

# PowerVM User Group

## HMC V8R860

### recent, important updates and changes (V3)

POWER Advanced Technology Support EMEA



Gareth Coates  
gaz@uk.ibm.com

## HMC V8 R860

IBM  
© 2017 IBM  
1  
HMC V8R860

- IBM Power Systems Hardware Management Console
  - Continues to mature
  - Continues to get better
- This session looks at some of the newer features



## HMC V8 Reminder and level setting



- Massive Graphical overhaul (code name K2) but optional
  - One touch VIOS deploy
  - Hands off PowerVM
  - Templates to deploy similar LPAR / VM & whole system
  - Integrated Performance & Capacity (think hourly)
- Pre-reqs
  - HMC hardware CR5 or later
  - Memory 4 GB but 8 GB recommended (CR7/8 start at 8GB)
- Upgrade over N-2 levels 7.8→8.1 or 7.9→8.2 etc
- Only connects to POWER6, 7 or 8 (no POWER5!)
- Max servers 48 or 32 for 595/795 (no change)
- Max 1024 VMs (no change)

## HMC CR6 CR7 CR8 comparison



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

## HMC 7042-CR9

IBM  
© 2017 IBM  
4  
HMC V8R860

- 7042-CR9 is based on System x3550 M5
  - 6 processor cores with hyperthreading
  - Expandable to 192 GB memory; 16 GB x 12 slots
- I/O
  - Front: 1x USB 3.0, 1x USB 2.0 (8x 2.5" drive bay models) or 2x USB 2.0 (4x 3.5" and 10x 2.5" drive bay models), and 1x DB-15 video.
  - Rear: 2x USB 3.0, 1x USB 2.0, 1x DB-15 video, 1x RJ-45 systems management, 4x RJ-45 GbE network ports.
- GA with HMC V8.840: 4Q 2015



## HMC V8R8.2

IBM  
© 2017 IBM  
5  
HMC V8R860

Welcome to the Hardware Management Console

User name:

Password:

Log In ?  

▼

[Learn more about HMC software interface options →](#)

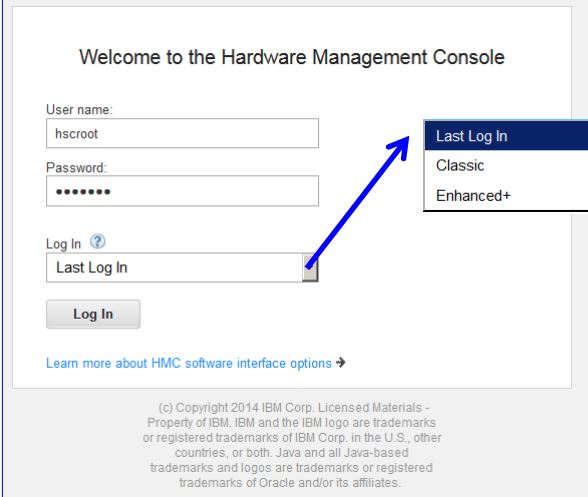
Last Log In

Classic

Enhanced

Enhanced + Tech Preview (Pre-GA)

## HMC V8R8.4 and later



Welcome to the Hardware Management Console

User name:  
hscroot

Password:  
••••••

Log In [?](#)  
Last Log In

Log In

[Learn more about HMC software interface options →](#)

(c) Copyright 2014 IBM Corp. Licensed Materials - Property of IBM. IBM and the IBM logo are trademarks or registered trademarks of IBM Corp. in the U.S., other countries, or both. Java and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.

IBM  
© 2017 IBM  
6  
HMC V8R860

## Poll

### ■ Do you use the Enhanced + GUI

1. All the time - we love it
2. We are using it more and more - it keeps getting better
3. We tried it a while back, but returned Classic – it's faster
4. We use it for routine things but in emergency use Classic
5. Never use it, but we are looking forward to trying it out

IBM  
© 2017 IBM  
7  
HMC V8R860

## Only the GUI is new

- New graphical user interface
- But calling the classic underlying field hardened functions

IBM  
© 2017 IBM  
8  
HMC V8R860

## Use FLRT Lite

← IBM Support Portal

FLRT >

# FLRT Lite

Please choose a product

- System Storage products
- Power, PureFlex and Power Blade System Firmware
- HMC and HMC Virtual Appliance
- AIX
- PowerVM Virtual I/O Server
- PowerHA SystemMirror
- Cluster Systems Management
- General Parallel File System
- General Parallel File System Standard Edition

Fix Level Recommendation Tool

FLRT Lite

Power systems

Pure Power

Live Partition Mobility

Load saved FLRT inventory

FLRTVC Online

Feedback

IBM  
© 2017 IBM  
9  
HMC V8R860

<https://www-304.ibm.com/webapp/set2/flrt/liteHome>

## See the HMC Lifecycle on FLRT Lite

IBM  
© 2017 IBM  
10  
HMC V8R860

**FLRT Lite**

**HMC and HMC Virtual Appliance**

**End of Service Pack Support**

Version	Recommended Update	Recommended Upgrade	Release Date	EoSPS Date
<a href="#">V8 R860</a>	none	none	2016.11.17	2018.10.31
<a href="#">V8 R850 SP1</a>	none	none	2016.09.19	2018.05.31
<a href="#">V8 R850</a>	<a href="#">V8 R850 SP1</a>	none	2016.05.27	2018.05.31
<a href="#">V8 R840 SP2</a>	none	<a href="#">V8 R850 SP1</a>	2016.08.22	2017.11.30
<a href="#">V8 R840 SP1</a>	<a href="#">V8 R840 SP2</a>	<a href="#">V8 R850 SP1</a>	2016.03.16	2017.11.30
<a href="#">V8 R840</a>	<a href="#">V8 R840 SP2</a>	<a href="#">V8 R850 SP1</a>	2015.11.20	2017.11.30
<a href="#">V8 R830 SP3</a>	none	<a href="#">V8 R850 SP1</a>	2016.11.11	2017.07.31
<a href="#">V8 R830 SP2</a>	<a href="#">V8 R830 SP3</a>	<a href="#">V8 R850 SP1</a>	2016.03.09	2017.07.31
<a href="#">V8 R830 SP1</a>	<a href="#">V8 R830 SP3</a>	<a href="#">V8 R850 SP1</a>	2015.09.04	2017.07.31
<a href="#">V8 R830</a>	<a href="#">V8 R830 SP3</a>	<a href="#">V8 R850 SP1</a>	2015.06.05	2017.07.31
<a href="#">V8 R820 SP3</a>	none	<a href="#">V8 R850 SP1</a>	2016.10.28	2016.10.31
<a href="#">V8 R820 SP2</a>	<a href="#">V8 R820 SP3</a>	<a href="#">V8 R850 SP1</a>	2015.08.18	2016.10.31
<a href="#">V8 R820 SP1</a>	<a href="#">V8 R820 SP3</a>	<a href="#">V8 R850 SP1</a>	2015.02.24	2016.10.31
<a href="#">V8 R820</a>	<a href="#">V8 R820 SP3</a>	<a href="#">V8 R850 SP1</a>	2014.11.18	2016.10.31
<a href="#">V8 R810 SP3</a>	none	<a href="#">V8 R850 SP1</a>	2015.12.22	2016.06.30
<a href="#">V8 R810 SP2</a>	<a href="#">V8 R810 SP3</a>	<a href="#">V8 R850 SP1</a>	2015.05.14	2016.06.30

Check out the future of FLRT with our new beta experience.

## See the Firmware Lifecycle on FLRT Lite

IBM  
© 2017 IBM  
11  
HMC V8R860

**FLRT Lite**

**Power, PureFlex and Power Blade System Firmware**

Version	MTM	Recommended Update	Recommended Upgrade	Release Date	EoSPS Date
<a href="#">SC860 070</a>	all	none	none	2017.01.13	NA
<a href="#">SC860 056</a>	all	none	none	2016.11.18	NA
<a href="#">SV860 070</a>	all	none	none	2017.01.13	NA
<a href="#">SV860 063</a>	all	none	none	2016.12.05	NA
<a href="#">SV860 056</a>	all	none	none	2016.11.18	NA
<a href="#">SC840 147</a>	all	none	none	2016.10.26	2017.12.04
<a href="#">SC840 139</a>	all	<a href="#">SC840 147</a>	none	2016.09.28	2017.12.04
<a href="#">SC840 132</a>	all	<a href="#">SC840 147</a>	none	2016.08.31	2017.12.04
<a href="#">SC840 118</a>	all	<a href="#">SC840 147</a>	none	2016.07.28	2017.12.04
<a href="#">SC840 113</a>	all	<a href="#">SC840 147</a>	none	2016.07.06	2017.12.04
<a href="#">SC840 111</a>	all	<a href="#">SC840 147</a>	none	2016.06.24	2017.12.04
<a href="#">SC840 104</a>	all	<a href="#">SC840 147</a>	none	2016.05.21	2017.12.04
<a href="#">SC840 087</a>	all	<a href="#">SC840 147</a>	none	2016.03.18	2017.12.04
<a href="#">SC840 079</a>	all	<a href="#">SC840 147</a>	none	2016.03.04	2017.12.04
<a href="#">SC840 056</a>	all	<a href="#">SC840 147</a>	none	2015.12.04	2017.12.04

Check out the future of FLRT with our new beta experience.

## HMC Resources

IBM  
© 2017 IBM  
12  
HMC V8R860

- HMC Community
  - <https://www.ibm.com/developerworks/community/groups/community/powerhmc>
- PowerVM LinkedIn  group
  - PowerVM VIOS, HMC, Hypervisor
  - <https://www.linkedin.com/groups/8403988>

## An Extremely useful matrix

IBM  
© 2017 IBM  
13  
HMC V8R860

HMC / Firmware Supported Combinations			
HMC	p8 System Firmware	p7 System Firmware	p6 System Firmware p5 System Firmware
		AH780_080	
		AH780_075	
		AH780_071	
		AH780_068	
		AH780_066	
		AH780_059	
V8R8.5.0	SV830_092	AL740_098	EM350_049
	SV830_086	AL740_095	EM350_038
	SV830_075	AL740_088	EL350_172
	SV830_068	AL740_077	EL350_171
	SV830_066	AL740_075	EL350_166

[https://www-945.ibm.com/support/fixcentral/main/transform?xml=https://download.boulder.ibm.com/ibmdl/pub/software/server/firmware/sfw\\_fixSupportedCompos.xml&title=HMC++Firmware+Supported+Combinations](https://www-945.ibm.com/support/fixcentral/main/transform?xml=https://download.boulder.ibm.com/ibmdl/pub/software/server/firmware/sfw_fixSupportedCompos.xml&title=HMC++Firmware+Supported+Combinations)

## Be informed

IBM  
© 2017 IBM  
14  
HMC V8R860

- Sign up for IBM My Notifications
  - <http://www-01.ibm.com/software/support/einfo.html>

Software > Support >

### Stay up to date

---

Sign up to stay informed of critical IBM software support updates with **My notifications**.

- Take a proactive approach to problem prevention.
- Receive support content tailored to your needs, delivered directly to you!
- Receive immediate notifications of Security Bulletins and Flashes.
- Receive daily or weekly notifications of technical support information such as downloads, tips, technical notes, and publications.

Signing up is fast and easy with our simple subscription interface:

- Select IBM products in which you are interested.
- Choose daily or weekly notifications.
- Select a delivery method: e-mail and/or RSS news feed.


[Subscribe now!](#)

Register for other communications:

## My Notifications

IBM  
© 2017 IBM  
15  
HMC V8R860

- Select the products of interest
- Receive email updates

 **Security advisories (2016.10.21)**  
IBM My Notifications to: Gareth M Coates

---

My Notifications for AIX - 21 Oct 2016

Dear Subscriber (gaz@uk.ibm.com),

Here are your updates from IBM My Notifications.

Check out the IBM Support beta  
- <https://ibm.biz/support-pilot>

Your support Notifications display in English by default. Machine translation based language setting is added if you specify this option in My defaults within My Notifications. (Note: Not all languages are available at this time, and the English version always over the machine translated version.)

---

1. AIX 6.1

- TITLE: UPDATE Vulnerabilities in MD5 and TLS 1.2 impact AIX  
- URL: <http://www14.software.ibm.com/webapp/set2/subscriptions/ovndq?mode=1&ID=5>



## HMC Upgrades

IBM  
© 2017 IBM  
16  
HMC V8R860

- Download code from FixCentral, burn some media etc etc
- OR
- Download Network install images from
  - <http://www14.software.ibm.com/webapp/set2/sas/f/netinstall/home.html>

### HMC network installation images

Support and downloads

---

**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 8.5.0 images](#)
- [HMC Version 8 Release 8.4.0 images](#)
- [HMC Version 8 Release 8.3.0 images](#)

## HMC Upgrades

IBM  
© 2017 IBM  
17  
HMC V8R860

### HMC 8.8.5.0 network installation images

Support and downloads

---

**Download options for HMC network install images**

You have three options for acquiring HMC network install image files:

- Download all files simultaneously via link to Download Director.
- Download the files individually.
- Download all files via an anonymous FTP process at a command line.

Note that in all cases you must download (or copy) the image files to a server that accepts FTP requests. You cannot download these files directly to the HMC.

---

**Download via Download Director**

You must enable Java on your browser to use Download Director, which uses a Java applet to perform file downloads.

- [Download HMC network install images via Download Director](#)

---

**Download individual files**

File name	Description	Destination path	Size (bytes)	Checksum
<a href="#">img2a</a>	Kernel image	/hmcboot	4053200	61272
<a href="#">img3a</a>	Ram Disk file system	/hmcboot	38704230	36748
<a href="#">base.img</a>	Base Image	/hmcboot	929583104	56635
<a href="#">disk1.img</a>	Base HMC image and Service Documentation	/hmcdump	2633879552	30743
<a href="#">hmcnetworkfiles.sum</a>	hmcnetworkfiles.sum	/hmcdump	55 bytes	n/a

---

**Additional**

- [Other HMC images](#)
- [FLRT: Recommended](#)
- [Power on](#)

---

**Upgrade/instruction**

The following links provide instructions for upgrading to HMC Version 8.8.5.0:

- [Upgrading HMC version 8.8.5.0](#)
- [Upgrading HMC version 8.8.5.0](#)

---

**Translate**

Select Language:

→ [Translate](#)

## HMC Upgrades



- Always read the instructions, but here is an overview:
- On the HMC, save upgrade:
  - `saveupgdata -r disk`
- Copy the files over to the bootable disk partition on the HMC.
  - `getupgfiles -h <hostname> -u <userid> -d <directory>`
- After the files are copied over, run the following command:
  - `chhmc -c altdiskboot -s enable --mode upgrade`
- Reboot the HMC
  - `hmcsshutdown -r -t now`

## Poll



- **Do you usually do HMC (Version) upgrades**
  1. In the computer room using media
  2. In the computer room over a network
  3. Over a network but you are not in the computer room
  4. When you are in a different building

## HMC V8R850 Announcement



- IBM PowerVM NovaLink, V1.0.0.3, IBM PowerVC V1.3.1, and IBM Hardware Management Console V8.8.5 enhanced
- [http://www-01.ibm.com/common/ssi/ShowDoc.wss?docURL=/common/ssi/rep\\_ca/3/877/ENUSZP16-0193/index.html&lang=en&request\\_locale=en](http://www-01.ibm.com/common/ssi/ShowDoc.wss?docURL=/common/ssi/rep_ca/3/877/ENUSZP16-0193/index.html&lang=en&request_locale=en)

## HMC V8R850 Announcement



- IBM PowerVM NovaLink
  - provides a scalable, direct OpenStack cloud management connection for OpenStack solutions like IBM PowerVC. PowerVM NovaLink now supports these configuration options:
- PowerVM Simplified Remote VM Restart
- Power Enterprise Pool Management
- IBM i VM Management
- VM deployment with AME enabled
- PowerVM Multiple Shared-Processor Pools

## HMC V8R850 Announcement



- HMC includes support for the following:
- Management of Power Enterprise Pools with multiple HMCs
- Improved VM restart capabilities that now allow restarting VMs when a system is completely powered off

## HMC V8R850 New features vHMC



- HMC Virtual Appliance (vHMC)
  - Now supports Xen hypervisor
- Originally available with V8R840
  - VMware vSphere ESXi 5
  - KVM, RHEL 6.4 and above

## HMC V8R850 Announcement



- HMC includes support for the following:
- Management of Power Enterprise Pools with multiple HMCs
- Improved VM restart capabilities that now allow restarting VMs when a system is completely powered off

## HMC V8R850 New features PEP

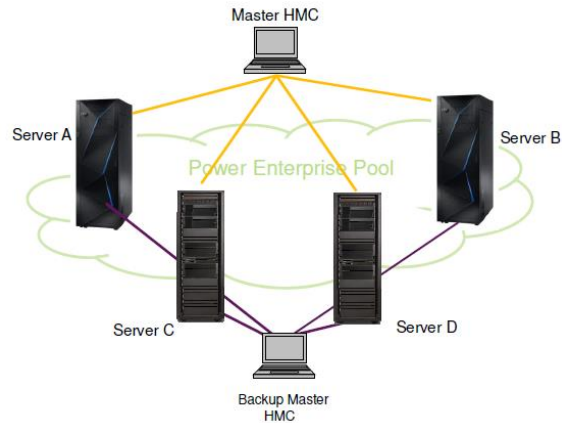


- Power Enterprise Pools (PEP)
  - Now support for multiple HMCs
  - Any number of HMCs can manage servers in the PEP
  - Servers do not have to be connected to all HMCs
  - Nor to the Master HMC

## PEP Pre HMC V8 R850

IBM  
© 2017 IBM  
26  
HMC V8R860

- Both the PEP Master HMC and the Backup Master HMC must be connected to all FSPs in all servers in the pool.
- Difficult between two data centres that are widely separated



## PEP Setup using HMC V8 R840

IBM  
© 2017 IBM  
27  
HMC V8R860

IBM Hardware Management Console

atshmc2 Resources > All Systems

All Systems

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

IBM Hardware Management Console

atshmc2 Resources > All Systems

All Systems

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

Power Enterprise Pool Management

ATIS\_Pool

Processor Resources

Memory Resources

General Pool Properties

Compliance Information

View Pool History Log

Pool Mobile CoD Processor:

Total:	In Use:	Proposed In Use:
3	2	2
Available:	Proposed Available:	
5	0	

Compliance Status: ● Compliance

Server Processor Information:

Server	Installed	Active Non-Base CoD	Active Mobile CoD	Active Mobile CoD Proposed	Inactive	Unreleased	Overdue?	Server State
ATIS_700	32	28	0	0	4	0	No	operating
ATIS_880A	32	28	2	2	2	0	No	operating

General Pool Properties - ATIS\_Pool

This page provides general property information for the selected Power enterprise pool. If this console is the master console for the pool, you can change the name of the pool or change the backup master console. Learn more about setting the master management console for this pool →

Name: ATIS\_Pool [Edit](#)

Pool ID: 021A

Sequence Number: 41

Is this Console the Master Console?  Yes

Master Management Console Name: atshmc2

MTMS: 7042-CR8121F20AC

Backup Master Management Console Name: ATSHMC4 [Edit](#) [Set as Master](#)

MTMS: 7042-CR810F188C

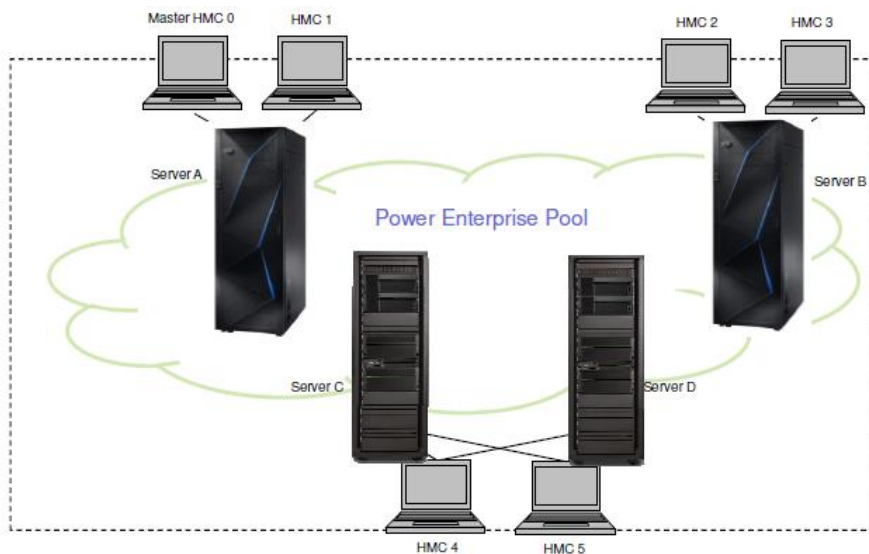
## PEP Setup using HMC V8 R850

IBM  
© 2017 IBM  
28  
HMC V8R860

- This architecture allows for redundant HMCs in each data centre or even for each server.
- Any HMC added to the pool as a 'managing' HMC can be made the master.
- All HMCs in the pool must be at the same level
  - All at V8.850 or all at the same future level.
- All HMCs must have RMC communication to each other, specifically to the 'Master' to coordinate any changes and propagate to all other HMCs.

## PEP Setup using HMC V8 R850

IBM  
© 2017 IBM  
29  
HMC V8R860



## HMC V8R850 Announcement



- IBM PowerVM NovaLink
  - provides a scalable, direct OpenStack cloud management connection for OpenStack solutions like IBM PowerVC. PowerVM NovaLink now supports these configuration options:
- PowerVM Simplified Remote VM Restart
- Power Enterprise Pool Management
- IBM i VM Management
- VM deployment with AME enabled
- PowerVM Multiple Shared-Processor Pools

## HMC V8R850 New features SRR



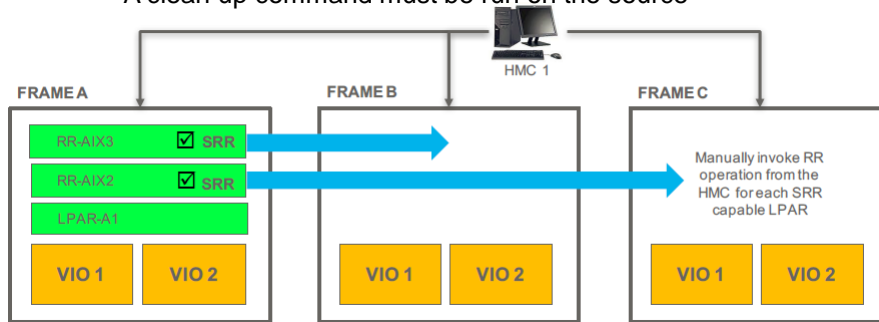
- Simplified Remote Restart (SRR)
  - Allow SRR when HMC has no connection to a server
  - Template support to create SRR-enabled partitions
  - Remote HMC support,
    - Source and destination server managed by different HMCs
  - Auto-cleanup on source server
  - LPM support of SRR-enabled partitions between POWER8 and POWER7
  - User specifications (overrides) for Shared Processor Pool and virtual fibre channel mapping
  - Increase in concurrent SRRs to 32



## Simplified Remote Restart - review

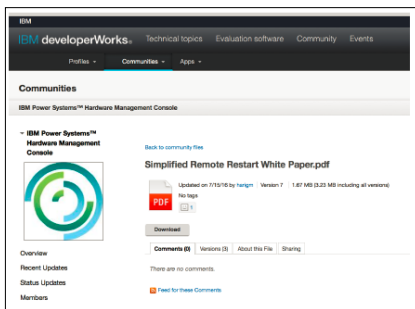
IBM  
© 2017 IBM  
32  
HMC V8R860

- What is SRR
  - Method to restart LPARs elsewhere if entire server fails
  - Available on P8 servers with PowerVM Enterprise Edition
- Compared to LPM
  - VIO servers are not available
  - HMC code level & system FW will dictate the level of functionality
  - User must “manually” invoke the remote restart commands
  - A clean up command must be run on the source



## SRR – July 2016 update

IBM  
© 2017 IBM  
33  
HMC V8R860



- Made Available 15/7/2016
  - Updated White Paper covers the enhancements with the HMC 8.850 release
  - Command usage examples
  - New commands
  - Remote Restart States



- Published 1/6/2016
  - Blog entry providing overview of the Simplified Remote Restart capabilities and enhancements in the HMC 8.85 release

## SRR – July 2016 update

IBM  
© 2017 IBM  
34  
HMC V8R860

ATSHMC4 Resources > All Partitions > mhha72node2 > General Properties

General

View and modify the client partition name and enable the advanced and virtualization capability for the partition. You can also specify advanced settings based on the operating system for the partition. [Learn More](#)

Boot Mode: Normal

Key Lock Position:  Manual  Normal

Serial Number \* System Machine Type: 9119-MHE\*1092E27

Description:

Group Tags:

Virtualization Capabilities

Suspend / Resume

Simplified Remote Restart State X Invalid

Attempt to enable SRR while partition was active

- The SRR checkbox could not be altered via the GUI using the 8.8.4 release

## SRR – check status on CLI

IBM  
© 2017 IBM  
35  
HMC V8R860

```
lssyscfg -r lpar -m $RUBY \
  --filter lpar_names=vm36-Ubuntu1604 \
  | sed -e s/,/\n/g | grep -i restart
```

```
remote_restart_capable=0
simplified_remote_restart_capable=1
remote_restart_status=Remote Restartable
```

## SRR – At LPAR creation

IBM  
© 2017 IBM  
36  
HMC V8R860

**Create Lpar Wizard : Server-8284-22A-SN218ABBV**

**Create Partition**

This wizard helps you create a new logical partition and a default profile for it. You can use the partition properties or profile properties to make changes after you complete this wizard.

To create a partition, complete the following information:

System name : Server-8284-22A-SN218ABBV  
 Partition ID : 12  
 Partition name : RR-AIX3

Allow this partition to be suspended.  
 Allow this partition to be remote restartable(Simplified)  
 Allow this partition to be vTPM capable

Warning: VTPM Trusted Key is the default key.  
 Sync Current configuration Capability Sync turned OFF

< Back Next > Finish Cancel Help

- For a fully virtualized LPAR the checkbox can be set at partition create time
- It can also be set via CLI for SRR at HMC 8.810
- At HMC 8.850 the HMC Enhanced view has been updated to toggle the flag

## SRR – HMC V8R850 Key updates

IBM  
© 2017 IBM  
37  
HMC V8R860

- Increase in number of concurrent RR operations
  - to **32 per target system**
- **Auto cleanup on source system after successful RR**
- Remote Restart with no connection to system ("dead host")
- Complete server outage including the service processor

## SRR – HMC V8R850 Useful updates



- Remote Restart operations can be done via the CLI or REST API
- New Command to list system level & LPAR level SRR details
- Remote MC Remote Restart
  - Source and target systems managed by different HMCs
- Live Partition Mobility Override
  - Migrating SRR-capable partitions between POWER7 & POWER8

## SRR – HMC V8R850 Useful updates



- Manage Partition UI & Template
  - Templates for creating partition with SRR capability
  - Manage Partition (enhanced+ UI) to enable/disable SRR capability
- User Specifications/Overrides
  - Shared Processor Pool
  - Virtual FC Mappings

## SRR – HMC V8R850 New Commands



- `lsrrstartlpar -r sys -m`
- `lsrrstartlpar -r lpar -m`

```
lsrrstartlpar -r sys -m P8-S822-lime
num_dest_remote_restarts_in_progress=0,
max_dest_remote_restarts_supported=32,
powervm_partition_simplified_remote_restart_capable=1,
powervm_partition_remote_restart_capable=1
```

```
lsrrstartlpar -r lpar -m P8-S822-lime
lpar_name=limevios2,lpar_id=4,
lpar_uuid=164CEE80-37A1-45A8-8A98-17F50211FA23,
remote_restart_operation_state=null,
simplified_remote_restart_capable=0,
remote_restart_capable=0
lpar_name=vm190-AIX72,lpar_id=21,
lpar_uuid=0AD682EF-33F5-46A9-82BD-D62960E760B8,
remote_restart_operation_state=Source Side Cleanup Failed,
simplified_remote_restart_capable=1,remote_restart_capable=0
lpar_name=limevios1,lpar_id=1,
lpar_uuid=0908D2D5-F77D-4843-B0AF-0A23863C91F6,
remote_restart_operation_state=null,
simplified_remote_restart_capable=0,remote_restart_capable=0
```

## HMC V8R850 New features vHMC



- ❁
  - HMC Virtual Appliance (vHMC)
    - Now supports Xen hypervisor
- Originally available with V8R840
  - VMware vSphere ESXi 5
  - KVM, RHEL 6.4 and above

## HMC V8R860 Announcement



- IBM PowerVM and IBM PowerVC enhancements
- [https://www-01.ibm.com/common/ssi/ShowDoc.wss?docURL=/common/ssi/rep\\_ca/8/877/ENUSZP16-0498/index.html&lang=en&request\\_locale=en](https://www-01.ibm.com/common/ssi/ShowDoc.wss?docURL=/common/ssi/rep_ca/8/877/ENUSZP16-0498/index.html&lang=en&request_locale=en)

## HMC V8R860 Announcement



- **IBM Power® Hardware Management Console** includes the following new capabilities:
  - Ability to export performance data to an external CSV file format
  - Dynamic setting of the Simplified Remote Restart property

## HMC V8R860 Announcement



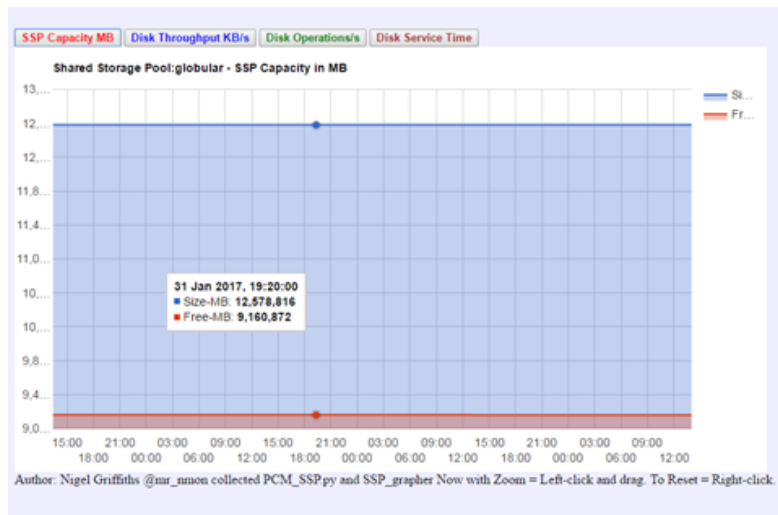
- **IBM Power® Hardware Management Console** includes the following new capabilities:
  - Ability to export performance data to an external CSV file format
  - Dynamic setting of the Simplified Remote Restart property

## Export performance data to CSV

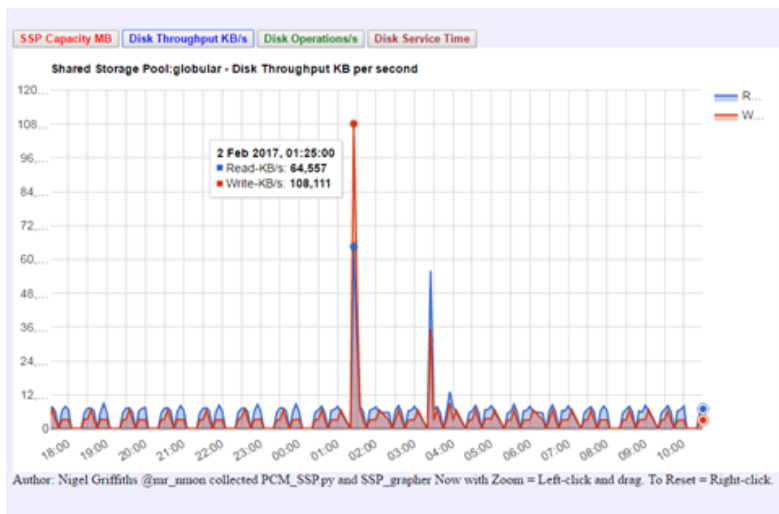


- Uses REST API
- “Non trivial”
- @mr\_nmon has been working on this
- In December, 2016 the following were added:
  - Electrical power supply (Watts)
  - Temperatures (Celsius)
  - Shared Storage Pools
    - size, used, read and write stats for bytes, operations, service times, errors

# Export performance data to CSV



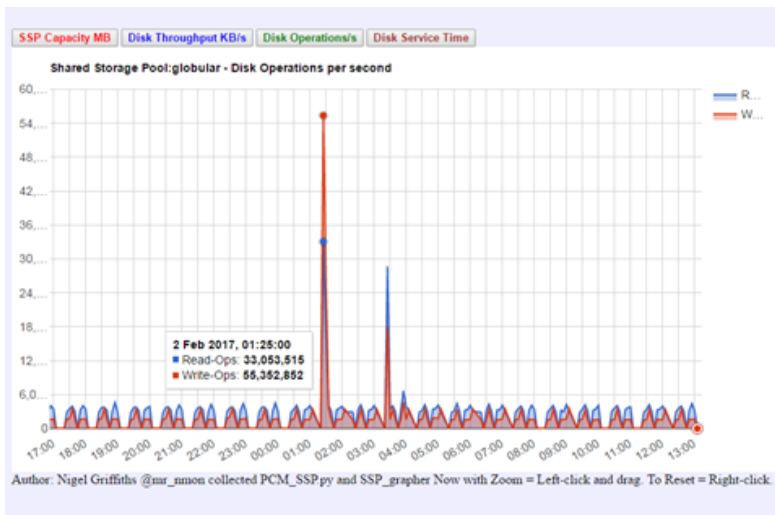
# Export performance data to CSV





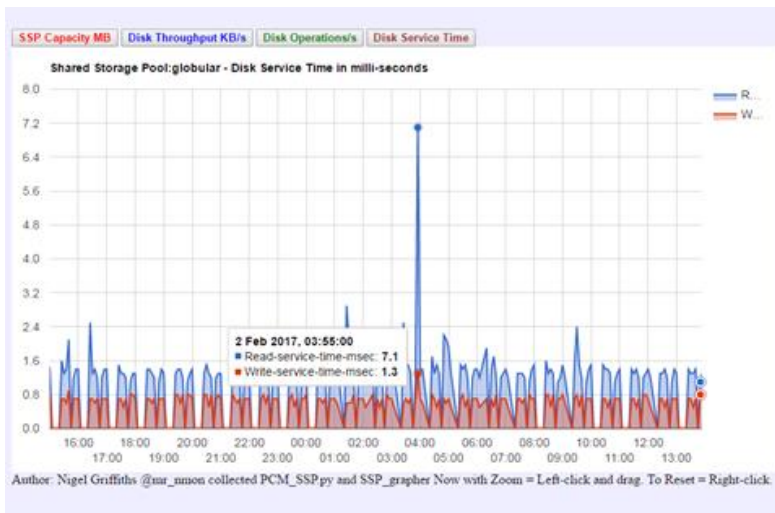
## Export performance data to CSV

IBM  
© 2017 IBM  
48  
HMC V8R860



## Export performance data to CSV

IBM  
© 2017 IBM  
49  
HMC V8R860



## HMC V8R860 Announcement



- **IBM Power® Hardware Management Console** includes the following new capabilities:

- Ability to export performance data to an external CSV file format
- Dynamic setting of the Simplified Remote Restart property

## Dynamic setting of SRR



- The SRR capable flag for an LPAR can now be toggled on the fly

```

lssyscfg -r lpar -m P8-S824-emerald \
--filter lpar_names=vm91 \
-F simplified_remote_restart_capable
1

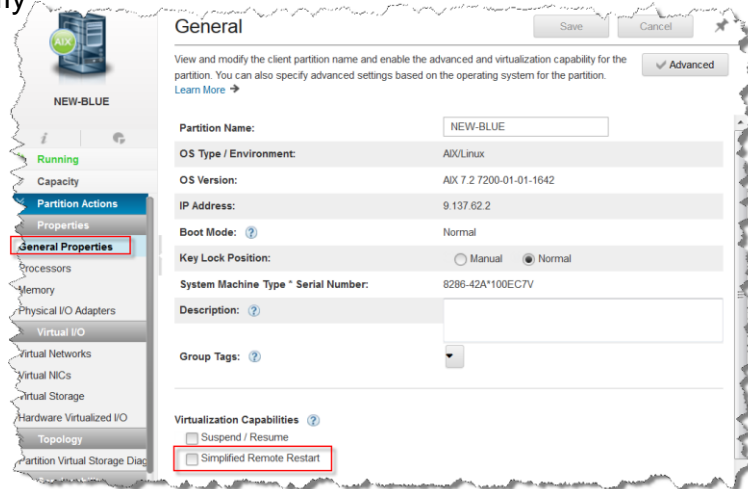
chsyscfg -r lpar -m P8-S824-emerald -I \
'name=vm91,simplified_remote_restart_capable=0
\

lssyscfg -r lpar -m P8-S824-emerald \
--filter lpar_names=vm91 \
-F simplified_remote_restart_capable
0
  
```

## Dynamic setting of SRR

IBM  
© 2017 IBM  
52  
HMC V8R860

- The SRR capable flag for an LPAR can now be toggled on the fly



## Virtual HMC Appliance

IBM  
© 2017 IBM  
53  
HMC V8R860

- TOP TIP
- If you are looking on the web, look for:
  - Virtual HMC Appliance
  - vHMC

## vHMC - Requisites



- Runs on generic x86 hardware
  - Not restricted to IBM/Lenovo
  - Needs H/W Virtualisation enabled (VT-x/AMD-V)
- Minimum requirements
  - 4 CPUs
  - 8GB RAM
  - 160GB HDD
  - 1 to 4 NICs
    - You really want 2 or more
  - Hypervisor
    - Xen hypervisor (new with V8.850)
    - KVM, RHEL 6.4 and above
    - VMware vSphere ESXi 5

## vHMC



- Managed servers as for Hardware Appliance V8
  - POWER6
  - POWER7
  - POWER8
  - NO POWER5
- Cannot
  - Format Media
  - Call home via modem
  - Call home of HMC Hardware failures
- New functionality
  - Activation Engine
    - Allows configuration after 1<sup>st</sup> boot
    - Accept licenses etc

## vHMC



- Announcements
  - [http://www-01.ibm.com/common/ssi/ShowDoc.wss?docURL=/common/ssi/rep\\_ca/4/877/ENUSZP15-0524/index.html&lang=en&request\\_locale=en](http://www-01.ibm.com/common/ssi/ShowDoc.wss?docURL=/common/ssi/rep_ca/4/877/ENUSZP15-0524/index.html&lang=en&request_locale=en)
  - [http://www-01.ibm.com/common/ssi/ShowDoc.wss?docURL=/common/ssi/rep\\_ca/3/877/ENUSZP16-0193/index.html&lang=en&request\\_locale=en](http://www-01.ibm.com/common/ssi/ShowDoc.wss?docURL=/common/ssi/rep_ca/3/877/ENUSZP16-0193/index.html&lang=en&request_locale=en)
- SWMA needed for licensing
- Download from IBM requires
  - Customer Number
  - MTMS of a managed server
  - Product Identification Number

## vHMC



<b>Program number</b>		
<hr/>		
<b>Program number</b>	<b>VRM</b>	<b>Program name</b>
5765-HMV	8.8.4	HMC virtual appliance
<hr/>		
<b>Product identification number</b>		
<b>Program PID number</b>	<b>Maintenance 1-year PID number</b>	<b>Maintenance 3-year PID number</b>
5765-HMV	5660-HMV	5662-HMV, 5663-HMV
	5661-HMV ALC	5664-HMV ALC

## vHMC - How to get it



- Available from ESS
  - <http://www.ibm.com/eserver/ess>
  - Enter your customer number during registration
  - If brand SWMA, select the system number
  - If you have any other contracts with IBM for system-entitled products, you can use that information for registration
  - When registration is completed, go to Software download
  - Select OS and version
- Updates are on FixCentral
  - **Cannot use HMC updates on a vHMC**

## vHMC - FAQ



<http://www-01.ibm.com/support/docview.wss?uid=nas8N1020969>

**Q: Are existing HMC customers entitled to vHMC?**

A: No. vHMC is a separate offering and must be purchased separately. There is no conversion and no upgrade offering at this time.

**Q: Are there any restrictions related to on-site warranty support for managed servers?**

A: Restrictions are similar to the hardware appliance

## vHMC - FAQ



Q: Can the vHMC be hosted on IBM POWER servers?

A: No, the current offering is only supported on Intel hardware.

Q: How can I tell if its a vHMC?

A: If the machine type and model is in the format of " Vxxx-  
mmm" then it is a virtual HMC.

```
*TM V8d7-f9d
*SE fa6e3fc
*MN IBM
*PN N/A
*SZ 8390283264
*OS Embedded Operating
Systems
*NA 9.5.66.40
*FC ???????
*DS Platform Firmware
*RM V8R8.4.0.0
*UVMID 8d7f:9dfa:6aa6:e3fc
```

## vHMC – Activation Engine



- Using the Activation Engine for the HMC virtual appliance
  - Learn how to use the Activation Engine for the Hardware Management Console (HMC) virtual appliance.
- [http://www.ibm.com/support/knowledgecenter/en/TI0003J/p8hai/p8hai\\_vhmc\\_ae.htm?view=kc](http://www.ibm.com/support/knowledgecenter/en/TI0003J/p8hai/p8hai_vhmc_ae.htm?view=kc)

## vHMC – Installing (KVM)



- Installing the HMC virtual appliance by using the KVM hypervisor
  - Learn how to install the Hardware Management Console (HMC) virtual appliance by using the kernel-based virtual machine (KVM) hypervisor.
- [http://www.ibm.com/support/knowledgecenter/en/TI0003J/p8hai/p8hai\\_vhmc\\_kvm.htm?view=kc](http://www.ibm.com/support/knowledgecenter/en/TI0003J/p8hai/p8hai_vhmc_kvm.htm?view=kc)

## vHMC – Installing (KVM)



- Download the <KVM vHMC installation filename>.tar.gz
- `mkdir -p /var/lib/libvirt/images/vHMC`
- `cd /var/lib/libvirt/images/vHMC`
- `tar -zxvf <KVM vHMC installation filename>.tgz`
- `vi domain.xml`
  - Verify that the path to your disks is correct
    - DISK\_PATH
  - Make sure virtio is used in the bus value for your disk device
  - Change the name of the VM (default is vHMC)
  - Verify that your bridges match your Ethernet devices.



## vHMC – Installing (KVM)



- Define the VM
  - `virsh define <domain>.xml`
- Start the VM
  - `virsh start vHMC`
- Determine the (VNC) display number of your console
  - `virsh vncdisplay vHMC`
- Connect to your console with a VNC viewer
  - `vncviewer HOSTNAME:ID`

## vHMC – Installing (Xen)



- New with HMC V8.850
- Installing the HMC virtual appliance by using the Xen hypervisor
  - Learn how to install the Hardware Management Console (HMC) virtual appliance by using the Xen Hypervisor.
- [http://www.ibm.com/support/knowledgecenter/en/TI0003J/p8hai/p8hai\\_vhmc\\_xen.htm?view=kc](http://www.ibm.com/support/knowledgecenter/en/TI0003J/p8hai/p8hai_vhmc_xen.htm?view=kc)

## vHMC – Installing (Xen)



- **Download** <XEN vHMC installation filename>.tar.gz
- `mkdir -p /var/lib/libvirt/images/vHMC.`
- `cd /var/lib/libvirt/images/vHMC`
- `tar -zxvf <XEN vHMC installation filename>.tgz`
- `vi vHMC.cfg` file
  - **Change the name of the virtual HMC**
  - **Replace DISK\_PATH with the path for disk1.img:**
    - `disk = [ 'file:DISKPATH,hda,w' ]`
  - **Replace ethernet adapter:**
    - `vif = [ 'type=virtio, model=e1000, bridge=eth0' ]`

## vHMC – Installing (Xen)



- **Create and start the VM**
  - `xl create vHMC.cfg`
- **Check that the VM was added to the list of defined virtual machines**
  - `xl list.`
- **Access the VM local console**
  - `vncviewer localhost 0`

## vHMC – Installing (VMware)



- Installing the HMC virtual appliance by using VMware ESXi
  - Learn how to install the Hardware Management Console (HMC) virtual appliance by using VMware ESXi.
- [http://www.ibm.com/support/knowledgecenter/en/TI0003J/p8hai/p8hai\\_vhmc\\_vmware.htm?view=kc](http://www.ibm.com/support/knowledgecenter/en/TI0003J/p8hai/p8hai_vhmc_vmware.htm?view=kc)

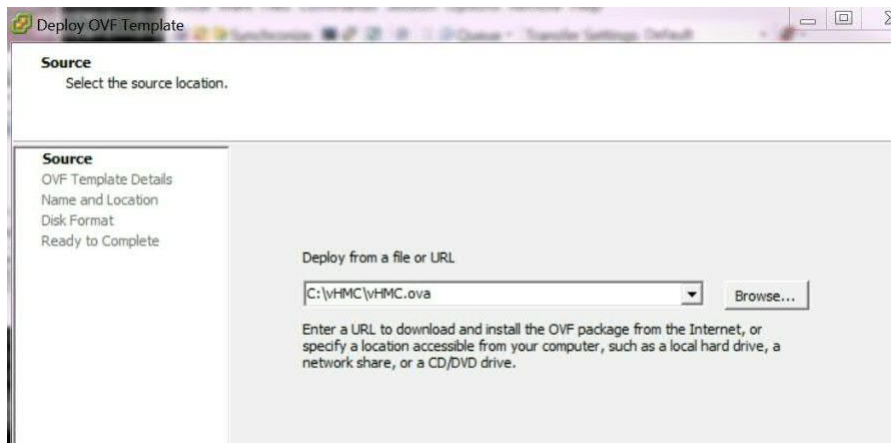
## vHMC – Installing (VMware)



1. Obtain the Tar archive file: `<VMware vHMC installation file name>.tgz`
2. Use the tar command to extract the OVA file from the Tar archive file.
3. Start the vSphere client and log in to the ESXi host.
4. From the File menu, select Deploy OVF template.
5. Click Browse and select the OVA file.
6. Click Next.
7. After the deployment is completed, click Close and select the HMC virtual appliance icon to power the HMC virtual appliance on.

## vHMC – Deployment (VMware)

IBM  
© 2017 IBM  
70  
HMC V8R860



## vHMC – Deployment (VMware)

IBM  
© 2017 IBM  
71  
HMC V8R860

Name	Target	Status	Details	Initiated by	Requested Start Time	Start Time	Completed Time
Power On virtual mach...	vHMC	Completed		root	7/31/2014 8:28:02 AM	7/31/2014 8:28:02 AM	7/31/2014 8:28:08 AM
Deploy OVF template	9.53.182.148	Completed			7/31/2014 8:14:57 AM	7/31/2014 8:14:57 AM	7/31/2014 8:27:10 AM

## vHMC - Notes



- `lshmc -v`

```
"vpd=*FC ??????????
*VC 20.0
*N2 Thu Jul 12 11:35:20 UTC 2016
*FC ??????????
*DS Hardware Management Console
*TM V007-f23
*SE 491baa3
*MN IBM
*PN N/A
*SZ 1044922368
*OS Embedded Operating Systems
*NA 127.0.0.1
*FC ??????????
*DS Platform Firmware
*RM V8R8.5.0.0
*UVMID 007f:2349:1615:6343
"
```

To obtain a pesh password you need to specify a UVMID instead of a serial number

## vHMC - Backup



- Consider using snapshots
  - PRO
    - Easy
    - Reliable
    - Restorable
  - CON
    - Takes disk space
- HMC CCD (Critical Console Data)
  - Caveat: Watch out for the MAC address when restoring

## vHMC – under Ubuntu on a ThinkPad



- Install Ubuntu
- Confirm that the platform supports virtualisation
- `egrep -c '(svm|vmx)' /proc/cpuinfo`
- You need it to be >0 ie: 0 is no good (I got 4)

## vHMC – under Ubuntu on a ThinkPad



- Update and install a few things

```
sudo apt-get install nmon
sudo apt-get install tightvncserver
sudo apt-get install openssh-client
sudo apt-get install openssh-server
sudo apt-get update
sudo apt-get upgrade
sudo apt-get install qemu-kvm libvirt-bin
sudo adduser name libvirtd bridge-utils virt-manager
```

- log out / login

## vHMC – under Ubuntu on a ThinkPad

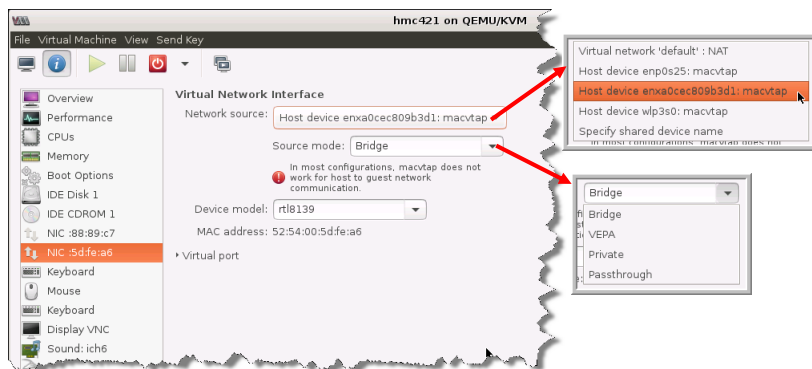
IBM  
© 2017 IBM  
76  
HMC V8R860

- `virsh -c qemu:///system list`
- see this:
  - `gaz@HMC-T420:~$ virsh -c qemu:///system list`
  - | Id    | Name  | State |
|-------|-------|-------|
| ----- | ----- | ----- |
- That is, the command worked but there are no guests
- Define a VM and install/restore the image into it

## vHMC – under Ubuntu on a ThinkPad

IBM  
© 2017 IBM  
77  
HMC V8R860

- Defining a VM is easy using the Virtualisation Manager
- Take care with the network devices

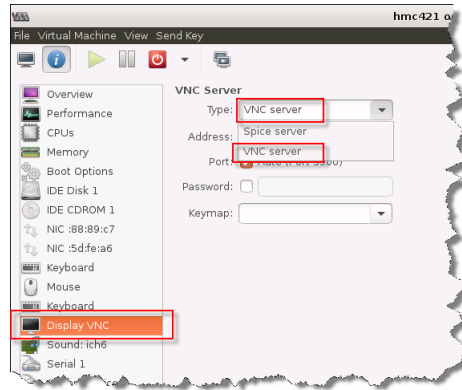


- Install from the KVM .TGZ file

## vHMC – under Ubuntu on a ThinkPad

IBM  
© 2017 IBM  
78  
HMC V8R860

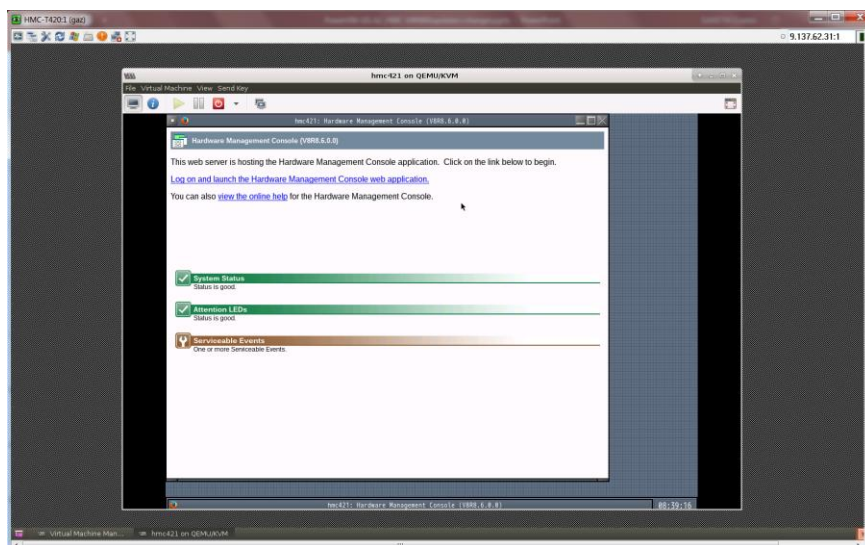
- If you want to use VNC, you need to do this:



- Otherwise the mouse works but the keyboard doesn't!
- <http://askubuntu.com/questions/769108/xrdp/xrdp-xfce-to-install-virtual-machines-in-kvm-keyboard-does-not-work>

## vHMC – under Ubuntu on a ThinkPad

IBM  
© 2017 IBM  
79  
HMC V8R860





## HMC V8R8.4 and later



Welcome to the Hardware Management Console

User name:  
hscroot

Password:  
.....

Log In ?  
Last Log In

Log In

[Learn more about HMC software interface options →](#)

(c) Copyright 2014 IBM Corp. Licensed Materials - Property of IBM. IBM and the IBM logo are trademarks or registered trademarks of IBM Corp. in the U.S., other countries, or both. Java and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.

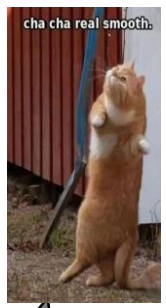
- Last Log In
- Classic
- Enhanced

The Classic GUI will disappear from an HMC near you **SOON**

## HMC Enhanced UI - Performance



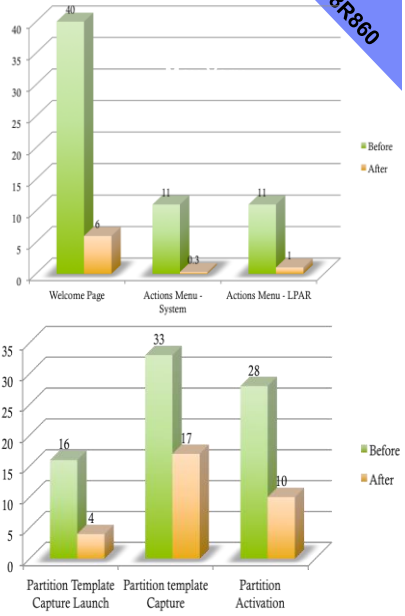
"The new GUI doesn't have an easy life. Even local IBMers told me 'do not use it'."



"But while at the beginning the functionality was miserable, the latest releases got it way better."

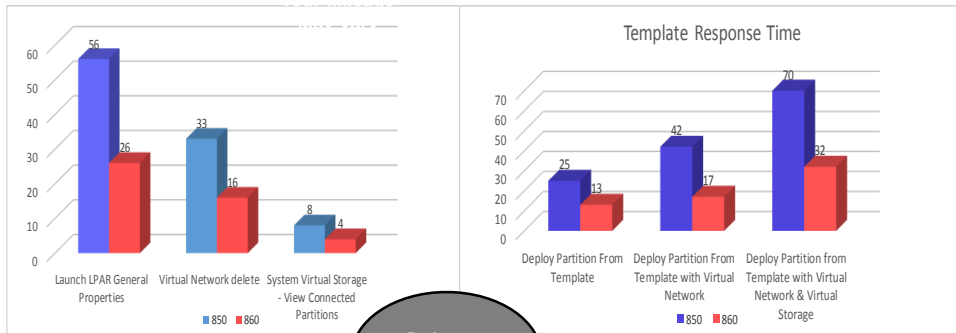
- V8.5.0 Comparison
- 1300 LPARs (950 emulated)
  - 42 systems (36 emulated)

<http://theibmi.org/2016/01/19/my-few-words-about-hmc-enhanced-interface/>



## HMC Enhanced UI – More Performance!


IBM  
© 2017 IBM  
82  
HMC V8R860



Performance  
All Day  
Everyday

## myHMC mobile app

IBM  
© 2017 IBM  
83  
HMC V8R860

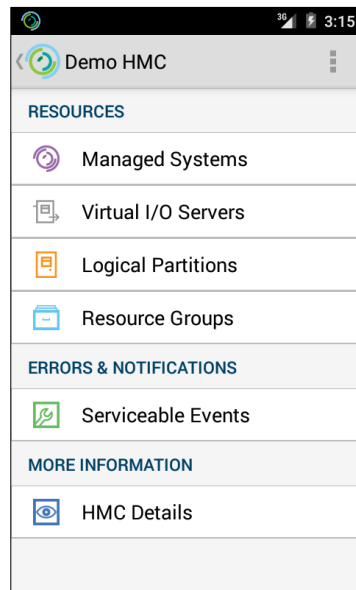
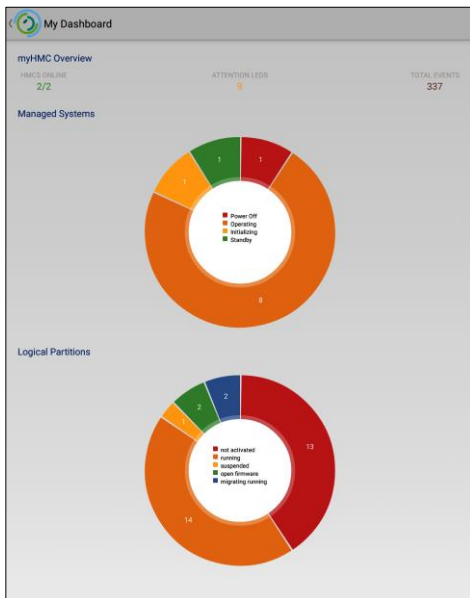
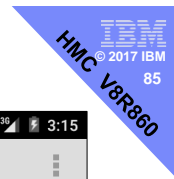
- The myHMC mobile app is here!
- Read about it
  - [https://www.ibm.com/developerworks/community/blogs/PowerSystemsRedbooks/entry/Power\\_Systems\\_HMC\\_mobile\\_monitor\\_IBM\\_myHMC?lang=en](https://www.ibm.com/developerworks/community/blogs/PowerSystemsRedbooks/entry/Power_Systems_HMC_mobile_monitor_IBM_myHMC?lang=en)
- Download it
  - The app is available for iPhone and Android
  - From the appropriate site
- Give us some feedback
  - <http://ibmurl.hursley.ibm.com/NN00>
- Video on 
  - <https://www.youtube.com/watch?v=vg3IkeuvH6E&feature=youtu.be>

## myHMC mobile app

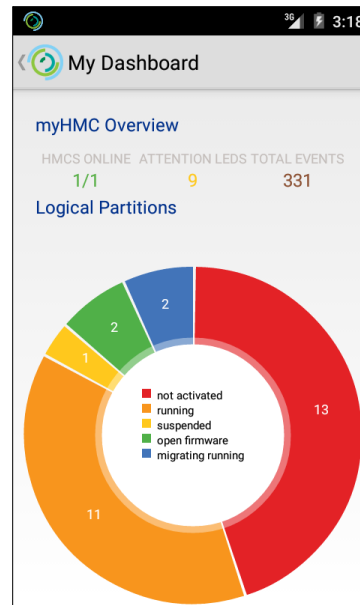
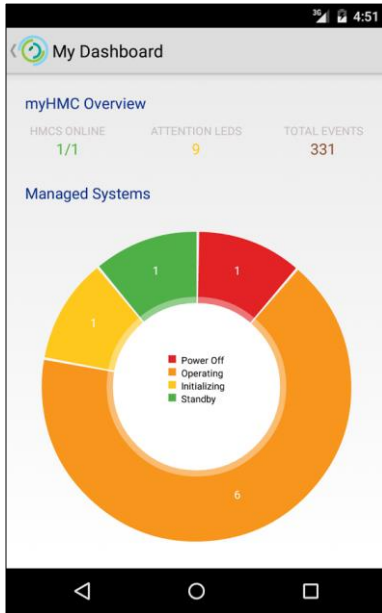


- Monitoring
  - HMC(s)
  - Managed System/ LPAR / VIOS / Group
  - Serviceable Events
  - Dashboard, Performance Monitoring
  
- Search, Sorting & Filtering capabilities
  
- Feedback
  
- Security
  
- Demo mode

## myHMC mobile app



## myHMC mobile app



IBM  
© 2017 IBM  
86  
HMC V8R860

## myHMC mobile app

Carrier 11:22 AM

Logical Partitions  
Jul 1, 2014, 3:42 PM

DEMO PLACEHOLDER

tul115fp-1	not activated	AIX/Linux
b100a-lp02	running	AIX/Linux
IBMi_new_attr	not activated	OS400
b101a-IBMi	not activated	OS400
IBMi-lp01	running	OS400
b101a-lp03	running	AIX/Linux
b101a-lp04	running	AIX/Linux
j14alp02-61S	running	AIX/Linux

My HMCs    Dashboard

- Want to see more screens?
- Install the app, and have a play with the demo HMC
- Then you can connect up to your own HMCs
- Clearly your mobile device will need to get a network connections to them

IBM  
© 2017 IBM  
87  
HMC V8R860

## HMC - Summary



- Continues to mature and improve
- Improvements for Power Enterprise Pools
- Simplified Remote Restart getting much better
- New Virtual Appliances
- Performance data in CSV format
  
- Develop your skills with the Enhanced+ GUI
- Have fun with the mobile app 😊

## March 2017 Presentation



Session 63: **IBM i Predictive Performance Management**

15th Mar 2017, 14:00-15:30 UK time.

Speaker: **Dawn May,**



Senior Technical Staff Member,  
Lab Services & Training & Program Manager for IBM Client Advisory Councils

Can the past predict the future? What about the present - right here and now?  
And if you know the past, and can predict the future, how can you determine  
the impact to your applications?

Performance management on IBM i has proactive monitoring features and  
historical data capabilities, as well as application performance modelling.

Attend this session to learn how you can use monitoring to identify and resolve  
potential issues before they become actual problems, learn about historical  
performance data and how you can use the past trends to plan for the future, and  
application modelling to understand what hardware changes will mean to your  
applications.