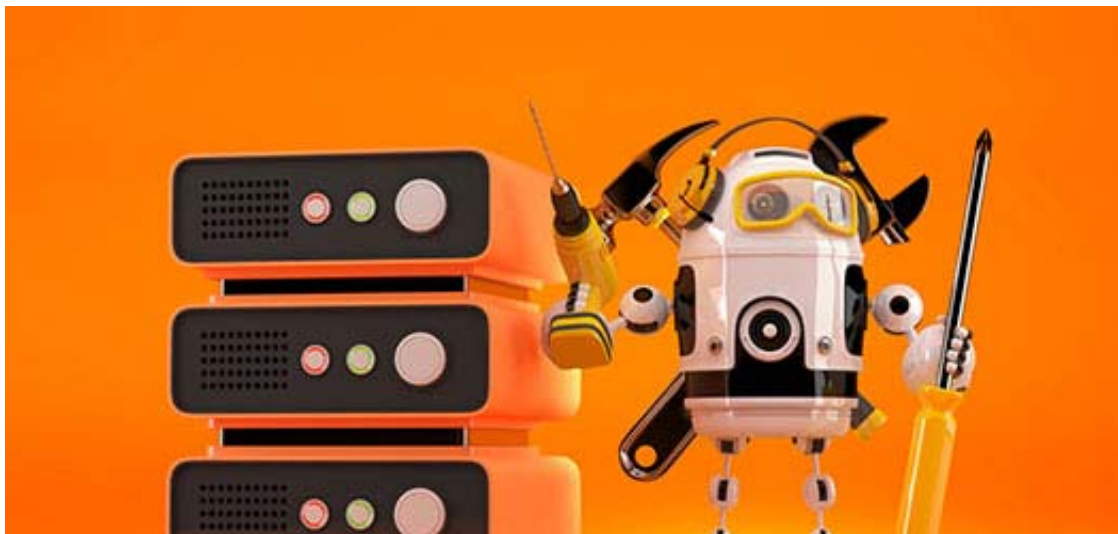




## Hardware Management Console Maintenance Basics

System maintenance is a time consuming but necessary process. Performing updates on your HMC is part of that process and should be done regularly.



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The care and feeding of your hardware management consoles (HMCs) is an important part of keeping your systems current and healthy. I try to keep my HMC at the absolute latest level that will support my servers and that is supported on the HMC. This ensures that I am always prepared to support any new functions and features that come out, provided they are also supported by the attached servers. The instructions in this article are for using Classic mode on the HMC; they will differ slightly if you are using Enhanced mode. The procedure for the updates is very close to the same with both the physical and the virtual HMC.

## Determining the Level You're Currently At

Once you are logged onto the HMC you will see the word Welcome on the right followed by (HMC Version). You can hover over the HMC version and it will provide you with the level you are currently running. Alternatively, you can ssh to the HMC and run the following:

```
lshmc -V
The result will look something like:
"version= Version: 8
  Release: 8.6.0
  Service Pack: 0
HMC Build level 20170124.1
MH01655: Required fix for HMC V8R8.6.0 (11-01-2016)
MH01674: Fix for HMC V8R8.6.0 (01-24-2017)
", "base_version=V8R8.6.0
"
```

The above tells me I am at v8.8.6.0 sp0 with two fixes applied (MH01655 and MH01674).

The lshmc command is very useful and the various flags below can be used to get information very quickly from the command line. If you type in just lshmc it will provide something similar to the syntax list below:

```
-V          - Displays HMC version information.
-v          - Displays HMC VPD information.
-r          - Displays HMC remote access settings.
-n          - Displays HMC network settings.
-b          - Displays the BIOS level of the HMC.
-l          - Displays the current locale for the HMC.
-L          - Displays all supported locales for the HMC.
-h          - Displays HMC hardware information.
-i          - Displays HMC Integrated Management Module (IMM)
            settings.
-e          - Displays HMC settings for Events Manager for Call
            Home.
--firewall - Displays HMC firewall settings.
--netroute - Displays HMC network routing information.
--syslog   - Displays HMC syslog server settings.
-F [] - delimiter-separated list of the names of the
        attributes to be listed for the specified HMC
        setting. If no attribute names are specified,
        then all attributes will be listed.
--header   - prints a header of attribute names when -F is
            also specified
--help     - prints this help
```

## Figuring Out the Levels to Go to

The first step is figuring out what versions you are on and what levels you should install. The latest version is v8.8.6.0 SP1 (as of March 15, 2017), which is also known as MH01656. This level requires that the HMC must be at least a CR8 deskside or a CR5 rack mount. It could also be a virtual HMC, which is a VM on an Intel\* server. Earlier HMCs are not

supported on v8. Additionally, POWER5\* servers are not supported on v8. For older HMCs or for POWER5\* server support, the most current version is v7.7.9.0M3 (MH01546) with multiple fixes. Support for v7.7.9 ended as of December 30, 2016, so this is a good time to transition your older servers to newer technology. If you need to keep POWER5\* servers around, then I would recommend putting them on their own HMC so that the newer servers can run with the latest HMC levels and take advantage of the features offered in v8.8.6.

Prior to upgrading, it is important to read the description file for the upgrade. This is where you will find the list of any prerequisites for the upgrade. You should also note that the HMC must currently be at v8.8.4+mandatory fix MH01560 or v8.8.5+mandatory fix MH01617 prior to upgrading to v8.8.6.

## Enhancements and New Functions in v8.8.6.0SP1

(Taken from the description file)

- Changed the default behavior of partition migration operations to maintain the processor and memory affinity group of each migrating partition.
- Added support to the migrpar command to allow users to override the processor and memory affinity group of each migrating partition.
- Added support for JNLP based Virtual Terminal Console (VTERMs) on the following browsers: IE, Mozilla Firefox, Chrome, Safari
- HMC New login page - The pre-login and login panels have been consolidated into one single page with the following features:
  - New design
  - Welcome text integrated into the sign-in box
  - Monitoring section, including resources states, attention LEDs and serviceable events
  - Persisted default login set to the Enhanced GUI
  - Social networks links (not available on local HMC)
  - DeveloperWorks feeds summary section (not available on local HMC)

This update also includes some significant security patches: In particular, there are fixes for BIND, NTP, OpenSSL and OpenSSH. After this update you may find that older SSH clients that use insecure ciphers will not work when using SSH to the HMC. Putty does still work, as should any modern client.

## Prior to Upgrading

It is important to take a backup prior to upgrading. That way if things go wrong you can still recover. There are two parts to the backup. The first is to take a local backup of the critical console data—this is done to ensure that local customizations are saved. Then you take a backup of the HMC itself.

We now check that we have enough memory and disk space for the upgrade.

1. Check we have plenty of memory `monhmc -r mem -n 0` KiB Mem : 8176644 total, 2289068 free, 2394964 used, 3492612 buff/cache This shows our server has 8GB memory
2. Check whether filesystems are full from previous upgrades `monhmc -r disk -n 0` This will show the filesystems and space used:

Filesystem	1K-blocks	Used	Available	Use%	Mounted on
/dev/sda2	15990112	7207120	7964080	48%	/
devtmpfs	4079392	0	4079392	0%	/dev
tmpfs	4088320	0	4088320	0%	/dev/shm
tmpfs	4088320	139820	3948500	4%	/run
tmpfs	4088320	0	4088320	0%	/sys/fs/cgroup
/dev/sda3	5909248	231852	5370556	5%	/var
/dev/mapper/HMCDataVG-ExtraLV	20511312	6982204	12464148	36%	/extra
/dev/mapper/HMCDataVG-HomeLV	10190100	114396	9535032	2%	/home
/dev/mapper/HMCDataVG-DataLV	113402528	68804	107550172	1%	/data
/dev/mapper/HMCDataVG-LogLV	8125880	1461692	6228376	20%	/var/hsc/log
/dev/mapper/HMCDataVG-DumpLV	51474912	57184	48779904	1%	/dump

To clean up filesystems by clearing out the temp files do the following: `chhmcfs -o f -d 0`

You can also run `lshmcfs` to show all the filesystems. `lshmcfs`

```
filesystem=/var,filesystem_size=7935,filesystem_avail=6082,temp_
files_start_time=12/05/2016 11:47:00,temp
_files_size=1089
filesystem=/dump,filesystem_size=50268,filesystem_avail=47636,temp_
files_start_time=02/07/2017 10:26:00,temp
_files_size=0
filesystem=/extra,filesystem_size=20030,filesystem_avail=12172,temp_
files_start_time=none,temp_files
_size=0
filesystem=/,filesystem_size=15615,filesystem_avail=7777,temp_files_start_
time=none,temp_files_size=0
```

- 3. Backing up the HMC In the HMC GUI Select HMC Management Then Save Upgrade Data and save the data to the hard drive. When that is complete select Backup Management Console Data Check include performance data You then have several choices – you can use the USB drive if you have it and it is formatted or you can backup to a remote FTP server. Once that is complete you are now ready to do your updates.

- 4. Verify server firmware compatibility with HMC level This is a critical step and helps ensure that you don't upgrade to a level of the HMC that is not supported for the firmware your servers are currently running. You can find the compatibility list at [here \(https://www-945.ibm.com/support/fixcentral/main/transform?xml=https://download.boulder.ibm.com/ibmdl/pub/software/server/firmware/sfw\\_fixSupportedCombos.xml&title=Supported+Combinations\)](https://www-945.ibm.com/support/fixcentral/main/transform?xml=https://download.boulder.ibm.com/ibmdl/pub/software/server/firmware/sfw_fixSupportedCombos.xml&title=Supported+Combinations).

## Updating

In order to install an HMC from scratch you either need to use the recovery DVD that came with it, or you can download an ISO image from Entitled Software and burn it to a DVD. You then install the HMC using that DVD. You can also burn that image to a USB flash drive (if you ordered the 8GB one with the HMC) and use that instead. To figure out the latest level for upgrading you go to Fix Central and click on select product, Power Systems management console, Power HMC and then the version you want to upgrade to (v8.8.6.0). Then you click on continue. It will then bring you to a webpage where you can see the latest upgrades and the description files along with links to any required patches.

There are three kinds of updates for the HMC and they are handled a little differently. Two of them (updates and fixes) are handled as general updates where the HMC is updated via the GUI. You need to know if the update is an update or a fix—this is detailed in the readme or description document, and determines the location you point to in order to obtain the update.

### Minor Fixes and Service Packs

When I select Update HMC on the HMC I use the FTP option, point to [ftp.software.ibm.com](ftp://ftp.software.ibm.com) and login as anonymous. If this is an update I point to </software/server/hmc/updates>. As an example, v8.8.6.0 sp1 (MH01656 - current version) is a service pack which means it is processed as an update. [Here's a current link to this update \(https://delivery04.dhe.ibm.com/sar/CMA/HMA/06td0/0/vMH01656.readme.html\)](https://delivery04.dhe.ibm.com/sar/CMA/HMA/06td0/0/vMH01656.readme.html).

This differs from smaller groups of fixes that have different names. If it is a fix, then the directory is usually </software/server/hmc/fixes>. The HMC prompts you with a list of patches with names such as MH01567.iso and you pick the correct one.

### The Actual Update Process Is:

In the HMC GUI select Updates, then Update HMC Select remote server Check the ftp box and then fill in the following: [ftp.software.ibm.com](ftp://ftp.software.ibm.com) anonymous login with your email as password </software/server/hmc/updates> (this is for MH01656)

**Click next** MH01656 is the service pack we are installing and it shows as HMC\_Update\_V8R860\_SP1.iso - check the box for this Click next

Click finish

When it says it is done click on ok Then yes to reboot

You can then go and install any additional fixes that are required. Each will require a reboot.

## Upgrades

The other option is a more major upgrade, and typically I do these by using SSH to the HMC. For example, if I was going to upgrade to v8.8.6.0 I would open two SSH sessions to the HMC. On one I would be running the following script to monitor the upgrade:

```
monitor the upgrade:
while true ; do
date
ls -la /hmcdump
sleep 60
done
```

On the other I would be downloading the software. Prior to downloading the software you can use the web to check what files are actually there. In the case of v8.8.6.0 you would go to: <http://public.dhe.ibm.com/software/server/hmc/network/v8860/>

Typically you will see base.img, disk1.img, hmcnetworkfiles.sum, img2a and img3a. You can download these if you want to or you can follow the procedure below to download them directly to the HMC.

On the actual download session, you would do the following:

```
chhmcfs -o f -d 0
```

The above clears out all temp files

```
getupgfiles -h public.dhe.ibm.com -u anonymous --passwd anonymous -d /software/server/hmc/network/v8860
```

The above downloads the actual upgrade files.

Once the software is downloaded you no longer see the files in /hmcdump, which is why the monitor script above is helpful in knowing when it has ended. Once they are downloaded you can exit the first session and then type in the following two commands to tell the HMC to perform the upgrade:

```
chhmc -c altdiskboot -s enable --mode upgrade
The above tells it to set up to upgrade on boot
hmcshutdown -r -t now
```

It takes about 20-30 minutes to actually perform the upgrade. Once it is done you then need to install any upgrades or fixes that are also required. Each upgrade or fix will take at least 20 minutes as a reboot of the HMC is required for each. If you have redundant HMCs you should do them both the same day as problems can occur when they are out of sync. This is explained in the readme.

## Post Install

Once the updates are applied you should check a few things. The first thing you should do is run another backup so you have an image to recover from

```
"version= Version: 8
Release: 8.6.0
Service Pack: 1
HMC Build level 20170302.1
", "base_version=V8R8.6.0
"
```

As you can see the system has now been upgraded to the new service pack.

## Summary

System maintenance is a time consuming but necessary process. Performing updates on your HMC is part of that process and should be done regularly. I typically do quarterly updates of my HMCs in order to ensure that I am able to move forward easily with new servers and functionality. This is not a difficult task as long as you are consistent. I highly recommend building regular backups and updates into your system maintenance plans.

### About the author

Jaqui Lynch has over 38 years of experience working with a projects and Oses across vendor platforms, including IBM Z, UNIX systems and more.

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