting PCM – select the server then Performance

PCM - Performance and Capacity Monitoring
Aggregate Server: Current Usage (CPU, Memory, IO)
Partition: Entitlement vs Usage Spread, Detail
Partition: Processor Utilization

### Processor Utilization Trend

- **Trend - Server Level Utilization**
- **Processor Units**
- **Total 16.0, Allocated 12.25, Overall Usage 3.51**

### Breakdown by Partitions

#### Breakdown by Pools

<table>
<thead>
<tr>
<th>Partition Name</th>
<th>Mode</th>
<th>Pool</th>
<th>Entitled</th>
<th>Used</th>
<th>Max Usage</th>
<th>Usage Trends</th>
<th>Donated Units</th>
<th>Dispatch Wait Time (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>dagresp2</td>
<td>Shared</td>
<td>DefaultPool</td>
<td>2.0</td>
<td>2.49</td>
<td>5.7</td>
<td></td>
<td>0.0</td>
<td>0.221</td>
</tr>
<tr>
<td>i2011sb</td>
<td>Shared</td>
<td>DefaultPool</td>
<td>8.0</td>
<td>0.04</td>
<td>0.06</td>
<td></td>
<td>0.0</td>
<td>0.01</td>
</tr>
<tr>
<td>dagresp3</td>
<td>Shared</td>
<td>DefaultPool</td>
<td>0.75</td>
<td>0.91</td>
<td>2.16</td>
<td></td>
<td>0.0</td>
<td>0.195</td>
</tr>
<tr>
<td>i202raw</td>
<td>Shared</td>
<td>DefaultPool</td>
<td>0.5</td>
<td>0.03</td>
<td>0.31</td>
<td></td>
<td>0.0</td>
<td>0.501</td>
</tr>
<tr>
<td>v004resb</td>
<td>Shared</td>
<td>DefaultPool</td>
<td>0.5</td>
<td>0.04</td>
<td>0.16</td>
<td></td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>
Partition: Network, including SR-IOV support
Storage by VIOS, vSCSI or NPIV
HMC v8 / VIOS 2.2.3.3 Issue

HMC REST API document for open development:
https://www.ibm.com/developerworks/community/groups/service/html/communityview?communityUuid=0196fd8d-7287-4dff-8526-102b5bfc0df5#fullpageWidgetId=W39581bd593b_487f_a7ec_79c3c27093f8&file=567cef95-775a-42a3-bba5-1d19725bd62d

Python script to export long-term metrics:
https://www.ibm.com/developerworks/community/groups/service/html/communityview?communityUuid=0196fd8d-7287-4dff-8526-102b5bfc0df5#fullpageWidgetId=W39581bd593b_487f_a7ec_79c3c27093f8&file=d405af32-fa79-43bb-8074-8b61a249e9ca

VIOS 2.2.3.3 Issue:
Performance daemon not running when upgrading VIOS and not installing from Scratch DVD. If required, configure the daemon manually with:

```
/usr/bin/mkssys -s perfprovider -p /usr/perf/pcm/srcloop -u 0 -R
/usr/sbin/mkitab "perfprovider:2:once:/usr/bin/startsrs -s perfprovider > /dev/null 2>&1"
```
Resources

- HMC V8 R8.1.0 Redbook -

- Fix Central:
  ▪ http://www.ibm.com/support/fixcentral/

- Recommended Fixes:

- IBM Systems Hardware Information Center:
  ▪ http://publib.boulder.ibm.com/eserver/

- Registered Software Knowledge Base:

- IBM Redbooks: http://www.redbooks.ibm.com/
HMC reference links

• Redpiece:
  ▪ IBM Power Systems Hardware Management Console Version 8 Release 8.1.0 Enhancements

• HMC readme

• FixCentral link for HMC

• HMC Network upgrade images
Thank you
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Revised February 9, 2010
Starting PCM – select the server then Performance

PCM
Performance and Capacity Monitoring
Performance ...

Hover
Select display options
Server Overview

Detailed chart shows entitlement versus usage
Select display options
Processor usage by partition

<table>
<thead>
<tr>
<th>Partition Name</th>
<th>Mode</th>
<th>Pool</th>
<th>Entitled</th>
<th>Used</th>
<th>Max Usage</th>
<th>Usage Trends</th>
<th>Donated Units</th>
<th>Dispatch Wait Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>dagresp2</td>
<td>Shared</td>
<td>DefaultPool</td>
<td>2.0</td>
<td>1.34</td>
<td>3.45</td>
<td></td>
<td>0.0</td>
<td>2.467</td>
</tr>
<tr>
<td>i201rsb</td>
<td>Shared</td>
<td>DefaultPool</td>
<td>8.0</td>
<td>0.04</td>
<td>0.06</td>
<td></td>
<td>0.0</td>
<td>0.576</td>
</tr>
<tr>
<td>dagresp3</td>
<td>Shared</td>
<td>DefaultPool</td>
<td>0.75</td>
<td>0.82</td>
<td>2.75</td>
<td></td>
<td>0.0</td>
<td>1.954</td>
</tr>
<tr>
<td>i202raw</td>
<td>Shared</td>
<td>DefaultPool</td>
<td>0.5</td>
<td>0.03</td>
<td>0.06</td>
<td></td>
<td>0.0</td>
<td>18.918</td>
</tr>
<tr>
<td>v004rsb</td>
<td>Shared</td>
<td>DefaultPool</td>
<td>0.5</td>
<td>0.03</td>
<td>0.18</td>
<td></td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>v003rsb</td>
<td>Shared</td>
<td>DefaultPool</td>
<td>0.5</td>
<td>0.01</td>
<td>0.02</td>
<td></td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>
Network Utilization

![Network Utilization Graph](image)

**Breakdown by Partitions**

<table>
<thead>
<tr>
<th>Partition</th>
<th>Network Bridge ID</th>
<th>Virtual I/O Servers</th>
<th>Traffic in MB/s</th>
<th>Physical Traffic in KB/s</th>
<th>Traffic Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>i109:raw</td>
<td>NetworkBridge_101</td>
<td>2</td>
<td>0.0010</td>
<td>1.175</td>
<td></td>
</tr>
<tr>
<td>dagresp2</td>
<td>NetworkBridge_101</td>
<td>2</td>
<td>73.373</td>
<td>0.629</td>
<td></td>
</tr>
<tr>
<td>dagresp3</td>
<td>NetworkBridge_101</td>
<td>2</td>
<td>73.373</td>
<td>0.536</td>
<td></td>
</tr>
<tr>
<td>i202:raw</td>
<td>NetworkBridge_101</td>
<td>2</td>
<td>0.0010</td>
<td>0.609</td>
<td></td>
</tr>
<tr>
<td>a128:rp</td>
<td>NetworkBridge_101</td>
<td>2</td>
<td>0.0010</td>
<td>0.632</td>
<td></td>
</tr>
</tbody>
</table>
Storage utilization vy vSCSI or NPIV

Trend - vSCSI Adapters Usage

Storage Utilization  Nov 21, 2014 11:00:00 AM to Nov 21, 2014 3:00:00 PM

Trend - NPIV Traffic

Storage Utilization  Nov 21, 2014 11:00:00 AM to Nov 21, 2014 3:00:00 PM

More Graphs

KB/s

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