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Enhanced Management With HMC V8

October 2014 | by Jaqui Lynch

With the advent of POWER8 architecture, IBM introduced a new version of the Hardware Management Console (HMC) software. POWER8 technology requires that the HMC be running v8r8.1.0. In this article, I'll look at some of the enhancements made in that version as well as prerequisites and steps to upgrade to v8.

Enhancements

HMC v8 is the only version that provides support for POWER8, which requires entitlement validation for its firmware. The HMC will now validate entitlement for the machine type and serial number of the managed server when trying to install firmware.

HMC v8 also introduces a new "Performance and Capacity Monitoring" GUI task that provides reports on resource utilization. This feature requires at least VIOS 2.2.3 and firmware 780 or later.

Other enhancements include:

NIST support
The JVM has been updated, the cryptographic keys have been strengthened, TLS 1.2 is enabled and an improved random number generator has been implemented. These changes require specific browser versions so it's best to ensure your browser is very current. The enhancements Redbooks publication provides details on browser levels and how to enable NIST support.

LPM improvements
HMC logic has been improved to reduce calls to the VIOS that's acting as the mover service partition for a Live Partition Mobility (LPM) action, when vSCSI is used. This can significantly improve LPM performance for vSCSI partitions.

IBM i virtual terminal changes
A new 5250 virtual terminal interface is Java based. The IBM i Access Client Solutions replaces the IBM i Access for Linux Emulation.

SR-IOV support
Single root I/O virtualization (SR-IOV) initially came out in v7.7.9 of the HMC software. HMC v8 adds support for several new adapters. SR-IOV allows for self-virtualizing of SR-IOV capable PCIe adapters so that they can be shared without requiring VIOS. However, VIOS is still required if you want to take advantage of LPM.

Dynamic partition remote restart
Partition Remote Restart is a function of PowerVM Enterprise Edition that's designed to enhance availability of a partition on another server when its original host fails. The change with HMC v8 is that this can now be enabled for an LPAR when the LPAR is deactivated. Prior to v8, it could only be enabled at partition creation.

Absolute values for dynamic LPAR
The chhwres command has been updated to let you specify an absolute value during a dynamic LPAR operation for the number of cores and memory, rather than the delta between current and new values.

POWER8 system support

POWER8 support is provided with HMC v8. When using lssyscfg to display possible compatibility modes, POWER8 will now show as a possible option. Some new metrics can also be displayed for POWER8 systems

POWER Integrated Facility for Linux
Integrated Facility for Linux (IFL) support came out in HMC v7.7.9 but only had a few very basic command line tools for monitoring. HMC v8 makes changes to the support for IFLs. Specifically, IFL processors can be viewed from the HMC GUI, and compliance monitoring and new command-line commands were added. Additionally, capacity on demand processor capacity settings in the GUI will now show the number of Linux-only cores.

Dynamic Platform Optimizer
Dynamic Platform Optimizer (DPO) has been updated to allow DPO to be scheduled from the HMC GUI, rather than only providing a command line interface.

HMC v8 offers several other enhancements but these are a good indication as to the improvements made. So the next step is getting to HMC v8r8.1.0 from your current HMC version. This is done either by a complete fresh install or by upgrading.

Upgrading

HMC v8r8.1.0 became available on June 10, 2014 and shows as MH01419. Since then, three sets of fixes have been released (the most recent on June 30). When upgrading to v8, all three must be applied after the base upgrade is done. Each install/upgrade requires a reboot of the HMC, which takes between 20 and 40 minutes so allow plenty of time for the upgrades. Since prerequisites change over time, you should check these instructions against the readme files to ensure they're still current.

Prior to the upgrade, check that the current HMC meets the prerequisites. In particular, more memory will be required than was previously needed. Specific prerequisites include:

1. At least 2GB memory is required (3GB if you're using Systems Director or have more than 254 partitions) but at least 4GB is recommended. When purchasing a new HMC, I always recommend adding a second 8GB DIMM. It's not expensive and makes a huge difference to HMC performance, especially when more than one person logs in.
2. The HMC must be a CR5 or C08 model or higher.
3. The HMC must already be installed at v7.780 with fixpack MH01402 or HMC v7.7.9 prior to upgrade. No other versions are supported for upgrading.
4. Only POWER6 servers and higher are supported; POWER5 support isn't provided.
5. PowerVM 2.2.3.0 is required for the new performance metrics.
6. You'll find specific instructions if redundant HMCs are involved.

The readme contains additional requirements but these are the critical ones.

The upgrade process involves backing up the critical console data and then backing up the HMC. You no longer have an option to backup to local DVDRam so the backup needs to be done to an attached USB stick or to a remote FTP server.

I did the following to upgrade the HMC:

1. Back it up
2. ssh to the HMC
3. Check it has enough memory monhmc –r mem –n 0
4. Clear temp space on the disk chhmcfs –o f –d 0
5. Get the upgrade files to go to v8 from the SSH connection to the HMC getupgfiles -h public.dhe.ibm.com -u anonymous --passwd anonymous -d /software/server/hmc/network/v8810
6. On a second connection, you can monitor the download ls –la /hmcdump It will show files until it's done then it will show nothing

7. Now you can kick off the upgrade chhmc –c altdiskboot –s enable –mode upgrade This tells the HMC to upgrade on boot Make sure no USB sticks are connected hmcshutdown –r –t now It now reboots and upgrades – this can take between 20 and 60 minutes.
8. After the HMC is back up, it should show as v8.8.1.0 MH01419. Now apply the mandatory and recommended fixes. This can be done easily from the GUI.
9. In the GUI select updates, update HMC, then select ftp from remote server. Details for the ftp are: Server - ftp.software.ibm.com Userid is anonymous and password is your email id Patches will either be service packs or fixes; each type resides in a different directory so it's important to know which type you're installing. In this case, the three patches to go on are all fixes so the ftp directory will be:
/software/server/hmc/fixes If they were service packs, then you would substitute updates for fixes in that path. Select the fix to go on, install it and reboot. The fixes will be:
MH01421 Mandatory patch MH01421.iso
MH01436 Security patch MH01436.iso
MH01441 Latest patch MH01441.iso
Each patch set has to be totally installed and the HMC rebooted prior to installing the next one.
10. Once they are all complete take another HMC backup and test.

More Options, Better Performance

HMC v8 not only adds support for POWER8 but also includes a significant number of other enhancements to the HMC performance and experience. The GUI has a lot more options including the new performance and capacity monitoring features and this puts more pressure on the HMC memory and CPU, hence the requirements for the more recent models and more memory in the HMC. This may be the time to replace your HMCs, bringing in the new CR8 model, which has more base memory as well as faster cores. Like the CR7, it also has two internal hard drives in a RAID configuration, which improves reliability. HMC v8 is proving to be stable and perform well, so now is the time to consider upgrading to the new version. But when doing so make sure you check the prerequisites to ensure a problem-free migration. If you still have POWER5 servers, then this is the time to either replace them with more recent servers or to bring in a new HMC for the newer technology systems, leaving the POWER5 servers on the older HMCs.

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HMC Enhancements Redbooks publication

http://www.redbooks.ibm.com/redpieces/abstracts/sg248232.html?Open

Sizing document for HMC v7.7.8 and later

http://www-01.ibm.com/support/docview.wss?uid=nas8N1019821

Readme for HMC v8 MH01419

http://download4.boulder.ibm.com/sar/CMA/HMA/04ko5/11/MH01419.readme.html

Details on new Entitlement Changes

http://www.ibm.com/support/docview.wss?uid=isg3T1020750

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