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# Hardware Management Console 101

Command-line actions improve backup procedures and more

June 2009 | by [Jaqui Lynch](#)

```
vtmenu
```

```
-----  
Managed Systems:  
-----  
 1) p6-520-8203-E4  
 2) p5-570-9117-57
```

[Figure 1](#)

[Figure 2](#)

[References](#)

Most of the time administrators perform their functions on the Hardware Management Console (HMC) using the Web browser-based interface that comes with version 7. However, there are times when it's necessary or quicker to perform administrative functions via the command-line interface. These functions can range from opening a terminal, to gathering a systems plan to obtaining information about what is on the HMC. In this article, I'll explain some important Web browser-based management functions and command-line functions that may be useful to you.

## Web Browser-Based Functions

**Enabling Remote Access**—If you plan to use HMC command-line functions, then this capability needs to be enabled from the physical HMC itself. Once you're logged into the HMCm click on "HMC Management" and then "Remote Command Execution." Make sure "Enable Remote Command Execution Using the SSH Facility" is checked. This allows a user to secure shell (SSH) into the HMC from a remote terminal. While still in "HMC Management," click on "Remote Operation" and ensure it's enabled. Remote operation provides the capability to control the HMC from a Web browser on a remote workstation. Finally click "Remote Virtual Terminal" and enable this so the vterms will work from the remote clients. Performing these functions enables remote access using vterms to the LPARs, SSH to the HMC and remote Web-browser access to the HMC.

**Backup Activities**—The HMC should be backed up regularly to ensure important data is recoverable. If the HMC fails and needs to be restored from the recovery DVD, it will query the service processors to get back the information about the LPARs, but you must restore from a data backup to recover custom data.

The first step in taking a backup is formatting the media. The HMC is very fussy about the media it will support and only supports specific DVD-RAM media. [Reference 5](#) provides a link to the latest list of supported media for HMC backups. The Format Media option can be used to correctly format a DVD-RAM or USB flash drives. Alternative options for backups are also available.

There are two kinds of backups that need to be taken. The first, the Save Upgrade Data option, allows you to save data before an upgrade, either to DVD, the HMC hard drive or to a USB flash drive. This task uses a wizard to save upgrade data—files that were created or customized while running the current software level—to the media. Saving this data should always be performed prior to an HMC software upgrade.

The second kind of backup is under the Backup HMC Data option and it's sometimes referred to as the Backup Critical Console Data option. This allows you to backup critical data to the DVD or to an NFS-mounted file system. Alternatively, you can send the data to a remote site. This kind of backup should be taken before and after any HMC changes such as adding LPARs. I also take these backups before an upgrade. This option backs up user-created data such as user information and preferences, platform configuration files, log files, updates, network definitions, etc. This backup is only used if the HMC is being reinstalled from the product DVD after a disaster.

## Using Line Commands on the HMC

Occasionally it's quicker to SSH into the HMC to execute commands. The HMC is actually a Linux system with a restricted command set. Common actions that may be performed at the command line include: opening and controlling vterms, listing dynamic IP addresses, getting details of an LPAR or system's configuration, rebooting the HMC or an LPAR and powering a system on or off.

**vterm Operations**—One useful command to know is the `vtmenu` command—which provides a list of managed systems you can work with. You can then select the system and the LPAR to open the vterm to. To escape a terminal session selected in this way type in "~." [Figure 1](#) shows an example of the `vtmenu` command.

Alternatively, the `mkvterm` command can be used to open a vterm to an LPAR. The command below will open a vterm to the LPAR that allows a user to then login once they receive the login prompt.

```
~> mkvterm -m p6-520-8203-E4A-06A8A94 -p p6vios1
```

Instead of `-p p6vios1` you could use `-id 3`, where 3 is the LPAR ID. To exit the vterm you will need to type in "~~." or to use `rmvterm`.

```
rmvterm -m p6-520-8203-E4A-06A8A94 -p p6vios1
```

**Rebooting the HMC**—It's possible to reboot the HMC using a line command. From the HMC login type in `hmcshutdown -r -t now`. This reboots the HMC immediately.

**Controlling an LPAR via the HMC Command Line**—If there are issues with the Web-browser interface it's still possible to shutdown, activate or reboot an LPAR from the HMC command line. It's also possible to power a managed server off or on. The following commands would shutdown and reboot the LPAR that is partition ID 3 (or that is named `p6l1`) on the managed system that is listed below. It's an immediate shutdown as the command specifies `-immed`.

```
chsysstate -r lpar -m p6-520-8203-E4A-06A8A94 -o shutdown --immed --
restart --id 3
chsysstate -r lpar -m p6-520-8203-E4A-06A8A94 -o shutdown --immed --
restart -n p6lpar1
```

If an LPAR is already shutdown then it is possible to activate the LPAR as follows:

```
chsysstate -r lpar -m p6-520-8203-E4A-06A8A94 -r lpar -o on -n p6lpar1 -f
default -b normal
```

Above, the `-f default` would use the profile called `default` and the `-b` could be `normal` or `sms`, depending on whether this is a normal reboot or a boot into `sms` mode. It's also possible to replace the `-n p6lpar1` with the LPAR ID by using `-id 3`. Finally the whole machine can be powered on using the following:

```
chsysstate -m managedsystemname -o on -r sys
```

**Commands to get Configuration Information**—There are additional commands that will provide configuration information if it needs to be gathered in a hurry. The first of these will list the dynamic IP addresses served out by the HMC along with other network settings.

- The `lshmc -n` command will list the hostname for the HMC, its domain information, the IP addresses for the public and private networks, the subnet mask, the gateway and nameserver plus additional network information, including the media access control (MAC) addresses of the network cards in the HMC.
- The `lssysconn` command is used to list all of the known managed systems for the HMC along with certain attributes. Specifically, (see [Figure 2](#)) the serial number for the managed system, its connection status and the DHCP that it was assigned are all listed.
- The `lssyscfg` command is used to get information about the attributes of managed systems. Typing in `lssyscfg -r sys` will cause all the attributes for all of the managed systems to be listed. The output can be limited to a specific system by using:

```
lssyscfg -r sys -name=p6-520-8203-E4A-06A8A94
```

**System Plans**—System plans are a critical component of systems documentation and can be invaluable if it's necessary to recover a server. The `lssysplan` command can be used to provide a list of the current sysplans on the HMC.

```
lssysplan
```

```
name=mar2509-plan.sysplan,description=System plan created from p6-520-8203-E4A-06A8A94,source=HMC V7R3.4.0.0,version=HMC 1.5,"date=Mar 25, 2009 10:20:03 PM"
```

In order to create a system plan the command would be:

```
mksysplan -f p6520-jaqui.sysplan -m p6-520-8203-E4A-06A8A94
```

System plans can be taken from the GUI as well, but if there are problems with that method then the command-line version usually works. If you're taking advantage of file-backed optical, then sometimes this causes problems for the system plan. Modifying the command to still probe the other LPARs but to not probe the virtual I/O servers will usually get around this. You can do this with the following command:

```
mksysplan -f p6520-jaqui.sysplan -m p6-520-8203-E4A-06A8A94 --novios  
lssysplan
```

```
now shows: name=p6520-jaqui.sysplan,description=,source=HMC  
V7R3.4.0.0,version=HMC 1.5,"date=Jun 7, 2009 8:31:34 PM"
```

Other options on the `mksysplan` include `-noprobe`, `--noinvscout` and `-nohwdisc`. These are all explained clearly in the man pages for `mksysplan` on the HMC. Once the sysplan is created, it can then be viewed through the Web-browser interface or FTP'd to a desktop and viewed using the Systems Planning Tool. For more information on SPT, read "[Using the Systems Planning Tool for Disaster Recovery.](#)"

## Utilizing HMC

Understanding how to properly use the HMC is a critical part of the administrator's role. Knowing how to use the command line and GUI to ensure smooth operation can make a huge difference in the capability to support the managed systems and its users. In all cases, the man command should be used beforehand to ensure the correct command syntax is being used. There are additional links in the references section that include general HMC information as well as the link to the command-line reference manual. Taking backups is a critical part of administering the HMC—these should be part of your regular backup cycle and should be sent off-site along with the LPAR backups, if that's your company practice. Understanding the HMC command line can also save significant time and can be used to get around some of the issues that occasionally arise using the GUI interface.

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