

HP System Partitions Guide

Administration for nPartitions

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Preface

This book describes nPartition system administration procedures, concepts, and principles for the HP servers that support nPartitions.

This preface has the following sections:

- *About This Book: Overview of Chapters* on page 22
- *Related Information* on page 24
- *Publication History* on page 27
- *Notational Conventions* on page 28

Reader Comments and Feedback

HP welcomes your feedback on this publication. Address your comments to edit@presskit.rsn.hp.com and note that you will not receive an immediate reply. All comments are appreciated.

About This Book: Overview of Chapters

1. *Getting Started with nPartitions* on page 29

This chapter introduces Hewlett-Packard nPartition system features, server models, and administration tools, and introduces the basic details needed for managing nPartitions.

2. *nPartition Server Hardware Overviews* on page 87

This chapter introduces Hewlett-Packard nPartition server models, features, model strings, and hardware path details.

3. *Planning nPartitions* on page 119

This chapter describes how you can plan nPartition configurations. Details include the nPartition configuration requirements and Hewlett-Packard's recommendations.

4. *Using Management Interfaces and Tools* on page 135

This chapter presents the system management interfaces and tools available on Hewlett-Packard's nPartition-capable servers. In addition to overviews of management features and the nPartition boot environments, this chapter has access procedures and detailed command references.

5. *Booting and Resetting nPartitions* on page 183

This chapter introduces nPartition system boot and reset concepts, configuration options, and procedures for booting and resetting nPartitions.

6. *Configuring nPartitions* on page 275

This chapter presents the procedures for creating, configuring, and managing nPartitions on Hewlett-Packard servers that support them.

7. *Managing Hardware Resources* on page 341

This chapter covers the procedures for managing the hardware resources in nPartitions and their server complexes.

The topics covered include power and LED (attention indicator) management, hardware configuration and deconfiguration, and analysis of the current complex status.

8. *Listing nPartition and Hardware Status* on page 383

This chapter covers procedures for listing the current status of nPartitions and server hardware components.

9. *Virtual Partitions (vPars) Management on nPartitions* on page 425

This chapter describes how to create, configure, and manage HP's virtual partitions within an nPartition (hard partition) system environment. Each virtual partition can boot a single instance of the HP-UX B.11.11 operating system.

10. *nPartition Commands* on page 503

This chapter has details and command-line syntax for the HP nPartition configuration commands.

Related Information

For the most current nPartition administration details use this publication, the *HP System Partitions Guide*.

You can find other information on nPartition server hardware management, administration of HP-UX 11i and Microsoft® Windows®, and diagnostic support tools in the following publications.

Web Site for HP Technical Documentation: **<http://docs.hp.com>**

The main Web site for HP technical documentation is <http://docs.hp.com>, which has complete information available for free.

Server Hardware Information: **<http://docs.hp.com/hpux/hw/>**

The <http://docs.hp.com/hpux/hw/> Web site is the systems hardware portion of the docs.hp.com and provides HP nPartition server hardware management details, including site prep, installation, and more.

HP-UX 11i Information

The following Web sites and publications are available for information about the HP-UX 11i operating system.

- <http://docs.hp.com/hpux/os/11i/>
This portion of the docs.hp.com Web site has complete information about HP-UX 11i Version 1 (HP-UX B.11.11).
- <http://docs.hp.com/hpux/os/11iv2/>
This portion of the docs.hp.com Web site has complete information about HP-UX 11i Version 2 (HP-UX B.11.23).
- **HP-UX System Administration Information**
 - *Managing Systems and Workgroups: A Guide for HP-UX System Administrators*
 - *HP WBEM Services for HP-UX System Administrators Guide*
- **HP-UX 11i Release Notes**
 - *HP-UX 11i September 2003 Release Notes*
 - *HP-UX 11i Version 2 Release Notes*

- **HP-UX 11i Installation Information**
 - *HP-UX 11i Version 1 Installation and Update Guide, September 2003*
 - *HP-UX 11i Version 2 Installation and Update Guide, October 2003*
- **PCI Card Online Addition/Replacement Information**
 - *Configuring HP-UX for Peripherals* [HP-UX 11i Version 1 Only]
 - *Interface Card OL* Support Guide* [HP-UX 11i Version 2 Only]
- **Virtual Partitions Information**
 - Installing and Managing HP-UX Virtual Partitions (vPars)*
[HP-UX 11i Version 1 Only]
- **Pay Per Use (PPU) and Capacity On Demand (iCOD) Information**
 - *Pay Per Use (PPU) User's Guide for Version B.06.x*
 - *Instant Capacity on Demand (iCOD) User's Guide for Version B.06.x*
- **HP-UX 11i Workload and Resource Management Information**
 - *HP-UX Workload Manager User's Guide*
 - *HP Process Resource Manager User's Guide*

Windows Operating System Information

You can find information about administration of the Microsoft® Windows® operating system at the following Web sites, among others:

- http://docs.hp.com/windows_nt/
- <http://www.microsoft.com/technet/>

Diagnostics and Event Monitoring: Hardware Support Tools

Complete information about HP's hardware support tools, including online and offline diagnostics and event monitoring tools, is at the <http://docs.hp.com/hpux/diag/> Web site. This site has manuals, tutorials, FAQs, and other reference material.

Related Information

**Web Site for HP Technical Support:
<http://us-support2.external.hp.com>**

HP's IT resource center Web site at <http://us-support2.external.hp.com/> provides comprehensive support information for IT professionals on a wide variety of topics, including software, hardware, and networking.

Books about HP-UX Published by Prentice Hall

The <http://www.hp.com/hpbooks/> Web site lists the HP books that Prentice Hall currently publishes, such as HP-UX books including:

- *HP-UX 11i System Administration Handbook*
http://www.hp.com/hpbooks/prentice/ptr_0130600814.html
- *HP-UX Virtual Partitions*
http://www.hp.com/hpbooks/prentice/ptr_0130352128.html

HP Books are available worldwide through bookstores, online booksellers, and office and computer stores.

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- Seventh Edition August 2003, 5971-4742. CD-ROM and Web (<http://docs.hp.com/>) delivery.
- Sixth Edition April 2003, 5187-3603. CD-ROM, Web (<http://docs.hp.com/>), and print delivery.
- Fifth Edition August 2002, B2355-90762. CD-ROM, EPSS, Web (<http://docs.hp.com/>), and print delivery.
- Fourth Edition June 2002, B2355-90752. CD-ROM, EPSS, and Web (<http://docs.hp.com/>) delivery.
- Third Edition March 2002, B2355-90746. CD-ROM, EPSS, and Web (<http://docs.hp.com/>) delivery.
- Second Edition December 2001, B2355-90744. CD-ROM, EPSS, and Web (<http://docs.hp.com/>) delivery.
- First Edition September 2001, B2355-90736. CD-ROM, EPSS, and Web (<http://docs.hp.com/>) delivery.

Notational Conventions

The following notational conventions are used in this publication.

WARNING

A warning lists requirements that you must meet to avoid personal injury.

CAUTION

A caution provides information required to avoid losing data or avoid losing system functionality.

NOTE

A note highlights useful information such as restrictions, recommendations, or important details about HP product features.

- Commands and options are represented using this font.
- **Text that you type exactly as shown** is represented using this font.
- *Text to be replaced with text that you supply* is represented using this font.

Example:

“Enter the `ls -l filename` command” means you must replace *filename* with your own text.

- **Keyboard keys and graphical interface items (such as buttons, tabs, and menu items)** are represented using this font.

Examples:

The **Control** key, the **OK** button, the **General** tab, the **Options** menu.

- **Menu → Submenu** represents a menu selection you can perform.

Example:

“Select the **Partition → Create Partition** action” means you must select the **Create Partition** menu item from the **Partition** menu.

- Example screen output is represented using this font.

1

Getting Started with nPartitions

This chapter introduces Hewlett-Packard nPartition system features, server models, and administration tools, and introduces the basic details needed for managing nPartitions.

Introduction to nPartitions

HP nPartition-capable servers enable you to configure a single server complex as one large system or as multiple smaller systems.

Each nPartition defines a subset of the server hardware resources that is used as an independent system environment. An nPartition includes: one or more cells (containing processors and memory) that are assigned to the nPartition as well as all I/O chassis connected to those cells.

All processors, memory, and I/O in an nPartition are used exclusively by software running in the nPartition. Thus, each nPartition has its own system boot interface and each nPartition boots and reboots independently.

Each nPartition provides both hardware and software isolation, so that hardware or software faults in one nPartition do not effect other nPartitions within the same server complex.

You can reconfigure nPartition definitions for a server without physically modifying the server hardware configuration by using HP's software-based nPartition management tools.

For procedures for creating and reconfiguring nPartitions see the chapter *Configuring nPartitions* on page 275.

Operating Systems Supported on nPartitions

Each nPartition can run either the HP-UX 11i Version 1.0 (B.11.11) operating system, the HP-UX 11i Version 2.0 (B.11.23) operating system, or the Microsoft® Windows® Server 2003 operating system:

- nPartition-capable HP 9000 servers run HP-UX B.11.11 and provide the Boot Console Handler (BCH) system boot environment.
- nPartition-capable HP Integrity servers run either HP-UX B.11.23 or Windows Server 2003 and provide the Extensible Firmware Interface (EFI) system boot environment.

For details on operating system boot and reset procedures see the chapter *Booting and Resetting nPartitions* on page 183.

nPartition-Capable HP Servers

HP supports nPartition capabilities on the servers listed in this section.

For details on the various nPartition-capable HP server models, see the chapter *nPartition Server Hardware Overviews* on page 87.

The same basic nPartition capabilities are supported for both nPartition-capable HP 9000 servers and HP Integrity servers, though some differences exist in the sets of supported tools and management capabilities. Where such differences exist this book notes them.

The newest nPartition-capable servers are built using the HP sx1000 chipset, which supports both HP 9000 server features and HP Integrity server features and includes remote management capabilities. For details see *sx1000 Chipset for HP Servers* on page 88 and *Remote and Local Management of nPartitions* on page 72.

The following list gives an overview of nPartition-capable HP servers.

- HP 9000 servers have PA-RISC processors.
nPartition-capable HP 9000 servers include:
 - HP 9000 Superdome servers, including the SD16000, SD32000, and SD64000 models, and the SD16A, SD32A, and SD64A models.
These models support up to 16 cells in a server complex.
 - HP 9000 rp8400 and HP 9000 rp8420 models.
These models support up to 4 cells in a server complex.
 - HP 9000 rp7405/rp7410 and HP 9000 rp7420 models.
These models support up to 2 cells in a server complex.
- HP Integrity servers have Intel® Itanium® 2 processors.
The Intel® Itanium® processor family architecture was co-developed by Hewlett-Packard and Intel.
nPartition-capable HP Integrity servers include:
 - HP Integrity Superdome servers, including the SD16A, SD32A, and SD64A models.
These models support up to 16 cells in a server complex.

Chapter 1 *Getting Started with nPartitions*

Hardware Components of nPartition Servers

- HP Integrity rx8620 model, which supports up to 4 cells in a server complex.
- HP Integrity rx7620 model, which supports up to 2 cells in a server complex.

Hardware Components of nPartition Servers

All hardware within an nPartition-capable server—including all cells, I/O chassis, cables, cabinet hardware, fans, and power and utilities components—is considered to be a “server complex”.

For details on listing and managing nPartition hardware components see the chapter *Managing Hardware Resources* on page 341.

Within each nPartition-capable HP server cabinet are multiple cells, each of which contains processors and memory.

Each nPartition server cabinet may have multiple I/O chassis that provide PCI slots for I/O cards. I/O resources also include any I/O devices attached to I/O cards within the I/O chassis. At least one core I/O card is required for each nPartition to provide console services and other boot and management abilities.

Each I/O chassis connects to only one cell in the server. Some nPartition-capable servers also support optional I/O expansion cabinets to provide additional I/O chassis.

An HP Superdome complex can consist of one cabinet or two server cabinets, and can also include one or two I/O expansion cabinets (to provide additional I/O chassis).

Each HP rp7405/rp7410 server, HP rp7420 server, or HP rx7620 server consists of a single server cabinet only.

HP rp8400 server, HP rp8420 server, or HP rx8620 server consists of a single server cabinet. An rp8400, rp8420, or rx8620 complex also may optionally include one I/O expansion cabinet to provide two additional I/O chassis and two additional core I/O cards.

Administration Tools for nPartitions

You can use a variety of administration tools to manage the nPartitions in a server complex.

Slightly different toolsets and capabilities are available on HP 9000 servers and HP Integrity servers. However, the same basic administration tasks are supported on all nPartition-capable servers.

You can perform nPartition administration tasks using the following tools:

- Service Processor (MP or GSP) Menus

Service processor menus provide a complex-wide service interface that allows access to all hardware and nPartitions defined within the complex. The service processor always is available, regardless of whether any nPartitions are configured or booted in the complex.

The service processor includes the Command menu, nPartition consoles, nPartition Virtual Front Panels, nPartition Console Logs and the Chassis Log or Event Log viewer (HP 9000 servers have chassis logs, and HP Integrity servers have event logs).

See the chapter *Using Management Interfaces and Tools* on page 135.

For service processor commands, see *Command Reference: Service Processor (MP or GSP) Commands* on page 169.

- EFI Boot Manager and EFI Shell Commands

On nPartition-capable HP Integrity servers, the Extensible Firmware Interface (EFI) supports nPartition management. The EFI interfaces are accessible from an nPartition console when the nPartition is in an active state but has not booted an operating system.

See *Command Reference: EFI Shell Commands* on page 172 for details.

- Boot Console Handler (BCH) Menu Commands

On PA-RISC nPartition-capable servers, the BCH interface supports management from an nPartition console when the nPartition is in an active state but has not booted an operating system.

See *Command Reference: BCH Menu Commands* on page 177 for details.

Chapter 1 *Getting Started with nPartitions*

Administration Tools for nPartitions

- nPartition Commands — HP-UX B.11.11, HP-UX B.11.23, or Windows SMS

You can configure and list nPartitions using the nPartition commands such as `parstatus`, `parcreate`, `parmodify`, and others.

These commands are available from the command line on an nPartition running HP-UX B.11.11, any system running HP-UX B.11.23, and from Windows running on a Superdome SMS.

See *Commands for Configuring nPartitions* on page 35 for details.

- Partition Manager (`/opt/parmgr/bin/parmgr`)

Partition Manager provides a graphical interface for configuring, modifying, and managing nPartitions and hardware within a server complex.

Two different Partition Manager implementations are available, one that runs on HP-UX B.11.11 systems and one for HP-UX B.11.23 systems.

On HP-UX B.11.11 systems, Partition Manager provides an X Windows interface.

On HP-UX B.11.23 systems, Partition Manager provides a Web-based management interface, a greatly enhanced graphical interface, and more detailed representations of the components in complexes and nPartitions.

See *Partition Manager* on page 37 for details.

Commands for Configuring nPartitions

HP-UX B.11.11, HP-UX B.11.23, and the Windows SMS provides you with commands for managing nPartitions and related server hardware.

The nPartition commands include: `parcreate`, `parmodify`, `parremove`, `parstatus`, `parunlock`, `fruled`, `frupower`, and `cplxmodify`. Table 1-1 on page 36 briefly describes these commands.

Using these commands you can create, modify, monitor, and remove nPartitions; get detailed server hardware information; manipulate attention indicators (LEDs) and power; and modify server complex attributes such as the complex name.

When using these commands, you specify cells and I/O chassis using the notations in *Specifying Cells and I/O Chassis to Commands* on page 504.

Remote management using the commands is supported as described in *Specifying Remote Management Options to Commands* on page 509.

The HP-UX nPartition configuration commands are supported on the following environments:

- On HP-UX B.11.11, these commands are supported by HP-UX kernels built with nPartition support enabled (the `hd_fabric` driver), and they use the `libfab.1` library. HP-UX B.11.11 supports the nPartition commands only when running on an nPartition.
- On HP-UX B.11.23, these commands are supported by WBEM (which includes the `cimserver` and the nPartition Provider `HP_NParProviderModule` components). HP-UX B.11.23 supports the nPartition commands on all systems that can run B.11.23. See *Web-Based Enterprise Management (WBEM)* on page 76 for details.
- On a Superdome SMS running Windows, these commands are supported by WMI, the Microsoft implementation of WBEM. See *Web-Based Enterprise Management (WBEM)* on page 76 for details.

NOTE

The HP-UX nPartition configuration commands provided for the various environments have some differing release-specific features, but all commands include the same core set of nPartition management capabilities.

Chapter 1 Getting Started with nPartitions

Commands for Configuring nPartitions

Table 1-1 describes the nPartition configuration commands and lists sections where you can find each command's syntax and details.

Table 1-1 **nPartition Configuration Commands**

Command	Description
parcreate	Create a new nPartition; root or IPMI LAN access is required. See <i>parcreate Command</i> on page 510.
parmodify	Modify an existing nPartition; root or IPMI LAN access is required. See <i>parmodify Command</i> on page 516.
parremove	Remove an existing nPartition; root or IPMI LAN access is required. See <i>parremove Command</i> on page 522.
parstatus	Display nPartition information and hardware details for a server complex. See <i>parstatus Command</i> on page 525.
parunlock	Unlock Complex Profile data (use this command with caution); root or IPMI LAN access is required. See <i>parunlock Command</i> on page 528.
fruled	Blink the attention indicators (LEDs) or turn them off. This command can control these indicators for cells, I/O chassis, and cabinet numbers. See <i>fruled Command</i> on page 531.
frupower	Display status or turn power on or off for cells and I/O chassis; root or IPMI LAN access is required. See <i>frupower Command</i> on page 534.
cplxmodify	HP-UX B.11.23 and Windows SMS Only. Modify server complex attributes. Supports changing the name of a complex; root or IPMI LAN access is required See <i>cplxmodify Command</i> on page 537.

Partition Manager

Two versions of the Partition Manager utility are available: one for nPartition-capable HP-UX B.11.11 systems, and one that may be used on all HP-UX B.11.23 systems.

Partition Manager for HP-UX B.11.23 Partition Manager for HP-UX B.11.23 is a Web-based tool that provides a graphical interface for managing nPartition-capable HP Integrity servers.

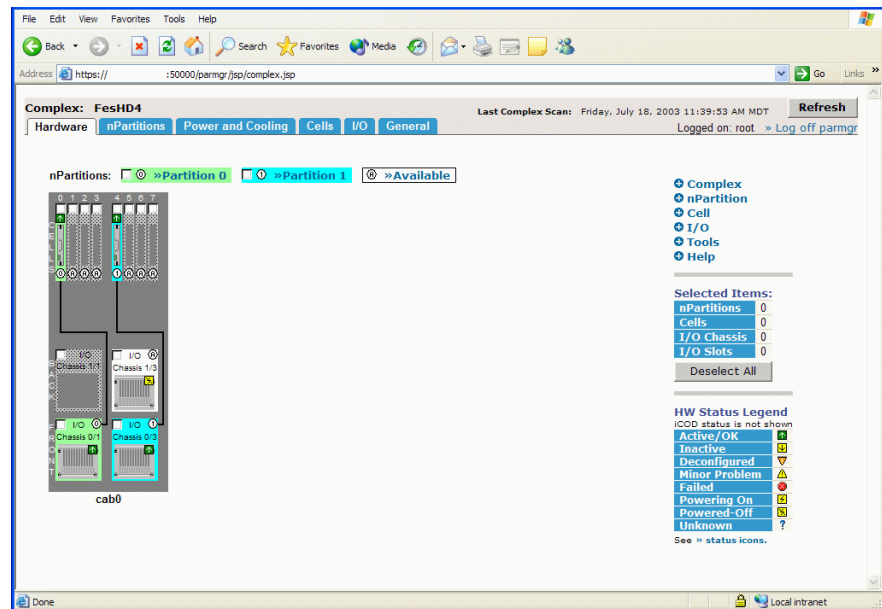
HP-UX B.11.23 provides the `/opt/parmgr/bin/parmgr` command to run, stop, and restart Partition Manager. Refer to the `parmgr -h` command or the `parmgr` (1M) manpage for command-line options. Also see the online help available from the main Partition Manager Web page or from the <http://www.software.hp.com/products/PARMGR/info.html> Web site.

To manually view help without running Partition Manager, open the following HP-UX B.11.23 file using a Web browser:

`/opt/hpwebadmin/webapps/mxhelp/parmgr/en/overview.html`

Figure 1-1

Partition Manager (HP-UX B.11.23) Main Screen



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Partition Manager for HP-UX B.11.11

Partition Manager for HP-UX B.11.11 The Partition Manager utility (`/opt/parmgr/bin/parmgr`) provides a graphical user interface for configuring nPartitions and managing resources within a server complex.

This section introduces these topics about Partition Manager: *Partition Manager Primary Window*, *Running Partition Manager*, *Requirements and Limits*, and *Partition Manager Online Help*.

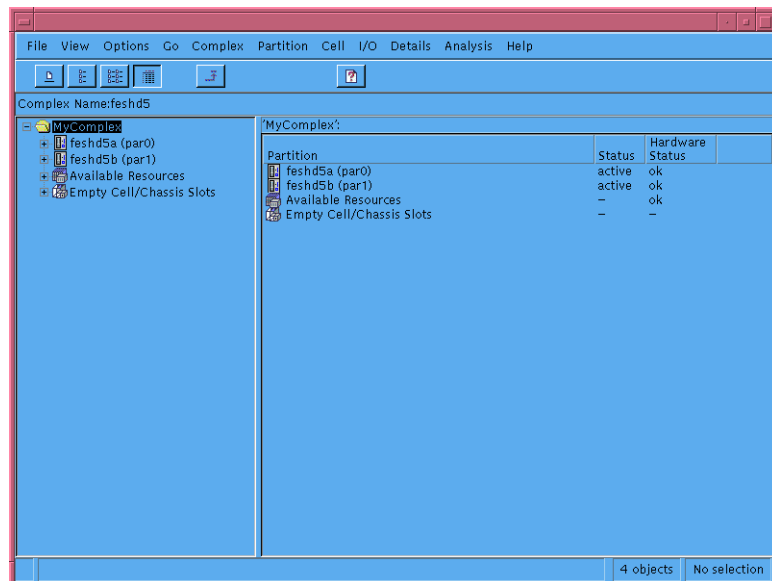
Complete information is in the online help.

Partition Manager Primary Window

The Partition Manager primary window (shown below in Figure 1-2) is the main window for selecting cells, nPartitions, and tasks (menu items).

When you run Partition Manager, by default the program performs an Analyze Complex Health task. If any problems are found, a window reporting those problems is displayed. The primary window is the first window displayed after any complex health analysis results.

Figure 1-2 Partition Manager (HP-UX B.11.11) Primary Window



The left side of the primary window lists all nPartitions, available resources (installed hardware that is not assigned to an nPartition), and empty cell and I/O chassis slots. Selecting an item on the left side of the primary window displays its details on the right side of the window.

Running Partition Manager You can access Partition Manager in HP-UX B.11.11 using any one of the following methods.

- Run Partition Manager directly from the HP-UX command line by issuing this command: `/opt/parmgr/bin/parmgr`

Command-line options are listed in the *parmgr* (1M) manpage.

- Run SAM (`/usr/sbin/sam`) in graphical mode and select **Partition Manager** to launch Partition Manager.
- Access Partition Manager through a PC Web browser.

Web access requires that an Apache Web server be installed, configured, and activated on the nPartition where you will run Partition Manager. See the online help **Starting and Exiting** section for Web configuration details.

When running Partition Manager directly or when launching it from SAM, you must set and export the DISPLAY environment variable for the nPartition system. The DISPLAY variable specifies where (which X server) the system displays X windows. You also must use the `xhost` command on the X server to grant access for the nPartition system to display windows on the X server.

See the example below and the *X* (1) and *xhost* (1) manpages for details.

```
# hostname nPartition System
feshd5a
# export DISPLAY=razmataz:0
# printenv DISPLAY
razmataz:0
#

$ hostname X Server
razmataz
$ xhost + feshd5a
feshd5a being added to access control list
$
```

Requirements and Limits The following are requirements and limits of the Partition Manager HP-UX B.11.11 version.

Refer to the *parmgr* (1M) manpage for other requirements.

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Partition Manager for HP-UX B.11.11

- Partition Manager provides graphical interfaces only, and does not provide a terminal (text mode) interface.
- Using Partition Manager requires `root` permission.
- HP-UX must be running in multi-user mode to support Partition Manager.
- You can run only one instance of Partition Manager or SAM (`/usr/sbin/sam`) per user login session. To run multiple instances of Partition Manger, you must login separately to launch each.

Both Partition Manager and SAM use the same lock file (`/var/sam/lock/lock_console`) to ensure that no more than one instance of either application runs at a time per user login session.

- Partition Manager uses the same driver and library as the HP-UX `nPartition` commands (the `hd_fabric` driver and `libfab.1` library).
- Partition Manager also provides PCI online card add and replace functionality similar to SAM, and uses the `libolrad.1` library for this functionality.

Partition Manager Online Help The Partition Manager online help gives complete details on using the Partition Manager utility.

Select the **Help** → **Overview** menu item for an online overview.

You also can view the Partition Manager HP-UX B.11.11 version help from a Web browser by issuing the following command:

```
/opt/netscape/netscape file:/opt/webadmin/parmgr/help/C/assistance.html
```

Web Site for Partition Manager Information:

<http://www.software.hp.com/products/PARMGR/info.html>

You can find online information about Partition Manager, including manpages, help files, and an interactive demonstration version of Partition Manager, at the

<http://www.software.hp.com/products/PARMGR/info.html> Web site.

nPartition Properties

This section describes the nPartition properties you work with when performing nPartition administration tasks.

The following nPartitions details are covered here:

- *Partition Numbers* on page 42
- *Assigned and Unassigned Cells* on page 42
- *Base Cells* on page 42
- *Core Cells* on page 43
- *Active and Inactive Cells* on page 43
- *Cell Local Memory (CLM) [HP Integrity Servers Only]* on page 44
- *Cell Property Details* on page 44
- *Active and Inactive nPartition Boot States* on page 46

Partition Numbers

Each nPartition has its own unique partition number that the nPartition administration tools use for identifying the nPartition.

When you create an nPartition, the tool you use assigns the nPartition the lowest available partition number. For example, the first nPartition always is partition number 0, and the second nPartition to be created is partition number 1.

After you remove an nPartition, no cells are assigned to the nPartition. As a result, the nPartition tools can reuse the partition number when creating a new nPartition.

For example, after you remove partition number 2, the next time you create a new nPartition the `parcreate` command or Partition Manager will assign cells to partition number 2 when creating a new nPartition, if all lower-numbered nPartitions (partition numbers 0 and 1) already are defined.

Assigned and Unassigned Cells

Each cell in an nPartition server complex either is assigned to one of the nPartitions in the complex, or it is unassigned and thus is not used by any of the nPartitions. If an I/O chassis is attached to an unassigned cell, then the chassis likewise is not assigned to an nPartition.

Cells that are unassigned are considered to be available resources; they are free to be assigned to any of the existing nPartitions, or can be used to create new nPartitions.

Base Cells

On both HP 9000 servers and HP Integrity servers, all cells within an nPartition are base cells.

The nPartitions administration tools automatically set the cell type to base cell, if you do not specify the cell type.

Core Cells

One cell in each nPartition must serve as the active core cell. The core cell is a cell that is connected to an I/O chassis that has core I/O. The core cell controls the nPartition until an operating system has booted, and it provides console access for the nPartition.

The core I/O in the I/O chassis connected to the core cell provides console access for the nPartition through the service processor.

The monarch processor on the core cell runs the Boot Console Handler (BCH) or Extensible Firmware Interface (EFI) code while all other processors are idle until an operating system is booted.

Although an nPartition can have multiple core-capable cells (any assigned cell that has an I/O chassis with core I/O), only one core I/O is actively used in an nPartition: the core I/O belonging to the active core cell.

To be eligible as a core cell, a cell must be assigned to the nPartition, it must be active, and it must be attached to an I/O chassis containing functional core I/O.

The core cell is selected by system firmware in the early stages of the nPartition boot process.

For details about setting and using the core cell choices (or “alternates”) for an nPartition see *Setting nPartition Core Cell Choices* on page 334. When none of the core cell choices can serve as the active core cell, the nPartition attempts to select an eligible cell using a default process.

Active and Inactive Cells

Cells that are assigned to an nPartition and have booted to form an nPartition are active cells whose resources (processors, memory, and any attached I/O) can be actively used by software running in the nPartition.

Cells that are inactive either are not assigned to an nPartition, or they have not participated in partition rendezvous to form an nPartition with any other cells assigned to the nPartition. (Partition rendezvous is the point during the nPartition boot process when all available cells in an nPartition join together to establish which cells are active for the current boot of the nPartition.)

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Cell Local Memory (CLM) [HP Integrity Servers Only]

For example, a cell is inactive when it is powered off, has booted with a “n” use-on-next-boot value, or is assigned to an nPartition that has been reset to the shutdown for reconfig state.

The resources belonging to inactive cells are not actively used by an nPartition. For a cell and its resources to be actively used the cell must boot and participate in partition rendezvous.

Cell Local Memory (CLM) [HP Integrity Servers Only]

On nPartition-capable HP Integrity servers, a portion of the memory in each cell can be configured as cell local memory (CLM), which is non-interleaved memory that can be quickly accessed by processors residing on the same cell as the memory.

The nPartition management tools enable you to configure CLM for each cell either as a percentage of the total memory in the cell, or as an absolute number of gigabytes of memory.

For details about configuring CLM see the chapter *Planning nPartitions* on page 119.

Cell Property Details

Cells in an HP nPartition server have various properties that determine how the cells can be used and managed.

To list the properties of cells in a server complex, you can use the `parstatus -C` command, `parstatus -V -c#` command, or Partition Manager.

The `parstatus -C` command output includes cell property summaries such as the current assignments, usage, and I/O details for all cells in the complex.

```
# parstatus -C  
[Cell]
```

Hardware	Actual		CPU	Memory			Core	Use
Location	Usage		OK/	(GB)			Cell	On
			Deconf/	OK/	Connected To		Next	Par
			Max	Deconf		Capable	Boot	Num
cab0,cell10	active	core	4/0/4	8.0/ 0.0	cab 0,bay0,chassis1	yes	yes	0
cab0,cell11	active	base	4/0/4	8.0/ 0.0	-	no	yes	0
cab0,cell12	active	base	4/0/4	8.0/ 0.0	cab 0,bay1,chassis3	yes	yes	0

```

cab0,cell13 absent      -      -      -      -      -      -
cab0,cell14 active core 2/0/4    4.0/ 0.0 cab 0,bay0,chassis3 yes  yes  1
cab0,cell15 active base 2/0/4    4.0/ 0.0 -      -      -      -
cab0,cell16 active base 2/0/4    4.0/ 0.0 cab 0,bay1,chassis1 yes  yes  1
cab0,cell17 absent      -      -      -      -      -      -

```

```
#
```

The `parstatus -V -c#` command gives detailed information about the properties and status for the cell (`-c#`) that you specify.

```
# parstatus -V -c0
[Cell]
Hardware Location      : cab0,cell0
Global Cell Number    : 0
Actual Usage          : active core
Normal Usage          : base
Connected To          : cab0,bay0,chassis0
Core Cell Capable     : yes
Firmware Revision     : 20.1
Failure Usage         : activate
Use On Next Boot      : yes
Partition Number      : 0
Partition Name        : Partition 0

```

```
[CPU Details]
Type   : 8820
Speed  : 900 MHz
CPU    Status
===   =====
0     ok
1     ok
2     ok
3     ok
4     ok
5     ok
6     ok
7     ok
CPUs
=====
OK      : 8
Deconf  : 0
Max     : 8

```

```
[Memory Details]
DIMM Size (MB) Status
====  =====  =====
0A    2048      ok
4A    2048      ok
0B    2048      ok
4B    2048      ok

```

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Active and Inactive nPartition Boot States

```
1A 2048 ok
5A 2048 ok
1B 2048 ok
5B 2048 ok
2A 2048 ok
6A 2048 ok
2B 2048 ok
6B 2048 ok
3A 2048 ok
7A 2048 ok
3B 2048 ok
7B 2048 ok
Memory
=====
DIMM OK      : 16
DIMM Deconf  : 0
Max DIMMs    : 16
Memory OK    : 32.00 GB
Memory Deconf : 0.00 GB

#
```

Active and Inactive nPartition Boot States

Each nPartition has a boot state of either active or inactive.

The boot state indicates whether the nPartition has booted so that it may be interactively accessed through its console (active nPartitions) or if it cannot be used interactively (inactive nPartitions)

You can use the `parstatus -P` command or Partition Manager to list all nPartitions and their boot states (active or inactive status).

```
# parstatus -P
[Partition]
Par
Num Status      # of # of I/O
Cells Chassis  Core cell  Partition Name (first 30 chars)
=== =====
 0 inactive      2     1    ?      feshd5a
 1 active        2     1    cab1,cell2 feshd5b

#
```

Likewise, you can view nPartition boot states using the Virtual Front Panel, which is available from the service processor Main Menu for the server complex.

Active nPartition

An nPartition that is active has at least one core-capable cell that is active (not in a boot-is-blocked state). When an nPartition is active, one or more of the cells assigned to the nPartition have completed partition rendezvous and the system boot interface (the BCH or EFI environment) has loaded and been displayed through the nPartition console. An operating system (such as HP-UX or Windows) may be loaded and run from the system boot interface on an active nPartition.

Inactive nPartition

An inactive nPartition is considered to be in the shutdown for reconfig state, because all cells assigned to the nPartition either remain at a boot-is-blocked state or are powered off.

To make an inactive nPartition active, use the `BO` command at the service processor (MP or GSP) Command menu. The `BO` command clears the boot-is-blocked flag for all cells assigned to the nPartition, thus allowing the cells to rendezvous and enabling the nPartition to run the system boot interface. (If all cells assigned to an nPartition are powered off, you must power on its cells to enable the nPartition to become active.)

To make an nPartition inactive perform a shutdown for reconfig. You can issue commands from the operating system, the system boot interface (BCH or EFI), or the service processor (MP or GSP) Command menu. All three methods reboot an nPartition and hold all of its cells at boot-is-blocked; as a result the nPartition is shutdown for reconfig (placed in an inactive state). For details see the chapter *Booting and Resetting nPartitions* on page 183.

Managing nPartitions

This section provides basic overviews of common nPartition management tasks.

The following task overviews are given here:

- *Basics of Listing nPartition and Complex Status* on page 49
- *Basics of nPartition Creation* on page 51
- *Basics of nPartition Modification* on page 55
- *Basics of nPartition Booting and Resetting* on page 58

Basics of Listing nPartition and Complex Status

You can list server complex hardware details and nPartition configuration details using the following tools and commands.

For details see the chapter *Listing nPartition and Hardware Status* on page 383.

- Service processor (MP or GSP) methods for listing hardware and nPartition status include the following commands, which are available from the service processor Command Menu.
 - CP — List nPartition configurations, including all assigned cells.
 - PS — List cabinet, power, cell, processor, memory, I/O, and other details.
 - IO — List connections from cells to I/O chassis on HP Superdome servers.
 - ID — List product and serial numbers.
- EFI Shell methods (available only on HP Integrity servers) for listing hardware and nPartition status include the following commands. Hardware and nPartition information displayed by the EFI Shell is limited to the local nPartition.
 - `info sys` — List the local nPartition number and active cell details.
 - `info io` — List the I/O configuration.
 - `info mem` — List memory details.
 - `info cpu` — List processor details.
- BCH Menu methods (available only on HP 9000 servers) for listing hardware and nPartition status include the following commands. Hardware and nPartition information displayed by the BCH Menu is limited to the local nPartition in most cases.
 - Information menu, PR command — List processor configuration details.
 - Information menu, ME command — List memory configuration details.
 - Information menu, IO command — List I/O configuration details.

Chapter 1 *Getting Started with nPartitions*

Basics of Listing nPartition and Complex Status

- Information menu, CID command — List complex product and serial numbers.
- Configuration menu, PD command — List the local nPartition number and name.
- nPartition administration tools for listing hardware and nPartition status include the following features.
 - Partition Manager for HP-UX B.11.11 — The **Complex** → **Show Complex Details** action provides complex status information; use the **Cells** tab, **CPUs/Memory** tab, **I/O Chassis** tab, and **Cabinet Info** tab to display selected details.
 - Partition Manager for HP-UX B.11.23 — The following user interface features provide nPartition and complex status: **General** tab, **Hardware** tab, **nPartitions** tab, **Cells** tab, **I/O** tab, **CPUs/Memory** tab, **Power and Cooling** tab. Also, the **Complex** → **Show Complex Details** action.
 - `parstatus -C` command — List cell configurations.
 - `parstatus -V -c#` command — List detailed cell information.
 - `parstatus -I` command, `rad -q` command (HP-UX B.11.11), and `olrad -q` command (HP-UX B.11.23) — List I/O chassis and card slot details.
 - `parstatus -B` command — List server cabinet summaries for the complex.
 - `parstatus -V -b#` command — List detailed server cabinet status.
 - `parstatus -X` command — List product and serial numbers.
 - `parstatus -P` command — List a configuration summary for all nPartitions.
 - `parstatus -V -p#` command — List detailed nPartition configuration information.
 - `parstatus -w` command — List the local nPartition number.
 - `frupower -d -C` command or `frupower -d -I` command — List power status for all cells (-C) or all I/O chassis (-I).

For further details and summaries see Table 8-1 on page 385.

Basics of nPartition Creation

Creating an nPartition involves using an nPartition administration tool to assign one or more cells in a complex to the new nPartition. At the time an nPartition is created you also can optionally specify various configuration options for the nPartition, such as its name, cell use-on-next-boot values, and other details. After an nPartition is created you can modify the nPartition, as described in *Basics of nPartition Modification* on page 55. For detailed procedures see the chapter *Configuring nPartitions* on page 275.

NOTE

When creating an nPartition, follow the HP nPartition requirements and guidelines. HP recommends only specific sets of nPartition configurations. For nPartition configuration requirements and recommendations, see the chapter *Planning nPartitions* on page 119.

The method you choose for creating an nPartition can depend on whether you are creating the first nPartition in a complex, creating a “Genesis Partition” for a complex, or creating an additional nPartition in a complex that already has one or more nPartitions defined.

- **Creating the First nPartition in a Server Complex**

To create the first nPartition in a complex you can do so either by creating a Genesis Partition or by using an nPartition administration tool on a remote system to remotely manage the complex (using IPMI over LAN).

- All nPartition-capable servers support creating a Genesis Partition. See *Creating a Genesis Partition for a Server Complex* on page 52.
- Only nPartition-capable servers based on the HP sx1000 chipset support remote administration using IPMI over LAN.

From a remote HP-UX B.11.23 system or Windows SMS, use the `parcreate` command `-g . . . -h . . .` set of options. Or from an HP-UX B.11.23 system use Partition Manager’s **Switch Complexes** dialog to connect to the complex and use the **nPartition → Create nPartition** action.

For remote administration details see *Remote and Local Management of nPartitions* on page 72.

- **Creating a Genesis Partition for a Server Complex**

Creating a Genesis Partition involves the service processor (MP or GSP) CC command to specify that an initial, one-cell nPartition be created within the server complex. To create a Genesis Partition, the complex either must have no nPartitions defined, or all nPartitions must be shutdown for reconfig (inactive). For details see *Genesis Partition* on page 53.

- **Creating Additional nPartitions in a Server Complex**

You can use either of two methods to create additional nPartitions in a complex where one or more nPartitions already are defined: either use `parcreate` or Partition Manager from an nPartition running HP-UX in the complex, or use the remote administration feature of those tools running on a remote HP-UX B.11.23 system or Windows SMS. For a detailed procedure see *Creating a New nPartition* on page 291.

- **Creating a New nPartition Locally** — To create a new nPartition in the same complex where `parcreate` or Partition Manager is running at least one nPartition must be running HP-UX. Login to HP-UX on the nPartition and issue the `parcreate` command, or access Partition Manager running on the nPartition and use its **Create nPartition** action.
- **Creating a New nPartition Remotely** — To remotely create a new nPartition in a complex, you do so either by using `parcreate` on HPUX B.11.23 or a Windows SMS, or by using Partition Manager running on an HP-UX B.11.23 system.

Only nPartition-capable servers based on the HP sx1000 chipset support remote administration.

Both `parcreate` and Partition Manager support two methods of remote administration: WBEM and IPMI over LAN. For remote administration using WBEM the tool remotely accesses HP-UX B.11.23 running on an nPartition in the target complex (for example, by the `-u . . . -h . . .` set of options). For remote administration using IPMI over LAN the tool remotely accesses the service processor (for example, by the `-g . . . -h . . .` set of options).

For remote administration details see *Remote and Local Management of nPartitions* on page 72.

For detailed procedures for creating and managing nPartitions see the chapter *Configuring nPartitions* on page 275.

Genesis Partition

The Genesis Partition is the initial, one-cell nPartition created within a server complex by the service processor (MP or GSP) CC command. The Genesis Partition is just like any other nPartition except for how it is created and the fact that its creation wipes out any previous nPartition configuration data.

For a detailed procedure see *Creating a Genesis Partition* on page 287.

If your server complex has its nPartitions pre-configured by HP, you do not need to create a Genesis Partition.

NOTE

Creating a Genesis Partition is not recommended for any server complex currently under a capacity for demand (iCOD) or pay per use (PPU) contract, because of the resulting loss of configuration data.

NOTE

For servers based on the HP sx1000 chipset, you can instead use nPartition tools running on a remote HP-UX B.11.23 system or a Windows SMS to remotely create and configure new nPartitions (including the first nPartition in the complex).

See *Remote and Local Management of nPartitions* on page 72 for details.

You can use nPartition management tools running on the Genesis Partition as the method for configuring all nPartitions in the complex. The Genesis Partition always is partition number 0.

When it is first created, the Genesis Partition consists of one cell that is connected to an I/O chassis that has core I/O installed. The Genesis Partition also should have a bootable disk (or a disk onto which you can install an operating system).

If an operating system (OS) is not installed on any disks in the Genesis Partition, you can boot the Genesis partition to the system boot interface (either BCH or EFI) and from that point install an OS. This installation

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Genesis Partition

requires either having access to an OS install server, or a CD-ROM drive (or DVD-ROM drive) attached to an I/O chassis belonging to the nPartition.

After you boot HP-UX on the Genesis Partition, you can modify the nPartition to include additional cells. You also can create other, new nPartitions and can modify them from the Genesis Partition or from any other nPartition running HP-UX.

Once you create additional nPartitions, you do not necessarily have to use the Genesis Partition to perform your nPartition management and configuration tasks.

Basics of nPartition Modification

Modifying an nPartition involves using an nPartition administration tool to revise one or more parts of the nPartition configuration data.

For detailed procedures see the chapter *Configuring nPartitions* on page 275.

You can modify an nPartition either locally or remotely.

- For local administration, use `parmodify` or Partition Manager from an nPartition running HP-UX in the same complex as the nPartition to be modified. Some nPartition details also can be modified locally from an nPartition console by using EFI Shell commands or BCH Menu commands.
- For remote administration, use `parmodify` or Partition Manager remote administration feature when running those tools running on a remote HP-UX B.11.23 system or Windows SMS.

Only nPartition-capable servers based on the HP sx1000 chipset support remote administration of the configuration data. Both `parmodify` and Partition Manager support two methods of remote administration: WBEM and IPMI over LAN.

- For remote administration using WBEM the tool remotely accesses HP-UX B.11.23 running on an nPartition in the target complex.

Use the `-u... -h...` set of `parmodify` options or the Partition Manager **Switch Complexes** action and “remote nPartition” option.

- For remote administration using IPMI over LAN the tool remotely accesses the service processor of the target complex.

Use the `-g... -h...` set of `parmodify` options or the Partition Manager **Switch Complexes** action and “remote partitionable complex” option.

See *Remote and Local Management of nPartitions* on page 72 for details.

nPartition modifications include the following tasks.

- Assign (add) or unassign (remove) cells from an nPartition — Use the `parmodify -p# -a#...` command to add a cell, or the `parmodify -p# -d#...` command to remove a cell from the specified nPartition

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Basics of nPartition Modification

(-p#, where # is the partition number). From Partition Manager select the nPartition, use the **nPartition** → **Modify nPartition** action, and select the **Add/Remove Cells** tab.

Also see *Assigning (Adding) Cells to an nPartition* on page 304 and see *Unassigning (Removing) Cells from an nPartition* on page 309.

- Remove (delete) an nPartition — Use the `parremove -p#` command to remove a specified nPartition (-p#, where # is the partition number). From Partition Manager select the nPartition and use the **nPartition** → **Delete nPartition** action.

Also see *Removing (Deleting) an nPartition* on page 298.

- Renaming an nPartition — Use the `parmodify -p# -P name` command to set the name for a specified nPartition (-p#, where # is the partition number). From Partition Manager select the nPartition, use the **nPartition** → **Modify nPartition** action, and select the **General** tab. On an HP 9000 server you also can use the BCH Configuration menu `PD NewName` command.

Also see *Renaming an nPartition* on page 316.

- Setting cell attributes — Use the `parmodify -p# -m#...` command to modify cell attributes for a specified nPartition (-p#, where # is the partition number).

From HP-UX B.11.11 Partition Manager select the nPartition, use the **Partition** → **Modify Partition** action, **Change Cell Attributes** tab, select the cell(s), and click **Modify Cell(s)**.

From HP-UX B.11.23 Partition Manager select the nPartition, use the **nPartition** → **Modify nPartition** action, and use the **Set Cell Options** tab (to set the use-on-next-boot value) and **Configure Memory** tab (to set the cell local memory value).

On an HP 9000 server you also can use the BCH Configuration menu `CELLCONFIG` command to set use-on-next-boot values. On an HP Integrity server you also can use the EFI Shell `cellconfig` command to set use-on-next-boot values.

Also see *Setting Cell Attributes* on page 324.

- Setting core cell choices — Use the `parmodify -p# -r# -r#...` command to specify up to four core cell choices in priority order for a specified nPartition (-p#, where # is the partition number).

From HP-UX B.11.11 Partition Manager select the nPartition, use the **Partition** → **Modify Partition** action, **Core Cell Choices** tab.

From HP-UX B.11.23 Partition Manager select the nPartition, use the **nPartition** → **Modify nPartition** action, **Set Cell Options** tab, and use the **Core Cell Choice** column to set priorities.

On an HP 9000 server you can use the BCH Configuration menu COC command to set core cell choices. On an HP Integrity server you can use the EFI Shell `rootcell` command to set core cell choices.

Also see *Setting nPartition Core Cell Choices* on page 334.

- **Setting nPartition boot paths** — On HP Integrity servers boot paths can be listed and configured only from the local nPartition.

From HP-UX use the `setboot` command to configure the local nPartition boot paths, or use the `parmodify -p# -b... -s... -t...` command to set boot paths for a specified nPartition (`-p#`, where `#` is the partition number).

On an HP 9000 server you can use the BCH Main menu `PATH` command to configure boot paths. On an HP Integrity server you can use the EFI Shell `bcfg` command to configure boot paths.

Also see *Configuring Boot Paths and Options* on page 256.

For more details and summaries see Table 6-1 on page 277.

Basics of nPartition Booting and Resetting

This section gives a brief overview of the boot process for cells and nPartitions and lists the main nPartition boot commands and tasks.

For more details see the chapter *Booting and Resetting nPartitions* on page 183.

Boot Process for Cells and nPartitions

The nPartition boot process, on both HP 9000 servers and HP Integrity servers, includes two phases: the cell boot phase and the nPartition boot phase.

1. Cell Boot Phase of the nPartition Boot Process

The cell boot phase occurs when cells are powered on or reset. The main activities that occur during the cell boot phase are power-on-self-test activities. During this phase each cell operates independently of all other cells in the complex. Cells do not necessarily proceed through this phase at the same pace, because each cell may have a different amount of hardware to test and discover, or cells might be reset or powered on at different times. The main steps that occur during the cell boot phase are:

- a. A cell is powered on or reset, and the cell boot-is-blocked (BIB) flag is set.

BIB is a hardware flag on the cell board. When BIB is set, the cell is considered to be inactive.

- b. Firmware on the cell performs self-tests and discovery operations on the cell hardware components. Operations at this point include processor self-tests, memory tests, I/O discovery, and discovery of interconnecting fabric (connections between the cell and other cells, I/O, and system crossbars).
- c. After the firmware completes cell self-tests and discovery, it reports the cell hardware configuration to the service processor (GSP or MP), informs the service processor it is “waiting at BIB”, and then waits for the cell BIB flag to be cleared.

2. nPartition Boot Phase of the nPartition Boot Process

The nPartition boot phase occurs when an nPartition is booted, after its cells have completed self tests. During this phase “nPartition rendezvous” occurs, however not all cells assigned to an nPartition are required to participate in rendezvous. A minimum of one core-capable cell that has completed its cell boot phase is required before the nPartition boot phase can begin. By default, all cells assigned to the nPartition that have a “y” use-on-next-boot value are expected to participate in rendezvous, and the service processor will wait for up to ten minutes for all such cells to reach the “waiting at BIB” state. Cells that have a “n” use-on-next-boot value do not participate in rendezvous and remain waiting at BIB. The main steps that occur during the nPartition boot phase are:

- a. The service processor provides a copy of the relevant Complex Profile data to the cells assigned to the nPartition.

This data includes a copy of the Stable Complex Configuration Data and a copy of the Partition Configuration Data for the nPartition. For details see *Complex Profile* on page 64.

- b. The service processor releases BIB for all cells assigned to the nPartition that have a “y” use-on-next-boot value and complete the cell boot phase in time.

The service processor does not release BIB for any cell with a “n” use-on-next-boot value, or for any cell that did not complete the cell boot phase within ten minutes of the first cell to do so.

Once BIB is released for a cell, the cell is considered to be active.

- c. nPartition rendezvous begins, with the system firmware on each active cell using its copy of complex profile data to contact other active cells in the nPartition.
- d. The active cells in the nPartition negotiate to select a core cell.
- e. The chosen core cell manages the rest of the nPartition boot process. A processor on the core cell runs the nPartition system boot environment (BCH on HP 9000 servers, EFI on HP Integrity servers). The core cell hands off control to an operating system loader when the OS boot process is initiated.

You can view progress during the cell and nPartition boot phases by observing the Virtual Front Panel for an nPartition, which is available from the service processor (MP or GSP) Main menu.

Common nPartition Boot Commands and Tasks

The following summary briefly describes the main nPartition boot commands and tasks. For more summaries and details see Table 5-1 on page 193.

- Service processor (MP or GSP) support for managing nPartition booting includes the following commands, which are available from the service processor Command Menu.
 - RS — Reset an nPartition.
 - RR — Perform a shutdown for reconfig of an nPartition.
 - BO — Boot the cells assigned to an nPartition past the “waiting at BIB” state and thus begin the nPartition boot phase.
 - TC — Perform a transfer of control reset of an nPartition.
 - PE — Power on or power off a cabinet, cell, or I/O chassis.

On HP Integrity rx8620 servers and HP Integrity rx7620 servers, nPartition power on and power off also is supported, to manage power of all cells and I/O chassis assigned to the nPartition using a single command.

- EFI Shell support for managing nPartition booting includes the following commands. (EFI is available only on HP Integrity servers.)
 - `bcfg` — List and configure the boot options list for the local nPartition.
 - `autoboot` — List, enable, or disable the nPartition autoboot configuration value.
 - `acpiconfig` — List and configure the nPartition ACPI configuration setting, which determines whether HP-UX or Windows can boot on the nPartition.

The ACPI configuration setting that must be set to default for HP-UX B.11.23 to boot. To boot Windows, the ACPI configuration setting for the nPartition must be set to windows.

- `acpiconfig enable softpowerdown` — When set, causes nPartition hardware to be powered off when the operating system issues a shutdown for reconfig command. On rx8620 and rx7620 servers with a windows ACPI configuration setting, this is the default behavior. Available only on rx8620 and rx7620 servers.

- `acpiconfig disable softpowerdown` — When set, causes nPartition cells to remain at BIB when the operating system issues a shutdown for `reconfig` command. In this case an OS shutdown for `reconfig` makes the nPartition inactive. On rx8620 and rx7620 servers with a default (to support HP-UX) ACPI configuration setting this is the default behavior. Available only on HP Integrity rx8620 servers and HP Integrity rx7620 servers.
- `reset` — Resets the local nPartition, resetting all cells and then proceeding with the nPartition boot phase.
- `reconfigreset` — Performs a shutdown for `reconfig` of the local nPartition, resetting all cells and then holding them at the “wait at BIB” state, making the nPartition inactive.
- BCH Menu support for managing nPartition booting includes the following commands. (BCH is available only on HP 9000 servers.)
 - `BOOT` — Initiate an operating system boot from a specified boot device path or path variable.
 - `REBOOT` — Resets the local nPartition, resetting all cells and then proceeding with the nPartition boot phase.
 - `RECONFIGRESET` — Performs a shutdown for `reconfig` of the local nPartition, resetting all cells and then holding them at the “wait at BIB” state, making the nPartition inactive.
 - `PATH` — List and set boot device path variables (`PRI`, `HAA`, `ALT`).
 - Configuration menu, `PATHFLAGS` command — List and set the boot control flag for each boot path, effectively determining the nPartition autoboot behavior.
- HP-UX includes the following commands for shutting down and rebooting the nPartition.
 - `shutdown -r` — Shuts down HP-UX and resets the local nPartition, resetting cells and then proceeding with the nPartition boot phase.

On HP 9000 servers `shutdown -r` resets only the active cells.

On HP Integrity servers `shutdown -r` has the same effect as `shutdown -R`. All cells are reset and nPartition reconfiguration occurs as needed.

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Common nPartition Boot Commands and Tasks

- `shutdown -h` — On HP 9000 servers, shuts down HP-UX, halts all processing on the nPartition, and does not reset cells.

On HP Integrity servers, `shutdown -h` has the same effect as `shutdown -R -H` and results in a shutdown for reconfig.

- `shutdown -R` — Shuts down HP-UX and performs a reboot for reconfig of the nPartition. All cells are reset and nPartition reconfiguration occurs as needed. The nPartition then proceeds with the nPartition boot phase.
- `shutdown -R -H` — Shuts down HP-UX and performs a shutdown for reconfig of the nPartition. All cells are reset and nPartition reconfiguration occurs as needed. All cells then remain at a “wait at BIB” state and the nPartition is inactive.

On rx8620 and rx7620 servers with a default (to support HP-UX) ACPI configuration setting a “wait at BIB” state is the default behavior, but the `acpiconfig enable softpowerdown` EFI Shell command can be used to instead cause all nPartition hardware to power off.

- Microsoft® Windows® includes the following commands for shutting down and rebooting the nPartition.

- `shutdown /r` — Shuts down Windows and performs a reboot for reconfig of the nPartition. All cells are reset and nPartition reconfiguration occurs as needed. The nPartition then proceeds with the nPartition boot phase.
- `shutdown /s` — Shuts down Windows and performs a shutdown for reconfig of the nPartition. The default behavior differs on HP Integrity Superdome servers and HP Integrity rx8620 and rx7620 servers.

On HP Integrity Superdome servers, `shutdown /s` causes all cells to be reset and nPartition reconfiguration to occur as needed. All cells then remain at a “wait at BIB” state and the nPartition is inactive

On HP Integrity rx8620 and rx7620 servers, the default behavior is for `shutdown /s` to cause nPartition hardware to be powered off. On rx8620 and rx7620 servers with a windows ACPI configuration setting, the `acpiconfig disable softpowerdown` EFI Shell command can be used to instead cause all cells to instead remain at a “wait at BIB” state.

For more details see the chapter *Booting and Resetting nPartitions* on page 183.

Complex Profile

The configurable aspects of a server complex are represented in a set of data called the “Complex Profile”, which determines how hardware is assigned to and used by nPartitions in an nPartition-capable server.

The Complex Profile consists of three parts, or groups of data, which are described in detail in Table 1-2 on page 69:

- *Stable Complex Configuration Data* — This group contains complex-wide settings, including the complex name, serial number, the nPartition assignment for each cell, and other details that apply to the entire server complex.

The Complex Profile contains one Stable Complex Configuration Data entry.

- *Dynamic Configuration Data* — Architecturally reserved data.
- *Partition Configuration Data* — This group contains individual nPartition settings, including the nPartition name, core cell choices, and other details that are specific to an nPartition.

The Complex Profile contains a Partition Configuration Data entry for each possible nPartition. (A server complex may have a maximum of sixteen nPartitions, globally numbered from 0–15.)

The master copy of all parts of the Complex Profile resides on the service processor (MP or GSP) for the complex. Each cell in the complex also has a copy of the Stable Complex Configuration Data and a copy of the Partition Configuration Data for the nPartition to which it is assigned.

The service processor (MP or GSP) in the server manages all Complex Profile data and keeps all copies of the data coherent using a locking mechanism, as described in the next sections.

Changing the Server Complex Profile

To modify the Complex Profile and thus change the server complex configuration, you use an administration tool such as Partition Manager or one of the nPartition commands. See *Administration Tools for nPartitions* on page 33 for details. You cannot directly edit the Complex Profile data for a server.

The service processor maintains a set of locks that are used to ensure that only one set of changes to the Complex Profile occurs at a time.

When you configure nPartitions, the administration tools you use revise the Complex Profile for the server in coordination with the service processor. The tools acquire and release locks as needed when modifying Complex Profile entries. You do not directly manage Complex Profile locks under normal circumstances, but you can force an entry to be unlocked if required.

How the Complex Profile is Updated

A server Complex Profile is updated when you use one of the nPartition administration tools (such as Partition Manager or commands) to create, modify, or delete an nPartition or modify complex-wide data.

The general process by which changes to the Complex Profile occur is as follows:

1. An administrator uses an nPartition administration tool to request that a specific configuration change occurs.

This is a request to create, modify, or delete an nPartition or modify complex-wide data such as the complex name.

2. The tool acquires a lock from the service processor (MP or GSP) for the Complex Profile entry that will be revised.

The lock ensures that no other changes to the Complex Profile entry will occur while the tool revises it.

If the entry already is locked, that Complex Profile entry cannot be updated and the request will fail and the tool exits with an error message.

3. The tool reads the Complex Profile entry whose lock it has acquired.
4. The tool revises the Complex Profile entry according to the administrator request.
5. The tool sends the revised Complex Profile entry back to the service processor along with the corresponding lock key.
6. The service processor then “pushes out” the new, revised Complex Profile entry by updating its copy and updating all cells that have a copy of the entry.

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Unlocking Complex Profile Groups

However, the service processor will not push out a revised Complex Profile entry that affects the nPartition assignment of an active cell. In this case the revised entry will remain pending until the cell becomes inactive, for example during a reboot for reconfig or shutdown for reconfig of the nPartition to which the cell is assigned.

7. After the service processor has pushed out the revised Complex Profile entry it clears the lock for the entry.

(That is, the entry is unlocked and thus, as needed, another nPartition configuration task can lock and revise that portion of the Complex Profile.)

A single administration task can revise multiple Complex Profile entries. For example, you can create a new nPartition and assign its name in a single action. In this case the tool you use must lock both the Stable Complex Configuration Data and the Partition Configuration Data entry for the new nPartition before revising the data according to the administration request.

Multiple nPartition configuration tasks can occur essentially concurrently if all tasks revise different Complex Profile entries (thus allowing each task to acquire a lock for the entry it revises).

Unlocking Complex Profile Groups

Each Complex Profile entry has its own lock which is used to restrict access to the entry. If necessary you can manually unlock Complex Profile entries, however in nearly all situations you instead should allow the administration tools to automatically acquire and release locks.

NOTE

You should generally avoid manually unlocking Complex Profile entries because doing so can result in the loss of configuration changes.

The locks for Complex Profile entries

- For the Stable Complex Configuration Data entry, there are slight differences in the locking mechanisms on HP 9000 and HP Integrity servers.
 - On nPartition-capable HP 9000 servers, the Stable Complex Configuration Data has a single lock.

- On nPartition-capable HP Integrity servers, the Stable Complex Configuration Data has two separate locks: a “read lock” for restricting read access to the current Stable Complex Configuration Data entry, and a “write lock” for restricting access to a modifiable copy of the Stable Complex Configuration Data.
- On both nPartition-capable HP 9000 and HP Integrity servers there is one lock for each Partition Configuration Data entry (each nPartition has its own Partition Configuration Data entry).

The `parunlock` command and the service processor `RL` command enable you to manually unlock Complex Profile entries.

It can be necessary to manually unlock a Complex Profile entry in the situation where an nPartition configuration tool such as Partition Manager has prematurely exited. If such a tool exits before it sends revised Complex Profile entries and corresponding lock keys back to the service processor, the entries that the tool locked will remain locked indefinitely (until they are manually unlocked).

Manually Unlocking a Complex Profile Entry

You can manually unlock Complex Profile entries after an nPartition configuration tool has exited before unlocking the entries it had locked. In this situation an attempt to modify the nPartition or complex-wide setting will fail because the Complex Profile entries still are locked. If you are certain no authorized users are changing configurations, use the `parunlock` command or the service processor `RL` command to unlock the entries. After they are unlocked you can perform the modifications you had previously attempted.

Canceling a Pending Complex Profile Update

A pending update of the Complex Profile can be canceled or prevented by clearing the lock for a Complex Profile entry before the service processor has pushed out the revised data for the entry. This occurs, for example, when you have issued a request to change the nPartition assignment of an active cell and then manually unlock the effected Complex Profile entries before performing a reboot for reconfig of the nPartition to which the cell is assigned.

Complex Profile Group Details

Table 1-2 on page 69 lists details of the three groups of data that comprise the Complex Profile.

NOTE

The Complex Profiles on nPartition-capable HP 9000 servers and HP Integrity servers contain slightly different sets of information.

Table 1-2 on page 69 covers both types of Complex Profiles.

The Complex Profile on nPartition-capable HP Integrity servers includes all HP 9000 server Complex Profile data and additional components that are specific to HP Integrity servers. Some HP 9000 server Complex Profile data is unused on HP Integrity servers but is included for compatibility.

Table 1-2 **Complex Profile Group Details**

Complex Profile Group	Description and Contents
<p>Stable Complex Configuration Data Complex-wide information.</p>	<p>The Stable Complex Configuration Data contains complex-wide configuration details, some of which may be set by administrators.</p> <p>Although the Stable Complex Configuration Data applies to the whole complex, the cell assignments and cell local memory (CLM) per cell components are comprised of data that affect the individual cells.</p> <p>A copy of the Stable Complex Configuration Data resides on the service processor (MP or GSP) and on every cell in the complex.</p> <p>The system boot interfaces (the BCH and EFI environments) do not have methods for changing Stable Complex Configuration Data. Instead, use the service processor command menu or nPartition management tools.</p> <p>The Stable Complex Configuration Data includes these components:</p> <ul style="list-style-type: none"> • Model String — Only applies to HP 9000 servers. PA-RISC model. • Complex System Name — User-chosen name for the complex. • Original Product Number — Set by HP manufacturing. • Current Product Number — Originally set by HP manufacturing. • Creator Serial Number — Set by HP manufacturing. • Cell Assignments — User-configurable nPartition assignments for all cells in the complex; also specifies each cell type (e.g. base). • Cell Local Memory (CLM) Per Cell — Only on servers based on the HP sx1000 chipset. User-configurable setting for each cell that determines the amount of cell local memory. The operating system on an nPartition with CLM configured must also support CLM for the cell local memory to be accessible to the operating system. Currently only HP-UX B.11.23 and Windows Server 2003 support CLM. • nPartition Configuration Privilege — Only on servers based on the HP sx1000 chipset. Either unrestricted or restricted. A restricted privilege means complex changes are possible only through the service processor LAN interface, which prompts for the IPMI password.

Table 1-2 **Complex Profile Group Details (Continued)**

Complex Profile Group	Description and Contents
Dynamic Configuration Data Architecturally reserved information.	<p>The Dynamic Configuration Data is architecturally reserved information that applies to the entire server complex.</p> <p>A copy of the Dynamic Configuration Data resides on the service processor (MP or GSP) and on every cell in the complex. A reboot is not required for Dynamic Configuration Data changes to take effect.</p> <p>The system boot interfaces (the BCH and EFI environments) do not have methods for changing Dynamic Configuration Data. Users and administrators do not directly configure this data.</p>

Table 1-2 **Complex Profile Group Details (Continued)**

Complex Profile Group	Description and Contents
<p>Partition Configuration Data</p> <p>nPartition-specific information (each nPartition has its own data).</p>	<p>The Partition Configuration Data contains configuration details specific to each nPartition in the complex. Each nPartition has its own Partition Configuration Data entry, which may be modified by administrators.</p> <p>The service processor (MP or GSP) has a copy of the Partition Configuration Data for every nPartition. Each cell has a copy of the Partition Configuration Data entry for the nPartition to which it is assigned.</p> <p>Partition Configuration Data includes this data for each nPartition:</p> <ul style="list-style-type: none"> • HP 9000 server components (unused on HP Integrity servers) — These components apply only on HP 9000 servers, but are present on HP Integrity servers for compatibility: Primary Boot Path, HA Alternate Boot Path, Alternate Boot Path, Console Path, Keyboard Path, Boot Timer, Known Good Memory Requirement, Autostart and Restart Flags, and CPU Flags (e.g. Data Prefetch setting). • Cell use-on-next-boot values — Specifies whether the cell is to be an active or inactive member of the nPartition to which it is assigned. • Core Cell Choices — Up to four cells preferred to be the core cell. • Partition Number — The partition number; not user-configurable. • Profile Architecture — Specifies whether the current Partition Configuration Data applies to the HP 9000 server architecture or HP Integrity server architecture; not user-configurable. • iCOD Processors — Denotes the number HP-owned processors in the nPartition, if any; not user-configurable. • nPartition Name — The nPartition name, used in various displays. • Cell Failure Usage — Specifies how each cell in the nPartition is handled when a processor or memory component fails self-tests. Only activating the cell to integrate it into the nPartition is supported (the <code>ri</code> failure usage option, as specified by the <code>parcreate</code> and <code>parmodify</code> commands). • IP Address — If set, should be consistent with the IP address assigned to the nPartition when HP-UX is booted. Not actually used for network configuration, but for information only.

Remote and Local Management of nPartitions

You can remotely manage nPartition servers using either the HP-UX B.11.23 or Windows versions of the nPartition management tools (including the nPartition commands and Partition Manager).

The HP-UX B.11.23 tools still can run on an nPartition and manage that nPartition and the complex to which it belongs. The tools also can run on any system running HP-UX 11.23 and be used to manage any nPartition-capable server based on the HP sx1000 chipset.

The Windows versions of nPartition management tools currently include the nPartition commands only. The Windows nPartition commands are available for the Superdome Support Management Station (SMS) running Microsoft® Windows®. The Windows SMS is an HP ProLiant system with a LAN connection to the service processor of a Superdome server. The SMS is used for service and administrative tasks. The Windows nPartition commands currently are not supported to be run on an nPartition.

The ability to remotely manage an sx1000-based nPartition-capable server is enabled by two technologies: the Web-Based Enterprise Management infrastructure (WBEM) and the Intelligent Platform Management Interface (IPMI). A brief overview of these technologies is provided first, then explanations of how to use the tools to locally and remotely manage sx1000-based servers are provided.

The following servers are sx1000-based servers, which support remote nPartition management.

- nPartition-capable HP Integrity servers (Itanium® 2-based servers)
 - HP Integrity Superdome servers: the HP Integrity SD16A, SD32A, and SD64A models
 - HP Integrity rx8620 servers
 - HP Integrity rx7620 servers
- Newer nPartition-capable HP 9000 servers (PA-RISC servers)
 - newer HP 9000 Superdome servers: the HP 9000 SD16A, SD32A, and SD64A models
 - HP 9000 rp8420 servers

— HP 9000 rp7420 servers

Intelligent Platform Management Interface (IPMI)

The nPartition management tools perform their functions by sending requests to the service processor. These requests are either to get information about the server or to affect changes to the server.

On the previous set of nPartition servers (the HP 9000 Superdome SD16000, SD32000, and SD64000 models; rp7405/rp7410; and rp8400 servers) a proprietary interface to the service processor was implemented. This interface relied on system firmware to convey information between HP-UX and the service processor. This in turn required that the nPartition management tools run on an nPartition in the complex being managed.

The service processor in all sx1000-based servers supports the Intelligent Platform Management Interface (IPMI) as a replacement for the proprietary interface mentioned above. IPMI is an industry-standard interface for managing hardware. IPMI also supports value-added capabilities, such as HP's nPartition and complex management features.

The service processor in all sx1000-based servers supports two of the communication paths defined by the IPMI standard: the Block Transfer path and IPMI over LAN. Some background details about each of these communication paths is provided in the next sections. How and when these paths are used is covered in the explanations of the local and remote management scenarios that follow.

IPMI Block Transfer (IPMI BT)

The IPMI Block Transfer (IPMI BT) path uses a driver in HP-UX B.11.23 (`/dev/ipmi`) and a hardware buffer on each cell to provide communication between the operating system and the service processor. Thus, each nPartition running HP-UX B.11.23 in an sx1000-based server has its own private path to the service processor; the block transfer hardware on the core cell in each nPartition is used. The service processor always reliably knows which nPartition a request comes from.

NOTE

The IPMI BT path currently is supported only for nPartitions running HP-UX B.11.23. To use the IPMI BT interface, you must locally or remotely access HP-UX B.11.23 running in the target complex. For details see *Remote Management Using WBEM* on page 77.

In many respects from an administrator's perspective the IPMI BT interface behaves like the proprietary interface used in the older nPartition servers. For example, a user with superuser capabilities on an nPartition can manage the entire complex, including making changes to both the local nPartition and other nPartitions in the complex.

Because it is not always desirable to allow a user on one nPartition to make changes that affect other nPartitions, HP provides the nPartition Configuration Privilege on sx1000-based servers. You can control this privilege by using the `PARPERM` command at the service processor Command Menu.

The nPartition Configuration Privilege has two settings:

- Unrestricted — The default setting, which allows the behavior described above.
- Restricted — Restricts use of the IPMI BT interface to the following capabilities:
 - Retrieving information about the server. Everything that is normally displayed by Partition Manager and the `parstatus` command is still available.
 - Making changes to the local nPartition's Partition Configuration Data. (Details on local versus remote nPartitions is provided later.)
 - Manipulating any of the attention indicators (LEDs).
 - Powering on/off cells and I/O chassis that belong to the local nPartition.

Thus, by restricting the nPartition Configuration Privilege, you limit someone with superuser privileges on an nPartition to doing things that affect only that nPartition. However, when the nPartition Configuration Privilege is restricted certain changes can only be made by using the nPartition management tools in the mode that utilizes IPMI over LAN.

IPMI over LAN

IPMI requests can be sent to the service processor's LAN port, thus eliminating the need to involve any of the nPartitions in the server.

IPMI LAN access to a service processor may be enabled or disabled by the SA command at the service processor Command Menu.

The service processor will accept IPMI requests over its LAN port only if the request is accompanied by the correct password. To set the IPMI password use the SO command at the service processor Command Menu.

Communication using IPMI over LAN is authenticated using the challenge and response protocol defined by the IPMI specification. The MD5 message digest algorithm (RFC1321) is used to encrypt the IPMI password and to ensure authentication of both the server and the client. All IPMI messages are authenticated in the manner described above. In addition, appropriate methods are implemented to protect against replay attacks.

The use of IPMI over LAN is not affected by setting the nPartition Configuration Privilege to restricted. When the IPMI BT interfaces are restricted certain changes to a complex can only be made by using the nPartition management tools in the mode that utilizes IPMI over LAN.

The following list describes all the actions that can be performed using IPMI over LAN.

- Retrieving information about the server.
- Changing the Stable Complex Configuration Data, including cell local memory settings and all cell assignments (that is: creating an nPartition, assigning cells to an nPartition, unassigning cells from an nPartition, and removing an nPartition).
- Powering on/off all cells and I/O chassis in the server, including unassigned resources.
- Manipulating any of the attention indicators (LEDs).

Web-Based Enterprise Management (WBEM)

The HP-UX B.11.23 versions of Partition Manager and the nPartition commands are implemented as WBEM client applications.

HP-UX B.11.23 also includes a WBEM agent known as the nPartition Provider.

Likewise, the Windows nPartition commands for the Superdome Support Management Station (SMS) running Microsoft® Windows® are implemented as WBEM client applications. The Windows SMS includes the Windows Management Instrumentation (WMI) software, which is the Microsoft implementation of WBEM. To support the Windows nPartition commands, HP also provides the WMI Mapper and the WMI nPartition Provider software components for the Windows SMS. The WMI-based nPartition tools components for the SMS running Windows provides a WBEM-compliant solution.

All communication with the service processor, whether by way of the IPMI BT path (using `/dev/ipmi` on HP-UX B.11.23 only) or by IPMI over LAN, is done by the nPartition Provider. The nPartition Provider responds to requests sent to it by the nPartition commands and Partition Manager.

The HP-UX B.11.23 version of Partition Manager, like the HP-UX B.11.11 version, uses the nPartition commands to make changes to an nPartition server. HP-UX B.11.23 Partition Manager only uses WBEM directly when retrieving information about a server.

The power of WBEM is that it enables a distributed architecture. The applications (the nPartition management tools) can be running on one system and can use the WBEM infrastructure to send requests to other systems. See *Remote Management Using WBEM* on page 77 for more details.

Local Management

As previously mentioned, the HP-UX B.11.23 nPartition management tools can be run on an nPartition to manage that nPartition and the complex that it belongs to. This is the default behavior of the tools when run on an nPartition.

In this scenario, the nPartition management tools send WBEM requests to the nPartition Provider running on the local nPartition (that is, the same nPartition where the tools are being run). The nPartition Provider uses `/dev/ipmi` to send requests to the service processor in the local complex.

NOTE

Currently only the HP-UX B.11.11 and HP-UX B.11.23 nPartition management tools are supported for local management. The Windows nPartition commands support only remote management from a Superdome SMS running Microsoft® Windows® 2000 with Service Pack 3 or later.

If the nPartition Configuration Privilege is unrestricted, then the server can be managed from any nPartition and making changes to other nPartitions in the complex is supported. However, if the privilege is set to restricted then certain operations are supported only when using the tools in the mode that uses IPMI over LAN (see *Remote Management Using IPMI over LAN* on page 82).

Local management is the only form of management supported by the HP-UX B.11.11 version of the nPartition management tools. Also, because the nPartition Configuration Privilege is a new feature of the sx1000-based servers it affects the HP-UX B.11.11 versions of the tools when used on nPartitions in an sx1000-based server, but not when used on nPartitions in the older nPartition servers.

Remote Management Using WBEM

WBEM enables one form of remote management of an nPartition complex: using nPartition management tools (WBEM client applications) that are running on any HP-UX B.11.23 system or Windows SMS to communicate with the nPartition Provider (a WBEM agent) running on an nPartition in the complex to be managed.

When performing remote management using WBEM the following terminology is used:

- The complex being managed is referred to as a “remote complex” because it is remote with respect to the system where the tools are being run.

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Remote Management Using WBEM

- The remote complex is also the “target complex” as it is the complex that will be affected by any changes requested by the tools.
- The nPartition that the tools communicate with (using WBEM) is referred to as a “remote nPartition” because it is remote with respect to the system where the tools are being run.
- If the tools are used to retrieve information about or to make a change to a specific nPartition in the target complex, then that nPartition is the “target nPartition”. The target nPartition and the remote nPartition might be the same, but don’t have to be the same nPartition.

For example, the `parmodify` command could be used in a way where it sends requests to an nPartition in the target complex but the `-p` option identifies a different nPartition to be modified.

The following sections explain how to use the nPartition commands and Partition Manager to remotely manage an nPartition complex using WBEM. The system where the tools are used could be an nPartition or Windows SMS or any HP-UX B.11.23 system, but where the tools are run is irrelevant when performing remote management of an nPartition complex.

NOTE

Remote management using WBEM relies on an nPartition in the target complex being booted to HP-UX multi-user mode. The remote nPartition must be configured to accept remote WBEM requests (which is the default configuration when HP-UX B.11.23 is installed).

Remote management using WBEM also requires that the Trust Certificate Store file (`client.pem`) on the local system contains a copy of the server certificate data from the SSL Certificate file (`server.pem`) on the system being managed. See *WBEM Remote Management Files* on page 79.

WBEM Remote Management Files

WBEM systems provide secure remote management using the following files as part of the SSL authentication process. Both files reside on all WBEM-enabled systems.

- **server.pem — WBEM SSL Certificate file**

The SSL Certificate file resides on the system that is being managed and contains the local server's PRIVATE KEY and CERTIFICATE data.

On HP-UX B.11.23 systems, the SSL Certificate file is the `/var/opt/wbem/server.pem` file.

On a Windows SMS system, the SSL Certificate file is in the location specified by the `%PEGASUS_HOME%\cimserver_current.conf` file; in this file the `sslCertificateFilePath` entry specifies the SSL Certificate file location.

- **client.pem — WBEM Trust Certificate Store file**

The Trust Certificate Store file resides on the system from which WBEM remote management commands are issued.

On HP-UX B.11.23 systems, the Trust Certificate Store file is the `/var/opt/wbem/client.pem` file.

On a Windows SMS system, the Trust Certificate Store file is the `%HP_SSL_SHARE%\client.pem` file, where `%HP_SSL_SHARE%` specifies the directory where the file resides.

To remotely manage a server, the Trust Certificate Store file (`client.pem`) on the local system must contain a copy of the CERTIFICATE data from the SSL Certificate file (`server.pem`) on the remote server. The CERTIFICATE data includes all text starting with the “-----BEGIN CERTIFICATE-----” line through the “-----END CERTIFICATE-----” line.

By default the Trust Certificate Store file contains a copy of the CERTIFICATE data from the SSL Certificate data for the local system.

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Commands Support for Remote Management Using WBEM

Commands Support for Remote Management Using WBEM

Two options supported by the nPartition commands result in remote management using WBEM. These options are:

- `-u username: [password]`

The `-u` option specifies a valid username on the remote nPartition.

For the `parstatus` and `fruled` commands any user defined on the remote nPartition can be used, but the other commands require the username to be a user with superuser privileges on the remote nPartition.

- `-h hostname | IPaddress`

The `-h` option specifies either the hostname or IP address of the remote nPartition.

When you use the `-u . . . -h . . .` set of options, the specified command sends the appropriate WBEM requests to the remote nPartition where the requests are handled by the nPartition Provider using `/dev/ipmi` to communicate with the service processor in the target complex.

Partition Manager Support for Remote Management Using WBEM

Partition Manager supports remote management using WBEM in either of two ways.

- Run Partition Manager on an nPartition and then select the **Switch Complexes** task from the **Tools** menu. In the resulting dialog enter the hostname or IP address of the remote nPartition, and supply a username and that user's password.

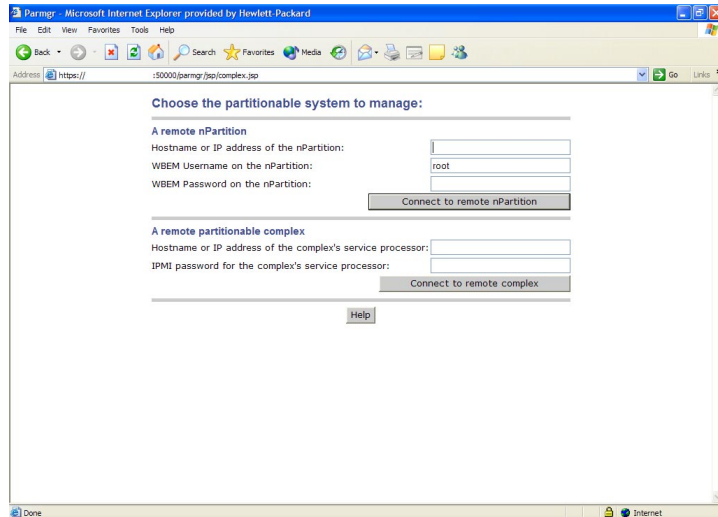
If you will use Partition Manager only to display information about the target complex, then you can specify any user defined on the remote nPartition.

However, if you will use Partition Manager to make changes to the target complex then you must specify a user with superuser privileges on the remote nPartition.

- Run Partition Manager on any system running HP-UX B.11.23 that is not an nPartition, and Partition Manager will immediately display the **Switch Complexes** dialog.

Figure 1-3

Partition Manager Switch Complexes Dialog



Remote Management Using IPMI over LAN

IPMI over LAN enables the second form of remote management of an nPartition complex: using nPartition management tools that are running on any HP-UX B.11.23 system or Windows SMS to communicate directly (without going through an nPartition) with the service processor in the complex to be managed.

When performing remote management using IPMI over LAN the following terminology is used:

- The complex being managed is referred to as a “remote complex” because it is remote with respect to the system where the tools are being run.
- The remote complex is also the “target complex” as it is the complex that will be affected by any changes requested by the tools.
- If the tools are used to retrieve information about or to make a change to a specific nPartition in the target complex, then that nPartition is the “target nPartition”.

Note that there is no concept of a “remote nPartition” in this scenario.

The following sections explain how to use the nPartition commands and Partition Manager to remotely manage an nPartition complex using IPMI over LAN.

The system where the tools are used could be an nPartition or a Windows SMS or any HP-UX B.11.23 system, but where the tools are run is irrelevant when performing remote management of an nPartition complex.

Commands Support for Remote Management Using IPMI over LAN

Two new options of the nPartition commands result in remote management using IPMI over LAN. These options are:

- `-g [password]`

The *password* is the service processor’s IPMI password.

- `-h hostname | IPaddress`

The `-h` option specifies the hostname or IP address of the service processor in the target complex.

When you use the `-g . . . -h . . .` set of options, the specified command sends the appropriate WBEM requests to the local nPartition Provider, which in turn uses IPMI over LAN to communicate with the service processor in the target complex.

Partition Manager Support for Remote Management Using IPMI over LAN

Partition Manager can be used in this mode in either of two ways:

- Run Partition Manager on an nPartition and then select the **Switch Complexes** task from the **Tools** menu. In the resulting dialog enter the hostname or IP address of the service processor in the target complex, and supply that service processor's IPMI password.
- Run Partition Manager on any system running HP-UX B.11.23 that is not an nPartition. In this situation Partition Manager immediately displays the **Switch Complexes** dialog.

Licensing Information: Getting Server Product Details

When you license a software product to run on an HP system, you may need to provide machine or system details to the software vendor as part of the software registration process.

This section describes how to obtain information you may need when licensing non-HP software to run on an HP nPartition server.

For complete information about software product licensing, refer to the company that manufactures or sells the software you plan to use.

- **Unique Machine (Complex) Identifier**

```
/usr/bin/getconf _CS_MACHINE_IDENT
```

- **Unique nPartition Identifier**

```
/usr/bin/getconf _CS_PARTITION_IDENT
```

- **Unique Virtual Partition Identifier**

```
/usr/bin/getconf _CS_PARTITION_IDENT
```

- **Machine (Complex) Serial Number**

```
/usr/bin/getconf _CS_MACHINE_SERIAL  
and  
/usr/sbin/parstatus -X
```

- **Server (Complex) Product Number**

```
/usr/sbin/parstatus -X
```

- **Machine (Complex) Hardware Model**

```
/usr/bin/getconf MACHINE_MODEL  
and  
/usr/bin/model
```

- **HP-UX Version and Installed Bundles**

```
For the HP-UX version: /usr/bin/uname -r
```

```
For all bundles installed: /usr/sbin/swlist -l bundle
```

nPartition and Virtual Partition Unique Identifiers

NOTE

Use the `getconf` command or the `confstr()` call to obtain unique identifiers. Do not use the `uname -i` command, which does not report unique IDs for nPartition systems.

In order to guarantee compatibility on current and future platforms, use the interfaces to `getconf` (1) and `confstr` (3C) to retrieve unique machine identifiers.

The interfaces include the `_CS_PARTITION_IDENT` and `_CS_MACHINE_IDENT` parameters:

- For a nPartition-specific or a virtual partition-specific unique ID use this command:

```
/usr/bin/getconf _CS_PARTITION_IDENT
```

The unique partition identifier value for a virtual partition environment has virtual partition-specific data added that does not appear for an equivalent non-vPars environment. See the examples that follow.

- For a complex-specific unique ID use this command:

```
/usr/bin/getconf _CS_MACHINE_IDENT
```

On HP PA-RISC nPartition servers, the complex, nPartition, and virtual partition unique IDs are based in part on the machine serial number.

To retrieve the machine serial through these interfaces, specify the `_CS_MACHINE_SERIAL` parameter to them.

Refer to the `confstr` (3C) manpage for details on these parameters and their use.

Example 1-1

Unique IDs for an nPartition and Complex

The following examples show nPartition-unique and complex-unique IDs returned by the `getconf` command, as well as the local nPartition number and machine serial number.

```
# parstatus -w
The local partition number is 1.
# /usr/bin/getconf _CS_PARTITION_IDENT
Z3e02955673f9f7c9_P1
```

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nPartition and Virtual Partition Unique Identifiers

```
# /usr/bin/getconf _CS_MACHINE_IDENT
Z3e02955673f9f7c9
# /usr/bin/getconf _CS_MACHINE_SERIAL
USR2024FP1
#
```

Example 1-2 Unique IDs for Virtual Partitions (vPars)

The following example shows the virtual partition-unique ID returned by the `getconf` command, as well as the local nPartition number and the current virtual partition name.

```
# parstatus -w
The local partition number is 0.
# vparstatus -w
The current virtual partition is Shad.
# getconf _CS_PARTITION_IDENT
Z3e0ec8e078cd3c7b_P0_V00
#
```

For details on virtual partitions, refer to the book *Installing and Managing HP-UX Virtual Partitions (vPars)*.

nPartition Server Hardware Overviews

This chapter introduces Hewlett-Packard nPartition server models, features, model strings, and hardware path details. Differences between the original nPartition-capable servers and those based on the HP sx1000 chipset also are covered in this chapter.

Both HP 9000 servers and HP Integrity servers are discussed here.

- The HP 9000 series of servers has HP PA-RISC processors. The nPartition-capable HP 9000 servers include the original models and newer models based on the HP sx1000 chipset.
- The HP Integrity series of servers has Intel® Itanium® 2 processors. All nPartition-capable HP Integrity servers are based on the HP sx1000 chipset.

The *Hardware, Slot, and Device Paths* on page 108 section discusses the notations used to describe hardware components within nPartitions.

sx1000 Chipset for HP Servers

The newest nPartition-capable servers are built around the HP sx1000 chipset. The sx1000 chipset supports both single-core and dual-core processors, including both HP PA-RISC and Intel® Itanium® 2 processors.

The following servers use the HP sx1000 chipset:

- PA-RISC servers — HP rp7420, HP rp8420, HP 9000 Superdome (SD16A, SD32A, and SD64A models).
- Itanium® 2-based servers — HP rx7620, HP rx8620, HP Integrity Superdome (SD16A, SD32A, SD64A models).

The HP sx1000 chipset provides a scalable server architecture with high-bandwidth processor, memory, and I/O busses. The HP sx1000 chipset includes interconnecting components such as memory buffers, I/O bus adapters and host bridges, and cell controllers, which have built-in low-level error correction.

One notable administration feature of HP servers build around the HP sx1000 chipset is Management Processor (MP) support for access to the server using IPMI over LAN. For details see *Remote and Local Management of nPartitions* on page 72.

Model Identifiers for Machine Hardware

The machine hardware model identifies the server hardware type.

A summary of the supported nPartition-capable servers and their corresponding model identifiers appears in *Server Hardware Details: HP nPartition-Capable Servers* on page 90.

You can report the machine hardware model for the local server complex using the following methods:

- From HP-UX 11i use either the `/usr/bin/model` command or the `/usr/bin/getconf MACHINE_MODEL` command.
- From the Windows command line, use the `systeminfo` command to report system details including the system model.

Different methods are used to establish the machine hardware model on HP 9000 servers and HP Integrity servers.

- For HP 9000 servers, the reported machine hardware model is the Model String component of the Stable Complex Configuration Data.
- For HP Integrity servers, the machine hardware model is based on the Creator Manufacturer and Creator Product Name complex-wide settings.

On OEM versions of nPartition-capable HP Integrity servers, the OEM Manufacturer and OEM Product Name are the machine hardware model, if they are set.

See *Complex Profile* on page 64 for details on the Model String and Creator complex-wide settings.

Server Hardware Details: HP nPartition-Capable Servers

HP's nPartition-capable servers include the models listed in Table 2-1 on page 91. For individual server details see the sections that follow.

Details about the HP sx1000 chipset that is used by the newest nPartition-capable servers are given in *sx1000 Chipset for HP Servers* on page 88.

nPartition-capable server cabinets are shown in Figure 2-1 on page 90.

Figure 2-1 **Hardware Models:
nPartition-Capable Server Cabinets**

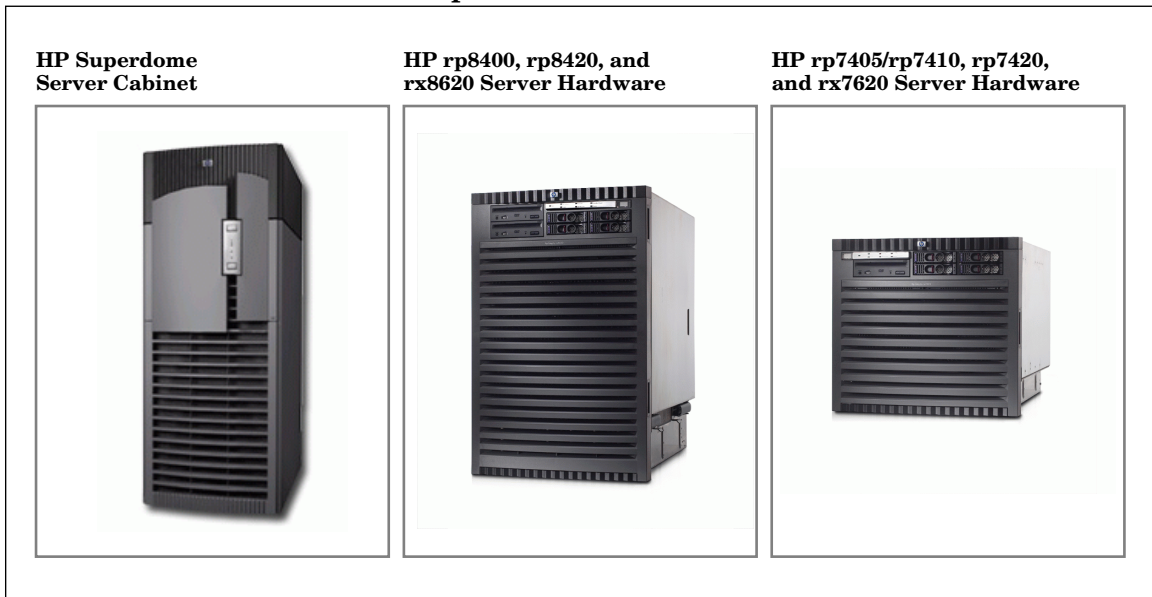


Table 2-1 Models of *nPartition*-Capable HP Servers

Cell Capacity	Server Model	Description
Two-Cell Servers See <i>Two-Cell nPartition Server Model</i> on page 95.	HP 9000 rp7405/7410 server	Up to eight PA-RISC processors. Runs HP-UX B.11.11. model string: 9000/800/rp7410
	HP 9000 rp7420 server	Up to eight dual-core PA-RISC processors (16 CPUs total). Uses the HP sx1000 chipset. Runs HP-UX B.11.11. model string: 9000/800/rp7420
	HP Integrity rx7620 server	Up to eight Intel® Itanium® 2 processors. Uses the HP sx1000 chipset. Runs both HP-UX B.11.23 and Microsoft® Windows® Server 2003. model command output: ia64 hp rx7620 server

Table 2-1 **Models of *n*Partition-Capable HP Servers (Continued)**

Cell Capacity	Server Model	Description
Four-Cell Servers See <i>Four-Cell <i>n</i>Partition Server Model</i> on page 97.	HP 9000 rp8400 server	Up to 16 PA-RISC processors. Runs HP-UX B.11.11. model string: 9000/800/S16K-A
	HP 9000 rp8420 server	Up to 16 dual-core PA-RISC processors (32 CPUs total). Uses the HP sx1000 chipset. Runs HP-UX B.11.11. model string: 9000/800/rp8420
	HP Integrity rx8620 server	Up to 16 Intel® Itanium® 2 processors. Uses the HP sx1000 chipset. Runs both HP-UX B.11.23 and Microsoft® Windows® Server 2003. model command output: ia64 hp rx8620 server

Table 2-1 Models of *nPartition*-Capable HP Servers (Continued)

Cell Capacity	Server Model	Description
<p>HP 9000 Superdome Servers</p> <p>See <i>Superdome Server Models</i> on page 100.</p>	<p>HP 9000 Superdome SD16000, SD32000, SD64000 servers</p>	<p>Up to 64 PA-RISC processors. Runs HP-UX B.11.11.</p> <ul style="list-style-type: none"> • HP 9000 Superdome 16-way (4-cell) server model string: 9000/800/SD16000 • HP 9000 Superdome 32-way (8-cell) server model string: 9000/800/SD32000 • HP 9000 Superdome 64-way (16-cell) server model string: 9000/800/SD64000
	<p>HP 9000 Superdome SD16A, SD32A, SD64A servers</p>	<p>Up to 64 dual-core PA-RISC processors (128 CPUs total). Uses the HP <i>sx1000</i> chipset. Runs HP-UX B.11.11.</p> <ul style="list-style-type: none"> • HP 9000 Superdome 16-way (4-cell) server model string: 9000/800/SD16A • HP 9000 Superdome 32-way (8-cell) server model string: 9000/800/SD32A • HP 9000 Superdome 64-way (16-cell) server model string: 9000/800/SD64A

Table 2-1 Models of nPartition-Capable HP Servers (Continued)

Cell Capacity	Server Model	Description
<p>HP Integrity Superdome Servers</p> <p>See <i>Superdome Server Models</i> on page 100.</p>	<p>HP Integrity Superdome SD16A, SD32A, SD64A servers</p>	<p>Up to 64 Intel® Itanium® 2 processors. Uses the HP sx1000 chipset.</p> <p>Runs both HP-UX B.11.23 and Microsoft® Windows® Server 2003.</p> <ul style="list-style-type: none"> • HP Integrity Superdome 16-way (4-cell) server model command output: ia64 hp superdome server SD16A • HP Integrity Superdome 32-way (8-cell) server model command output: ia64 hp superdome server SD32A • HP Integrity Superdome 64-way (16-cell) server model command output: ia64 hp superdome server SD64A

Two-Cell nPartition Server Model

The following nPartition-capable HP servers scale from one to two cells:

- The HP rp7405/rp7410 server has single-core HP PA-RISC processors.
The model string is: 9000/800/rp7410.
- The HP rp7420 server has dual-core HP PA-RISC processors: PA-8800 processors, which provide two CPUs per processor socket.
The model string is: 9000/800/rp7420.
- The HP rx7620 server has single-core Intel® Itanium® 2 processors.
The model command output is: ia64 hp rx7620 server.

Figure 2-2 on page 96 shows an overview of the two-cell nPartition-capable HP server hardware architecture.

On the two-cell nPartition-capable HP servers you can configure a single nPartition using one or both cells, or can configure up to two separate nPartitions within the server complex. In a two-nPartition complex, you use cell 0 and its core I/O in one nPartition, and use cell 1 and its core I/O in the other nPartition.

The two-cell nPartition-capable HP server models includes these features:

- A single server cabinet that includes all cells, I/O chassis, processors, memory, PCI cards, and core I/O.
- Either one or two cells. Each cell has up to four processor sockets and up to 16 DIMMs.
- Two PCI I/O chassis that share the same chassis hardware.
One I/O chassis is connected to cell 0, the other is connected to cell 1.
Each I/O chassis has 8 PCI card slots, numbered from 1 to 8.

NOTE

On two-cell nPartition-capable HP servers, two PCI slots by convention are dedicated for use by a combination LAN/SCSI card: PCI domain 0 slot 1 (the first slot on the left) and PCI domain 1 slot 8 (the last slot on the right).

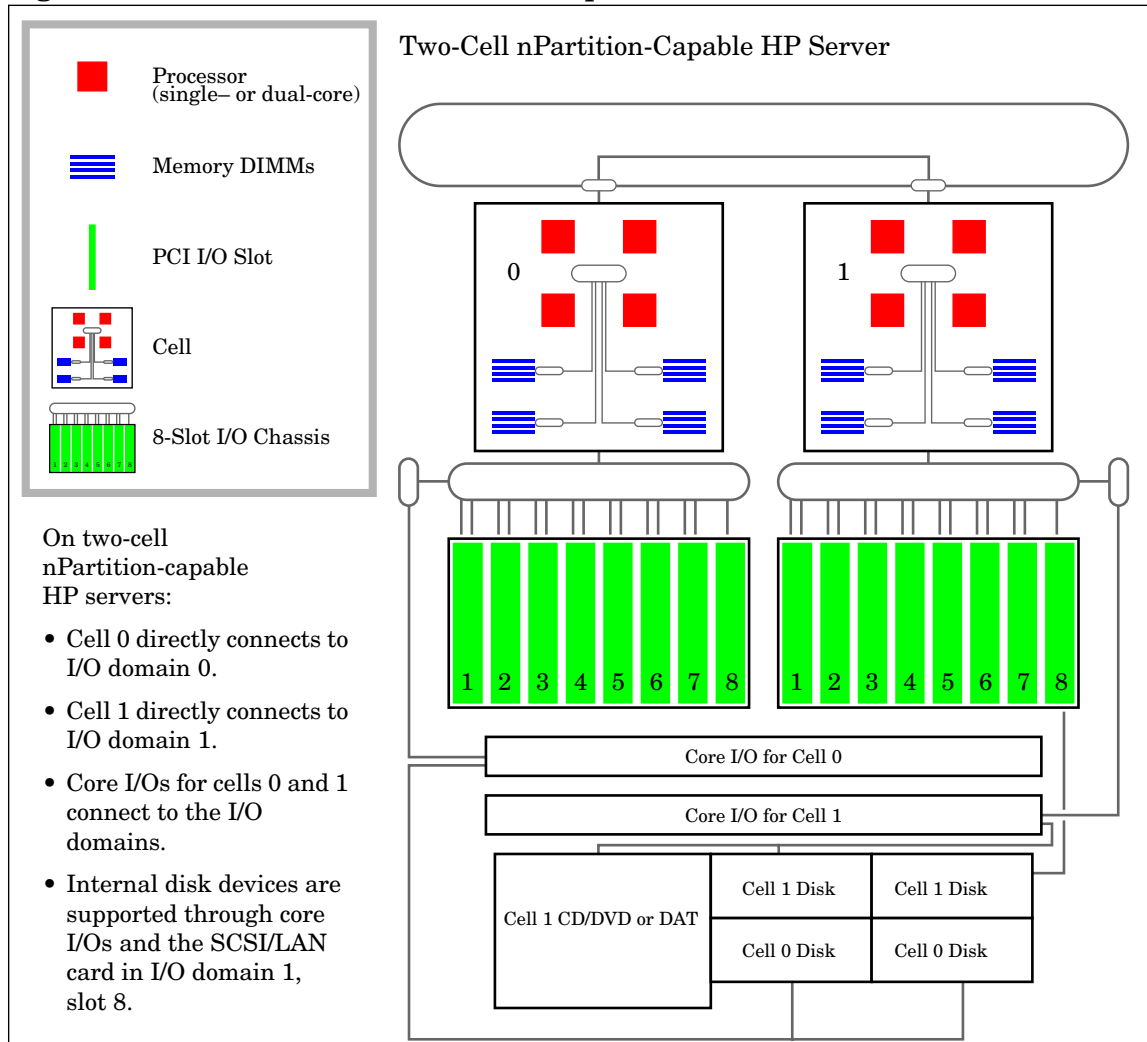
Chapter 2 nPartition Server Hardware Overviews

Two-Cell nPartition Server Model

- Up to two core I/O devices, one connected to cell 0, and the other connected to cell 1.
- A total server complex capacity of: 2 cells, 8 processor sockets, 32 DIMMs, and 16 PCI card slots.

Two-cell nPartition-capable HP servers include a single server cabinet that may be rack-mounted or a stand-alone server configuration.

Figure 2-2 Two-Cell nPartition-Capable HP Server Architecture Overview



Four-Cell nPartition Server Model

The following nPartition-capable HP servers scale from one to four cells:

- The HP rp8400 server has single-core HP PA-RISC processors.
The model string is: 9000/800/S16K-A.
- The HP rp8420 server has dual-core HP PA-RISC processors:
PA-8800 processors, which provide two CPUs per processor socket.
The model string is: 9000/800/rp8420.
- The HP rx8620 server has single-core Intel® Itanium® 2 processors.
The model command output is: ia64 hp rx8620 server.

Figure 2-3 on page 99 shows an overview of the four-cell nPartition-capable HP server hardware architecture.

You can configure a single nPartition using some or all cells, or can configure up to four separate nPartitions within the server complex when using an I/O expansion cabinet.

In a multiple-nPartition four-cell server complex, you would use cell 0 and its core I/O in one nPartition, and use cell 1 and its core I/O in another nPartition. The other cells (cells 2 and 3) can be assigned to either of the two nPartitions, or if connected to I/O in an expansion cabinet can be used to create additional nPartitions.

The four-cell nPartition-capable HP servers include these features:

- A single server cabinet that includes cells, I/O chassis, processors, memory, PCI cards, and core I/O.
Two PCI I/O chassis in the server cabinet share the same chassis hardware. One I/O chassis is connected to cell 0, the other is connected to cell 1. Each I/O chassis has 8 PCI card slots, numbered from 1 to 8.
- An optional I/O expansion cabinet that provides an additional two core I/O cards and an additional two I/O domains each containing eight PCI card slots (for a total of 16 more PCI card slots).
Two PCI I/O chassis in the I/O expansion cabinet share the same chassis hardware. One I/O chassis is connected to cell 2, the other is connected to cell 3.
- From one to four cells. Each cell has four processor sockets and up to 16 DIMMs.

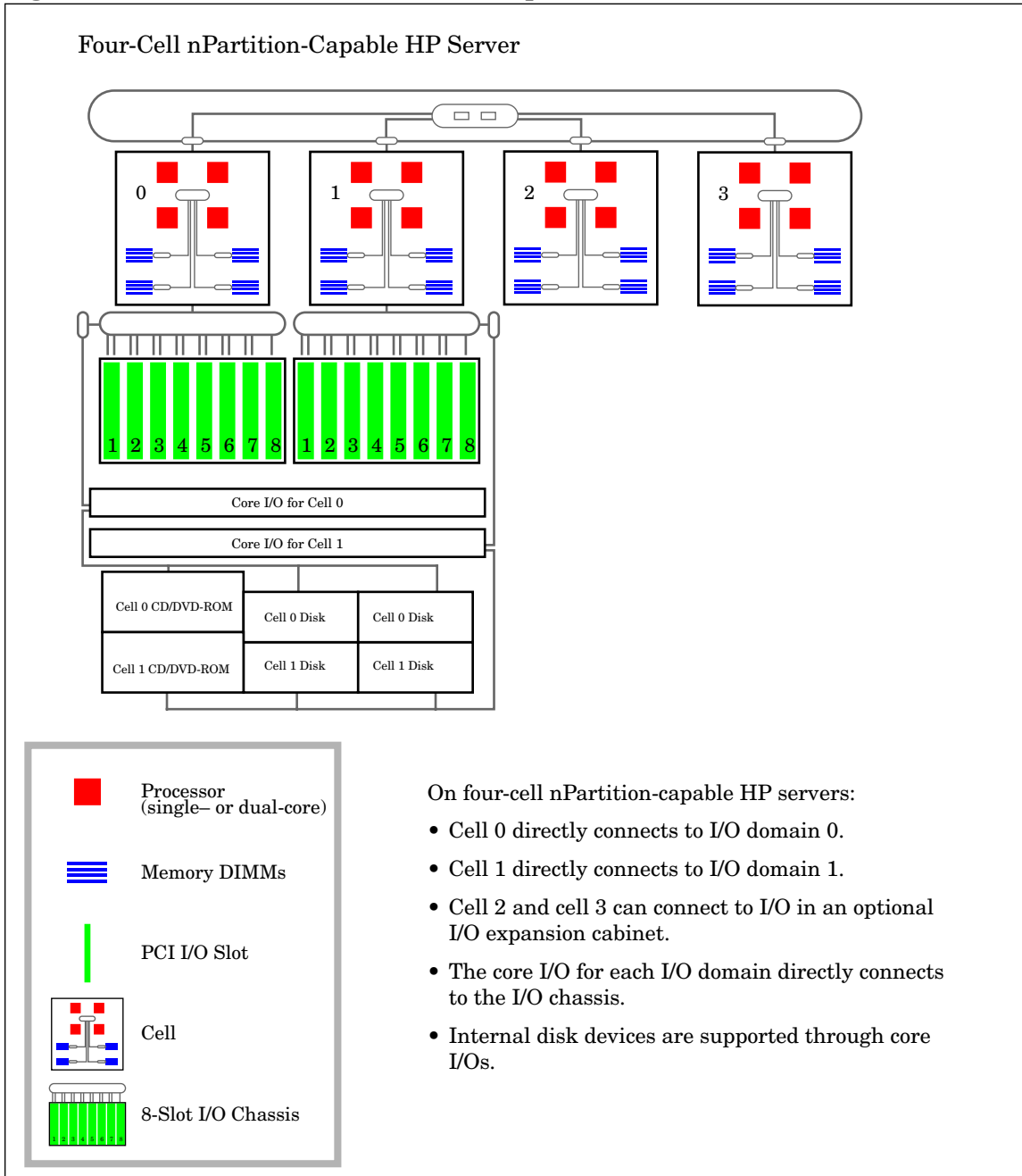
Chapter 2 nPartition Server Hardware Overviews

Four-Cell nPartition Server Model

- A total server complex capacity of: 4 cells, 16 processor sockets, 64 DIMMs, and either 16 or 32 PCI card slots.

Four-cell nPartition-capable HP servers include a single server cabinet that can be rack-mounted or stand-alone. An optional I/O expansion cabinet may also be used.

Figure 2-3 Four-Cell nPartition-Capable HP Server Architecture Overview



Superdome Server Models

HP Superdome servers scale up to 16 cells and include complete support for hard partitions (nPartitions). You can configure a single nPartition using some or all cells, or can configure multiple nPartitions within the same Superdome server complex (up to one nPartition for each cell connected to an I/O chassis containing core I/O).

Three types of HP Superdome servers are supported: the original HP 9000 Superdome (SD16000, SD32000, and SD64000), the sx1000-chipset-based HP 9000 Superdome (SD16A, SD32A, and SD64A), and the HP Integrity Superdome server (SD16A, SD32A, and SD64A).

A Support Management Station (SMS) is connected to each HP Superdome server through the service processor private LAN port. The SMS is either an HP-UX workstation or an HP ProLiant system running Microsoft® Windows®. The SMS primarily is used for support and service purposes. The Windows SMS supports Windows versions of the nPartition commands, thus enabling remote administration of nPartitions from the SMS. For details see *SMS (Support Management Station) for HP Superdome Servers* on page 136.

You can add up to two Superdome I/O expansion cabinets to the Superdome 32-way and 64-way models. Each I/O expansion cabinet has up to six additional 12-slot I/O chassis.

The HP Superdome server models include:

- *HP Superdome 16-Way Servers: SD16000 and SD16A*
- *HP Superdome 32-Way Servers: SD32000 and SD32A*
- *HP Superdome 64-Way Servers: SD64000 and SD64A*

Details on these models are given in the following sections.

HP Superdome 16-Way Servers: SD16000 and SD16A

The HP Superdome 16-way server is a single-cabinet server that has from two to four cells, each with four processor sockets and up to 32 DIMMs.

Figure 2-4 on page 102 shows an overview of the Superdome 16-way server hardware architecture.

The models of HP Superdome 16-way servers are: SD16000 and SD16A.

- The HP 9000 Superdome SD16000 server has single-core HP PA-RISC processors.

The model string for the SD16000 server is: 9000/800/SD16000

- The HP 9000 Superdome SD16A server has dual-core HP PA-RISC processors: PA-8800 processors, which provide two CPUs per processor socket.

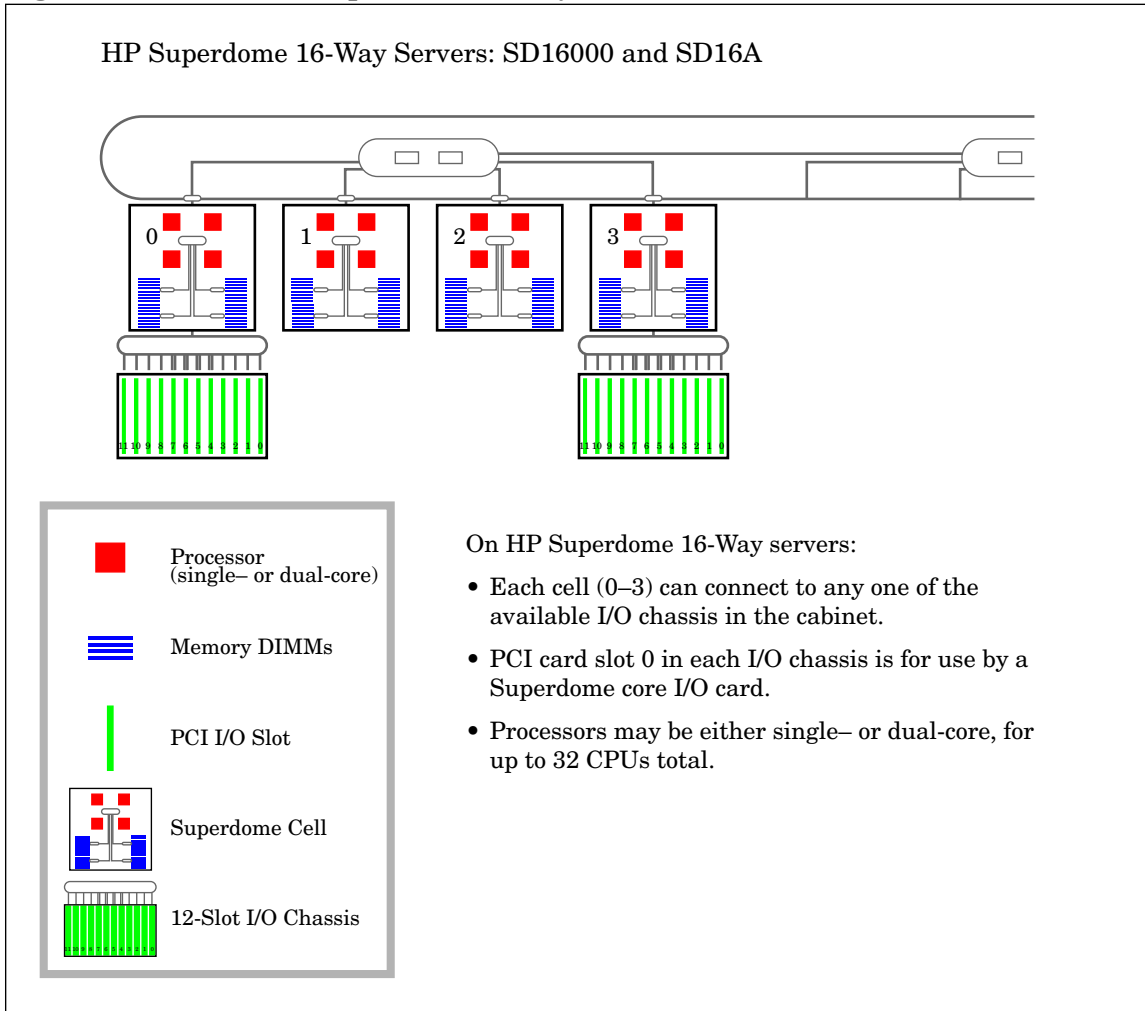
The model string for the HP 9000 SD16A server is: 9000/800/SD16A

- The HP Integrity Superdome SD16A server has single-core Intel® Itanium® 2 processors.

The model command output for the HP Integrity SD16A server is:
ia64 hp superdome server SD16A

The Superdome 16-way server can have up to 16 processor sockets, 128 DIMMs, and up to four 12-slot PCI I/O chassis.

Figure 2-4 HP Superdome 16-Way Architecture Overview



HP Superdome 32-Way Servers: SD32000 and SD32A

The Superdome 32-way server is a single-cabinet server that has from two to eight cells, each with four processor sockets and up to 32 DIMMs.

Figure 2-5 on page 104 shows an overview of the Superdome 32-way server hardware architecture.

The models of HP Superdome 32-way servers are: SD32000 and SD32A.

- The HP 9000 Superdome SD32000 server has single-core HP PA-RISC processors.

The model string for the SD32000 server is: 9000/800/SD32000

- The HP 9000 Superdome SD32A server has dual-core HP PA-RISC processors: PA-8800 processors, which provide two CPUs per processor socket.

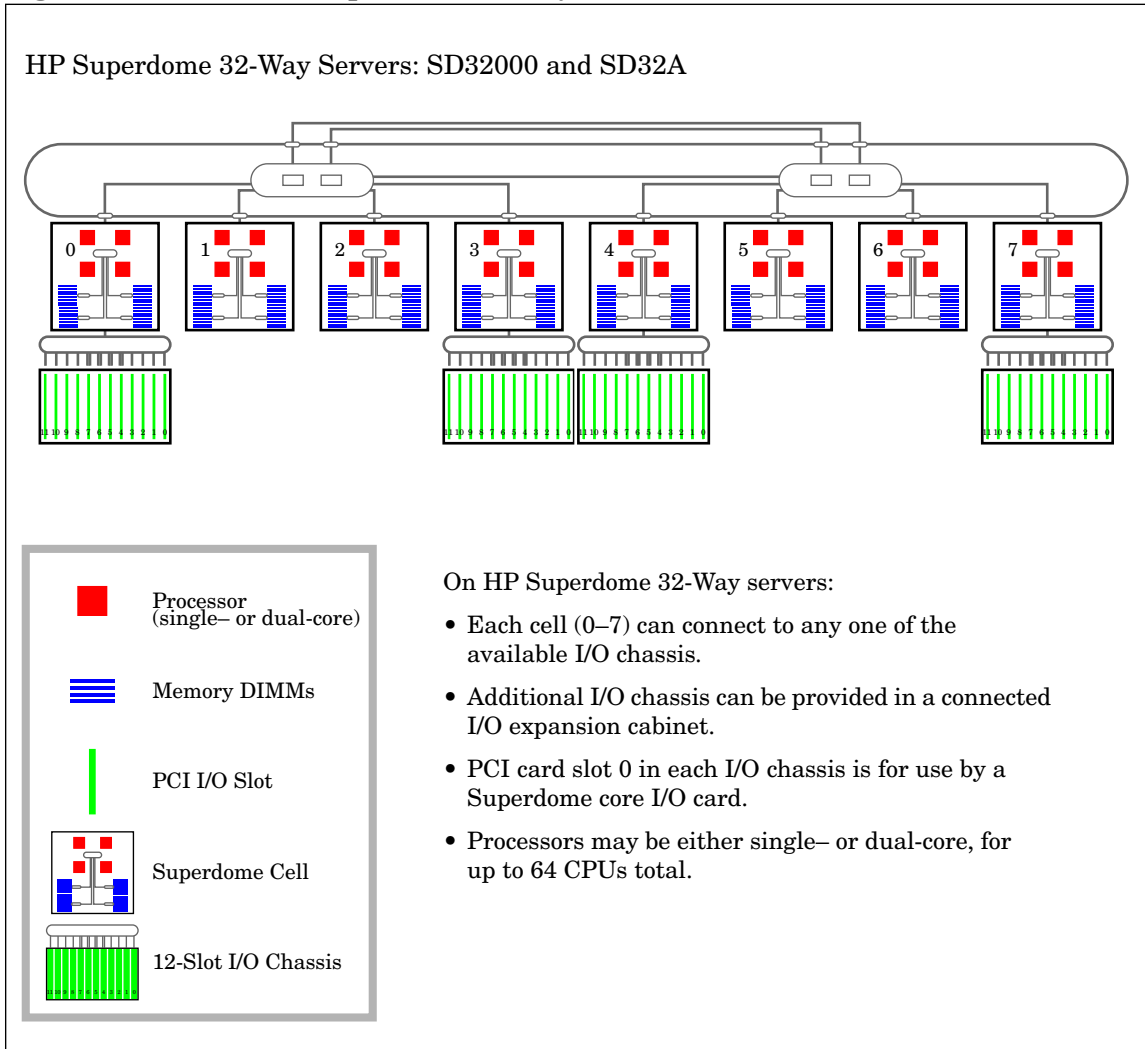
The model string for the HP 9000 SD32A server is: 9000/800/SD32A

- The HP Integrity Superdome SD32A server has single-core Intel® Itanium® 2 processors.

The `model` command output for the HP Integrity SD32A server is:
ia64 hp superdome server SD32A

The Superdome 32-way server can have up to 32 processor sockets, 256 DIMMs, up to four internal 12-slot PCI I/O chassis, plus optional I/O expansion cabinet hardware.

Figure 2-5 HP Superdome 32-Way Architecture Overview



HP Superdome 64-Way Servers: SD64000 and SD64A

The Superdome 64-way server is a tightly interconnected dual-cabinet server that has from 4 to 16 cells, each with four processor sockets and up to 32 DIMMs.

Figure 2-6 on page 106 shows an overview of the Superdome 64-way server hardware architecture.

The two models of HP Superdome 64-way servers are: SD64000 and SD64A.

- The hp 9000 Superdome SD64000 server has single-core HP PA-RISC processors.

The model string for the SD64000 server is: 9000/800/SD64000

- The hp 9000 Superdome SD64A server has dual-core HP PA-RISC processors: PA-8800 processors, which provide two CPUs per processor socket.

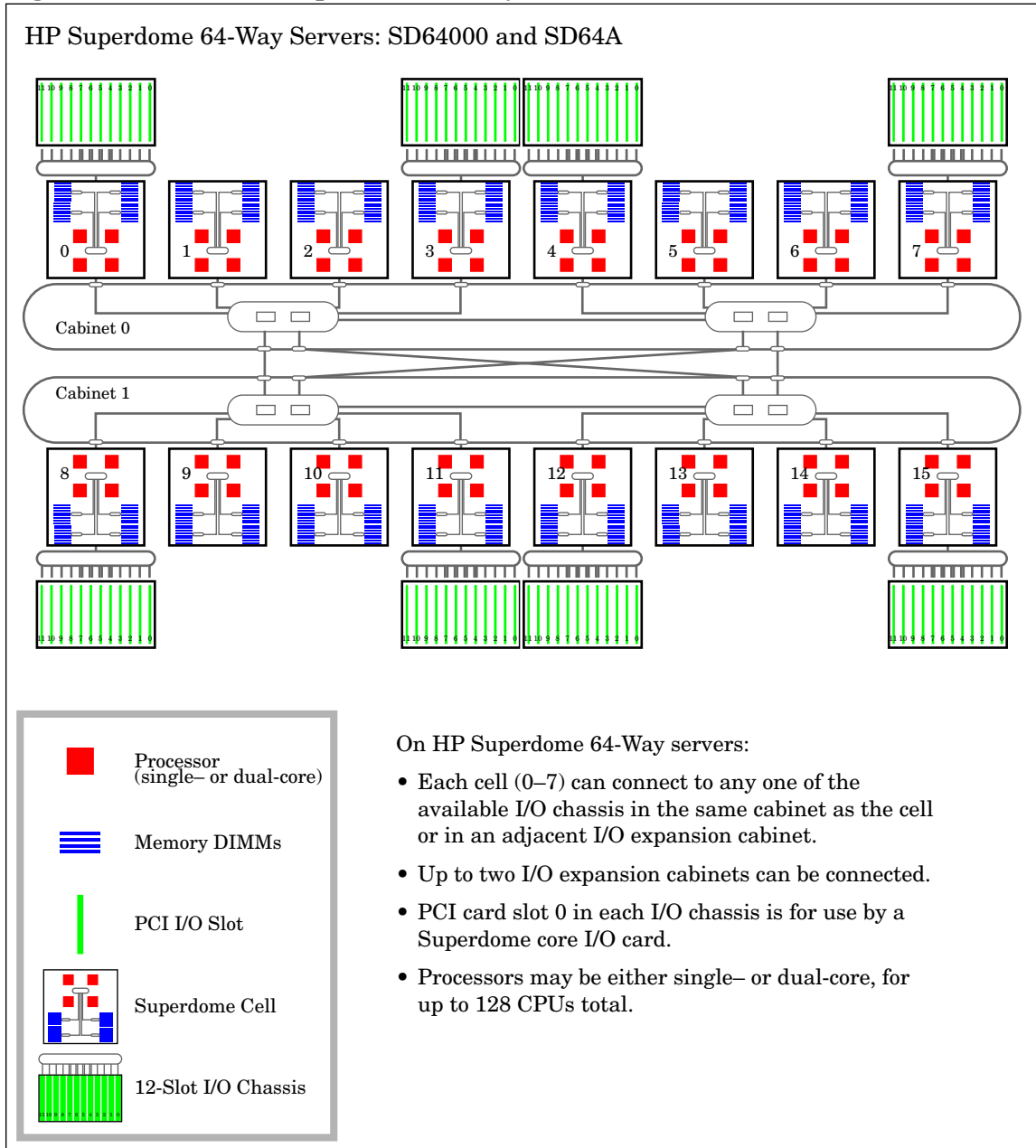
The model string for the hp 9000 SD64A server is: 9000/800/SD64A

- The hp Integrity Superdome SD64A server has single-core Intel® Itanium® 2 processors.

The `model` command output for the hp Integrity SD64A server is:
ia64 hp superdome server SD64A

The Superdome 64-way server can have up to 64 processor sockets, 512 DIMMs, and up to eight internal 12-slot PCI I/O chassis. (Each of the two cabinets in a Superdome 64-way server provides up to 32 processor sockets, 256 DIMMs, and up to four 12-slot PCI I/O chassis.) HP Superdome 64-way servers also can have optional I/O expansion cabinet hardware.

Figure 2-6 HP Superdome 64-Way Architecture Overview



HP Superdome I/O Expansion Cabinet

HP Superdome 32-way and Superdome 64-way servers can include I/O expansion cabinets in addition to the server cabinet(s) in the complex.

Each I/O expansion cabinet has a cabinet number of either 8 or 9.

A Superdome I/O expansion cabinet includes up to 3 I/O bays, with two 12-slot I/O chassis in each bay. This provides for up to 6 chassis with a total of 72 PCI card slots in each I/O expansion cabinet.

The Superdome I/O expansion cabinet is a standard-size cabinet that, space permitting, you can mount peripherals in as well as I/O chassis.

Also refer to the book *I/O Expansion Cabinet Guide for Superdome Servers*.

Hardware, Slot, and Device Paths

This section discusses the notations used to describe hardware components within *nPartitions*.

The following hardware notation formats are covered:

- *HP-UX Hardware Paths* on page 109.
The `/usr/sbin/ioscan` command lists the hardware paths for active components in an *nPartition*.
- *PCI Card Slot and Hardware Path Numbering* on page 114.
PCI card slot numbering differs from the hardware path numbering in many cases.
- *rad and olrad Command Output in nPartitions* on page 115.
The `rad` and `olrad` commands present detailed reports of PCI card slots.
- *EFI Device Path Notation* on page 117.
On HP Integrity Superdome servers, the Extensible Firmware Interface (EFI) system boot environment displays I/O paths in EFI Device Path notation, which differs from other notations such as HP-UX hardware paths.
This section describes the EFI Device Path Notation for HP Integrity Superdome servers.

HP-UX Hardware Paths

The HP-UX hardware path for nPartition systems is provided in the formats described here.

The `/usr/sbin/ioscan` HP-UX command reports the hardware path for active components within the nPartition in which the command is issued.

You also can use the `/usr/bin/rad -q` command (with HP-UX B.11.11) or the `/usr/bin/olrad -q` command (with HP-UX B.11.23) to list details about active I/O slots and cards in the local nPartition.

NOTE

The `ioscan`, `rad`, and `olrad` commands only report information about the currently active hardware components in the local nPartition.

These commands do not report details for hardware that is not assigned to the local nPartition or hardware that is inactive in the nPartition.

NOTE

PCI I/O chassis and PCI-X I/O chassis have different hardware paths due to the differing PCI device numbers reported (0 for PCI, 1 for PCI-X).

Hardware Paths in nPartitions

The components of nPartition hardware paths are:

`a/b/c/d/e.f.g`

where these components are as described in the following list.

- a

Is the global cell number.

- b

On HP 9000 servers, b may be a processor (10–13), memory (5), or a system bus adapter (0).

On HP Integrity servers, b may be a processor (120–123) or a system bus adapter (0).

Each I/O chassis has a single system bus adapter.

Chapter 2 nPartition Server Hardware Overviews

HP-UX Hardware Paths

- c

Is a local bus adapter (the LBA, one for each PCI card slot in the chassis). The LBA connects its corresponding PCI card slot with the system bus adapter.

NOTE

The LBA number is not necessarily the same as the PCI slot number.

Use the `rad -q` command to list all active PCI slots in an nPartition along with their corresponding hardware paths. See *PCI Card Slot and Hardware Path Numbering* on page 114.

- d

Is the PCI device number, the address of the card on the PCI bus.

For PCI I/O chassis, the PCI device number is 0.

For PCI-X I/O chassis, the PCI device number is 1.

Note that the core I/O card has multiple devices and addresses in a single card.

- e

Is the function for the I/O card. Typically this is 0 (zero) for single-function cards.

- f

Is the target of the I/O device, or SCSI ID.

- g

Is a device-specific address such as a SCSI controller (initiator).

Refer to the *ioscan* (1M) manpage for details on using `ioscan` to list hardware path information.

Example 2-1 ioscan Output for a One-Cell HP 9000 Superdome nPartition

The following example shows `ioscan` output for a one-cell nPartition on an HP 9000 Superdome server.

In this example, the hardware path for the cell is 12, indicating that the cell is in slot 4 in cabinet 1. See *Specifying Cells and I/O Chassis to Commands* on page 504 for details about cell path formats.

Also note that in this example the I/O chassis is a PCI chassis.

```
# ioscan
H/W Path      Class      Description
=====
                root
12            cell
12/0          ioa        System Bus Adapter (804)
12/0/0        ba        Local PCI Bus Adapter (782)
12/0/0/0/0    tty       PCI Serial (103c1048)
12/0/0/1/0    lan       HP PCI 10/100Base-TX Core
12/0/1        ba        Local PCI Bus Adapter (782)
12/0/2        ba        Local PCI Bus Adapter (782)
12/0/3        ba        Local PCI Bus Adapter (782)
12/0/4        ba        Local PCI Bus Adapter (782)
12/0/6        ba        Local PCI Bus Adapter (782)
12/0/6/0/0    ext_bus   SCSI C87x Ultra Wide Differential
12/0/6/0/0.5 target
12/0/6/0/0.5.0 disk      SEAGATE ST39173WC
12/0/6/0/0.6 target
12/0/6/0/0.6.0 disk      SEAGATE ST39173WC
12/0/6/0/0.7 target
12/0/6/0/0.7.0 ctl       Initiator
12/0/8        ba        Local PCI Bus Adapter (782)
12/0/9        ba        Local PCI Bus Adapter (782)
12/0/10       ba        Local PCI Bus Adapter (782)
12/0/11       ba        Local PCI Bus Adapter (782)
12/0/12       ba        Local PCI Bus Adapter (782)
12/0/14       ba        Local PCI Bus Adapter (782)
12/5          memory    Memory
12/10         processor Processor
12/11         processor Processor
12/12         processor Processor
12/13         processor Processor
#
```

Chapter 2 nPartition Server Hardware Overviews

HP-UX Hardware Paths

Example 2-2 ioscan Output for a One-Cell HP Integrity Superdome nPartition

The following example shows `ioscan` output for a one-cell nPartition on an HP Integrity Superdome server.

In this example, the hardware path for the cell is 4, indicating that the cell is in slot 4 in cabinet 0. See *Specifying Cells and I/O Chassis to Commands* on page 504 for details about cell path formats.

Also note that in this example, the I/O chassis is a PCI-X chassis.

```
# ioscan
H/W Path      Class      Description
=====
              root
4             cell
4/0           ioa       System Bus Adapter (127b)
4/0/0        ba       Local PCI-X Bus Adapter (122e)
4/0/0/0/0    tty      PCI Serial (103c1048)
4/0/0/1/0    lan      HP PCI 10/100Base-TX Core
4/0/1        ba       Local PCI-X Bus Adapter (122e)
4/0/1/1/0    ext_bus  SCSI C1010 Ultra160 Wide LVD
A6828-60101
4/0/1/1/0.0 target
4/0/1/1/0.0.0 disk     HP 18.2GST318453LC
4/0/1/1/0.1 target
4/0/1/1/0.1.0 disk     HP 18.2GST318453LC
4/0/1/1/0.2 target
4/0/1/1/0.2.0 disk     HP 18.2GST318453LC
4/0/1/1/0.7 target
4/0/1/1/0.7.0 ctl      Initiator
4/0/1/1/0.15 target
4/0/1/1/0.15.0 ctl      HP      A6491A
4/0/2        ba       Local PCI-X Bus Adapter (122e)
4/0/2/1/0    lan      HP A6825-60101 PCI 1000Base-T
Adapter
4/0/3        ba       Local PCI-X Bus Adapter (122e)
4/0/4        ba       Local PCI-X Bus Adapter (122e)
4/0/4/1/0    ba       PCItoPCI Bridge
4/0/4/1/0/4/0 usb      NEC USB Interface
4/0/4/1/0/4/0.1 usbhub   USB Root Hub
4/0/4/1/0/4/0.1.2 usbhid   USB HID Mouse(2)
4/0/4/1/0/4/1 usb      NEC USB Interface
4/0/4/1/0/4/1.1 usbhub   USB Root Hub
4/0/4/1/0/4/1.1.2 usbhid   USB HID Kbd(0) Other(1)
4/0/4/1/0/4/2 usb      NEC USB Interface
4/0/4/1/0/5/0 unknown  PCI Display (10025159)
4/0/6        ba       Local PCI-X Bus Adapter (122e)
```



```

4/0/8          ba          Local PCI-X Bus Adapter (122e)
4/0/9          ba          Local PCI-X Bus Adapter (122e)
4/0/10         ba          Local PCI-X Bus Adapter (122e)
4/0/11         ba          Local PCI-X Bus Adapter (122e)
4/0/11/1/0    ext_bus     SCSI C1010 Ultra Wide
Single-Ended A6828-60101
4/0/11/1/0.4  target
4/0/11/1/0.4.0 disk          HP          DVD-ROM 6x/32x
4/0/11/1/0.7  target
4/0/11/1/0.7.0 ctl          Initiator
4/0/12         ba          Local PCI-X Bus Adapter (122e)
4/0/14         ba          Local PCI-X Bus Adapter (122e)
4/120         processor   Processor
4/121         processor   Processor
4/122         processor   Processor
4/123         processor   Processor
4/250         ba          Core I/O Adapter
4/250/0       ipmi        IPMI Controller
4/250/1       acpi_node   Acpi Hardware
#

```

PCI Card Slot and Hardware Path Numbering

On nPartition servers, the PCI card slot numbers (within an I/O chassis) are not necessarily the same as their local bus adapter (LBA) number, such as is reported by HP-UX commands such as `ioscan`, `rad`, or `olrad` (the `rad` command is in HP-UX B.11.11, and `olrad` in HP-UX B.11.23).

Table 2-2 shows the correlations among PCI slots and LBA numbers.

Table 2-2 I/O Numbering: PCI slots and Busses (LBAs)

PCI Card Slot	LBA Number for HP Superdome servers	LBA Number for HP rp7405/rp7410, rp7420, rx7620, rp8400, rp8420, and rx8620 servers
0	0	0 Always connected to Core I/O.
1	1	8
2	2	10
3	3	12
4	4	14
5	6	6
6	14	4
7	12	2
8	11	1
9	10	—
10	9	—
11	8	—

The `rad -q` and `olrad -q` commands list each active PCI slot, its associated HP-UX hardware path, and other slot details.

The `ioscan -C ba` command lists the active PCI slots (“Local PCI Bus Adapter”) for your nPartition.

The order in which `ioscan` reports the PCI slots (in LBA number order) does not correspond to the order in which the slots physically are arranged (PCI card slot order, left-to-right or right-to-left).

rad and olrad Command Output in nPartitions

This section covers the `rad` command's output on nPartitions. For complete details, refer to the *rad* (1M) or *olrad* (1M) manpage. The `rad` command is available with HP-UX B.11.11, and `olrad` with B.11.23.

NOTE

In HP-UX B.11.11, when adding or replacing I/O cards, use the SAM (`/usr/sbin/sam`) procedures when possible rather than equivalent `rad` command procedures. Refer to the *sam* (1M) and *rad* (1M) manpages.

On HP nPartition servers, the `rad` and `olrad` commands report PCI card slot details as shown in the following example output. Both commands list slots in active I/O chassis that are assigned to the local nPartition.

The `rad` and `olrad` commands report each available PCI slot (*cabinet-bay-chassis-slot*), the corresponding HP-UX hardware path (*cell/sba/lba/device*), and more details.

Chapter 2 nPartition Server Hardware Overviews

rad and olrad Command Output in nPartitions

```
# rad -q
```

Slot	Path	Bus	Speed	Power	Occupied	Suspended	Driver(s) Capable
0-0-1-0	0/0/0	0	33	On	Yes	No	No
0-0-1-1	0/0/1/0	8	33	On	Yes	No	Yes
0-0-1-2	0/0/2/0	16	33	On	Yes	No	Yes
0-0-1-3	0/0/3/0	24	33	On	Yes	No	Yes
0-0-1-4	0/0/4/0	32	33	On	Yes	No	Yes
0-0-1-5	0/0/6/0	48	66	On	Yes	No	Yes
0-0-1-6	0/0/14/0	112	33	On	No	N/A	N/A
0-0-1-7	0/0/12/0	96	33	On	No	N/A	N/A
0-0-1-8	0/0/11/0	88	33	On	Yes	No	Yes
0-0-1-9	0/0/10/0	80	33	On	No	N/A	N/A
0-0-1-10	0/0/9/0	72	33	On	No	N/A	N/A
0-0-1-11	0/0/8/0	64	33	On	Yes	No	Yes
0-1-3-0	2/0/0	0	33	On	Yes	No	No
0-1-3-1	2/0/1/0	8	33	On	Yes	No	Yes
0-1-3-2	2/0/2/0	16	33	On	Yes	No	Yes
0-1-3-3	2/0/3/0	24	33	On	Yes	No	Yes
0-1-3-4	2/0/4/0	32	33	On	No	N/A	N/A
0-1-3-5	2/0/6/0	48	66	On	Yes	No	Yes
0-1-3-6	2/0/14/0	112	66	On	Yes	No	Yes
0-1-3-7	2/0/12/0	96	33	On	No	N/A	N/A
0-1-3-8	2/0/11/0	88	33	On	Yes	No	Yes
0-1-3-9	2/0/10/0	80	33	On	No	N/A	N/A
0-1-3-10	2/0/9/0	72	33	On	No	N/A	N/A
0-1-3-11	2/0/8/0	64	33	On	Yes	No	Yes

#

Cabinet 0, Bay 0, Chassis 1, Slot 3
(rad and olrad slot notation: 0-0-1-3)

Cell 2, SBA 0, LBA 6, Device 0
(HP-UX hardware path: 2/0/6/0)

EFI Device Path Notation

On HP Integrity Superdome servers, the Extensible Firmware Interface (EFI) system boot environment displays I/O paths in EFI Device Path notation using a combination of text and hexadecimal numbers.

NOTE

This section describes EFI Device Paths for HP Integrity Superdome servers only. Other hardware models may use differing notations.

The EFI presentation of I/O paths differs from HP-UX Hardware Paths, which are composed of decimal numbers.

For example, a disk device that in HP Integrity Superdome EFI Device Path form is shown in the following notation:

```
Acpi(000222F0,E15)/Pci(0|0)/Scsi(Pun0,Lun0)/HD(Part1,Sig843B0000)
```

is displayed in HP-UX B.11.23 using the following HP-UX Hardware Path notation:

```
14/0/1/0/0.0.0
```

NOTE

To list the EFI Device Path for a device from HP-UX B.11.23, use the `ioscan -e...` command. For details refer to the `ioscan` (1M) manpage.

Description of EFI Device Path Notation

The EFI Device Path notation for HP Integrity Superdome servers is as follows:

```
Acpi( ... , XYY)/Pci(A|B)/Scsi(PunC,LunD)/ ...
```

where:

`XYY)` indicates the cell and PCI bus.

Note that `X` and `YY` are specific to HP Integrity Superdome servers.

For devices on cell 0, the EFI Device Path only shows `YY`.

Chapter 2 nPartition Server Hardware Overviews

Description of EFI Device Path Notation

- x = cell number in hex.

Convert x to decimal to get the cell number as per HP-UX Hardware Path. (Hex A = decimal 10, B=11, C=12... F=15.)

The cell number is not shown in the EFI Device Path for devices on cell 0.

- xy = PCI bus in hex.

Translate xy to its corresponding PCI slot number, then translate the slot number to its corresponding rope number (use the first rope, for two-rope slots).

These translations can be done using the `info io` command output from the EFI Shell.

The decimal rope number is the LBA component of the HP-UX Hardware Path.

`Pci(A|B)`

indicates the device and function.

A = PCI device, in hex. (Ordinarily 0 or 1; if so, is the same in both decimal and hex.)

B = PCI function, in hex. (Ordinarily 0 or 1; if so, is the same in both decimal and hex.)

`Scsi(PunC,LunD)` indicates the target and LUN (logical unit number).

C = The target or PUN (physical unit number) in hex.

Convert C to decimal to get the target as per the HP-UX Hardware Path. (Hex A = decimal 10, B=11, C=12... F=15.)

D = The LUN (logical unit number) in hex. (Ordinarily 0; if so it is the same in both decimal and hex.)

3

Planning nPartitions

This chapter describes how you can plan nPartition configurations. Details include the nPartition configuration requirements and Hewlett-Packard's recommendations.

For procedures to create and configure nPartitions, see the chapter *Configuring nPartitions* on page 275.

Configuration Requirements for nPartition

The hardware requirements determine which cells are eligible to be assigned to an nPartition.

Every nPartition you configure must meet the following hardware requirements:

- On HP 9000 systems, all cells in an nPartition must have the same processor revision level and clock speed. That is, the `IODC_HVERSION` must be identical for all PA-RISC processors.

You can view processor details, including the CPU type (revision level) and speed, by using the `parstatus -V -c#` command or by using Partition Manager for HP-UX B.11.11 to select the **Cell** → **Show Cell Details** action, **CPUs/Memory** tab.

- On HP Integrity servers, all cells in an nPartition must have the same compatibility value.

The cell compatibility value is reported by the `parstatus -V -c#` command as “CPU Compatibility” for the cell.

Partition Manager for HP-UX B.11.23 reports the value as “Cell Compatibility” in the General Cell Properties view for the cell, which you can display by clicking the cell location when viewing other details about the server complex.

- The same firmware revision must be present on all cells within an nPartition.
- At least one cell in every nPartition must be connected to an I/O chassis that has core I/O.

Only one core I/O is active per nPartition. If an nPartition has multiple cells that are connected to I/O chassis with core I/O, only the core I/O connected to the active core cell is active.

CAUTION

HP currently supports a maximum of 64 CPUs per nPartition. This requirement applies to HP 9000 Superdome SD64A servers configured with more than 32 dual-core processors: a maximum of 32 dual-core processors may be reside in any nPartition, for a total of 64 CPUs.

Recommended nPartition Configurations

For best performance and availability, configure nPartitions to meet the following guidelines.

- On HP Integrity servers, the nPartition memory configuration should meet the following guidelines:
 - The number of cells participating in memory interleave should be a power of two, and each cell participating in interleave should contribute the same amount of memory.
 - The total amount of memory being interleaved should be a power of two number of GBytes.
- On HP 9000 servers, nPartition sizes should be a power of two: 1, 2, 4, 8, or 16 cells.

This provides the best memory interleaving and performance characteristics. (nPartitions on HP 9000 servers have all memory interleaved.)

You can configure nPartitions of any size, but those whose size is a power of two have best memory performance.

- The I/O chassis containing the active core I/O also should have an operating system (OS) boot disk and method of installing or recovering the OS (such as a CD-ROM/DVD-ROM drive, network connection to an install server, or tape drive).

This allows the nPartition to boot or recover the OS, even if only the core cell for the nPartition is functioning.

- You should assign multiple core-capable cells to each nPartition.

This allows the nPartition to boot at least to the system boot environment (either BCH or EFI) if a core cell fails to boot.

(Disregard this recommendation if you are configuring multiple nPartitions in an nPartition server that has only two core cells.)

- The memory configuration of all cells in an nPartition should be identical to achieve best performance.

Each cell in an nPartition should have:

- the same number of DIMMs

Chapter 3 *Planning nPartitions*

Recommended nPartition Configurations

- the same capacity (size) and the same locations (population) of DIMMs

This avoids cell interconnect (crossbar) “hot spots” by distributing memory evenly across all of the cells in the nPartition.

- The memory configuration of each cell should include a multiple of two memory ranks (older HP 9000 servers) or a multiple of two memory echelons (servers based on the HP sx1000 chipset) per cell.

On the original nPartition-capable HP 9000 servers, each memory rank is 4 DIMMs. If possible, install memory in sets of 8 DIMMs: 8 DIMMs or 16 DIMMs on HP rp7405/rp7410, rp8400, and Superdome (SD16000, SD32000, SD64000) cells. On Superdome cells, you also can install 24 DIMMs or 32 DIMMs per cell.

On sx1000-chipset-based servers, each memory echelon is 2 DIMMs. If possible, install memory in sets of 4 DIMMs: 4, 8, 12, or 16 DIMMs on HP rp7420, rx7620, rp8420, rx8620, and Superdome (SD16A, SD32A, SD64A) servers. On sx1000-chipset-based Superdome servers, you also can install 20, 24, 28, or 32 DIMMs per cell.

This provides a performance improvement by doubling the memory bandwidth of the cell, as compared to having one memory rank or memory echelon installed.

This also can provide an availability improvement, in that if one memory rank or echelon fails the cell still has at least one functional rank of memory.

(Memory rank 0, or echelon 0, must be functional for a cell to boot.)

- Each nPartition should have PRI (primary), HAA (high-availability alternate), and ALT (alternate) boot paths defined and configured, and their path flags appropriately configured for your purposes.

NOTE

Note that on HP Integrity servers, the PRI path corresponds to the first item in the EFI boot options list, the HAA path is the second item in the boot options list, and ALT is the third boot option.

The PRI and HAA paths should be configured to reference disks that are connected to different cells, if possible, with HAA being a mirror of the root volume and PRI being the root volume. ALT should be the path of a recovery or install device.

Under this configuration, if the cell to which the PRI disk is connected fails or is otherwise inactive and the cell to which the HAA disk is available, then the nPartition still can boot HP-UX.

Even if the PRI and HAA devices connect to the same cell (such as on a multiple-partition HP rp7405/rp7410 server), the HAA device can be used to boot the nPartition to HP-UX should the PRI device fail.

Recommendations for HP Superdome nPartition Configurations

On HP Superdome servers, the locations of the cells you assign to each nPartition and the resulting loads on server interconnections can affect nPartition system performance within the server.

HP offers specific guidelines for configuring nPartitions on HP Superdome servers in order to ensure good system performance.

NOTE

The guidelines in this section apply to HP Superdome servers only.

These guidelines follow two basic configuration principles:

1. Avoid sharing interconnecting hardware (crossbars and crossbar links) among multiple nPartitions.
2. Minimize the number of crossbar links used by each nPartition, but do not overload crossbar links by creating nPartitions that can generate more cell communications traffic across the links than the links can support. Overloading crossbar links degrades performance.

The above principles are incorporated into the guidelines below, and are accounted for in the charts of recommended HP Superdome nPartitions.

Configuration Guidelines for HP Superdome nPartitions

Use these guidelines to help determine which cells to assign to the nPartitions you create on HP Superdome servers.

- Define nPartitions in order of size.

Assign cells to the nPartition that has the largest cell count first. Then select cells for the next largest nPartition, and so on, and finally choose cells for the nPartition with the fewest cells last.

This provides more appropriate cell assignments for larger nPartitions (those with more cells). Any smaller nPartitions with fewer cells are more easily accommodated in the remaining, available cells.
- Place each nPartition within an empty cabinet, if possible.

This applies to nPartitions in HP Superdome 64-way servers only.

If possible, assign each nPartition cells from a cabinet whose cells have no nPartition assignments. Do this before assigning cells from a cabinet that already has cells assigned to an nPartition.

To select cells for nPartitions that are larger than six cells, on HP Superdome 64-way servers, refer *Superdome 64-way Supported nPartition Configurations* on page 130. For such larger nPartitions, assigning some cells from both cabinet 0 and cabinet 1 provides better performance by better distributing cell communications across crossbar links.

These guidelines can help minimize contentions for using the interconnecting server hardware (crossbars and crossbar links).

- Assign each nPartition cells from an unused “cell quad”, if possible.

Each “cell quad” is a set of four cells that share the same cabinet backplane connections (crossbar chips). Within each HP Superdome cabinet, cell slots 0–3 comprise one cell quad, and cell slots 4–7 comprise the second cell quad.

Because cells in a quad share the same crossbar chips, they have the best cross-cell memory performance.

Partitions with cells on different crossbar chips have higher memory latency (worse memory performance) than nPartitions whose cells all share the same crossbar chip.

Chart of Supported rp7405/rp7410, rp7420, and rx7620 nPartition Configurations

Figure 3-1 lists the nPartition configurations that HP supports for HP rp7405/rp7410, rp7420, and rx7620 servers.

Figure 3-1 **HP rp7405/rp7410, rp7420, and rx7620 Supported nPartition Configurations**

	rp7405/rp7410 rp7420,rx7620	
Cell Slots	0	1
One-Cell Partitions	1B	1A
Two-Cell Partition	2A	2A

Chart of Supported HP rp8400, rp8420, and rx8620 nPartition Configurations

Figure 3-2 lists the nPartition configurations that HP supports for HP rp8400, rp8420, and rx8620 servers.

Figure 3-2 HP rp8400, rp8420, and rx8620 Supported nPartition Configurations

		rp8400, rp8420, rx8620			
Cell Slots		0	1	2	3
One-Cell Partitions		1A	1B		
Two-Cell Partitions		2A		2A	
		2B			2B
		2C	2C		
			2D	2D	
			2E		2E
Three-Cell Partitions		3A	3A	3A	
		3B		3B	3B
			3C	3C	3C
Four-Cell Partition		4A	4A	4A	4A

On these servers, each nPartition must include either cell 0 or cell 1 — unless an I/O Expansion cabinet with core I/O is connected.

Charts of Supported HP Superdome nPartition Configurations

Figure 3-3 lists the nPartition cell configurations that HP supports for Superdome 16-way and Superdome 32-way servers.

Figure 3-4 lists the nPartition cell configurations that HP supports for Superdome 64-way servers.

Example nPartition configurations that use these charts to determine which cells to assign to nPartitions appear in *Example nPartition Configurations for an HP Superdome Server* on page 131.

CAUTION

HP currently supports a maximum of 64 CPUs per nPartition. This requirement applies to HP 9000 Superdome SD64A servers configured with more than 32 dual-core processors: a maximum of 32 dual-core processors may be reside in any nPartition, for a total of 64 CPUs.

Figure 3-3 Superdome 16-way and Superdome 32-way Supported nPartition Configurations

		Superdome 16-way			
Cell Slots	Config Set	0	1	2	3
One-Cell Partitions	1	1A	1C	1B	1D
Two-Cell Partitions	2	2A	2B	2A	2B
Three-Cell Partition	3	3A	3A	3A	
Four-Cell Partition	4	4A	4A	4A	4A

		Superdome 32-way							
Cell Slots		0	1	2	3	4	5	6	7
One-Cell Partitions	5	1A	1E	1C	1G	1B	1F	1D	1H
Two-Cell Partitions	6	2A	2C	2A	2C	2B	2D	2B	2D
	7				2E				2E
Three-Cell Partitions	8	3A	3A	3A		3B	3B	3B	
Four-Cell Partitions	9	4A	4A	4A	4A	4B	4B	4B	4B
Five-Cell Partition	10	5A	5A	5A	5A				5A
Six-Cell Partition	11	6A	6A	6A	6A		6A		6A
Seven-Cell Partition	12	7A	7A	7A	7A		7A	7A	7A
Eight-Cell Partition	13	8A	8A	8A	8A	8A	8A	8A	8A

Chapter 3 Planning nPartitions

Charts of Supported HP Superdome nPartition Configurations

Figure 3-4 Superdome 64-way Supported nPartition Configurations

Cell Slots	Config Set	Superdome 64-way Cabinet 0							Superdome 64-way Cabinet 1								
		0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
One-Cell Partitions	14	1A	1I	1E	1M	1C	1K	1G	1O	1B	1J	1F	1N	1D	1L	1H	1P
Two-Cell Partitions	15	2A	2E	2A	2E	2C	2G	2C	2G	2B	2F	2B	2F	2D	2H	2D	2H
	16														2I	2I	
	17					2J										2J	
	18				2K				2K				2L				2L
Three-Cell Partitions	19	3A	3A	3A		3C	3C	3C		3B	3B	3B		3D	3D	3D	
	20														3E	3E	3E
Four-Cell Partitions	21	4A	4A	4A	4A	4C	4C	4C	4C	4B	4B	4B	4B	4D	4D	4D	4D
	22					4E		4E							4E		4E
Five-Cell Partitions	23	5A	5A	5A	5A				5A	5B	5B	5B	5B				5B
Six-Cell Partitions	24	6A	6A	6A	6A		6A		6A	6B	6B	6B	6B		6B		6B
Seven-Cell Partitions	25	7A	7A	7A	7A		7A	7B	7A	7B	7B	7B	7B		7B	7A	7B
Eight-Cell Partitions	26	8A	8A	8A	8A	8B	8A	8B	8A	8B	8B	8B	8B	8A	8B	8A	8B
Nine-Cell Partition*	27	9A	9A	9A	9A	9A	9A		9A					9A		9A	
Ten-Cell Partition*	28	10A	10A	10A	10A	10A	10A	10A	10A					10A		10A	
Eleven-Cell Partition*	29	11A	11A	11A	11A	11A	11A	11A	11A					11A	11A	11A	
Twelve-Cell Partition*	30	12A	12A	12A	12A	12A	12A	12A	12A					12A	12A	12A	12A
Thirteen-Cell Partition*	31	13A	13A	13A	13A	13A	13A	13A	13A					13A	13A	13A	13A
Fourteen-Cell Partition*	32	14A	14A	14A	14A	14A	14A	14A	14A		14A		14A	14A	14A	14A	14A
Fifteen-Cell Partition*	33	15A	15A	15A	15A	15A	15A	15A	15A		15A	15A	15A	15A	15A	15A	15A
Sixteen-Cell Partition*	34	16A	16A	16A	16A	16A	16A	16A	16A	16A	16A	16A	16A	16A	16A	16A	16A

* NOTE: nPartitions larger than 8 cells are supported for single-core processor configurations only.

Example nPartition Configurations for an HP Superdome Server

This section shows example cell assignments to demonstrate the procedure for selecting cells for two sample server complex configurations.

For reference in the following examples, Figure 3-3 on page 129 and Figure 3-4 on page 130 list a unique number for each nPartition configuration set. (For example, config set 6 shows the four two-cell nPartition configurations that HP recommends for Superdome 32-way servers.)

The following two examples are given here:

- *Example nPartition Configuration for a Superdome 32-way Server* on page 132
- *Example nPartition Configuration for a Superdome 64-way Server* on page 133

Chapter 3 *Planning nPartitions*

Example nPartition Configurations for an HP Superdome Server

Example 3-1

Example nPartition Configuration for a Superdome 32-way Server

This example configures an HP Superdome 32-way server with one six-cell nPartition and one two-cell nPartition.

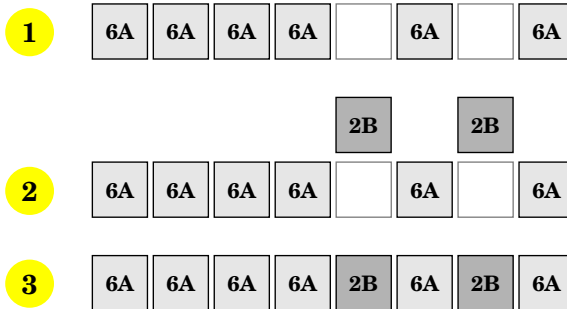
A Superdome 32-way server with a six-cell and two-cell nPartition would be configured with nPartitions 6A and 2B, as shown in Figure 3-3 on page 129.

In Figure 3-3, configuration sets 5–13 are eligible to be assigned on Superdome 32-way servers. The nPartition cell assignments are:

1. 6A (config set 11), the recommended six-cell nPartition.
2. 2B (config set 6), because cells 0 and 2 (2A) are assigned to 6A.
3. nPartitions 6A and 2B use all cells in the complex.

Example

Superdome 32-way complex nPartition configuration: one six-cell nPartition and one two-cell nPartition.



Example 3-2 Example nPartition Configuration for a Superdome 64-way Server

This example configures an HP Superdome 64-way server with one seven-cell nPartition and two four-cell nPartitions.

A Superdome 64-way server with a seven-cell nPartition and two four-cell nPartitions would be configured with nPartitions 7A, 4B, and 4E, as shown in Figure 3-4 on page 130.

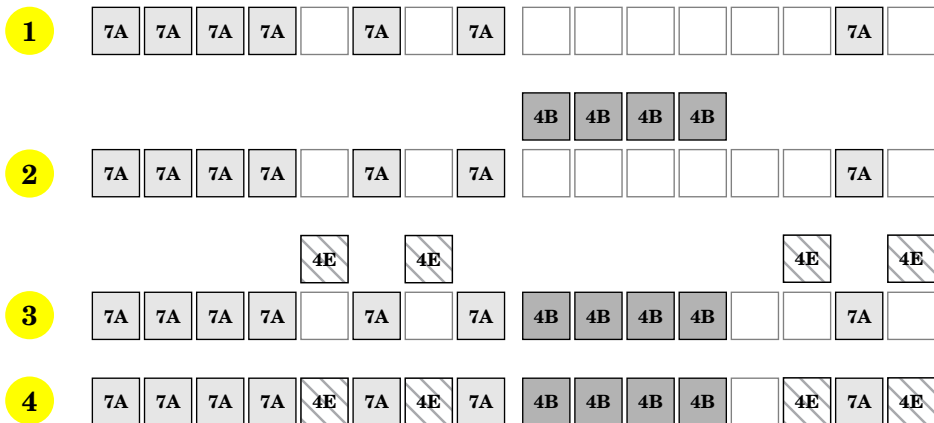
In Figure 3-4, configuration sets 14–34 are eligible to be assigned on Superdome 64-way servers. The nPartition cell assignments are:

1. 7A (config set 25), the first recommended seven-cell nPartition.
2. 4B (config set 21), because cells in 4A are used by 7A.
3. 4E (config set 22), because some or all cells in 4A–D are assigned.
4. Partitions 7A, 4B, and 4E use all cells except one (cabinet 1, cell 4).

The following illustrations shows how the Superdome 64-way nPartition configurations would be selected, using Figure 3-4 to determine which recommended nPartitions to use.

Example

Superdome 64-way complex nPartition configuration:
one seven-cell nPartition and two four-cell nPartitions.



Chapter 3 *Planning nPartitions*

Example nPartition Configurations for an HP Superdome Server

Using Management Interfaces and Tools

This chapter presents the system management interfaces and tools available on Hewlett-Packard's nPartition-capable servers. In addition to overviews of management features and the nPartition boot environments, this chapter has access procedures and detailed command references.

Management differences on PA-RISC systems and Intel® Itanium®-based systems are addressed in this chapter. For a discussion of the supported nPartition server models, see the chapter *nPartition Server Hardware Overviews* on page 87.

SMS (Support Management Station) for HP Superdome Servers

The Support Management Station (SMS) is a workstation or PC that is connected to an HP Superdome server through the service processor private LAN. The SMS may either be an HP-UX workstation or an HP ProLiant system running Microsoft® Windows® 2000 with Service Pack 3 or later.

The SMS primarily is used by HP-certified service and support personnel for system scan, upgrade, and hardware verification purposes.

The Windows SMS is an HP ProLiant system running the Windows operating system that has an enhanced system support toolset, including the HP nPartition commands (such as `parcreate` and `parstatus`, among others). The Windows versions of the nPartition commands are supported only on the Windows SMS — they are currently not supported to be used by Windows running on an nPartition.

Use of the nPartition commands from a Windows SMS requires specifying the remote management command-line options (either the `-u...` `-h...` set of options or the `-g...` `-h...` options). For details see *Specifying Remote Management Options to Commands* on page 509.

You can use the Windows versions of the nPartition commands to remotely manage servers based on the HP sx1000 chipset. Remote management using IPMI over LAN is supported for all servers based on the HP sx1000 chipset. Remote nPartition management using WBEM is supported for servers running the HP-UX B.11.23 operating system.

Remote nPartition management currently is not supported on older nPartition-capable servers (HP rp7405/rp7410; rp8400; and Superdome SD16000, SD32000, and SD64000 servers).

Details on the Windows SMS release of nPartition commands are given in *Commands for Configuring nPartitions* on page 35.

For more details about the SMS for Superdome servers, refer to the *Service Guide* for your model of Superdome server.

Overview of nPartition Service Processor (MP or GSP) Interfaces

The service processor (MP or GSP) utility hardware is an independent support system for nPartition servers. It provides a way for you to connect to a server complex and perform administration or monitoring tasks for the server hardware and its nPartitions.

The main features of the service processor include:

- Command Menu
- nPartition Consoles
- Console Logs
- Chassis Code Viewer (on HP 9000 servers) or Event Log Viewer (on HP Integrity servers)
- Virtual Front Panels (live displays of nPartition and cell states)

These features are described in more detail in *Service Processor (MP or GSP) Features* on page 139.

The service processor is available when its cabinet has standby power, even if the main (48-volt) cabinet power switch is turned off.

Access to the service processor is restricted by user accounts. Each user account is password protected and provides a specific level of access to the server complex and service processor commands.

Multiple users can independently interact with the service processor because each service processor login session is private. However, some output is mirrored: the Command menu and each nPartition console permit one interactive user at a time and mirror output to all users accessing those features. Likewise, the service processor mirrors live chassis codes to all users accessing the Live Chassis Logs feature (or the Live Events feature).

Up to 32 users can simultaneously login to the service processor through its network (customer LAN) interface and they can independently manage nPartitions or view the server complex hardware states.

Chapter 4 Using Management Interfaces and Tools

Overview of nPartition Service Processor (MP or GSP) Interfaces

Two additional service processor login sessions can be supported by the local and remote serial ports. These allow for serial port terminal access (through the local RS-232 port) and external modem access (through the remote RS-232 port).

In general, the service processor (MP or GSP) on nPartition servers is similar to the service processor on other HP servers, while providing enhanced features necessary for managing a multiple-nPartition server.

For example, the service processor manages the complex profile, which defines nPartition configurations as well as complex-wide settings for the server.

The service processor also controls power, reset, and TOC capabilities, displays and records system events (or chassis codes), and can display detailed information about the various internal subsystems.

Service Processor (MP or GSP) Features

The following list describes the primary features available through the service processor on nPartition-capable HP servers.

- **Command Menu**

The Command menu provides commands for system service, status, and access configuration tasks.

To enter the Command menu, enter **CM** at the service processor Main menu. To exit the service processor Command menu, enter **MA** or type **^b (Control-b)** to return to the service processor Main menu.

See *Command Reference: Service Processor (MP or GSP) Commands* on page 169 for details.

Service processor commands are restricted based on the three levels of access: Administrator, Operator, and Single Partition User. See *Service Processor Accounts and Access Levels* on page 141 for details.

- **Consoles**

Each nPartition in a server complex has its own console.

Enter **CO** at the service processor Main menu to access the nPartition consoles. To exit the console, type **^b (Control-b)**.

See *nPartition Console Features* on page 143 for details.

Console output for each nPartition is reflected to all users currently accessing the console.

One console user can have interactive access to each nPartition console, and all other users of the console have read-only access. To gain write access for a console, type **^e cf (Control-e c f)**.

Each nPartition console provides access to:

- The nPartition system boot environment: either BCH or EFI.

The BCH or EFI system boot environment is available when the nPartition is active but has not yet loaded or booted an operating system.

- The Boot Console Handler (BCH) environment is provided on HP 9000 servers only (PA-RISC servers).

Chapter 4 Using Management Interfaces and Tools

Service Processor (MP or GSP) Features

- The Extensible Firmware Interface (EFI) is provided on HP Integrity servers only (Intel® Itanium®-based servers).
- HP-UX console for the nPartition.

The nPartition console provides console login access to HP-UX and serves as `/dev/console` for the nPartition.

- **Console Logs**

Enter **CL** from the service processor Main menu to access the console logs menu. To exit the console log, type **^b** (**Control-b**).

Each nPartition has its own console log, which stores a history of console output for the nPartition, including boot output, system boot environment (BCH or EFI) activity, and any HP-UX console login activity.

See *Viewing Console Logs* on page 164 for details.

The console log provides a limited history; it is a circular log file that overwrites the oldest information with the most recent.

All console activity is recorded in the console log, regardless of whether any service processor users are connected to the console.

- **Chassis Logs and Event Logs**

On both HP 9000 systems and HP Integrity systems, you can view real-time (live) system events and can view prior events that have been stored in a log history. Use the **SL** (“show logs”) option from the service processor Main Menu to view events/chassis codes.

- On nPartition-capable HP 9000 systems, **SL** provides the Chassis Log Viewer. The chassis log viewer includes options for viewing: activity (level 1 and greater) logs, error (level 2 and greater) logs, and live logs (which optionally may be filtered by cell, nPartition, or alert level).
- On nPartition-capable HP Integrity systems, **SL** provides the Event Log Viewer. The event log viewer includes options for viewing: forward progress (level 1 and greater) logs, system event (level 2 and greater) logs, and live logs (which optionally may be filtered by cell, nPartition, or alert level).

See *Viewing Chassis Codes or Event Logs* on page 165 for details.

- **Virtual Front Panel (VFP) for an nPartition**

The Virtual Front Panel (VFP) for each nPartition displays real-time boot activity and details about all cells assigned to the nPartition. The VFP display automatically updates as cell and nPartition status changes. A system-wide VFP also is provided.

Enter **VFP** at the Main menu to access the View Front Panel menu. To exit a Virtual Front Panel, type **^b (Control-b)**.

See *Virtual Front Panel (VFP) nPartition Views* on page 168 for details.

Service Processor Accounts and Access Levels

To access the service processor interface for a server complex, you must have a user account that enables you to login to the service processor.

Each server complex has its own set of service processor user accounts, which are defined for the server complex and may differ from accounts on other complexes.

Service processor user accounts have a specific login name, password, and access level.

The three user account access levels are:

- **Administrator Account**

Provides access to all commands, and access to all nPartition consoles and Virtual Front Panels.

Can manage user accounts (using the Command menu **SO** command) and can reconfigure various service processor settings.

- **Operator Account**

Provides access to a subset of commands, and access to all nPartition consoles and Virtual Front Panels.

Can reconfigure the service processor.

- **Single Partition User Account**

Provides access to a restricted subset of commands and provides access to the nPartition console for a single nPartition. However, allows the user to view the Virtual Front Panel for any nPartition.

Chapter 4 Using Management Interfaces and Tools

Service Processor Accounts and Access Levels

Can only execute commands that affect the assigned nPartition.

Cannot execute commands that could potentially affect multiple nPartitions or affect the service processor configuration.

Each user account can permit multiple concurrent login sessions (if it is a “multiple use” account), or restrict account access to a single login session (for “single use” accounts).

nPartition Console Features

The service processor Console menu provides access to all nPartition consoles within the server complex.

Enter **CO** from the service processor Main menu to access an nPartition console. To exit the nPartition console, type **^b (Control-b)** to return to the Main menu.

Each nPartition in a complex has a single console. However, multiple connections to the console are supported, allowing multiple users to simultaneously view the console output. Only one connection per console permits write-access.

To force (gain) console write access for an nPartition console, type **^ecf (Control-e c f)**.

Each nPartition console can display a variety of information about the nPartition, including:

- Partition startup, shutdown, and reset output.
- The system boot environment: either Boot Console Handler (BCH, on HP 9000 servers) or Extensible Firmware Interface (EFI, on HP Integrity servers).

The system boot environment is available when the nPartition has not yet booted an operating system and has completed Power-On Self Tests (POST) and completed nPartition rendezvous to become active.

- The HP-UX login prompt and “console shell access”.

CAUTION

When you use an nPartition console connection to login to an operating system running on the nPartition, logout from the operating system when you have finished using it before you type **^B (Control-b)** to disconnect from the nPartition console.

If you fail to logout from the operating system console session, then any other service processor user who has permission to access the nPartition could connect to the nPartition console and use the open login session.

Disconnecting from an nPartition console does not close any open operating system login sessions.

nPartition Console Access versus Direct HP-UX Login

You may need to consider the following factors when deciding whether to interact with an nPartition through the service processor console interface or a direct HP-UX login:

- Whether you want to log your activity to the console log for the nPartition (all console activity is stored at least temporarily).
- Whether HP-UX is installed, booted, and properly configured on the nPartition.

If HP-UX is not installed on an nPartition, you should access the nPartition console (through the service processor) in order to install and configure HP-UX.

You should login to HP-UX running on an nPartition when you do not need to use service processor features and do not want to record a log of your activity.

Before HP-UX has booted, the service processor nPartition consoles are the primary method of interacting with an nPartition.

After an nPartition has booted HP-UX, you should be able to connect to and login to the nPartition by using `telnet` or `rlogin` to remotely login.

If the HP-UX kernel booted on the nPartition does not have networking fully configured, you may need to login using a service processor nPartition console connection to set up the networking configuration (using `/sbin/set_parms`).

To view the `/dev/console` messages for HP-UX running on an nPartition, you can access the nPartition console, view its console log, or use the `xconsole` command or `xterm -C` command and option. Refer to the *xconsole* (1) or *xterm* (1) manpages for details.

Boot Console Handler (BCH) System Boot Environment

Each nPartition in a server complex has its own Boot Console Handler (BCH) interface.

The BCH interface is available through an nPartition console interface before an operating system has booted and after the cells have booted and performed nPartition rendezvous (to make the nPartition active).

The nPartition BCH interface enables you to manage and configure the HP-UX boot process for an nPartition. You also can configure some settings for the local nPartition, get some information about the nPartition and its server complex, and perform other tasks such as reboot.

Figure 4-1 on page 147 shows details on accessing and using the BCH interface for an nPartition, including the following points:

- To access an nPartition console type **CO** from the service processor (MP or GSP) Main menu.
- To force console write access, type **^ecf** (**Control-e c f**).
- To exit the console, type **^b** (**Control-b**) to return to the Main Menu.

The BCH interface is available after one or more core-capable cells assigned to the nPartition has been powered on; its hardware has completed all Power-On Self Tests (POST); and the cells have booted past boot-is-blocked, rendezvoused, and BCH has started executing.

Once you begin the HP-UX boot process and load ISL, the BCH interface is no longer available.

The BCH menus and commands for nPartitions differ slightly from the commands menus for BCH on other HP 9000 server systems.

To display the current BCH menu and commands, type **DI**.

The BCH interface **HELP** command lists BCH command or menu details.

Chapter 4 Using Management Interfaces and Tools

Boot Console Handler (BCH) System Boot Environment

Main Menu: Enter command or menu > **HELP MA**

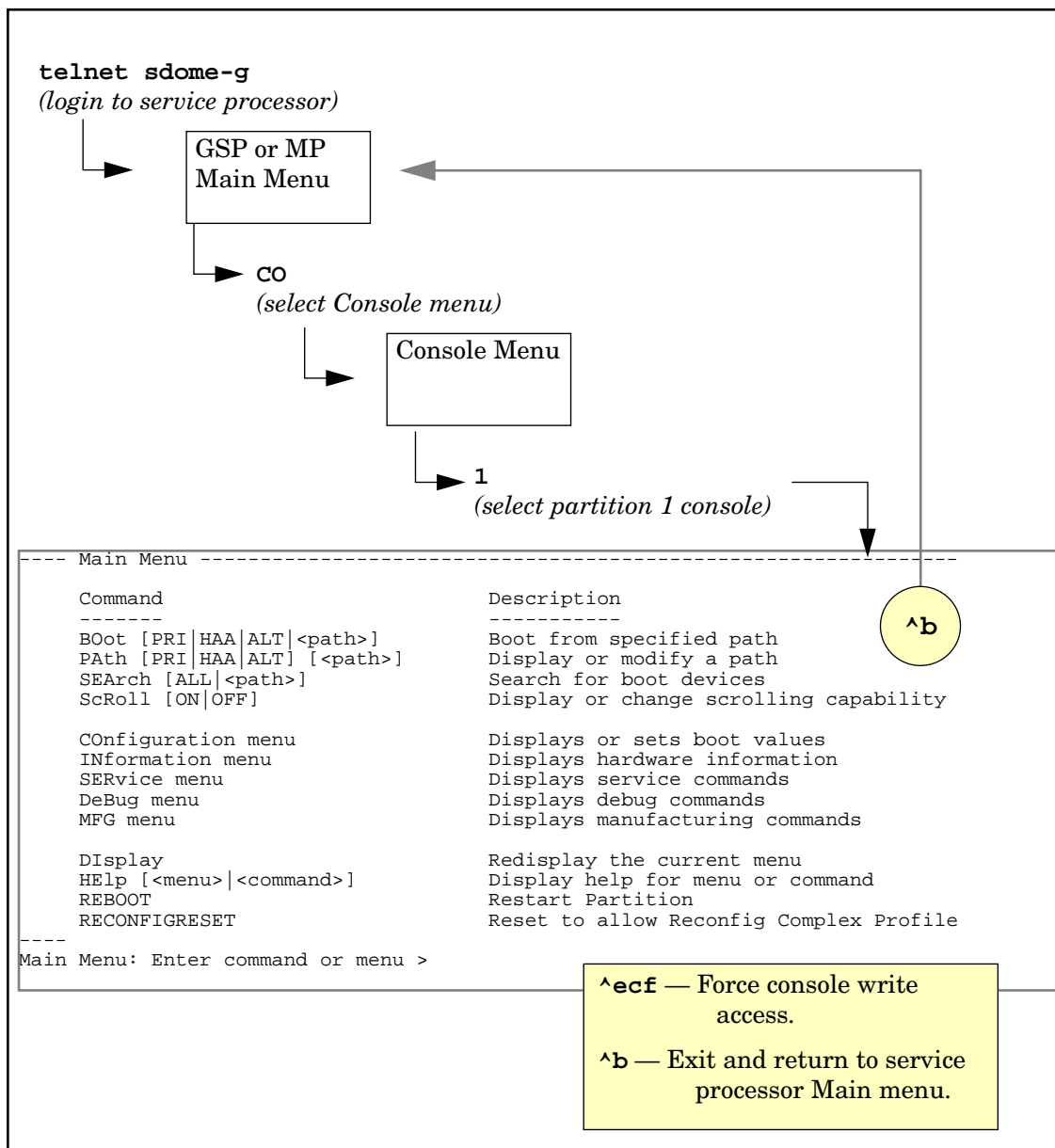
----- Main Menu Help -----

The following submenus are available from the main menu:

COntfiguration-----			BootID
INformation-----		ALL	BootTimer
SERvice-----	BAttery	BootINfo	CEllConfig
	CLEARPIM	CAche	COreCell
	MemRead	ChipRevisions	CPUConfig
	PDT	ComplexID	DataPrefetch
	PIM	FabricInfo	Default
	SCSI	FRU	FastBoot
		FwrVersion	KGMemory
		IO	PathFlag
		LanAddress	PD
		MEemory	ResTart
		PRocessor	Time

...

Figure 4-1 Accessing the BCH Interface for an nPartition



Extensible Firmware Interface (EFI) System Boot Environment

On HP Integrity servers the system boot environment is provided by the Extensible Firmware Interface (EFI).

EFI is available through an nPartition console interface before an operating system has booted and after the cells have booted and performed nPartition rendezvous (to make the nPartition active).

The EFI environment enables you to manage and configure the operating system boot process for an nPartition. You also can configure some settings for the local nPartition, get information about the nPartition and its server complex, and perform other tasks such as reboot.

The EFI boot environment has two main components:

- **EFI Boot Manager** — A menu-driven interface that enables you to configure and select boot options. From the EFI Boot Manager you can load an operating system, reset the nPartition, and configure various system boot and console options.
- **EFI Shell** — A command-line system boot interface that you can enter by selecting the **EFI Shell** option from the EFI Boot Manager Menu.

Type `exit` to leave the EFI Shell interface and return to the EFI Boot Manager Menu.

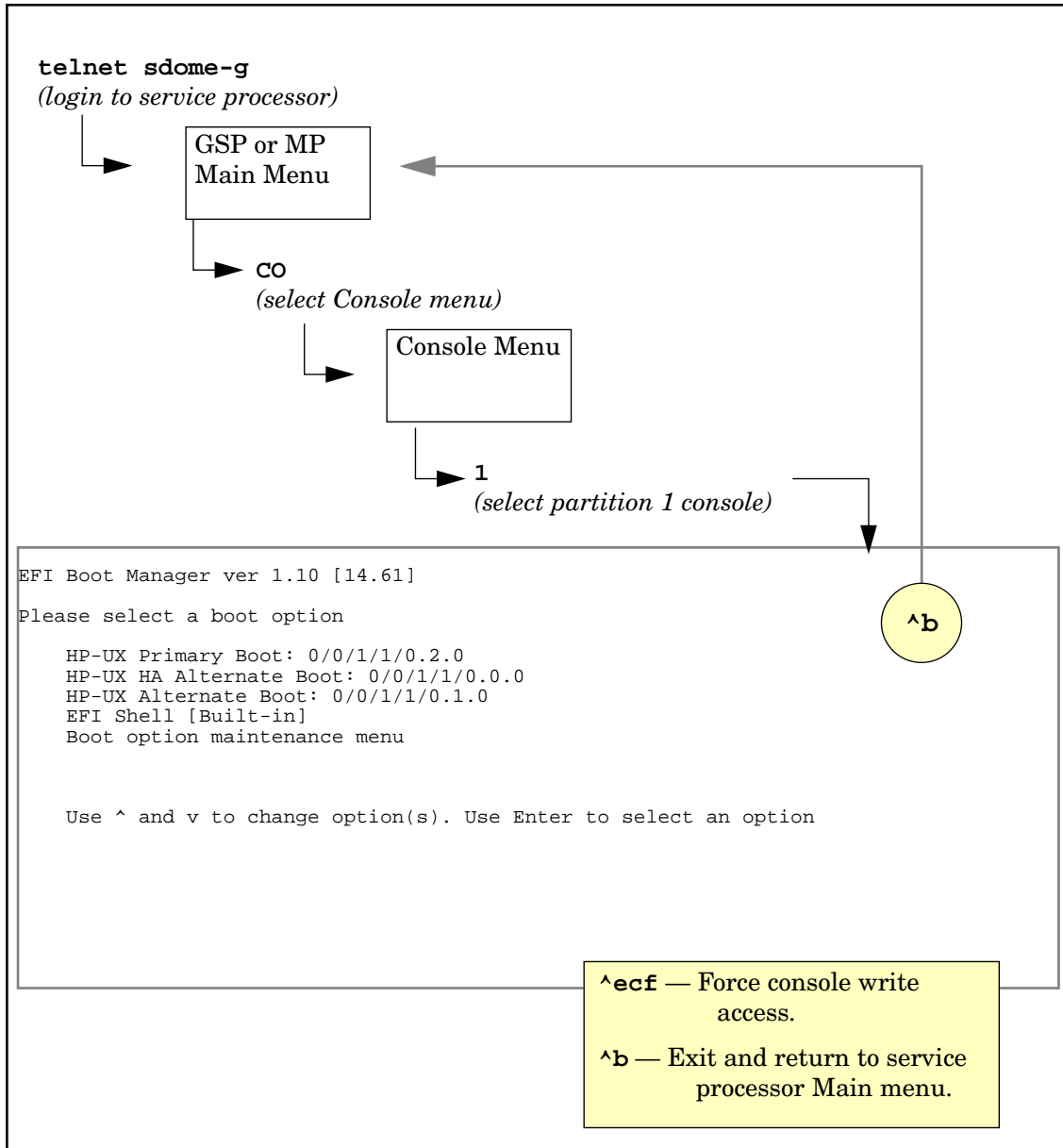
The EFI Shell provides much of the same functionality as the Boot Console Handler (BCH) interface on HP 9000 systems (PA-RISC systems).

For details on using the EFI Shell use the `help` command.

Figure 4-2 on page 149 shows details on accessing and using the EFI system boot environment for the nPartition, including the following points:

- To access an nPartition console type **CO** from the service processor (MP or GSP) Main menu.
- To force console write access, type **^ecf (Control-e c f)**.
- To exit the console, type **^b (Control-b)** to return to the Main Menu.

Figure 4-2 Accessing the EFI Environment for an nPartition



Windows Special Administration Console (SAC)

After an nPartition has successfully loaded Microsoft® Windows® Server 2003, you can access a text-based Windows administration interface at the nPartition console.

The Special Administration Console (SAC) interface lets you interact with the Windows operating system running on an nPartition by using the `SAC>` command prompt that is provided at the nPartition console interface. The SAC commands listed in Table 4-1 on page 151 are provided for managing Windows.

The SAC interface enables you to have administrative access to Windows on an nPartition even if Windows networking is not functional.

Tips for using the SAC interface and a table of SAC commands follow.

SAC Interface:

Tips for Interacting with Windows Special Administration Console

When using the Windows SAC interface through an nPartition console, you can use the commands in Table 4-1 on page 151. You also can use the following tips to help complete tasks with the SAC.

- To list all commands available from the SAC, issue the `?` or `help` command at the `SAC>` prompt.
- To list basic identification and boot information about the instance of Windows running on the nPartition whose console you are using, issue the `id` command.
- To switch among the “channels” provided by the SAC interface, use the channel management command.

SAC Channel Management Commands

Esc Tab — Change channels: if multiple channels exist, typing **Esc Tab** switches to the next channel and typing **Space** selects a channel.
`ch` — List all channels.
`ch -?` — Display the channel-management command help.
`ch -si #` — Switch to a channel by its number.

ch -sn *name* — Switch to a channel by its name.

ch -ci # — Close a channel by its number.

ch -cn *name* — Close a channel by its name.

- To create a new Windows command prompt that you can interact with through the nPartition console, issue the `cmd` command.

The `cmd` SAC command creates a new channel for the command prompt, which you can then switch to (using **Esc Tab**, or other commands) in order to login to Windows running on the nPartition.

- When you need to type function keys and are using the SAC, type the following key sequence: **Esc #**

For example, for the **F3** key type **Esc** then **3** in quick sequence.

Table 4-1 lists the commands you can issue at the Windows SAC> prompt, which is provided through an nPartition console after Windows has booted.

Table 4-1 Windows SAC Commands

SAC Command	Description
ch	Channel management commands. Use <code>ch -?</code> for more help.
cmd	Create a Command Prompt channel.
d	Dump the current kernel log.
f	Toggle detailed or abbreviated <code>tlist</code> (Windows process) info.
? or help	Display command help.
i	List all IP network numbers and their IP addresses.
i # <i>ip sub gate</i>	Set IP address, subnet, and gateway for an IP network number.
id	Display the Windows nPartition identification information.
k <i>pid</i>	Kill the given process.
l <i>pid</i>	Lower the priority of a process to the lowest possible.
lock	Lock access to Command Prompt channels.

Table 4-1 Windows SAC Commands (Continued)

SAC Command	Description
<code>m pid MB-allow</code>	Limit the memory usage of a process to <i>MB-allow</i> .
<code>p</code>	Toggle paging the display.
<code>r pid</code>	Raise the priority of a process by one.
<code>s</code>	Display the current time and date (24 hour clock used).
<code>s mm/dd/yyyy hh:mm</code>	Set the current time and date (24 hour clock used).
<code>t</code>	Display tlist info (a list of Windows processes running on the nPartition).
<code>restart</code>	Restart the system immediately.
<code>shutdown</code>	Shutdown the system immediately. This puts the nPartition in a shutdown for reconfig (inactive) state. To boot the nPartition (make it active), use the BO command at the service processor Command menu.
<code>crashdump</code>	Crash the Windows system running on the nPartition. You must have crash dump enabled.

Accessing and Using the Service Processor

This section describes how to login to the service processor (MP or GSP) for an nPartition server complex.

You can connect to the service processor for a server complex by using the following methods:

- Connecting through the customer LAN port by using `telnet`, if login access through the customer LAN is enabled for the service processor.

On HP Superdome servers, the customer LAN hardware is labeled “Customer LAN”. On HP rp8400 servers it is “GSP LAN”. On HP rp7405/rp7410 servers it is the only LAN port on the core I/O.

Use `telnet` to open a connection with the service processor, then login by entering the account name and corresponding password.

- Connecting through the local RS-232 port using a direct serial cable connection.

On HP Superdome server hardware, the local RS-232 port is labeled “Local RS-232”. On HP rp8400 servers it is the “Local Console” port. On HP rp7405/rp7410 servers it is the 9-pin D-shaped connector (DB9) labeled “Console”.

- Connecting through the remote RS-232 port using external model (dial-up) access, if remote modem access is configured.

On HP Superdome server hardware, the remote RS-232 port is labeled “Remote RS-232”. On HP rp8400 servers it is the “Remote Console” port. On HP rp7405/rp7410 servers it is the DB9 connector labeled “Remote”.

Chapter 4 Using Management Interfaces and Tools

Accessing and Using the Service Processor

Example 4-1

Service Processor Login Session

The following output shows a sample login session for a server whose service processor hostname is “hpsys-s”.

```
> telnet hpsys-s
Trying...
Connected to hpsys-s.rsn.hp.com.
Escape character is '^]'.
Local flow control off

MP login: Accountname
MP password:

Welcome to the

S Class 16K-A

Management Processor

(c) Copyright 1995-2001 Hewlett-Packard Co., All Rights
Reserved.

Version 0.23

MP MAIN MENU:

CO: Consoles
VFP: Virtual Front Panel
CM: Command Menu
CL: Console Logs
SL: Show chassis Logs
HE: Help
X: Exit Connection

MP>
```

Logging in to a Service Processor

This procedure connects to and logs in to the service processor (MP or GSP) for a server complex by using `telnet` to access the customer LAN.

If connecting through the local or remote RS-232 port, skip Step 1 (instead establish a direct-cable or dial-up connection) and begin with Step 2.

- Step 1.** Use the HP-UX `telnet` command on a remote system to connect to the service processor for the server complex.

You can connect directly from the command line, for example:

```
telnet sdome-g
```

or run `telnet` first, and then issue the `open` command (for example, `open sdome-g`) at the `telnet>` prompt.

All `telnet` commands and escape options are supported while you are connected to the service processor. Refer to the *telnet* (1) manpage for details.

(On non-HP-UX platforms such as various PC environments you can instead use an alternate `telnet` program.)

- Step 2.** Login using your service processor user account name and password.

```
GSP login: Accountname
GSP password: Password
```

- Step 3.** Use the service processor menus and commands as needed and log out when done.

To log out, select the Exit Connection menu item from the Main menu (enter **x** at the `GSP>` prompt or `MP>` prompt).

You also can terminate a login session by issuing the `telnet` escape key sequence `^]` (type: **Control-right bracket**) and entering `close` at the `telnet>` prompt.

NOTE

If possible, you should log out of any consoles and menus before terminating your `telnet` session.

Chapter 4 Using Management Interfaces and Tools

Using Service Processor Menus

If accessing HP-UX on an nPartition, log out of HP-UX before exiting the console and service processor sessions. (Otherwise an open HP-UX login session will remain available to any other service processor users.)

Using Service Processor Menus

The service processor (MP or GSP) has a set of menus that give you access to various commands, consoles, log files, and other features.

See *Navigating through Service Processor Menus* on page 158 for details on using these menus.

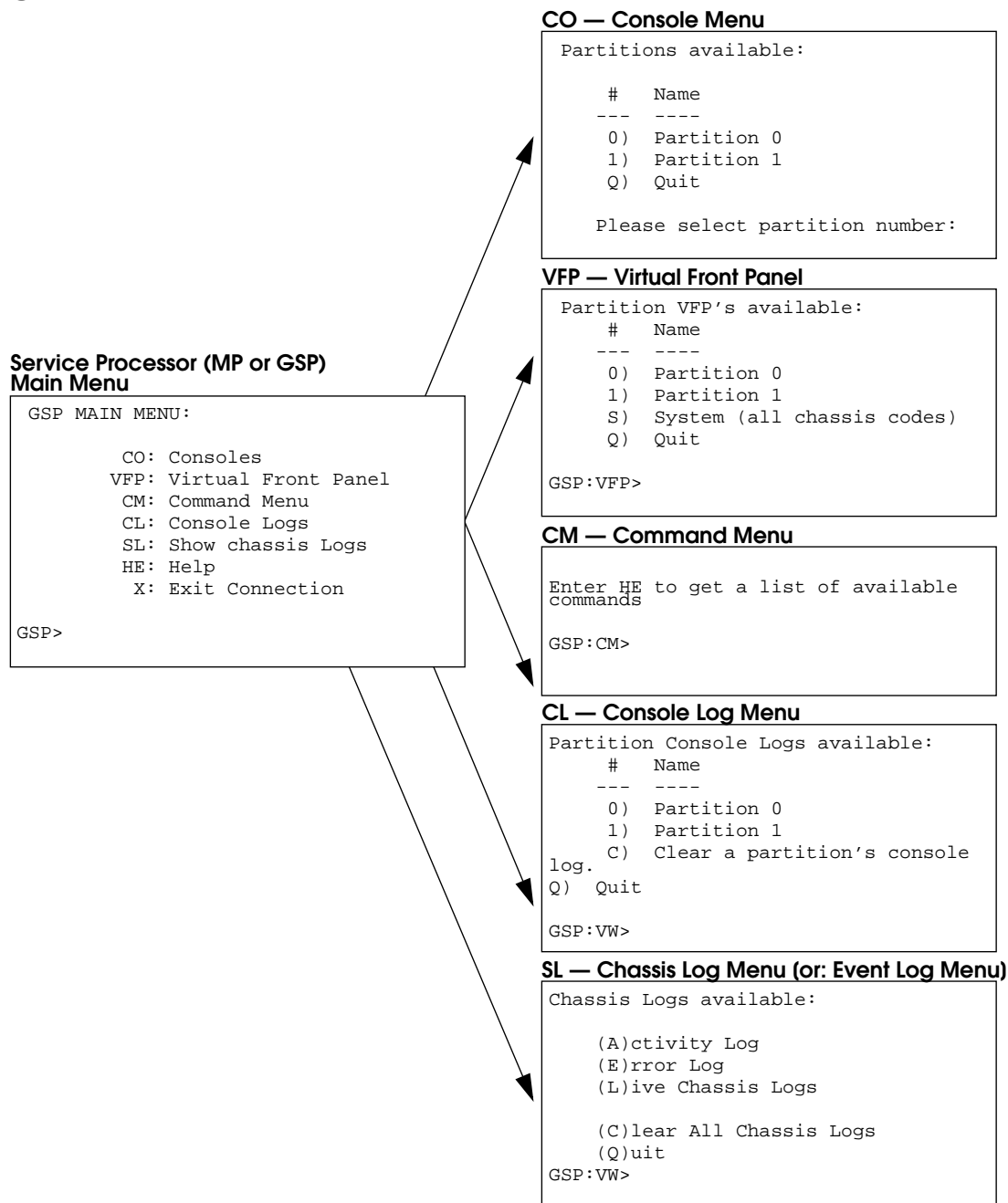
The following menus are available from the service processor Main menu (which is the menu you first access when logging in):

- Console Menu—Provides access to nPartition consoles for the server.
- Virtual Front Panel Menu—Provides a Virtual Front Panel for each nPartition (or for the entire server complex).
- Command Menu—Includes service, status, system access, and manufacturing commands.
- Console Log Viewer Menu—Allows access to the console logs for nPartitions.
- Chassis Log Viewer Menu or Event Log Viewer Menu—Allows access to the server chassis code logs (on HP 9000 servers) or event logs (on HP Integrity servers). Chassis logs and event logs are functionally equivalent: they record system activities.
- Help Menu—Provides online help on a variety of service processor topics and on all service processor Command menu commands.

These menus provide a central point for managing an nPartition server complex outside of an operating system.

The service processor menus provide many tools and details not available elsewhere. More administration features also are available from the nPartition system boot environments (BCH or EFI), the nPartition tools, and various operating system commands.

Figure 4-3 Overview of Service Processor (MP or GSP) Menus



Navigating through Service Processor Menus

Figure 4-4 on page 159 shows the commands and options for returning to the service processor Main menu and for ending a service processor login session.

The following list also includes tips for navigating through service processor menus and using various menu features:

- **Control-b**

Exit current console, console log, chassis log, or Virtual Front Panel.

When accessing the Command menu, an nPartition console, any log files, or any Virtual Front Panel (VFP), you can exit and return to the Main menu by typing **^b** (**Control-b**).

- **Q** (or lower-case **q**)

Exit or cancel current menu prompt.

Enter **Q** (or lower-case **q**) as response to any menu prompt to exit the prompt and return to the previous sub-menu.

You can do this throughout the service processor menus, including the console menus, various command menu prompts, and the log and VFP menus.

Note that, from the Command menu prompt (**GSP:CM>** or **MP:CM>**) you must enter **MA** (not **Q**) to return to the Main menu. However, you can enter **Q** or **q** to cancel any command.

- **Control-]**

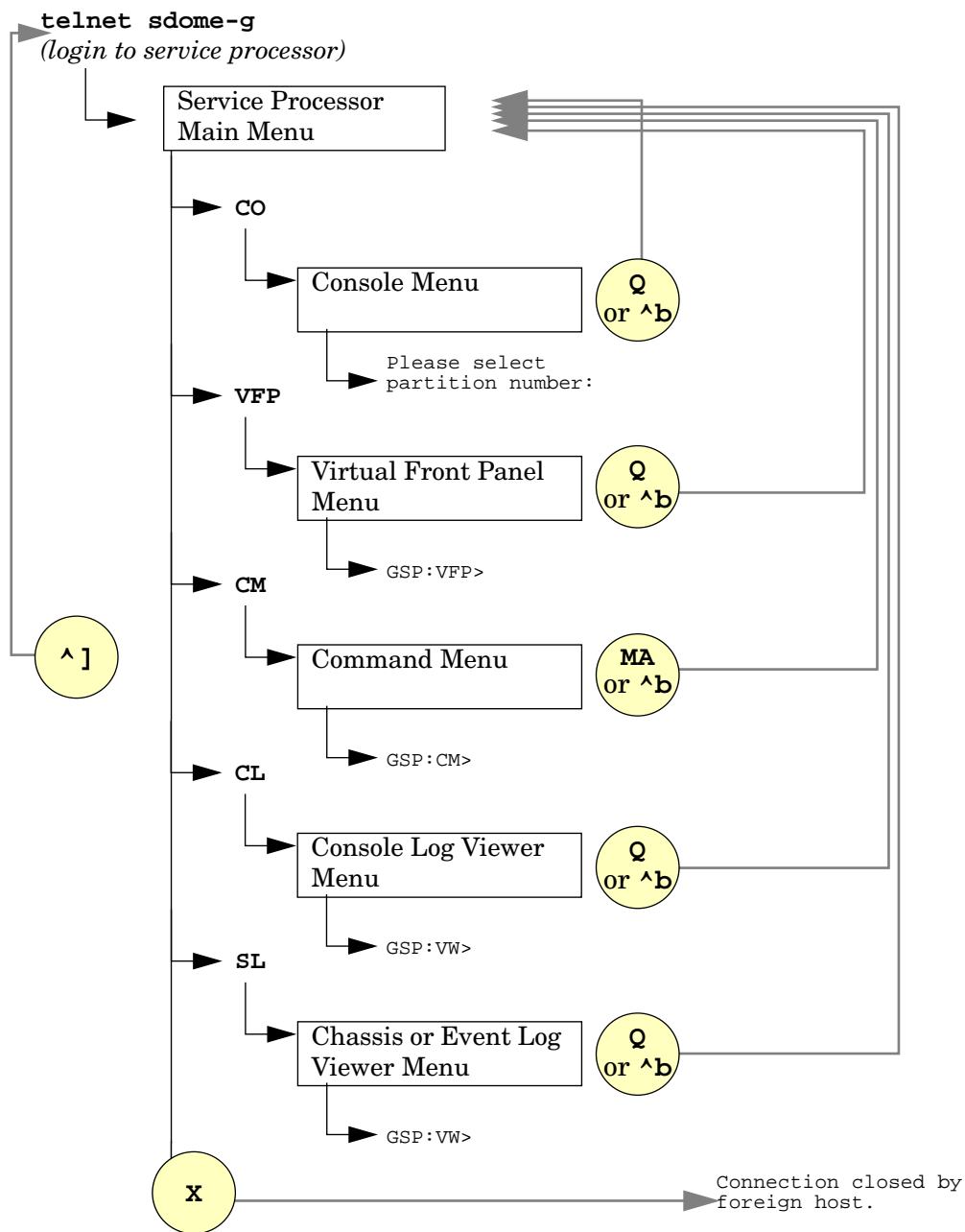
Escape the service processor connection and return to the telnet prompt.

At any time during your telnet connection to a service processor, you can type the **^]** (**Control-right bracket**) escape sequence.

This key sequence escapes back to the telnet prompt. When at the **telnet>** prompt you can use the following commands, among others: **?** (print telnet command help information), **close** (close the current connection), and **quit** (exit telnet).

To return to the service processor connection, type enter (or return) one or more times.

Figure 4-4 Navigating through Service Processor (MP or GSP) Menus



Network Configuration for a Service Processor

This section describes how to list and configure the network settings for service processor (MP or GSP) hardware. These settings are used for connections to the service processor and are not used for HP-UX networking.

Details on configuring service processor networking are given in the procedure *Configuring Service Processor Network Settings* on page 162.

The service processor utility hardware on HP Superdome servers has two network connections: the customer LAN and private LAN.

The service processor on other (non-Superdome) nPartition-capable servers does not have a private LAN; only a customer LAN connection is provided.

Features of service processor LANs are given in the following list.

- **Customer LAN for Service Processor**

The customer LAN is the connection for login access to the service processor menus, consoles, commands, and other features.

All HP nPartition servers have a customer LAN.

On HP Superdome servers, the customer LAN port is labeled “Customer LAN”. On HP rp8400 servers it is “GSP LAN”. On HP rp7405/rp7410 servers it is the only LAN connection on each core I/O board.

- **Private LAN for Service Processor (Superdome Only)**

The private LAN is the connection to the Superdome service support processor (SSP) workstation, also called the service management station (SMS).

Only Superdome servers have a private LAN.

To configure service processor network settings, you can use the `LC` command from the Command menu.

To list the current service processor network configuration use the `LS` command.

The following examples show service processor LAN status for various HP nPartition servers.

Service Processor LAN Status: HP rp7405/rp7410, HP rp8400, HP rx7620, HP rx8620

```

MP:CM> LS
Current configuration of MP customer LAN interface
MAC address   : 00:30:6e:05:19:ac
IP address    : 15.99.84.140      (0x0f63548c)
Hostname      : redxii-c
Subnet mask   : 255.255.255.0    (0xffffffff00)
Gateway       : 15.99.84.254    (0x0f6354fe)
Status        : UP and RUNNING
AutoNegotiate : Enabled
Data Rate     : 100 Mb/s
Duplex        : Half
Error Count   : 0
Last Error    : none
MP:CM>

```

HP Superdome Service Processor LAN Status

```

GSP:CM> LS
Current configuration of GSP customer LAN interface
MAC address   : 00:10:83:27:04:5a
IP address    : 15.99.49.129     0x0f633181
Name          : feshd5-u
Subnet mask   : 255.255.248.0   0xffffffff800
Gateway       : 15.99.49.254    0x0f6331fe
Status        : UP and RUNNING

Current configuration of GSP private LAN interface
MAC address   : 00:a0:f0:00:83:b1
IP address    : 192.168.2.15     0xc0a8020f
Name          : priv-05
Subnet mask   : 255.255.255.0   0xffffffff00
Gateway       : 192.168.2.100   0xc0a80264
Status        : UP and RUNNING
GSP:CM>

```

Default Service Processor Network Settings

Table 4-2 and Table 4-3 list the default customer LAN and private LAN network settings for nPartition servers. Only Superdome servers have a private LAN.

Table 4-2 Default Configuration for Service Processor Customer LAN (All nPartition Servers)

Customer LAN IP Address	192.168.1.1
Customer LAN Host Name	gsp0
Customer LAN Subnet Mask	255.255.255.0
Customer LAN Gateway	192.168.1.1

Table 4-3 Default Configuration for Service Processor Private LAN (HP Superdome Servers Only)

Private LAN IP Address	192.168.2.10
Private LAN Host Name	priv-00
Private LAN Subnet Mask	255.255.255.0
Private LAN Gateway	192.168.2.10

Configuring Service Processor Network Settings

This procedure (Command menu, **LC** command) configures the service processor customer LAN and private LAN network settings from the service processor Command menu.

- Step 1.** Connect to the service processor for the complex, login as an administrator, and enter **CM** to access the Command menu.

Use `telnet` to connect to the service processor, if possible.

If a service processor is at its default configuration (including default network settings), you can connect to it using either of these methods:

- Establish a direct serial cable connection through the service processor local RS-232 port, a 9-pin D-shaped connector (DB9).

On HP Superdome servers this port is labeled “Local RS-232”. On HP rp8400 servers it is the “Local Console” port. On HP rp7405/rp7410 servers use the DB9 connector that is labeled “Console”.

- Access a PC or workstation on the same subnet as the service processor, modify its network routing tables to include the default customer LAN IP address, then `telnet` to the service processor. The procedure to modify networking and connect is:
 1. Access a PC or workstation on the same subnet as the service processor.

2. Modify the network routing tables for the PC or workstation by using the `route add 192.168.1.1 ClientName` command, where *ClientName* is the network name of the PC or workstation.

From a PC command prompt: `route add 192.168.1.1 ClientName`

On an HP-UX workstation login as root and use this command:

```
/usr/sbin/route add 192.168.1.1 ClientName
```

After you reconfigure the service processor network settings, you can remove these network routing table changes with the `route delete...` command.

3. Enter this command to confirm the new network connection to the service processor: `ping 198.168.1.1 -n 2`
4. Use the `telnet 192.168.1.1` command from the PC or workstation to connect to the service processor.

- Step 2.** From the service processor Command menu, enter `LS` to list the current network settings, and if needed use the `LC` command to reconfigure the network settings for the service processor.

You must be logged in as an administrator to use the `LC` command.

The `LC` command enables you to modify the customer LAN and/or the private LAN configuration.

You can cancel all changes to the service processor LAN configuration at any time by replying `Q` to any of the `LC` command prompts.

Viewing Console Logs

Each nPartition in a server complex has its own console log that stores a record of the most recent nPartition console activity.

To access the console log for an nPartition, enter **CL** from the service processor Main menu and select which nPartition console log you want to view. To exit the console log viewer, type **^b** (**Control-b**) to return to the Main menu.

When viewing an nPartition console log, type **P** to view the previous page of the console log, or type **N** (or **Enter**) to view the next page.

When you enter a console log viewer it displays the oldest data in the log first and allows you to page through the log to view the more recently recorded activity.

Each console log is a circular log file that records approximately 30 to 40 pages of data. All nPartition console activity is written to this log file, regardless of whether a user is connected to the nPartition console.

As a console log is written the oldest data in the log is overwritten by current data, as needed, so that the last 30 to 40 pages of console output always is available from the console log viewer.

Viewing Chassis Codes or Event Logs

The chassis log viewer enables you to view chassis codes that are emitted throughout the entire server complex.

NOTE

On HP Integrity servers, the equivalent of chassis codes is event logs.

To enter the chassis log viewer enter **SL** at the service processor Main menu. To exit the viewer type **^b** (**Control-b**) to return to the Main menu.

Chassis codes are data that communicate information about system events from the source of the event to other parts of the server complex. Chassis code data indicates what event has occurred, when and where it happened, and its severity (the alert level).

All chassis codes pass from the event source through the service processor. The service processor takes any appropriate action and then reflects the chassis codes to all running nPartitions. If an nPartition is running event monitoring software, it may also take action based on the chassis codes (for example, sending notification e-mail).

System administrators, of course, may have interest in viewing various chassis codes—especially chassis codes that indicate failures or errors.

Hardware, software, and firmware events may emit chassis codes as a result of a failure or error, a major change in system state, or basic forward progress. For example: a fan failure, an HPMC, the start of a boot process, hardware power on or off, and test completion all result in chassis codes being emitted.

While HP-UX is running on an nPartition, it constantly emits a “heartbeat” chassis code (at alert level 0) to indicate that the operating system still is functioning and has not hung.

NOTE

The front panel attention LED for each nPartition server cabinet is automatically turned on when one or more chassis codes of alert level 2 or higher have not yet been viewed by the administrator. When this attention LED is on, entering the chassis log viewer turns the LED off.

Chapter 4 Using Management Interfaces and Tools

Viewing Chassis Codes or Event Logs

You can remotely check the on/off status of this attention LED by using the **PS** command, **G** option, from the service processor Command menu.

On nPartition servers, chassis codes are recorded in the server complex activity log (for events of alert level 0 or alert level 1) or the error log (for events alert level 2 or higher).

```
GSP> SL
```

```
Chassis Logs available:
```

```
(A)ctivity Log
(E)rror Log
(L)ive Chassis Logs

(C)lear All Chassis Logs
(Q)uit
```

```
GSP:VW> L
```

```
Entering Live Log display
```

```
A)lert filter
C)ell filter
P)artition filter
U)nfiltered
V)iew format selection
^B to Quit
```

```
Current filter: ALERTS only
```

Log Viewing Options: Activity, Error, and Live Chassis Logs

When you enter the chassis log viewer by entering **SL** at the service processor (MP or GSP) Main menu, you can select from these viewers:

- **Activity Log Viewer**
Allows you to browse recorded chassis codes of alert level 0 or 1.
- **Error Log Viewer**
Allows you to browse recorded chassis codes of alert level 2 or higher.
- **Live Chassis Logs Viewer**
Displays chassis codes in real time as they are emitted.

By default, the live chassis code viewer has the Alert filter enabled, which causes it to display only the events of alert level 3 or higher.

To view all chassis codes in real-time, type **U** for the Unfiltered option.

You also can filter the live codes by cell (**C**) or nPartition (**P**).

Cell filter: only display chassis codes emitted by a specific cell in the server complex. Partition filter: only display chassis codes emitted by hardware assigned to a specific nPartition.

When viewing chassis code logs, type **v** to change the display format. The viewers can show chassis codes in text format (**T**), keyword format (**K**), or raw hex format (**R**).

Virtual Front Panel (VFP) nPartition Views

The Virtual Front Panel (VFP) provides ways to monitor the chassis codes for a particular nPartition or the entire server complex (all nPartitions).

The VFP presents a real-time display of activity on the selected nPartition(s) and it automatically updates when cell and nPartition status change.

To access the VFP feature, enter **vfp** from the service processor Main menu. To exit the VFP, type **^b (Control-b)** to return to the Main menu.

When you access a Virtual Front Panel, you can either select the nPartition whose VFP you want to view or select the system VFP to view summary information for all nPartitions in the server complex.

E indicates error since last boot

```
Partition 0 state      Activity
-----
Cell(s) Booting:      710 Logs
```

```
# Cell state          Activity
- -----
0 Early CPU selftest  Cell firmware test      232 Logs
1 Early CPU selftest  Processor test           230 Logs
2 Memory discovery    Physical memory test     242 Logs
```

GSP:VFP (^B to Quit) >

Command Reference: Service Processor (MP or GSP) Commands

Table 4-4 lists the commands available from the service processor command menu (the MP:CM> or GSP:CM> prompt).

The following categories of commands are available:

- *Service Commands — Service Processor (MP or GSP)* on page 169.
- *Status Commands — Service Processor (MP or GSP)* on page 170.
- *System and Access Configuration Commands — Service Processor (MP or GSP)* on page 170.

Some commands are restricted to users with Operator or Administrator authority. Also note that the available set of commands may differ depending on the utility revision level and server hardware model.

For details on these commands, use the help (HE: HeLp) feature at the service processor Main Menu. Enter the command name at the MP:HELP or GSP:HELP prompt for syntax, restrictions, and other information.

Table 4-4 Service Processor (MP or GSP) Command Reference

Command	Description
Service Commands — Service Processor (MP or GSP)	
Commands for general server complex administration and nPartition management.	
BO	Boot an nPartition past Boot is Blocked (BIB).
DF	Display FRU information of an entity.
MA	Return to the Main menu.
MR	Modem reset.
PCIOLOAD	Activate/deactivate a PCI card.
PE	Power entities on or off.
RE	Reset entity.

Table 4-4 Service Processor (MP or GSP) Command Reference (Continued)

Command	Description
RR	Reset an nPartition for reconfiguration; the nPartition remain inactive, in the shutdown for reconfig state.
RS	Reset an nPartition.
TC	Send a TOC signal to an nPartition.
TE	Broadcast a message to all users of the MP Command Handler.
VM	Margin the voltage in a cabinet.
WHO	Display a list of MP connected users.
<p>Status Commands — Service Processor (MP or GSP) Commands for displaying hardware and nPartition information.</p>	
CP	Display nPartition cell assignments.
HE	Display the list of available commands.
IO	Display IO chassis/cell connectivity.
LS	Display LAN connected console status.
MS	Display the status of the modem.
PS	Display detailed power and hardware configuration status.
SYSREV	Display revisions of all firmware entities in the complex.
<p>System and Access Configuration Commands — Service Processor (MP or GSP) Commands for managing server complex accounts, security, and nPartition configuration.</p>	
PARPERM	Restrict/unrestrict nPartition Reconfiguration Privilege.
PD	Modify default nPartition for this login session.
RL	Rekey Complex Profile locks.
SA	Display and set (enable/disable) MP remote access methods.
SO	Configure security options and access control (user accounts and passwords).

Table 4-4 **Service Processor (MP or GSP) Command Reference (Continued)**

Command	Description
XD	MP diagnostics and reset.

Command Reference: EFI Shell Commands

Table 4-5 lists the commands supported by the EFI Shell interface on HP Integrity Superdome servers.

The EFI Shell is accessible from an nPartition console when the nPartition is in an active state but has not booted an operating system.

The following categories of commands are available:

- *Boot Commands — EFI Shell* on page 172.
- *Configuration Commands — EFI Shell* on page 173.
- *Device, Driver, and Handle Commands — EFI Shell* on page 174.
- *Filesystem Commands — EFI Shell* on page 174.
- *Memory Commands — EFI Shell* on page 175.
- *Shell Navigation and Other Commands — EFI Shell* on page 176.
- *Shell Script Commands / Programming Constructs — EFI Shell* on page 176.

For details on these commands, enter `help command` at the EFI shell prompt.

Table 4-5 **EFI Shell Command Reference**

Command	Description
Boot Commands — EFI Shell	
Commands related to nPartition booting.	
autoboot	Set/view autoboot timeout variable.
bcfg	Display/modify the driver/boot configuration.
boottest	Set/view BootTest bits.
lanboot	Boot over the LAN.
reconfigreset	Reset the system (nPartition) for reconfiguration; the nPartition remains inactive, in the shutdown for reconfig state.

Table 4-5 EFI Shell Command Reference (Continued)

Command	Description
reset	Reset the system (nPartition).
search	Connect drivers for bootables devices.
Configuration Commands — EFI Shell	
Commands for changing and retrieving system (nPartition) information.	
acpiconfig	Set/view ACPI configuration mode.
cellconfig	Deconfigure/reconfigure cells. (Set cell use-on-next-boot values.)
cpuconfig	Deconfigure/reconfigure CPUs.
date	Display the current date or set the date of the system (nPartition).
dimmconfig	Deconfigure/reconfigure memory (DIMMs).
err	Display/change the error level.
errdump	View/clear logs.
fru	View FRU data.
info	Display hardware information.
monarch	Set/view a monarch processor.
palproc	Make a PAL call.
romdrivers	Enable/disable PCI expansion ROM drivers.
rootcell	Set/view preferred root cells. (Set nPartition core cell choices.)
salproc	Make a SAL call.
tftp	Performs TFTP operation to a bootp/DHCP enabled Unix boot server.
time	Display the current time or set the time of the system (nPartition). EFI time is set and presented in GMT (Greenwich mean time).
variable	Save/restore specific EFI variables.
ver	Display the version information.

Table 4-5 **EFI Shell Command Reference (Continued)**

Command	Description
Device, Driver, and Handle Commands — EFI Shell	
Commands for managing devices, drivers, and handles.	
baud	View serial port com settings.
connect	Bind a driver to a device.
dblk	Hex dump of BlkIo devices.
devices	Display devices managed by EFI drivers.
devtree	Display tree of devices.
dh	Dump handle info.
disconnect	Disconnect driver(s) from device(s).
drivers	Display list of drivers.
drvcfg	Invoke the Driver Config Protocol.
drvdiag	Invoke the Driver Diagnostics Protocol.
guid	Dump known GUID IDs.
lanaddress	Display core I/O MAC address.
load	Load EFI drivers.
map	Map shortname to device path.
openinfo	Display the open protocols for given handle.
pci	Display PCI devices or PCI function configuration space.
reconnect	Reconnect driver(s) from a device.
unload	Unload a protocol image.
Filesystem Commands — EFI Shell	
Commands for managing files, directories, and attributes.	
attrib	Display/change the attributes of files/directories.

Table 4-5 EFI Shell Command Reference (Continued)

Command	Description
cd	Update/view the current directory.
comp	Compare the contents of two files.
cp	Copy one or more files/directories to another location.
edit	Edit an ASCII or UNICODE file in full screen.
eficompress	Compress infile and write to outfile.
efidecompress	Decompress infile and write to outfile.
hexedit	Edit a file, block device, or memory region using hex.
ls	Display a list of files and subdirectories in a directory.
mkdir	Create one or more directories.
mount	Mount a filesystem on a block device.
rm	Delete one or more files/directories.
setsize	Set the size of a file.
touch	Update time of file/directory with current time.
type	Display the contents of a file.
vol	Display volume information of the file system.
Memory Commands — EFI Shell	
Commands for listing and managing memory, EFI variables, and NVRAM details.	
default	Set the default NVRAM values.
dmem	Dump memory or memory mapped IO.
dmpstore	Display all EFI variables.
memmap	Display the memory map.
mm	Display/modify MEM/IO/PCI.
pdt	View/clear partition or cell PDT.

Table 4-5 **EFI Shell Command Reference (Continued)**

Command	Description
Shell Navigation and Other Commands — EFI Shell	
Commands for basic EFI Shell navigation and customization.	
alias	Set/get alias settings.
cls	Clear the standard output with an optional background color.
exit	Exit EFI Shell environment.
getmtc	Display current monotonic counter value.
help or ?	Display help.
mode	Display the mode of the console output device.
set	Set/Get environment variable.
xchar	Turn on/off extended character features.
Shell Script Commands / Programming Constructs — EFI Shell	
EFI shell-script commands.	
echo	Echo message to stdout or toggle script echo.
else	Script-only: Use with IF THEN.
endfor	Script-only: Delimiter for FOR loop construct.
endif	Script-only: Delimiter for IF THEN construct.
for	Script-only: Loop construct.
goto	Script-only: Jump to label location in script.
if	Script-only: IF THEN construct.
input	Take user input and place in efi variable.
pause	Script-only: Prompt to quit or continue.
stall	Stall the processor for some microseconds.

Command Reference: BCH Menu Commands

Table 4-6 lists the commands available from the Boot Console Handler (BCH) menus for an nPartition.

The BCH Menu is accessible from an nPartition console when the nPartition is in an active state but has not booted an operating system.

The following categories of commands are available:

- *General Commands — Boot Console Handler (BCH)* on page 177.
- *Main Menu Commands — Boot Console Handler (BCH)* on page 178.
- *Configuration Menu Commands — Boot Console Handler (BCH)* on page 178.
- *Information Menu Commands — Boot Console Handler (BCH)* on page 179.
- *Service Menu Commands — Boot Console Handler (BCH)* on page 180.

For details on these commands, use the help (HE) command. At any BCH menu enter **HE** *command* for details about the specified *command*, or enter **HE** for general help.

Table 4-6 **Boot Console Handler (BCH) Command Reference**

Command	Description
General Commands — Boot Console Handler (BCH)	
These BCH commands are available from all BCH menus.	
BOot [PRI HAA ALT <i>path</i>]	Boot from the specified path.
REBOOT	Restart nPartition.
RECONFIGRESET	Reset the nPartition to allow Complex Profile reconfiguration; the nPartition remains inactive, in the shutdown for reconfig state.

Table 4-6 Boot Console Handler (BCH) Command Reference (Continued)

Command	Description
DIisplay	Redisplay the current menu.
HElp [<i>menu</i> <i>command</i>]	Display help for the current menu or the specified <i>menu</i> or <i>command</i> .
Main Menu Commands — Boot Console Handler (BCH)	
Commands to find devices, set boot paths (PRI,HAA, ALT), and access other BCH menus.	
BOot [PRI HAA ALT <i>path</i>]	Boot from the specified path.
PAth [PRI HAA ALT] [<i>path</i>]	Display or modify a device boot path.
SEArch [ALL <i>cell</i> <i>path</i>]	Search for boot devices.
ScRoll [ON OFF]	Display or change scrolling capability.
COntfiguration	Access the Configuration Menu, which displays or sets boot values.
INformation	Access the information menu, which displays hardware information.
SERvice	Access the Service Menu, which displays service commands.
Configuration Menu Commands — Boot Console Handler (BCH)	
Commands to display or set boot values.	
MAin	Return to the BCH Main Menu.
BootID [<i>cell</i> [<i>proc</i> [<i>bootid</i>]]]	Display or set Boot Identifier.
BootTimer [0-200]	Seconds allowed for boot attempt.
CEllConfig [<i>cell</i>] [ON OFF]	Configure or deconfigure the specified <i>cell</i> .
COreCell [<i>choice cell</i>]	Display or set core cell choices for the nPartition.

Table 4-6 Boot Console Handler (BCH) Command Reference (Continued)

Command	Description
CPUconfig [<i>cell</i> [<i>cpu</i> [ON OFF]]]	Configure or deconfigure the processor (<i>cpu</i>) on the specified <i>cell</i> .
DataPrefetch [ENABLE DISABLE]	Display or set data prefetch behavior.
Default	Set the nPartition to predefined (default) values.
FastBoot [test][RUN SKIP]	Display or set boot tests execution (self tests).
KGMemory [<i>value</i>]	Display or set KGMemory requirement.
PathFlags [PRI HAA ALT] [<i>value</i>]	Display or set boot path flags (boot actions).
PD [<i>name</i>]	Display or set the nPartition name.
ResTart [ON OFF]	Set nPartition restart policy.
TTime [<i>cn:yr:mo:dy:hr</i> : <i>mn:[ss]</i>]	Read or set the real time clock, the local nPartition date/time setting. The BCH time is set and presented in GMT (Greenwich mean time).
Information Menu Commands — Boot Console Handler (BCH)	
Commands to display hardware information.	
MAin	Return to the BCH Main Menu.
ALL [<i>cell</i>]	Display all of the information available for the nPartition.
BootINfo	Display boot-related information.
CAche [<i>cell</i>]	Display cache information.
ChipRevisions [<i>cell</i>]	Display revisions of major VLSI.

Table 4-6 Boot Console Handler (BCH) Command Reference (Continued)

Command	Description
ComplexID	Display Complex information.
FabricInfo	Display Fabric information.
FRU [cell] [CPU MEM]	Display FRU information
FwrVersion [cell]	Display versions for PDC, ICM, and complex.
IO [cell]	Display I/O interface information.
MEmory [cell]	Display memory information.
PRocessor [cell]	Display processor information
Service Menu Commands — Boot Console Handler (BCH) Commands related to nPartition system service tasks.	
MAin	Return to the BCH Main Menu.
BATtery [cell]	Display cell battery status.
CLEARPIM [cell]	Clear the nPartition NVM PIM data.
DimmDealloc [cell] [dimm] [ON OFF]	Display, deallocate, or re-allocate the DIMM identified by <i>dimm</i> in cell number specified by <i>cell</i> .
ErrorLog [cell][MEMORY IO FABRIC CELL]	Display error log information.
LanAddress	Display Core I/O LAN station address.
MemRead <i>address</i> [len]	Read memory locations scope of nPartition.
PDT [cell] [CLEAR]	Display or clear the PDT.

Table 4-6 **Boot Console Handler (BCH) Command Reference (Continued)**

Command	Description
PIM [<i>cell</i> [<i>proc</i>]] [HPMC LPMC TOC]	Display PIM information.
SCSI [<i>path</i> [INIT RATE TERM WIDTH DEFAULT [<i>id</i>]]]	Display or set SCSI device parameters.

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Command Reference: BCH Menu Commands

5

Booting and Resetting nPartitions

This chapter introduces nPartition system boot and reset concepts, configuration options, and procedures for booting and resetting nPartitions.

Differences in the nPartition boot process on PA-RISC systems and Intel® Itanium®-based systems also are addressed in this chapter. For a discussion of the supported nPartition server models, see the chapter *nPartition Server Hardware Overviews* on page 87.

Overview of nPartition System Booting

This section provides an overview of the nPartition system boot process for HP 9000 servers and HP Integrity servers.

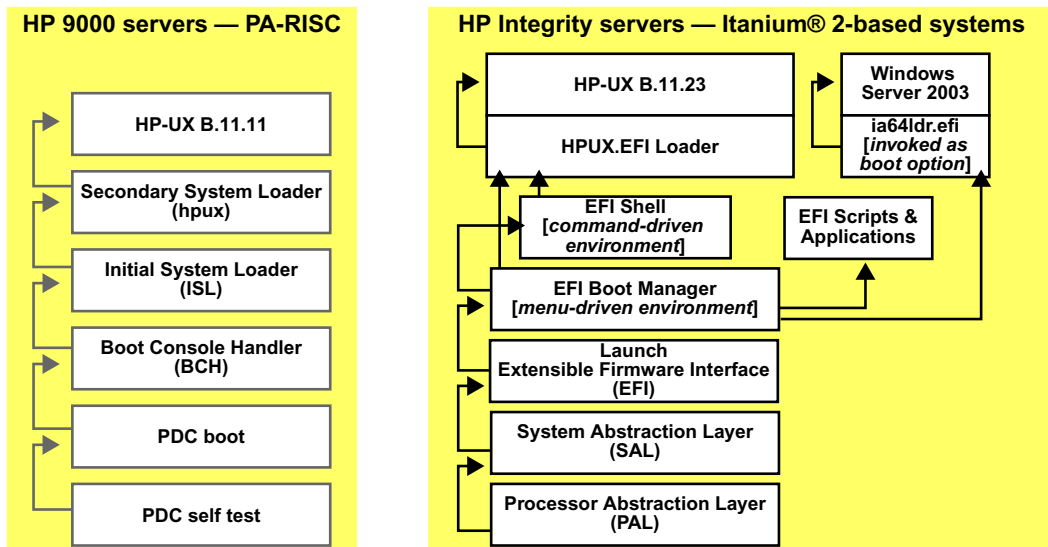
On HP nPartition-capable servers, system resources are configured into one or more nPartitions. Each nPartition includes the cells (with processors and memory) assigned to it and the I/O that is connected to those cells.

An nPartition can boot and reboot independently of any other nPartitions in the same server complex. Each nPartition runs its own firmware and has its own system boot environment. nPartitions provide hardware and software fault isolation: a reset, TOC, or MCA in one nPartition does not affect any other nPartition in most cases.

Figure 5-1 shows an overview of the boot process differences on HP 9000 servers (PA-RISC systems) and HP Integrity servers (Itanium® 2-based systems). Each nPartition is effectively an independent system that follows the boot processes outlined in Figure 5-1.

Also see *Boot Process for Cells and nPartitions* on page 58.

Figure 5-1 Boot Overview for HP 9000 servers and HP Integrity servers



Boot Process Differences for nPartitions on HP 9000 servers and HP Integrity servers

Although many of the system boot commands, tools, and processes for managing nPartition system booting are the same on HP 9000 servers and HP Integrity servers, a few aspects differ.

On nPartition-capable HP Integrity servers:

- The nPartition system boot environment is the Extensible Firmware Interface (EFI): the EFI Boot Manager menu and the EFI Shell.
- The autoboot process is configured by the EFI autoboot setting and the order of items in the boot options list.

The boot options list can include:

- First boot option: configured using the `setboot -p...` or `parmodify -b...` command.
- Second boot option: configured using the `setboot -h...` or `parmodify -s...` command
- Third boot option: configured using the `setboot -a...` or `parmodify -t...` command.
- The HP-UX B.11.23 OS loader is `HPUX.EFI`, which supports *hpux* (1M) loader options.

You can issue `hpux` loader commands from the `HPUX>` prompt.

- The EFI system boot environment includes an ACPI configuration setting that must be set to `default` for HP-UX B.11.23 to boot.

To boot Windows, the ACPI configuration setting for the nPartition must be set to `windows`.

At the EFI Shell interface, enter the `acpicfg` command with no arguments to list the current ACPI configuration for the nPartition. Use the `help acpicfg` command for more details.

On nPartition-capable HP 9000 servers:

- The nPartition system boot environment is the Boot Console Handler (BCH).
- The autoboot process is configured using boot device paths (PRI, HAA, ALT) and path flags.

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Boot Process Differences for nPartitions on HP 9000 servers and HP Integrity servers

- PRI boot path: configured using the `setboot -p...` or `parmodify -b...` command.
- HAA boot path: configured using the `setboot -h...` or `parmodify -s...` command
- ALT boot path: configured using the `setboot -a...` or `parmodify -t...` command.
- The HP-UX B.11.11 OS loaders are `ISL` and `hpux`. Issue commands from the `ISL>` prompt.

Types of Booting and Resetting for nPartitions

All standard boot and reboot methods are supported for HP nPartition servers, though some boot and reset procedures differ slightly or use different tools than on other HP servers.

HP's nPartition servers also provide two special types of reboot and reset for managing nPartitions: performing a reboot for reconfig, and performing a shutdown for reconfig.

The following list summarizes all types of booting, rebooting, and resetting that are supported for HP nPartition systems. See the *Reboot for Reconfig* and *Shutdown for Reconfig State* items for a discussion of these nPartition-specific boot processes.

NOTE

When rebooting HP-UX or Windows on an nPartition under normal circumstances—such as when not reconfiguring or halting it—use the HP-UX `shutdown -r` command or Windows `shutdown /r` command.

NOTE

You can perform the Windows shutdown tasks either by using the `shutdown` command or by using the **Start** → **Shut Down** action.

- **Reboot**

A reboot shuts down the operating system and reboots the nPartition. On PA-RISC systems, only the active cells in the nPartition are rebooted.

To perform a standard reboot of an nPartition use the HP-UX `shutdown -r` command or the Windows `shutdown /r` command. (The Windows `shutdown /r` command is used for both the standard reboot operation and for the reboot for reconfig operation.)

- **Halt**

A halt shuts down the operating system, halts all processing on the nPartition, and does not reboot.

Chapter 5 Booting and Resetting nPartitions

Types of Booting and Resetting for nPartitions

To halt the operating system use the HP-UX `shutdown -h` command or the Windows `shutdown /s` command. (The Windows `shutdown /s` command is used for both the standard shutdown operation and for the shutdown for reconfig operation.)

To reboot an nPartition that was halted from HP-UX use the `RS` command from the service processor Command menu. To reboot an nPartition that was halted from Windows use the `BO` command from the service processor Command menu.

- **Reset**

A reset resets the nPartition immediately. On PA-RISC systems, only the active cells in the nPartition are reset.

You can reset an nPartition using the `REBOOT` command from the BCH interface, the `reset` command from the EFI Shell, or the `RS` command from the service processor Command menu.

The `RS` command does not check whether the specified nPartition is in use or running an operating system—be certain to correctly specify the nPartition.

- **Boot an nPartition from the Service Processor (GSP or MP)**

A boot initiated from the service processor boots an inactive nPartition past the shutdown for reconfig state.

The cells assigned to the nPartition proceed past boot-is-blocked (BIB), rendezvous, and the nPartition boots to the system boot environment (BCH or EFI).

To boot an inactive nPartition, use the `BO` command from the service processor Command menu.

- **Boot HP-UX B.11.11 from the BCH Interface [HP 9000 servers only]**

On HP 9000 servers, to boot HP-UX B.11.11 on an nPartition, use the `BOOT` command from the BCH interface and specify the device path from which to load and boot the HP-UX kernel.

The BCH `BOOT` command loads and boots HP-UX on an nPartition. This command also can be used to load and interact with the Initial System Loader (ISL) interface. Likewise on systems configured for virtual partitions the vPars monitor (`MON>` prompt) is loaded following the `BOOT` command.

- **Boot HP-UX B.11.23 from the EFI Boot Manager or EFI Shell [HP Integrity servers only]**

On HP Integrity servers, to boot HP-UX B.11.23 on an nPartition, you can select the desired boot device and options from the boot options list displayed by the EFI Boot Manager.

You also can use the EFI Shell environment to access the EFI System Partition (an EFI filesystem) for a boot device and from there directly invoke the `HPUX.EFI` boot loader to boot HP-UX B.11.23 from the device.

CAUTION

To boot HP-UX B.11.23, the `acpiconfig` value for the nPartition must be set to `default` (not `windows`). Use the EFI Shell `acpiconfig` command to list and configure this value. You also must use the `reset` command to reboot the nPartition after changing the `acpiconfig` value.

- **Boot Windows Server 2003 from the EFI Boot Manager [HP Integrity servers only]**

On HP Integrity servers, to boot Windows Server 2003 on an nPartition, select the desired boot device and option from the EFI Boot Manager's boot options list.

For example, select the **Windows Server 2003, Datacenter** item from the EFI Boot Manager menu to load the Datacenter Edition.

The Windows Server 2003 loader (`ia64ldr.efi`) does not support invoking Windows from the EFI Shell environment.

CAUTION

To boot Windows, the `acpiconfig` value for the nPartition must be set to `windows` (not `default`). Use the EFI Shell `acpiconfig` command to list and configure this value. You also must use the `reset` command to reboot the nPartition after changing the `acpiconfig` value.

Chapter 5 Booting and Resetting nPartitions

Types of Booting and Resetting for nPartitions

- **Reboot for Reconfig**

A reboot for reconfig shuts down the operating system, resets all cells assigned to the nPartition, performs any nPartition reconfigurations, and boots the nPartition back to the system boot environment (BCH or EFI).

To perform a reboot for reconfig of the local nPartition, use the HP-UX `shutdown -R` command or Windows `shutdown /r` command. (The Windows `shutdown /r` command is used for both the standard reboot operation and for the reboot for reconfig operation.)

All cells—including any inactive cells and all newly added or deleted cells—reboot and are reconfigured. All cells with a “y” use-on-next-boot setting participate in partition rendezvous and synchronize to boot as a single nPartition.

After you assign a cell to an nPartition, or remove an active cell from an nPartition, you can perform a reboot for reconfig of the nPartition to complete the cell addition or removal.

If an nPartition is configured to boot an operating system automatically, it can do so immediately following a reboot for reconfig.

- **Shutdown for Reconfig State**

A reboot to the shutdown for reconfig state shuts down the operating system, resets all cells assigned to the nPartition, performs any nPartition reconfigurations, and keeps all cells at a boot-is-blocked (BIB) state, thus making the nPartition and all of its cells inactive.

When an nPartition is at the shutdown for reconfig state you can add or remove cells from the nPartition from a remote nPartition within the server complex.

To put an nPartition into the shutdown for reconfig state use the `shutdown -R -H` HP-UX command, the `shutdown /s` Windows command, the `RECONFIGRESET` command from the BCH interface, the `reconfigreset` command from the EFI Shell, or the `RR` command from the service processor Command menu.

(The Windows `shutdown /s` command is used for both the standard shutdown operation and for the shutdown for reconfig operation.)

To make an nPartition boot past shutdown for reconfig, use the `BO` command from the service processor Command menu. The `BO` command makes the nPartition active by allowing its cells to boot past BIB, rendezvous, and boot to the system boot environment (BCH or EFI) and, if configured, automatically boot an operating system.

- **TOC: Transfer-of-Control Reset**

When you initiate a transfer-of-control reset, the service processor immediately performs a TOC reset of the specified nPartition, which resets the nPartition and allows a crash dump to be saved.

If crash dump is configured for HP-UX on an nPartition, then when you TOC the nPartition while it is running HP-UX, the nPartition performs a crash dump and lets you select the type of dump.

To perform a TOC reset, use the `TC` command from the service processor Command menu. HP nPartition systems do not have TOC buttons on the server cabinet hardware.

Tools for Booting nPartitions

The tools for booting nPartitions and configuring related settings are:

- Service Processor (MP or GSP) Menus
Service processor menus provide a complex-wide service interface that can allow access to all hardware and nPartitions.
See *Command Reference: Service Processor (MP or GSP) Commands* on page 169.
- EFI Boot Manager and EFI Shell
On HP Integrity servers only, the EFI (Extensible Firmware Interface) Boot Manager and Shell are the methods for interacting with an nPartition before it has booted an operating system.
See *Command Reference: EFI Shell Commands* on page 172.
- Boot Console Handler (BCH) Menu Commands
On PA-RISC servers, the BCH interface is the method for interacting with an nPartition before it has booted HP-UX.
See *Command Reference: BCH Menu Commands* on page 177.
- nPartition Commands
HP nPartition commands allow you to manage and monitor nPartitions and hardware within a server complex from HP-UX running on any nPartition in the server. The HP-UX B.11.23 versions of the nPartition commands also can remotely manage complexes based on the HP sx1000 chipset from any system running HP-UX B.11.23. Windows versions of the commands are supported for the Windows SMS (a Superdome Support Management Station running the Windows operating system); Windows SMS commands require specifying remote administration options.
See *Commands for Configuring nPartitions* on page 35.
- Partition Manager (/opt/parmgr/bin/parmgr)
Partition Manager provides a graphical interface for managing and monitoring nPartitions and hardware within a server complex.
See *Partition Manager* on page 37.

Task Summaries: nPartition Boot and Reset

Table 5-1 describes the main nPartition boot and reset tasks and provides brief summaries and references for detailed procedures.

You can perform the nPartition boot tasks in Table 5-1 using various tools, including including the service processor (MP or GSP), Boot Console Handler (BCH, available only on PA-RISC servers), Extensible Firmware Interface (EFI, available only on HP Integrity servers), HP-UX commands, or Partition Manager (/opt/parmgr/bin/parmgr).

See *Tools for Booting nPartitions* on page 192 for details.

Table 5-1 nPartition Boot and Reset Task Summaries

Task	Summary
<i>Troubleshooting Boot Problems</i>	This section has tips for resolving common nPartition boot issues. See <i>Troubleshooting Boot Problems</i> on page 200.
<i>Accessing nPartition Console and System Boot Interfaces</i>	Use the service processor Console Menu (CO) to access the BCH or EFI system boot environment for an nPartition. See <i>Accessing nPartition Console and System Boot Interfaces</i> on page 202.
<i>Monitoring nPartition Boot Activity</i>	Use the VFP option from the service processor Main Menu to access a Virtual Front Panel for monitoring the boot status of an nPartition. See <i>Monitoring nPartition Boot Activity</i> on page 206.
<i>Finding Bootable Devices</i>	<ul style="list-style-type: none"> • BCH Menu: SEARCH command. • EFI Shell: map command. See <i>Finding Bootable Devices</i> on page 208.

Table 5-1 nPartition Boot and Reset Task Summaries (Continued)

Task	Summary
<i>Booting HP-UX</i>	<ul style="list-style-type: none"> • BCH Menu: BOOT command. • EFI Boot Manager: select an item from the boot options list. • EFI Shell: access the EFI System Partition (for example <code>fs0:</code>) for a root device and enter HPUX to invoke the loader. <p>See <i>Booting HP-UX</i> on page 211. This section also covers booting HP-UX in single-user mode and LVM-maintenance mode.</p>
<i>Booting Windows Server 2003</i>	<p>NOTE: Only supported on HP Integrity servers.</p> <ul style="list-style-type: none"> • EFI Boot Manager: select an item from the boot options list. (Windows does not support being invoked from the EFI Shell.) <p>See <i>Booting Windows Server 2003</i> on page 224.</p>
<i>Booting over a Network</i>	<ul style="list-style-type: none"> • BCH Menu: BOOT LAN... command. • EFI Boot Manager: select Boot option maintenance menu → Boot from a File and select the “Load File” option for the LAN card that has the desired MAC address. • EFI Shell: <code>lanboot</code> command or <code>lanboot select</code> command. <p>See <i>Booting over a Network</i> on page 226.</p>
<i>Booting to the HP-UX Initial System Loader (ISL)</i>	<p>NOTE: Only supported on PA-RISC systems.</p> <ul style="list-style-type: none"> • BCH Menu: issue the BOOT command and reply y (for “yes”) to the Do you wish to stop at the ISL prompt question. <p>See <i>Booting to the HP-UX Initial System Loader (ISL)</i> on page 229.</p>
<i>Booting to the HP-UX Loader (HPUX.EFI)</i>	<p>NOTE: Only supported on HP Integrity servers.</p> <ul style="list-style-type: none"> • EFI Shell or EFI Boot Manager: start booting HP-UX and type any key to interrupt the boot process, stopping it at the HP-UX Boot Loader prompt (HPUX>). <p>See <i>Booting to the HP-UX Loader (HPUX.EFI)</i> on page 231.</p>

Table 5-1 nPartition Boot and Reset Task Summaries (Continued)

Task	Summary
<i>Using HP-UX Loader Commands</i>	<ul style="list-style-type: none"> • BCH Menu: boot to the Initial System Loader prompt (ISL>), and from ISL issue HP-UX loader commands in the following form: hpux <i>command</i> For example: enter hpux ls to issue the ls command. • EFI Shell or EFI Boot Manager: boot to the HP-UX Boot Loader prompt (HPUX>), and issue HP-UX loader commands directly. For example: enter ls to issue the ls command. <p>See <i>Using HP-UX Loader Commands</i> on page 233.</p>
<i>Shutting Down HP-UX</i>	<ul style="list-style-type: none"> • Issue the /sbin/shutdown command with the desired options, such as -r to shut down and reboot automatically, or -h to shut down and halt the system. • The -R and -H options to shutdown and reboot are used when performing nPartition reconfigurations; see the Reboot for Reconfig and Shutdown for Reconfig details in this table. <p>See <i>Shutting Down HP-UX</i> on page 235.</p>
<i>Shutting Down Windows Server 2003</i>	<p>NOTE: Only supported on HP Integrity servers.</p> <ul style="list-style-type: none"> • Issue the shutdown command with the desired options, such as /r to shut down and reboot automatically, /s to shut down and halt (make the nPartition inactive), or /a to abort a system shutdown. You also can select the Start → Shut Down action and either choose Restart or choose Shut down from the pull-down menu. • The /r and /s options to shutdown also are used when performing nPartition reconfigurations; see the Reboot for Reconfig and Shutdown for Reconfig details in this table. <p>See <i>Shutting Down Windows Server 2003</i> on page 237.</p>

Table 5-1 **nPartition Boot and Reset Task Summaries (Continued)**

Task	Summary
<i>Rebooting and Resetting nPartitions</i>	<ul style="list-style-type: none"> • Service Processor (MP or GSP): RS command; under normal operation you first shut down the operating system. • BCH Menu: REBOOT command. • EFI Boot Manager: Boot option maintenance menu → Cold Reset. • EFI Shell: reset command. • HP-UX: /sbin/shutdown or /usr/sbin/reboot command. • Windows: shutdown /r command or the Start → Shut Down action and Restart pull-down menu option. <p>See <i>Rebooting and Resetting nPartitions</i> on page 239.</p>
<i>Performing a Reboot for Reconfig</i>	<p>NOTE: Only supported for HP nPartition-capable servers.</p> <ul style="list-style-type: none"> • HP-UX: /sbin/shutdown -R command. • Windows: shutdown /r command or the Start → Shut Down action and Restart pull-down menu option. <p>See <i>Performing a Reboot for Reconfig</i> on page 244.</p>
<i>Shutting Down to a Shutdown for Reconfig (Inactive) State</i>	<p>NOTE: Only supported for HP nPartition-capable servers.</p> <ul style="list-style-type: none"> • Service Processor (MP or GSP): RR command; under normal operation you first shut down the operating system. • BCH Menu: RECONFIGRESET command. • EFI Shell: reconfigreset command. • HP-UX: /sbin/shutdown -R -H command. • Windows: shutdown /s command or the Start → Shut Down action and Shut down pull-down menu option. <p>See <i>Shutting Down to a Shutdown for Reconfig (Inactive) State</i> on page 246.</p>

Table 5-1 nPartition Boot and Reset Task Summaries (Continued)

Task	Summary
<i>Booting an Inactive nPartition</i>	<p>NOTE: Only supported for HP nPartition-capable servers.</p> <ul style="list-style-type: none"> • Service Processor (MP or GSP): BO command. • HP-UX: specify the <code>-B</code> option when using the <code>/usr/sbin/parmodify</code> command to reconfigure an inactive nPartition. <p>See <i>Booting an Inactive nPartition</i> on page 251.</p>
<i>Performing a Transfer of Control (TOC) Reset</i>	<p>CAUTION: Under normal operation you shut down the operating system before issuing a TOC reset.</p> <ul style="list-style-type: none"> • Service Processor (MP or GSP): TC command. <p>See <i>Performing a Transfer of Control (TOC) Reset</i> on page 254.</p>
<i>Configuring Boot Paths and Options</i>	<ul style="list-style-type: none"> • BCH Menu: PATH command. • EFI Boot Manager: use Boot option maintenance menu operations to add or delete boot options, or to change the order of items in the boot options list. • EFI Shell: <code>bcfg</code> command for HP-UX options. For example: <code>bcfg boot dump</code> to list all boot options, or <code>help bcfg</code> for details setting and reordering boot options list items. For Windows boot options, use the <code>MSUtil\nvrboot.efi</code> utility. • HP-UX: <code>/usr/sbin/setboot</code> or <code>/usr/sbin/parmodify</code> command. On HP-UX B.11.23 systems, only the boot options list for the local nPartition may be displayed and modified. <p>See <i>Configuring Boot Paths and Options</i> on page 256.</p>

Table 5-1 **nPartition Boot and Reset Task Summaries (Continued)**

Task	Summary
<i>Configuring Autoboot Options</i>	<ul style="list-style-type: none"> • BCH Menu: the <code>PATHFLAGS</code> command from the BCH Configuration menu sets boot-time actions for an nPartition. To set the boot actions for an nPartition boot paths, enter: <code>PATHFLAGS VAR action</code> where <i>VAR</i> is the boot path variable (PRI, HAA, or ALT) and <i>action</i> is the boot action (0 for “go to BCH”, 1 for “boot, if fail go to BCH”, 2 for “boot, if fail try next path”, or 3 for “skip this path, try next path”). • EFI Boot Manager: Boot option maintenance menu → Set Auto Boot TimeOut operation. • EFI Shell: <code>autoboot</code> command. For example: <code>autoboot off</code> to disable autoboot, or <code>autoboot 60</code> to enable autoboot with a 60-second timeout period. • HP-UX: <code>setboot -b on</code> or <code>setboot -b off</code> command, to turn on (enable) or turn off (disable) autoboot. <p>See <i>Configuring Autoboot Options</i> on page 262.</p>
<i>Configuring Automatic System Restart</i>	<p>NOTE: When Automatic System Restart is enabled for an nPartition, the service processor will automatically reset the nPartition if its operating system has been hanged for three minutes.</p> <ul style="list-style-type: none"> • Service Processor (MP or GSP): <code>AR</code> command. <p>See <i>Configuring Automatic System Restart</i> on page 267.</p>

Table 5-1 nPartition Boot and Reset Task Summaries (Continued)

Task	Summary
<i>Configuring Boot-Time System Tests</i>	<p>NOTE: HP recommends that all self tests be performed.</p> <ul style="list-style-type: none"> • BCH Menu: Configuration menu FASTBOOT command: enter FASTBOOT to list settings; enter FASTBOOT RUN to enable all tests; enter FASTBOOT TEST RUN or FASTBOOT TEST SKIP to enable or disable an individual test. • EFI Shell: boottest command to list settings; boottest on to enable all tests; boottest off to disable all tests. To configure a specific test, use the boottest test on or boottest test off command. • HP-UX B.11.11: setboot -t testname=value to configure the test for all following boots, or setboot -T testname=value to configure the test for the next boot only. setboot -v to list settings. • HP-UX B.11.23: setboot -t testname=value to configure the test for the next boot only. setboot -v to list settings. <p>See <i>Configuring Boot-Time System Tests</i> on page 269.</p>

Troubleshooting Boot Problems

On HP nPartition servers, you might encounter different boot issues than on other HP servers.

The following boot issues are possible on nPartition servers.

- **Problem:** On an HP Integrity server, HP-UX B.11.23 begins booting but is interrupted with a panic when launching the HP-UX kernel (`/stand/vmunix`).

Causes: The nPartition ACPI configuration might not be properly set for booting HP-UX. In order to boot the HP-UX operating system an nPartition must have its `acpiconfig` value set to default.

Actions: At the EFI Shell interface, enter the `acpiconfig` command with no arguments to list the current ACPI configuration for an nPartition. If the `acpiconfig` value is set to `windows`, then HP-UX cannot boot; in this situation you must reconfigure `acpiconfig`.

To set the ACPI configuration for HP-UX: at the EFI Shell interface enter the `acpiconfig default` command, and then enter the `reset` command for the nPartition to reboot with the proper (default) configuration for HP-UX.

Use the `help acpiconfig` command for more details.

- **Problem:** Not all cells boot to join (rendezvous) an nPartition.

Causes: Some cells may have the `use-on-next-boot` value set to “n” (do not use), or the cells may have been powered off, or the cells may have booted too late to participate in partition rendezvous, or the cells have failed self-tests and cannot be used, or the cells are incompatible.

Actions: Check the cell `use-on-next-boot` values and change them to “y” as needed then reboot for reconfig (HP-UX shutdown `-R`, or Windows shutdown `/r`). Check cell power (`frupower -d -C`) and power on any cells as needed, then reboot for reconfig. Check the cell processor and firmware revisions using (`parstatus -V -c#` where # is the cell number).

As the cells assigned to the nPartition reboot, observe the boot progress from the Virtual Front Panel (VFP) for the nPartition and note any problems the cells have proceeding from one boot state to the next; as needed review chassis logs or event logs using the service processor **Show Chassis Logs** or **Show Event Logs** (SL) menu.

- Problem: An nPartition takes a long time to boot (over ten minutes).

Causes: One or more cells assigned to the nPartition that have a “y” use-on-next-boot value has not booted to participate in partition rendezvous, thus causing the rest of the cells assigned to the nPartition to wait for ten minutes for the cell to report.

For example, the cell might not be installed, might be powered off, or might have been powered on or reset too late to rendezvous with the other cells.

Actions: You can avoid the delay by performing any of the following actions, as needed. Perform a reboot for reconfig following any changes you make.

- Set the cell use-on-next-boot value to “n” (do not use).
- Power on the cell.
- Unassign (remove) the cell from the nPartition.

- Problem: An nPartition does not boot to its system boot environment (BCH or EFI) and instead all cells remain at a boot-is-blocked (BIB) state.

Causes: The nPartition has been reset to the shutdown for reconfig state, or no valid core cell is available to the nPartition.

Actions: If the nPartition was reset to the shutdown for reconfig state, use the `BO` command from the service processor Command menu to boot the nPartition past boot-is-blocked (to allow it to boot to its system boot environment).

If no valid core cell was available to the nPartition when it booted, check the power for all core cell choices (a cell might be powered off) and power it on if needed.

Also review the chassis logs for the nPartition to search for any core cell problems and failures.

Accessing nPartition Console and System Boot Interfaces

You can access an nPartition console and its BCH or EFI system boot environment through the service processor (GSP or MP).

On HP 9000 servers, the system boot environment is the Boot Console Handler (BCH) interface.

On HP Integrity servers, the system boot environment is the Extensible Firmware Interface (EFI).

Each nPartition has its own system boot environment that provides you a method for interacting with the nPartition before an operating system has booted on it. The system boot environment is accessible through the nPartition console during the time after the cells assigned to the nPartition have booted and completed nPartition rendezvous and before the nPartition begins loading an operating system.

NOTE

Always login to the service processor from a tty (not console) login session. You can check your current login terminal using the `who -m` command.

Do not login to a service processor from an nPartition console connection. Any use of the `^b` (**Control-b**) console exit sequence would exit the original console login—not the subsequent console-based login to the service processor—thus potentially stranding the console-based login (for example, if it too were accessing a console).

Accessing nPartition Console and System Boot Interfaces [Service Processor (MP or GSP)]

Use the service processor Console Menu (CO) to access the BCH or EFI system boot environment for an nPartition through its console.

- Step 1.** Login to the service processor (MP or GSP) for the server complex where the nPartition resides.

You can connect to the service processor using a direct physical connection, or using `telnet` for a remote connection.

In most situations, you can telnet to the service processor.

Step 2. Select the Console Menu (CO) from the service processor Main Menu.

The Console Menu is the method for accessing nPartition consoles.

```
GSP MAIN MENU:

Utility Subsystem FW Revision Level: SR_XXXX_D

      CO: Consoles
      VFP: Virtual Front Panel
      CM: Command Menu
      CL: Console Logs
      SL: Show chassis Logs
      HE: Help
      X: Exit Connection
```

```
GSP> CO
```

If you are accessing the service processor using a single-partition-user account, selecting the CO (console) option takes you directly to the nPartition console.

If using an operator or administrator account, you can access the console for any of the nPartitions within the server complex.

Step 3. At the Console Menu, enter the nPartition number for the nPartition whose console (and BCH or EFI system boot environment) you wish to access.

Skip this step if you are accessing the service processor using a single-partition-user account.

If using an operator or administrator account, select the nPartition whose console you wish to access.

```
GSP> CO
```

```
Partitions available:
```

```
#   Name
---  ----
0)  jules00
1)  jules01
Q)  Quit
```

```
Please select partition number: 1
```

Chapter 5 Booting and Resetting nPartitions

Accessing nPartition Console and System Boot Interfaces

```
Connecting to Console: jules01

(Use ^B to return to main menu.)

[A few lines of context from the console log:]
```

```
-----

Service menu                               Displays service commands

Display                                     Redisplay the current menu
Help [<menu>|<command>]                   Display help for menu or command
REBOOT                                       Restart Partition
RECONFIGRESET                               Reset to allow Reconfig Complex Profile
-----

Main Menu: Enter command or menu >
```

The console displays the last 10 lines of console output when you connect to it. This provides you a view of the most recent console activity.

Step 4. Gain interactive access to the nPartition console.

Press **Enter** to access the prompt currently available from the nPartition console, if any. You will have either interactive or non-interactive access, as described in the sections *Interactive Console Access* and *Non-Interactive Console Access* in this step.

To exit the nPartition console and return to the service processor Main Menu, type **^b (Control-b)** at any time.

Interactive Console Access

In most situations a prompt for the BCH or EFI system boot environment, or the operating system login or command prompt, is available from the nPartition console.

- When an nPartition is at the BCH or EFI system boot environment you can access the BCH Menu, the EFI Boot Manager menu, or the EFI Shell from the nPartition console.
- When an nPartition has booted to ISL you can use the **EXIT** command to exit ISL and return to the BCH interface for the nPartition.

- When an nPartition has booted HP-UX, in order to access the BCH or EFI system boot environment you must reboot HP-UX and if necessary interrupt the automatic boot process. (To reboot the nPartition, use the `shutdown -r` command, or use `shutdown -R` if you also are changing the cell configuration of the nPartition.)
- When an nPartition has booted Windows, in order to access the EFI system boot environment you must reboot Windows and if necessary interrupt the automatic boot process. (To reboot the nPartition, use the `shutdown /r Windows` command.)

Non-Interactive Console Access

In the following situations, you cannot interact with the nPartition console. In these cases you can wait until the console is interactive or can force interactive access.

- When the nPartition is resetting or is booting an operating system you cannot interact with software running on the nPartition.

Once the nPartition has completed resetting, or has completed booting the operating system, you can interact with the BCH or EFI system boot environment or with an operating system running on the nPartition.

To determine the boot state of an nPartition use the Virtual Front Panel (the VFP menu, available from the service processor Main menu).

- When another user already is attached to the console you can access the nPartition console in spy (read-only) mode or can force write access by typing `^ecf` (**Control-e c f**).

Spy mode allows you to view console information but does not enable you to enter commands. If you type when accessing an nPartition console in spy mode, the console prints the following message.

```
[Read-only - use ^Ecf to attach to console.]
```

When in spy mode, you can force access to the nPartition console by typing `^ecf` (**Control-e c f**). Doing this provides you interactive console access and forces (“bumps”) the user who was using the console into spy mode.

```
[Bumped user - Admin.]
```

Monitoring nPartition Boot Activity

On HP nPartition servers you can monitor the nPartition boot process—from power-on or reset to operating system start-up—using the Virtual Front Panel (VFP) view of the nPartition.

Each nPartition has its own VFP that displays details about the cells assigned to the nPartition and the current boot state and activity.

Monitoring nPartition Boot Activity [Service Processor (MP or GSP)]

Use the **VFP** option from the service processor Main Menu to access an nPartition Virtual Front Panel for monitoring the nPartition boot status.

Step 1. Login to the service processor (MP or GSP).

Step 2. From the Main Menu, enter **VFP** to select the Virtual Front Panel option.

```
GSP MAIN MENU:
```

```
Utility Subsystem FW Revision Level: SR_XXXX_D
```

```
CO: Consoles
VFP: Virtual Front Panel
CM: Command Menu
CL: Console Logs
SL: Show chassis Logs
HE: Help
X: Exit Connection
```

```
GSP> VFP
```

If you are accessing the service processor using a single-partition-user account, selecting the VFP option takes you directly to the nPartition Virtual Front Panel.

If accessing the GSP using an operator or administrator account, you can select the VFP for any single nPartition, or can select a system VFP that displays the nPartition state and activity for all nPartitions within the server complex.

Step 3. Select the nPartition you wish to monitor.

Skip this step if you are accessing the service processor using a single-partition-user account.

Partition VFP's available:

```

#   Name
---  ----
0)  jules00
1)  jules01
S)  System (all chassis codes)
Q)  Quit

```

GSP:VFP> 1

Step 4. View the VFP details for information about the nPartition and its current boot state.

To exit the VFP and return to the service processor main menu, type **^b** (**Control-b**).

The VFP provides details including the nPartition state, nPartition activity, and the state and activity for each cell assigned to the nPartition. The VFP display updates as the cell or nPartition state and activities change.

E indicates error since last boot

```

Partition 1 state          Activity
-----
Cell(s) Booting:         57 Logs

```

```

# Cell state              Activity
- -----
4 Booting                 Cell firmware test          28 Logs
6 Booting                 Cell firmware test          28 Logs

```

GSP:VFP (^B to Quit) >

Step 5. At the service processor (MP or GSP) Main Menu, enter X to exit the service processor interface.

Finding Bootable Devices

You can find bootable devices by using any one of the following procedures:

- *Finding Bootable Devices [BCH Menu]* on page 208
- *Finding Bootable Devices [EFI Shell]* on page 209

Finding Bootable Devices [BCH Menu]

From the BCH Main Menu, issue the `SEARCH` command to find bootable devices. The BCH Menu is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition whose bootable devices you want to list.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the Main Menu: Enter command or menu> prompt). If at a BCH menu other than the Main Menu, then enter `MA` to return to the BCH Main Menu.

- Step 2.** From the BCH Main Menu, issue the `SEARCH` command to find and list bootable devices in the nPartition.

The `SEARCH` command reports all potential boot devices it locates.

```

----- Main Menu -----

```

Command	Description
<code>BOot [PRI HAA ALT]<path></code>	Boot from specified path
<code>PAth [PRI HAA ALT] [<path>]</code>	Display or modify a path
<code>SEArch [ALL]<path></code>	Search for boot devices
<code>ScRoll [ON OFF]</code>	Display or change scrolling capability
<code>COnfiguration menu</code>	Displays or sets boot values
<code>INformation menu</code>	Displays hardware information
<code>SERvice menu</code>	Displays service commands
<code>DiSplay</code>	Redisplay the current menu
<code>HElp [<menu> <command>]</code>	Display help for menu or command
<code>REBOOT</code>	Restart Partition
<code>RECONFIGRESET</code>	Reset to allow Reconfig Complex Profile

Main Menu: Enter command or menu > **SEARCH**

Searching for potential boot device(s)

This may take several minutes.

To discontinue search, press any key (termination may not be immediate).

Path#	Device Path (dec)	Device Type
-----	-----	-----
P0	0/0/1/0/0.15	Random access media
P1	0/0/1/0/0.12	Random access media
P2	0/0/1/0/0.11	Random access media
P3	0/0/1/0/0.9	Random access media
P4	0/0/1/0/0.8	Random access media
P5	0/0/1/0/0.6	Random access media

Main Menu: Enter command or menu >

The **SEARCH** command lists up to the first 20 potential boot devices that it locates, and lists each with a path number (P0 through P19).

To boot a device that was reported by the **SEARCH** command, specify the path number or the full device path. For example, **BOOT P0** would boot the path listed as path number P0.

Step 3. Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **x** at the Main Menu.

Finding Bootable Devices [EFI Shell]

From the EFI Shell environment, issue the **map** command to list bootable devices. The EFI Shell is available only on HP Integrity systems.

Step 1. Access the EFI Shell environment for the nPartition whose bootable devices you want to list.

Login to the service processor (MP or GSP) and enter **CO** to access the Console list. Select the nPartition console.

Chapter 5 Booting and Resetting nPartitions

Finding Bootable Devices

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

- Step 2.** At the EFI Shell, issue the `map` command to list all disk devices with a potentially bootable EFI System Partition.

For details see the `help map` command. Also see the `help search` command for details on using the `search` command to load drivers for bootable devices.

- Step 3.** Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `x` at the Main Menu.

Booting HP-UX

This section covers the following methods of booting HP-UX:

- *HP-UX Booting* — The standard ways to boot HP-UX. Typically this results in booting HP-UX in multi-user mode.
- *Single-User Mode HP-UX Booting* — How to boot HP-UX in single-user mode.
- *LVM-Maintenance Mode HP-UX Booting* — How to boot HP-UX in LVM-maintenance mode.

CAUTION

On nPartition-capable HP Integrity servers, to boot the HP-UX operating system an nPartition must have its ACPI configuration value set to default.

At the EFI Shell interface, enter the `acpiconfig` command with no arguments to list the current ACPI configuration. If the `acpiconfig` value is set to `windows`, then HP-UX cannot boot; in this situation you must reconfigure `acpiconfig` or else booting will be interrupted with a panic when launching the HP-UX kernel.

To set the ACPI configuration for HP-UX: at the EFI Shell interface enter the `acpiconfig default` command, and then enter the `reset` command for the nPartition to reboot with the proper (default) configuration for HP-UX.

HP-UX Booting

You can boot HP-UX by using any one of the following procedures:

- *HP-UX Booting [BCH Menu]* on page 212
- *HP-UX Booting [EFI Boot Manager]* on page 214
- *HP-UX Booting [EFI Shell]* on page 215

HP-UX Booting [BCH Menu]

From the BCH Menu, use the `BOOT` command to boot the HP-UX operating system. The BCH Menu is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition on which you want to boot HP-UX.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the `Main Menu: Enter command or menu>` prompt). If at a BCH menu other than the Main Menu, then enter `MA` to return to the BCH Main Menu.

- Step 2.** Choose which device you wish to boot.

From the BCH Main menu, use the `PATH` command to list any boot path variable settings. The primary (PRI) boot path normally is set to the main boot device for the nPartition. You also can use the `SEARCH` command to find and list potentially bootable devices for the nPartition.

```
Main Menu: Enter command or menu > PATH
```

```
    Primary Boot Path:  0/0/2/0/0.13
                       0/0/2/0/0.d    (hex)

    HA Alternate Boot Path: 0/0/2/0/0.14
                           0/0/2/0/0.e    (hex)

    Alternate Boot Path:  0/0/2/0/0.0
                           0/0/2/0/0.0    (hex)
```

```
Main Menu: Enter command or menu >
```

- Step 3.** Boot the device using the `BOOT` command from the BCH interface.

You can issue the `BOOT` command in any of the following ways:

- **BOOT**

Issuing the **BOOT** command with no arguments boots the device at the primary (PRI) boot path.

- **BOOT *bootvariable***

This command boots the device indicated by the specified boot path, where *bootvariable* is the PRI, HAA, or ALT boot path.

For example, **BOOT PRI** boots the primary boot path.

- **BOOT LAN INSTALL or BOOT LAN.*ip-address* INSTALL**

The **BOOT . . . INSTALL** commands boot HP-UX from the default HP-UX install server or from the server specified by *ip-address*.

- **BOOT *path***

This command boots the device at the specified *path*. You can specify the *path* in HP-UX hardware path notation (for example, 0/0/2/0/0.13) or in “path label” format (for example, P0 or P1) .

If you specify the *path* in “path label” format then *path* refers to a device path reported by the last **SEARCH** command.

After you issue the **BOOT** command, the BCH interface prompts you to specify whether you want to stop at the ISL prompt.

To boot the /stand/vmunix HP-UX kernel from the device without stopping at the ISL prompt, enter **n** to automatically proceed past ISL and execute the contents of the AUTO file on the selected device. (By default the AUTO file is configured to load /stand/vmunix.)

```
Main Menu: Enter command or menu > BOOT PRI
```

```
Primary Boot Path: 0/0/1/0/0.15
```

```
Do you wish to stop at the ISL prompt prior to booting? (y/n)
>> n
```

```
ISL booting hpux
```

```
Boot
```

```
: disk(0/0/1/0/0.15.0.0.0.0.0;0)/stand/vmunix
```

Chapter 5 Booting and Resetting nPartitions

HP-UX Booting

To boot an HP-UX kernel other than `/stand/vmunix`, or to boot HP-UX in single-user or LVM-maintenance mode, stop at the ISL prompt and specify the appropriate arguments to the `hpux` loader.

- Step 4.** Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `x` at the Main Menu.

HP-UX Booting [EFI Boot Manager]

From the EFI Boot Manager menu, select an item from the boot options list to boot HP-UX using the selected boot option. The EFI Boot Manager is available only on HP Integrity systems.

- Step 1.** Access the EFI Boot Manager menu for the nPartition on which you want to boot HP-UX.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

- Step 2.** At the EFI Boot Manager menu, select an item from the boot options list.

Each item in the boot options list references a specific boot device and provides a specific set of boot options or arguments to be used when booting the device.

- Step 3.** Press **Return** or **Enter** to initiate booting using the selected boot option.

- Step 4.** Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `x` at the Main Menu.

HP-UX Booting [EFI Shell]

From the EFI Shell environment, to boot HP-UX on a device first access the EFI System Partition (for example `fs0:`) for the root device and then enter `HPUX` to invoke the loader. The EFI Shell is available only on HP Integrity systems.

- Step 1.** Access the EFI Shell environment for the nPartition on which you want to boot HP-UX.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

- Step 2.** At the EFI Shell environment, issue the `acpiconfig` command to list the current ACPI configuration for the local nPartition.

On nPartition-capable HP Integrity servers, to boot the HP-UX operating system an nPartition must have its ACPI configuration value set to `default`. If the `acpiconfig` value is set to `windows`, then HP-UX cannot boot; in this situation you must reconfigure `acpiconfig` or else booting will be interrupted with a panic when launching the HP-UX kernel.

To set the ACPI configuration for HP-UX: at the EFI Shell interface enter the `acpiconfig default` command, and then enter the `reset` command for the nPartition to reboot with the proper (`default`) configuration for HP-UX.

- Step 3.** At the EFI Shell environment, issue the `map` command to list all currently mapped bootable devices.

The bootable filesystems of interest typically are listed as `fs0:`, `fs1:`, and so on.

- Step 4.** Access the EFI System Partition (`fsX:` where *X* is the filesystem number) for the device from which you want to boot HP-UX.

Chapter 5 Booting and Resetting nPartitions

HP-UX Booting

For example, enter `fs2:` to access the EFI System Partition for the bootable filesystem number 2. Note that the EFI Shell prompt changes to reflect the filesystem currently accessed.

Also note that the filesystem number may change each time it is mapped (for example, when the nPartition boots, or when the `map -r` command is issued).

- Step 5.** When accessing the EFI System Partition for the desired boot device, issue the `HPUX` command to invoke the `HPUX.EFI` loader on the selected device.

The full path for the loader is `\EFI\HPUX\HPUX.EFI` and when invoked it references the `\EFI\HPUX\AUTO` file and proceeds to boot HP-UX using the default boot behavior specified in the `AUTO` file.

You are given ten seconds to interrupt the automatic booting of the default boot behavior. Typing a key during this ten-second period stops the HP-UX boot process and enables you to interact with the `HPUX.EFI` loader. To exit the loader (the `HPUX>` prompt) type `exit` to return to the EFI Shell.

To boot the HP-UX operating system, do not type anything during the ten-second period given for stopping at the `HPUX.EFI` loader.

```
Shell> map
Device mapping table
  fs0 : Acpi(000222F0,269)/Pci(0|0)/Scsi(Pun8,Lun0)/HD(Part1,Sig72550000)
  blk0 : Acpi(000222F0,269)/Pci(0|0)/Scsi(Pun8,Lun0)
  blk1 : Acpi(000222F0,269)/Pci(0|0)/Scsi(Pun8,Lun0)/HD(Part1,Sig72550000)
  blk2 : Acpi(000222F0,269)/Pci(0|0)/Scsi(Pun8,Lun0)/HD(Part2,Sig72550000)
  blk3 : Acpi(000222F0,2A8)/Pci(0|0)/Scsi(Pun8,Lun0)
  blk4 : Acpi(000222F0,2A8)/Pci(0|1)/Scsi(Pun2,Lun0)
```

```
Shell> fs0:
```

```
fs0:\> hpux
```

```
(c) Copyright 1990-2002, Hewlett Packard Company.
All rights reserved
```

```
HP-UX Boot Loader for IA64 Revision 1.723
```

```
Press Any Key to interrupt Autoboot
\efi\hpux\AUTO ==> boot vmunix
Seconds left till autoboot - 9
```


Step 6. Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **x** at the Main Menu.

Single-User Mode HP-UX Booting

You can boot HP-UX in single-user mode by using any one of the following procedures:

- *Single-User Mode HP-UX Booting [BCH Menu]* on page 218
- *Single-User Mode HP-UX Booting [EFI Shell]* on page 220

Single-User Mode HP-UX Booting [BCH Menu]

From the BCH Menu, you can boot HP-UX in single-user mode by issuing the **BOOT** command, stopping at the ISL interface, and issuing hpux loader options. The BCH Menu is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition on which you want to boot HP-UX in single-user mode.

Login to the service processor (MP or GSP) and enter **CO** to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the Main Menu: Enter command or menu> prompt). If at a BCH menu other than the Main Menu, then enter **MA** to return to the BCH Main Menu.

- Step 2.** Boot the desired device using the **BOOT** command at the BCH interface, and specify that the nPartition stop at the ISL prompt prior to booting (reply **y** to the “stop at the ISL prompt” question).

```
Main Menu: Enter command or menu > BOOT 0/0/2/0/0.13

    BCH Directed Boot Path: 0/0/2/0/0.13

    Do you wish to stop at the ISL prompt prior to booting? (y/n)
    >> y

    Initializing boot Device.

    ....

    ISL Revision A.00.42  JUN 19, 1999

    ISL>
```

- Step 3.** From the ISL prompt, issue the appropriate Secondary System Loader (`hpux`) command to boot the HP-UX kernel in the desired mode.

Use the `hpux` loader to specify the boot mode options and to specify which kernel (such as: `/stand/vmunix`) to boot on the nPartition.

- To boot HP-UX in single-user mode:

```
ISL> hpux -is boot /stand/vmunix
```

- To boot HP-UX at the default run level:

```
ISL> hpux boot /stand/vmunix
```

To exit the ISL prompt and return to the BCH interface, issue the `EXIT` command instead of specifying one of the above `hpux` loader commands.

Refer to the *hpux* (1M) manpage for a detailed list of `hpux` loader options.

Example 5-1

Example Single-User HP-UX Boot

```
ISL Revision A.00.42 JUN 19, 1999
```

```
ISL> hpux -is /stand/vmunix
```

```
Boot
```

```
: disk(0/0/2/0/0.13.0.0.0.0.0;0)/stand/vmunix
8241152 + 1736704 + 1402336 start 0x21a0e8
```

```
....
```

```
INIT: Overriding default level with level 's'
```

```
INIT: SINGLE USER MODE
```

```
INIT: Running /sbin/sh
```

```
#
```

- Step 4.** Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `x` at the Main Menu.

Chapter 5 Booting and Resetting nPartitions

Single-User Mode HP-UX Booting

Single-User Mode HP-UX Booting [EFI Shell]

From the EFI Shell environment, boot in single-user mode by stopping the boot process at the HPUNIX.EFI interface (the HP-UX Boot Loader prompt, HPUNIX>) entering the `boot -is vmunix` command. The EFI Shell is available only on HP Integrity systems.

- Step 1.** Access the EFI Shell environment for the nPartition on which you want to boot HP-UX in single-user mode.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

- Step 2.** Access the EFI System Partition (`fsX:` where *X* is the filesystem number) for the device from which you want to boot HP-UX.

- Step 3.** When accessing the EFI System Partition for the desired boot device, issue the `HPUNIX` command to invoke the `\EFI\HPUNIX\HPUNIX.EFI` loader on the selected device.

- Step 4.** Boot to the HP-UX Boot Loader prompt (`HPUNIX>`) by typing any key within the ten seconds given for interrupting the HP-UX boot process. You will use the `HPUNIX.EFI` loader to boot HP-UX in single-user mode in the next step.

After you type a key, the `HPUNIX.EFI` interface (the HP-UX Boot Loader prompt, `HPUNIX>`) is provided. For help using the `HPUNIX.EFI` loader, type the `help` command. To return to the EFI Shell, type `exit`.

```
fs0:\> hpux
```

```
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All rights reserved
```

```
HP-UX Boot Loader for IA64 Revision 1.723
```

```
Press Any Key to interrupt Autoboot  
\efi\hpux\AUTO ==> boot vmunix  
Seconds left till autoboot - 9
```

[User Types A Key to Stop the HP-UX Boot Process and Access the HPUX.EFI Loader]

Type 'help' for help

HPUX>

Step 5. At the HPUX.EFI interface (the HP-UX Boot Loader prompt, HPUX>) enter the `boot -is vmunix` command to boot HP-UX (the `/stand/vmunix` kernel) in single-user (`-is`) mode.

```
HPUX> boot -is vmunix
> System Memory = 4063 MB
loading section 0
..... (complete)
loading section 1
..... (complete)
loading symbol table
loading System Directory(boot.sys) to MFS
....
loading MFSFILES Directory(bootfs) to MFS
.....
Launching /stand/vmunix
SIZE: Text:25953K + Data:3715K + BSS:3637K = Total:33306K

Console is on a Serial Device
Booting kernel...
```

Step 6. Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **X** at the Main Menu.

LVM-Maintenance Mode HP-UX Booting

You can boot HP-UX in LVM-maintenance mode by using any one of the following procedures:

- *LVM-Maintenance Mode HP-UX Booting [BCH Menu]* on page 222
- *LVM-Maintenance Mode HP-UX Booting [EFI Shell]* on page 223

LVM-Maintenance Mode HP-UX Booting [BCH Menu]

From the BCH Menu, you can boot HP-UX in LVM-maintenance mode by issuing the **BOOT** command, stopping at the ISL interface, and issuing `hpux` loader options. The BCH Menu is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition on which you want to boot HP-UX in LVM-maintenance mode.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the `Main Menu: Enter command or menu>` prompt). If at a BCH menu other than the Main Menu, then enter `MA` to return to the BCH Main Menu.

- Step 2.** Boot the desired device using the **BOOT** command at the BCH interface, and specify that the nPartition stop at the ISL prompt prior to booting (reply `y` to the “stop at the ISL prompt” question).

- Step 3.** From the ISL prompt, issue the appropriate Secondary System Loader (`hpux`) command to boot the HP-UX kernel in the desired mode.

To boot HP-UX in LVM-maintenance mode:

```
ISL> hpux -lm boot /stand/vmunix
```

- Step 4.** Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `x` at the Main Menu.

LVM-Maintenance Mode HP-UX Booting [EFI Shell]

From the EFI Shell environment, boot in LVM-maintenance mode by stopping the boot process at the `HPUX.EFI` interface (the HP-UX Boot Loader prompt, `HPUX>`) entering the `boot -lm vmunix` command. The EFI Shell is available only on HP Integrity systems.

- Step 1.** Access the EFI Shell environment for the nPartition on which you want to boot HP-UX in LVM-maintenance mode.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the `EFI Boot Manager` heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

- Step 2.** Access the EFI System Partition (`fsX:` where *X* is the filesystem number) for the device from which you want to boot HP-UX.
- Step 3.** When accessing the EFI System Partition for the desired boot device, issue the `HPUX` command to invoke the `\EFI\HPUX\HPUX.EFI` loader on the selected device.
- Step 4.** Type any key within the ten seconds given for interrupting the HP-UX boot process. This stops the boot process at the `HPUX.EFI` interface (the HP-UX Boot Loader prompt, `HPUX>`).
- Step 5.** At the `HPUX.EFI` interface, enter the `boot -lm vmunix` command to boot HP-UX (the `/stand/vmunix` kernel) in LVM-maintenance (`-lm`) mode.
- Step 6.** Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `X` at the Main Menu.

Booting Windows Server 2003

You can boot the Windows Server 2003 operating system on an HP Integrity Superdome server by using the EFI Boot Manager to select the appropriate Windows item from the boot options list.

NOTE

Booting Windows Server 2003 currently is supported only on HP Integrity Superdome servers.

CAUTION

On nPartition-capable HP Integrity servers, to boot the Windows operating system an nPartition must have its ACPI configuration value set to `windows`.

At the EFI Shell interface, enter the `acpiconfig` command with no arguments to list the current ACPI configuration. If the `acpiconfig` value is not set to `windows`, then Windows cannot boot; in this situation you must reconfigure `acpiconfig` or else booting will be interrupted with a panic when launching Windows.

To set the ACPI configuration for Windows: at the EFI Shell interface enter the `acpiconfig windows` command, and then enter the `reset` command for the nPartition to reboot with the proper (`windows`) configuration for Windows.

Windows Booting

From the EFI Boot Manager menu, select an item from the boot options list to boot Windows using the selected boot option. The EFI Boot Manager is available only on HP Integrity systems.

- Step 1.** Access the EFI Boot Manager menu for the nPartition on which you want to boot Windows.

Login to the service processor (MP) and enter CO to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

Step 2. At the EFI Boot Manager menu, select an item from the boot options list.

Each item in the boot options list references a specific boot device and provides a specific set of boot options or arguments to be used when booting the device.

Step 3. Press **Return** or **Enter** to initiate booting using the selected boot option.

Step 4. Once Windows begins loading, wait for the Special Administration Console (SAC) to become available.

The SAC interface provides a text-based administration tool that is available from the nPartition console. For details see *Windows Special Administration Console (SAC)* on page 150.

```
Loading.: Windows Server 2003, Datacenter
Starting: Windows Server 2003, Datacenter
```

```

                                Starting Windows...
*****
Computer is booting, SAC started and initialized.

Use the "ch -?" command for information about using channels.
Use the "?" command for general help.

SAC>
```

Step 5. Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type X at the Main Menu.

Booting over a Network

You can boot over a network by using any one of the following procedures:

- *Booting over a Network [BCH Menu]* on page 226
- *Booting over a Network [EFI Boot Manager]* on page 227
- *Booting over a Network [EFI Shell]* on page 228

Booting over a Network [BCH Menu]

From the BCH Menu, use the `BOOT LAN. . .` command to boot HP-UX over a network. The BCH Menu is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition that you want to boot over a network.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the `Main Menu: Enter command or menu>` prompt). If at a BCH menu other than the Main Menu, then enter `MA` to return to the BCH Main Menu.

- Step 2.** Issue the `BOOT LAN INSTALL` command or the `BOOT LAN.ip-address INSTALL` command to boot over a network and perform an HP-UX installation.

The `BOOT. . . INSTALL` commands boot HP-UX from the default HP-UX install server or from the server specified by `ip-address`.

- Step 3.** Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type `^B (Control-B)`; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `x` at the Main Menu.

Booting over a Network [EFI Boot Manager]

From the EFI Boot Manager, to boot from a network device select the **Boot option maintenance menu** —> **Boot from a File** menu option and then select the “Load File” option for the LAN card that has the desired MAC address. The EFI Boot Manager is available only on HP Integrity systems.

- Step 1.** Access the EFI Boot Manager menu for the nPartition that you want to boot over a network.

Login to the service processor (MP or GSP) and enter **CO** to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

- Step 2.** At the EFI Boot Manager menu, select the **Boot option maintenance menu** option.

- Step 3.** At the Boot Options Maintenance menu, select the **Boot from a File** menu option and then select the network card whose MAC address you want to use when booting.

Highlight the desired network card, then press **Return** or **Enter** to initiate booting using the selected card.

```
EFI Boot Maintenance Manager ver 1.10 [14.60]
```

```
Boot From a File.  Select a Volume
```

```
IA64_EFI [Acpi(000222F0,269)/Pci(0|0)/Scsi(Pun8,Lun0)/HD(Part1,S
Removable Media Boot [Acpi(000222F0,2A8)/Pci(0|1)/Scsi(Pun2,Lun0
Load File [Acpi(000222F0,200)/Pci(1|0)/Mac(001083FD5D9B)]
Load File [EFI Shell [Built-in]]
Exit
```

- Step 4.** Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **X** at the Main Menu.

Chapter 5 Booting and Resetting nPartitions

Booting over a Network

Booting over a Network [EFI Shell]

From the EFI Shell environment, use the `lanboot` command or `lanboot select` command to boot over a network. The EFI Shell is available only on HP Integrity systems.

- Step 1.** Access the EFI Shell environment for the nPartition that you want to boot over a network.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

- Step 2.** At the EFI Shell, issue the `lanboot` command or the `lanboot select` command to boot from the selected networking card.

For details see the `help lanboot` command.

```
Shell> lanboot select
  01 Acpi(000222F0,0)/Pci(1|0)/Mac(00306E0E5268)
  02 Acpi(000222F0,800)/Pci(1|0)/Mac(00108327549F)
Select Desired LAN: 1
Selected Acpi(000222F0,0)/Pci(1|0)/Mac(00306E0E5268)

Running LoadFile()

CLIENT MAC ADDR: 00 30 6e 0e 52 68
```

- Step 3.** Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `X` at the Main Menu.

Booting to the HP-UX Initial System Loader (ISL)

On HP 9000 servers, you can boot to the HP-UX Initial System Loader (ISL) by using the following procedure.

NOTE

The Initial System Loader (ISL) interface is available only from HP-UX boot devices on HP 9000 servers (PA-RISC systems).

See *Using HP-UX Loader Commands* on page 233 for details in issuing commands to the HP-UX Boot Loader (hpux) from the Initial System Loader (the ISL> prompt).

Initial System Loader (ISL) Booting of HP-UX

From the BCH Menu, to access the ISL prompt issue the **BOOT** command and and reply **y** (for “yes”) to the Do you wish to stop at the ISL prompt question. The BCH Menu is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition from which you will be running and accessing the ISL interface.

Login to the service processor (MP or GSP) and enter **CO** to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the Main Menu: Enter command or menu> prompt). If at a BCH menu other than the Main Menu, then enter **MA** to return to the BCH Main Menu.

- Step 2.** Boot the desired device using the **BOOT** command at the BCH interface, and specify that the nPartition stop at the ISL prompt prior to booting (reply **y** to the “stop at the ISL prompt” question).

```
Main Menu: Enter command or menu > BOOT 0/0/2/0/0.13
```

```
BCH Directed Boot Path: 0/0/2/0/0.13
```

```
Do you wish to stop at the ISL prompt prior to booting? (y/n)  
>> y
```

Chapter 5 Booting and Resetting nPartitions

Booting to the HP-UX Initial System Loader (ISL)

```
Initializing boot Device.
```

```
....
```

```
ISL Revision A.00.42 JUN 19, 1999
```

```
ISL>
```

Replying “n” (no, do not stop at ISL) skips the ISL prompt and proceeds to execute the AUTO file, which by default will boot HP-UX (/stand/vmunix) on the nPartition.

ISL: Initial System Loader

Replying “y” (yes, do stop at ISL) allows you to interact directly with the Initial System Loader (ISL) and the Secondary System Loader (hpux) for the boot device. Enter all ISL commands from the ISL> prompt.

hpux: Secondary System Loader

From the ISL prompt you also can enter commands that are executed by the Secondary System Loader (hpux). Preface your Secondary System Loader command with **hpux**. For example: `hpux ls /stand` to list the contents of the /stand directory on the booted device.

Refer to the *isl* (1M) and *hpux* (1M) manpages for details.

- Step 3.** Issue commands from the ISL prompt (ISL>), or enter the EXIT command to leave the ISL interface and return to the BCH Menu.
- Step 4.** Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **x** at the Main Menu.

Booting to the HP-UX Loader (HPUX.EFI)

On HP Integrity servers, you can boot to the HP-UX Loader (HPUX.EFI) by using the following procedure.

NOTE

The HP-UX Loader (HPUX.EFI) is available only on HP Integrity servers (Intel® Itanium®-based systems).

See *Using HP-UX Loader Commands* on page 233 for details in issuing commands from the HP-UX Boot Loader (HPUX.EFI, the HPUX> prompt).

HPUX.EFI Access:

Booting to the HP-UX Loader [EFI Boot Manager or EFI Shell]

The EFI system boot environment is available only on HP Integrity systems.

- Step 1.** Access the EFI Shell environment for the nPartition from which you will be running and accessing the HP-UX Loader (HPUX.EFI) interface.

Login to the service processor (MP or GSP) and enter CO to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

- Step 2.** Access the EFI System Partition (fsX: where X is the filesystem number) for the device from which you want to boot HP-UX.
- Step 3.** When accessing the EFI System Partition for the desired boot device, issue the HPUX command to invoke the \EFI\HPUX\HPUX.EFI loader on the selected device.

Chapter 5 Booting and Resetting nPartitions

Booting to the HP-UX Loader (HPUX.EFI)

- Step 4.** Boot to the HP-UX Boot Loader prompt (HPUX>) by typing any key within the ten seconds given for interrupting the HP-UX boot process. You will use the HPUX.EFI loader to boot HP-UX in single-user mode in the next step.

After you type a key, the HPUX.EFI interface (the HP-UX Boot Loader prompt, HPUX>) is provided.

```
fs0:\> hpux
```

```
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All rights reserved
```

```
HP-UX Boot Loader for IA64 Revision 1.723
```

```
Press Any Key to interrupt Autoboot  
\efi\hpux\AUTO ==> boot vmunix  
Seconds left till autoboot - 9
```

[User Types A Key to Stop the HP-UX Boot Process and Access the HPUX.EFI Loader]

```
Type 'help' for help
```

```
HPUX>
```

- Step 5.** Issue HP-UX Boot Loader commands at the HPUX> prompt, or enter the EXIT command to return to the EFI Shell interface.

Refer to the help command or the *hpux* (1M) manpage for details.

- Step 6.** Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **X** at the Main Menu.

Using HP-UX Loader Commands

This section gives details on issuing HP-UX Boot Loader commands using the following two methods:

- *HPUX.EFI Boot Loader Commands* on page 233 — On HP Integrity servers (Intel® Itanium®-based systems), you can issue HP-UX Boot Loader commands using HPUX.EFI (the HPUX> prompt).
- *HPUX Boot Loader Commands Issued from ISL* on page 234 — On HP 9000 servers (PA-RISC systems), you can issue HP-UX Boot Loader commands from the HP-UX Initial System Loader (the ISL> prompt).

HPUX.EFI Boot Loader Commands

On HP Integrity servers, you can issue HP-UX Boot Loader commands using HPUX.EFI (the HPUX> prompt), as described in the following procedure.

Issuing HP-UX Boot Loader Commands [HP Integrity servers]

Issue HP-UX Loader commands directly from the HPUX> prompt. The EFI system boot environment and HPUX.EFI boot loader are available only on HP Integrity systems.

- Step 1.** Access the nPartition console, EFI Shell, and desired boot device, then boot to the HP-UX Loader (HPUX.EFI) interface.

See *HPUX.EFI Access: Booting to the HP-UX Loader [EFI Boot Manager or EFI Shell]* on page 231 for details.

- Step 2.** Issue HP-UX Loader commands directly from the HPUX> prompt.

For example, to list files in /stand enter: `ls`

To exit the HP-UX Loader interface, enter the `EXIT` command to return to the EFI Shell environment.

Refer to the `help` command or the *hpux* (1M) manpage for command details.

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HPUX Boot Loader Commands Issued from ISL

- Step 3.** Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **x** at the Main Menu.

HPUX Boot Loader Commands Issued from ISL

On HP 9000 servers, you can issue HP-UX Boot Loader commands from the HP-UX Initial System Loader (the `ISL>` prompt), as described in the following procedure.

Issuing HP-UX Boot Loader Commands [HP 9000 servers]

Issue HP-UX Loader commands from the ISL prompt by prefacing them with “hpux”. The BCH Menu and ISL interface are available only on HP 9000 systems.

- Step 1.** Access the nPartition console, use the `BOOT` command to boot the desired device, then interrupt the boot process at the ISL interface.

See *Initial System Loader (ISL) Booting of HP-UX* on page 229 for details.

- Step 2.** Issue HP-UX Loader commands by prefacing them with “hpux” so that ISL invokes the `hpux` secondary system loader to execute the commands you specify.

From ISL issue HP-UX loader commands in the following form:

`hpux command`

where *command* is one of the the `hpux` secondary system loader commands.

For example: enter `hpux ls` to issue the `ls` command.

Refer to the *isl* (1M) and *hpux* (1M) manpages for details.

- Step 3.** Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **x** at the Main Menu.

Shutting Down HP-UX

When HP-UX is running on an nPartition, you can shut down HP-UX using either the `shutdown` command or the `reset` command.

NOTE

The `reboot` command does not invoke the shutdown scripts associated with subsystems. The `shutdown` command invokes the scripts and terminates all running processes in an orderly and cautious manner.

On nPartitions you have the following options when shutting down HP-UX:

- To shut down HP-UX and reboot an nPartition: `shutdown -r`
- To shut down HP-UX and halt an nPartition: `shutdown -h`
- To perform a reboot for reconfig of an nPartition: `shutdown -R`
- To hold an nPartition at a shutdown for reconfig state:
`shutdown -R -H`

For details refer to the *shutdown* (1M) manpage.

Shutting Down HP-UX [/sbin/shutdown command]

From the HP-UX command line, issue the `shutdown` command to shut down the HP-UX operating system.

Step 1. Login to HP-UX running on the nPartition that you want to shut down.

You can login to HP-UX on the nPartition either by directly connecting (with the `telnet` or `rlogin` commands) or by logging in to the service processor (GSP or MP) for the complex where it resides and using the Console menu to access the nPartition console.

Accessing the console through the service processor allows you to maintain console access to the nPartition after HP-UX has shut down.

Step 2. Issue the `shutdown` command with the appropriate command-line options.

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Shutting Down HP-UX

The command-line options you specify dictate the way in which HP-UX is shut down, whether the nPartition is rebooted, and whether any nPartition configuration changes (adding or removing cells) take place.

Use the following list to choose an HP-UX shut down option for your nPartition.

- Shut down HP-UX and halt the nPartition.

Issue the **shutdown -h** command to shut down and halt the nPartition.

This leaves the nPartition and all its cells in an active state (the nPartition cannot be reconfigured) after HP-UX shuts down and halts.

To reboot the nPartition you must reset the nPartition using the **RS** command at the GSP command menu.

- Shut down HP-UX and reboot the nPartition.

Issue the **shutdown -r** command to shut down and reboot the nPartition.

- Perform a reboot for reconfig of the nPartition.

Issue the HP-UX **shutdown -R** command or Windows **shutdown /r** command to perform a reboot for reconfig.

This shuts down HP-UX, reconfigures the nPartition if needed, and reboots the nPartition.

- Reboot the nPartition and put it in to the shutdown for reconfig state.

Use the HP-UX **shutdown -R -H** command or Windows **shutdown /s** command to hold the nPartition in the shutdown for reconfig state.

This leaves the nPartition and all its cells in an inactive state (the nPartition can be reconfigured remotely).

To reboot the nPartition you must do so manually by using the **BO** command at the service processor Command menu.

If HP-UX is halted on the nPartition, thus not allowing you to use the **shutdown** command, you can reboot or reset the nPartition by issuing commands from the service processor Command menu.

Shutting Down Windows Server 2003

When Windows Server 2003 is running on an nPartition, you can shut down Windows by using the `shutdown` command.

You have the following options when shutting down Windows:

- To shut down Windows and reboot:
`shutdown /r` or select the **Start** → **Shut Down** action and choose **Restart** from the pull-down menu.
- To shut down Windows and not reboot (make the nPartition inactive by putting it in a shutdown for reconfig state):
`shutdown /s` or select the **Start** → **Shut Down** action and choose **Shut down** from the pull-down menu.
- To abort a shutdown (stop a shutdown that has been initiated):
`shutdown /a`

NOTE

The Windows `shutdown /r` command (and **Start** → **Shut Down, Restart**) is used for both the standard reboot operation and for the reboot for reconfig operation.

The Windows `shutdown /s` command (and **Start** → **Shut Down, Shut down**) is used for both the standard shutdown operation and for the shutdown for reconfig operation. To reboot use the `BO` command from the service processor Command menu.

For more details use the `help shutdown` command.

Windows Shut Down [`shutdown` command]

From the Windows command line, issue the `shutdown` command to shut down the operating system.

- Step 1.** Login to Windows running on the nPartition that you want to shut down.

For example, access the nPartition console and use the Windows SAC interface to start a command prompt, from which you can issue Windows commands to shut down the nPartition.

Chapter 5 *Booting and Resetting nPartitions*

Shutting Down Windows Server 2003

Step 2. Check to see whether any users are logged in.

Use the `query user` or `query session` command.

Step 3. Issue the `shutdown /r` command (or select the **Start** → **Shut Down** action and choose **Restart** from the pull-down menu) to shut down the Windows Server 2003 operating system on the nPartition and reboot.

For example:

```
shutdown /r /t 60 /c "Shut down in one minute."
```

This command initiates a Windows system shutdown-and-reboot after a timeout period of 60 seconds. The `/c` option specifies a message that is broadcast to any other users of the system.

Rebooting and Resetting nPartitions

You can reboot and reset nPartitions by using any one of the following procedures:

- *Rebooting and Resetting nPartitions [Service Processor (MP or GSP)]* on page 239
- *Rebooting and Resetting nPartitions [BCH Menu]* on page 240
- *Rebooting and Resetting nPartitions [EFI Boot Manager]* on page 241
- *Rebooting and Resetting nPartitions [EFI Shell]* on page 242
- *Rebooting and Resetting nPartitions [HP-UX]* on page 242
- *Rebooting and Resetting nPartitions [Windows]* on page 243

When you perform a reboot or reset of an nPartition, all active cells in the nPartition reboot and the nPartition returns to the system boot environment (BCH or EFI). On PA-RISC systems, any inactive cells in the nPartition are not rebooted in this procedure.

NOTE

If possible shut down the operating system before resetting an nPartition.

Rebooting and Resetting nPartitions [Service Processor (MP or GSP)]

From the service processor issue the **RS** command to reset an nPartition. Under normal operation you first shut down the operating system.

- Step 1.** Login to the service processor (MP or GSP) and enter **CM** to access the Command Menu.
- Step 2.** At the Command menu, enter the **RS** command, specify which nPartition is to be reset, and confirm whether to reset it.

Chapter 5 *Booting and Resetting nPartitions*

Rebooting and Resetting nPartitions

The RS command resets all active cells in the nPartition and reboots them past partition rendezvous to the system boot environment (BCH or EFI) or HP-UX.

Be certain to correctly select which nPartition to be reset.

```
GSP:CM> RS
```

This command resets the selected partition.

```
WARNING: Execution of this command irrecoverably halts all  
system
```

```
processing and I/O activity and restarts the selected  
partition.
```

```
  #  Name  
---  ----  
  0)  jules00  
  1)  jules01
```

```
Select a partition number: 1
```

```
Do you want to reset partition number 1? (Y/[N]) y
```

```
-> The selected partition will be reset.
```

```
GSP:CM>
```

If you are accessing the service processor using a single-partition-user account, the RS command selects which nPartition is to be reset: the nPartition that your account allows you to access.

If using an operator or administrator service processor account, you can select which of the nPartitions in the server complex you want to reset.

- Step 3.** To exit the service processor Command Menu, enter MA to return to the service processor Main Menu.

At the Main Menu, enter X to exit the service processor interface.

Rebooting and Resetting nPartitions [BCH Menu]

From the BCH Menu, issue the REBOOT command to reset the local nPartition. The BCH Menu is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition that you want to reboot.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the `Main Menu: Enter command or menu>` prompt). If at a BCH menu other than the Main Menu, then enter `MA` to return to the BCH Main Menu.

- Step 2.** From the BCH main menu for the nPartition, enter the **REBOOT** command to reboot the nPartition.

The BCH **REBOOT** command resets all active cells in the nPartition and reboots them past partition rendezvous to BCH or HP-UX.

```
Main Menu: Enter command or menu > REBOOT
Rebooting the partition ...
```

- Step 3.** Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `X` at the Main Menu.

Rebooting and Resetting nPartitions [EFI Boot Manager]

From the EFI Boot Manager menu, select the **Boot option maintenance menu** → **Cold Reset** menu to reset the local nPartition.

The EFI Boot Manager is available only on HP Integrity systems.

- Step 1.** Access the EFI Boot Manager menu for the nPartition that you want to reboot.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

- Step 2.** From the EFI Boot Manager menu, select the **Boot option maintenance menu**. Then from the Boot Option Maintenance menu select the **Cold Reset** menu to reset the local nPartition.

The **Cold Reset** menu item resets all active cells in the nPartition and reboots them.

Chapter 5 *Booting and Resetting nPartitions*

Rebooting and Resetting nPartitions

- Step 3.** Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **x** at the Main Menu.

Rebooting and Resetting nPartitions [EFI Shell]

From the EFI Shell environment, issue the `reset` command to reset the local nPartition. The EFI Shell is available only on HP Integrity systems.

- Step 1.** Access the EFI Shell environment for the nPartition that you want to reboot.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

- Step 2.** From the EFI Shell environment, issue the `reset` command to reset the local nPartition.

The `reset` command resets all active cells in the nPartition and reboots them.

- Step 3.** Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **x** at the Main Menu.

Rebooting and Resetting nPartitions [HP-UX]

From the HP-UX command line, issue the `/sbin/shutdown` or `/usr/sbin/reboot` command to reset the local nPartition.

- Step 1.** Login to HP-UX running on the nPartition that you want to reboot.

Step 2. Issue the `shutdown -r` command to reset the nPartition.

The `shutdown -r` command shuts down HP-UX and reboots the nPartition. All active cells in the nPartition are reset.

Rebooting and Resetting nPartitions [Windows]

To reset the local nPartition from Windows issue the `shutdown /r` command (or select the **Start** → **Shut Down** action and choose **Restart** from the pull-down menu).

Step 1. Login to Windows running on the nPartition that you want to shut down.

For example, access the nPartition console and use the Windows SAC interface to start a command prompt, from which you can issue Windows commands to shut down the nPartition.

Step 2. Issue the `shutdown /r` command to shut down the Windows Server 2003 operating system on the nPartition and reboot. You also can perform this procedure by selecting the **Start** → **Shut Down** action and choosing **Restart** from the pull-down menu

For example:

```
shutdown /r /t 60 /c "Shut down and reboot."
```

This command initiates a Windows system shutdown-and-reboot after a timeout period of 60 seconds. The `/c` option specifies a message that is broadcast to any other users of the system.

For more details use the `help shutdown` command.

Performing a Reboot for Reconfig

You can perform a reboot for reconfig by using the following procedures:

- *Reboot for Reconfig from HP-UX* [*/sbin/shutdown -R command*] on page 244
- *Reboot for Reconfig from Windows* [*shutdown /r command*] on page 245

During a reboot for reconfig of an nPartition, the command that you issue (HP-UX `shutdown -R`, or Windows `shutdown /r`) performs the following tasks:

1. Shuts down the operating system and resets all cells that are assigned to the nPartition, including any inactive cells.
2. Reconfigures the nPartition if necessary (if there is a pending change to the Stable Complex Configuration Data, it occurs during the reboot for reconfig).
3. Boots all cells in the nPartition. Any cells with a “n” use-on-next-boot value remain inactive at BIB, and all other cells can rendezvous to form the nPartition.

Perform a reboot for reconfig of an nPartition whenever you add cells or remove active cells from the nPartition, and whenever you need to allow an inactive cell to join the nPartition (such as after changing a cell use-on-next-boot value from “n” to “y”).

Reboot for Reconfig from HP-UX [*/sbin/shutdown -R command*]

From the HP-UX command line use the `shutdown -R` command to perform a reboot for reconfig for an nPartition.

- Step 1.** Login to HP-UX running on the nPartition where you want to perform the reboot for reconfig.
- Step 2.** Issue the `shutdown -R` command to perform a reboot for reconfig of the nPartition.

The `shutdown -R` command shuts down HP-UX, reboots all cells assigned to the nPartition, performs any nPartition reconfigurations, and boots all cells that have “y” use-on-next-boot values.

Reboot for Reconfig from Windows [`shutdown /r` command]

From the Windows command line use the `shutdown /r` command (or select the **Start** → **Shut Down** action and choose **Restart** from the pull-down menu) to perform a reboot for reconfig for an nPartition.

- Step 1.** Login to Windows running on the nPartition that you want to shut down.

For example, access the nPartition console and use the Windows SAC interface to start a command prompt, from which you can issue Windows commands to shut down the nPartition.

- Step 2.** Issue the `shutdown /r` command to shut down the Windows Server 2003 operating system on the nPartition and reboot. You also can perform this task by selecting the **Start** → **Shut Down** action and choosing **Restart** from the pull-down menu.

For example:

```
shutdown /r /t 60 /c "Reboot for reconfig."
```

This command initiates a Windows system shutdown-and-reboot after a timeout period of 60 seconds. The `/c` option specifies a message that is broadcast to any other users of the system.

For more details use the `help shutdown` command.

Shutting Down to a Shutdown for Reconfig (Inactive) State

You can shut down to a shutdown for reconfig (inactive) state by using any one of the following procedures:

- *Shutting Down to Shutdown for Reconfig [Service Processor (MP or GSP)]* on page 246
- *Shutting Down to Shutdown for Reconfig [BCH Menu]* on page 248
- *Shutting Down to Shutdown for Reconfig [EFI Shell]* on page 248
- *Shutting Down to Shutdown for Reconfig [HP-UX]* on page 249
- *Shutting Down to Shutdown for Reconfig [Windows]* on page 250

When you use the above methods to hold an nPartition at the shutdown for reconfig state, the commands perform the following tasks:

1. Shut down HP-UX (if using the `shutdown -R -H` command) and reset all cells that are assigned to the nPartition, including any inactive cells.
2. Reconfigures the nPartition if necessary (if there is a pending change to the Stable Complex Configuration Data, it occurs during the reboot for reconfig).
3. Keeps all cells at a boot-is-blocked state; the nPartition and all cells assigned to it are inactive.

You can reset an nPartition to shutdown for reconfig whenever you need for the nPartition and its cells to be inactive.

Shutting Down to Shutdown for Reconfig [Service Processor (MP or GSP)]

From the service processor Command Menu, issue the `RR` command to shut an nPartition down to a shutdown for reconfig (inactive) state. Under normal operation you first shut down the operating system.

- Step 1.** Login to the service processor (MP or GSP) and enter **CM** to access the Command Menu.
- Step 2.** At the service processor Command menu, enter the **RR** command, specify which nPartition is to be reset, and confirm whether to reset it to the shutdown for reconfig state.

The service processor **RR** command resets all cells in the nPartition, performs any nPartition reconfigurations, and halts all cells at a boot-is-blocked state, thus making the nPartition and all its cells inactive.

Be certain to select the correct nPartition to be reset.

```
GSP:CM> RR
```

```
This command resets for reconfiguration the selected partition.
```

```
WARNING: Execution of this command irrecoverably halts all system  
processing and I/O activity and restarts the selected  
partition in a way that it can be reconfigured.
```

```
#   Name  
---  ----  
0)  jules00  
1)  jules01
```

```
Select a partition number: 1
```

```
Do you want to reset for reconfiguration partition number 1? (Y/[N]) y
```

```
-> The selected partition will be reset for reconfiguration.
```

```
GSP:CM>
```

If you are accessing the service processor using a single-partition-user account, the **RR** command selects which nPartition is to be reset: the nPartition that your account allows you to access.

If using an operator or administrator account, you can select which nPartition in the server complex you want to reset.

- Step 3.** To exit the service processor Command Menu, enter **MA** to return to the service processor Main Menu.

At the Main Menu, enter **x** to exit the service processor interface.

Chapter 5 *Booting and Resetting nPartitions*

Shutting Down to a Shutdown for Reconfig (Inactive) State

Shutting Down to Shutdown for Reconfig [BCH Menu]

From the BCH Menu issue the `RECONFIGRESET` command to shut an nPartition down to a shutdown for reconfig (inactive) state. The BCH Menu is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition that you want to shut down to a shutdown for reconfig (inactive) state.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the `Main Menu: Enter command or menu>` prompt). If at a BCH menu other than the Main Menu, then enter `MA` to return to the BCH Main Menu.

- Step 2.** From the BCH interface for the nPartition, enter the `RECONFIGRESET` command to reset the nPartition to the shutdown for reconfig state.

The `RECONFIGRESET` command resets all cells in the nPartition, performs any nPartition reconfigurations, and halts all cells at a boot-is-blocked state, thus making the nPartition and all its cells inactive.

```
Main Menu: Enter command or menu > RECONFIGRESET  
Reset the partition for reconfiguration of Complex Profile ...
```

- Step 3.** Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type `^B (Control-B)`; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `X` at the Main Menu.

Shutting Down to Shutdown for Reconfig [EFI Shell]

From the EFI Shell environment issue the `reconfigreset` command to shut an nPartition down to a shutdown for reconfig (inactive) state. The EFI Shell is available only on HP Integrity systems.

- Step 1.** Access the EFI Shell environment for the nPartition that you want to shut down to a shutdown for reconfig (inactive) state.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

- Step 2.** At the EFI Shell environment, issue the `reconfigreset` command to reset the local nPartition to a shutdown for reconfig state.

The `reconfigreset` command resets all cells in the nPartition, performs any nPartition reconfigurations, and halts all cells at a boot-is-blocked state, thus making the nPartition and all its cells inactive.

- Step 3.** Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **X** at the Main Menu.

Shutting Down to Shutdown for Reconfig [HP-UX]

From the HP-UX command line issue the `/sbin/shutdown -R -H` command to shut an nPartition down to a shutdown for reconfig (inactive) state.

- Step 1.** Login to HP-UX running on the nPartition that you want to shut down to a shutdown for reconfig (inactive) state.

- Step 2.** Issue the `shutdown -R -H` command to reset the nPartition to the shutdown for reconfig state.

The `shutdown -R -H` command shuts down HP-UX, reset all cells in the nPartition, perform any nPartition reconfigurations, and halt all cells at a boot-is-blocked state, thus making the nPartition and all its cells inactive.

Chapter 5 *Booting and Resetting nPartitions*

Shutting Down to a Shutdown for Reconfig (Inactive) State

Shutting Down to Shutdown for Reconfig [Windows]

From the Windows command line issue the `/sbin/shutdown /s` command (or select the **Start** → **Shut Down** action and choose **Shut down** from the pull-down menu) to shut an nPartition down to a shutdown for reconfig (inactive) state.

- Step 1.** Login to Windows running on the nPartition that you want to shut down.

For example, access the nPartition console and use the Windows SAC interface to start a command prompt, from which you can issue Windows commands to shut down the nPartition.

- Step 2.** Issue the `shutdown /s` command to shut down the Windows Server 2003 operating system on the nPartition and reset the nPartition to the shutdown for reconfig state. You also can perform this task by selecting the **Start** → **Shut Down** action and choosing **Shut down** from the pull-down menu.

For example:

```
shutdown /s /c "Shut down for reconfig (inactive)."
```

This command initiates a Windows system shutdown-and-stop after a timeout period of 60 seconds. The `/c` option specifies a message that is broadcast to any other users of the system.

The `shutdown /s` command and option shuts down Windows, reset all cells in the nPartition, perform any nPartition reconfigurations, and halt all cells at a boot-is-blocked state, thus making the nPartition and all its cells inactive.

For more details use the `help shutdown` command.

Booting an Inactive nPartition

You can boot an inactive nPartition by using any one of the following procedures:

- *Booting an Inactive nPartition [Service Processor (MP or GSP)]* on page 251
- *Booting an Inactive nPartition [HP-UX]* on page 252

When all cells in an nPartition are at boot-is-blocked, the nPartition is inactive. This is the case, for example, when an nPartition is held at the shutdown for reconfig state.

You can boot an nPartition past the shutdown for reconfig state to make it active by using the **BO** (boot) command at the service processor Command menu.

To determine whether an nPartition is in a boot-is-blocked (shutdown for reconfig) state, use the Virtual Front Panel for the nPartition to check the nPartition boot status. If all cells assigned to the nPartition are at boot-is-blocked, the nPartition is halted at the shutdown for reconfig state.

Booting an Inactive nPartition [Service Processor (MP or GSP)]

Use the service processor Command menu **BO** command to boot an nPartition past the shutdown for reconfig state to make the nPartition active.

If you use the **BO** command to attempt to boot an nPartition that already is active, the command has no effect.

- Step 1.** Login to the service processor (MP or GSP) and enter **CM** to access the Command Menu.
- Step 2.** From the Command menu, enter the **BO** command and specify which nPartition is to be booted (released from boot-is-blocked).

Chapter 5 Booting and Resetting nPartitions

Booting an Inactive nPartition

As a result of the `BO` command, the service processor for the complex releases the cells assigned to the selected nPartition from `boot-is-blocked`: the cells proceed to rendezvous to form an active nPartition, which no longer is in the shutdown for reconfig state.

```
GSP:CM> BO
```

This command boots the selected partition.

```

#   Name
---  ----
0)  jules00
1)  jules01

Select a partition number: 0

Do you want to boot partition number 0? (Y/[N]) y

-> The selected partition will be booted.
GSP:CM>
```

Any of the cells assigned to the nPartition that are not configured (those with a “n” use-on-next-boot value) remain inactive at `boot-is-blocked`.

When the nPartition becomes active it proceeds through the normal boot process.

Step 3. To exit the service processor Command Menu, enter `MA` to return to the service processor Main Menu.

At the Main Menu, enter `x` to exit the service processor interface.

Booting an Inactive nPartition [HP-UX]

From the HP-UX command line you can cause an inactive nPartition to be booted (made active) by using the `parmodify` command with the `-B` option when changing the configuration of an inactive nPartition.

Step 1. Login to HP-UX running on any nPartition in the server complex.

Step 2. When modifying an inactive nPartition, specify the `-B` option when using the `/usr/sbin/parmodify` command to reconfigure the inactive nPartition.

For example, when adding or removing cells from an inactive nPartition, specifying the `-B` option causes the nPartition to boot (become active) immediately following the nPartition modification.

For details refer to the *parmodify* (1M) manpage.

Performing a Transfer of Control (TOC) Reset

You can perform a transfer of control (TOC) reset by using the Service Processor (MP or GSP) `TC` command, as described in the following procedure.

If crash dump is configured for HP-UX on the nPartition, when you TOC the nPartition while it is running HP-UX the nPartition performs a crash dump and gives you an opportunity select the type of dump.

Performing a Transfer of Control (TOC) Reset [Service Processor (MP or GSP)]

Use the Command menu `TC` command to perform a transfer-of-control (TOC) reset of an nPartition.

- Step 1.** Login to the service processor (MP or GSP) and enter `CM` to access the Command Menu.
- Step 2.** At the Command menu, enter the `TC` command, specify which nPartition is to be reset, and confirm whether to TOC the nPartition.

The `TC` command performs a transfer-of-control reset on the specified nPartition.

If you are accessing the service processor using a single-partition-user account, the `TC` command selects which nPartition is to be reset: the nPartition that your account allows you to access.

If using an operator or administrator account, you can select which nPartitions in the server complex you want to TOC.

Be certain to select the correct nPartition to be reset.

```
GSP:CM> TC
```

```
This command TOCs the selected partition.
```

```
WARNING: Execution of this command irrecoverably halts all system  
processing and I/O activity and restarts the selected  
partition.
```

```
# Name
```

```

---  ----
0)  jules00
1)  jules01

Select a partition number: 0

Do you want to TOC partition number 0? (Y/[N]) y

-> The selected partition will be TOCed.
GSP:CM>

```

Step 3. After you initiate the TOC, you can observe its progress and select the type of crash dump through the nPartition console.

Once the nPartition completes the dump, or once you cancel it, the nPartition reboots.

```

***** Unexpected TOC. Processor HPA FFFFFFFF'FC07C000 *****
                GENERAL REGISTERS:
r00/03 00000000'00000000 00000000'0099CA2C 00000000'00000000 00000000'010BB790
r04/07 00000000'00000002 00000000'010BC140 00000000'0080F000 00000000'00AA2490
r08/11 00000000'00000001 00000000'0099A800 00000000'0099A800 00000000'0099C800

....

Processor 8 TOC:  pcsq.pcoq = 0'0.0'12675c
                  isr.iior  = 0'10340004.0'2f8bfd30

Boot device reset done.
*** The dump will be a SELECTIVE dump: 457 of 4080 megabytes.
*** To change this dump type, press any key within 10 seconds.
*** Proceeding with selective dump.

*** The dump may be aborted at any time by pressing ESC.
*** Dumping: 7% complete (32 of 457 MB) (device 64:0x2)

```

Configuring Boot Paths and Options

You can configure boot paths and boot options by using any one of the following procedures:

- *Configuring Boot Paths and Options [BCH Menu]* on page 256
- *Configuring Boot Paths and Options [EFI Boot Manager]* on page 257
- *Configuring Boot Paths and Options [EFI Shell]* on page 258
- *Configuring Boot Paths and Options [HP-UX]* on page 259

CAUTION

On HP Integrity servers, when configuring HP-UX boot options the nPartition `acpiconfig` setting must be set to `default` for the device paths to be properly established in the boot options list.

Also on HP Integrity servers, when configuring Windows boot options you must do so from EFI by using the `MSUtil\nvrboot.efi` utility to import boot options from the `EFI\Microsoft\WINNT50\Boot00...` file on the device from which Windows is to be loaded.

Configuring Boot Paths and Options [BCH Menu]

Use the `PATH` command from the BCH Main Menu to configure boot paths for an nPartition. The BCH Menu is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition whose boot paths and options you want to configure.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the `Main Menu: Enter command or menu>` prompt). If at a BCH menu other than the Main Menu, then enter `MA` to return to the BCH Main Menu.

- Step 2.** At the BCH Main menu, set the boot path values using the `PATH` command.

To list the current boot path settings, enter **PATH** with no arguments.

To set a boot path, enter **PATH VAR hwpath**, where *VAR* is the boot path variable (PRI, HAA, or ALT) and *hwpath* is a boot device hardware path.

For example, to set the PRI boot path to a new value (4/0/2/0/0.10, in this case) enter **PATH PRI 4/0/2/0/0.10**, as shown below.

```
Main Menu: Enter command or menu > PATH PRI 4/0/2/0/0.10.0
```

```
Primary Boot Path: 4/0/2/0/0.10
                   4/0/2/0/0.a      (hex)
```

```
Main Menu: Enter command or menu >
```

Step 3. Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **X** at the Main Menu.

Configuring Boot Paths and Options [EFI Boot Manager]

From the EFI Boot Manager environment, use the use **Boot option maintenance menu** operations to add or delete boot options, or to change the order of items in the boot options list. The EFI Boot Manager is available only on HP Integrity systems.

Step 1. Access the EFI Boot Manager menu for the nPartition whose boot paths (the EFI boot options list items) and options you want to configure.

Login to the service processor (MP or GSP) and enter **CO** to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

Step 2. Select the **Boot option maintenance menu** option from the main EFI Boot Manager menu.

Step 3. At the Boot Option Maintenance menu use the **Add a Boot Option**, **Delete Boot Option(s)**, and **Change Boot Order** menu items to add or delete boot options or change the order of items in the boot options list.

Chapter 5 Booting and Resetting nPartitions

Configuring Boot Paths and Options

EFI Boot Maintenance Manager ver 1.10 [14.60]

Main Menu. Select an Operation

```
Boot from a File
Add a Boot Option
Delete Boot Option(s)
Change Boot Order

Manage BootNext setting
Set Auto Boot TimeOut

Select Active Console Output Devices
Select Active Console Input Devices
Select Active Standard Error Devices

Cold Reset
Exit
```

Step 4. Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **X** at the Main Menu.

Configuring Boot Paths and Options [EFI Shell]

From the EFI Shell environment, use the `bcfg` command to add or delete boot options, or to change the order of items in the boot options list. The EFI Shell is available only on HP Integrity systems.

Step 1. Access the EFI Shell environment for the nPartition whose boot paths (the EFI boot options list items) and options you want to configure.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

- Step 2.** At the EFI Shell environment, use the `bcfg` command to manage the boot options list for the local nPartition.

The `bcfg` command include the following options for managing the boot options list:

- `bcfg boot dump` — Display all items in the boot options list for the local nPartition.
- `bcfg boot rm #` — Remove the item number specified by `#` from the boot options list.
- `bcfg boot mv #a #b` — Move the item number specified by `#a` to the position specified by `#b` in the boot options list.
- `bcfg boot add # file.efi "Description"` — Add a new boot option to the position in the boot options list specified by `#`. The new boot option references `file.efi` and is listed with the title specified by `Description`.

See the `help bcfg` command for details.

- Step 3.** Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **X** at the Main Menu.

Configuring Boot Paths and Options [HP-UX]

From the HP-UX command line you can configure boot options for an nPartition by using the `/usr/sbin/setboot` or `/usr/sbin/parmodify` command.

NOTE

On HP-UX B.11.23 systems, the boot options list for only the local nPartition may be displayed and modified.

- Step 1.** Login to HP-UX running on the nPartition whose boot paths and options you want to configure.

On HP-UX B.11.11 nPartition systems, you can configure boot paths for any nPartition in the complex, including remote nPartitions.

Chapter 5 Booting and Resetting nPartitions

Configuring Boot Paths and Options

On HP-UX B.11.23 nPartition systems—the nPartition-capable HP Integrity servers—you can configure boot paths (the EFI boot options list items) for only the local nPartition.

Step 2. Configure boot path settings using the `parmodify -p#...` command.

Use the following commands to set the boot path variables for a specified partition number (`-p#`):

- **PRI path**—`parmodify -p# -b PRI` where *PRI* is the hardware path.
- **HAA path**—`parmodify -p# -s HAA` where *HAA* is the hardware path.
- **ALT path**—`parmodify -p# -t ALT` where *ALT* is the hardware path.

If using the `setboot` command to set boot paths for the local nPartition, you can specify `setboot -p PRI` or the `setboot -a ALT` command. On HP-UX B.11.23 systems you also can set the HAA boot path using the `setboot -h HAA` command.

You can list the current boot path settings for an nPartition by issuing the `parstatus -V -p# | grep Path` command and specifying the partition number (`-p#`). The `setboot` command with no arguments lists the PRI and ALT settings for the local nPartition as well as the PRI path flags (boot actions) for the local nPartition.

For example, to set the PRI boot path to `0/0/4/0/0.8.0` and the HAA boot path to `0/0/4/0/0.9.0` for partition number `0`, issue the `parmodify -p0 -b 0/0/4/0/0.8.0 -s 0/0/4/0/0.9.0` command, as shown below.

```
# parmodify -p0 -b 0/0/4/0/0.8.0 -s 0/0/4/0/0.9.0
Command succeeded.
#
```

Boot Path Notes for HP Integrity servers

On HP Integrity servers, `parmodify` and `setboot` considers the first item in the boot options list to be the PRI boot path, the second item to be the HAA boot path, and the third boot option list item to be the ALT boot path.

Also, when you use `parmodify` or `setboot` to configure the first (PRI) or second (HAA) or third (ALT) item in the boot options list, the new device

path that you specify either replaces the original boot option, or it is inserted in the original item's place (with the original item being shifted toward the end of the boot options list):

- If the boot option currently is not set to an HP-UX device, the new boot device path is inserted as a new item in the boot options list.

In this case the original list item, if any, moves toward the end of the boot options list and the new boot device path becomes the first (PRI) or second (HAA) or third (ALT) item in the list, as specified by `parmodify` or `setboot`.

- If the boot option currently is set to an HP-UX device and the list item has the standard description (such as “HP-UX Primary Boot” for PRI, or “HP-UX Alternate Boot” for ALT) then the new boot device path replaces the original item in the boot options list.
- If the boot option currently is set to an HP-UX device and the list item's description is not standard for its place in the boot options list, then the new boot device setting is inserted as a new item in the boot options list.

In this case the original list item is moved toward the end of the boot options list.

Configuring Autoboot Options

You can configure autoboot options by using any one of the following procedures:

- *Configuring Autoboot Options [BCH Menu]* on page 262
- *Configuring Autoboot Options [EFI Boot Manager]* on page 263
- *Configuring Autoboot Options [EFI Shell]* on page 264
- *Configuring Autoboot Options [HP-UX]* on page 265

Configuring Autoboot Options [BCH Menu]

From the BCH Menu, use the `PATHFLAGS` command at the BCH Configuration menu to set the boot-time actions for an nPartition. The BCH Menu is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition whose autoboot options you want to configure.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the Main Menu: Enter command or menu> prompt). If at a BCH menu other than the Main Menu, then enter `MA` to return to the BCH Main Menu.

- Step 2.** Access the BCH Configuration menu by entering `CO` at the Main menu, and set the boot action for each boot path, as desired, by using the `PATHFLAGS` command.

At the BCH Configuration menu, you can list the path flags (boot actions) for all boot path variables by entering `PATHFLAGS` with no arguments.

To set the boot action for each of the boot paths, enter `PATHFLAGS VAR action`, where `VAR` is the boot path variable (PRI, HAA, or ALT) and `action` is the boot action (0 for “go to BCH”, 1 for “boot, if fail go to BCH”, 2 for “boot, if fail try next path”, or 3 for “skip this path, try next path”).

For example, to configure an nPartition to boot from the PRI device or (if PRI fails to boot) the HAA device, use the following two BCH

Configuration commands: **PATHFLAGS PRI 2** and **PATHFLAGS HAA 1**, as shown below.

Configuration Menu: Enter command > **PATHFLAGS PRI 2**

Primary Boot Path Action

Boot Actions: Boot from this path.

If unsuccessful, go to next path.

Configuration Menu: Enter command > **PATHFLAGS HAA 1**

HA Alternate Boot Path Action

Boot Actions: Boot from this path.

If unsuccessful, go to BCH.

Configuration Menu: Enter command >

For other help in setting path flags, enter **HELP PATHFLAGS** at the BCH Configuration menu prompt.

- Step 3.** Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **X** at the Main Menu.

Configuring Autoboot Options [EFI Boot Manager]

From the EFI Boot Manager environment use the **Boot option maintenance menu** —> **Set Auto Boot TimeOut** menu operation to configure an nPartitions autoboot setting. The EFI Boot Manager is available only on HP Integrity systems.

- Step 1.** Access the EFI Boot Manager menu for the nPartition whose autoboot options you want to configure.

Login to the service processor (MP or GSP) and enter **CO** to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

Chapter 5 *Booting and Resetting nPartitions*

Configuring Autoboot Options

- Step 2.** Select the **Boot option maintenance menu** option from the main EFI Boot Manager menu.
- Step 3.** Select the **Set Auto Boot TimeOut** menu operation from the Boot Option Maintenance menu.
- Step 4.** At the Set Auto Boot TimeOut menu, either disable autoboot by selecting the **Delete/Disable Timeout** menu item, or enable autoboot by setting the autoboot timeout through the **Set Timeout Value** menu item.

When autoboot is enabled on an HP Integrity server, the local nPartition boot options are attempted to be loaded automatically at boot time, starting with the first item in the boot options list.

See the **Help** menu for details.

```
EFI Boot Maintenance Manager ver 1.10 [14.60]
```

```
Set Auto Boot Timeout. Select an Option
```

```
Set Timeout Value
Delete/Disable Timeout
Help
Exit
```

- Step 5.** Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **X** at the Main Menu.

Configuring Autoboot Options [EFI Shell]

From the EFI Shell environment configure the autoboot setting for the local nPartition by using the `autoboot` command. The EFI Shell is available only on HP Integrity systems.

- Step 1.** Access the EFI Shell environment for the nPartition whose autoboot options you want to configure.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

- Step 2.** At the EFI Shell environment, use the `autoboot` command to enable or disable autoboot for the nPartition.

When autoboot is enabled for an nPartition in an HP Integrity server, items in the boot options list are attempted to be loaded automatically at boot time, starting with the first item in the boot options list.

Enter the `autoboot` command with no arguments to list the current autoboot configuration for the local nPartition.

You also can specify `off` to disable autoboot, or specify a timeout duration to enable autoboot with a specific number of seconds during which automatic booting from the boot options list can be canceled.

For example: `autoboot off` to disable autoboot, or `autoboot 60` to enable autoboot with a 60-second timeout period.

See the `help autoboot` command for details.

- Step 3.** Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `X` at the Main Menu.

Configuring Autoboot Options [HP-UX]

From the HP-UX command line use the `setboot -b on` or `setboot -b off` command, to turn on (enable) or turn off (disable) autoboot.

- Step 1.** Login to HP-UX running on the nPartition whose autoboot options you want to configure.
- Step 2.** On HP Integrity servers only, the `setboot -b on` command enables autoboot, and the `setboot -b off` command disables autoboot.

Chapter 5 Booting and Resetting nPartitions

Configuring Autoboot Options

When autoboot is enabled for an nPartition in an HP Integrity server, items in the boot options list are attempted to be loaded automatically at boot time, starting with the first item in the boot options list.

- Step 3.** On HP 9000 servers only, the `setboot` command configures the boot action for the PRI boot path.

Configure the PRI boot action for the local nPartition by using the `setboot -b Autoboot -s Autosearch` command.

The `setboot` command supports the following options for setting local nPartition boot actions:

- b Autoboot setting for the local nPartition:
 - b *on* to automatically boot the PRI path.
 - b *off* to not boot PRI.
- s Autosearch setting for the local nPartition:
 - s *on* to attempt to perform the HAA path boot action when PRI is not booted (either when *-b* is *off*, or when PRI fails to boot when *-b* is *on*).
 - s *off* to never attempt to perform the HAA action.

For example, to always stop the local nPartition at BCH when booting, issue the `setboot -b off -s off` command.

Configuring Automatic System Restart

You can perform this task by using the **AR** command at the Service Processor (MP or GSP) command menu, as described in the following procedure.

The automatic system restart feature on nPartition servers enables you to configure an nPartition to be automatically rebooted when HP-UX hangs on the nPartition.

By default, automatic system restart is disabled for nPartitions.

To use the **AR** command, you must login to the service processor for the complex using an account that has administrator authority.

CAUTION

When automatic system restart is enabled for an nPartition, all cells in the nPartition automatically will be reset—and the nPartition will reboot—if HP-UX running on the nPartition is hung for three (3) minutes.

Automatic System Restart Configuration [Service Processor (MP or GSP)]

Use the **AR** command at the service processor Command menu to enable or disable automatic system restart for an nPartition.

- Step 1.** Login to the service processor (MP or GSP) and enter **CM** to access the Command Menu.
- Step 2.** Issue the **AR** command at the service processor Command menu to enable or disable automatic system restart for an nPartition.

To use the **AR** command, you must be logged in using an account that has administrator authority.

```
GSP:CM> AR
```

This command modifies the automatic system restart configuration of the selected partition.

```
# Name
```

Chapter 5 *Booting and Resetting nPartitions*

Configuring Automatic System Restart

```
---  ----  
0)  feshd5a  
1)  feshd5b
```

Select a partition number: 0

Automatic system restart for partition 0 is currently enabled.
Do you want to disable automatic system restart? (Y/[N]) **y**

-> Automatic system restart is disabled.

GSP:CM>

Step 3. To exit the service processor Command Menu, enter MA to return to the service processor Main Menu.

At the Main Menu, enter X to exit the service processor interface.

Configuring Boot-Time System Tests

You can configure boot-time system tests (self tests) for an nPartition by using any one of the following procedures:

- *Configuring Boot-Time System Tests [BCH Menu]* on page 269
- *Configuring Boot-Time System Tests [EFI Shell]* on page 270
- *Configuring Boot-Time System Tests [HP-UX B.11.11]* on page 272
- *Configuring Boot-Time System Tests [HP-UX B.11.23]* on page 273

Configuring Boot-Time System Tests [BCH Menu]

From the BCH Configuration Menu use the **FASTBOOT** command to configure fast boot settings for an nPartition. The BCH interface is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition whose boot-time tests you want to configure.

Login to the service processor (MP or GSP) and enter **CO** to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the **Main Menu: Enter command or menu>** prompt). If at a BCH menu other than the Main Menu, then enter **MA** to return to the BCH Main Menu.

- Step 2.** At the BCH Configuration menu use the **FASTBOOT** command to list or configure the nPartition fast boot settings.

Enter **FASTBOOT** with no arguments to display the current fast boot settings. This lists which self tests are set to be performed or skipped.

NOTE

HP recommends that all self tests be performed for all nPartitions.

To enable all tests for an nPartition, use the **FASTBOOT RUN** command at the BCH Configuration menu.

Chapter 5 Booting and Resetting nPartitions

Configuring Boot-Time System Tests

To disable an individual test, enter `FASTBOOT test SKIP`, where *test* is the name of the self test (“PDH”, “EARLY”, or “LATE”).

To enable an individual test, enter `FASTBOOT test RUN`.

For details on setting self tests, enter `HELP FASTBOOT` at the Configuration menu.

Step 3. Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **X** at the Main Menu.

Configuring Boot-Time System Tests [EFI Shell]

From the EFI Shell environment use the `boottest` command to manage the self test configuration for the local nPartition. The EFI Shell is available only on HP Integrity systems.

Step 1. Access the EFI Shell environment for the nPartition whose boot-time tests you want to configure.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

Step 2. At the EFI Shell environment use the `boottest` command to list, enable, or disable boot-time system tests for the local nPartition.

To display the list of supported boot-time system tests, enter the `boottest -h` command at the EFI Shell prompt.

```
Shell> boottest -h
```

```
Usage: BOOTTEST [on|off] | [[test] [on|off]]
test : early_cpu, late_cpu, platform, chipset
```

```
io_hw, mem_init, mem_test
```

```
Shell>
```

You can enable or disable any of the boot-time tests by specifying the name of the test to `boottest`. The test names include: `early_cpu`, `late_cpu`, `platform`, `chipset`, `io_hw`, `mem_init`, and `mem_test`.

System Tests:

Configuring and Deconfiguring Tests from the EFI Shell

- **boottest** — Display the current boot-time system test configuration.
- **boottest *testname*** — Display the current setting for the specified test (*testname*).

For example: `boottest mem_test` displays the memory selftest settings.

- **boottest on** — Enable all boot-time system tests.

Enabling all tests is recommended.

- **boottest off** — Disable all boot-time system tests.

Disabling all selftests is usually not recommended; ordinarily all tests are enabled.

- **boottest *testname* on** — Enable the specified test (*testname*).

For example: `boottest io_hw on` enables I/O hardware selftests.

- **boottest *testname* off** — Disable the specified test (*testname*).

For example: `boottest io_hw off` disables I/O hardware selftests.

Step 3. Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **x** at the Main Menu.

Configuring Boot-Time System Tests [HP-UX B.11.11]

From the HP-UX B.11.11 command line use the `setboot` command to configure the self test configuration for an nPartition.

- Step 1.** Login to HP-UX running on the nPartition whose boot-time tests you want to configure.
- Step 2.** Enter the `setboot -v` command to list the current self test configuration for the local nPartition.

The self test details listed by `setboot -v` include:

TEST—The keyword names of self tests that you can enable or disable.

CURRENT—The test setting in stable storage for the nPartition: `on` means the test is normally executed on each boot, `off` means the test is normally omitted on each boot, `partial` means some subtests normally are executed on each boot. This may differ from the NEXT BOOT settings.

SUPPORTED—Whether the server supports the test completely (`yes`), partially (`partial`), or not at all (`no`).

DEFAULT—The default setting for the test, either `on`, `off`, or `partial`.

NEXT BOOT—The self test behavior for the next boot of the nPartition only. If these settings differ from **CURRENT**, then the **CURRENT** settings are reestablished after the next boot.

The following example shows `setboot -v` output for an nPartition in an HP 9000 server.

```
# setboot -v
Primary bootpath : 0/0/6/0/0.6.0
Alternate bootpath : 0/0/1/0/0.8.0
```

```
Autoboot is OFF (disabled)
Autosearch is OFF (disabled)
```

Note: The interpretation of Autoboot and Autosearch has changed for systems that support hardware partitions. Please refer to the manpage.

TEST	CURRENT	SUPPORTED	DEFAULT	NEXT BOOT
----	-----	-----	-----	-----
all	partial	partial	partial	partial
SELFTESTS	on	yes	on	on
early_cpu	on	yes	on	on
late_cpu	on	yes	on	on
FASTBOOT	partial	partial	partial	partial
full_memory	off	no	off	off
PDH	on	yes	on	on
CEC	off	no	off	off

```
#
```


- Step 3.** Use the `setboot...` command to enable or disable boot-time self tests for the local nPartition.

You can use the following commands to configure tests:

```
setboot -t test_name=[on|off|default]
```

```
setboot -T test_name=[on|off|default]
```

`test_name` is the name of the self test (“PDH”, “early_cpu”, “late_cpu”) or is “all” (for all tests).

The `setboot` command’s `-t` option changes the test setting in stable storage and affects all following boots. The `-T` option changes the test setting for the next boot only.

NOTE

HP recommends that all self tests be performed for all nPartitions.

To enable all tests for an nPartition, use the following command:

```
setboot -t all=on
```

For example, to enable the early CPU tests and PDH tests but disable the late CPU tests issue the following command:

```
setboot -t early_cpu=on -t PDH=on -t late_cpu=off
```

This changes the settings for these tests in stable storage for the nPartition and uses these test configurations for all following boots.

After modifying the self test configuration for an nPartition, you can list the new settings with the `setboot -v` command.

For more details refer to the *setboot* (1M) manpage.

Configuring Boot-Time System Tests [HP-UX B.11.23]

From the HP-UX B.11.23 command line use the `setboot` command to configure the self test configuration for an nPartition.

- Step 1.** Login to HP-UX running on the nPartition whose boot-time tests you want to configure.

Chapter 5 Booting and Resetting nPartitions

Configuring Boot-Time System Tests

- Step 2.** Enter the `setboot -v` command to list the current self test configuration for the local nPartition.

The self test details listed by `setboot -v` include:

TEST—The keyword names of self tests that you can enable or disable.

CURRENT—The setting for the test in stable storage for the nPartition: `on` means the test is normally executed on each boot, `off` means the test is normally omitted on each boot, `partial` means some subtests normally are executed on each boot.

DEFAULT—The default setting for the test, either `on`, `off`, or `partial`.

- Step 3.** Use the `setboot . . .` command to enable or disable boot-time self tests for the local nPartition.

You can use the following command to configure tests on HP Integrity systems:

```
setboot -T test_name=[on|off|default]
```

`test_name` is the name of the self test or is “all” (for all tests).

The `-T` option changes the test setting for the next boot only.

NOTE

The `setboot` command’s `-t` option is not supported for HP Integrity systems.

After modifying the self test configuration for an nPartition, you can list the new settings with the `setboot -v` command.

For more details refer to the *setboot* (1M) manpage.

6

Configuring nPartitions

This chapter presents the procedures for creating, configuring, and managing nPartitions on Hewlett-Packard servers that support them.

For an introduction to nPartition features, see the chapter *Getting Started with nPartitions* on page 29.

For nPartition configuration requirements and recommendations, see the chapter *Planning nPartitions* on page 119.

Tools for Configuring nPartitions

You can configure and manage nPartitions using various software tools. The tools for configuring nPartitions are:

- **Service Processor (MP or GSP) Menus**

Service processor menus provide a complex-wide service interface that can allow access to all hardware and nPartitions.

See *Command Reference: Service Processor (MP or GSP) Commands* on page 169.
- **EFI Boot Manager and EFI Shell**

On HP Integrity servers only, the EFI (Extensible Firmware Interface) Boot Manager and Shell are the methods for interacting with an nPartition before it has booted an operating system.

See *Command Reference: EFI Shell Commands* on page 172.
- **Boot Console Handler (BCH) Menu Commands**

On PA-RISC servers, the BCH interface is the method for interacting with an nPartition before it has booted an operating system.

See *Command Reference: BCH Menu Commands* on page 177.
- **nPartition Commands**

HP nPartition commands allow you to manage and monitor nPartitions and hardware within a server complex from HP-UX running on any nPartition in the server. The HP-UX B.11.23 versions of the nPartition commands also can remotely manage complexes based on the HP sx1000 chipset from any system running HP-UX B.11.23. Windows versions of the commands are supported for the Windows SMS (a Superdome Support Management Station running the Windows operating system); Windows SMS commands require specifying remote administration options.

See *Commands for Configuring nPartitions* on page 35.
- **Partition Manager (/opt/parmgr/bin/parmgr)**

Partition Manager provides a graphical interface for managing and monitoring nPartitions and hardware within a server complex.

See *Partition Manager* on page 37.

Task Summaries: Configuring nPartitions

Table 6-1 describes the main nPartition configuration tasks and provides brief summaries and references for detailed procedures.

You can perform the tasks in Table 6-1 using various tools, including including the service processor (MP or GSP), Boot Console Handler (BCH, available only on PA-RISC servers), Extensible Firmware Interface (EFI, available only on HP Integrity servers), nPartition commands, or Partition Manager (/opt/parmgr/bin/parmgr).

See *Tools for Configuring nPartitions* on page 276 for details.

Table 6-1 nPartition Configuration Task Summaries

Task	Summary
<i>Creating a Genesis Partition</i>	<p>NOTE: Creating a Genesis Partition is not recommended for any server complex currently under a capacity for demand (iCOD) or pay per use (PPU) contact, because of the resulting loss of configuration data.</p> <p>Creating a Genesis Partition overwrites all nPartition-related complex profile data for the server and establishes one single-cell nPartition.</p> <ul style="list-style-type: none"> • Service Processor (MP or GSP): CC command. <p>See <i>Creating a Genesis Partition</i> on page 287.</p>
<i>Creating a New nPartition</i>	<ul style="list-style-type: none"> • nPartition Commands: parcreate command. • Partition Manager: <ul style="list-style-type: none"> — B.11.11 — Partition → Create Partition action. — B.11.23 — nPartition → Create nPartition action. <p>See <i>Creating a New nPartition</i> on page 291.</p>

Table 6-1 nPartition Configuration Task Summaries (Continued)

Task	Summary
<i>Removing (Deleting) an nPartition</i>	<p>NOTE: When an inactive nPartition is specified to be removed, its removal occurs immediately. When an active nPartition is specified to be removed, the nPartition must be put into a shutdown for reconfig state (HP-UX shutdown -R -H, or Windows shutdown /s) for the nPartition removal (deletion) to occur.</p> <ul style="list-style-type: none"> • nPartition Commands: <code>parremove -p#</code> command removes the specified nPartition (-p#, where # is the nPartition number). When removing an active nPartition you must specify the -F command. • Partition Manager: <ul style="list-style-type: none"> — B.11.11 — Select an nPartition, then select the Partition → Delete Partition action. — B.11.23 — Select an nPartition, then select the nPartition → Delete nPartition action. <p>See <i>Removing (Deleting) an nPartition</i> on page 298.</p>
<i>Assigning (Adding) Cells to an nPartition</i>	<p>NOTE: When a cell is assigned to an inactive nPartition the assignment completes immediately. An active nPartition must perform a reboot for reconfig (HP-UX shutdown -R, or Windows shutdown /r) for new cell assignments to be completed.</p> <ul style="list-style-type: none"> • nPartition Commands: <code>parmodify -p# -a#...</code> command, which adds a cell (-a#, where # is the cell number) to the specified nPartition (-p#, where # is the nPartition number). • Partition Manager: <ul style="list-style-type: none"> — B.11.11 — Select an nPartition, and use the Partition → Modify Partition action, Add/Remove Cells tab. — B.11.23 — Select an nPartition, and use the nPartition → Modify nPartition action, Add/Remove Cells tab. <p>See <i>Assigning (Adding) Cells to an nPartition</i> on page 304.</p>

Table 6-1 nPartition Configuration Task Summaries (Continued)

Task	Summary
<p><i>Unassigning (Removing) Cells from an nPartition</i></p>	<p>NOTE: When an inactive cell is specified to be removed from an nPartition the removal occurs immediately. When an active cell is specified to be removed from an nPartition, the nPartition must perform a reboot for reconfig (HP-UX <code>shutdown -R</code>, or Windows <code>shutdown /r</code>) to complete the cell removal.</p> <ul style="list-style-type: none"> • nPartition Commands: <code>parmodify -p# -d#</code> command, which unassigns the cell (<code>-d#</code>, where <code>#</code> is the cell number) from the specified nPartition (<code>-p#</code>, where <code>#</code> is the nPartition number). <p>When removing an active cell, you must specify the <code>-B</code> option if you want the nPartition to be active after the reboot for reconfig.</p> <ul style="list-style-type: none"> • Partition Manager: <ul style="list-style-type: none"> — B.11.11 — Select an nPartition, and use the Partition → Modify Partition action, Add/Remove Cells tab. — B.11.23 — Select an nPartition, and use the nPartition → Modify nPartition action, Add/Remove Cells tab. <p>See <i>Unassigning (Removing) Cells from an nPartition</i> on page 309.</p>
<p><i>Renaming an nPartition</i></p>	<ul style="list-style-type: none"> • BCH Menu: Configuration menu, PD <code>NewName</code> command, where <code>NewName</code> specifies the new name for the nPartition. Quotation marks are not needed, even if the name includes spaces. • nPartition Commands: <code>parmodify -p# -P name</code> command, where <code>-P name</code> specifies the new name for the nPartition (<code>-p#</code>, where <code>#</code> is the nPartition number). <p>If the nPartition name includes spaces you must specify it in quotation mark (for example: “nPar Name 1”).</p> <ul style="list-style-type: none"> • Partition Manager: <ul style="list-style-type: none"> — B.11.11 — Partition → Modify Partition, General tab. — B.11.23 — nPartition → Modify nPartition, General tab. <p>See <i>Renaming an nPartition</i> on page 316.</p>

Chapter 6 Configuring nPartitions

Task Summaries: Configuring nPartitions

Table 6-1 **nPartition Configuration Task Summaries (Continued)**

Task	Summary
<i>Renaming a Server Complex</i>	<ul style="list-style-type: none">• nPartition Commands: <code>cplxmodify -N name</code> command. Only HP-UX B.11.23 systems and the Windows SMS support the <code>cplxmodify</code> command. If the complex name includes spaces you must specify it in quotation mark (for example: "Cplx Name 1").• Partition Manager: Complex → Set Complex Name action. <p>See <i>Renaming a Server Complex</i> on page 320.</p>

Table 6-1 nPartition Configuration Task Summaries (Continued)

Task	Summary
<p><i>Setting Cell Attributes</i></p>	<ul style="list-style-type: none"> • BCH Menu: Configuration menu, <code>CELLCONFIG</code> command to list or set cell use-on-next-boot values. • EFI Shell: <code>cellconfig</code> command to list or set cell use-on-next-boot values. • nPartition Commands: <code>parmodify -p# -m#...</code> command to modify cell attributes (<code>-m#...</code>, where <code>#</code> is the cell number) for the specified nPartition (<code>-p#</code>, where <code>#</code> is the nPartition number). <ul style="list-style-type: none"> — HP-UX B.11.11 — For the cell modify (<code>-m</code>) option, specify: <code>-m#:base:[y n]:ri</code> where: <code>#</code> is the cell number, <code>base</code> always is the cell type, the cell use-on-next-boot value is either <code>y</code> (the default, make active) or <code>n</code> (inactive), and <code>ri</code> always is the cell failure usage. At HP-UX B.11.11 all attributes are optional and if not specified the default values (<code>base:y:ri</code>) are assigned. — HP-UX B.11.23 and Windows SMS — For the <code>-m</code> option: <code>-m#:base:[y n]:ri[:c1m]</code> where all HP-UX B.11.11 attributes are supported, and <code>c1m</code> is the cell local memory value: the amount of memory on the cell that is not interleaved. The <code>c1m</code> attribute may be an absolute number of GBytes in 0.5 GByte increments, or a percentage (in 12.5% increments, or in 25% increments for cells with less than 4 GBytes). • Partition Manager: <ul style="list-style-type: none"> — HP-UX B.11.11 — Select the nPartition to which the cell belongs, select the Partition → Modify Partition action, Change Cell Attributes tab, select the cell(s), and click Modify Cell(s). — HP-UX B.11.23 — Select the nPartition to which the cell belongs, select the nPartition → Modify nPartition action, and then configure attributes using the Set Cell Options tab and the Configure Memory tab. <p>See <i>Setting Cell Attributes</i> on page 324.</p>

Table 6-1 nPartition Configuration Task Summaries (Continued)

Task	Summary
<i>Setting nPartition Core Cell Choices</i>	<ul style="list-style-type: none"> • BCH Menu: Configuration menu, COC command. COC <i>choice cell</i>, where <i>choice</i> is 0-3 (with 0 being the highest-priority choice) and where <i>cell</i> is the cell number. • EFI Shell: rootcell command. rootcell clear to clear the list of preferred core cells. rootcell <i>c0 c1...</i> to specify up to four choices, with <i>c0</i> being the highest-priority choice and <i>c0-c3</i> being the cell numbers. • nPartition Commands: parmodify -p# -r# -r#... command to specify up to four core cell choices (-r#, where # is the cell number) in priority order for the specified nPartition (-p#, where # is the nPartition number) • Partition Manager: <ul style="list-style-type: none"> — B.11.11 — Select the nPartition to configure, select the Partition → Modify Partition action, Core Cell Choices tab. — B.11.23 — Select the nPartition to configure, select the nPartition → Modify nPartition action, Set Cell Options tab, and use the Core Cell Choice column to set priorities. <p>See <i>Setting nPartition Core Cell Choices</i> on page 334.</p>
Setting nPartition Boot Paths	<p>NOTE: On HP Integrity servers, nPartition boot paths can be listed and configured only from the local nPartition.</p> <p>See <i>Booting and Resetting nPartitions</i> on page 183 for detailed nPartition boot configuration tasks and related information.</p> <ul style="list-style-type: none"> • BCH Menu: BCH Main menu, PATH command. • EFI Boot Manager: Boot options maintenance menu. • EFI Shell: bcfg command. • HP-UX: setboot command, or parmodify -p# -b... -s... -t... command.

Table 6-1 **nPartition Configuration Task Summaries (Continued)**

Task	Summary
Setting the Date and Time	<p>NOTE: The Service Processor (MP or GSP) date and time is stored and managed separately from nPartition times, and each nPartition has independently stored and managed date and time settings. Changes to the date and time for an nPartition do not affect other nPartitions or the MP.</p> <ul style="list-style-type: none">• Service Processor (MP or GSP): <code>DATE</code> command configures the MP date and time.• BCH Menu: Configuration menu, <code>TIME</code> command configures the local nPartitions date and time. The BCH time is set and presented in GMT (Greenwich mean time).• EFI Shell: <code>date</code> command and <code>time</code> command configure the local nPartition date and time. The EFI time is set and presented in GMT (Greenwich mean time).• HP-UX: <code>date</code> command configures the local nPartition date and time. Use <code>set_parms timezone</code> to set the HP-UX system time zone.

Table 6-1 **nPartition Configuration Task Summaries (Continued)**

Task	Summary
Restricting nPartition Configuration Privilege	<p>NOTE: nPartition Configuration Privilege is supported only on servers based on the HP sx1000 chipset.</p> <p>When the nPartition Configuration Privilege for a complex is restricted the following nPartition configuration actions are prohibited (except when using the MP IMPI LAN access):</p> <ul style="list-style-type: none"> — Changes to the complex name, cell assignments, and cell local memory parameters. — Powering on/off non-local cells. — Changes to Partition Configuration Data for non-local nPartitions. <p>When nPartition Configuration Privilege is unrestricted the above actions are permitted.</p> <ul style="list-style-type: none"> • Service Processor (MP or GSP): the PARPERM command restricts and unrestricts nPartition Configuration Privilege.

Table 6-1 nPartition Configuration Task Summaries (Continued)

Task	Summary
Configuring Remote Administration	<p>NOTE: This coverage of remote nPartition administration addresses features of HP Integrity Superdome, rx8620, and rx7620 servers.</p> <ul style="list-style-type: none"> • Service Processor (MP or GSP): Remote security features. <ul style="list-style-type: none"> — SO command — Set MP security, including IPMI password. — SA command — Set MP network access, including IMPI LAN. — PARPERM command — Set nPartition Configuration Privilege. • HP-UX B.11.23: Features affecting remote administration. <ul style="list-style-type: none"> — The <code>/opt/wbem/sbin/cimconfig</code> command lists and sets CIM Server configuration properties, which determine the types of users and connections permitted. To list the current properties: <code>cimconfig -l -c</code> command. — The <code>/opt/wbem/sbin/cimserver</code> command starts and stops the CIM Server. To stop the CIM Server: <code>cimserver -s</code> command; to start the CIM Server: <code>cimserver</code> command. — The <code>/opt/wbem/bin/cimprovider</code> command lists, enables, disables, or removes CIM provider modules, such as <code>HP_NParProviderModule</code>. To list CIM provider modules: <code>cimprovider -l -s</code> command. — The WBEM Services SSL certificates files (<code>client.pem</code>, <code>server.pem</code>) determine whether a client is trusted to connect to a server. <ul style="list-style-type: none"> — <code>/var/opt/wbem/client.pem</code> file — The Trust Store file on the local system, which contains a CERTIFICATE entry from every server to which it is trusted to connect. — <code>/var/opt/wbem/server.pem</code> file — Contains the PRIVATE KEY and CERTIFICATE entry for the local system. — The <code>/opt/parmgr/bin/parmgr</code> command starts or stops the HP-UX Tomcat-based Servlet Engine, in which Partition Manager runs. To start: <code>parmgr -s start</code>; to stop: <code>parmgr -s stop</code>; to check status: <code>parmgr -s status</code>; to restart: <code>parmgr -s restart</code>.

Table 6-1 **nPartition Configuration Task Summaries (Continued)**

Task	Summary
Canceling Pending Changes to Stable Complex Configuration Data	<p>NOTE: Currently only HP-UX B.11.23 supports the ability to cancel pending changes to the Stable Complex Configuration Data.</p> <ul style="list-style-type: none"> • HP-UX B.11.23: The <code>parunlock -P</code> command cancels any pending changes to the Stable Complex Configuration Data for the target complex.
Unlocking Complex Profile Data	<p>CAUTION: These commands are only used when recovering from a hung complex reconfiguration.</p> <ul style="list-style-type: none"> • Service Processor (MP or GSP): <code>RL</code> command. • HP-UX: <code>parunlock</code> command.
Restoring the Prior Complex Profile	<p>NOTE: All nPartitions in the complex must be inactive (put in a shutdown for reconfig state) before restoring a prior complex profile.</p> <ul style="list-style-type: none"> • Service Processor (MP or GSP): <code>CC</code> command, <code>L</code> option.

Creating a Genesis Partition

Creating a Genesis Partition overwrites all nPartition-related complex profile data for the server and establishes one single-cell nPartition.

NOTE

Creating a Genesis Partition is not recommended for any server complex currently under a capacity for demand (iCOD) or pay per use (PPU) contract, because of the resulting loss of configuration data.

Genesis Partition Creation [Service Processor]

Use the `CC` command and `G` option at the service processor Command menu to create a Genesis Partition on an HP nPartition server.

As a result of this procedure, all existing nPartition configurations are deleted and are replaced with a single, one-cell nPartition (the Genesis Partition).

You can revert to the previous nPartition configuration—if any existed before you created the Genesis Partition—by using the `CC` command and `L` option to restore the last configuration.

- Step 1.** Save all current nPartition configuration details, if any nPartitions are configured in the complex.

Saving the current nPartition information provides you the details you would need to re-create all nPartitions as they currently exist.

Use the `parstatus -V -p#` command (or an equivalent Partition Manager procedure) to save configuration details about each nPartition.

For each nPartition, enter the `parstatus -V -p#` command to display detailed information about the partition number (`-p#`) specified.

- Step 2.** Determine which cell will be configured as the Genesis Partition.

Chapter 6 Configuring nPartitions

Creating a Genesis Partition

The cell must be connected to an I/O chassis. The I/O chassis must have a core I/O card installed, and it should have a bootable disk (or a method for installing an operating system and a disk onto which it can be installed).

- Step 3.** Ensure that all nPartitions within the complex are in the shutdown for reconfig (inactive) state.

If an nPartition is running HP-UX, you can shut down the nPartition to the shutdown for reconfig state by using the `shutdown -R -H` command.

If an nPartition is running Windows you can put it in a shutdown for reconfig state by using the `shutdown /s` command.

Or, you can put an nPartition into the shutdown for reconfig state by using the `RECONFIGRESET` command at the BCH interface, the `reconfigreset` command at the EFI Shell, or using the `RR` command at the service processor Command menu.

- Step 4.** Login to the service processor (GSP or MP) for the server complex.

Login as a user with administrator privileges, which are required for creating a Genesis Partition.

- Step 5.** Enter `CM` to access the service processor Command menu.

- Step 6.** Issue the `CC` command, select `G` for Genesis Complex Profile, and specify the cabinet and cell slot for the cell that will comprise the Genesis Partition.

```
GSP:CM> CC
```

This command allows you to change the complex profile.

WARNING: You must shut down all Protection Domains before executing this command.

```
G - Genesis Complex Profile
L - Last Complex Profile
Select Profile: g
```

```
Enter Cabinet number: 0
```

```
Enter Slot number: 0
```



```
Do you want to modify the complex profile? (Y/[N]) y
```

```
-> The complex profile will be modified.
```

```
GSP:CM>
```

You can confirm that the Genesis Partition was successfully created if the CC command reports that the “complex profile will be modified”.

If the CC command reports “Sorry, command failed”, then the Genesis Partition was not created, possibly because one or more nPartitions are not at the shutdown for reconfig state. If this is the case, go back to Step 3 and ensure all nPartitions are inactive at the shutdown for reconfig state.

- Step 7.** Issue the **BO** command to boot the Genesis Partition past its shutdown for reconfig state and make it an active nPartition.

When a Genesis Partition is created, it remains at boot-is-blocked (in an inactive, shutdown for reconfig state), so you must boot it manually.

The Genesis Partition always is assigned partition number 0, because when it is created it is the first and only nPartition in the server complex.

Using the **BO** command to boot partition 0 will boot the Genesis Partition to its system boot environment: either Boot Console Handler (BCH, on HP 9000 servers) or Extensible Firmware Interface (EFI, on HP Integrity servers).

```
GSP:CM> BO
```

```
This command boots the selected partition.
```

```

#   Name
---  ----
0)  Partition 0
```

```
Select a partition number : 0
```

```
Do you want to boot partition number 0,
named Partition 0 ? (Y/[N]) y
```

```
-> The selected partition will be booted.
```

```
GSP:CM>
```

- Step 8.** Access the console for the Genesis Partition and configure the nPartition as appropriate and necessary.

Chapter 6 *Configuring nPartitions*

Creating a Genesis Partition

From the service processor Command menu, enter **MA** to return to the Main menu, then enter **CO** to access the Console menu. The Genesis Partition is partition 0 and by default is named "Partition 0".

You will need to set the boot paths or options, any core cell choices, the nPartition name, and other settings as appropriate. You also may need to add cells to the Genesis Partition if you want it to have more than one cell.

Creating a New nPartition

You can create a new nPartition by using any one of the following procedures:

- *Creating a New nPartition [Commands]* on page 291
- *Creating a New nPartition [Partition Manager]* on page 296

Creating a new nPartition involves specifying one or more cells in a server complex, setting various attributes for the cells, and optionally specifying other nPartition settings. The settings you specify then are used to create a new nPartition, which has assigned to it the cells you selected.

At least one cell in each nPartition must be connected to an I/O chassis that has core I/O attached. To boot an operating system from disk, the nPartition also must have a boot device and associated PCI card.

When creating an nPartition, follow the HP nPartition requirements and guidelines. HP recommends only specific sets of nPartition configurations.

Creating a New nPartition [Commands]

From the command line, use the `parcreate` command to create a new nPartition. You also can use the `parstatus` and `parmodify` commands to list nPartition and complex details and modify nPartition settings.

NOTE

You can remotely perform this task from either an HP-UX B.11.23 system or Windows SMS by using the remote administration options. Remote administration is supported by the Partition Manager **Tools** → **Switch Complexes** action and by the nPartition command `-u...` `-h...` options or `-g...` `-h...` options.

For details see *Tools for Configuring nPartitions* on page 276. Remote administration is supported only for servers based on the HP sx1000 chipset. The Windows SMS commands require remote options.

Chapter 6 Configuring nPartitions

Creating a New nPartition

- Step 1.** Login to HP-UX running on an existing nPartition in the server complex, or login to any HP-UX B.11.23 system or Windows SMS. Plan your nPartition configuration by selecting which cells will comprise the new nPartition.

Use the **parstatus -AC** command to list all unassigned (available) cells in the server complex.

```
# parstatus -AC
[Cell]

          CPU      Memory      Use
Hardware Actual   OK/      (GB)      Core   On
Location Usage   Max/      Failed/   Connected To   cell   Next Par
          =====
cab0,cell11 absent   -        -        -        -        -        -
cab0,cell13 absent   -        -        -        -        -        -
cab0,cell14 power on  4/0/4    2.0/0.0  cab 0,bay0,chassis3  yes    -        -
cab0,cell15 absent   -        -        -        -        -        -
cab0,cell16 power on  4/0/4    2.0/0.0  cab 0,bay1,chassis1  yes    -        -
cab0,cell17 absent   -        -        -        -        -        -

#
```

You can select any of the cells listed to create the new nPartition; only the cells that are not “absent” are present within the server complex.

All cells that you choose must meet the hardware requirements for nPartitions (for example, they all must have the same firmware revision). The cells also must form an HP-recommended nPartition configuration. At least one cell must have an I/O chassis with core I/O.

- Step 2.** After confirming that cells you have chosen would establish a valid nPartition configuration, use the **parcreate -c...** command to create a new nPartition with the cells. The **-c...** option differs slightly on HP-UX B.11.11 and other systems.

When using the **parcreate** command, only specify the **-B** option if you want the nPartition to be booted and become active. The **-B** option causes **parcreate** to immediately boot the newly-created nPartition past the default shutdown for reconfig state.

By not specifying **-B**, the new nPartition can be further modified because it will remain inactive at the shutdown for reconfig state (until you boot it using the **BO** command at the service processor Command Menu).

If creating a single-cell nPartition, use just one **-c** option.

To create a multiple-cell nPartition, specify the `-c` option multiple times (once for each cell) issuing a single command line.

For example, on an HP-UX B.11.11 system, the following command creates a one-cell nPartition:

```
# parcreate -c4:base:y:ri -c6:base:y:ri
Partition Created. The partition number is : 1
#
```

When `parcreate` successfully creates a new nPartition, it reports “Partition Created” and reports the nPartition number (“partition number is...”).

If `parcreate` detects any problems or issues when creating an nPartition, it lists them in its output. If it cannot create the nPartition, `parcreate` reports “Command failed” along with more details.

parcreate Command:

Cell Attributes Differences for HP-UX B.11.11 and Other Systems

The `parcreate` command’s `-c . . .` option specifies the cell number(s) and attributes to be used when creating the new nPartition. On HP Integrity servers, an additional cell local memory attribute is optional. Both the syntaxes are given in the following list.

- For HP-UX B.11.11, the `parcreate` command’s `-c` option is as follows:

```
-c cell:[cell_type]:[use_on_next_boot]:[failure_usage]
```

This option specifies the cell ID (*cell*) to be assigned to the nPartition.

— The only valid *cell_type* value is: `base` (base cell, the default).

— The valid *use_on_next_boot* values for cells are:

 y Participate in reboot (the default).

 n Do not participate in reboot.

— The only valid *failure_usage* value is: `ri` (reactivate with interleave, the default).

For details, refer to the *parcreate* (1M) manpage.

Chapter 6 Configuring nPartitions

Creating a New nPartition

- For HP-UX B.11.23 and the Windows SMS, the `parcreate` command's `-c` option is as follows:

```
-c cell:[cell_type]:[use_on_next_boot]:[failure_usage][:clm]
```

This option specifies the cell ID (*cell*) to be assigned to the nPartition.

- The *cell_type*, *use_on_next_boot*, and *failure_usage* attributes are the same as supported on HP-UX B.11.11.
- You can specify the *clm* value in either of two forms: percentage or absolute amount of memory.
 - Percentage cell-local memory (CLM).

The percent number can be any number in the range 0–100 with a suffix of %.

This number is rounded to 12.5%, 25%, 37.5%, 50%, 62.5%, 75%, 87.5% or 100%. If the cell contains less than 4 GBytes of memory, then the percentage is rounded to 25%, 50%, 75% or 100%. Percentages are rounded up or down to the nearest value, but are not rounded up to 100%.

- Absolute CLM specification. (The default.)

The absolute number is interpreted as an absolute number of gigabytes of memory and can optionally have a suffix of GB.

As needed, an absolute CLM specification is rounded up to the nearest 0.5 GBytes.

If the *clm* value is rounded, the command reports the final value used.

For details, refer to the `parcreate` (1M) manpage.

- Step 3.** Use the `parmodify` command to modify the configuration of the new nPartition configuration and set the nPartition name (`-P`), boot paths (`-b`, `-s`, and `-t`), and any core cell choices (`-r`). On HP Integrity servers, nPartition boot paths must be set from the local nPartition.

When using the `parmodify` command, you must use the `-p#` option to specify the partition number for the nPartition. Use the partition number that the `parcreate` command reported in the previous step.

```
# parmodify -pl -P "hostname05"
Command succeeded.
# parmodify -pl -r0/4 -r0/6
Command succeeded.
# parmodify -pl -b 4/0/1/0/0.9
Command succeeded.
#
```

When each modification takes place, `parmodify` reports “Command succeeded”. Otherwise it reports any problems.

You can specify each configuration option on a separate command line or can combine all options into a single, longer command line.

For details on the various options for modifying nPartition settings, refer to the *parmodify* (1M) manpage.

- Step 4.** Use the `parstatus -v -p#` command to list all details about your newly created and configured nPartition.

If any configuration details need to be modified, use the `parmodify` command before you boot the nPartition in the next step.

```
# parstatus -v -p1
[Partition]
Partition Number      : 1
Partition Name        : hostname05
Status                 : inactive
IP address             :
Primary Boot Path     : 4/0/1/0/0.9
Alternate Boot Path   : 0/0/0/0/0/0/0/0.0.0
HA Alternate Boot Path : 0/0/0/0/0/0/0/0.0.0
PDC Revision          : 104.1
IODCH Version         : 23664
CPU Speed              : 552 MHz
Core Cell              : ?
Core Cell Alternate   :
                    0. cab0,cell4
                    1. cab0,cell6
[Cell]
                CPU      Memory      Use
                OK/     (GB)
Hardware      Actual   Failed/ OK/      Core   Next Par
Location      Usage   Max/   Failed   Connected To   Capable Boot Num
=====
cab0,cell14  inactive  4/0/4   2.0/ 0.0  cab 0,bay0,chassis3  yes   yes  1
cab0,cell16  inactive  4/0/4   2.0/ 0.0  cab 0,bay1,chassis1  yes   yes  1
....
```

Chapter 6 Configuring nPartitions

Creating a New nPartition

- Step 5.** Boot your newly-created nPartition past boot-is-blocked to make it active and make its system boot environment available.

(The BCH environment is provided on HP 9000 servers; the EFI environment is provided on HP Integrity servers.)

Use the **BO** command at the service processor Command menu to boot the nPartition.

Once the nPartition is booted, you can access its system boot environment through its console. Use the service processor Console menu (enter **CO** at the service processor Main Menu).

Creating a New nPartition [Partition Manager]

You can create a new nPartition by using Partition Manager.

When using the HP-UX B.11.11 Partition Manager, use the **Partition** → **Create Partition** action.

When using the HP-UX B.11.23 Partition Manager, use the **nPartition** → **Create nPartition** action.

- Step 1.** Access Partition Manager.

If managing an nPartition-capable HP 9000 server, run Partition Manager (`/opt/parmgr/bin/parmgr`) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools** → **Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Configuring nPartitions* on page 276.

- Step 2.** Run the Partition Manager task wizard for creating a new nPartition.

From the HP-UX B.11.11 Partition Manager, select the **Partition** → **Create Partition** action.

From the HP-UX B.11.23 Partition Manager, select the **nPartition** → **Create nPartition** action.

Partition Manager guides you through the steps it requires for creating a new nPartition.

Step 3. Exit Partition Manager.

From the HP-UX B.11.23 Partition Manager, select **Log off parmgr** or exit the Web browser when finished.

From the HP-UX B.11.11 Partition Manager, select the **File** → **Exit** action.

Removing (Deleting) an nPartition

You can remove an nPartition by using any one of the following procedures:

- *Deleting an nPartition [Commands]* on page 298
- *Deleting an nPartition [Partition Manager]* on page 301

Deleting an nPartition causes all cells (and any I/O resources connected to the cells) that were assigned to the nPartition to be unassigned. As a result, all of these cells become available resources which can be assigned to any nPartition in the server complex.

When removing an active nPartition, you must complete the procedure by performing a shutdown for reconfig (the HP-UX `shutdown -R -H` command or Windows `shutdown /s` command) as soon as possible after initiating the nPartition removal.

Unless you use the remote administration features supported by the HP-UX B.11.23 and Windows SMS nPartition tools, you can delete only the local nPartition and inactive remote nPartitions.

Deleting an nPartition [Commands]

From the command line, use the `parremove` command to delete (remove) an nPartition.

NOTE

You can remotely perform this task from either an HP-UX B.11.23 system or Windows SMS by using the remote administration options. Remote administration is supported by the Partition Manager **Tools** → **Switch Complexes** action and by the nPartition command `-u...` `-h...` options or `-g...` `-h...` options.

For details see *Tools for Configuring nPartitions* on page 276. Remote administration is supported only for servers based on the HP sx1000 chipset. The Windows SMS commands require remote options.

-
- Step 1.** Use the `parstatus -P` command to list all nPartitions, and check the status (active or inactive) for the nPartition you plan to remove.

To check the local partition number, use the `parstatus -w` command. The local nPartition always is active when it is running HP-UX.

If you are planning to remove a remote nPartition, check to see whether the remote nPartition is inactive.

- If using HP-UX B.11.11 to remove a remote nPartition, the remote nPartition must be inactive.

To make a remote nPartition inactive, you can perform any of the following tasks:

- Login to HP-UX running on the remote nPartition and issue the `shutdown -R -H` command
 - Login to Windows running on the remote nPartition and issue the `shutdown /s` command.
 - Access the console for the remote nPartition and use the `RECONFIGRESET` command at the BCH Menu (on HP 9000 systems) or the `reconfigreset` command at the EFI Shell (on HP Integrity systems).
 - Use the `RR` command at the service processor Command Menu to reset the nPartition to a shutdown for reconfig state.
- To remove an active remote nPartition, you must use the HP-UX B.11.23 or Windows SMS nPartition tools remote administration options and the remote nPartition must be in a complex based on the HP sx1000 chipset.

Step 2. Save all current configuration details about the nPartition you plan to remove.

Use the `parstatus -v -p#` command to display all current configuration information related to the nPartition you plan to remove.

Save this information, as you can use it to manually recreate the nPartition if necessary at a later time.

Step 3. Remove the nPartition.

Use one of the following procedures to remove the nPartition: *Removing an Inactive Remote nPartition*, *Removing a Local nPartition*, or *Removing an Active Remote nPartition*.

Chapter 6 Configuring nPartitions

Removing (Deleting) an nPartition

- **Removing an Inactive Remote nPartition**

1. Issue the `parremove -p#` command to remove the inactive remote nPartition (`-p#` where `#` is the nPartition number). For example:

```
# parremove -p1
```

2. Issue the `parstatus -P` command to confirm that the nPartition was removed.

If the nPartition was removed, it no longer is listed in the `parstatus` command output.

- **Removing a Local nPartition**

To remove the local nPartition (the nPartition on which you currently are issuing commands), perform the following steps.

1. Shut down all applications and warn users. Follow the same procedures you would use if you were to reboot the nPartition.
2. Issue the `parremove -F -p#` command to force-remove (`-F`) the local nPartition (`-p#` where `#` is the number of the local nPartition).

Note that the local nPartition remains active following the `parremove -F -p#` command, until you perform a shutdown for reconfig to complete the removal.

As soon as possible proceed with the shutdown for reconfig because the server Complex Profile will remain locked—and no other changes can occur—until the pending nPartition removal is completed.

3. Perform a shutdown for reconfig (HP-UX `shutdown -R -H`, or Windows `shutdown /s`) of the local nPartition.

The shutdown for reconfig command shuts down the nPartition and all cells so that the configuration changes occur and the nPartition is deleted.

- **Removing an Active Remote nPartition**

To remove an active remote nPartition, you must use the HP-UX B.11.23 or Windows SMS nPartition tools and the remote nPartition must be in a complex based on the HP sx1000 chipset.

1. Shut down all applications and warn users. Follow the same procedures you would use if you were to reboot the nPartition.
2. Issue the `parremove -F -p#` command and specify either the `-u... -h...` options or `-g... -h...` options. For details see *Tools for Configuring nPartitions* on page 276.

You must specify both the force-remove option (`-F`) and the nPartition number (`-p#` where `#` is the number for the nPartition being removed).

3. Perform a shutdown for reconfig of the nPartition that is being removed.

Use any one of the following commands, as appropriate, to perform the shutdown for reconfig: `shutdown -R -H` from HP-UX running on the nPartition being removed, `shutdown /s` from Windows on the nPartition being removed, `reconfigreset` from the EFI Shell for the nPartition, or `RR` from the service processor Command Menu for the server complex where the nPartition resides.

After you complete the nPartition removal, the nPartition no longer exists. All cells (and associated I/O chassis) that used to be assigned to the deleted nPartition now are unassigned and can be assigned for other uses.

Deleting an nPartition [Partition Manager]

You can delete an nPartition by using Partition Manager.

When using the HP-UX B.11.11 version of Partition Manager, select an nPartition, then select the **Partition** → **Delete Partition** action.

When using the HP-UX B.11.23 version of Partition Manager, select an nPartition, then select the **nPartition** → **Delete nPartition** action.

Step 1. Access Partition Manager.

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Removing (Deleting) an nPartition

If managing an nPartition-capable HP 9000 server, run Partition Manager (/opt/parmgr/bin/parmgr) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools** → **Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Configuring nPartitions* on page 276.

Step 2. In Partition Manager, select the nPartition you want to remove.

If using the HP-UX B.11.11 Partition Manager, you must select either the local nPartition or a inactive remote nPartition (where all hardware assigned to the nPartition must be listed as having an Actual Usage of “inactive”).

If using the HP-UX B.11.23 Partition Manager, you also can remove an active remote nPartition either when managing the complex where nPartition resides, or when managing the remote nPartition. Both remote management features involve using the **Tools** → **Switch Complexes** action.

Step 3. Select the Partition Manager action to request that the nPartition be removed (deleted).

From the HP-UX B.11.11 Partition Manager, select the **Partition** → **Delete Partition** action.

From the HP-UX B.11.23 Partition Manager, select the **nPartition** → **Delete nPartition** action.

Step 4. Proceed with the nPartition deletion by clicking the **OK** button when Partition Manager requests confirmation for deleting the nPartition.

Step 5. If removing an active nPartition, perform a shutdown for reconfig of the nPartition. (You do not need to perform a shutdown for reconfig if removing an inactive nPartition.)

Login to the nPartition being removed, and issue the HP-UX `shutdown -R -H` command or Windows `shutdown /s` command to perform the shutdown for reconfig. Following the shutdown, the nPartition no longer exists—its configuration information is deleted.

Step 6. Exit Partition Manager.

From the HP-UX B.11.23 Partition Manager, select **Log off parmgr** or exit the Web browser when finished.

From the HP-UX B.11.11 Partition Manager, select the **File** → **Exit** action.

Assigning (Adding) Cells to an nPartition

You can add cells to an nPartition by using any one of the following procedures:

- *Adding Cells to an nPartition [Commands]* on page 305
- *Adding Cells to an nPartition [Partition Manager]* on page 307

Adding cells to an nPartition involves selecting available cells (those not currently assigned to an nPartition) and assigning them to an existing nPartition. Both the selected cells and any I/O chassis connected to the cells are assigned to the designated nPartition.

You can add cells to the local nPartition or to any remote nPartitions in the same server complex.

Reboot for Reconfig Guidelines for Adding Cells

In some situations, you must immediately perform a reboot for reconfig of a modified nPartition after adding cells to it.

- You must perform a reboot for reconfig (HP-UX `shutdown -R`, or Windows `shutdown /r`) of an active nPartition after you have added a cell to it. The reboot for reconfig enables the newly assigned cell to rendezvous and be actively used when the nPartition reboots.
- Perform a reboot for reconfig of an nPartition as soon as possible after you have added a cell to an active nPartition and have specified a “y” use-on-next-boot value for the new cell.
- You need not perform a reboot for reconfig of an nPartition in these situations:
 - When you have added a cell to an inactive nPartition.
 - When you have added a cell with a “n” use-on-next-boot value and you did not specify the `-B` option to the `parmodify` command.

Adding Cells to an nPartition [Commands]

From the command line, use the `parmodify` command to add cells to an nPartition. You also can use the `parstatus` command to list nPartition and complex details, such as available cells.

NOTE

You can remotely perform this task from either an HP-UX B.11.23 system or Windows SMS by using the remote administration options. Remote administration is supported by the Partition Manager **Tools** → **Switch Complexes** action and by the nPartition command `-u...` `-h...` options or `-g...` `-h...` options.

For details see *Tools for Configuring nPartitions* on page 276. Remote administration is supported only for servers based on the HP sx1000 chipset. The Windows SMS commands require remote options.

Step 1. Use the `parstatus -A -C` command to list all available cells (the unassigned cells) in the server complex.

Step 2. Choose one or more eligible cells from the list to add to the nPartition.

Adding the cell(s) to the nPartition must create a configuration that meets the hardware requirements and performance guidelines.

Step 3. Modify the nPartition by issuing the `parmodify -p# -a#...` command to add the cell (`-a#...` where # is the cell number) to the specified nPartition (`-p#` where # is the nPartition number). The `-a...` option differs slightly on HP-UX B.11.11 and other systems.

To add multiple cells, you can specify the `-a` option multiple times in the same command.

`parmodify` Command:

-a Attribute Differences for HP-UX B.11.11 and Other Systems

The `parmodify` command's `-a...` option specifies a cell number and attributes, which are used when adding the cell to an existing nPartition. On HP Integrity servers, an additional cell local memory attribute is optional. Both syntaxes are given in the following list.

- For HP-UX B.11.11, the `parmodify` command's `-a...` option is as follows:

Chapter 6 Configuring nPartitions

Assigning (Adding) Cells to an nPartition

```
-a cell:[type]:[use]:[fail]
```

where:

<i>cell</i>	The cell to be added to the nPartition. You can specify the cell in global (<i>cell</i>) format or in hardware location (<i>cabinet/slot</i>) format.
<i>type</i>	The cell type: base is the only supported cell type and it is the default.
<i>use</i>	The cell use-on-next-boot value: y or n. Use y (the default) if the cell is to be an active member of the nPartition, or use n if the cell is to remain an inactive member.
<i>fail</i>	The cell failure usage: ri (reactivate with interleave) is the only supported failure usage policy and it is the default.

For details, refer to the *parmodify* (1M) manpage.

- For HP-UX B.11.23 and Windows SMS, the *parmodify* command's *-a . . .* option is as follows:

```
-a cell:[type]:[use]:[fail][:clm]
```

where the *cell*, *type*, *use*, and *fail* attributes are the same as supported on HP-UX B.11.11.

For HP Integrity servers, the *clm* value specifies the amount of memory that will be configured as cell local memory for the cell.

You can specify the *clm* value in either of two forms: percentage or absolute amount of memory.

— Percentage cell-local memory (CLM).

The percent number can be any number in the range 0–100 with a suffix of %.

This number is rounded to 12.5%, 25%, 37.5%, 50%, 62.5%, 75%, 87.5% or 100%. If the cell contains less than 4 GBytes of memory, then the percentage is rounded to 25%, 50%, 75% or 100%. Percentages are rounded up or down to the nearest value, but are not rounded up to 100%.

- Absolute CLM specification. (The default.)

The absolute number is interpreted as an absolute number of gigabytes of memory and can optionally have a suffix of GB.

As needed, an absolute CLM specification is rounded up to the nearest 0.5 GBytes.

If the *clm* value is rounded, the command reports the final value used. For details, refer to the *parmodify* (1M) manpage.

parmodify Command:
-B Option for nPartition Booting

You can optionally specify the *parmodify* command's `-B` option to require that the modified nPartition be rebooted.

- When you specify `-B` to modify an inactive nPartition, the changes to the inactive nPartition are completed immediately and the nPartition then boots and becomes active.
- When you specify `-B` to modify an active nPartition, you must perform a reboot for reconfig for the changes to be completed. After the reboot for reconfig occurs the nPartition boots and becomes active (because the *parmodify* command's `-B` option was specified).

Refer to the *parmodify* (1M) manpage for details on all options.

- Step 4.** As needed, perform a reboot for reconfig (HP-UX `shutdown -R`, or Windows `shutdown /r`) on the modified nPartition.

See *Reboot for Reconfig Guidelines for Adding Cells* on page 304 for details on when to perform a reboot for reconfig.

Adding Cells to an nPartition [Partition Manager]

You can add cells to an nPartition by using Partition Manager.

When using the HP-UX B.11.11 version of Partition Manager, select an nPartition, and use the **Partition** → **Modify Partition** action, **Add/Remove Cells** tab.

When using the HP-UX B.11.23 version of Partition Manager, select an nPartition, and use the **nPartition** → **Modify nPartition** action, **Add/Remove Cells** tab.

Chapter 6 Configuring nPartitions

Assigning (Adding) Cells to an nPartition

Step 1. Access Partition Manager.

If managing an nPartition-capable HP 9000 server, run Partition Manager (`/opt/parmgr/bin/parmgr`) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools** → **Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Configuring nPartitions* on page 276.

Step 2. Select the nPartition to which you want to add cells.

Step 3. Specify for Partition Manager to add one or more cells to the nPartition.

From the HP-UX B.11.11 Partition Manager, use the **Partition** → **Modify Partition** action and select the **Add/Remove Cells** tab. To add cells to the nPartition, select the cells from the Available Cells list and click the **Add** button.

From the HP-UX B.11.23 Partition Manager, use the **nPartition** → **Modify nPartition** action and select the **Add/Remove Cells** tab. To add cells to the nPartition, click on the checkbox for the new cells so that a checkmark appears.

Step 4. After selecting the new cells to add to the nPartition, click the **OK** button.

Step 5. Review all information presented in the **Notes and Warnings**, the **Summary of Changes**, and the **HA Checks** tabs and either cancel or proceed with the changes.

Click the **Cancel** button to cancel the changes.

To proceed with adding the cells, click the **Finish** button (HP-UX B.11.23) or click the **OK** button (HP-UX B.11.11).

Step 6. As needed, perform a reboot for reconfig (HP-UX `shutdown -R`, or Windows `shutdown /r`) on the modified nPartition.

See *Reboot for Reconfig Guidelines for Adding Cells* on page 304 for details on when to perform a reboot for reconfig.

Unassigning (Removing) Cells from an nPartition

You can remove cells from an nPartition by using any one of the following procedures:

- *Removing Cells from an nPartition [Commands]* on page 310
- *Removing Cells from an nPartition [Partition Manager]* on page 313

Removing a cell from an nPartition involves unassigning the cell from the nPartition to which it is assigned and, if necessary, performing a reboot for reconfig of the nPartition.

When not using remote administration features, you can remove any cell from the local nPartition and can remove inactive cells from remote nPartitions in the same server complex. However, at least one core-capable cell must remain in each nPartition.

The remote administration features supported by the HP-UX B.11.23 and Windows SMS nPartition tools also enable you to remove any cell from any nPartition in an HP Integrity server complex. Still, at least one core-capable cell must remain in each nPartition.

Reboot for Reconfig Guidelines for Removing Cells

In some situations, you must immediately perform a reboot for reconfig (HP-UX shutdown `-R`, or Windows shutdown `/r`) of a modified nPartition after removing cells from it. Performing a required reboot for reconfig completes cell assignment changes and unlocks the Complex Profile for the server.

- You must immediately perform a reboot for reconfig of an nPartition when you have removed an active cell from the nPartition.
- You must immediately perform a reboot for reconfig of an nPartition when you have removed a cell from an active nPartition and specified the `-B` option to the `parmodify` command.
- You need not perform a reboot for reconfig of an nPartition when you have removed an inactive cell from an nPartition and did not specify the `-B` option to the `parmodify` command.

Chapter 6 Configuring nPartitions

Unassigning (Removing) Cells from an nPartition

In the cases where you must immediately perform a reboot for reconfig after removing a cell, not doing so will leave the Complex Profile locked and thus will prevent any other changes to the server complex configuration. In these cases, the reboot for reconfig is required to complete the cell assignment changes and permit other changes to occur.

Removing Cells from an nPartition [Commands]

From the command line, use the `parmodify` command to remove cells from an nPartition. You also can use the `parstatus` command to list current nPartition details such as cell assignments.

NOTE

You can remotely perform this task from either an HP-UX B.11.23 system or Windows SMS by using the remote administration options. Remote administration is supported by the Partition Manager **Tools** → **Switch Complexes** action and by the nPartition command `-u...` `-h...` options or `-g...` `-h...` options.

For details see *Tools for Configuring nPartitions* on page 276. Remote administration is supported only for servers based on the HP sx1000 chipset. The Windows SMS commands require remote options.

Step 1. Login to HP-UX or the Windows SMS.

If using remote administration features to modify an nPartition in a complex based on the HP sx1000 chipset, you can login to any HP-UX B.11.23 system or a Windows SMS.

If removing an inactive cell from an nPartition, you can login to HP-UX running on any nPartition in the same server complex.

If removing an active cell from an nPartition and not using remote administration features, you must login to the nPartition from which the cell is to be removed.

Step 2. Issue the `parstatus -c#...` command to list the current nPartition assignments and status for each cell (`-c#` where `#` is the cell number) that you plan to remove from its assigned nPartition.

Specify each cell you plan to remove with a separate `-c` option. For example, to list details on cells 0, 1, and 2, issue the `parstatus -c0 -c1 -c2` command.

The cells must all be assigned to the same nPartition in order to remove them using a single procedure. Otherwise, if the cells are assigned to different nPartitions, you must perform this procedure separately for each nPartition.

- Step 3.** Remove the cell from the nPartition to which it is assigned by using the `parmodify -p# -d#...` command.

Specify the nPartition (`-p#` where `#` is the nPartition number) and each cell (`-d#` where `#` is the cell number) that you want to remove from the nPartition.

If you are performing this task using an HP-UX B.11.23 system or Windows SMS to remotely administer a server based on the HP sx1000 chipset, also specify the `-u...` `-h...` options or the `-g...` `-h...` options as appropriate.

If removing multiple cells from an nPartition, specify each cell with a separate `-d#` option on the same command line (such as: `parmodify -p1 -d0 -d2...` to remove cells 0 and 2 from partition number 1).

Slightly different procedures are required for removing active cells and inactive cells. See the following information for details (*Guidelines for Removing an Active Cell* and *Guidelines for Removing an Inactive Cell*).

If at least one of the cells you plan to remove is currently active, then follow the guidelines for removing active cells.

- **Guidelines for Removing an Active Cell**

Specify the `-B` option to `parmodify` when removing an active cell from an nPartition if you want the nPartition to become active following its reboot for reconfig.

For example, the following command removes cell 4 from partition 0 and the `-B` option ensures that the nPartition will be active following its reboot for reconfig.

```
# parmodify -p0 -d4 -B
Cell 4 is active.
Use shutdown -R to shutdown the system to ready for
```

Chapter 6 Configuring nPartitions

Unassigning (Removing) Cells from an nPartition

```
reconfig state.  
Command succeeded.  
#
```

You must perform a reboot for reconfig after you issue the `parmodify` command to remove active cell(s) from the nPartition. (This is covered in the step that follows.)

- **Guidelines for Removing an Inactive Cell**

When removing an inactive cell from an nPartition you do not need to specify the `-B` option to `parmodify` and do not need to perform a reboot for reconfig of the nPartition to which the cell is assigned.

When you use `parmodify` to remove an inactive cell, the cell is immediately unassigned from its nPartition.

If you specify the `-B` option when removing an inactive cell from an inactive nPartition, then the cell is immediately removed and the modified nPartition is booted past its inactive shutdown for reconfig state and becomes an active nPartition.

For example, the following command removes cell 2 from partition 0. Because cell 2 is inactive, it is immediately unassigned.

```
# parmodify -p0 -d2  
Command succeeded.  
#
```

- Step 4.** As needed, perform a reboot for reconfig (HP-UX `shutdown -R`, or Windows `shutdown /r`) of the nPartition being modified.

You must perform a reboot for reconfig if you have removed an active cell or have specified the `-B` option when modifying an active nPartition.

See the *Reboot for Reconfig Guidelines for Removing Cells* on page 309 for details on when to perform a reboot for reconfig.

This reboot for reconfig enables the cell removal to complete and the Complex Profile to be unlocked.

If you have removed an active cell and you did not specify the `-B` option to `parmodify`, then the nPartition will remain inactive in the shutdown for reconfig state after you perform the reboot for reconfig. To make the inactive nPartition active, use the `BO` (boot) command at the service processor Command menu.

Removing Cells from an nPartition [Partition Manager]

You can remove cells from an nPartition by using Partition Manager.

When using the HP-UX B.11.11 version of Partition Manager, select an nPartition, and use the **Partition** → **Modify Partition** action, **Add/Remove Cells** tab.

When using the HP-UX B.11.23 version of Partition Manager, select an nPartition, and use the **nPartition** → **Modify nPartition** action, **Add/Remove Cells** tab.

Step 1. Access Partition Manager.

If managing an nPartition-capable HP 9000 server, run Partition Manager (`/opt/parmgr/bin/parmgr`) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools** → **Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Configuring nPartitions* on page 276.

Step 2. Select the nPartition from which you want to remove cells.

Step 3. Specify for Partition Manager to remove one or more cells from the nPartition.

From the HP-UX B.11.11 Partition Manager, use the **Partition** → **Modify Partition** action and select the **Add/Remove Cells** tab. To remove cells from the nPartition, select the cells from the “Cells in the Partition” list and click the **Remove** button.

Chapter 6 Configuring nPartitions

Unassigning (Removing) Cells from an nPartition

From the HP-UX B.11.23 Partition Manager, use the **nPartition** → **Modify nPartition** action and select the **Add/Remove Cells** tab. To remove cells from the nPartition, click on the checkbox for the cells so that no checkmark appears (the checkbox is empty).

- Step 4.** After specifying that the cells be removed from the nPartition, click the **OK** button.
- Step 5.** Review all information presented in the **Notes and Warnings**, the **Summary of Changes**, and the **HA Checks** tabs.
- Step 6.** Either check or leave unchecked the option for booting the nPartition after the reconfiguration occurs.

At HP-UX B.11.11, this option is the **Automatically boot partition...** checkbox. At HP-UX B.11.23, this option is the **Boot nPartition to system firmware...** checkbox.

If removing an active cell, leaving this option unchecked (not selected) results in the nPartition being inactive after its reboot for reconfig occurs.

If removing a cell from an inactive nPartition, selecting this option results in the nPartition becoming active after its reconfiguration occurs.

- Step 7.** Either cancel or proceed with the changes (the removal of cell).

Click the **Cancel** button to cancel the changes.

To proceed with removing the cells, click the **Finish** button (HP-UX B.11.23) or click the **OK** button (HP-UX B.11.11).

- Step 8.** As needed, perform a reboot for reconfig (HP-UX **shutdown -R**, or Windows **shutdown /r**) on the modified nPartition.

- If you have removed only inactive cells from an nPartition, then you do not need to perform a reboot for reconfig of the nPartition.
- If you have removed any active cells from the nPartition, then you must perform a reboot for reconfig and will have seen a detailed message about rebooting from Partition Manager.

Issue the reboot for reconfig command.

If you did not select the option for automatically booting the nPartition to system firmware, then the nPartition is inactive (at the shutdown for reconfig state) after the reboot for reconfig occurs. In this situation, you can make the nPartition active by using the `BO` command at the service processor Command Menu.

Renaming an nPartition

You can change the name of an nPartition by using any one of the following procedures:

- *Renaming an nPartition [BCH Menu]* on page 316
- *Renaming an nPartition [Commands]* on page 317
- *Renaming an nPartition [Partition Manager]* on page 318

Each nPartition has both an nPartition name and an nPartition number. The nPartition name is a short description useful for identifying the nPartition. You can customize nPartition names to help you distinguish among the nPartition in a server complex. (You cannot change the nPartition number, which is a permanent unique identifier that is automatically assigned for each nPartition in a server complex.)

Each nPartition name can have from 1 to 64 characters, including upper- and lowercase letters; numbers; and dashes, underscores, and spaces (“-” “_” and “ ”).

nPartition names are displayed (along with nPartition numbers) in various reports and menus provided by the service processor, Boot Console Handler (BCH), and other nPartition tools. Note that some tools display only the first 30 characters of nPartition names.

Renaming an nPartition [BCH Menu]

From the BCH Configuration Menu, use the PD command to display and change the name of the local nPartition. The BCH Menu is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition whose name you want to change.

Login to the service processor (MP or GSP) and enter CO to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the Main Menu: Enter command or menu> prompt). If at a BCH menu other than the Main Menu, then enter MA to return to the BCH Main Menu.

- Step 2.** Enter CO to access the BCH Configuration Menu.
- Step 3.** At the BCH Configuration Menu, enter the PD *NewName* command to change the nPartition name to *NewName*. No quotation marks are needed when specifying the name, even if it includes spaces.

To display the nPartition number and its current name, enter the PD command (PD not followed by any text).

- Step 4.** Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type X at the Main Menu.

Renaming an nPartition [Commands]

From the command line, rename an nPartition by using the `parmodify -p# -P name` command, where `-P name` specifies the new name for the nPartition (`-p#`, where # is the nPartition number).

NOTE

You can remotely perform this task from either an HP-UX B.11.23 system or Windows SMS by using the remote administration options. Remote administration is supported by the Partition Manager **Tools** → **Switch Complexes** action and by the nPartition command `-u... -h...` options or `-g... -h...` options.

For details see *Tools for Configuring nPartitions* on page 276. Remote administration is supported only for servers based on the HP sx1000 chipset. The Windows SMS commands require remote options.

-
- Step 1.** Login to HP-UX running on any existing nPartition in the server complex, or login to any HP-UX B.11.23 system or Windows SMS.
- Step 2.** Use the `parmodify -p# -P name` command to set the nPartition name for any of the nPartitions in the server complex.

Specify both the nPartition number (`-p#`, where # is the nPartition number) and the new name for the nPartition (`-P name`).

If the nPartition name contains spaces then quotation marks must surround the name.

Chapter 6 Configuring nPartitions

Renaming an nPartition

```
# parmodyfy -pl -P "New Name"  
Command succeeded.  
#
```

You can list the new name of the nPartition by using the `parstatus -p#` command (where # is the nPartition number) or `parstatus -P`.

Renaming an nPartition [Partition Manager]

You can change an nPartition name by using Partition Manager. Select an nPartition, then select either the **Partition → Modify Partition** action (HP-UX B.11.11) or the **nPartition → Modify nPartition** action (HP-UX B.11.23). Then use the **General** tab to rename the nPartition.

Step 1. Access Partition Manager.

If managing an nPartition-capable HP 9000 server, run Partition Manager (`/opt/parmgr/bin/parmgr`) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools → Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Configuring nPartitions* on page 276.

Step 2. Select the nPartition you want to rename, then perform the actions to rename it.

From the HP-UX B.11.11 Partition Manager, select the **Partition → Modify Partition** action and use the **General** tab to rename the nPartition.

From the HP-UX B.11.23 Partition Manager, select the **nPartition → Modify nPartition** action and use the **General** tab to rename the nPartition.

Step 3. Exit Partition Manager.

From the HP-UX B.11.23 Partition Manager, select **Log off parmgr** or exit the Web browser when finished.

From the HP-UX B.11.11 Partition Manager, select the **File** → **Exit** action.

Renaming a Server Complex

You can rename a server complex by using any one of the following procedures:

- *Renaming a Server Complex [Service Processor (MP or GSP)]* on page 320
- *Renaming a Server Complex [Commands]* on page 322
- *Renaming a Server Complex [Partition Manager]* on page 322

You can assign a name for each server complex in order to better identify the complex as you work with it. The server complex name serves as a helpful identifier; changing the name does not affect the way in which commands and utilities interact with the complex.

Several commands and utilities display the server complex name as part of their output and interfaces. For example, some nPartition commands and Partition Manager list the complex name.

Each server complex name has up to 20 characters, which can include upper- and lowercase letters; numbers; and dashes, underscores, periods, and spaces (“-” “_” “.” and “ ”).

The server complex name is stored as part of the Complex Profile for the server (part of its Stable Complex Configuration Data).

Renaming a Server Complex [Service Processor (MP or GSP)]

From the service processor Command Menu, use the ID command to list and modify the server complex name.

- Step 1.** Login to the service processor (MP or GSP) and enter CM to access the Command Menu.
- Step 2.** At the Command Menu, issue the ID command to list the complex name.

The ID command lists some of the Stable Complex Configuration Data for the current server, including the complex name.

```
GSP:CM> ID
```

This command allows you to change certain fields in the Stable complex configuration portion of the complex profile.

Retrieving the stable complex configuration portion of the complex profile.

GSP modifiable stable complex configuration data fields.

Model String : 9000/800/SD64000

Complex System Name : feshd5

Complex Serial Number : USR2024FP1

Original Product Number: A5201A

Current Product Number : A5201A

Enterprise Id :

Do you want to modify any of this information? (Y/[N])

- Step 3.** Specify whether you want to modify the complex profile, including its name.

Only modify the “Complex System Name”. Do not change the model string, serial number, or other details used by commands, utilities, and licensing tools.

To cancel the changes at any time enter **q** to quit the ID command without modifying the complex profile.

- Step 4.** To exit the service processor Command Menu, enter **MA** to return to the service processor Main Menu.

At the Main Menu, enter **x** to exit the service processor interface.

Chapter 6 Configuring nPartitions

Renaming a Server Complex

Renaming a Server Complex [Commands]

From the command line, use the `cplxmodify -N name` command to rename a server complex. The `cplxmodify` command currently only is supported on HP-UX B.11.23 systems and the Windows SMS.

NOTE

You can remotely perform this task from either an HP-UX B.11.23 system or Windows SMS by using the remote administration options. Remote administration is supported by the Partition Manager **Tools** → **Switch Complexes** action and by the `nPartition` command `-u... -h...` options or `-g... -h...` options.

For details see *Tools for Configuring nPartitions* on page 276. Remote administration is supported only for servers based on the HP sx1000 chipset. The Windows SMS commands require remote options.

- Step 1.** Login to HP-UX running on an existing nPartition in the server complex, or login to any HP-UX B.11.23 system or Windows SMS.
- Step 2.** Issue the the `cplxmodify -N name` command to rename the local server complex.

To list the current complex name, issue the `parstatus -X` command.

Renaming a Server Complex [Partition Manager]

You can rename a server complex from Partition Manager by selecting the **Complex** → **Set Complex Name** action.

- Step 1.** Access Partition Manager.

If managing an nPartition-capable HP 9000 server, run Partition Manager (`/opt/parmgr/bin/parmgr`) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the

hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools** → **Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Configuring nPartitions* on page 276.

Step 2. Select the **Complex** → **Set Complex Name** action.

Enter the new name for the complex in the text box provided, which shows the current complex name. If no name was previously assigned, the default name is “MyComplex”.

Step 3. Exit Partition Manager.

From the HP-UX B.11.23 Partition Manager, select **Log off parmgr** or exit the Web browser when finished.

From the HP-UX B.11.11 Partition Manager, select the **File** → **Exit** action.

Setting Cell Attributes

You can set the attributes for a cell by using any one of the following procedures:

- *Setting Cell Attributes [BCH Menu]* on page 324
- *Setting Cell Attributes [EFI Shell]* on page 326
- *Setting Cell Attributes [Commands]* on page 328
- *Setting Cell Attributes [Partition Manager]* on page 331

Each cell assigned to an nPartition has attributes including use-on-next-boot that determine how the cell is used within the nPartition. On nPartition-capable HP Integrity servers, each cell also has a cell local memory attribute that determines the amount of memory on the cell that is not interleaved.

NOTE

After changing cell attributes you must reboot (HP-UX shutdown `-r`, Windows shutdown `/r`) the nPartition to which the cell is assigned in order to use the new settings. If modifying an inactive cell to be active, perform a reboot for reconfig (HP-UX shutdown `-R`, or Windows shutdown `/r`).

NOTE

Changing a cell use-on-next-boot attribute may be restricted on any server complex that is under a Capacity on Demand (iCOD) or Pay Per Use (PPU) contract.

Setting Cell Attributes [BCH Menu]

From the BCH Configuration Menu, use the `CELLCONFIG` command to list or set the use-on-next-boot value for each cell in the local nPartition. The BCH Menu is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition whose cell use-on-next-boot attributes you want to list or set.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the `Main Menu: Enter command or menu>` prompt). If at a BCH menu other than the Main Menu, then enter `MA` to return to the BCH Main Menu.

- Step 2.** Enter `CO` to access the BCH Configuration Menu.

- Step 3.** From the BCH Configuration menu, use the `CELLCONFIG` command to list or set the use-on-next-boot value for each cell.

- To list the use-on-next-boot values for all cells in the nPartition, issue the `CELLCONFIG` command with no arguments.
- To change the use-on-next-boot value for a cell, issue the following command:

```
CELLCONFIG cell [ON|OFF]
```

where *cell* is the cell number, `ON` sets the cell use-on-next-boot value to “y” (yes, do use the cell), or `OFF` sets the cell use-on-next-boot value to “n” (no, do not use the cell).

A cell that boots with a “y” (`ON`) use-on-next-boot value is permitted to rendezvous and join its nPartition, thus becoming an active cell whose resources are used.

A cell that boots with a “n” (`OFF`) use-on-next-boot value does not rendezvous and thus becomes an inactive cell whose resources are not used by its nPartition, although the cell still is assigned to its nPartition.

- Step 4.** Reboot the nPartition to use the cells’ new use-on-next-boot settings.

If you have changed any cell use-on-next-boot settings for the nPartition then reboot the nPartition in either of two ways:

- Use the `REBOOT` command at the BCH interface to perform a reboot.

Chapter 6 Configuring nPartitions

Setting Cell Attributes

If you have only changed cell configurations from ON to OFF, then perform a reboot using the REBOOT command. Any cells set to not be used will still be assigned to the nPartition but will not be used (will not rendezvous) in the nPartition.

- Use the RECONFIGRESET command at the BCH interface to put the nPartition in the shutdown for reconfig state, then use the BO command at the service processor Command menu to boot the nPartition.

If you have changed any cell from OFF (“n”, do not use on next boot) to ON (“y”, use the cell on next boot), then you must perform these two tasks; this resets and reconfigures the nPartition and boots it.

BCH

```
Configuration Menu: Enter command > RECONFIGRESET
Reset the partition for reconfiguration of Complex Profile ...
```

Service Processor (GSP or MP)

```
GSP:CM> BO

This command boots the selected partition.

#   Name
---  ---
0)  jules00
1)  jules01

Select a partition number: 1

Do you want to boot partition number 1? (Y/[N]) y

-> The selected partition will be booted.
GSP:CM>
```

Step 5. Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type X at the Main Menu.

Setting Cell Attributes [EFI Shell]

From the EFI Shell environment, use the `cellconfig` command to list or set the use-on-next-boot value for each cell in the local nPartition. The EFI Shell is available only on HP Integrity systems.

NOTE

Use of the `cellconfig` command at the EFI Shell is restricted. See the `help cellconfig` command for details.

- Step 1.** Access the EFI Shell environment for the nPartition whose cell use-on-next-boot attributes you want to list or set.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

- Step 2.** Use the `cellconfig` command to list or set the use-on-next-boot value for each cell.

- To list the use-on-next-boot values for all cells in the nPartition, issue the `cellconfig` command with no arguments.
- To change the use-on-next-boot value for a cell, issue the following command:

```
cellconfig cell [on|off]
```

where `cell` is the cell number, `on` sets the cell use-on-next-boot value to “y” (yes, do use the cell), or `off` sets the cell use-on-next-boot value to “n” (no, do not use the cell).

A cell that boots with a “y” (`on`) use-on-next-boot value is permitted to rendezvous and join its nPartition, thus becoming an active cell whose resources are used.

A cell that boots with a “n” (`off`) use-on-next-boot value does not rendezvous and thus becomes an inactive cell whose resources are not used by its nPartition, although the cell still is assigned to its nPartition.

- Step 3.** Reboot the nPartition to use the cells’ new use-on-next-boot settings.

Chapter 6 Configuring nPartitions

Setting Cell Attributes

If you have changed any cell use-on-next-boot settings for the nPartition then reboot the nPartition in either of two ways:

- Use the `reset` command at the EFI Shell to perform a reboot.

If you have only changed cell configurations from `on` to `off`, then perform a reboot using the `reset` command. Any cells set to not be used will still be assigned to the nPartition but will not be used (will not rendezvous) in the nPartition.

- Use the `reconfigreset` command at the EFI Shell to put the nPartition in the shutdown for reconfig state, then use the `BO` command at the service processor Command Menu to boot the nPartition.

If you have changed any cell from `off` (“n”, do not use on next boot) to `on` (“y”, use the cell on next boot), then you must perform these two tasks; this resets and reconfigures the nPartition and boots it.

Step 4. Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `x` at the Main Menu.

Setting Cell Attributes [Commands]

From the command line, use the `parmodify -p# -m#...` command to configure cell attributes. You also can use the `parstatus -v -c#` command to list attribute details for a specific cell (`-c#` where `#` is the cell number).

NOTE

You can remotely perform this task from either an HP-UX B.11.23 system or Windows SMS by using the remote administration options. Remote administration is supported by the Partition Manager **Tools** → **Switch Complexes** action and by the nPartition command `-u...` `-h...` options or `-g...` `-h...` options.

For details see *Tools for Configuring nPartitions* on page 276. Remote administration is supported only for servers based on the HP sx1000 chipset. The Windows SMS commands require remote options.

- Step 1.** Login to HP-UX running on an existing nPartition in the server complex, or login to any HP-UX B.11.23 system or Windows SMS.

You can list and modify any cell settings from HP-UX running on any nPartition in the server complex.

- Step 2.** To list current cell attribute settings, use the `parstatus -C` command to list the use-on-next-boot values for all cells, or use the `parstatus -v -c#` command to list all attribute values for a specific cell (`-c#` where `#` is the cell number)

- Step 3.** To modify cell attribute values, use the `parmodify -p# -m#...` command and specify the new attributes for a cell as part of the `-m` option. The `-m...` option differs slightly on HP-UX B.11.11 and other systems.

You must specify both the nPartition (`-p#` where `#` is the nPartition number) and the cell (`-m#...` where `#` is the cell number).

To modify multiple cells, you can specify the `-m` option multiple times in the same command.

parmodify Command:

-m Attribute Differences for HP-UX B.11.11 and Other Systems

The `parmodify` command's `-m...` option specifies a cell number and attributes, which are used to modify the configuration of the specified cell. Both syntaxes are given in the following list.

- For HP-UX B.11.11, the `parmodify` command's `-m...` option is as follows:

```
-m cell:[type]:[use]:[fail]
```

where:

cell The cell to be added to the nPartition. You can specify the cell in global (*cell*) format or in hardware location (*cabinet/slot*) format.

type The cell type: `base` is the only supported cell type and it is the default.

Chapter 6 Configuring nPartitions

Setting Cell Attributes

<i>use</i>	The cell use-on-next-boot value: <i>y</i> or <i>n</i> . Use <i>y</i> (the default) if the cell is to be an active member of the nPartition, or use <i>n</i> if the cell is to remain an inactive member.
<i>fail</i>	The cell failure usage: <i>ri</i> (reactivate with interleave) is the only supported failure usage policy and it is the default.

For details, refer to the *parmodify* (1M) manpage.

- For HP-UX B.11.23 and Windows SMS, the *parmodify* command's *-m...* option is as follows:

```
-m cell:[type]:[use]:[fail][:clm]
```

where the *cell*, *type*, *use*, and *fail* attributes are the same as supported on HP-UX B.11.11.

On HP Integrity servers, the *clm* value specifies the amount of memory that will be configured as cell local memory for the cell.

You can specify the *clm* value in either of two forms: percentage or absolute amount of memory.

— Percentage cell-local memory (CLM).

The percent number can be any number in the range 0–100 with a suffix of %.

This number is rounded to 12.5%, 25%, 37.5%, 50%, 62.5%, 75%, 87.5% or 100%. If the cell contains less than 4 GBytes of memory, then the percentage is rounded to 25%, 50%, 75% or 100%. Percentages are rounded up or down to the nearest value, but are not rounded up to 100%.

— Absolute CLM specification. (The default.)

The absolute number is interpreted as an absolute number of gigabytes of memory and can optionally have a suffix of GB.

As needed, an absolute CLM specification is rounded up to the nearest 0.5 GBytes.

If the *clm* value is rounded, the command reports the final value used. For details, refer to the *parmodify* (1M) manpage.

Step 4. Reboot the nPartition to use the cells' new attribute values.

On HP Integrity servers, if you have changed cell local memory (CLM) values then you must reboot (HP-UX `shutdown -r`, or Windows `shutdown /r`) the nPartition whose CLM values have changed. If you also are changing use-on-next-boot values then also use the following guidelines.

If you have changed any cell use-on-next-boot settings for the nPartition then reboot the nPartition in either of two ways:

- To perform a standard reboot use the HP-UX `shutdown -r` command or Windows `shutdown /r` command (or the **Start** → **Shut Down** action and **Restart** pull-down menu option in Windows).

If you have only changed use-on-next-boot values from `y` to `n`, then perform a reboot. Any cells set to not be used will still be assigned to the nPartition but will not be used (will not rendezvous) in the nPartition.

- To perform a reboot for reconfig use the HP-UX `shutdown -R` command or Windows `shutdown /r` command (or the **Start** → **Shut Down** action and **Restart** pull-down menu option in Windows).

If you have changed any use-on-next-boot values from `n` (do not use on next boot) to `y` (use the cell on next boot), then you must perform a reboot for reconfig to allow the currently inactive cells to reboot and rendezvous when the nPartition reboots.

Setting Cell Attributes [Partition Manager]

You can set cell attributes by using Partition Manager.

When using the HP-UX B.11.11 version of Partition Manager, select the nPartition to which the cell belongs, select the **Partition** → **Modify Partition** action, **Change Cell Attributes** tab, select the cell(s), and click **Modify Cell(s)**.

When using the HP-UX B.11.23 version of Partition Manager, select the nPartition to which the cell belongs, select the **nPartition** → **Modify nPartition** action, and then configure attributes using the **Set Cell Options** tab and the **Configure Memory** tab.

Step 1. Access Partition Manager.

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Setting Cell Attributes

If managing an nPartition-capable HP 9000 server, run Partition Manager (`/opt/parmgr/bin/parmgr`) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools** → **Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Configuring nPartitions* on page 276.

Step 2. Select the nPartition whose cell attribute values you want to modify.

Step 3. Initiate the nPartition modify action.

If using the HP-UX B.11.11 Partition Manager, the **Partition** → **Modify Partition** action.

If using the HP-UX B.11.23 Partition Manager, select the **nPartition** → **Modify nPartition** action.

Step 4. Access the Partition Manager section(s) for configuring cell attributes.

From HP-UX B.11.11 Partition Manager, select the **Change Cell Attributes** tab, then select the cell and click the **Modify Cell** button. This enables you to configure the use-on-next-boot value for the selected cell.

From HP-UX B.11.23 Partition Manager, use the **Set Cell Options** tab to configure cell use-on-next-boot values, and use the **Configure Memory** tab to configure cell local memory values.

Step 5. After changing attribute values for all the cells you plan to modify, click the **OK** button.

Step 6. Review all information presented in the **Notes and Warnings**, the **Summary of Changes**, and the **HA Checks** tabs.

Step 7. Either cancel or proceed with the cell attribute changes.

Click the **Cancel** button to cancel the changes.

To proceed with removing the cells, click the **Finish** button (HP-UX B.11.23) or click the **OK** button (HP-UX B.11.11).

Step 8. Reboot the nPartition to use the cells' new attribute values.

On HP Integrity servers, if you have changed cell local memory (CLM) values then you must reboot (`shutdown -r`) the nPartition whose CLM values have changed. If you also are changing use-on-next-boot values then also use the following guidelines.

If you have changed any cell use-on-next-boot settings for the nPartition then reboot the nPartition in either of two ways:

- To perform a standard reboot use the HP-UX `shutdown -r` command or Windows `shutdown /r` command (or the **Start** → **Shut Down** action and **Restart** pull-down menu option in Windows).

If you have only changed use-on-next-boot values from *y* to *n*, then perform a reboot. Any cells set to not be used will still be assigned to the nPartition but will not be used (will not rendezvous) in the nPartition.

- To perform a reboot for reconfig use the HP-UX `shutdown -R` command or Windows `shutdown /r` command (or the **Start** → **Shut Down** action and **Restart** pull-down menu option in Windows).

If you have changed any use-on-next-boot values from *n* (do not use on next boot) to *y* (use the cell on next boot), then you must perform a reboot for reconfig to allow the currently inactive cells to reboot and rendezvous when the nPartition reboots.

Setting nPartition Core Cell Choices

You can set the core cell choices for an nPartition by using any one of the following procedures:

- *Setting Core Cell Choices [BCH Menu]* on page 334
- *Setting Core Cell Choices [EFI Shell]* on page 335
- *Setting Core Cell Choices [Commands]* on page 336
- *Setting Core Cell Choices [Partition Manager]* on page 338

The core cell choice settings for an nPartition are optional preferences that establish which cells in the nPartition are preferred to be selected as the core cell for the nPartition.

NOTE

You do not need to specify core cell choices for a valid core cell to be chosen.

By default on HP Superdome, rp8400, rp8420, and rx8620 servers, system firmware selects the lowest numbered eligible cell to be the active core cell for the nPartition.

By default on HP rp7405/rp7410, rp7420, rx7620 servers, cell 1 is selected as the core cell.

Setting Core Cell Choices [BCH Menu]

From the BCH Menu, use the Configuration menu, COC command to configure core cell choices for the nPartition. The BCH Menu is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition whose core cell choices you want to configure.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the `Main Menu: Enter command or menu>` prompt). If at a BCH menu other than the Main Menu, then enter `MA` to return to the BCH Main Menu.

- Step 2.** Enter `CO` to access the BCH Configuration Menu.
- Step 3.** Enter the `COC` command to list or set the core cell choices for the local nPartition.

Entering `COC` with no arguments lists all core cell choice preferences.

The `COC` command syntax is:

```
COC choice cell
```

where *choice* is 0–3 (with 0 being the highest-priority choice) and where *cell* is the cell ID.

For example, `COC 0 2` sets the most preferred core cell choice to be cell ID 2. Likewise, `COC 1 4` sets the next (second-highest priority) core preference to be cell ID 4.

Use the `HELP COC` command for other details about the `COC` command.

- Step 4.** Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `X` at the Main Menu.

Setting Core Cell Choices [EFI Shell]

From the EFI Shell environment, use the `rootcell` command to set core cell choices for the local nPartition. The EFI Shell is available only on HP Integrity systems.

- Step 1.** Access the EFI Shell environment for the nPartition whose core cell choices you want to configure.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console. Select the nPartition console.

Chapter 6 Configuring nPartitions

Setting nPartition Core Cell Choices

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

- Step 2.** At the EFI Shell interface enter the `rootcell` command to list or set the core cell choices for the local nPartition.

Enter the `rootcell` command with no arguments to display the current core cell choice list.

Enter the `rootcell clear` command to clear the list of preferred core cells.

Enter `rootcell c0 c1...` to specify up to four choices, with `c0` being the highest-priority choice and `c0-c3` being the cell numbers.

- Step 3.** Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `x` at the Main Menu.

Setting Core Cell Choices [Commands]

From the command line, use the `parmodify` command to configure the core cell choices for an nPartition. You also can use the `parstatus -V -p#` command to list the core cell choices for an nPartition (`-p#` where `#` is the nPartition number).

NOTE

You can remotely perform this task from either an HP-UX B.11.23 system or Windows SMS by using the remote administration options. Remote administration is supported by the Partition Manager **Tools** → **Switch Complexes** action and by the nPartition command `-u...` `-h...` options or `-g...` `-h...` options.

For details see *Tools for Configuring nPartitions* on page 276. Remote administration is supported only for servers based on the HP sx1000 chipset. The Windows SMS commands require remote options.

Step 1. Login to HP-UX running on an existing nPartition in the server complex, or login to any HP-UX B.11.23 system or Windows SMS.

Step 2. Issue the `parstatus -v -p#` command to list the current core cell choices and core cell use for an nPartition.

The `parstatus -v -p#` command list detailed status for the specified nPartition (`-p#` where `#` is the nPartition number).

The nPartition status includes the current active core cell (“Core Cell”), and any core cell choice settings.

The core cell choice preferences are listed by `parstatus` as the “Core Cell Alternate” settings with “1” being the highest priority and “2” through “4” as the lower priority core cell choices.

```
# parstatus -v -p0
[Partition]
Partition Number      : 0
Partition Name       : jules00
Status               : active
IP address           : 0.0.0.0
Primary Boot Path    : 0/0/2/0/0.13.0
Alternate Boot Path  : 0/0/2/0/0.0.0
HA Alternate Boot Path : 0/0/2/0/0.14.0
PDC Revision         : 6.0
IODCH Version        : 23664
CPU Speed            : 552 MHz
Core Cell            : cab0,cell0
Core Cell Alternate [1]: cab0,cell0
Core Cell Alternate [2]: cab0,cell2

....

Hardware Location  Usage      Core Connected  Par
=====
cab0,bay0,chassis1 active     yes  cab0,cell10  0
cab0,bay1,chassis3 active     yes  cab0,cell2  0

#
```

Chapter 6 Configuring nPartitions

Setting nPartition Core Cell Choices

- Step 3.** Modify the nPartition core cell choices using the `parmodify -p# -r#...` command.

You can modify the core cell choices for the local nPartition or any remote nPartition in the server complex.

Use the following command: `parmodify -p# -r# -r#...`

Specify the nPartition number (`-p#`) and the cell ID (`-r#`) for all cells you wish to designate as core cell choices.

```
# parmodify -p0 -r2 -r0
Command succeeded.
#
```

The order in which you list the cells is the order in which the nPartition core cell choices are established; the first cell listed is the first preferred core cell (choice 1), and the subsequent cells are lower-priority core cell choices (choices 2 through 4, if specified).

Setting Core Cell Choices [Partition Manager]

You can set core cell choices by using Partition Manager.

When using the HP-UX B.11.11 version of Partition Manager, select the nPartition to configure, select the **Partition** → **Modify Partition** action, and use the **Core Cell Choices** tab.

When using the HP-UX B.11.23 version of Partition Manager, select the nPartition to configure, select the **nPartition** → **Modify nPartition** action, select the **Set Cell Options** tab, and use the **Core Cell Choice** column to set priorities.

- Step 1.** Access Partition Manager.

If managing an nPartition-capable HP 9000 server, run Partition Manager (`/opt/parmgr/bin/parmgr`) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the

hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools** → **Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Configuring nPartitions* on page 276.

Step 2. Select the nPartition whose core cell choices you want to configure.

Step 3. Initiate the nPartition modify action.

If using the HP-UX B.11.11 Partition Manager, the **Partition** → **Modify Partition** action.

If using the HP-UX B.11.23 Partition Manager, select the **nPartition** → **Modify nPartition** action.

Step 4. Access the Partition Manager area for setting core cell choices and then make any changes to the core choices for the nPartition.

From HP-UX B.11.11 Partition Manager, select the **Core Cell Choices** tab. Highlight the cell whose core cell choice you want to configure, select the desired choice priority (1st, 2nd, none, etc.) from the Core Cell Choice pop-up list, and click the **Modify** button to modify the priority.

From HP-UX B.11.23 Partition Manager, select **Set Cell Options** tab, and use the **Core Cell Choice** column to set priorities.

Step 5. After changing attribute values for all the cells you plan to modify, click the **OK** button.

Step 6. Review all information presented in the **Notes and Warnings**, the **Summary of Changes**, and the **HA Checks** tabs.

Step 7. Either cancel or proceed with the cell attribute changes.

Click the **Cancel** button to cancel the changes.

To proceed with removing the cells, click the **Finish** button (HP-UX B.11.23) or click the **OK** button (HP-UX B.11.11).

Step 8. Exit Partition Manager.

From the HP-UX B.11.23 Partition Manager, select **Log off parmgr** or exit the Web browser when finished.

From the HP-UX B.11.11 Partition Manager, select the **File** → **Exit** action.

Chapter 6 Configuring nPartitions

Setting nPartition Core Cell Choices

This chapter covers the procedures for managing the hardware resources in nPartitions and their server complexes.

The topics covered include power and LED (attention indicator) management, hardware configuration and deconfiguration, and analysis of the current complex status.

Tools for Managing Hardware

You can use several software tools to list server hardware details and manage the hardware in a server complex. The tools are:

- **Service Processor (MP or GSP) Menus**

Service processor menus provide a complex-wide service interface that can allow access to all hardware and nPartitions.

See *Command Reference: Service Processor (MP or GSP) Commands* on page 169.
- **EFI Boot Manager and EFI Shell**

On HP Integrity servers only, the EFI (Extensible Firmware Interface) Boot Manager and Shell are the methods for interacting with an nPartition before it has booted an operating system.

See *Command Reference: EFI Shell Commands* on page 172.
- **Boot Console Handler (BCH) Menu Commands**

On PA-RISC servers, the BCH interface is the method for interacting with an nPartition before it has booted an operating system.

See *Command Reference: BCH Menu Commands* on page 177.
- **nPartition Commands**

HP nPartition commands allow you to manage and monitor nPartitions and hardware within a server complex from HP-UX running on any nPartition in the server. The HP-UX B.11.23 versions of the nPartition commands also can remotely manage complexes based on the HP sx1000 chipset from any system running HP-UX B.11.23. Windows versions of the commands are supported for the Windows SMS (a Superdome Support Management Station running the Windows operating system); Windows SMS commands require specifying remote administration options.

See *Commands for Configuring nPartitions* on page 35.
- **Partition Manager (/opt/parmgr/bin/parmgr)**

Partition Manager provides a graphical interface for managing and monitoring nPartitions and hardware within a server complex.

See *Partition Manager* on page 37.

Task Summaries: Hardware Resource Management

Table 7-1 describes the main hardware management tasks and provides brief summaries and references for detailed procedures.

You can perform the hardware tasks in Table 7-1 using various tools, including the service processor (MP or GSP), Boot Console Handler (BCH, available only on PA-RISC servers), Extensible Firmware Interface (EFI, available only on HP Integrity servers), nPartition commands, or Partition Manager (/opt/parmgr/bin/parmgr).

See *Tools for Managing Hardware* on page 342 for details.

Table 7-1 **Hardware Management Task Summaries**

Task	Summary
<i>Powering Server Cabinets On and Off</i>	<p>CAUTION: Before powering off system hardware, you first must check whether it is being used and also inspect the hardware.</p> <ul style="list-style-type: none">• Cabinet Power Switch: use the 48-volt power switch on the front of the cabinet.• Service Processor (MP or GSP): PE command. <p>See <i>Powering Server Cabinets On and Off</i> on page 349.</p>

Table 7-1 Hardware Management Task Summaries (Continued)

Task	Summary
<i>Powering Cells and I/O Chassis On and Off</i>	<p>NOTE: Powering on a cell also powers on any I/O chassis attached to the cell, and powering off a cell also powers off any I/O chassis attached to the cell. Powering on or off an I/O chassis connected to a powered-on cell causes the cell to reset if the cell located and mapped the I/O chassis during its cell boot process.</p> <ul style="list-style-type: none"> • Service Processor (MP or GSP): PE command. • nPartition Commands: frupower command, and specify -o or -f and a cell or I/O chassis: -o option to turn power on, -f option to turn power off, -c# for a cell (where # is the cell number), -i #/#/# for an I/O chassis (where #/#/# is the cabinet/bay/chassis). • Partition Manager: <ul style="list-style-type: none"> — B.11.11 — Select an inactive cell or I/O chassis, and use the Cell → Power Off Cell or I/O → Power Off I/O Chassis action (or a similar “Power On...” action). — B.11.23 — Select an inactive cell or I/O chassis, and use the Cell → Power Off Cell or I/O → Power Off Chassis action (or a similar “Power On...” action). <p>See <i>Powering Cells and I/O Chassis On and Off</i> on page 352.</p>

Table 7-1 Hardware Management Task Summaries (Continued)

Task	Summary
<p><i>Turning Attention Indicators (LEDs) On and Off</i></p>	<ul style="list-style-type: none"> • nPartition Commands: <code>fruled</code> command and specify <code>-o</code> or <code>-f</code> and a cabinet, cell, or I/O chassis: <code>-o</code> option to blink the LED, <code>-f</code> option to turn off the LED, <code>-b#</code> for a cabinet (where # is the cabinet number), <code>-c#</code> for a cell (where # is the cell number), <code>-i #/#/#</code> for an I/O chassis (where #/#/# is the cabinet/bay/chassis) <p>HP-UX B.11.11 supports the <code>rad</code> command for controlling PCI card slot attention indicators and other tasks.</p> <p>HP-UX B.11.23 supports the <code>olrad</code> command for controlling PCI card slot attention indicators and other tasks.</p> <ul style="list-style-type: none"> • Partition Manager: <ul style="list-style-type: none"> — B.11.11 — Select a cell or I/O chassis, and use the Cell → Light Cell LED or I/O → Light I/O Chassis LED action. To turn off all LEDs use the Complex → Clear All LEDs action. — B.11.23 — Select a cell or I/O chassis, and use the Cell → Turn On Cell LED or I/O → Turn On Chassis LED action (or a similar “Turn Off...” action). To turn off all LEDs use the Complex → Clear All LEDs action. <p>See <i>Turning Attention Indicators (LEDs) On and Off</i> on page 358.</p>

Table 7-1 Hardware Management Task Summaries (Continued)

Task	Summary
<i>Configuring and Deconfiguring Cells</i>	<p>NOTE: Configuring and deconfiguring cells may be restricted based on any capacity on demand (iCOD) or pay per use (PPU) contracts for the server complex.</p> <p>To make an inactive cell active (configured), its use-on-next-boot value must be “y” and its nPartition must perform a reboot for reconfig (<code>shutdown -R</code>). To make an active cell inactive (deconfigured) its use-on-next-boot value must be “n” and its nPartition must perform a normal reboot (<code>shutdown -r</code>).</p> <ul style="list-style-type: none"> • BCH Menu: Configuration Menu, <code>CELLCONFIG</code> command. • EFI Shell: <code>cellconfig</code> command; use of this command is restricted. • nPartition Commands: <code>parmodify -p# -m#...</code> command to modify attributes of the specified cell (<code>-m#...</code>, where # is the cell number) for the specified nPartition (<code>-p#</code>, where # is the nPartition number). <ul style="list-style-type: none"> — B.11.11 — For the cell modify (<code>-m</code>) option, specify: <ul style="list-style-type: none"> <code>-m#: :y:</code> to configure the cell to be used the next time the nPartition boots, or <code>-m#: :n:</code> to deconfigure the cell. — B.11.23 — For the cell modify (<code>-m</code>) option, specify: <ul style="list-style-type: none"> <code>-m#: :y: :c1m</code> to configure the cell to be used the next time the nPartition boots, or <code>-m#: :n: :c1m</code> to deconfigure the cell. The <code>c1m</code> parameter specifies the amount of cell local memory. • Partition Manager: <ul style="list-style-type: none"> — B.11.11 — Select the nPartition to which the cell belongs, select the Partition → Modify Partition action, Change Cell Attributes tab, select the cell(s), and click Modify Cell(s). — B.11.23 — Select the nPartition to which the cell belongs, select the nPartition → Modify nPartition action, Set Cell Options tab, and configure the use-on-next-boot value. <p>See <i>Configuring and Deconfiguring Cells</i> on page 365.</p>

Table 7-1 Hardware Management Task Summaries (Continued)

Task	Summary
<p><i>Configuring and Deconfiguring Processors (CPUs)</i></p>	<p>NOTE: Configuring and deconfiguring processors may be restricted based on any capacity on demand (iCOD) or pay per use (PPU) contracts for the server complex.</p> <p>After a processor configuration is changed the nPartition in which the processor resides must be rebooted to use the new configuration.</p> <ul style="list-style-type: none"> • BCH Menu: Configuration Menu, CPUCONFIG command. CPUCONFIG <i>cell cpu</i> OFF deconfigures the specified processor (<i>cpu</i>) on the specified cell (<i>cell</i>). CPUCONFIG <i>cell cpu</i> ON configures the processor on the cell. • EFI Shell: <code>cpuconfig</code> command. <code>cpuconfig <i>cell cpu</i> off</code> deconfigures the specified processor (<i>cpu</i>) on the specified cell (<i>cell</i>). <code>cpuconfig <i>cell cpu</i> on</code> configures the processor on the cell. <p>See <i>Configuring and Deconfiguring Processors (CPUs)</i> on page 373.</p>

Table 7-1 Hardware Management Task Summaries (Continued)

Task	Summary
<p><i>Configuring and Deconfiguring Memory (DIMMs)</i></p>	<p>NOTE: DIMMs operate either in ranks of four or echelons of two, depending on the memory architecture of the server. When you deallocate a DIMM, all other DIMMs in the rank or echelon also will not be used the next time the nPartition boots.</p> <p>Each rank or echelon is numbered (0, 1, 2, and so on up to hexadecimal number F as needed). The DIMMs in the rank or echelon are lettered (A to D). For example, rank 0 includes DIMMs 0A, 0B, 0C, and 0D; echelon 1 has DIMMs 1A and 1B.</p> <p>After the DIMM configuration is changed the nPartition in which it resides must be rebooted to use the new configuration.</p> <ul style="list-style-type: none"> • BCH Menu: Service Menu, DIMMDEALLOC command. <p>DIMMDEALLOC <i>cell dimm</i> OFF deconfigures the specified DIMM (<i>dimm</i>) on the cell (<i>cell</i>) indicated.</p> <p>DIMMDEALLOC <i>cell dimm</i> ON configures the DIMM on the cell.</p> <p>Use DIMMDEALLOC <i>cell</i> to display the DIMM configuration for the specified cell.</p> <ul style="list-style-type: none"> • EFI Shell: dimmconfig command. <p>dimconfig <i>cell dimm</i> OFF deconfigures the specified DIMM (<i>dimm</i>) on the cell (<i>cell</i>) indicated.</p> <p>dimconfig <i>cell dimm</i> ON configures the DIMM on the cell.</p> <p>Use dimconfig <i>cell</i> to display the DIMM configuration for the specified cell.</p> <p>See <i>Configuring and Deconfiguring Memory (DIMMs)</i> on page 376.</p>
<p><i>Complex Health Analysis of a Server</i></p>	<ul style="list-style-type: none"> • Complex health analysis provides both an evaluation of the complex hardware and an evaluation its nPartition configurations. • Partition Manager: Use the Complex → Analyze Complex Health action. <p>See <i>Complex Health Analysis of a Server</i> on page 380.</p>

Powering Server Cabinets On and Off

You can power on or power off server cabinets by using any one of the following procedures:

- *Powering Server Cabinets On and Off [Cabinet Power Switch]* on page 350
- *Powering Server Cabinets On and Off [Service Processor (MP or GSP)]* on page 350

When powering off a cabinet, you turn off 48-volt power to the cabinet thus causing all cells and all I/O chassis to power off, and causing most fans to turn off.

Changes in cabinet power status do not affect the standby power that supplies system utilities such as the service processor (GSP or MP) and keeps some fans running. These utilities and fans can receive power as long as standby power is enabled.

CAUTION

When you power on or off HP Superdome 64-way compute cabinets, you must power off and power on cabinet 0 and cabinet 1 in such a way that both cabinets are off for an overlapping interval.

If either Superdome 64-way cabinet is powered off then powered on while the other cabinet remains on, then communications between the two cabinets is lost.

CAUTION

Before powering off system hardware, you first must check whether it is being used.

The cabinet power switch and the PE command at the service processor Command menu do not check whether system hardware is in use before powering it off.

Chapter 7 Managing Hardware Resources

Powering Server Cabinets On and Off

Powering Server Cabinets On and Off [Cabinet Power Switch]

Use the Virtual Front Panel to check status, and then use the cabinet power switch to manage 48-volt power for a cabinet with the cabinet hardware.

- Step 1.** Login to the service processor for the server complex and access the Virtual Front Panel for the system.

From the service processor Main menu, enter **VFP** to access the Virtual Front Panel menu, then enter **S** to access the “system VFP” that displays the current status for all nPartitions.

- Step 2.** Check the VFP status to see whether any cabinet hardware is running an operating system (OS).

Any nPartition whose state is “OS heartbeat” is running an OS and thus should not have its hardware powered off until after the OS is shut down.

Type **^b (Control-b)** to exit the VFP.

- Step 3.** Shut down the OS running on any cabinet hardware that you plan to power off.

- Step 4.** Confirm that nobody else is using or servicing the cabinet hardware you plan to power on or off.

Both physically inspect the hardware and check whether others are remotely accessing the service processor (using the **WHO** command at the Command menu).

- Step 5.** Access the cabinet hardware and flip the power switch (located on the front of the cabinet) to the on or off position in order to power the cabinet on or off.

Powering Server Cabinets On and Off [Service Processor (MP or GSP)]

Use the Virtual Front Panel, and then use the Command menu **PE** command to turn 48-volt cabinet power on or off from the service processor (GSP or MP).

- Step 1.** Login to the service processor for the server and access the Virtual Front Panel for the system.

From the service processor Main menu, enter **VFP** to access the Virtual Front Panel menu, then enter **S** to access the “system VFP” that displays the current status for all nPartitions.

- Step 2.** Check the VFP status to see whether any cabinet hardware is running an operating system (OS).

Any nPartition whose state is “OS heartbeat” is running an OS and thus should not have its hardware powered off until after the OS is shut down.

Type **^b (Control-b)** to exit the VFP.

- Step 3.** Shut down the OS running on any cabinet hardware that you plan to power off.

- Step 4.** Confirm that nobody else is using or servicing the cabinet hardware you plan to power on or off.

Both physically inspect the hardware and check whether others are remotely accessing the service processor (using the **WHO** command at the Command menu).

- Step 5.** Access the service processor Command menu, issue the **PE** command, then select the cabinet to power on or power off.

From the service processor Main menu, enter **CM** to access the Command menu. To exit the Command menu enter **MA**.

When using the **PE** command enter **B** to power on or off a cabinet; specify the cabinet number; and then enter **ON** (power on), **OFF** (power off), or **Q** (quit without changing the power status).

```
GSP:CM> PE
```

This command controls power enable to a hardware device.

```
B - Cabinet
C - Cell
I - IO Chassis
    Select Device: b
```

```
Enter cabinet number: 1
```

```
The power state is ON for Cabinet 1.
In what state do you want the power? (ON/OFF)
```

Powering Cells and I/O Chassis On and Off

You can power on or power off cells and I/O chassis by using any one of the following procedures:

- *Powering Cells and I/O Chassis On and Off [Service Processor (MP or GSP)]* on page 353
- *Powering Cells and I/O Chassis On and Off [Commands]* on page 354
- *Powering Cells and I/O Chassis On and Off [Partition Manager]* on page 356

You can control power for cells and I/O chassis from remote locations, without physically accessing the system hardware.

NOTE

On HP nPartition systems, powering on a cell also powers on any I/O chassis attached to the cell, and powering off a cell also powers off any I/O chassis attached to the cell.

Powering on or off an I/O chassis connected to a powered-on cell causes the cell to reset if the cell located and mapped the I/O chassis during its cell boot process.

The `frupower` command and Partition Manager permit you to power on or off inactive cells and I/O chassis that are assigned to the current nPartition or are not assigned to any nPartition.

The `PE` command at the service processor Command menu permits you to power on or off any hardware in the complex, including active cells and I/O chassis. The `PE` command does not check the current usage of components.

Powering Cells and I/O Chassis On and Off [Service Processor (MP or GSP)]

Use the Command menu **PE** command to power on and power off cells, I/O chassis, and cabinets from the service processor interface (GSP or MP).

CAUTION

When using the **PE** command at the service processor Command menu to power on or off hardware, be certain to specify the correct component to power on or off.

The **PE** command does not check whether the hardware is actively being used.

You can manage the power for all components within the server complex by using the **PE** command at the service processor Command menu, regardless of any nPartition assignment or the status (active or inactive) for the hardware components.

- Step 1.** Login to the service processor for the server and access the Command menu.

From the service processor Main menu, enter **CM** to access the Command menu. To exit the Command menu enter **MA**.

- Step 2.** Issue the **PE** command and specify the type of hardware whose power you want to turn on or turn off.

You can manage power to cells, I/O chassis, and cabinets.

- Step 3.** Specify the hardware device to power on or power off.

The service processor does not check whether the specified component is currently being used.

- Cabinets—When you power on or off a cabinet, the firmware also powers on or off all cells and I/O chassis in the cabinet.
- Cells—When you power on or off a cell, the firmware also powers on or off any I/O chassis attached to the cell.

When specifying a cell, you indicate both the cabinet number and the slot in which the cell resides.

Chapter 7 Managing Hardware Resources

Powering Cells and I/O Chassis On and Off

- I/O Chassis—When you power off an I/O chassis from the service processor Command menu, the system firmware resets the cell attached to the I/O chassis (if the cell located and mapped the I/O chassis during its cell boot process).

When specifying an I/O chassis, you indicate the cabinet, bay, and chassis numbers to identify it.

In the following example, the service processor powers off cell 2 in cabinet 0.

```
GSP:CM> PE
```

This command controls power enable to a hardware device.

```
B - Cabinet
C - Cell
I - IO Chassis
  Select Device: c
```

```
Enter cabinet number: 0
Enter slot number: 2
```

```
The power is ON for the Cell in Cabinet 0, Slot 2.
In what state do you want the power for the
Cell in Cabinet 0, Slot 2? (ON/OFF) OFF
```

```
GSP:CM>
```

Powering Cells and I/O Chassis On and Off [Commands]

From the command line, use the **frupower -o -c#** and **frupower -f -c#** commands to power on and power off cells (and their associated I/O chassis).

NOTE

You can remotely perform this task from either an HP-UX B.11.23 system or Windows SMS by using the remote administration options. Remote administration is supported by the Partition Manager **Tools** → **Switch Complexes** action and by the nPartition command **-u... -h...** options or **-g... -h...** options.

For details see *Tools for Managing Hardware* on page 342. Remote administration is supported only for servers based on the HP sx1000 chipset. The Windows SMS commands require remote options.

- Step 1.** Login to HP-UX running on an nPartition in the server complex, or login to any HP-UX B.11.23 system or Windows SMS.

To manage power for a cell, you must login to the nPartition to which the cell is assigned or use HP-UX B.11.23 remote administration features.

If the cell is not assigned to an nPartition, you can manage its power from any nPartition.

- Step 2.** Use the `frupower` command to turn on or turn off the cell power.

Specify the `frupower -f -c#` command to power off a cell. (`-c#`). This also powers off any I/O chassis connected to the cell.

Specify the `frupower -o -c#` command to power on a cell (`-c#`). This also powers on any I/O chassis connected to the cell.

The following example shows several sample `frupower` commands and their results.

```
# frupower -f -c0
Error: Can not power off active cell 0.
# frupower -f -c2
# frupower -o -c2
# frupower -f -c6
Error: Cell 6 belongs to partition 1. Can not power off cell.
#
# frupower -f -i0/1/1
Error: I/O chassis 0/1/1 is attached to a powered-on free
cell 4. Please power off the free cell.
#
```

In the above example, cell 0 is active and thus cannot be powered off using `frupower`. Cell 2 is inactive and is powered off (`frupower -f -c2`) and then powered back on (`frupower -o -c2`). Cell 6 is assigned to a remote nPartition (partition number 1) and thus cannot be powered off. I/O chassis 0/1/1 is attached to cell 4, so to power it off cell 4 must be powered off.

Powering Cells and I/O Chassis On and Off [Partition Manager]

You can power cells and I/O chassis on and off by using Partition Manager.

When using the HP-UX B.11.11 version of Partition Manager, select an inactive cell or I/O chassis, and use the **Cell → Power Off Cell** or **I/O → Power Off I/O Chassis** action (or a similar “Power On...” action)

When using the HP-UX B.11.23 version of Partition Manager, select an inactive cell or I/O chassis, and use the **Cell → Power Off Cell** or **I/O → Power Off Chassis** action (or a similar “Power On...” action).

NOTE

You can use Partition Manager to power on or off inactive cells.

You cannot power off active cells. To power on or off cells assigned to a remote nPartition when using Partition Manager, you must use the HP-UX B.11.23 Partition Manager remote administration features.

Step 1. Access Partition Manager.

If managing an nPartition-capable HP 9000 server, run Partition Manager (`/opt/parmgr/bin/parmgr`) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools → Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Managing Hardware* on page 342.

Step 2. Select the cell or I/O chassis you want to power on or off.

In the HP-UX B.11.11 Partition Manager, select the nPartition containing the item you want to power on or off, then select the item.

In the HP-UX B.11.23 Partition Manager, select the cell (or I/O chassis) that you want to power on or off.

Step 3. Select the Partition Manager action to power on or off the selected item.

Select the **Cell → Power On Cell** action, or select the **Cell → Power Off Cell** action. If powering on or off an I/O chassis, instead use the **I/O → Power On...** or **I/O → Power Off...** actions.

Step 4. Exit Partition Manager.

From the HP-UX B.11.23 Partition Manager, select **Log off parmgr** or exit the Web browser when finished.

From the HP-UX B.11.11 Partition Manager, select the **File → Exit** action.

Turning Attention Indicators (LEDs) On and Off

You can turn hardware attention indicators (LEDs) on or off by using any one of the following procedures:

- *Turning Attention Indicators (LEDs) On and Off [Commands]* on page 360
- *Turning Attention Indicators (LEDs) On and Off [Partition Manager]* on page 363

HP's nPartition systems provide attention indicators (LEDs) to help you to visually select and confirm which hardware you want to perform operations on. Attention indicators are amber (orange) lights.

Table 7-2 lists the meanings for the various attention indicator states. When all components of a system are functioning and no service operations are occurring, every attention indicator should be turned off. (HP Superdome cabinet number LCDs remain lit or blinking when cabinet power is on.)

Table 7-2 Attention Indicator (LED) States and Meanings

Attention Indicator State	Meaning
OFF	Not selected.
BLINKING	Selected to be used in a service operation.
ON	Supported for PCI card slot LEDs only. Service required, problems have been identified with the component.

LEDs for Hardware Components

You can control (turn off, blink, and/or turn on) attention indicators for the following hardware components.

- **Cell LEDs**
Each cell or cell slot has its own attention indicators.

- On HP Superdome servers, each cell attention indicator is located on the server cabinet hardware below the cell slot, just to the right of the power LED for the cell slot.
- On other Partition-capable servers, each cell attention indicator is located on the cell hardware, to the outside of the power LEDs for the cell.
- **I/O Chassis LEDs**

On HP Superdome servers only, each I/O chassis has a attention indicator, which is located on the cabinet above the I/O chassis.
- **PCI Card Slot LEDs**

On all HP nPartition systems, each PCI card slot has an attention indicator that you can use to select the card slot. You can view the attention indicator for a PCI card slot when accessing the card cage.

On HP rp7405/rp7410, rp7420, rx7620, rp8400, rp8420, and rx8620 servers only, you also can view the attention indicator for each PCI slot beneath the corresponding slot, on the external chassis at the rear of the server cabinet.
- **Cabinet Number LCDs**

On HP Superdome servers only, each cabinet has a cabinet number LCD that serves as the attention indicator for the cabinet.

NOTE

The cabinet “attention” light on HP’s nPartition capable servers is not user-controllable.

The cabinet attention light automatically turns on when one or more alert level 6 (or higher) chassis codes has been recorded in the error logs and has not yet been read. This light automatically turns off when a user enters the service processor (GSP or MP) chassis logs or event logs viewer.

Turning Attention Indicators (LEDs) On and Off [Commands]

From the command line, you can turn attention indicators on or off by using the `fruled` command, the `rad` command (HP-UX B.11.11 only), and the `olrad` command (HP-UX B.11.23 only).

You can use the `fruled` command and specify `-o` or `-f` and a cabinet, cell, or I/O chassis: `-o` option to blink the LED, `-f` option to turn off the LED, `-b#` for a cabinet (where `#` is the cabinet number), `-c#` for a cell (where `#` is the cell number), `-i #/#/#` for an I/O chassis (where `#/#/#` is the cabinet/bay/chassis).

HP-UX B.11.11 supports the `rad` command for controlling PCI card slot attention indicators and other tasks.

HP-UX B.11.23 supports the `olrad` command for controlling PCI card slot attention indicators and other tasks.

NOTE

You can remotely perform this task from either an HP-UX B.11.23 system or Windows SMS by using the remote administration options. Remote administration is supported by the Partition Manager **Tools** → **Switch Complexes** action and by the `nPartition` command `-u...` `-h...` options or `-g...` `-h...` options.

For details see *Tools for Managing Hardware* on page 342. Remote administration is supported only for servers based on the HP `sx1000` chipset. The Windows SMS commands require remote options.

-
- Step 1.** Login to HP-UX running on an `nPartition` in the server complex, or login to any HP-UX B.11.23 system or Windows SMS.

You can manage cabinet, cell, and I/O chassis attention indicators from HP-UX on any `nPartition` or from any HP-UX B.11.23 system or Windows SMS.

To manage PCI slot attention indicators, you must access HP-UX in the local `nPartition` where the PCI slot resides (the `nPartition` to which the cell attached to the I/O chassis containing the PCI slot is assigned).

- Step 2.** Use the `fruled` command and either the `rad` command (HP-UX B.11.11) or the `olrad` command (HP-UX B.11.23) to manage (turn on, off, or blink) the attention indicator for a system hardware component.

From the command line you can manage LEDs for the following hardware components:

- Cells—Use `fruled` to blink or turn off a cell attention indicator.
 - Turn Off: The `fruled -f -c#` command turns off the attention indicator for the specified cell (`-c#`). To turn off all cell attention indicators use the `fruled -f -C` command.
 - Blink: The `fruled -o -c#` command blinks the attention indicator for the specified cell (`-c#`).
- I/O Chassis—Use `fruled` to blink or turn off HP Superdome I/O chassis attention indicators.

Specify the I/O chassis using `cabinet/bay/chassis` notation (`#/#/#`).

 - Turn Off: The `fruled -f -i#/#/#` command turns off the attention indicator for the specified I/O chassis (`-i#/#/#`). To turn off all I/O chassis attention indicators use the `fruled -f -I` command.
 - Blink: The `fruled -o -i#/#/#` command blinks the attention indicator for the specified I/O chassis (`-i#/#/#`).
- Cabinet Numbers—Use `fruled` to blink or not-blink (keep lit) the cabinet number LCD for an HP Superdome cabinet.
 - Not-Blink: The `fruled -f -b#` command stops blinking (keeps it lit) the cabinet number LCD for the specified cabinet (`-b#`).
 - Blink: The `fruled -o -b#` command blinks the cabinet number LED for the specified cabinet (`-b#`).
- PCI Card Slots—Managing the attention indicator for a PCI card slot is supported from HP-UX only.

Use the `rad` command (HP-UX B.11.11 only) or `olrad` command (HP-UX B.11.23 only) to turn on, off, or blink the attention indicator for a PCI card slot.

Specify the PCI slot using `cabinet-bay-chassis-slot` (`##-##-##`) notation.

 - Turn Off PCI Card Slot Attention Indicator

Chapter 7 Managing Hardware Resources

Turning Attention Indicators (LEDs) On and Off

The HP-UX B.11.11 `rad -f off slot` command turns off the attention indicator for the specified PCI card slot (*slot*).

The HP-UX B.11.23 `olrad -I OFF slot` command turns off the attention indicator for the specified PCI card slot (*slot*).

— Blink PCI Card Slot Attention Indicator

The HP-UX B.11.11 `rad -f attention slot` command blinks the attention indicator for the specified PCI card slot (*slot*).

The HP-UX B.11.23 `olrad -f ATTN slot` command blinks the attention indicator for the specified PCI card slot (*slot*).

— Turn On PCI Card Slot Attention Indicator

The HP-UX B.11.11 `rad -f on slot` command turns on the attention indicator for the specified PCI card slot (*slot*).

The HP-UX B.11.23 `olrad` command does not support turning on a PCI card slot's attention indicator to a steady-on state.

For details refer to the *fruled* (1), *rad* (1M), or *olrad* (1M) manpage.

The following HP-UX B.11.11 example turns off and blinks various attention indicators on an HP Superdome system, including cell, I/O chassis, PCI slot, and cabinet LEDs.

```
# fruled -f -C          Turn off all cell and I/O chassis attention
# fruled -f -I

# fruled -o -c0 -c2 -c4  Blink attention indicators for cells 0, 2,
# fruled -o -i0/0/1 -i0/0/3 and 4 and I/O chassis 0/0/1 and 0/0/3.
# fruled -o -b0          Blink the cabinet number LCD for

# fruled -f -C          Turn off all cell and I/O chassis attention
# fruled -f -I          indicators and stop blinking the cabinet
# fruled -f -b0          number LED.

# rad -f attention 0-0-1-2  Blink the attention indicator for PCI slot
# rad -f off 0-0-1-2       2 in cabinet 0, bay 0, chassis 1. Then turn
#                          off the same PCI slot attention indicator.
```

Turning Attention Indicators (LEDs) On and Off [Partition Manager]

You can turn attention indicators (LEDs) on and off by using Partition Manager.

When using the HP-UX B.11.11 version of Partition Manager, select a cell or I/O chassis, and use the **Cell** → **Light Cell LED** or **I/O** → **Light I/O Chassis LED** action. To turn off all LEDs use the **Complex** → **Clear All LEDs** action.

When using the HP-UX B.11.23 version of Partition Manager, select a cell or I/O chassis, and use the **Cell** → **Turn On Cell LED** or **I/O** → **Turn On Chassis LED** action (or a similar “Turn Off...” action). To turn off all LEDs use the **Complex** → **Clear All LEDs** action.

Step 1. Access Partition Manager.

If managing an nPartition-capable HP 9000 server, run Partition Manager (`/opt/parmgr/bin/parmgr`) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

Chapter 7 Managing Hardware Resources

Turning Attention Indicators (LEDs) On and Off

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools** → **Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Managing Hardware* on page 342.

- Step 2.** Select the cell or I/O chassis whose attention indicator you want to control.

In the HP-UX B.11.11 Partition Manager, the nPartition that contains the cell or I/O chassis, and then select the cell or I/O chassis.

In the HP-UX B.11.23 Partition Manager, select the cell (or I/O chassis) whose attention indicator you want to control.

- Step 3.** Select the Partition Manager action to turn on (blink) or turn off (stop blinking) the attention indicator (LED) for the selected cell or I/O chassis.

From the HP-UX B.11.11 Partition Manager, use the **Cell** → **Light Cell LED** or **I/O** → **Light I/O Chassis LED** action. To turn off all LEDs use the **Complex** → **Clear All LEDs** action.

From the HP-UX B.11.23 Partition Manager, use the **Cell** → **Turn On Cell LED** or **I/O** → **Turn On Chassis LED** action (or a similar “Turn Off...” action). To turn off all LEDs use the **Complex** → **Clear All LEDs** action.

- Step 4.** Exit Partition Manager.

From the HP-UX B.11.23 Partition Manager, select **Log off parmgr** or exit the Web browser when finished.

From the HP-UX B.11.11 Partition Manager, select the **File** → **Exit** action.

Configuring and Deconfiguring Cells

You can configure and deconfigure cells by using any one of the following procedures:

- *Configuring and Deconfiguring Cells [BCH Menu]* on page 365
- *Configuring and Deconfiguring Cells [EFI Shell]* on page 367
- *Configuring and Deconfiguring Cells [Commands]* on page 369
- *Configuring and Deconfiguring Cells [Partition Manager]* on page 370

You can deconfigure (make inactive) a cell that is assigned to an nPartition by setting its use-on-next-boot value to “n” (do not use). This causes the cell to remain assigned to the nPartition, but the cell will be inactive the next time its nPartition boots, meaning the cell hardware resources will not be used.

Whenever you configure or deconfigure cells, you must reboot the corresponding nPartition for the configuration change to take effect.

NOTE

Configuring and deconfiguring cells may be restricted based on any capacity on demand (iCOD) or pay per use (PPU) contracts for the server complex.

Configuring and Deconfiguring Cells [BCH Menu]

From the BCH Configuration Menu use the `CELLCONFIG` command to configure and deconfigure cells assigned to the local nPartition. The BCH Menu is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition whose cells you want to configure or deconfigure.

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Configuring and Deconfiguring Cells

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the `Main Menu: Enter command or menu>` prompt). If at a BCH menu other than the Main Menu, then enter `MA` to return to the BCH Main Menu.

Step 2. Enter `CO` to access the Configuration Menu.

Step 3. From the BCH Configuration menu, use the `CELLCONFIG` command to list or set the use-on-next-boot value for each cell.

- To list the use-on-next-boot values for all cells in the nPartition, issue the `CELLCONFIG` command with no arguments.
- To change a cell use-on-next-boot value, issue the following command:

```
CELLCONFIG cell [ON|OFF]
```

where *cell* is the cell number, `ON` sets the cell use-on-next-boot value to “y” (yes, do use the cell), or `OFF` sets the cell use-on-next-boot value to “n” (no, do not use the cell).

A cell that boots with a “y” (`ON`) use-on-next-boot value is permitted to rendezvous and join its nPartition, thus becoming an active cell whose resources are used.

A cell that boots with a “n” (`OFF`) use-on-next-boot value does not rendezvous and thus becomes an inactive cell whose resources are not used by its nPartition, although the cell still is assigned to its nPartition.

Step 4. Reboot the nPartition to use the cells’ new use-on-next-boot settings.

If you have changed any cell use-on-next-boot settings for the nPartition then reboot the nPartition in either of two ways:

- Use the `REBOOT` command at the BCH interface to perform a reboot.

If you have only changed cell configurations from `ON` to `OFF`, then perform a reboot using the `REBOOT` command. Any cells set to not be used will still be assigned to the nPartition but will not be used (will not rendezvous) in the nPartition.

- Use the `RECONFIGRESET` command at the BCH interface to put the nPartition in the shutdown for reconfig state, then use the `BO` command at the service processor Command menu to boot the nPartition.

If you have changed any cell from OFF (“n”, do not use on next boot) to ON (“y”, use the cell on next boot), then you must perform these two tasks; this resets and reconfigures the nPartition and boots it.

Step 5. Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **X** at the Main Menu.

Configuring and Deconfiguring Cells [EFI Shell]

From the EFI Shell environment, use the `cellconfig` command to configure or deconfigure cells in the local nPartition. The EFI Shell is available only on HP Integrity systems.

NOTE

Use of the `cellconfig` command at the EFI Shell is restricted. See the `help cellconfig` command for details.

Step 1. Access the EFI Shell environment for the nPartition whose cells you want to configure or deconfigure.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

Step 2. Use the `cellconfig` command to list or set the configuration setting (the use-on-next-boot value) for each cell.

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Configuring and Deconfiguring Cells

- To list the use-on-next-boot values for all cells in the nPartition, issue the `cellconfig` command with no arguments.
- To change a cell use-on-next-boot value, issue the following command:

```
cellconfig cell [on|off]
```

where *cell* is the cell number, *on* sets the cell use-on-next-boot value to “y” (yes, do use the cell), or *off* sets the cell use-on-next-boot value to “n” (no, do not use the cell).

A cell that boots with a “y” (*on*) use-on-next-boot value is permitted to rendezvous and join its nPartition, thus becoming an active cell whose resources are used.

A cell that boots with a “n” (*off*) use-on-next-boot value does not rendezvous and thus becomes an inactive cell whose resources are not used by its nPartition, although the cell still is assigned to its nPartition.

Step 3. Reboot the nPartition to use the cells’ new configuration settings.

If you have changed any cell use-on-next-boot settings for the nPartition then reboot the nPartition in either of two ways:

- Use the `reset` command at the EFI Shell to perform a reboot.

If you have only changed cell configurations from *on* to *off*, then perform a reboot using the `reset` command. Any cells set to not be used will still be assigned to the nPartition but will not be used (will not rendezvous) in the nPartition.

- Use the `reconfigreset` command at the EFI Shell to put the nPartition in the shutdown for reconfig state, then use the `BO` command at the service processor Command Menu to boot the nPartition.

If you have changed any cell from *off* (“n”, do not use on next boot) to *on* (“y”, use the cell on next boot), then you must perform these two tasks; this resets and reconfigures the nPartition and boots it.

Step 4. Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **X** at the Main Menu.

Configuring and Deconfiguring Cells [Commands]

From the command line, use the `parmodify -p# -m#...` command to configure or deconfigure a cell by setting its use-on-next-boot attribute value. You also can use the `parstatus -V -c#` command to list attribute details for a specific cell (`-c#` where `#` is the cell number).

NOTE

You can remotely perform this task from either an HP-UX B.11.23 system or Windows SMS by using the remote administration options. Remote administration is supported by the Partition Manager **Tools** → **Switch Complexes** action and by the nPartition command `-u...` `-h...` options or `-g...` `-h...` options.

For details see *Tools for Managing Hardware* on page 342. Remote administration is supported only for servers based on the HP sx1000 chipset. The Windows SMS commands require remote options.

-
- Step 1.** Login to HP-UX running on an nPartition in the server complex, or login to any HP-UX B.11.23 system or Windows SMS.

You can list and modify any cell settings from HP-UX running on any nPartition in the server complex or from any HP-UX B.11.23 system or Windows SMS.

- Step 2.** To list current cell attribute settings, use the `parstatus -C` command to list the use-on-next-boot values for all cells, or use the `parstatus -V -c#` command to list all attribute values for a specific cell (`-c#` where `#` is the cell number)

- Step 3.** To modify cell attribute values, use the `parmodify -p# -m#...` command and specify the new cell attributes as part of the `-m` option. The `-m...` option differs slightly on HP-UX B.11.11 and other systems.

You must specify both the nPartition (`-p#` where `#` is the nPartition number) and the cell (`-m#...` where `#` is the cell number).

Chapter 7 Managing Hardware Resources

Configuring and Deconfiguring Cells

See *Setting Cell Attributes* on page 324 for details on modifying cell attributes, including the use-on-next-boot value that determines whether a cell is configured or deconfigured during the nPartition boot process.

- Step 4.** Reboot the nPartition to use the cells' new configuration (the new use-on-next-boot values).

If you have changed any cell use-on-next-boot settings for the nPartition then reboot the nPartition in either of two ways:

- Use the HP-UX `shutdown -r` command or Windows `shutdown /r` command to perform a standard reboot.

If you have only changed use-on-next-boot values from `y` to `n`, then perform a reboot. Any cells set to not be used will still be assigned to the nPartition but will not be used (will not rendezvous) in the nPartition.

- Use the HP-UX `shutdown -R` command or Windows `shutdown /r` command to perform a reboot for reconfig.

If you have changed any use-on-next-boot values from `n` (do not use on next boot) to `y` (use the cell on next boot), then you must perform a reboot for reconfig to allow the currently inactive cells to reboot and rendezvous when the nPartition reboots.

Configuring and Deconfiguring Cells [Partition Manager]

You can set configure and deconfigure cell by using Partition Manager to set each cell use-on-next-boot value.

When using the HP-UX B.11.11 version of Partition Manager, select the nPartition to which the cell belongs, select the **Partition** → **Modify Partition** action, **Change Cell Attributes** tab, select the cell(s), and click **Modify Cell(s)**.

When using the HP-UX B.11.23 version of Partition Manager, select the nPartition to which the cell belongs, select the **nPartition** → **Modify nPartition** action, and then configure attributes using the **Set Cell Options** tab.

- Step 1.** Access Partition Manager.

If managing an nPartition-capable HP 9000 server, run Partition Manager (`/opt/parmgr/bin/parmgr`) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools** → **Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Managing Hardware* on page 342.

Step 2. Select the nPartition whose cells you want to configure or deconfigure.

Step 3. Initiate the nPartition modify action.

If using the HP-UX B.11.11 Partition Manager, the **Partition** → **Modify Partition** action.

If using the HP-UX B.11.23 Partition Manager, select the **nPartition** → **Modify nPartition** action.

Step 4. Access the Partition Manager section(s) for configuring cell attributes.

From HP-UX B.11.11 Partition Manager, select the **Change Cell Attributes** tab, then select the cell and click the **Modify Cell** button. This enables you to configure the use-on-next-boot value for the selected cell.

From HP-UX B.11.23 Partition Manager, use the **Set Cell Options** tab to configure cell use-on-next-boot values.

Step 5. After changing attribute values for all the cells you plan to modify, click the **OK** button.

Step 6. Review all information presented in the **Notes and Warnings**, the **Summary of Changes**, and the **HA Checks** tabs.

Step 7. Either cancel or proceed with the cell attribute changes.

Click the **Cancel** button to cancel the changes.

To proceed with removing the cells, click the **Finish** button (HP-UX B.11.23) or click the **OK** button (HP-UX B.11.11).

Chapter 7 *Managing Hardware Resources*

Configuring and Deconfiguring Cells

Step 8. Reboot the nPartition to use the cells' new attribute values.

If you have changed any cell use-on-next-boot settings for the nPartition then reboot the nPartition in either of two ways:

- Use the HP-UX `shutdown -r` command or Windows `shutdown /r` command to perform a standard reboot.

If you have only changed use-on-next-boot values from `y` to `n`, then perform a reboot. Any cells set to not be used will still be assigned to the nPartition but will not be used (will not rendezvous) in the nPartition.

- Use the HP-UX `shutdown -R` command or Windows `shutdown /r` command to perform a reboot for reconfig.

If you have changed any use-on-next-boot values from `n` (do not use on next boot) to `y` (use the cell on next boot), then you must perform a reboot for reconfig to allow the currently inactive cells to reboot and rendezvous when the nPartition reboots.

Configuring and Deconfiguring Processors (CPUs)

You can configure and deconfigure processors by using any one of the following procedures:

- *Configuring and Deconfiguring Processors (CPUs) [BCH Menu]* on page 373
- *Configuring and Deconfiguring Processors (CPUs) [EFI Shell]* on page 374

You can configure and deconfigure processors from any cell that is assigned to an nPartition. Deconfiguring a processor causes it to not be available for use by the cell or its nPartition.

Whenever you configure or deconfigure processors, you must reboot the corresponding nPartition for the configuration change to take effect.

NOTE

Configuring and deconfiguring processors may be restricted based on any capacity on demand (iCOD) or pay per use (PPU) contracts for the server complex.

Configuring and Deconfiguring Processors (CPUs) [BCH Menu]

From the BCH Configuration Menu, use the CPUCONFIG command to configure or deconfigure processors in the local nPartition. The BCH Menu is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition whose processors you want to configure or deconfigure.

Login to the service processor (MP or GSP) and enter CO to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the Main Menu: Enter command or menu> prompt). If at a BCH menu other than the Main Menu, then enter MA to return to the BCH Main Menu.

Chapter 7 Managing Hardware Resources

Configuring and Deconfiguring Processors (CPUs)

Step 2. Enter `CO` to access the BCH Configuration Menu.

Step 3. From the Configuration Menu, use the `CPUCONFIG` command to configure or deconfigure a processor on a cell in the nPartition.

Enter `CPUCONFIG` with no arguments to list the current current processor configurations for all cells assigned to the local nPartition.

`CPUCONFIG cell cpu OFF` deconfigures the specified processor (*cpu*) on the specified cell (*cell*).

`CPUCONFIG cell cpu ON` configures the specified processor on the cell

Enter `HELP CPUCONFIG` for details.

Step 4. Reboot the nPartition using the `REBOOT` command.

Whenever changing processor configurations you must reboot the corresponding nPartition to allow the configuration changes to take place.

Step 5. Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type `^B (Control-B)`; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `x` at the Main Menu.

Configuring and Deconfiguring Processors (CPUs) [EFI Shell]

From the EFI Shell environment, use the `cpuconfig` command to configure or deconfigure processors in the local nPartition. The EFI Shell is available only on HP Integrity systems.

Step 1. Access the EFI Shell environment for the nPartition whose processors you want to configure or deconfigure.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

Step 2. Enter the `cpuconfig` command with no arguments to list the current processor configurations for all cells assigned to the local nPartition.

Step 3. Use the `cpuconfig` command to change processor configurations for any of the cells assigned to the local nPartition.

`cpuconfig cell cpu off` deconfigures the specified processor (*cpu*) on the specified cell (*cell*).

`cpuconfig cell cpu on` configures the processor on the cell.

Enter `help cpuconfig` for more details on configuring and deconfiguring processors from the EFI Shell.

Step 4. Reboot the nPartition using the `reset` command.

Whenever changing processor configurations you must reboot the corresponding nPartition to allow the configuration changes to take place.

Step 5. Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type `^B` (**Control-B**); this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `x` at the Main Menu.

Configuring and Deconfiguring Memory (DIMMs)

You can configure and deconfigure memory by using any one of the following procedures:

- *Configuring and Deconfiguring Memory (DIMMs) [BCH Menu]* on page 376
- *Configuring and Deconfiguring Memory (DIMMs) [EFI Shell]* on page 378

You can configure and deconfigure memory modules (DIMMs) from any cell that is assigned to an nPartition. Deconfiguring memory causes it to not be available for use by the cell or its nPartition.

Whenever you configure or deconfigure memory, you must reboot the corresponding nPartition for the configuration change to take effect.

NOTE

DIMMs operate either in ranks of four or echelons of two, depending on memory architecture of the server. When you deallocate a DIMM, all other DIMMs in the rank or echelon also will not be used the next time the nPartition boots.

Each rank or echelon is numbered (0, 1, 2, and so on up to hexadecimal number F as needed). The DIMMs in the rank or echelon are lettered (A to D). For example, rank 0 includes DIMMs 0A, 0B, 0C, and 0D; echelon 1 has DIMMs 1A and 1B.

Configuring and Deconfiguring Memory (DIMMs) [BCH Menu]

From the BCH Service Menu, use the `DIMMDEALLOC` command to configure or deconfigure memory modules (DIMMs) in cells assigned to the local nPartition. The BCH Menu is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition whose memory you want to configure or deconfigure.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the `Main Menu: Enter command or menu>` prompt). If at a BCH menu other than the Main Menu, then enter `MA` to return to the BCH Main Menu.

- Step 2.** Enter `SER` to access the BCH Service Menu.

- Step 3.** From the Service Menu, use the `DIMMDEALLOC` command to list the current configurations of memory modules (DIMMs) in the cells assigned to the local nPartition. Also use the `DIMMDEALLOC` command to configure and deconfigure DIMMs for cells in the local nPartition.

NOTE

When you deallocate a DIMM, all other DIMMs in the rank or echelon also will not be used the next time the nPartition boots.

Enter `DIMMDEALLOC` with no arguments to list the current DIMM configurations for all cells in the local nPartition.

`DIMMDEALLOC cell dimm OFF` deconfigures the specified DIMM (*dim*) on the cell (*cell*) indicated.

`DIMMDEALLOC cell dimm ON` configures the DIMM on the cell.

Use `DIMMDEALLOC cell` to display the DIMM configuration for a cell.

Enter `HELP DIMMDEALLOC` for details.

- Step 4.** Reboot the nPartition using the `REBOOT` command.

Whenever changing memory configurations you must reboot the corresponding nPartition to allow the configuration changes to take place.

- Step 5.** Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type `^B (Control-B)`; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `x` at the Main Menu.

Chapter 7 Managing Hardware Resources

Configuring and Deconfiguring Memory (DIMMs)

Configuring and Deconfiguring Memory (DIMMs) [EFI Shell]

From the EFI Shell environment, use the `dimmconfig` command to configure or deconfigure memory modules (DIMMs) in cells assigned to the local nPartition. The EFI Shell is available only on HP Integrity systems.

- Step 1.** Access the EFI Shell environment for the nPartition whose memory you want to configure or deconfigure.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

- Step 2.** Enter the `dimmconfig` command with no arguments to list a current summary of the memory configuration for the local nPartition.

- Step 3.** Use the `dimmconfig` command to change memory configurations for any of the cells assigned to the local nPartition.

NOTE

When you deallocate a DIMM, all other DIMMs in the echelon also will not be used the next time the nPartition boots.

`dimmconfig cell dimm OFF` deconfigures the specified DIMM (*dim*) on the cell (*cell*) indicated.

`dimmconfig cell dimm ON` configures the DIMM on the cell.

Use `dimmconfig cell` to display the DIMM configuration for a cell.

Enter the `help dimmconfig` command for more details.

- Step 4.** Reboot the nPartition using the `reset` command.

Whenever changing memory configurations you must reboot the corresponding nPartition to allow the configuration changes to take place.

Step 5. Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **x** at the Main Menu.

Complex Health Analysis of a Server

You can analyze the general hardware and configuration status of an nPartition-capable server by using the Partition Manager **Complex** → **Analyze Complex Health** action, as described in the following procedure.

This feature scans the server complex and uses problem detectors to check the operating status of cells, I/O chassis, fans and blowers, and power supplies.

Complex Health Analysis of a Server [Partition Manager]

Use the **Complex** → **Analyze Complex Health** action to quickly check the operating status of a server complex from Partition Manager.

Step 1. Access Partition Manager.

If managing an nPartition-capable HP 9000 server, run Partition Manager (`/opt/parmgr/bin/parmgr`) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools** → **Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Managing Hardware* on page 342.

Step 2. Use the **Complex** → **Analyze Complex Health** action to have Partition Manager analyze the general hardware and configuration status for the server complex.

Partition Manager displays a report of the hardware analysis results. To re-analyze the server health click the **Refresh** button.

Step 3. Exit Partition Manager.

From the HP-UX B.11.23 Partition Manager, select **Log off parmgr** or exit the Web browser when finished.

From the HP-UX B.11.11 Partition Manager, select the **File** → **Exit** action.

Chapter 7 Managing Hardware Resources

Complex Health Analysis of a Server

8

Listing nPartition and Hardware Status

This chapter covers procedures for listing the current status of nPartitions and server hardware components.

For an introduction to nPartition system hardware features, see the chapter *Getting Started with nPartitions* on page 29.

Tools for Listing Status

The tools for listing hardware and nPartition status are:

- Service Processor (MP or GSP) Menus
Service processor menus provide a complex-wide service interface that can allow access to all hardware and nPartitions.
See *Command Reference: Service Processor (MP or GSP) Commands* on page 169.
- EFI Boot Manager and EFI Shell
On HP Integrity servers only, the EFI (Extensible Firmware Interface) Boot Manager and Shell are the methods for interacting with an nPartition before it has booted an operating system.
See *Command Reference: EFI Shell Commands* on page 172.
- Boot Console Handler (BCH) Menu Commands
On PA-RISC servers, the BCH interface is the method for interacting with an nPartition before it has booted an operating system.
See *Command Reference: BCH Menu Commands* on page 177.
- nPartition Commands
HP nPartition commands allow you to manage and monitor nPartitions and hardware within a server complex from HP-UX running on any nPartition in the server. The HP-UX B.11.23 versions of the nPartition commands also can remotely manage complexes based on the HP sx1000 chipset from any system running HP-UX B.11.23. Windows versions of the commands are supported for the Windows SMS (a Superdome Support Management Station running the Windows operating system); Windows SMS commands require specifying remote administration options.
See *Commands for Configuring nPartitions* on page 35.
- Partition Manager (/opt/parmgr/bin/parmgr)
Partition Manager provides a graphical interface for managing and monitoring nPartitions and hardware within a server complex.
See *Partition Manager* on page 37.

Task Summaries: Status for nPartitions and Hardware

Table 8-1 describes the main hardware and nPartition status tasks and provides brief summaries and references for detailed procedures.

You can perform the status tasks in Table 8-1 using various tools, including the service processor (MP or GSP), Boot Console Handler (BCH, available only on PA-RISC servers), Extensible Firmware Interface (EFI, available only on HP Integrity servers), nPartition commands, or Partition Manager (/opt/parmgr/bin/parmgr).

See *Tools for Listing Status* on page 384 for details.

Table 8-1 **Hardware and nPartition Status:
Task Summaries**

Task	Summary
<i>Listing Cell Configurations</i>	<ul style="list-style-type: none"> • Service Processor (MP or GSP): CP command for cell nPartition assignments. PS command and select a cell for detailed information about any cell in the complex. • nPartition Commands: parstatus -C command. • Partition Manager: <ul style="list-style-type: none"> B.11.11 — Details → Show Complex Details action, Cells tab. B.11.23 — Select the Cells tab. <p>See <i>Listing Cell Configurations</i> on page 391.</p>

**Table 8-1 Hardware and nPartition Status:
Task Summaries (Continued)**

Task	Summary
<i>Listing Processor Configurations</i>	<ul style="list-style-type: none"> • Service Processor (MP or GSP): PS command, and select the cell whose processor configuration you wish to view. • BCH Menu: Information menu, PR command. • EFI Shell: info cpu command. • nPartition Commands: <ul style="list-style-type: none"> — parstatus -C for processor summaries for all cells. — parstatus -V -c# for detailed processor information for the specified cell (-c# where # is the cell number). — Processor information about the local nPartition: ioscan -C processor (HP-UX only) or mpsched -s (HP-UX B.11.23 only). • Partition Manager: <ul style="list-style-type: none"> — B.11.11 — Details → Show Complex Details action, CPUs/Memory tab. — B.11.23 — Select the Cells tab. <p>See <i>Listing Processor Configurations</i> on page 393.</p>

**Table 8-1 Hardware and nPartition Status:
Task Summaries (Continued)**

Task	Summary
<i>Listing Memory Configurations</i>	<ul style="list-style-type: none"> • Service Processor (MP or GSP): PS command, and select the cell whose memory configuration you wish to view. • BCH Menu: Information menu, ME command. • EFI Shell: <code>info mem</code> command, and the <code>dimmconfig #</code> command (where # is the cell number) for memory module (DIMM) details for a specific cell. • nPartition Commands: <ul style="list-style-type: none"> — <code>parstatus -C</code> for processor summaries for all cells. — <code>parstatus -V -c#</code> for detailed memory information for the specified cell (-c# where # is the cell number). Includes cell local memory (CLM) details for HP Integrity servers. — <code>parstatus -V -p#</code> for detailed memory information for the specified nPartition (-p# where # is the nPartition number). Includes cell local memory (CLM) details for HP Integrity servers. • Partition Manager: <ul style="list-style-type: none"> — B.11.11 — Details → Show Complex Details action, CPUs/Memory tab. — B.11.23 — Select the Cells tab. <p>See <i>Listing Memory Configurations</i> on page 397.</p>

**Table 8-1 Hardware and nPartition Status:
Task Summaries (Continued)**

Task	Summary
<p><i>Listing Input/Output (I/O) Configurations</i></p>	<ul style="list-style-type: none"> • Service Processor (MP or GSP): IO command to list connections from cells to I/O chassis. PS command and the cabinet option to list I/O details for an entire cabinet. • BCH Menu: Information menu, IO command. • EFI Shell: info io command. • nPartition Commands: parstatus -I command, for complex-wide details. <ul style="list-style-type: none"> — HP-UX B.11.11 — rad -q command. — HP-UX B.11.23 — olrad -q command. • Partition Manager: <ul style="list-style-type: none"> — B.11.11 — Details → Show Complex Details action, I/O Chassis tab. — B.11.23 — Select the I/O tab. <p>See <i>Listing Input/Output (I/O) Configurations</i> on page 402.</p>
<p><i>Listing Cabinets in a Server Complex</i></p>	<ul style="list-style-type: none"> • Service Processor (MP or GSP): PS command and B option to list cabinet details for the desired cabinet. • nPartition Commands: parstatus -B command for summaries about all cabinets, or the parstatus -v -b# command for detailed status for the specified cabinet (-b# where # is the cabinet number). • Partition Manager: <ul style="list-style-type: none"> — B.11.11 — Details → Show Complex Details action, Cabinet Info tab. — B.11.23 — Hardware tab for an overview of cabinets in the complex. Complex → Show Complex Details for complete details about all hardware in the complex. <p>See <i>Listing Cabinets in a Server Complex</i> on page 407.</p>

Table 8-1 **Hardware and nPartition Status:
Task Summaries (Continued)**

Task	Summary
<i>Listing Product and Serial Numbers</i>	<ul style="list-style-type: none"> • Service Processor (MP or GSP): ID command. • BCH Menu: Information menu, CID command. • nPartition Commands: parstatus -X command. • Partition Manager: <ul style="list-style-type: none"> — B.11.11 — Complex → Show Complex Details, General tab. — B.11.23 — General tab. <p>See <i>Listing Product and Serial Numbers</i> on page 410.</p>
<i>Listing nPartition Configurations</i>	<ul style="list-style-type: none"> • Service Processor (MP or GSP): CP command. • nPartition Commands: parstatus -P command, or the parstatus -V -p# command for details about specific nPartition (-p# where # is the nPartition number) • Partition Manager: <ul style="list-style-type: none"> — B.11.11 — View the left side of the primary window to see a display of all nPartitions in the server; for details select an nPartition and the Details → Show Partition Details action. — B.11.23 — nPartitions tab. <p>See <i>Listing nPartition Configurations</i> on page 413.</p>
<i>Listing the Local (Current) nPartition Number</i>	<ul style="list-style-type: none"> • BCH Menu: Configuration menu, PD command. • EFI Shell: info sys command. • nPartition Commands: parstatus -w command. <p>See <i>Listing the Local (Current) nPartition Number</i> on page 416.</p>

Chapter 8 Listing nPartition and Hardware Status

Task Summaries: Status for nPartitions and Hardware

**Table 8-1 Hardware and nPartition Status:
Task Summaries (Continued)**

Task	Summary
<p><i>Listing Power Status and Power Supplies</i></p>	<ul style="list-style-type: none"> • Service Processor (MP or GSP): PS command and the cabinet option for detailed power status for the specified cabinet. • nPartition Commands: parstatus -B command for a power status summary for all cabinets, or parstatus -V -b# for detailed power status for the specified cabinet (-b#, where # is the cabinet number). frupower -d -C command for cell power status. frupower -d -I command for I/O chassis power status. • Partition Manager: <ul style="list-style-type: none"> — B.11.11 — Details —> Show Complex Details action, Power/Cooling tab. — B.11.23 — Power and Cooling tab. <p>See <i>Listing Power Status and Power Supplies</i> on page 419.</p>
<p><i>Listing Fan and Blower Status</i></p>	<ul style="list-style-type: none"> • Service Processor (MP or GSP): PS command, B option for detailed fan and blower status for the specified cabinet. • nPartition Commands: parstatus -B command for a summary of fans and blowers for all cabinets, or parstatus -V -b# for detailed fan and blower status for the specified cabinet (-b#, where # is the cabinet number). • Partition Manager: <ul style="list-style-type: none"> — B.11.11 — Details —> Show Complex Details action, Power/Cooling tab. — B.11.23 — Power and Cooling tab. <p>See <i>Listing Fan and Blower Status</i> on page 422.</p>

Listing Cell Configurations

You can list the cell configurations in an nPartition-capable server by using any one of the following procedures:

- *Listing Cell Configurations [Service Processor (MP or GSP)]* on page 391
- *Listing Cell Configurations [Commands]* on page 391
- *Listing Cell Configurations [Partition Manager]* on page 392

Cell configuration details include the list of the cells installed in the server, and cell assignments to nPartitions.

Listing Cell Configurations [Service Processor (MP or GSP)]

From the service processor Command Menu, use the `CP` and `PS` commands to list cell configuration details.

- Step 1.** Login to the service processor (MP or GSP) and enter `CM` to access the Command Menu.
- Step 2.** At the Command Menu, enter the `CP` command to list cell nPartition assignments, or use the `PS` command to list details about the individual cells in the server complex. The `PS` command's `C` option displays detailed information about a specified cell.
- Step 3.** To exit the service processor Command Menu, enter `MA` to return to the service processor Main Menu.

At the Main Menu, enter `X` to exit the service processor interface.

Listing Cell Configurations [Commands]

From the command line, use the `parstatus -C` command to list cell configuration details.

- Step 1.** Login to HP-UX running on an nPartition in the server complex, or login to any HP-UX B.11.23 system or Windows SMS.

Chapter 8 Listing nPartition and Hardware Status

Listing Cell Configurations

- Step 2.** Issue the `parstatus -C` command to list details about the cells installed in the server complex and their nPartition assignments.

Listing Cell Configurations [Partition Manager]

From Partition Manager, select the **Cells** tab to list cell configuration details.

When using the HP-UX B.11.11 version of Partition Manager, first select the **Details** → **Show Complex Details** action, then select the **Cells** tab.

- Step 1.** Access Partition Manager.

If managing an nPartition-capable HP 9000 server, run Partition Manager (`/opt/parmgr/bin/parmgr`) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools** → **Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Listing Status* on page 384.

- Step 2.** Use the **Cells** tab to list cell configurations, including details about which cell are installed in the server and any cell nPartition assignments.

From the HP-UX B.11.11 Partition Manager, select the **Details** → **Show Complex Details** action, then select the **Cells** tab.

From the HP-UX B.11.23 Partition Manager, select the **Cells** tab to list these details.

- Step 3.** Exit Partition Manager if finished using it.

From the HP-UX B.11.23 Partition Manager, select **Log off parmgr** or exit the Web browser when finished.

From the HP-UX B.11.11 Partition Manager, select the **File** → **Exit** action.

Listing Processor Configurations

You can list processor configurations by using any one of the following procedures:

- *Listing Processor Configurations [Service Processor (MP or GSP)]* on page 393
- *Listing Processor Configurations [BCH Menu]* on page 393
- *Listing Processor Configurations [EFI Shell]* on page 394
- *Listing Processor Configurations [Commands]* on page 395
- *Listing Processor Configurations [Partition Manager]* on page 395

Processor (CPU) configuration details include the CPU population, CPU type, and the clock speed.

Listing Processor Configurations [Service Processor (MP or GSP)]

From the service processor Command Menu, use the `PS` command to list details about the cell whose processor configuration you want to view.

- Step 1.** Login to the service processor (MP or GSP) and enter `CM` to access the Command Menu.
- Step 2.** At the Command Menu, enter the `PS` command, select the `C` option, and specify the cell whose processor configuration you want to view.
- Step 3.** To exit the service processor Command Menu, enter `MA` to return to the service processor Main Menu.

At the Main Menu, enter `X` to exit the service processor interface.

Listing Processor Configurations [BCH Menu]

From the BCH Information Menu use the `PR` command to list processor details for the local nPartition. The BCH Menu is available only on HP 9000 systems.

Chapter 8 Listing nPartition and Hardware Status

Listing Processor Configurations

- Step 1.** Access the BCH Main Menu for the nPartition whose processor configuration you want to list.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the `Main Menu: Enter command or menu>` prompt). If at a BCH menu other than the Main Menu, then enter `MA` to return to the BCH Main Menu.

- Step 2.** Enter `IN` to access the BCH Information Menu.

- Step 3.** Enter the `PR` command to list processor information for all active cells in the local nPartition.

- Step 4.** Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type `^B (Control-B)`; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `X` at the Main Menu.

Listing Processor Configurations [EFI Shell]

From the EFI Shell environment, use the `info cpu` command to list processor details for the local nPartition. The EFI Shell is available only on HP Integrity systems.

- Step 1.** Access the EFI Shell environment for the nPartition whose processor configuration you want to list.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the `EFI Boot Manager` heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

- Step 2.** Enter the `info cpu` command to list processor details for all active cells in the local nPartition.

- Step 3.** Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **x** at the Main Menu.

Listing Processor Configurations [Commands]

From the command line, use `parstatus -C` for processor summaries for all cells in the server complex; or use `parstatus -V -c#` for detailed processor information for the specified cell (`-c#` where `#` is the cell number). Use the HP-UX `ioscan -C processor` command or the HP-UX B.11.23 `mpsched -s` command for processor information about the local nPartition.

Step 1. Login to HP-UX running on an nPartition in the server complex, or login to any HP-UX B.11.23 system or Windows SMS.

Step 2. Issue the command to list processor details.

- `parstatus -C` — Cell and processor summaries for all cells in the server complex.
- `parstatus -V -c#` — Detailed processor information for the specified cell (`-c#` where `#` is the cell number).
- `ioscan -C processor` — HP-UX only. Processor HP-UX Hardware Paths for all configured processors in all active cells in the local nPartition.
- `mpsched -s` — HP-UX B.11.23 only. Processor and “locality domain” summary for all configured processors in all active cells in the local nPartition.

Listing Processor Configurations [Partition Manager]

You can list the processor configuration for any of the cells or nPartitions in a server complex by using Partition Manager.

When using the HP-UX B.11.11 version of Partition Manager, select the **Details** → **Show Complex Details** action, then select the **CPUs/Memory** tab.

When using the HP-UX B.11.23 version of Partition Manager, select the **Cells** tab.

Step 1. Access Partition Manager.

Chapter 8 Listing nPartition and Hardware Status

Listing Processor Configurations

If managing an nPartition-capable HP 9000 server, run Partition Manager (/opt/parmgr/bin/parmgr) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools** → **Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Listing Status* on page 384.

- Step 2.** List processor configuration details for any cell in the complex you currently are accessing.

From the HP-UX B.11.11 Partition Manager, select the **Details** → **Show Complex Details** action, then select the **CPUs/Memory** tab to view processor details about all cells in the complex. For additional details on any cell, use the **Show Details** button.

From the HP-UX B.11.23 Partition Manager, select the **Cells** tab to view details about all cells in the complex, including processor details.

- Step 3.** Exit Partition Manager.

From the HP-UX B.11.23 Partition Manager, select **Log off parmgr** or exit the Web browser when finished.

From the HP-UX B.11.11 Partition Manager, select the **File** → **Exit** action.

Listing Memory Configurations

You can list memory configurations by using any one of the following procedures:

- *Listing Memory Configurations [Service Processor (MP or GSP)]* on page 397
- *Listing Memory Configurations [BCH Menu]* on page 398
- *Listing Memory Configurations [EFI Shell]* on page 398
- *Listing Memory Configurations [Commands]* on page 399
- *Listing Memory Configurations [Partition Manager]* on page 400

Memory configuration details include summaries of the total memory in a cell or nPartition, the amounts of interleaved memory and cell local memory (where supported) per cell or nPartition, and the number and locations of memory modules (DIMMs) within the cells in a server complex.

Listing Memory Configurations [Service Processor (MP or GSP)]

From the service processor Command Menu, use the `PS` command to list details about the cell whose memory configuration you want to view.

- Step 1.** Login to the service processor (MP or GSP) and enter `CM` to access the Command Menu.
- Step 2.** At the Command Menu, enter the `PS` command, select the `C` option, and specify the cell whose memory configuration you want to view.
- Step 3.** To exit the service processor Command Menu, enter `MA` to return to the service processor Main Menu.

At the Main Menu, enter `X` to exit the service processor interface.

Chapter 8 Listing nPartition and Hardware Status

Listing Memory Configurations

Listing Memory Configurations [BCH Menu]

From the BCH Information Menu, use the `ME` command to list memory details for the local nPartition. The BCH Menu is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition whose processor configuration you want to list.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the `Main Menu: Enter command or menu>` prompt). If at a BCH menu other than the Main Menu, then enter `MA` to return to the BCH Main Menu.

- Step 2.** Enter `IN` to access the BCH Information Menu.

- Step 3.** Enter the `ME` command to list memory details for all active cells in the local nPartition.

- Step 4.** Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type `^B (Control-B)`; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `x` at the Main Menu.

Listing Memory Configurations [EFI Shell]

From the EFI Shell environment, use the `info mem` command to list memory details for the local nPartition. Also use the `dimmconfig #` command (where `#` is the cell number) for memory module (DIMM) details for a specific cell. The EFI Shell is available only on HP Integrity systems.

- Step 1.** Access the EFI Shell environment for the nPartition whose memory configuration you want to list.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

- Step 2.** Enter the `info mem` command to list memory details for all active cells in the local nPartition. For additional details about memory modules (DIMMs) in an individual cell use the `dimmconfig #` command (where # is the cell number).

The `info mem` command lists memory totals for each active cell in the local nPartition, and includes a summary of the current interleaved memory and non-interleaved (cell local) memory.

The `dimmconfig #` command shows DIMM locations, sizes, and current status for all memory in the specified cell (where # is the cell number).

- Step 3.** Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **X** at the Main Menu.

Listing Memory Configurations [Commands]

From the command line, issue the `parstatus -C` command for memory summaries for all cells; use `parstatus -V -c#` for detailed memory information for the specified cell (`-c#` where # is the cell number); or use `parstatus -V -p#` for detailed memory information for the specified nPartition (`-p#` where # is the nPartition number).

- Step 1.** Login to HP-UX running on an nPartition in the server complex, or login to any HP-UX B.11.23 system or Windows SMS.

- Step 2.** Issue the command to list memory details.

- `parstatus -C` — Cell and memory summaries for all cells in the server complex.
- `parstatus -V -c#` — Detailed memory information for the specified cell (`-c#` where # is the cell number), including memory module (DIMM) locations and sizes. For HP Integrity servers, this includes details about the interleaved memory in the cell as well as the requested and allocated cell local memory (CLM) amounts.

Chapter 8 Listing nPartition and Hardware Status

Listing Memory Configurations

- `parstatus -v -p#` — Detailed information about the specified nPartition (`-p#` where `#` is the nPartition number), including summaries for all assigned cells including their amounts of memory. For HP Integrity servers, the nPartition details include the total good memory size, total interleaved memory, and the total requested and allocated cell local memory (CLM) amounts.

Listing Memory Configurations [Partition Manager]

You can list the memory configuration for any of the cells or nPartitions in a server complex by using Partition Manager.

When using the HP-UX B.11.11 version of Partition Manager, select the **Details** → **Show Complex Details** action, then select the **CPUs/Memory** tab.

When using the HP-UX B.11.23 version of Partition Manager, select the **Cells** tab.

Step 1. Access Partition Manager.

If managing an nPartition-capable HP 9000 server, run Partition Manager (`/opt/parmgr/bin/parmgr`) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools** → **Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Listing Status* on page 384.

Step 2. List memory configuration details for any cell in the complex you currently are accessing.

From the HP-UX B.11.11 Partition Manager, select the **Details** → **Show Complex Details** action, then select the **CPUs/Memory** tab to view memory details about all cells in the complex. For additional details on any cell, use the **Show Details** button.

From the HP-UX B.11.23 Partition Manager, select the **Cells** tab to view details about all cells in the complex, including memory details.

Step 3. Exit Partition Manager.

From the HP-UX B.11.23 Partition Manager, select **Log off parmgr** or exit the Web browser when finished.

From the HP-UX B.11.11 Partition Manager, select the **File —> Exit** action.

Listing Input/Output (I/O) Configurations

You can list I/O configurations by using any one of the following procedures:

- *Listing Input/Output (I/O) Configurations [Service Processor (MP or GSP)]* on page 402
- *Listing Input/Output (I/O) Configurations [BCH Menu]* on page 403
- *Listing Input/Output (I/O) Configurations [EFI Shell]* on page 403
- *Listing Input/Output (I/O) Configurations [Commands]* on page 404
- *Listing Input/Output (I/O) Configurations [Partition Manager]* on page 405

nPartition input/output (I/O) configuration details include the I/O chassis population, cell-to-chassis connections, PCI card slot capabilities, and PCI card details.

Listing Input/Output (I/O) Configurations [Service Processor (MP or GSP)]

From the service processor Command Menu, use the `IO` command to list connections from cells to I/O chassis, or use the `PS` command and the cabinet option to list I/O chassis population and power status for an entire cabinet.

- Step 1.** Login to the service processor (MP or GSP) and enter `CM` to access the Command Menu.
- Step 2.** At the Command Menu, enter the `IO` command to list the connections from I/O chassis to cells; the `IO` command is supported for HP Superdome servers only.

To list the power status for I/O chassis, and the locations of installed I/O chassis, issue the `PS` command, and select the cabinet option for the server cabinet whose I/O configuration you want to view:

- On HP Superdome servers, select the `B` (cabinet) option, and specify the cabinet whose information you want to view.

- On all other systems, select the T (cabinet) option.

Step 3. To exit the service processor Command Menu, enter MA to return to the service processor Main Menu.

At the Main Menu, enter x to exit the service processor interface.

Listing Input/Output (I/O) Configurations [BCH Menu]

From the BCH Information Menu use the IO command to list I/O details for the local nPartition. The BCH Menu is available only on HP 9000 systems.

Step 1. Access the BCH Main Menu for the nPartition whose processor configuration you want to list.

Login to the service processor (MP or GSP) and enter CO to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the Main Menu: Enter command or menu> prompt). If at a BCH menu other than the Main Menu, then enter MA to return to the BCH Main Menu.

Step 2. Enter IN to access the BCH Information Menu.

Step 3. Enter the IO command to list I/O details for all active cells in the local nPartition.

The IO command provides details that include I/O chassis information, I/O module (PCI card slot) details, and information about PCI devices (installed PCI cards).

Step 4. Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type ^B (**Control-B**); this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type x at the Main Menu.

Listing Input/Output (I/O) Configurations [EFI Shell]

From the EFI Shell environment, use the info io command to list I/O details for the local nPartition. The EFI Shell is available only on HP Integrity systems.

Chapter 8 Listing nPartition and Hardware Status

Listing Input/Output (I/O) Configurations

- Step 1.** Access the EFI Shell environment for the nPartition whose I/O configuration you want to list.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the EFI Boot Manager heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

- Step 2.** Enter the `info io` command to list I/O details for all active cells in the local nPartition.

The `info io` command reports details that include I/O chassis information, I/O module (PCI card slot) details, and information about PCI devices (installed PCI cards).

- Step 3.** Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `x` at the Main Menu.

Listing Input/Output (I/O) Configurations [Commands]

From the command line, use the `parstatus -I` command to list details about all I/O chassis in the server complex.

From HP-UX B.11.11 use the `rad -q` command, or from HP-UX B.11.23 use the `olrad -q` command, to list details about PCI cards and slots in the local nPartition.

- Step 1.** Login to HP-UX running on an nPartition in the server complex, or login to any HP-UX B.11.23 system or Windows SMS.

To list details about the cards and slots in an I/O chassis you must login to the nPartition to which the cell connected to the I/O chassis is assigned. If using the `parstatus -I` command you can login to any nPartition in the complex or remotely list details from any HP-UX B.11.23 system or Windows SMS.

Step 2. Issue the commands to list details about I/O chassis and PCI slots.

- `parstatus -I` — List details about all I/O chassis in the server complex, including the usage (absent, active, inactive), whether the chassis has Core I/O, and which cell the I/O chassis is connected to.
- `rad -q` — HP-UX B.11.11 only. Displays the status of all PCI card slots in the system. Includes details about each PCI card slot, HP-UX Hardware Paths, and power and driver status.
- `olrad -q` — HP-UX B.11.23 only. Displays the status of all PCI card slots in the system. Includes details about each PCI card slot, HP-UX Hardware Paths, and power and driver status.

Listing Input/Output (I/O) Configurations [Partition Manager]

You can list the I/O configuration for a server complex or any nPartition in the complex by using Partition Manager.

When using the HP-UX B.11.11 version of Partition Manager, select the **Details** → **Show Complex Details** action, then select the **I/O Chassis** tab.

When using the HP-UX B.11.23 version of Partition Manager, select the **I/O** tab.

Step 1. Access Partition Manager.

If managing an nPartition-capable HP 9000 server, run Partition Manager (`/opt/parmgr/bin/parmgr`) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools** → **Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Listing Status* on page 384.

Step 2. List I/O configuration details for the server complex.

Chapter 8 Listing nPartition and Hardware Status

Listing Input/Output (I/O) Configurations

From the HP-UX B.11.11 Partition Manager, select the **Details** → **Show Complex Details** action, then select the **I/O Chassis** tab to view I/O chassis details for the complex. For additional details on any I/O chassis, use the **Show Details** button to display a list of PCI slots and cards.

From the HP-UX B.11.23 Partition Manager, select the **I/O** tab to view details about the I/O chassis in the complex. You can view further details about individual cards by clicking on the card or by selecting the card(s) and using actions available from the **I/O** menu. Viewing these additional details requires running `pdweb` (the HP-UX Peripheral Device tool) on the local nPartition to which the cell connected to the I/O chassis is assigned.

Step 3. Exit Partition Manager.

From the HP-UX B.11.23 Partition Manager, select **Log off parmgr** or exit the Web browser when finished.

From the HP-UX B.11.11 Partition Manager, select the **File** → **Exit** action.

Listing Cabinets in a Server Complex

You can list the cabinets in a server complex by using any one of the following procedures:

- *Listing Cabinets in a Server Complex [Service Processor (MP or GSP)]* on page 407
- *Listing Cabinets in a Server Complex [Commands]* on page 408
- *Listing Cabinets in a Server Complex [Partition Manager]* on page 408

Cabinet details include the cabinet type, a list of cells, I/O chassis, power supplies, utilities, fans, firmware components, interconnecting hardware. Other information such as the power status, faults, and LED states also are given.

Listing Cabinets in a Server Complex [Service Processor (MP or GSP)]

From the service processor Command Menu, use the `PS` command and the cabinet option to list the current status for the desired cabinet.

- Step 1.** Login to the service processor (MP or GSP) and enter `CM` to access the Command Menu.
- Step 2.** To list the current status for a cabinet in the server complex, issue the `PS` command and select the cabinet option for the server cabinet whose configuration and details you want to view:
 - On HP Superdome servers, select the `B` (cabinet) option, and specify the cabinet whose information you want to view.
 - On all other systems, select the `T` (cabinet) option.
- Step 3.** To exit the service processor Command Menu, enter `MA` to return to the service processor Main Menu.

At the Main Menu, enter `X` to exit the service processor interface.

Chapter 8 Listing nPartition and Hardware Status

Listing Cabinets in a Server Complex

Listing Cabinets in a Server Complex [Commands]

From the command line, use the `parstatus -B` command to list all cabinets in the server complex, or use the `parstatus -V -b#` command to view a detailed status for the specified cabinet (`-b#` where `#` is the cabinet number).

- Step 1.** Login to HP-UX running on an nPartition in the server complex, or login to any HP-UX B.11.23 system or Windows SMS.
- Step 2.** Issue commands to list details about cabinets in the target complex.
 - `parstatus -B` — List all cabinets in the server complex.
 - `parstatus -V -b#` — View a detailed status for the specified cabinet (`-b#` where `#` is the cabinet number).

Listing Cabinets in a Server Complex [Partition Manager]

You can list details about the cabinets in a server complex by using Partition Manager.

When using the HP-UX B.11.11 version of Partition Manager, select the **Details** → **Show Complex Details** action; the **General** tab and the **Cabinet Info** tab provide cabinet-related information.

When using the HP-UX B.11.23 version of Partition Manager, select the **Hardware** tab for an overview of cabinets in the complex. For complete details about all hardware in the complex, select the **Complex** → **Show Complex Details** action.

- Step 1.** Access Partition Manager.

If managing an nPartition-capable HP 9000 server, run Partition Manager (`/opt/parmgr/bin/parmgr`) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools** → **Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Listing Status* on page 384.

Step 2. List cabinet details for the server complex.

From the HP-UX B.11.11 Partition Manager, select the **Details** → **Show Complex Details** action, then select the **Cabinet Info** tab. The **General** tab also provides cabinet-related information.

From the HP-UX B.11.23 Partition Manager, select the **Hardware** tab for an overview of cabinets in the complex. For complete details about all hardware in the complex, select the **Complex** → **Show Complex Details** action.

Step 3. Exit Partition Manager.

From the HP-UX B.11.23 Partition Manager, select **Log off parmgr** or exit the Web browser when finished.

From the HP-UX B.11.11 Partition Manager, select the **File** → **Exit** action.

Listing Product and Serial Numbers

You can list product and serial numbers by using any one of the following procedures:

- *Listing Product and Serial Numbers [Service Processor (MP or GSP)]* on page 410
- *Listing Product and Serial Numbers [BCH Menu]* on page 411
- *Listing Product and Serial Numbers [Commands]* on page 411
- *Listing Product and Serial Numbers [Partition Manager]* on page 411

Product and serial number information is stored in the Stable Complex Configuration Data portion of the Complex Profile for an nPartition-capable server.

Listing Product and Serial Numbers [Service Processor (MP or GSP)]

From the service processor Command Menu, use the ID command to list product and serial number information for the server complex.

- Step 1.** Login to the service processor (MP or GSP) and enter CM to access the Command Menu.
- Step 2.** At the Command Menu, enter the ID command to list product and serial number information for the server complex.

In response to the Do you want to modify any of this information? prompt, type n (or type q) to not modify the server complex information that was displayed.

- Step 3.** To exit the service processor Command Menu, enter MA to return to the service processor Main Menu.

At the Main Menu, enter x to exit the service processor interface.

Listing Product and Serial Numbers [BCH Menu]

From the BCH Information Menu, use the `CID` command to list the product number and serial number for the server complex. The BCH Menu is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition whose processor configuration you want to list.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the `Main Menu: Enter command or menu>` prompt). If at a BCH menu other than the Main Menu, then enter `MA` to return to the BCH Main Menu.

- Step 2.** Enter `IN` to access the BCH Information Menu.

- Step 3.** Enter the `CID` command to list the product number and serial number for the server complex.

- Step 4.** Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type `x` at the Main Menu.

Listing Product and Serial Numbers [Commands]

From the command line, issue the `parstatus -X` command to display the product number and serial number for the server complex.

- Step 1.** Login to HP-UX running on an nPartition in the server complex, or login to any HP-UX B.11.23 system or Windows SMS.

- Step 2.** Issue the `parstatus -X` command to display the product number and serial number.

Listing Product and Serial Numbers [Partition Manager]

You can list the product number and serial number for a complex by using Partition Manager.

When using the HP-UX B.11.11 version of Partition Manager, select the **Complex** → **Show Complex Details** action and **General** tab.

Chapter 8 Listing nPartition and Hardware Status

Listing Product and Serial Numbers

When using the HP-UX B.11.23 version of Partition Manager, select the **General** tab.

Step 1. Access Partition Manager.

If managing an nPartition-capable HP 9000 server, run Partition Manager (`/opt/parmgr/bin/parmgr`) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools** → **Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Listing Status* on page 384.

Step 2. From the HP-UX B.11.11 Partition Manager, select the **Complex** → **Show Complex Details** action and **General** tab to list the product number and serial number for the server complex.

From the HP-UX B.11.23 Partition Manager, select the **General** tab to list the product number and serial number.

Step 3. Exit Partition Manager.

From the HP-UX B.11.23 Partition Manager, select **Log off parmgr** or exit the Web browser when finished.

From the HP-UX B.11.11 Partition Manager, select the **File** → **Exit** action.

Listing nPartition Configurations

You can list nPartition configurations by using any one of the following procedures:

- *Listing nPartition Configurations [Service Processor (MP or GSP)]* on page 413
- *Listing nPartition Configurations [Commands]* on page 414
- *Listing nPartition Configurations [Partition Manager]* on page 414

nPartition configuration information includes a list of which cells are assigned to which nPartitions, and additional details such as the core cell choices, boot device paths, and nPartition names.

Listing nPartition Configurations [Service Processor (MP or GSP)]

From the service processor Command Menu, use the `CP` command to list the nPartition configurations for the server complex. The `CP` command reports information including the nPartition numbers and corresponding cells assignments.

- Step 1.** Login to the service processor (MP or GSP) and enter `CM` to access the Command Menu.
- Step 2.** At the Command Menu, enter the `CP` command to list the nPartition configurations: the nPartition numbers and corresponding cells assignments for the server complex.
- Step 3.** To exit the service processor Command Menu, enter `MA` to return to the service processor Main Menu.

At the Main Menu, enter `X` to exit the service processor interface.

Chapter 8 Listing nPartition and Hardware Status

Listing nPartition Configurations

Listing nPartition Configurations [Commands]

From the command line, issue the `parstatus -P` command to list a summary of all nPartitions in the server complex. For detailed information issue the `parstatus -V -p#` command for more information about a specific nPartition (`-p#` where `#` is the nPartition number).

- Step 1.** Login to HP-UX running on an nPartition in the server complex, or login to any HP-UX B.11.23 system or Windows SMS.
- Step 2.** Issue the `parstatus -P` command to list a summary of all nPartitions in the server complex.

For detailed information issue the `parstatus -V -p#` command for more information about a specific nPartition (`-p#` where `#` is the nPartition number).

Listing nPartition Configurations [Partition Manager]

You can list nPartition configurations for a server complex by using Partition Manager.

When using the HP-UX B.11.11 version of Partition Manager, view the left side of the primary window to see a display of all nPartitions in the server, and for details select an nPartition and select the **Details** → **Show Partition Details** action.

When using the HP-UX B.11.23 version of Partition Manager, use the **nPartitions** tab to view details about all nPartitions in the complex.

- Step 1.** Access Partition Manager.

If managing an nPartition-capable HP 9000 server, run Partition Manager (`/opt/parmgr/bin/parmgr`) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools** → **Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Listing Status* on page 384.

- Step 2.** From the HP-UX B.11.11 Partition Manager, view the left side of the primary window to see a display of all nPartitions in the server. For further details about a specific nPartition, select the nPartition and select the **Details** → **Show Partition Details** action.

From the HP-UX B.11.23 Partition Manager, use the **nPartitions** tab to view details about all nPartitions in the complex.

- Step 3.** Exit Partition Manager.

From the HP-UX B.11.23 Partition Manager, select **Log off parmgr** or exit the Web browser when finished.

From the HP-UX B.11.11 Partition Manager, select the **File** → **Exit** action.

Listing the Local (Current) nPartition Number

You can list the local nPartition number by using any one of the following procedures:

- *Listing the Local (Current) nPartition Number [BCH Menu]* on page 416
- *Listing the Local (Current) nPartition Number [EFI Shell]* on page 417
- *Listing the Local (Current) nPartition Number [Commands]* on page 417

The local nPartition number is the numerical identifier for the nPartition currently being accessed (where the command executes).

Listing the Local (Current) nPartition Number [BCH Menu]

From the BCH Configuration Menu, use the PD command to list the local nPartition number and its name. The BCH Menu is available only on HP 9000 systems.

- Step 1.** Access the BCH Main Menu for the nPartition whose processor configuration you want to list.

Login to the service processor (MP or GSP) and enter CO to access the Console list. Select the nPartition console. When accessing the console, confirm that you are at the BCH Main Menu (the Main Menu: Enter command or menu> prompt). If at a BCH menu other than the Main Menu, then enter MA to return to the BCH Main Menu.

- Step 2.** Enter CO to access the BCH Configuration Menu.

- Step 3.** Enter the PD command to list the local nPartition number and its name.

- Step 4.** Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **x** at the Main Menu.

Listing the Local (Current) nPartition Number [EFI Shell]

From the EFI Shell, use the `info sys` command to list the local nPartition number; this command also displays a list of active cells, CPUs, and the current memory configuration. The EFI Shell is available only on HP Integrity systems.

- Step 1.** Access the EFI Shell environment for the nPartition whose nPartition number you want to list.

Login to the service processor (MP or GSP) and enter `CO` to access the Console list. Select the nPartition console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If at another EFI menu, select the **Exit** option from the sub-menus until you return to the screen with the `EFI Boot Manager` heading.

From the EFI Boot Manager menu, select the **EFI Shell** menu option to access the EFI Shell environment.

- Step 2.** Enter the `info sys` command to list the nPartition number for the local nPartition.

The `info sys` command also displays a list of active cells, CPUs, and the current memory configuration.

- Step 3.** Exit the console and service processor interfaces if finished using them.

To exit the EFI environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **x** at the Main Menu.

Listing the Local (Current) nPartition Number [Commands]

From the command line, issue the `parstatus -w` command to list the local nPartition number.

Chapter 8 Listing nPartition and Hardware Status

Listing the Local (Current) nPartition Number

- Step 1.** Login to HP-UX running on an nPartition in the server complex, or login to any HP-UX B.11.23 system or Windows SMS.

When using HP-UX B.11.23 or the Windows SMS to list the nPartition number for a remote nPartition running HP-UX B.11.23 system, you use the `-u...` `-h...` options to remotely perform this task. See *Tools for Listing Status* on page 384 for more details about the HP nPartition commands.

- Step 2.** Issue the `parstatus -w` command to list the local nPartition number.

Listing Power Status and Power Supplies

You can list power status and power supply details by using any one of the following procedures:

- *Listing Power Status and Power Supplies [Service Processor (MP or GSP)]* on page 419
- *Listing Power Status and Power Supplies [Commands]* on page 420
- *Listing Power Status and Power Supplies [Partition Manager]* on page 420

Power status and power supply information includes the power status (on or off) for cabinets, cells, and I/O chassis; the status (ok or failed) for power supplies; and related details.

Listing Power Status and Power Supplies [Service Processor (MP or GSP)]

From the service processor Command Menu, use the `PS` command and the cabinet option to list power status and power supply details for the specified cabinet.

- Step 1.** Login to the service processor (MP or GSP) and enter `CM` to access the Command Menu.
- Step 2.** At the Command Menu, enter the `PS` command and select the cabinet option for the cabinet whose power status and related details you want to view:
 - On HP Superdome servers, select the `B` (cabinet) option, and specify the cabinet whose information you want to view.
 - On all other systems, select the `T` (cabinet) option.
- Step 3.** To exit the service processor Command Menu, enter `MA` to return to the service processor Main Menu.

At the Main Menu, enter `X` to exit the service processor interface.

Chapter 8 Listing nPartition and Hardware Status

Listing Power Status and Power Supplies

Listing Power Status and Power Supplies [Commands]

From the command line, issue the `parstatus -B` command for a power status summary for all cabinets, or `parstatus -V -b#` for detailed power status for the specified cabinet (`-b#`, where `#` is the cabinet number). You also can issue the `frupower -d -C` command for cell power status, or the `frupower -d -I` command for I/O chassis power status.

Step 1. Login to HP-UX running on an nPartition in the server complex, or login to any HP-UX B.11.23 system or Windows SMS.

Step 2. Issue commands to list details about system power status.

- `parstatus -B` — Power status summary for all cabinets.
- `parstatus -V -b#` — Detailed power status for the specified cabinet (`-b#`, where `#` is the cabinet number).
- `frupower -d -C` — Cell power status.
- `frupower -d -I` — I/O chassis power status.

Listing Power Status and Power Supplies [Partition Manager]

You can list power status and power supply details by using Partition Manager.

When using the HP-UX B.11.11 version of Partition Manager, use the **Details** → **Show Complex Details** action, **Power/Cooling** tab to list power details.

When using the HP-UX B.11.23 version of Partition Manager, use the **Power and Cooling** tab to list power details.

Step 1. Access Partition Manager.

If managing an nPartition-capable HP 9000 server, run Partition Manager (`/opt/parmgr/bin/parmgr`) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the

hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools** → **Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Listing Status* on page 384.

Step 2. List power status and power supply details for the server complex.

From the HP-UX B.11.11 Partition Manager, select the **Details** → **Show Complex Details** action and the **Power/Cooling** tab to view power status. For specific details, select the backplane power boards or bulk power supplies entries in the Power/Cooling summary list.

From the HP-UX B.11.23 Partition Manager, select the **Power and Cooling** tab to view power status details.

Step 3. Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **x** at the Main Menu.

Listing Fan and Blower Status

You can list fan and blower status by using any one of the following procedures:

- *Listing Fan and Blower Status [Service Processor (MP or GSP)]* on page 422
- *Listing Fan and Blower Status [Commands]* on page 423
- *Listing Fan and Blower Status [Partition Manager]* on page 423

Fan and blower status includes lists of cabinet blowers and I/O fans, and their status (whether ok or failed).

Listing Fan and Blower Status [Service Processor (MP or GSP)]

From the service processor Command Menu, use the PS command and the cabinet option to list fan and blower status for the specified cabinet.

- Step 1.** Login to the service processor (MP or GSP) and enter CM to access the Command Menu.
- Step 2.** At the Command Menu, enter the PS command and select the cabinet option for the cabinet whose fan and blower status you want to view:
 - On HP Superdome servers, select the B (cabinet) option, and specify the cabinet whose information you want to view.
 - On all other systems, select the T (cabinet) option.
- Step 3.** To exit the service processor Command Menu, enter MA to return to the service processor Main Menu.

At the Main Menu, enter X to exit the service processor interface.

Listing Fan and Blower Status [Commands]

From the command line, issue the `parstatus -B` command for a fan and blower status summary for all cabinets, or `parstatus -V -b#` for detailed fan and blower status for the specified cabinet (`-b#`, where `#` is the cabinet number).

- Step 1.** Login to HP-UX running on an nPartition in the server complex, or login to any HP-UX B.11.23 system or Windows SMS.
- Step 2.** Issue commands to list details about system power status.
- `parstatus -B` — Fan and blower status summary for all cabinets.
 - `parstatus -V -b#` — Detailed fan and blower status for the specified cabinet (`-b#`, where `#` is the cabinet number).

Listing Fan and Blower Status [Partition Manager]

You can list fan and blower status by using Partition Manager.

When using the HP-UX B.11.11 version of Partition Manager, use the **Details** → **Show Complex Details** action, **Power/Cooling** tab to list fan and blower details.

When using the HP-UX B.11.23 version of Partition Manager, use the **Power and Cooling** tab to list fan and blower details.

- Step 1.** Access Partition Manager.

If managing an nPartition-capable HP 9000 server, run Partition Manager (`/opt/parmgr/bin/parmgr`) from HP-UX B.11.11 on any of the nPartitions in the server complex being managed.

If managing an nPartition-capable HP Integrity server, you can use a Web browser to access the Partition Manager server running on any HP-UX B.11.23 system. The URL for Partition Manager is `https://sys.corp.com:50000/parmgr/` where `sys.corp.com` is the hostname and domain of the system running the Partition Manager server. As needed, use the Partition Manager **Tools** → **Switch Complexes** action to remotely manage either a server complex or an nPartition.

For details on accessing Partition Manager or other tools, see *Tools for Listing Status* on page 384.

- Step 2.** List fan and blower details for the server complex.

Chapter 8 Listing nPartition and Hardware Status

Listing Fan and Blower Status

From the HP-UX B.11.11 Partition Manager, select the **Details** → **Show Complex Details** action and the **Power/Cooling** tab to view fan and blower status. For specific details, select the cabinet blowers or I/O fans entries in the Power/Cooling summary list.

From the HP-UX B.11.23 Partition Manager, select the **Power and Cooling** tab to view fan and blower status details.

Step 3. Exit the console and service processor interfaces if finished using them.

To exit the BCH environment type **^B (Control-B)**; this exits the nPartition console and returns to the service processor Main Menu. To exit the service processor, type **x** at the Main Menu.

9

Virtual Partitions (vPars) Management on nPartitions

This chapter describes how to create, configure, and manage HP's virtual partitions within an nPartition (hard partition) system environment. Each virtual partition can boot a single instance of the HP-UX B.11.11 operating system.

The HP virtual partitions (vPars) software is an optional feature that you can use to further subdivide server resources into multiple, smaller virtual machines through software partitioning.

By configuring multiple virtual partitions within an nPartition, you can boot multiple instances of HP-UX B.11.11 in a single nPartition.

For detailed tasks for configuring virtual partitions within an nPartition, see *Procedures for Managing Virtual Partitions on HP nPartition Servers* on page 459.

NOTE

Virtual Partitions (vPars) are supported only for selected on HP 9000 servers including HP rp7405/rp7410, HP rp8400, HP Superdome servers, and others.

The vPars software is not supported on HP-UX B.11.23 or HP Integrity servers.

NOTE

This chapter describes the current A.02.02 vPars software release, which supports HP rp7405/rp7410, HP rp8400, and HP Superdome servers.

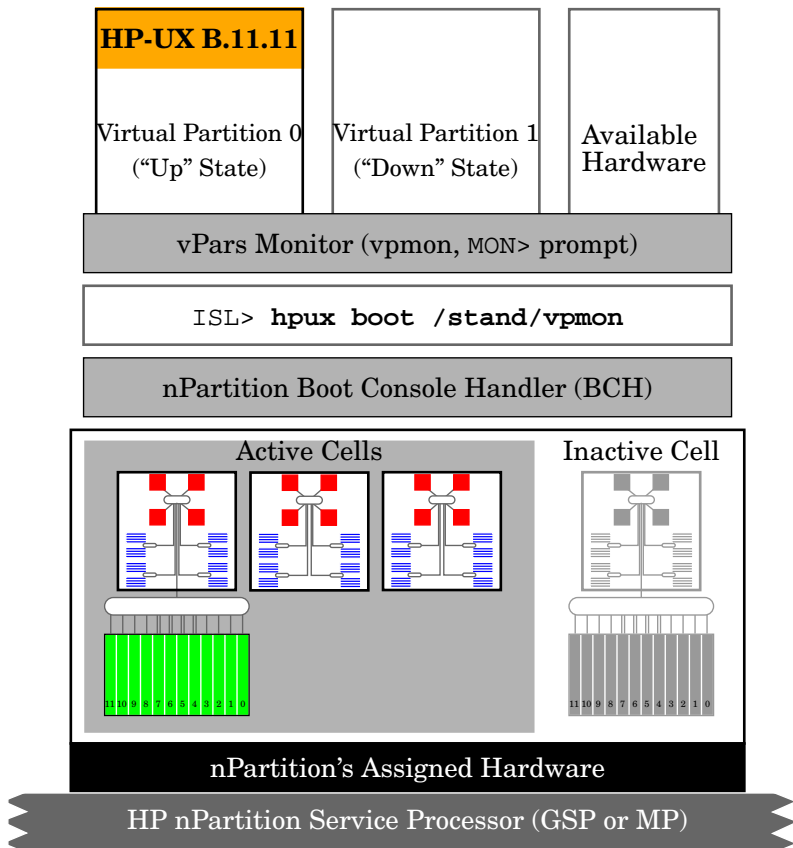
For an introduction to nPartition features, see the chapter *Getting Started with nPartitions* on page 29.

Also refer to the book *Installing and Managing HP-UX Virtual Partitions (vPars)* for more details about HP's vPars software.

Introduction to Managing Virtual Partitions on nPartitions

Figure 9-1 shows how an nPartition can boot vPars software from its BCH interface, thus enabling one or more virtual partitions to run HP-UX B.11.11 on a subset of the active hardware in the nPartition.

Figure 9-1 Overview of HP Virtual Partitions (vPars) in an nPartition



Virtual Partition Hardware

On HP nPartition servers, each virtual partition is assigned a subset of the nPartition hardware. Only the active hardware assigned to the local nPartition can be used by virtual partitions within the nPartition.

Hardware that is assigned to remote nPartitions and hardware that is inactive cannot be used by virtual partitions in the local nPartition.

Each virtual partition runs its own instance of HP-UX and has its own dedicated hardware resources. You can reconfigure virtual partitions and can dynamically reallocate certain processors among virtual partitions in the local nPartition, but you cannot share resources across virtual partitions or across nPartitions.

The hardware assigned to each virtual partition includes: processors (CPUs), memory, and input/output busses. Each I/O bus can have a PCI card installed and devices attached.

Each virtual partition should be assigned at least one I/O bus (LBA) that has a boot device with HP-UX B.11.11 and the vPars software product installed. An I/O bus with a network interface card also should be assigned to each virtual partition to support networking. See *vPars Requirements and Recommendations* on page 438 for more details.

vPars Software, Booting, and Consoles

Running virtual partitions in an nPartition involves installing the HP-UX virtual partitions software product, configuring one or more virtual partitions, and then booting the vPars monitor (`/stand/vpmon`) on the nPartition and loading/booting HP-UX on each of the virtual partitions.

By booting the `/stand/vpmon` virtual partitions monitor instead of the `/stand/vmunix` HP-UX kernel, an nPartition provides an additional boot loader specifically for virtual partitions.

Each nPartition can be configured to automatically boot virtual partitions, and virtual partitions can individually be configured to be booted manually or automatically. See *Procedures for Managing Virtual Partitions on HP nPartition Servers* on page 459 for details.

Only one vPars monitor is booted per nPartition. All virtual partitions in an nPartition share the same console device: the nPartition console. See *Virtual Partition Console and Log Use on nPartition Servers* on page 449 for details.

Chapter 9 *Virtual Partitions (vPars) Management on nPartitions*

Introduction to Managing Virtual Partitions on nPartitions

vPars HP-UX B.11.11 Kernel

The vPars software installation builds a relocatable, vPars-enabled HP-UX B.11.11 kernel and installs patches, commands, and `vpmon` to support the vPars software environment. See *Installing and Configuring vPars on nPartition Servers* on page 456 for details.

You can load and run a vPars-enabled HP-UX B.11.11 kernel in both vPars environments and non-vPars environments. You do not need to reconfigure a vPars-enabled kernel for non-vPars use.

nPartition and vPars Performance

In general in HP nPartition virtual partitions environments, HP-UX B.11.11 and application performance is nearly equivalent to the performance given by a non-vPars nPartition that has the same hardware and software resources and configuration.

Also see the document *HP-UX Virtual Partitions Ordering and Configuration Guide* for more virtual partitions performance info.

The main performance factor for virtual partitions running in nPartitions is the underlying nPartition hardware configuration: the cells and corresponding processors, memory, and I/O assigned to and actively used in the nPartition.

As in non-vPars nPartition environments, all memory is interleaved across all active cells in the nPartition when virtual partitions are running in an nPartition. Also on all HP nPartition servers, each processor has its own runway bus for communication to memory and I/O.

As a result, the locations (hardware paths) of processors assigned to a virtual partition do not affect performance. In general all processors have the same memory latency when accessing any significant amount of memory in an nPartition.

The rest of this chapter covers requirements, guidelines, procedures, and tools for using virtual partitions on HP nPartition-capable servers.

Configuring Virtual Partition Resources and Attributes

When creating or reconfiguring a virtual partition, you manage resources and attributes that determine the virtual partition configuration and capabilities.

Each virtual partition has three types of resources: `cpu`, `io`, and `mem`, which specify processor(s), I/O, and memory allocated exclusively for the virtual partition.

The virtual partition resource configuration determines which hardware is dedicated for use by the virtual partition, by indicating hardware paths, quantities, and limits.

Each virtual partition also has three types of attributes: general attributes, hardware attributes, and boot attributes.

NOTE

To modify most virtual partition hardware resources or attributes, you must ensure that the virtual partition being modified is in a “Down” state.

Also note that some virtual partition attributes are required and some are optional.

Refer to the *vparmodify* (1M) and *vparresources* (5) manpages for details.

The following list includes details and command-line options for setting virtual partition attributes. Also refer to the *vparcreate* (1M) and *vparmodify* (1M) command manpages.

- **Virtual Partition General Attributes**

The general virtual partition attributes include the *name* of the virtual partition and the *static* attribute.

The *name* attribute (`-p` and `-P`) defines the virtual partition name, which you use when referencing or managing the virtual partition using commands.

The *static* attribute (-s) defines whether the virtual partition can be reconfigured. See *Dynamic and Static Virtual Partitions* on page 445 for details.

- **Virtual Partition Hardware Resource Attributes**

Virtual partition hardware resource attributes include specifications for the processors, I/O, and memory that are dedicated for use by the virtual partition.

You can add (-a), delete (-d), and modify (-m) virtual partition hardware resources and attributes.

Also refer to the *vparresources* (5) manpage for details.

Descriptions of processor (cpu), I/O (io), and memory (mem) virtual partition hardware resource attributes are in the following list.

- Processors (cpu) resources — You can specify the following attributes for processors:

The *path* of one or more processors that are bound to the virtual partition. For example, to set the processor at hardware path 0/10 to be bound to the virtual partition:

```
# vparmodify -p name -m cpu:0/10
```

A *minimum* and *maximum* number of processors allowed in the virtual partition. For example, to set the minimum number of processors to 2 and the maximum to 4 processors:

```
# vparmodify -p name -m cpu:::2:4
```

The *total* number of processors in the virtual partition. For example, to set the total number of processors to 6:

```
# vparmodify -p name -m cpu::6
```

- Input/Output (io) — You can optionally specify boot, altboot, and other attributes for each I/O device path assigned to a virtual partition.

The boot attribute specifies the primary (PRI) boot device path for the virtual partition, which is stored in the vPars database (vpdb) and is separate from the nPartition boot device path settings.

The `altboot` attribute specifies the alternate (ALT) boot device path for the virtual partition, which also is separate from nPartition boot settings.

For example, to set the PRI boot device path for the specified virtual partition to 0/0/6/0/0.5 (the PRI path for the corresponding nPartition is not changed, however):

```
# vparmodify -p name -m io:0/0/6/0/0.5:boot
```

- Memory (`mem`) — You can specify the total (`-m mem::size`) memory *size* in MBytes for a virtual partition, and can increase (`-a`) or decrease (`-d`) the amount of memory,

As needed, the specified *size* is rounded up to a 64 MByte boundary.

For example, to configure a virtual partition to have 2 GBytes (2048 MBytes) of memory allocated:

```
# vparmodify -p name -m mem::2048
```

NOTE

HP recommends that you only specify the total amount of memory to be allocated for each virtual partition. On all supported HP virtual partition systems there is no benefit to specifying the base and range for memory.

The memory in each nPartition supporting virtual partitions is interleaved across all active cells in the nPartition and thus all useful ranges of virtual partition memory will span all cells.

• Virtual Partition Boot Attributes

Virtual partition boot attributes include the `autoboot` setting, the `kernel path` attribute, the `boot options` attribute, and `io resources` attributes.

The `autoboot` attribute (`-B`) determines whether a virtual partition is booted (`-B auto`) or not booted (`-B manual`) when the virtual partition is reset. This attribute also affects virtual partition boot behavior when the vPars monitor is loaded with the `vpmon -a` option or when the `vparload -auto` command is issued from the `MON>` prompt.

Chapter 9 Virtual Partitions (vPars) Management on nPartitions

Configuring Virtual Partition Resources and Attributes

The *kernel path* attribute (-b) specifies the path of the vPars-enabled HP-UX B.11.11 kernel that is to be booted when the virtual partition is loaded. By default the `/stand/vmunix` kernel on the boot device is used.

The *boot options* attribute (-o) specifies the options that are applied when the HP-UX B.11.11 kernel for the virtual partition is booted. These boot options are equivalent to the secondary system loader options described in the *hpux* (1M) manpage.

You can use the *io resources* attributes (-a io..., -m io...) to designate primary (PRI) and alternate (ALT) boot device paths for a virtual partition, as explained in *Virtual Partition Hardware Resource Attributes* on page 430.

Tools for Managing Virtual Partitions on nPartition Servers

The main tools for virtual partitions administration are the HP-UX vPars commands and the Virtual Partition Manager (`vparmgr`) utility.

This section briefly lists these and other tools and commands you can use for managing virtual partitions on HP nPartition servers.

- **HP-UX Virtual Partitions Commands**

The HP-UX vPars commands create, modify, and provide status and configuration info about the virtual partitions in the currently active vPars database (`/stand/vpdb`), or any other accessible vPars database that you specify.

The vPars commands list status or modify configuration details for virtual partitions in the local nPartition. They cannot modify or list info about virtual partitions running in remote nPartitions.

Using all vPars commands requires `root` permission.

In most cases the vPars commands are used after you have booted one or more virtual partitions in an nPartition. However, you also can use some vPars commands when you have booted HP-UX in a non-vPars nPartition environment, such as when initially configuring virtual partitions.

Refer to the *vpartition* (5) manpage for a list and descriptions of the vPars commands, including `vparstatus`, `vparcreate`, `vparmodify`, `vparboot`, `vparreset`, and others.

- **Virtual Partition Manager (`vparmgr`) Utility**

The Virtual Partition Manager utility provides a graphical interface to the HP-UX vPars commands. Using Virtual Partition Manager, you can perform virtual partitions administration tasks from HP-UX running on a virtual partition. You cannot use Virtual Partition Manager when HP-UX is booted in non-vPars mode.

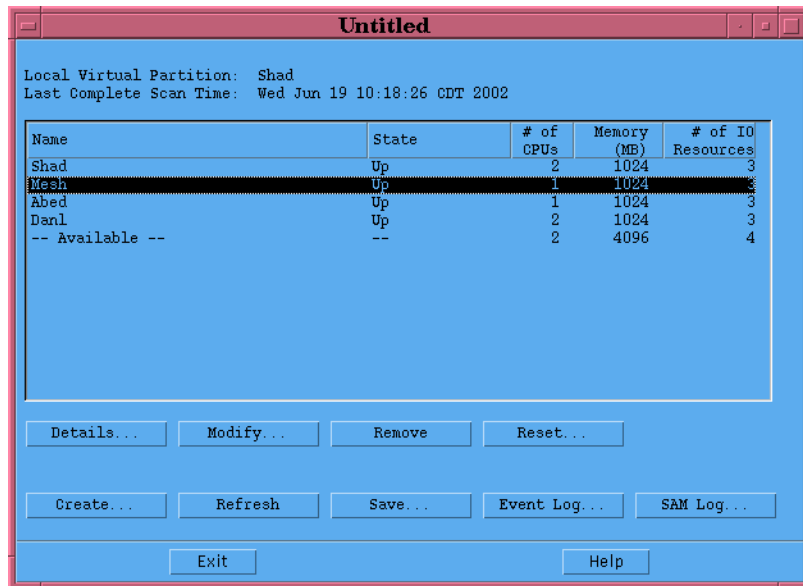
NOTE

The Virtual Partition Manager utility is not installed as part of the virtual partitions software product installation. Instead, you must install Virtual Partition Manager separately, as described in the the book *Installing and Managing HP-UX Virtual Partitions (vPars)*.

Using the Virtual Partition Manager utility requires `root` permission.

Because Virtual Partition Manager is an X window graphical utility, you must set and export the `DISPLAY` environment variable for the virtual partition system before launching `vparmgr`. The `DISPLAY` variable specifies where (which X server) the system displays X windows. You also must use the `xhost` command on the X server (your local system) to grant access for the virtual partition system to display windows on the X server. Refer to the `X (1)` and `xhost (1)` manpages for details.

The following window is the status window for the Virtual Partition Manager utility, which is the first window displayed after any alert messages. This window lists the status of all virtual partitions defined in the current vPars database as well as general details about available resources.



Virtual Partition Manager has online help that you can view at any time by clicking the **Help** button, which displays info in a separate Web browser. You also can view Virtual Partition Manager help from a Web browser by issuing the following command:

```
/opt/netscape/netscape file:/opt/webadmin/vparmgr/help/C/overview.html
```

See the online help for complete details on using the Virtual Partition Manager.

All Virtual Partition Manager tasks also can be performed using the HP-UX vPars commands, which are described in the *vpartition* (5) manpage.

- HP-UX nPartition Commands: *parstatus* and Others

The *parstatus* command can list nPartition status info as well as details about hardware assigned to the local nPartition and other hardware throughout the entire nPartition server complex.

Refer to the *parstatus* (1) manpage for details.

The other HP-UX nPartition commands, such as *parmodify*, also are supported when running HP-UX in a virtual partition on an nPartition. Likewise the Partition Manager tool is supported.

Chapter 9 Virtual Partitions (vPars) Management on nPartitions

Tools for Managing Virtual Partitions on nPartition Servers

- HP-UX `setboot` Command

The HP-UX `setboot` command affects the boot settings for the current virtual partition (stored in its `/stand/vpdb`) when you use it in a virtual partition environment.

When used in a non-vPars nPartition environment, the `setboot` command affects boot settings for the local nPartition. The nPartition boot device paths on HP 9000 servers are stored in the Partition Configuration Data for the nPartition, a portion of Complex Profile for the server.

- Tools for Boot Device AUTO File Management

HP-UX commands to set (`mkboot`) and list (`lifcp`) the AUTO file for a device: `mkboot -a STRING /dev/dsk/...` and `lifcp /dev/dsk/...:AUTO -`

ISL commands to list (`hpux show...`) and set (`hpux set...`) an AUTO file: `hpux show autofile` and `hpux set autofile STRING`

vPars monitor (`MON>`) command to list an AUTO file: `getauto`

Refer to the *mkboot* (1M), *lifcp* (1), and *hpux* (1M) manpages.

- HP nPartition Virtual Front Panel (VFP)

The nPartition VFP indicates the boot status for all cells and virtual partitions in the nPartition. As long as at least one virtual partition is running HP-UX the VFP will display an HP-UX “heartbeat”.

For details, see the chapter *Using Management Interfaces and Tools* on page 135.

- HP nPartition Console and Virtual Partition Consoles

Each nPartition console provides access to BCH for the nPartition, allows you to boot HP-UX or the vPars monitor on an nPartition, and permits access to all virtual partition console interfaces in the nPartition.

For details, see *Virtual Partition Console and Log Use on nPartition Servers* on page 449.

- HP vPars Monitor (`vpmon`) Commands

At the vPars monitor (`MON>`) prompt enter `?` or the `help` command to list all available vPars monitor commands.

The vPars monitor commands include: `reboot` (reboot the nPartition), `vparload` (load/boot one or more virtual partitions), `scan` (scan and list all active hardware in the local nPartition), `log` (list recent history from the vPars monitor event log), and other commands.

The vPars monitor has a `MON>` prompt that is available when the monarch processor for the nPartition is not assigned to a virtual partition that has been loaded/booted.

- **HP nPartition Service Processor (GSP or MP) Commands**

Service processor commands that reboot or reset an nPartition affect all virtual partitions within the nPartition.

For details, see the chapter *Using Management Interfaces and Tools* on page 135.

- **HP nPartition Server Chassis Log Viewer (SL)**

HP virtual partitions-related details that are accessible as chassis logs include the HP-UX “heartbeat” emitted when HP-UX is running on each virtual partition. Otherwise, all vPars-specific event logs are stored in the vPars event log.

For details, see the section *Virtual Partition Console and Log Use on nPartition Servers* on page 449.

vPars Requirements and Recommendations

HP offers the following requirements and recommendations for configuring virtual partitions in HP nPartition environments.

Additional recommendations for avoiding obstacles to loading/booting virtual partitions are in *Fault-Tolerant Virtual Partition Configurations for nPartitions* on page 441.

NOTE

See the *HP-UX Virtual Partitions Ordering and Configuration Guide* for the latest requirements.

Configuration Requirements and Recommendations for Virtual Partitions

- The following software releases, or later, must be installed for complete vPars support on HP nPartition-capable servers:
 - Any HP-UX B.11.11 release (December 2000 or later).
 - The A.02.02 virtual partitions software product.
 - The Partition Manager B.11.11.01.05 product, which must be installed before the A.02.02 vPars software is installed.
 - The Superdome SMS Software V1.2 release (including firmware).
- Each nPartition in which virtual partitions are configured must have no more than eight cells assigned to it, and all the cells assigned to the nPartition must reside in the same cabinet.
- Each nPartition must have no more than eight virtual partitions configured.

If you require more than eight virtual partitions in the same HP nPartition complex, configure the virtual partitions in multiple nPartitions.

- Hardware to be used by virtual partitions within an nPartition must be assigned to the local nPartition and must be active hardware.

Because each nPartition only provides access to the hardware that is assigned to and active within the local nPartition, any virtual partitions in the nPartition are limited to using this same set of currently available nPartition hardware.

Adding or removing hardware from an nPartition changes the local set of hardware that is available to virtual partitions in the nPartition. Likewise, making nPartition hardware inactive makes it unavailable to virtual partitions.

- At least one processor must be bound to each virtual partition.

Only bound processors can handle I/O interrupts. Other processors in the virtual partition can be either bound or unbound.

- A multiple of 64 MBytes of memory must be assigned to each virtual partition.

When you specify the memory size of each virtual partition, the commands involved automatically round the memory assignment upward as required to a 64-MByte boundary.

Memory in HP nPartitions is interleaved across all active cells in the local nPartition. As a result the memory used by each virtual partition may physically reside on all active cells in the nPartition where the virtual partitions exist.

- Each virtual partition must have at least one I/O bus (LBA) assigned to it.

On HP nPartition servers, each LBA corresponds to a PCI card slot in an I/O chassis attached to an active cell in the local nPartition.

For I/O slot details, see the section *Planning Virtual Partition Configurations for HP nPartition Servers* on page 451.

- Each virtual partition must have at least one bootable disk accessible through a PCI card in one of the I/O busses assigned to the virtual partition.

The bootable disk must have both HP-UX B.11.11 and the HP virtual partitions software package installed.

- The HP processor pay per use product (PPU) versions B.05.00 and later is supported for virtual partitions on nPartition systems.

The HP processor Instant Capacity on Demand (iCOD Purchase) release B.06.00 software may be installed and used with vPars software on HP nPartition-capable servers.

Chapter 9 *Virtual Partitions (vPars) Management on nPartitions*

vPars Requirements and Recommendations

- Each virtual partition should have at least one LAN card or port available through one of the I/O busses assigned to the virtual partition.

The LAN port is required if HP-UX networking is to be supported.

HP recommends that, for best performance, you do not configure HP-UX lan0 to use the nPartition Core I/O LAN (on HP Superdome servers, the LAN at hardware path `cell/0/0/1/0`).

The HP Superdome Core I/O card is a PCI-1x card that possibly provides lower performance than a comparable PCI-2x or PCI-4x card.

- If you require that a virtual partition not be reconfigured then set the virtual partition to be “static”. For details, see *Dynamic and Static Virtual Partitions* on page 445.

The next section gives detailed guidelines for creating fault-tolerant virtual partition configurations on nPartitions.

Fault-Tolerant Virtual Partition Configurations for nPartitions

Consider the following recommendation if you intend to establish virtual partition configurations that are tolerant of failures, such as hardware self-test failures, or nPartition configuration changes, such as removing a cell from an nPartition.

NOTE

The guidelines in this section only apply to virtual partitions that are configured in multiple-cell nPartitions.

These guidelines are not for single-cell nPartitions.

Configuration Guidelines for Fault-Tolerant Virtual Partitions

To configure virtual partitions in an nPartition so that the virtual partitions still can load/boot HP-UX when not all expected hardware is active or available, use the info in the following list.

- **Fault-Tolerant Virtual Partition Processor (cpu) Configuration**

To plan and create fault-tolerant virtual partition processor configurations you need to know how many processors are available for use in an nPartition.

The number of processors available for virtual partition use is the number of configured processors on active cells in the nPartition.

Guidelines for virtual partition processor fault tolerance:

- The number of virtual partition *bound* processors and the *min* number of virtual partition processors should anticipate that one or more cells or processors might remain inactive or be deconfigured.

The total of all *min* processor attributes for all virtual partitions within an nPartition should no more than:

$$(active_cells - 1) * (processors_per_cell)$$

where *active_cells* is the number of currently active cells, and *processors_per_cell* is the average number of configured processors on each cell.

Chapter 9 Virtual Partitions (vPars) Management on nPartitions

Fault-Tolerant Virtual Partition Configurations for nPartitions

The *bound* attribute value cannot exceed the *min* attribute, and so the total of all *bound* processor attributes for all virtual partitions within an nPartition also should not exceed the following amount:

$$[(active_cells - 1) * (processors_per_cell)]$$

When a bound processor is unavailable, the vPars monitor assigns and binds a different processor in its place. Thus, even when some of the requested bound processors for a virtual partition are unavailable, the virtual partition still has the same number of bound processors requested.

In a multiple-cell nPartition, this guideline for *bound* and *min* processors can accommodate a cell being made inactive or deleted without preventing any virtual partitions from loading/booting HP-UX B.11.11.

- The *max* number of processors for each virtual partition within an nPartition can exceed the number of processors assigned to an nPartition.

However, for example, note that it is not practical to set *max* to greater than 64 because HP-UX B.11.11 running on HP Superdome hardware does not support configurations beyond 64 processors.

- The *total* number of processors for each virtual partition can be any value, but the *total* processor attribute never needs to be greater than 64.

To help permit the desired virtual partition processor configurations to be loaded and booted, you should ensure that the sum of all virtual partition *total* processor attributes does not exceed the number of assigned and available processors in the nPartition.

If not enough processors are available for a virtual partition to be assigned the configured *total*, then each virtual partition is assigned as many processors as possible after all virtual partitions are assigned their *bound* and *min* processors.

- Fault-Tolerant Virtual Partition Input/Output (iO) Configuration

You may need to use alternate I/O devices for virtual partitions when nPartition I/O is unavailable, such as when a cell or I/O chassis is inactive due to a failure or reconfiguration.

Guidelines for virtual partition input/output fault tolerance:

- ❑ If possible, configure disks in separate I/O chassis for the `boot` and `altboot` attributes of the virtual partition (the `PRI` and `ALT` device paths for the virtual partition).

Having the `boot` and `altboot` devices for a virtual partition on separate I/O chassis permits the virtual partitions to load and boot HP-UX even in the event of a cell failure or I/O chassis failure.

- ❑ If possible, plan for an alternate LAN to be available in a PCI slot on a separate I/O chassis from the primary LAN.

As with the `boot` and `altboot` devices, this configuration permits a LAN device to still be available if a cell or I/O chassis fails or is inactive.

- Fault-Tolerant Virtual Partition Memory (mem) Configuration

All configured/allocated memory DIMMs on all active cells in an nPartition are available for use by virtual partitions.

If less nPartition memory is available than is configured for virtual partitions within the nPartition, one or more of the virtual partitions might be unable to load/boot.

Guidelines for virtual partition memory fault tolerance:

- ❑ Specify the *size* of memory for each virtual partition so that the total amount of memory allocated for all virtual partitions is less than or equal to the total memory on all active cells in the nPartition.

By configuring less memory to all virtual partitions than is available on the active cells in the nPartition, you can potentially avoid virtual partition load/boot problems in the event of a memory or cell failure.

For example, when a DIMM fails on a cell its entire rank (4 DIMMs) is deallocated. Likewise, all memory in an inactive cell is unavailable for use.

Chapter 9 *Virtual Partitions (vPars) Management on nPartitions*

Fault-Tolerant Virtual Partition Configurations for nPartitions

- ❑ Do not specify a *base* and *range* for memory.

There is no benefit to specifying virtual partition memory in terms of base and range, and doing so can potentially prevent a virtual partition from booting if the base and range are unavailable.

For example: if one or more cells does not boot, then less memory is available and some previously available bases and ranges will not exist. This can prevent virtual partitions from loading/booting if they are configured to use the unavailable memory range.

Dynamic and Static Virtual Partitions

Each virtual partition has a static/dynamic attribute that determines whether resource changes can be made to the virtual partition.

A static virtual partition cannot have any modifications made to its resource profile. This means that the processor, memory, and I/O characteristics and assignments for the virtual partition cannot be changed, even if the virtual partition is not running (in a “Down” state).

A dynamic virtual partition can have its resource profile changed through the use of the `vparmodify` command.

To toggle between the `static` and `dynamic` virtual partition attribute settings, use the `vparmodify` command’s `-S` option:

```
vparmodify -p vpname -S static
```

```
vparmodify -p vpname -S dynamic
```

You also can toggle this attribute between `dynamic` and `static` in a single command. For example, the following command sets the virtual partition named “Shad” to be dynamic, then modifies its total number of CPUs, then sets the virtual partition to be static.

```
# vparmodify -p Shad -S dynamic -m cpu:::3 -S static
```

Refer to the `vparmodify` (1M) manpage for details.

Note that some resource changes require that the virtual partition not only be dynamic but also be in a “Down” state.

For example, changing I/O attributes or adding and removing processors may be possible while a dynamic virtual partition is running, but changing memory or I/O assignments requires a virtual partition to be both dynamic and down.

To check virtual partition static/dynamic attribute settings, use `vparstatus`.

```
# vparstatus
```

```
[Virtual Partition]
```

Virtual Partition Name	State	Attributes	Kernel Path	Boot Opts
Shad	Down	Dyn,Man1	/stand/vmunix	
Mesh	Up	Stat,Man1	/stand/vmunix	boot

Chapter 9 Virtual Partitions (vPars) Management on nPartitions
 Dynamic and Static Virtual Partitions

[Virtual Partition Resource Summary]

Virtual Partition Name	CPU		CPU		Num IO devs	Memory (MB)	
	Min/Max	Bound/	Unbound	# Ranges/		Total MB	Total MB
Shad	2/ 8	2	0	8	0/ 0	2048	
Mesh	2/ 12	2	6	3	0/ 0	2048	

vparmodify -p Mesh -m cpu:4
 vparmodify: Error: Virtual partition Mesh is static, cannot modify resources.
 #

Virtual Partition Configuration Data on nPartitions

This section covers configuration data issues related to using virtual partitions in nPartitions.

Virtual partition configuration data by default is stored in the `/stand/vpdb` file, although you can specify that another file be used as the vPars database.

When you have multiple virtual partitions booted (in an “Up” state) on an nPartition, the vPars databases for all booted virtual partitions are kept coherent; any changes to virtual partition configurations are saved in each of the booted virtual partition databases.

Virtual partition configuration data is not stored in the nPartition complex profile data. As a result, virtual partition changes do not affect nPartition configurations.

The following list describes some issues related to managing both nPartition and virtual partitions configuration data in an nPartition.

- **Boot Paths for Virtual Partitions and nPartitions**

The boot path variables (PRI, HAA, ALT) for an nPartition on an HP 9000 server are stored in the Partition Configuration Data for the nPartition.

The virtual partition boot device paths (PRI, ALT) are stored in the vPars configuration database.

The `parmodify` and `parstatus` commands always can report and modify nPartition boot device path details.

When one or more virtual partitions is booted in an nPartition, the `setboot` command affects the boot paths and settings for the current virtual partition.

When HP-UX is booted in a non-vPars nPartition, the `setboot` command and others affect the local nPartition.

- **Virtual Partition Configuration Data Coherency**

Only the vPars configuration database (`/stand/vpdb`) residing on filesystems for the currently booted device in each virtual partition is updated to reflect any changes.

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Virtual Partition Configuration Data on nPartitions

Any booted virtual partition that has multiple boot devices (such as `boot` and `altboot`) can have one current and one outdated copy of virtual partition data.

For example: when a virtual partition boots from its ALT device path and has a config change, and then nPartition containing the virtual partition reboots and loads `/stand/vpmon` from the PRI device path on the same virtual partition, then as a result the latest virtual partition config changes are not used (but they still reside on the ALT device for the virtual partition). Instead, in this example, the `/stand/vpdb` vPars database on the PRI device is used for configuring virtual partitions in the nPartition.

Virtual Partition Console and Log Use on nPartition Servers

On HP nPartition-capable servers, each nPartition has its own console and its own console log that stores a record of recent console activity.

When an nPartition has one or more virtual partitions booted, the nPartition console serves as the console for all virtual partitions loaded/booted in the nPartition.

NOTE

To switch among virtual partition console interfaces, type **Control-a** when accessing the corresponding nPartition console.

In the following example, the user of the nPartition console repeatedly types **Control-a** to cycle through the available virtual partition consoles.

```
feshd3a / Shad [HP Release B.11.11] (see /etc/issue)
Console Login:
Control-a
[Mesh]
Control-a
[Abed]
Control-a
[Danl]
Control-a
[Shad]
Control-a
[Mesh]
```

The above example starts with console access to the virtual partition named “Shad”, then switches to the “Mesh” virtual partition console, “Abed” console, “Danl” console, and then back to the “Shad” and finally the “Mesh” virtual partition console.

The service processor (GSP or MP) console log stores nPartition console output, including BCH output and HP-UX `/dev/console` for nPartitions. On nPartition server running virtual partitions, all virtual partitions in the nPartition emit their `/dev/console` output to the nPartition console. Thus, when HP-UX B.11.11 is running in multiple virtual partitions in an nPartition, the nPartition console will display `/dev/console` output for more than one instance of HP-UX.

Chapter 9 *Virtual Partitions (vPars) Management on nPartitions*

Virtual Partition Console and Log Use on nPartition Servers

The nPartition console log also records vPars monitor (vpmom, MON> prompt) output for its nPartition, because the vPars monitor interface is accessed and displayed through the nPartition console for the nPartition where the virtual partitions reside. The vpmom event logs file—which is viewable from the vparstatus -e command or the vPars monitor log command—only records virtual partition events. It does not record any nPartition chassis codes. The server chassis logs—which are viewable from the service processor (GSP or MP) Show Chassis Log menu—record nPartition and server complex hardware events. nPartition chassis logs do not record virtual partition configuration or virtual partition-specific load/boot events. However, as in non-vPars nPartition environments, the chassis logs do record HP-UX “heartbeat” events and related timeout counter details.

The vPars monitor prompt (MON>) is shared by all virtual partitions in the same nPartition and gives access to commands for loading/booting virtual partitions, displaying virtual partition and system info, reviewing event log history, and performing other tasks.

If multiple nPartitions in a server are running virtual partitions, each nPartition has its own vPars monitor, just as each nPartition runs its own instance of Boot Console Handler (BCH).

Planning Virtual Partition Configurations for HP nPartition Servers

You can use this section to help plan the virtual partition configurations you will establish in nPartitions.

This section covers the following topics:

- *Virtual Partition Hardware Paths* on page 452
- *Listing Available nPartition Hardware Resources* on page 453
- *Virtual Partition Configuration Planning* on page 454

Also see the book *Installing and Managing HP-UX Virtual Partitions (vPars)* for other virtual partition planning info.

Virtual Partition Hardware Paths

You may need to reference the following hardware path info for HP nPartition-capable servers when planning virtual partition configurations.

Figure 9-2 **HP nPartition Hardware Paths
for Virtual Partition Configurations**

Processor (CPU) Hardware Paths												
<i>cell/10</i>	For all nPartition hardware paths,											
<i>cell/11</i>	<i>cell</i> is the global cell number (0–15).											
<i>cell/12</i>												
<i>cell/13</i>												
HP Superdome — PCI Card Slot Hardware Paths												
Slot	11	10	9	8	7	6	5	4	3	2	1	0
Path (LBA)	<i>cell/0/8</i>	<i>cell/0/9</i>	<i>cell/0/10</i>	<i>cell/0/11</i>	<i>cell/0/12</i>	<i>cell/0/14</i>	<i>cell/0/6</i>	<i>cell/0/4</i>	<i>cell/0/3</i>	<i>cell/0/2</i>	<i>cell/0/1</i>	<i>cell/0/0</i>
HP rp7405/rp7410 and HP rp8400 — PCI Card Slot Hardware Paths												
Slot	1	2	3	4	5	6	7	8				
Path (LBA)	<i>cell/0/8</i>	<i>cell/0/10</i>	<i>cell/0/12</i>	<i>cell/0/14</i>	<i>cell/0/6</i>	<i>cell/0/4</i>	<i>cell/0/2</i>	<i>cell/0/1</i>				

Listing Available nPartition Hardware Resources

This section presents how you can list all available hardware resources in an nPartition server.

The following are common methods of listing available hardware:

- **vparstatus -A** lists the available processor, I/O, and memory resources in the local nPartition. This command lists the hardware that has not yet been assigned to any virtual partition.

Note that `vparstatus -A` command lists processors and I/O using a form of the hardware path notation where a period (.) separates each hardware path field rather than a slash (/).

- **ioscan** lists the assigned and active hardware in the local nPartition or the current virtual partition.

When HP-UX is booted in a non-vPars environment, `ioscan` lists all active hardware in the local nPartition.

When HP-UX is booted in a virtual partition, `ioscan` lists only the I/O devices assigned to the current virtual partition and lists processors on active cells in the local nPartition (but it does not list bound processors in other virtual partitions).

Note that `ioscan` can list some processors that are not assigned to the current virtual partition, including unbound processors assigned to other virtual partitions.

- **mpsched -s** lists only the assigned and active processors in the current virtual partition or nPartition.

Note, however, that `mpsched -s` lists the HP-UX CPU IDs for processors, not their hardware paths.

- **parstatus -C** lists the configurations of all cells in an HP nPartition-capable server complex, including the number of processors, amount of memory, I/O chassis connections, current usage status, and nPartition assignment.

Also see the chapter *Listing nPartition and Hardware Status* on page 383 for details.

Virtual Partition Configuration Planning

Table 9-1 is for planning virtual partition attributes and resource assignments.

For each virtual partition, you must specify: a virtual partition name, at least one bound CPU, at least one I/O slot, a PRI boot path, and enough memory to boot HP-UX. The default virtual partition attributes establish a dynamic configuration that manually boots the `/stand/vmunix` kernel with no boot options.

The “Host Info” column in Table 9-1 includes configuration details for HP-UX networking (the hostname, IP, gateway, and so on).

Also see *Configuring Virtual Partition Resources and Attributes* on page 429.

Table 9-1 Configuration Planning Table for a Virtual Partition

Virtual Partition Name and Host Info	Attributes (* = Default)	Processor Resources	Input/Output Resources	Memory Resources
Virtual Partition Name: _____	Configuration: Static or Dynamic*	Min: _____	Boot Path (PRI): _ / 0 / _ / _ / _ . _ Note: also must assign the LBA.	Size (MBytes): _____ Note: 1024 MBytes = 1 GByte
Hostname: _____	Boot: Manual* or Automatic	Max: _____	Altboot (ALT): _ / 0 / _ / _ / _ . _ Note: also must assign the LBA.	
IP Address: _ . _ . _ . _	Kernel Path: /stand/_____ For example: /stand/vmunix*	Total: _____	Assigned Slots (LBAs): _ / 0 / _ _ / 0 / _ _ / 0 / _ _ / 0 / _	
Gateway: _ . _ . _ . _	Boot Options: _____	Bound CPUs: _ / _ _ / _ _ / _ _ / _ _ / _ _ / _ _ / _	_ / 0 / _ _ / 0 / _ _ / 0 / _ _ / 0 / _	
Subnet: _ . _ . _ . _				
DNS IP: _ . _ . _ . _				
Domain: _____				

Installing and Configuring vPars on nPartition Servers

This section covers information on installing the vPars software product onto disks that will be used for booting HP-UX on a virtual partition that is loaded in an nPartition.

After a boot disk has both HP-UX and the vPars software product installed, the disk can be booted to be used in either virtual partition or non-vPars environments.

The vPars software install process can occur when you have booted HP-UX from each disk so that HP-UX is running in a non-vPars environment.

You also can install both the HP-UX and vPars software simultaneously on a virtual partition when its nPartition is running in vPars mode. To do this issue the `vparboot -p vpname -I...` command from a different virtual partition in the same nPartition to load/boot the virtual partition from an Ignite-UX server. For details refer to the *vparboot* (1M) manpage or the vPars install documentation listed below.

NOTE

The HP vPars software product must be installed on every boot device that will be used by virtual partitions. Each virtual partition must have a boot disk where HP-UX B.11.11 and the vPars software product are installed.

NOTE

Before installing the HP vPars software product on an nPartition, you must install the Partition Manager B.11.11.01.05 product (or a later Partition Manager release).

For the latest Partition Manager software, see the <http://software.hp.com> Web site.

vPars Software Installation for an HP nPartition

This procedure gives a high-level overview of a process for manually installing HP's virtual partitions software product on disks in an nPartition.

The book *Read Before Installing HP-UX Virtual Partitions* has important information you should read before performing this procedure. Also refer to the book *Installing and Managing HP-UX Virtual Partitions (vPars)*.

- Step 1.** Boot HP-UX on the nPartition using the boot device that will be the primary (PRI) boot device for one of the virtual partitions in the nPartition.
- Step 2.** Install the HP virtual partitions software product on the booted device.

As part of the vPars software installation, the nPartition is rebooted and a new `/stand/vmunix` HP-UX kernel is built.
- Step 3.** Create the first virtual partition on the device onto which you have installed the vPars software product.

NOTE

Only perform this step for the boot disk from which `/stand/vpmon` will be loaded. Do not perform this step for other boot disks.

Other boot disks are automatically updated with copies of the vPars database as needed.

To complete this step, first boot HP-UX from the device, and then use the `vparcreate` and `vparmodify` commands to create the first virtual partition for the nPartition.

Creating the first virtual partition establishes a vPars database (`/stand/vpdb`) for the nPartition.

You can assign each virtual partition resources that are part of the local nPartition. Only hardware that is assigned to the local nPartition and is active can be used by the virtual partitions within the nPartition.

Chapter 9 Virtual Partitions (vPars) Management on nPartitions

Installing and Configuring vPars on nPartition Servers

By default the `vparcreate`, `vparmodify`, and `vparstatus` commands use the `/stand/vpdb` file. Although the vPars monitor is not running as you perform this step, these commands will read and write to `/stand/vpdb` if you do not specify a different vPars database file using the `-D` option.

If you want to create multiple virtual partitions within an nPartition you can do so as part of this step, by issuing a `vparcreate` command for each new virtual partition within the local nPartition.

You also can create any additional virtual partitions later, after you have booted the vPars monitor and loaded/booted HP-UX B.11.11 on the first virtual partition.

- Step 4.** Issue the `shutdown -r` command to reboot HP-UX on the nPartition and return to the BCH interface for the nPartition.

As needed, interrupt the autoboot process to interact with the nPartition at the BCH interface.

- Step 5.** Install the vPars software product on each remaining boot device that is to be used to boot HP-UX on one of the virtual partitions in the nPartition.

For each virtual partition boot device, you can boot HP-UX from the device in non-vPars mode and then install the vPars software product on the device.

An alternate install method is to load/boot HP-UX on the first virtual partition, and then simultaneously install HP-UX and vPars software on other virtual partitions by using the `vparboot -p vprname -I...` command. Refer to the *vparboot* (1M) manpage.

You must install both HP-UX and the vPars software for every virtual partition. For example, if you plan to have three virtual partitions in an nPartition then you need at least three boot devices with HP-UX and vPars software installed.

If you intend to have multiple boot disks for a virtual partition—for example, a PRI device and an ALT device—then you need to install HP-UX and the vPars software product on both the PRI and ALT devices for the virtual partition.

Procedures for Managing Virtual Partitions on HP nPartition Servers

This section has procedures for performing typical virtual partitions configuration and management tasks on HP nPartition-capable servers.

The following virtual partitions procedures are covered here:

- *vPars Management: Creating a New Virtual Partition in an nPartition* on page 461
- *vPars Management: Deleting a Virtual Partition from an nPartition* on page 465
- *vPars Management: Modifying Virtual Partition Attributes in nPartition Environments* on page 467
- *vPars Management: Listing Virtual Partition Status from an nPartition* on page 469
- *vPars Management: Booting HP-UX B.11.11 on Virtual Partitions in an nPartition* on page 471
- *vPars Management: Rebooting or Shutting Down Virtual Partitions in an nPartition* on page 479
- *Configuring Virtual Partition Autoboot* on page 482

NOTE

The procedures described here use the HP-UX virtual partitions commands and not the graphical Virtual Partition Manager utility.

You can perform all tasks in this section with either the commands or Virtual Partition Manager. For info on the Virtual Partition Manager graphical utility see its online help or see the section *Tools for Managing Virtual Partitions on nPartition Servers* on page 433.

See the section *Installing and Configuring vPars on nPartition Servers* on page 456 for details on installing vPars software on nPartition systems.

Also see the section *Managing nPartitions from a Virtual Partition* on page 490 for details about performing nPartition configuration tasks from a vPars environment.

Chapter 9 *Virtual Partitions (vPars) Management on nPartitions*

Procedures for Managing Virtual Partitions on HP nPartition Servers

The book *Installing and Managing HP-UX Virtual Partitions (vPars)* also has detailed virtual partitions management information.

Creating a New Virtual Partition

This section gives details on how to create a new virtual partition.

NOTE

Before creating a virtual partition, plan how the local nPartition resources will be assigned to the virtual partitions running in the local nPartition.

See the section *Planning Virtual Partition Configurations for HP nPartition Servers* on page 451 for info on planning virtual partitions configurations for use in nPartitions.

vPars Management: Creating a New Virtual Partition in an nPartition

This procedure creates a new virtual partition from HP-UX running in a virtual partition on an nPartition.

The book *Installing and Managing HP-UX Virtual Partitions (vPars)* also has detailed virtual partitions information.

- Step 1.** Login to HP-UX running on one of the virtual partitions within an nPartition.
- Step 2.** Complete all virtual partition resource planning and confirm that the resources are available for the new virtual partition you intend to create.

See the section *Planning Virtual Partition Configurations for HP nPartition Servers* on page 451 for planning details.

Issue the `vparstatus -A` command to list the processors, memory, and I/O busses that are not yet assigned to any virtual partition.

The `vparstatus -A` command lists all hardware you can assign to the new virtual partition. If any hardware you planned to assign is not available then you must either must revise your plans or unassign or otherwise make the hardware available.

```
# vparstatus -A
[Unbound CPUs (path)]: 0.13
                       1.11
                       1.12
                       1.13
                       2.10
```

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Creating a New Virtual Partition

```
2.11
2.12
2.13
6.10
6.11
6.12
6.13

[Available CPUs]: 12

[Available I/O devices (path)]: 0.0.1
                                0.0.3
                                0.0.8
                                0.0.9
                                0.0.10
                                0.0.11
                                0.0.12
                                0.0.14
                                2.0
                                2.0.0
                                2.0.1
                                2.0.2
                                2.0.3
                                2.0.4
                                2.0.6
                                2.0.8
                                2.0.9
                                2.0.10
                                2.0.11
                                2.0.12
                                2.0.14

[Unbound memory (Base /Range)]: 0x0/64
                                (bytes) (MB) 0x8000000/6080
[Available memory (MB)]: 6144
#
```

- Step 3.** Issue the `vparcreate -p...` command to create the new virtual partition and as needed use `vparmodify -p...` to further configure the new virtual partition.

When using the `vparcreate` command you must specify the name for the new virtual partition (`-p vpname`).

Also specify the resources that are to be assigned for exclusive use by the virtual partition, including processor (`-a cpu...`) memory (`-a mem...`) and input/output (`-a io...`) resources.

You also can include other virtual partition attributes and settings (such as the autoboot setting) as part of the `vparcreate` command that establishes the new virtual partition.

```
# vparcreate -p Mesh -a mem::2048 -a io:2/0/14 -a io:2/0/0 -B manual -S dynamic
-a io:2/0/14/0/0.6:BOOT -a cpu:2/10
#
```

To further modify the virtual partition, issue the `vparmodify` command after `vparcreate` has created the new virtual partition.

For other details on creating and configuring virtual partitions see the section *Configuring Virtual Partition Resources and Attributes* on page 429.

Step 4. Issue the `vparstatus` command to list the configuration and boot status for the newly created virtual partition.

For detailed virtual partition information, use the `vparstatus -v -p...` command.

If you need to change any of the configuration details of the new virtual partition, use the `vparmodify` command.

```
# vparstatus
[Virtual Partition]

Virtual Partition Name      State Attributes Kernel Path      Boot
=====
Shad                        Up      Dyn,Manl  /stand/vmunix    Opts
Mesh                        Down    Dyn,Manl  /stand/vmunix

[Virtual Partition Resource Summary]

Virtual Partition Name      CPU          CPU          CPU          Num          Memory (MB)
                          Min/Max     Bound/      Unbound      IO          # Ranges/
                          =====
Shad                        2/ 8        2 2         7           0/ 0        2048
Mesh                        1/ 16       1 0         3           0/ 0        2048

# vparstatus -v -p Mesh
[Virtual Partition Details]
Name:      Mesh
State:     Down
Attributes: Dynamic,Manual
Kernel Path: /stand/vmunix
Boot Opts:

[CPU Details]
Min/Max:   1/16
```

Chapter 9 *Virtual Partitions (vPars) Management on nPartitions*

Creating a New Virtual Partition

```
Bound by User [Path]: 2.10  
Bound by Monitor [Path]:  
Unbound [Path]:
```

```
[IO Details]  
  2.0.14  
  2.0.0  
  2.0.14.0.0.6  BOOT
```

```
[Memory Details]  
Specified [Base /Range]:  
  (bytes) (MB)  
Total Memory (MB): 2048  
#
```


Deleting a Virtual Partition

This section describes the procedure for deleting a virtual partition and related issues you may encounter.

NOTE

The virtual partition you delete must be in a “Down” state.

You can delete virtual partitions that are defined in the currently active vPars database (vpdb) used by the local nPartition.

You also can delete virtual partitions from an alternate vPars database that you specify using the `vparremove` command's `-D database` option.

You cannot modify or delete vPars configuration info from inaccessible vPars databases, such as those on currently unused boot disks. (Currently unused boot disks include: disks assigned to a virtual partition that is not in an “Up” state; or disks not currently booted by a virtual partition such as the ALT boot device for a virtual partition that has booted its PRI device.)

vPars Management: Deleting a Virtual Partition from an nPartition

This procedure deletes the configuration info for a virtual partition from the currently active vPars database.

Also see the book *Installing and Managing HP-UX Virtual Partitions (vPars)* for virtual partition management info.

Step 1. Login to HP-UX running on one of the virtual partitions in an nPartition.

Step 2. Issue the `vparstatus` command to list the current boot status and high-level configuration information for all virtual partitions defined in the currently active vPars database (vpdb) used by the local nPartition

```
# vparstatus
[Virtual Partition]

Virtual Partition Name      State Attributes Kernel Path      Boot
=====
Shad                       Up      Dyn,Auto  /stand/vmunix    Opts
Mesh                       Down    Dyn,Manl  /stand/vmunix    boot

[Virtual Partition Resource Summary]

                                CPU      Num      Memory (MB)
```

Chapter 9 Virtual Partitions (vPars) Management on nPartitions

Deleting a Virtual Partition

Virtual Partition Name	CPU Min/Max	Bound/ Unbound	IO devs	# Ranges/ Total MB	Total MB
Shad	2/ 8	2 0	7	0/ 0	2048
Mesh	2/ 12	2 0	3	0/ 0	0

Step 3. Issue the `vparremove -p vpname` command to delete the specified virtual partition (`vpname`) and then issue the `vparstatus` command to list the new configuration status.

You can delete only virtual partitions that are in a “Down” state, as reported by the `vparstatus` command (see the example in the previous step).

Refer to the `vparremove (1M)` manpage for details.

```
# vparremove -p Mesh
Remove virtual partition Mesh? [n] y
#
# vparstatus
[Virtual Partition]

Virtual Partition Name      State Attributes Kernel Path      Boot
=====
Shad                       Up      Dyn,Auto   /stand/vmunix

[Virtual Partition Resource Summary]

Virtual Partition Name      CPU      CPU      Num      Memory (MB)
Min/Max  Bound/   IO      # Ranges/
=====
Shad     2/ 8    2 0     7       0/ 0     2048
#
```

Modifying Virtual Partition Configuration Attributes

This section describes how to add or remove resources from a virtual partition, and how to change virtual partition attribute settings.

Many virtual partition hardware resource changes require that the virtual partition being modified is not running (not in an “Up” state).

vPars Management: Modifying Virtual Partition Attributes in nPartition Environments

This procedure describes how to modify the attributes and resource configuration for a virtual partition.

- Step 1.** Login to HP-UX running on one of the virtual partitions in an nPartition, or login to HP-UX running in non-vPars mode on an nPartition.

You can modify virtual partition attributes from HP-UX running in a virtual partition.

You also can modify vPars database configurations when you have booted HP-UX in non-vPars mode. By default the `vparcreate`, `vparmodify`, and `vparstatus` commands use the `/stand/vpdb` file.

To modify a vPars database other than the `/stand/vpdb` file, use the `-D` option to specify its location.

- Step 2.** Issue the `vparstatus` command to list the current status of the virtual partition you plan to update.

For detailed info on a virtual partition use the `vparstatus -v -p...` command.

```
# vparstatus
[Virtual Partition]

Virtual Partition Name      State Attributes Kernel Path      Boot
=====
Shad                        Up      Dyn,Manl   /stand/vmunix
Mesh                       Up      Dyn,Manl   /stand/vmunix      boot

[Virtual Partition Resource Summary]

                                CPU      Num      Memory (MB)
                                CPU      Bound/   IO      # Ranges/
Virtual Partition Name      Min/Max Unbound devs  Total MB  Total MB
=====
```

Chapter 9 Virtual Partitions (vPars) Management on nPartitions

Modifying Virtual Partition Configuration Attributes

```
Shad                2/  8    2  6    7  0/  0          2048
Mesh                2/ 12    2  6    3  0/  0          2048
#
```

Step 3. Issue the `vparmodify -p...` command to modify the specified virtual partition.

See the section *Configuring Virtual Partition Resources and Attributes* on page 429 for descriptions of the virtual partitions configuration options.

Also refer to the `vparmodify (1M)` manpage for details.

For example, the following commands set the virtual partition named “Mesh” to be configured for autoboot; configure “Shad” to have 4 processors; and configure “Mesh” to have 12 processors:

```
# vparmodify -p Mesh -B auto
# vparmodify -p Shad -m cpu::4
# vparmodify -p Mesh -m cpu::12
```

Step 4. Issue the `vparstatus` command to list the new status for the virtual partition you modified in the previous step.

You can make further changes to the virtual partition by issuing additional `vparmodify` commands.

```
# vparstatus
[Virtual Partition]

Virtual Partition Name      State Attributes Kernel Path      Boot
=====
Shad                       Up    Dyn,Manl  /stand/vmunix
Mesh                       Up    Dyn,Auto  /stand/vmunix      boot

[Virtual Partition Resource Summary]

Virtual Partition Name      CPU          CPU          Num          Memory (MB)
Min/Max    Bound/ Unbound  IO  # Ranges/
=====
Shad                2/  8    2  2    7  0/  0          2048
Mesh                2/ 12    2 10    3  0/  0          2048
#
```

Listing the Status for Virtual Partitions

This section covers methods for listing the status of virtual partitions in an nPartition.

You can list virtual partition status details from HP-UX running on a virtual partition. You also can list vPars database details for nPartitions that are not booted in vPars mode.

In addition to the procedure listed below, you can list limited virtual partition status info from the vPars monitor (the MON> prompt) by using the `vparinfo` monitor command.

vPars Management: Listing Virtual Partition Status from an nPartition

This procedure lists the boot status and configuration details for virtual partitions that are defined in an nPartition.

- Step 1.** Login to HP-UX running on any of the virtual partitions in the nPartition.
- Step 2.** Issue the `vparstatus` command for details about virtual partitions.

You can list the status for all virtual partitions, a specific virtual partition, or the vPars monitor event log.

- To list a summary that includes the status for all currently defined virtual partitions, issue the `vparstatus` command with no arguments or options.
- To list detailed information about a specific virtual partition, issue the `vparstatus -v -p vpname` command.
- To display history from the event log for the vPars monitor issue the `vparstatus -e` command.

The vPars monitor event log details are available only when the nPartition is booted in vPars mode.

```
# vparstatus
[Virtual Partition]

Virtual Partition Name      State Attributes Kernel Path      Boot
=====
Shad                       Up      Dyn,Auto   /stand/vmunix
Mesh                       Down    Dyn,Manl   /stand/vmunix      boot
```

Chapter 9 Virtual Partitions (vPars) Management on nPartitions

Listing the Status for Virtual Partitions

[Virtual Partition Resource Summary]

Virtual Partition Name	CPU		Num IO	Memory (MB)	
	Min/Max	Bound/Unbound		# Ranges/	Total MB
=====	=====	=====	=====	=====	=====
Shad	2/ 8	2 0	8	0/ 0	2048
Mesh	2/ 12	2 2	3	0/ 0	2048

#

vparstatus -e

```
INFO:CPU0:MON:[17:56:51 5/20/2002 GMT] VPAR Monitor version 0.2 started
INFO:CPU0:MON:Version string: @(#) $Revision: vpmon: vw: -- selectors: CUP
11.11_BL2001_1101 'cup_vpar_pib3' 'cup_shep_sd_vpars' Sun May 5 20:22:18 PDT
2002 $
INFO:CPU0:MON:cell num 6 does not contain i/o chassis
INFO:CPU0:MON:cell num 1 does not contain i/o chassis
INFO:CPU0:MON:Partition Shad monarch set to 0/10
INFO:CPU0:MON:Partition Mesh monarch set to 2/10
INFO:CPU0:MON:[17:57:45 5/20/2002 GMT] Shad is active
INFO:CPU0:MON:PDC_STABLE return size = 3f0
INFO:CPU0:MON:[17:58:15 5/20/2002 GMT] Shad is up
```

#

Booting HP-UX on Virtual Partitions

This section provides a procedure for loading and booting HP-UX on a virtual partition that is running in an nPartition.

As part of the virtual partition boot process, you will boot the `/stand/vpmon` vPars monitor from the nPartition BCH interface instead of booting the `/stand/vmunix` HP-UX kernel.

From the vPars monitor (the `MON>` prompt) running on an nPartition, you can load one or more virtual partitions. Each virtual partition then can boot a single instance of the HP-UX kernel.

Before performing this procedure, review the following list for an overview of situations you may encounter when loading and booting virtual partitions on an nPartition server.

- If one or more virtual partitions already has loaded/booted HP-UX on the nPartition, you can load/boot additional virtual partitions from HP-UX running on one of the existing virtual partitions.

In this situation, you can issue the `vparboot` command to load other virtual partitions; refer to the `vparboot` (1M) manpage for details.

However, you can only load virtual partitions that are defined in the currently active vPars configuration database, which typically is the `/stand/vpdb` file on the same boot device where `/stand/vpmon` was booted.

- If HP-UX is booted in non-vPars mode on an nPartition, you must shut down HP-UX on the nPartition and from the BCH interface for the nPartition boot the `/stand/vpmon` vPars monitor before loading any virtual partitions.

These above situations also are addressed in the following procedure.

vPars Management: Booting HP-UX B.11.11 on Virtual Partitions in an nPartition

This procedure describes how to boot HP-UX on one or more virtual partitions in a single nPartition.

Also refer to the chapter *Booting and Resetting nPartitions* on page 183 for details on booting nPartitions.

- Step 1.** Login to the service processor (GSP or MP) for the server where the virtual partitions will be booted.

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Booting HP-UX on Virtual Partitions

- Step 2.** Access the console for the nPartition in which the virtual partitions will boot HP-UX.

From the service processor main menu enter **CO** to access the nPartition console menu, and select the nPartition in which you will boot the virtual partitions.

```
GSP> CO
```

```
Partitions available:
```

```
#   Name
---  ----
0)  feshd4a
1)  feshd4b
Q)  Quit
```

```
Please select partition number: 0
```

- Step 3.** Access HP-UX or the BCH interface for the nPartition, and if needed reboot the instance of HP-UX running on the nPartition.

When accessing the nPartition console, if you can interact with a BCH command prompt such as the following:

```
Main Menu: Enter command or menu >
```

then you can proceed to the next step and skip the rest of this step.

If you cannot interact with a BCH menu or HP-UX login prompt or command line, then the nPartition might be booting or might be hanged.

You can use the Virtual Front Panel (VFP) to check the current boot state for an nPartition. See the chapter *Using Management Interfaces and Tools* on page 135 for details.

Otherwise, if HP-UX is running in the nPartition, first check to see whether HP-UX booted in vPars-mode or non-vPars mode.

Enter the **vparstatus -w** command, and determine the current nPartition boot state:

- If **vparstatus** reports **Error: Virtual partition monitor not running** then the nPartition is not running vPars.

Enter **shutdown -r** to reboot the nPartition and as needed interrupt the autoboot process to access the BCH interface for an nPartition.

After entering the `shutdown` command and accessing the BCH interface you can proceed with the next step.

- If `vparstatus` reports `The current virtual partition is...` then the nPartition is running one or more virtual partitions.

NOTE

This note applies only when an nPartition is running one or more virtual partitions.

Because at least one virtual partition already has loaded/booted HP-UX on the nPartition, check whether the virtual partition you wish to boot already is loaded, or whether the virtual partition can be loaded without rebooting HP-UX.

From HP-UX running on the virtual partition, enter the `vparstatus` command.

If the virtual partition you wish to load/boot is not listed in the `vparstatus` output, you may need to reboot the nPartition and its virtual partitions and you can proceed with the rest of this step and procedure.

If the virtual partition you wish to load/boot is listed, then check its boot state. If the virtual partition is “Up” then it already has loaded/booted HP-UX. If the virtual partition is “Down” then you can load/boot it using the `vparboot` command (refer to the *vparboot (1M)* manpage). In either of these two cases you can skip the rest of this procedure.

If you are certain that you need to reboot the nPartition and its virtual partitions, proceed with the rest of this step.

To access BCH, shut down HP-UX on all virtual partitions and reset the virtual partition.

See the procedure *Rebooting or Shutting Down Virtual Partitions* on page 478 for complete details on shutting down HP-UX on all virtual partitions and returning to the BCH interface. You must shut down and halt (`shutdown -h`) HP-UX in each virtual partition, and then at the vPars monitor (`MON>` prompt) enter the `reboot` command to reset

Chapter 9 Virtual Partitions (vPars) Management on nPartitions

Booting HP-UX on Virtual Partitions

the nPartition. When the nPartition resets all active cells in the nPartition are reset; after the cells reset interrupt the nPartition autoboot process if needed and then access the BCH interface.

Once you have access to the BCH interface proceed with the next step.

- Step 4.** From the BCH interface enter the **BOOT device** command, where *device* is the disk where the desired vPars configuration database (the `/stand/vpdb` file) resides.

When using the **BOOT** command you can specify a boot path variable (for example, `BOOT PRI`) or a hardware path for the boot device (for example, `BOOT 0/0/1/0/1.3`).

In addition to having the vPars database (`vpdb`), the device must have both HP-UX B.11.11 and the vPars software product installed.

- Step 5.** Instruct BCH to stop the boot process at the ISL prompt by entering **y** at the “Do you wish to stop” prompt.

```
Do you wish to stop at the ISL prompt prior to booting? (y/n)
>> y
```

If the **AUTO** file for a boot device is set to `boot /stand/vpmon` then you can instead enter **n** (for “do not stop at ISL”) and have the nPartition proceed to boot the vPars monitor automatically.

However, you must direct the ISL/SSL interfaces to load `/stand/vpmon` if the boot device **AUTO** file does not contain the string `hpux boot /stand/vpmon`.

You can check the **AUTO** file contents from the ISL prompt by entering the `hpux show autofile` command. By default the **AUTO** file is set to `hpux`, which loads the `/stand/vmunix` kernel.

See *Configuring Virtual Partition Autoboot* on page 482 for details on configuring a boot device **AUTO** file.

- Step 6.** As necessary, from the ISL interface enter the **hpux boot /stand/vpmon** command to boot the vPars monitor (`vpmon`) on the local nPartition.

```
ISL> hpux boot /stand/vpmon
```

```
Boot
: disk(0/0/6/0/0.5.0.0.0.0.0;0)/stand/vpmon
565248 + 156368 + 16872200 start 0x23000
```

Welcome to VPMON (type '?' for a list of commands)

MON>

If you stopped at the ISL interface, you must perform this step.

You do not need to perform this step if the boot device AUTO file is set to `hpux boot /stand/vpmon` and you did not stop at the ISL prompt in the previous step.

- Step 7.** At the vPars monitor (MON> prompt), enter the `vparinfo` command to list details about the virtual partitions currently defined in the vPars database (vpdb).

Especially note the list of virtual partitions that the `vparinfo` command displays as the “Names of the partitions in the database”.

MON> `vparinfo`

Resources not assigned to any partition

```
-----
0          0xfffffffffc000000    1      0  TYPE=14  SV_MODEL=170
0/0        0xffffffff80800000    1      0  TYPE= 7   SV_MODEL= 12
0/0/0      0xffffffff80400000    1      0  TYPE=13  SV_MODEL= 10
0/0/1      0xffffffff80400200    1      0  TYPE=13  SV_MODEL= 10
```

....

Names of the partitions in the database:

```
-----
Shad
Mesh
```

Available Free Memory: 0 MB

Available MEM RANGE: 0x0000000000000000-0x00000000ffffffff (4194304 Kb)

MON>

To see detailed information about a particular virtual partition you can use the `vparinfo vpname` command, where `vpname` is the virtual partition name. This detailed information includes the resources assigned to the virtual partition and other details such as the virtual partition boot path(s) and the virtual partition autoboot setting.

- Step 8.** From the vPars monitor (MON> prompt), use the `vparload` command `load/boot` HP-UX on a virtual partition.

Chapter 9 Virtual Partitions (vPars) Management on nPartitions

Booting HP-UX on Virtual Partitions

You can specify any of the following `vparload` commands at the vPars monitor `MON>` prompt:

- To load/boot HP-UX on all virtual partitions that are defined in the current vPars configuration database, enter: **`vparload -all`**
- To load/boot HP-UX on a single virtual partition, enter:
`vparload -p vpname`

where *vpname* is the name of the virtual partition, as reported by the `vparinfo` command in the previous step.

- To load/boot HP-UX only on the autoboot-enabled virtual partitions, enter: **`vparload -auto`**

This command loads only the virtual partitions that have the autoboot attribute configured (the boot attribute is set to `auto`).

The following example shows the virtual partition named “Shad” being loaded from the vPars monitor prompt and booting HP-UX.

```
MON> vparload -p Shad
[MON] Booting Shad...
[MON] Console client set to Shad
[MON] Console server set to Shad

[Shad]

[MON] Shad loaded
gate64: sysvec_vaddr = 0xc0002000 for 2 pages
NOTICE: nfs3_link(): File system was registered at index 3.
NOTICE: autofs_link(): File system was registered at index 6.
NOTICE: cachefs_link(): File system was registered at index 7.

Host is virtual System Console slave
Logical volume 64, 0x3 configured as ROOT
Logical volume 64, 0x2 configured as SWAP

....

HP-UX Start-up in progress

-----

Configure system crash dumps ..... OK
Mount file systems ..... OK
Virtual Partitions Initialization ..... OK
Update kernel and loadable modules ..... N/A
Initialize loadable modules ..... N/A
```

Setting hostname OK

....

Step 9. Login to HP-UX running in the virtual partition you loaded/booted in the previous steps of this procedure.

Because the nPartition console is shared by all virtual partitions within the nPartition, login using a method other than the system console login for most virtual partition access purposes.

Use the `telnet` command or another remote login method to access HP-UX running on the virtual partition.

After you login to a virtual partition running on an nPartition, you can list the current virtual partition using `vparstatus -w`, and can list the partition number for the local nPartition using the `parstatus -w` command.

```
# vparstatus -w
The current virtual partition is Shad.
# parstatus -w
The local partition number is 0.
#
```

Rebooting or Shutting Down Virtual Partitions

This section describes how to reboot HP-UX in a virtual partition and how to shut down all virtual partitions running in an nPartition.

After shutting down all virtual partitions in an nPartition you can reboot the vPars monitor to reset the nPartition and, after resetting, make available the BCH interface for the nPartition.

NOTE

The nPartition reboot for reconfig and shutdown for reconfig state involve methods of resetting an nPartition that require additional considerations not covered in this section.

See the section *Managing nPartitions from a Virtual Partition* on page 490 for details and procedures to perform a reboot for reconfig or to shut down an nPartition to a shutdown for reconfig state when one or more virtual partitions is running in the nPartition.

When you reboot (`shutdown -r`) HP-UX running in a virtual partition, HP-UX will automatically attempt to reboot on the virtual partition if the virtual partition is configured for autoboot and none of the other virtual partitions in the same nPartition have initiated a reboot for reconfig or a shutdown to the shutdown for reconfig state.

You can interrupt the virtual partition autoboot process when accessing the virtual partition console interface through the console interface for its nPartition.

When you halt (`shutdown -h`) HP-UX running in a virtual partition the virtual partition shuts down to a “Down” state and HP-UX does not reboot. After you have halted a virtual partition you can load/boot HP-UX on the virtual partition using the `vparboot` command from HP-UX running on any of the other virtual partitions in the same nPartition. Also see the procedure *vPars Management: Booting HP-UX B.11.11 on Virtual Partitions in an nPartition* on page 471 for other methods and details.

To shut down all virtual partitions in an nPartition, login to each virtual partition through its console and halt HP-UX (`shutdown -h`). Then from the vPars monitor (`MON>` prompt) you can enter `reboot` to exit the vPars monitor and reset the nPartition.

vPars Management: Rebooting or Shutting Down Virtual Partitions in an nPartition

The following procedure is for performing a normal reboot (`shutdown -r`) or a shutdown-and-halt (`shutdown -h`) in a virtual partition that is running in an nPartition.

This procedure also describes how to halt all virtual partitions in an nPartition and return to the BCH interface for the nPartition.

- Step 1.** Login to HP-UX running on the virtual partition that you want to shutdown or reboot.

You can login to the virtual partition remotely by using the `telnet` command or another remote login command, or can login through the virtual partition console.

If you plan to shut down all virtual partitions in the nPartition, then gain console login access to the virtual partitions.

You also will need virtual partition console access for this procedure if you must interrupt the HP-UX autoboot process for the virtual partition.

To access the virtual partition console, first login to the service processor (GSP or MP) for server where the nPartition containing the virtual partition resides and then access the nPartition console. As needed, in the nPartition console type **Control-a** to switch among the virtual partition consoles.

- Step 2.** Enter the `vparstatus -w` command to confirm that you are logged into the virtual partition that you want to shut down.

You also can check the autoboot setting for a virtual partition by using the `setboot` or the `vparstatus` command.

```
# vparstatus -w
The current virtual partition is Shad.
# setboot
Primary bootpath : 0/0/6/0/0.5.0
Alternate bootpath : 0/0/6/0/0.6.0

Autoboot is ON (enabled)
Autosearch is ON (enabled)
```

Note: The interpretation of Autoboot and Autosearch has changed for

Chapter 9 Virtual Partitions (vPars) Management on nPartitions

Rebooting or Shutting Down Virtual Partitions

systems that support hardware partitions. Please refer to the manpage.

#

- Step 3.** From HP-UX running in the virtual partition you want to shut down, enter the **shutdown** command with the appropriate command-line options.

If shutting down all virtual partitions in the nPartition, use **shutdown -h**.

To shut down and halt HP-UX on the virtual partition, enter the **shutdown -h** command along with any additional command-line options you need.

To shut down HP-UX on the virtual partition and allow the virtual partition to autoboot HP-UX if it is configured to do so, enter the **shutdown -r** command along with any additional options you need.

Refer to the *shutdown* (1M) manpage for complete details about all options.

- Step 4.** If you are shutting down all virtual partitions in the nPartition, type **Control-a** to switch to the next virtual partition console login prompt, login to the virtual partition, and then repeat Step 2 and Step 3 to shut down HP-UX in the virtual partition.

Typing **Control-a** switches among the virtual partition consoles that are available through an nPartition console, when one or more virtual partitions are loaded/booted in the nPartition.

NOTE

When you type **Control-a** repeatedly in the nPartition console and remain at the vPars monitor (MON> or [MON]), then no virtual partitions are loaded or booted in the nPartition.

- Step 5.** If you are shutting down all virtual partitions in the nPartition, then after you have halted HP-UX running in each virtual partition in the nPartition you can reset the nPartition by entering the **reboot** command from the MON> prompt.

The vPars monitor **reboot** command resets all active cells in the nPartition.

After the cells have reset and completed self-tests, the cells participate in partition rendezvous, form an nPartition, and finally the BCH interface for the nPartition is made available through the nPartition console.

If the nPartition is configured to autoboot, you can interrupt the autoboot process by typing any key at the appropriate time when accessing the nPartition console.

If autoboot is configured for an nPartition, you will see a message similar to the following in the nPartition console during the nPartition reset process.

```
Attempting to boot using the primary path.  
-----
```

```
To discontinue, press any key within 10 seconds.
```

Configuring Virtual Partition Autoboot

This section describes how you can configure an nPartition to automatically boot the virtual partitions Monitor and to also boot all virtual partitions that have autoboot configured.

For details on automatically booting HP-UX in non-vPars mode on an nPartition, see the chapter *Booting and Resetting nPartitions* on page 183.

As the following procedure describes, setting up the virtual partitions autoboot process involves first configuring the nPartition boot device paths and path flags to boot the device where the current vPars database resides, then configuring the AUTO file for that boot device to specify that the vPars monitor be loaded with the `-a` option, and finally configuring the virtual partitions that you want load automatically to have their boot attribute set to `auto`.

vPars Management: Configuring Virtual Partition Boot Settings

This procedure configures an nPartition to autoboot the vPars monitor (MON> prompt) and also automatically load/boot the virtual partitions that have autoboot configured.

- Step 1.** From the BCH interface for an nPartition, configure the nPartition to automatically boot the device where the current vPars database and vPars monitor resides.

First configure one of the nPartition boot path variables (PRI, HAA, or ALT) to reference the device where the current vPars database (`/stand/vpdb`) resides.

Then configure the nPartition path flags to boot the chosen device path.

See the chapter *Booting and Resetting nPartitions* on page 183 for details on nPartition autoboot, including device path and path flag configuration.

- Step 2.** Boot HP-UX in non-vPars mode from the device you configured in the previous step.

From the BCH interface, issue the `BOOT` command and specify the boot path variable you set in the previous step. For example: `BOOT HAA` to boot the HAA device path.

- Step 3.** Login to HP-UX and configure the AUTO file for the chosen boot device.

After HP-UX has booted in non-vPars mode on the nPartition, login as root, use the `lvdisplay` command to list device file for the boot device, and then use the `mkboot` command to configure the AUTO file on the boot device. You also can use the `lifcp` command to display the contents of the AUTO file.

For example, the following `mkboot` command sets the AUTO file for the `/dev/dsk/c1t5d0` device, and the `lifcp` command displays the contents of the AUTO file on the device.

```
# mkboot -a "hpux boot /stand/vpmon -a" /dev/dsk/c1t5d0
# lifcp /dev/dsk/c1t5d0:AUTO -
hpux boot /stand/vpmon -a
#
```

The `vpmon -a` option specifies to automatically load/boot all virtual partitions that have autoboot configured when the vPars monitor is loaded.

Also see the example *Autoboot Configuration Example for Virtual Partitions (vPars)* on page 484 for more example.

- Step 4.** From HP-UX check all virtual partition boot attributes and reconfigure any boot attributes to establish the virtual partitions autoboot configuration you desire.

Use the `vparstatus` command to list details about all virtual partitions, including boot attributes. Note that when you issue this command when HP-UX is booted in non-vPars mode, the command presents configuration info based on the `/stand/vpdb` vPars database.

Then as needed use the `vparmodify` command to reconfigure any boot attributes. For example, the following command sets the virtual partition named “Mesh” to automatically load/boot HP-UX when possible.

```
# vparmodify -p Mesh -B auto
```

Each virtual partition that you want to boot automatically must have its boot attribute set to `auto`.

- Step 5.** Reboot the nPartition, and as desired observe its boot progress from the nPartition Virtual Front Panel or its console.

The result of this nPartition reboot is to automatically load/boot the virtual partitions that you have configured for autoboot.

Chapter 9 Virtual Partitions (vPars) Management on nPartitions

Configuring Virtual Partition Autoboot

Issue the `shutdown -r` command to shut down HP-UX and reboot the nPartition.

When the nPartition reboots to its BCH interface, it will proceed to boot the device path you specified using nPartition boot paths and path flags. The nPartition then will execute the AUTO file contents on the device that you specified, to load the `/stand/vpmon` vPars monitor. Finally, because the vPars monitor is invoked with the `-a` option, it will automatically load/boot all virtual partitions that have autoboot configured.

Example 9-1 Autoboot Configuration Example for Virtual Partitions (vPars)

In this example, the user first confirms that the vPars database (`/stand/vpdb`) and vPars monitor (`/stand/vpmon`) are in the `/stand` directory and thus can be referenced and booted.

The `bdf` command displays the logical volume associated with the `/stand` directory, and the `lvdisplay` command then displays the device file associated with the logical volume.

```
# ls /stand/vp*
/stand/vpdb /stand/vpmon
# bdf /stand
Filesystem          kbytes    used    avail %used Mounted on
/dev/vg00/lvol1    512499    71581   389668   16% /stand
# lvdisplay -vk /dev/vg00/lvol1 | grep dev
LV Name              /dev/vg00/lvol1
VG Name              /dev/vg00
  /dev/dsk/c1t5d0    128        128
#
```

The first `lifcp` command that follows displays the original contents of the AUTO file on the boot device. Originally, this device is configured with the AUTO file default, `hpux`, which invokes the `hpux` loader with no options and thus the `/stand/vmunix` kernel would be booted.

The `mkboot` command that follows sets the AUTO file contents so that the `hpux` loader will boot the `/stand/vpmon` vPars monitor with the `-a` option. Issuing the `lifcp` command again shows the new contents of the AUTO file on the device.

```
# lifcp /dev/dsk/c1t5d0:AUTO -
hpux
# mkboot -a "hpux boot /stand/vpmon -a" /dev/dsk/c1t5d0
# lifcp /dev/dsk/c1t5d0:AUTO -
hpux boot /stand/vpmon -a
#
```

Next the user issues the `vparstatus` command to list the current settings for the virtual partitions defined in the `/stand/vpdb` file. Because the `vparstatus` command is issued when the local nPartition is booted in non-vPars mode, the command lists info based on the `vpdb` file rather than the vPars monitor (which is not running).

```
# vparstatus
vparstatus: Warning: Virtual partition monitor not running, Requested resources
shown.
[Virtual Partition]

Virtual Partition Name      State Attributes Kernel Path      Boot
=====
Shad                        N/A   Dyn,Manl   /stand/vmunix
Mesh                        N/A   Dyn,Manl   /stand/vmunix

[Virtual Partition Resource Summary]

Virtual Partition Name      CPU          CPU          Num          Memory (MB)
                          CPU          Bound/      IO          # Ranges/
                          Min/Max     Unbound    devs       Total MB   Total MB
=====
Shad                        2/ 3      2 0      6      0/ 0      2048
Mesh                        1/ 2      1 1      6      0/ 0      1024
#
```

In this example both virtual partitions, named “Shad” and “Mesh”, originally are configured to be booted manually, as shown in the previous `vparstatus` command output: the boot attribute for each is listed as “Manl” (manual).

Next the `vparmodify` command reconfigures the boot attribute for the virtual partition named “Mesh” to auto.

After changing the boot attribute, issuing the `vparstatus` command shows updated info about “Mesh” and lists its boot attribute as “Auto” (auto).

```
# vparmodify -p Mesh -B auto
# vparstatus -p Mesh
vparstatus: Warning: Virtual partition monitor not running, Requested resources
shown.
[Virtual Partition]

Virtual Partition Name      State Attributes Kernel Path      Boot
=====
Mesh                        N/A   Dyn,Auto   /stand/vmunix

[Virtual Partition Resource Summary]

Virtual Partition Name      CPU          CPU          Num          Memory (MB)
                          CPU          Bound/      IO          # Ranges/
                          Min/Max     Unbound    devs       Total MB   Total MB
=====
```

Chapter 9 Virtual Partitions (vPars) Management on nPartitions

Configuring Virtual Partition Autoboot

Virtual Partition Name	Min/Max	Unbound	devs	Total MB	Total MB
Mesh	1/ 2	1 1	6	0/ 0	1024

This example nPartition now is configured so that when the nPartition reboots it will automatically boot from a device that will automatically load a vPars monitor, which then will automatically load/boot the virtual partition named “Mesh”.

In this next step the user reboots the nPartition by issuing the `shutdown -r` command.

```
# shutdown -r
```

```
SHUTDOWN PROGRAM
06/26/02 17:57:23 CDT
Waiting a grace period of 60 seconds for users to logout.
Do not turn off the power or press reset during this time.
```

```
Broadcast Message from root (console) Wed Jun 26 17:58:23...
SYSTEM BEING BROUGHT DOWN NOW ! ! !
```

```
Do you want to continue? (You must respond with 'y' or 'n'.): y
```

```
/sbin/auto_parms: DHCP access is disabled (see /etc/auto_parms.log)
```

```
System shutdown in progress
```

```
Stopping OpC agent processes (opcagt). . . . . OK
Stop CDE login server . . . . . OK
```

Because the nPartition is booted in non-vPars mode, the `shutdown -r` command shuts down HP-UX and resets the nPartition.

After the cells boot and the nPartition reaches its BCH interface, the autoboot process begins.

The following example output shows that the nPartition automatically boots the primary (PRI) boot device path, whose AUTO file is configured to load the vPars monitor and automatically load/boot the virtual partitions whose boot attribute is `auto`.

The end result of this example nPartition shutdown-and-reboot is that the nPartition has loaded/booted the virtual partition named “Mesh”.

Firmware Version 35.3

Duplex Console IO Dependent Code (IODC) revision 1

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....

Primary Boot Path: 0/0/1/0/1.5
Boot Actions: Boot from this path.
If unsuccessful, go to BCH.

HA Alternate Boot Path: 0/0/1/0/1.6
Boot Actions: Go to BCH.

Alternate Boot Path: 0/0/1/0/1.4
Boot Actions: Go to BCH.

Console Path: 0/0/0/0/0.0

Attempting to boot using the primary path.

To discontinue, press any key within 10 seconds.

10 seconds expired.
Proceeding...

Initializing boot Device.

Boot IO Dependent Code (IODC) Revision 0

Boot Path Initialized.

HARD Booted.

ISL Revision A.00.43 Apr 12, 2000

ISL booting hpux boot /stand/vpmon -a

Boot

: disk(0/0/1/0/1.5.0.0.0.0;0)/stand/vpmon

585728 + 164600 + 16896360 start 0x23000

[MON] Booting Mesh...

MON> [MON] Console client set to Mesh

[MON] Mesh loaded

Chapter 9 Virtual Partitions (vPars) Management on nPartitions

Configuring Virtual Partition Autoboot

```
....

HP-UX Start-up in progress
-----

Configure system crash dumps ..... OK
VxVM device node check ..... OK

....

Start CDE login server ..... OK

The system is ready.

2/0/1/0/0.5 feshd4b (Mesh) [HP Release B.11.11]
Console Login:
```

In this example, the nPartition has completed the reboot and autoboot process and has automatically loaded/booted the virtual partition named “Mesh”, which has its boot attribute set to auto.

As the following output shows, when the user logs in to HP-UX running on the virtual partition, the `vparstatus` and `parstatus` commands report that the current virtual partition is “Mesh”, the local nPartition is partition number 0, and the virtual partition named “Shad” is in a “Down” state. Shad was not automatically loaded/booted because its boot attribute is set to manual (listed as “Manl” in the output below).

```
Console Login: root
Password:
```

```
# vparstatus -w
```

```
The current virtual partition is Mesh.
```

```
# parstatus -w
```

```
The local partition number is 0.
```

```
# vparstatus
```

```
[Virtual Partition]
```

Virtual Partition Name	State	Attributes	Kernel Path	Boot Opts
Shad	Down	Dyn,Manl	/stand/vmunix	
Mesh	Up	Dyn,Auto	/stand/vmunix	

```
[Virtual Partition Resource Summary]
```

Virtual Partition Name	CPU Min/Max	CPU Bound/Unbound	Num IO devs	Memory (MB) # Ranges/ Total MB
=====	=====	=====	=====	=====

Chapter 9 Virtual Partitions (vPars) Management on nPartitions

Configuring Virtual Partition Autoboot

Shad	2/	3	2	0	6	0/	0	2048
Mesh	1/	2	1	1	6	0/	0	1024
#								

Managing nPartitions from a Virtual Partition

This section covers the nPartition management issues that are unique to virtual partition environments.

NOTE

In virtual partition environments, you can apply the same nPartition configuration tools and principles that you use in non-vPars environments—but you must take additional steps to perform a reboot for reconfig of an nPartition that has more than one virtual partition loaded/booted.

The procedures in this section address the minor differences in performing nPartition reconfiguration and reboot for reconfig processes when using virtual partitions in an nPartition.

The following procedures are covered in this section:

- *vPars Management: Determining if an nPartition is Running vPars* on page 491
- *vPars Management: Performing a Reboot for Reconfig or Shutdown for Reconfig from a Virtual Partition* on page 494
- *vPars Management of nPartitions: Adding and Removing nPartition Cells from a Virtual Partition* on page 496
- *vPars Management of nPartitions: Reconfiguring nPartition Attributes from a Virtual Partition* on page 501

Also see the chapter *Configuring nPartitions* on page 275 for complete nPartition management procedures.

Virtual partition configuration procedures are covered in the section *Procedures for Managing Virtual Partitions on HP nPartition Servers* on page 459.

Determining if an nPartition is Running vPars

This section gives you several methods for determining if an nPartition has loaded/booted HP-UX in or more virtual partitions. For example, typing **Control-a** at the nPartition console, or using the `vparstatus` command.

vPars Management: Determining if an nPartition is Running vPars

Step 1. Login to the service processor (GSP or MP) for the server where the nPartition resides, and access the nPartition console. From the main menu, enter **CO** for the console menu and select the nPartition console.

Step 2. At the nPartition console, determine the current boot state.

The current console prompt, if any, provides the first clue about the boot state of the nPartition:

- If you can interact with a BCH command prompt such as the following:

```
Main Menu: Enter command or menu >
```

Then the nPartition has not booted HP-UX or any virtual partitions.

- If you can interact with a vPars monitor prompt (MON>) then the nPartition has at least booted the `/stand/vpmon` vPars monitor.

It is possible that one or more virtual partitions also are loaded/booted.

- If you can interact with the HP-UX console login prompt or the HP-UX command line then you still need to determine if HP-UX has booted in a vPars or in non-vPars mode.

If the nPartition console does not have any interactive prompt or command line, then you can use the Virtual Front Panel to help determine if the nPartition is in the process of booting/resetting or if HP-UX has hanged.

Step 3. When the nPartition console gives access to the vPars monitor or HP-UX, use additional techniques to determine how many (if any) virtual partitions are loaded/booted.

Chapter 9 Virtual Partitions (vPars) Management on nPartitions

Determining if an nPartition is Running vPars

You can type **Control-a** to switch among the virtual partition consoles. Each time you type **Control-a** the name of the current virtual partition or monitor ([MON]) is displayed in the console window.

If HP-UX is running, login as `root` and issue the `vparstatus -w` command to list the current virtual partition name. The `vparstatus` command with no options lists all virtual partitions.

Example 9-2 Checking if Virtual Partitions are Running on an nPartition

The following examples show different nPartition boot states on systems that have the HP vPars software installed.

In the following example, the vPars monitor has booted on the nPartition but virtual partitions have not yet been loaded or booted. Typing **Control-a** repeatedly did not switch to any virtual partitions—only the monitor ([MON]) is running.

```
MON>
Control-a
[MON]
Control-a
[MON]
Return
MON>
```

In the following example, HP-UX is running on the nPartition. Although the vPars software is installed, the nPartition is running in non-vPars mode. The vPars monitor is not running, indicating that `/stand/vmunix` was booted from BCH, not the `/stand/vpmon` vPars monitor.

```
# vparstatus
vparstatus: Error: Virtual partition monitor not running.
#
```

Finally, in the following example, HP-UX is running on a virtual partition in the nPartition. The current virtual partition is “Shad” and it is the only loaded/booted virtual partition in the nPartition: the other virtual partition named “Mesh” is in a “Down” state.

```
# vparstatus -w
The current virtual partition is Shad.
# vparstatus
[Virtual Partition]
```

Virtual Partition Name	State	Attributes	Kernel Path	Boot Opts
Shad	Up	Dyn,Manl	/stand/vmunix	
Mesh	Down	Dyn,Manl	/stand/vmunix	boot

Chapter 9 Virtual Partitions (vPars) Management on nPartitions

Determining if an nPartition is Running vPars

[Virtual Partition Resource Summary]

Virtual Partition Name	CPU		Num IO devs	Memory (MB)	
	Min/Max	Bound/ Unbound		# Ranges/ Total MB	Total MB
Shad	2/ 8	2 0	8	0/ 0	2048
Mesh	2/ 12	2 2	3	0/ 0	2048
#					

Reboot for Reconfig or Shutdown for Reconfig from a Virtual Partition

This section describes how to perform a reboot for reconfig and how to shut down an nPartition to the shutdown for reconfig state on nPartitions that are running HP-UX one or more virtual partitions.

A reboot for reconfig resets all cell in the nPartition, performs any nPartition reconfigurations, and reboots the nPartition to its BCH interface and allows the nPartition to autoboot, if it is configured to autoboot.

A shut down to the shutdown for reconfig state resets all cell in the nPartition, performs any nPartition reconfigurations, and then holds all cells at a boot-is-blocked state, which makes the nPartition inactive.

See the chapter *Booting and Resetting nPartitions* on page 183 for complete details.

vPars Management: Performing a Reboot for Reconfig or Shutdown for Reconfig from a Virtual Partition

This procedure covers how to perform a reboot for reconfig of an nPartition that is running virtual partitions.

This procedure also describes how to reset an nPartition to a shutdown for reconfig state, for an nPartition that is running vPars.

- Step 1.** Login to HP-UX running on any of the virtual partitions in the nPartition.
- Step 2.** Issue the `parstatus -w` command to list the partition number of the local nPartition, and confirm that you are logged into the virtual partition on the nPartition you want to reboot.
- Step 3.** Issue the `vparstatus` command to list details about all virtual partitions currently defined in the local nPartition.

Check the command's output to determine whether a reboot for reconfig or a shutdown to shutdown for reconfig already has been initiated from one of the virtual partitions in the nPartition.

The following note in the `vparstatus` output is presented when either type of reconfig shutdown has been initiated.

Note: A profile change is pending. The hard partition must be rebooted to complete it.

If this note is presented, then in all other virtual partitions at an “Up” or “Load” or “Boot” state issue the **shutdown -r** command and skip the next step.

- Step 4.** Issue the **shutdown** command with the options appropriate for the type of reboot you want to perform.

You can perform a reboot for reconfig or reset the nPartition to the shutdown for reconfig (inactive) state.

Use either of the following lists for details.

To perform the reboot for reconfig of the local nPartition:

- First issue the **shutdown -R** command in the current virtual partition.
- Then in all other virtual partitions at an “Up” or “Load” or “Boot” state, issue the **shutdown -r** command.

Any virtual partitions in a “Load” or “Boot” state must be shut down after they finish loading/booting HP-UX.

If the nPartition has only one virtual partition—or if all other virtual partitions are in a “Down” or “Shut” state—you do not need to shut down other virtual partitions.

To reset the nPartition to a shutdown for reconfig (inactive) state:

- First issue the **shutdown -R -H** command in the current virtual partition.
- Then in all other virtual partitions at an “Up” or “Load” or “Boot” state, issue the **shutdown -r** command.

Any virtual partitions in a “Load” or “Boot” state must be shut down after they finish loading/booting HP-UX.

If the nPartition has only one virtual partition—or if all other virtual partitions are in a “Down” or “Shut” state—you do not need to shut down other virtual partitions.

- Step 5.** Monitor the nPartitions boot state by using its Virtual Front Panel. You can access the VFP from the service processor (GSP or MP) main menu.

See the chapter *Booting and Resetting nPartitions* on page 183 for boot status details.

Adding or Removing nPartition Cells from a Virtual Partition

This section describes how you can add cells and remove cells from an nPartition that is running HP-UX in one or more virtual partitions.

See *vPars Management of nPartitions: Reconfiguring nPartition Attributes from a Virtual Partition* on page 501 for details on reconfiguring other nPartition attributes, such as boot paths or the nPartition name, from a virtual partition.

Complete nPartition configuration procedures are given in the chapter *Configuring nPartitions* on page 275.

vPars Management of nPartitions: Adding and Removing nPartition Cells from a Virtual Partition

This procedure covers how to add and remove cells from an nPartition that is running the HP virtual partitions software product.

In this procedure, you make changes to the local nPartition from HP-UX running in a virtual partition in the nPartition.

For details on modifying remote nPartitions, or nPartitions not currently running vPars, see the chapter *Configuring nPartitions* on page 275.

NOTE

After removing one or more cells from an nPartition, any virtual partitions defined within the nPartition may need to be reconfigured if they explicitly used processor or I/O resources on the removed cell(s).

The vPars software product automatically adjusts virtual partition configurations as needed to account for any expected hardware that is unavailable; as a result, the vPars database may automatically be changed after a cell is made inactive or is removed from its nPartition.

After adding one or more cells to an nPartition, to use the resources on the new cell(s) you also must modify the virtual partition configurations in the nPartition. For example, for a virtual partition to bind to processors on the new cell or use any attached I/O slots you must add the resource to the virtual partition by using the `vparsmodify` command or the Virtual Partition Manager utility.

Likewise, after an inactive cell in an nPartition is made active you also must modify the virtual partition configurations in the nPartition to explicitly use the processor or I/O resources provided by the cell.

The following procedure initiates an nPartition cell assignment change from HP-UX running on one virtual partition (using `parmodify` or Partition Manager) and then if required performs a reboot for reconfig of the nPartition.

- Step 1.** Login to HP-UX running on one of the virtual partitions in the nPartition you want to reconfigure.

You must login as `root` to perform this procedure.

- Step 2.** List the local nPartition partition number to confirm that you are logged into the nPartition you want to modify.

Issue the `parstatus -w` command or use an equivalent Partition Manager procedure to determine the local partition number.

- Step 3.** Issue the `vparstatus -w` command to list the current virtual partition name, and then issue the `vparstatus` command (with no options) to list all virtual partitions defined in the local nPartition.

```
# parstatus -w
The local partition number is 0.
# vparstatus -w
The current virtual partition is Shad.
#
# vparstatus
[Virtual Partition]
```

Virtual Partition Name	State	Attributes	Kernel Path	Boot Opts
Shad	Up	Dyn,Manl	/stand/vmunix	
Mesh	Down	Dyn,Manl	/stand/vmunix	-iS

[Virtual Partition Resource Summary]

Virtual Partition Name	CPU		CPU Bound/Unbound	Num IO devs	Memory (MB)	
	Min/Max				Total MB	Total MB
Shad	2/ 8	2 2	7	0/ 0	2048	
Mesh	2/ 8	2 2	3	0/ 0	2048	

Chapter 9 Virtual Partitions (vPars) Management on nPartitions

Adding or Removing nPartition Cells from a Virtual Partition

After you add or remove a cell from the local nPartition, if required you will initiate a reboot for reconfig of the local nPartition from the current virtual partition only and will initiate a normal reboot (`shutdown -r`) from all other “Up” (loaded/booted) virtual partitions in the nPartition.

Step 4. Request that the cell(s) be added or removed from the local nPartition.

Use the `parmodify` command or Partition Manager to initiate the cell addition or removal. For detailed information on adding or removing the cell see the following list:

- Adhere to HP’s nPartition requirements and guidelines when adding or removing cells from an nPartition; see the chapter *Planning nPartitions* on page 119.
- For details on adding or removing a cell from an nPartition, see the chapter *Configuring nPartitions* on page 275.

After you have used the `parmodify` command or Partition Manager to modify the local nPartition configuration, proceed with the next step.

Step 5. Determine if the local nPartition must be shut down to perform a reboot for reconfig.

The cell addition and removal procedures referenced in the previous step describe the situations where a reboot for reconfig of the local nPartition is required.

You must perform a reboot for reconfig if you removed an active cell or you specified the `-B` option to the `parmodify` command. Perform a reboot for reconfig if you added a cell with a “y” use-on-next-boot value.

You do not need to perform a reboot for reconfig if you removed an inactive cell (and did not specify the `-B` option) or if you added a cell with a “n” use-on-next-boot value (and did not specify the `-B` option).

Step 6. Only if required to complete the nPartition configuration change, perform a reboot for reconfig of the local nPartition.

First issue the `vparstatus` command to list the state (such as “Up” or “Down”) of all virtual partitions in the local nPartition.

```
# vparstatus
[Virtual Partition]

Virtual Partition Name      State Attributes Kernel Path      Boot
=====
=====
```

```
Shad          Up      Dyn,Man1   /stand/vmunix
Mesh         Load   Dyn,Man1   /stand/vmunix          boot
```

[Virtual Partition Resource Summary]

Virtual Partition Name	CPU		Num IO	Memory (MB)	
	Min/Max	Bound/Unbound		Total	Ranges/Total
Shad	2/ 8	2 0	7	0/ 0	2048
Mesh	2/ 12	2 0	3	0/ 0	2048

To perform the reboot for reconfig of the local nPartition:

- First issue the **shutdown -R** command in the current virtual partition.
- Then in all other virtual partitions that are at an “Up” or “Load” or “Boot” state, issue the **shutdown -r** command.

Any virtual partitions in a “Load” or “Boot” state must be shut down after they finish loading/booting HP-UX.

If the nPartition has only one virtual partition—or if all other virtual partitions are in a “Down” or “Shut” state—you do not need to shut down other virtual partitions.

For details see *vPars Management: Performing a Reboot for Reconfig or Shutdown for Reconfig from a Virtual Partition* on page 494.

After you issue the above **shutdown** commands, HP-UX on the virtual partitions is shut down and the vPars monitor is automatically rebooted.

Because a reboot for reconfig is a reset of the nPartition hardware, any virtual partitions that are configured for autoboot do not do so at this time. Instead, the nPartition boot process takes place—including the configured nPartition autoboot behavior (defined by the nPartition Path Flag settings).

As the reboot for reconfig occurs, all cells assigned to the nPartition will reset, any cell assignment changes for the nPartition will occur, and the cells will proceed to perform their self tests.

Chapter 9 *Virtual Partitions (vPars) Management on nPartitions*

Adding or Removing nPartition Cells from a Virtual Partition

After the cells assigned to the nPartition complete self tests the partition rendezvous can occur and then the BCH interface for the nPartition is initiated. If the nPartition is configured to autoboot, then that will occur; otherwise, the BCH interface is made available through the nPartition console interface.

To load/boot all virtual partitions, you can use the normal virtual partition boot methods. See the section *Booting HP-UX on Virtual Partitions* on page 471 for details.

Reconfiguring nPartition Attributes from a Virtual Partition

This section describes how you can modify nPartition attributes from HP-UX running in a virtual partition in the same server as the nPartition.

For details on changing nPartition cell assignments from a virtual partition, see *vPars Management of nPartitions: Adding and Removing nPartition Cells from a Virtual Partition* on page 496.

NOTE

When one or more virtual partitions is loaded/booted on an nPartition, the `setboot` command affects the boot settings for the current virtual partition and does not affect the boot settings of the local nPartition.

In this situation, instead use the `parmodify` command to configure nPartition boot device paths from HP-UX.

nPartition configuration data is stored as part of the server Complex Profile and is separate from virtual partition configuration data, which typically is stored in the `/stand/vpmon` file on disk.

vPars Management of nPartitions: Reconfiguring nPartition Attributes from a Virtual Partition

This section covers the configuration of nPartition attributes other than cell assignments, when performing the nPartition configuration from HP-UX running in a virtual partition.

When performing this procedure you do not need to perform any reboots.

- Step 1.** Login to HP-UX running on any virtual partition within the nPartition whose attributes you wish to reconfigure.

Some changes, such as cell attribute changes, require that you initiate the reconfiguration from the local nPartition to which the cell is assigned. When the nPartition is running multiple virtual partitions, you can login to any of the virtual partitions on the local nPartition.

- Step 2.** Use the `parstatus` command or Partition Manager to list the current configuration status of the nPartition.

Chapter 9 *Virtual Partitions (vPars) Management on nPartitions*

Reconfiguring nPartition Attributes from a Virtual Partition

- Step 3.** Use the `parmodify` command or Partition Manager to modify the nPartition configuration. (Do not use the `setboot` command.)

For example, `parmodify -p0 -P NewName` changes nPartition number 0 to be named “NewName”.

For other details, see the chapter *Configuring nPartitions* on page 275.

10 nPartition Commands

This chapter has details and command-line syntax for the HP nPartition configuration commands.

- *parcreate Command* on page 510
- *parmodify Command* on page 516
- *parremove Command* on page 522
- *parstatus Command* on page 525
- *parunlock Command* on page 528
- *fruled Command* on page 531
- *frupower Command* on page 534
- *cplxmodify Command* on page 537 — Only HP-UX B.11.23 and Windows SMS.

NOTE

The sections that follow provide reference information for using the HP nPartition commands.

For the most current information for these commands, refer to the online manpages for HP-UX B.11.11 or B.11.23: *parcreate* (1M), *parmodify* (1M), *parremove* (1M), *parstatus* (1), *parunlock* (1M), *fruled* (1M), *frupower* (1M), and *cplxmodify* (1M).

On a Superdome SMS running Windows, refer to **Start** → **Programs** → **Hewlett-Packard** → **nPar Management** → **nPar Commands Manual**.

Specifying Cells and I/O Chassis to Commands

Use the cell and I/O chassis notation described in this section when you manage, configure, and inquire about cells and I/O chassis using the *nPartition* configuration commands.

Details are in the *Cell Specification Formats* and *I/O Specification Format* sections that follow.

Cell Specification Formats

Use either of the following two formats to specify cells when using the HP-UX *nPartition* configuration commands: *Global Cell Number Format* or *Cell Hardware Location Format*.

- **Global Cell Number Format**

The global cell number format is identical to the cells' HP-UX hardware path, as reported by the HP-UX `ioscan` command. In global format, each cell is given a single unique number that indicates the relative location of the cell in the entire server complex.

Table 10-1 Cell IDs in Global Cell Number Format

Cell Slot	0	1	2	3	4	5	6	7
rp7405/rp7410, rp7420, and rx7620 Global Format	0	1	—	—	—	—	—	—
rp8400, rp8420, and rx8620 Global Format	0	1	2	3	—	—	—	—
Superdome Cabinet 0 Global Format	0	1	2	3	4	5	6	7
Superdome Cabinet 1 Global Format	8	9	10	11	12	13	14	15

- **Cell Hardware Location Format**

In cell hardware location format, each cell is identified using two numbers that specify the cabinet and the cell slot with the cabinet where the cell resides: *cabinet/slot*.

Table 10-2 Cell IDs in Hardware Location Format

Cell Slot	0	1	2	3	4	5	6	7
rp7405/rp7410, rp7420, and rx7620 HW Loc Format	0/0	0/1	—	—	—	—	—	—
rp8400, rp8420, and rx8620 HW Loc Format	0/0	0/1	0/2	0/3	—	—	—	—
Superdome Cabinet 0 HW Loc Format	0/0	0/1	0/2	0/3	0/4	0/5	0/6	0/7
Superdome Cabinet 1 HW Loc Format	1/0	1/1	1/2	1/3	1/4	1/5	1/6	1/7

Both cell ID formats specify the location of a cell in a complex. For example, `parstatus -c9` and `parstatus -c1/1` specify the same cell.

```
# parstatus -c9
[Cell]
          CPU      Memory
          OK/      (GB)
Hardware  Actual   Deconf/ OK/      Core   Use
Location Usage    Max    Deconf   Connected To   Cell   Next Par
          Usage    Max    Deconf   Connected To   Capable Boot Num
=====
cab1,cell1 active base 4/0/4    8.2/ 0.0 -                no     yes  1

# parstatus -c1/1
[Cell]
          CPU      Memory
          OK/      (GB)
Hardware  Actual   Deconf/ OK/      Core   Use
Location Usage    Max    Deconf   Connected To   Cell   Next Par
          Usage    Max    Deconf   Connected To   Capable Boot Num
=====
```

```
cab1,cell1 active base 4/0/4      8.2/ 0.0 -           no       yes  1
#
```

I/O Specification Format

Use the following I/O hardware location format when specifying an I/O chassis to the HP-UX *nPartition* configuration commands:

cabinet/bay/chassis

The *cabinet*, *bay*, and *chassis* fields specify the physical location of the I/O chassis. The values of these fields are as follows.

- *cabinet*

specifies the cabinet number where the I/O chassis resides.

On HP rp7405/rp7410, rp7420, rx7620, rp8400, rp8420, and rx8620 servers, the server cabinet number always is 0.

In HP rp8400, rp8420, and rx8620 complexes the I/O Expansion cabinet, if present, is 8.

On HP Superdome servers, the cabinet number can be:

- 0 — the left Compute cabinet.
- 1 — the right Compute cabinet, if present.
- 8 — an I/O Expansion cabinet, if present.
- 9 — an I/O Expansion cabinet, if present.

- *bay*

specifies the I/O bay (within a cabinet) where the I/O chassis resides.

On HP rp7405/rp7410, rp7420, rx7620, rp8400, rp8420, and rx8620 servers, the bay number always is 0.

On HP Superdome servers, the bay number can be:

- 0 — the front bay of a Compute cabinet, or the bottom bay of an I/O Expansion cabinet.
- 1 — the rear bay of a Compute cabinet, or the middle bay of an I/O Expansion cabinet.
- 2 — the top bay in an I/O Expansion cabinet.

- *chassis*

specifies the I/O chassis (within a bay).

On HP rp7405/rp7410, rp7420, rx7620, rp8400, rp8420, and rx8620 servers, the chassis number is:

- 0 — Chassis 0, which connects to cell 0 and is the left chassis as viewed from the cabinet rear: the left eight PCI card slots.
- 1 — Chassis 1, which connects to cell 1 and is the right chassis as viewed from the cabinet rear: the right eight PCI card slots.

On HP Superdome servers, the chassis number is:

- 1 — Chassis 1, the left chassis in the bay, as viewed when facing the bay/chassis.
- 3 — Chassis 3, the right chassis in the bay, as viewed when facing the bay/chassis.

In HP Superdome servers all chassis are 12-slot I/O chassis, both in Compute cabinets and in I/O Expansion cabinets.

The example below shows the `parstatus` command listing details about two different I/O chassis (cabinet 0/bay 0/chassis 1, and cabinet 0/bay 1/chassis 3).

```
# parstatus -i0/0/1
[Chassis]
Hardware Location  Usage           Core Connected  Par
=====
cab0,bay0,chassis1  absent         -    -            -

# parstatus -i0/1/3
[Chassis]
Hardware Location  Usage           Core Connected  Par
=====
cab0,bay1,chassis3  active        yes  cab0,cell0  0

#
```

Use the `parstatus -I` command to list all I/O chassis within a server complex, regardless of the chassis cell connections and *nPartition* assignments.

Chapter 10 nPartition Commands

I/O Specification Format

Use the HP-UX `rad -q` command or `olrad -q` command to list the currently available PCI I/O slots in the local nPartition and their status. The `rad` command is available with HP-UX B.11.11, and `olrad` is available with HP-UX B.11.23.

In the following example, both the `parstatus` and `rad` commands show details for various chassis and slots, including chassis 0/1/3.

```
# parstatus -I
[Chassis]
Hardware Location      Usage          Core Connected  Par
IO To                Num
=====
cab0,bay0,chassis0    absent         -   -           -
cab0,bay0,chassis1    absent         -   -           -
cab0,bay0,chassis2    absent         -   -           -
cab0,bay0,chassis3    inactive      yes  cab0,cell14  -
cab0,bay1,chassis0    absent         -   -           -
cab0,bay1,chassis1    absent         -   -           -
cab0,bay1,chassis2    absent         -   -           -
cab0,bay1,chassis3    active        yes  cab0,cell10  0
cab1,bay0,chassis0    absent         -   -           -
cab1,bay0,chassis1    inactive      -   -           -
cab1,bay0,chassis2    absent         -   -           -
cab1,bay0,chassis3    absent         -   -           -
cab1,bay1,chassis0    absent         -   -           -
cab1,bay1,chassis1    absent         -   -           -
cab1,bay1,chassis2    absent         -   -           -
cab1,bay1,chassis3    active        yes  cab1,cell12  1
cab8,bay0,chassis1    inactive      -   -           -
cab8,bay0,chassis3    active        yes  cab0,cell12  0
cab8,bay1,chassis1    inactive      -   -           -
cab8,bay1,chassis3    inactive      -   -           -
cab8,bay2,chassis1    absent         -   -           -
cab8,bay2,chassis3    absent         -   -           -
cab8,bay3,chassis1    absent         -   -           -
cab8,bay3,chassis3    absent         -   -           -

# rad -q
Slot      Path          Bus  Speed  Power  Occupied  Suspended  Driver(s)
0-1-3-0   0/0/0         0    33     On     Yes       No         No
0-1-3-1   0/0/1         0    33     On     No        No         No
0-1-3-2   0/0/2/0       16   33     On     No        N/A        N/A
0-1-3-3   0/0/3/0       24   33     On     No        N/A        N/A
0-1-3-4   0/0/4/0       32   33     On     No        N/A        N/A
0-1-3-5   0/0/6/0       48   33     On     Yes       No         Yes
0-1-3-6   0/0/14/0      112  33     On     No        N/A        N/A
0-1-3-7   0/0/12/0      96   33     On     No        N/A        N/A
0-1-3-8   0/0/11/0     88   33     On     Yes       No         Yes
0-1-3-9   0/0/10/0     80   33     On     No        N/A        N/A
0-1-3-10  0/0/9/0      72   33     On     No        N/A        N/A
0-1-3-11  0/0/8/0     64   33     On     No        N/A        N/A
8-0-3-0   2/0/0         0    33     On     Yes       No         No
8-0-3-1   2/0/1/0       8    33     On     No        N/A        N/A
8-0-3-2   2/0/2/0      16   33     On     No        N/A        N/A
8-0-3-3   2/0/3/0      24   33     On     No        N/A        N/A
8-0-3-4   2/0/4/0      32   33     On     No        N/A        N/A
8-0-3-5   2/0/6/0      48   33     On     No        N/A        N/A
8-0-3-6   2/0/14/0     112  33     On     Yes       No         Yes
8-0-3-7   2/0/12/0     96   33     On     No        N/A        N/A
8-0-3-8   2/0/11/0     88   33     On     No        N/A        N/A
8-0-3-9   2/0/10/0     80   33     On     No        N/A        N/A
8-0-3-10  2/0/9/0      72   33     On     No        N/A        N/A
8-0-3-11  2/0/8/0     64   33     On     No        N/A        N/A
#
```

Cabinet 0/Bay 1/Chassis 3 (0/1/3)

Specifying Remote Management Options to Commands

Two sets of remote management options are supported by the `nPartition` command that run on HP-UX B.11.23 and the Windows SMS (a Superdome Support Management Station running Microsoft® Windows®):

- The `-u...` `-h...` set of options may be specified to cause the command to send its management request using WBEM to an `nPartition` other than the local `nPartition` (but can also be used as a “loopback access” to the local `nPartition`).

NOTE

When specifying the `-u...` `-h...` options, the host specified by `-h` must be running HP-UX B.11.23 and have WBEM configured. Also, the `client.pem` file on the the system from which the command is issued must have a copy of the SSL certificate entry (including the `BEGIN` and `END` lines) from specified host’s `server.pem` file.

See *Remote Management Using WBEM* on page 77 for details.

- The `-g...` `-h...` options may be specified to cause the command to send its management request using IPMI over LAN to a service processor in another server complex (but can also be used as a “loopback access” to the service processor in the local complex).

NOTE

When specifying the `-g...` `-h...` options, the host specified by `-h` must have IPMI LAN access enabled. Also, the user who issues the command must correctly specify the host’s IPMI password in order for the command to be able to successfully complete.

See *Remote Management Using IPMI over LAN* on page 82 for details.

The `-u` and `-g` options are mutually exclusive.

For more details about remote management, see *Remote and Local Management of nPartitions* on page 72.

parcreate Command

The `parcreate` command creates a new `nPartition`.

This command assigns the specified cells (and any attached I/O chassis) to an `nPartition`, assigns a number to the new `nPartition`, and returns the partition number of the newly created `nPartition`.

Root permission or IPMI LAN access is required to use `parcreate`.

NOTE

On servers based on the HP `sx1000` chipset, when the `nPartition Configuration Privilege` is restricted the `parcreate` command cannot create a new `nPartition`. This restriction does not apply when using the `-g...` `-h...` options.

Refer to the *parcreate* (1M) manpage for complete details.

Synopsis

The `parcreate` command supports slightly different options for the HP-UX B.11.11 and other releases.

HP-UX B.11.11:

```
parcreate [-P PartitionName] [-I IPaddress]
-c cell:[type]:[use_on_next_boot]:[failure_usage] [-c...]
[-b path] [-t path] [-s path] [-r cell] [-r...] [-B]
```

HP-UX B.11.23 and Windows SMS:

```
parcreate [-P PartitionName] [-I IPaddress] [-L clm_value]
-c cell:[type]:[use_on_next_boot]:[failure_usage][:clm]
[-c...]
[-b path] [-t path] [-s path] [-r cell] [-r...] [-B]
[-u username:[passwd] -h IPaddress|hostname | -g [passwd] -h
IPaddress|hostname ]
```

- The `-u...` `-h...` set of options may be specified to cause the command to send its management request using WBEM to an `nPartition` other than the local `nPartition` (but can also be used as a “loopback access” to the local `nPartition`).

- The `-g...` `-h...` options may be specified to cause the command to send its management request using IPMI over LAN to a service processor in another server complex (but can also be used as a “loopback access” to the service processor in the local complex).

The `-u` and `-g` options are mutually exclusive.

Chapter 10 nPartition Commands

parcreate Command

Options

`-P PartitionName`

Specifies the name of the new nPartition.

`-I IPaddress`

Specifies the IP address that can be used by management tools to address this nPartition. This value should be consistent with the IP address used for the nPartition when an operating system is booted.

`-L clm_value`

Specifies the amount of the memory that will be used as cell local memory per cell. The *clm_value* specified using the `-c` option takes precedence over the *clm_value* specified using the `-L` option. See the `-c` option for a description of the *clm_value* formats.

HP-UX B.11.11:

`-c cell:[type]:[use_on_next_boot]:[failure_usage]`

HP-UX B.11.23 and Windows SMS:

`-c cell:[type]:[use_on_next_boot]:[failure_usage][:clm]`

Specifies the cell(s) to be added to the nPartition.

- The only valid *type* value is:

base	Base cell. (The default.)
------	---------------------------
- The valid *use_on_next_boot* values for cells are:

y	Participate in reboot. (The default.)
n	Do not participate in reboot.
- The only valid *failure_usage* value is:

ri	Reactivate with memory interleave (the default). Specifies to integrate the cell into the nPartition as normally occurs.
----	--
- HP-UX B.11.23 and Windows SMS only.
The *clm* value specifies the amount of memory that will be configured as cell local memory for the cell.

The *clm* value specified using the *-c* option takes precedence over the *clm* value specified using the *-L* option.

You can specify the *clm* value in either of two forms: percentage or absolute amount of memory. The default is 0 (no cell local memory).

— Percentage cell-local memory (CLM).

The percent number can be any number in the range 0–100 with a suffix of %.

This number is rounded to 12.5%, 25%, 37.5%, 50%, 62.5%, 75%, 87.5% or 100%. If the cell contains less than 4 GBytes of memory, then the percentage is rounded to 25%, 50%, 75% or 100%. Percentages are rounded up or down to the nearest value, but are not rounded up to 100%.

— Absolute CLM specification. (The default.)

The absolute number is interpreted as an absolute number of gigabytes of memory and can optionally have a suffix of GB.

As needed, an absolute CLM specification is rounded up to the nearest 0.5 GBytes.

If the *clm* value is rounded, the command reports the final value used.

-b path

Specifies the primary boot path.

For HP 9000 servers, this is the PRI boot path.

For HP Integrity servers, only boot options for the local *nPartition* can be modified—therefore, boot paths for a newly created *nPartition* cannot be set using *parcreate*. Instead use the EFI system boot interface, available through the *nPartition* console.

-t path

Specifies the alternate boot path.

For HP 9000 servers, this is the ALT boot path.

Chapter 10 nPartition Commands

parcreate Command

For HP Integrity servers, only boot options for the local nPartition can be modified—therefore, boot paths for a newly created nPartition cannot be set using `parcreate`. Instead use the EFI system boot interface, available through the nPartition console.

`-s path`

Specifies the secondary boot path.

For HP 9000 servers, this is the HAA boot path.

For HP Integrity servers, only boot options for the local nPartition can be modified—therefore, boot paths for a newly created nPartition cannot be set using `parcreate`. Instead use the EFI system boot interface, available through the nPartition console.

`-r cell`

Specifies the core cell choices. One to four cells can be specified.

`-B`

Specifies to boot the nPartition. The default is not to boot the nPartition and leave it in the shutdown for reconfig state.

`-u username: [passwd]` HP-UX B.11.23 and Windows SMS only.

Specifies the account and authorization to access an nPartition other than the local nPartition.

The `-h` option is required if this option is used.

- `username` specifies a configured user name on the target nPartition.
- `passwd` specifies the password associated with the `username`. If this field is empty, the command prompts for the password.

`-g [passwd]`

HP-UX B.11.23 and Windows SMS only. Allows access to the complex specified by the `-h` option. The accessed complex is then considered the target complex. Access is through the service processor LAN port.

The `-h` option is required if this option is used.

`passwd` specifies the IPMI password of the service processor. If this field is omitted, the command prompts for the password.

-h *IPaddress|hostname* HP-UX B.11.23 and Windows SMS only. This option is only used in combination with either the -u or -g option. *IPaddress|hostname* specifies the IP address or hostname of the target nPartition (-u) or service processor (-g).

parmodify Command

You can use the `parmodify` command to modify the following attributes of an existing `nPartition`:

- Partition name
- Cell assignments (add cells or remove cells)
- Attributes of existing cells:
 - Cell type
 - Use-on-next-boot value
 - Failure usage
 - HP-UX B.11.23 and Windows SMS only:
Cell local memory (CLM) value
- Core cell choices
- Boot paths (the primary, alternate, and HA alternate paths)
- IP address (if set, this value should be consistent with the IP address assigned to the `nPartition` when HP-UX is booted)

Root permission or IPMI LAN access is required to use this command.

NOTE

On servers based on the HP `sx1000` chipset, when the `nPartition Configuration Privilege` is restricted the `parmodify` command cannot add or remove cells from an `nPartition` and cannot modify the CLM value of any cell. These restrictions do not apply when using the `-g...` `-h...` options.

Refer to the *parmodify* (1M) manpage for complete details.

Synopsis

The `parmodify` command supports slightly different options for the HP-UX B.11.11 and other releases.

HP-UX B.11.11:

```
parmodify -p PartitionNumber
-a cell:[type]:[use_on_next_boot]:[failure_usage] [-a...] |
-m cell:[type]:[use_on_next_boot]:[failure_usage] [-m...] |
-I IPaddress | -r cell [-r...] | -d cell [-d...] | -b path |
-t path | -s path | -P PartitionName | -B
```

HP-UX B.11.23 and Windows SMS:

```
parmodify -p PartitionNumber
-a cell:[type]:[use_on_next_boot]:[failure_usage][:clm]
[-a...] |
-m cell:[type]:[use_on_next_boot]:[failure_usage][:clm]
[-m...] | -I IPaddress | -r cell [-r...] | -d cell [-d...] |
-b path | -t path | -s path | -P PartitionName | -B |
[-u username:[passwd] -h IPaddress|hostname |-g [passwd] -h
IPaddress|hostname ]
```

- The `-u...` `-h...` set of options may be specified to cause the command to send its management request using WBEM to an *nPartition* other than the local *nPartition* (but can also be used as a “loopback access” to the local *nPartition*).
- The `-g...` `-h...` options may be specified to cause the command to send its management request using IPMI over LAN to a service processor in another server complex (but can also be used as a “loopback access” to the service processor in the local complex).

The `-u` and `-g` options are mutually exclusive.

The `-p` option is required.

Options

The `parmodify` command supports the following command-line options.

`-p` *PartitionNumber*

Specifies the *nPartition* to be modified.

PartitionNumber specifies the unique number (integer) assigned to the *nPartition*.

The `-p` option is required.

Note that you must also to specify any one or more of the following options.

Chapter 10 nPartition Commands

parmodify Command

HP-UX B.11.11:

```
-a cell:[type]:[use_on_next_boot]:[failure_usage]
```

HP-UX B.11.23 and Windows SMS:

```
-a cell:[type]:[use_on_next_boot]:[failure_usage][:clm]
```

Specifies the cell(s) to be added to the nPartition.

- The only valid *type* value is:

base Base cell. (The default.)

- The valid *use_on_next_boot* values for cells are:

y Participate in reboot. (The default.)

n Do not participate in reboot.

- The only valid *failure_usage* value is:

ri Reactivate with memory interleave (the default). Specifies to integrate the cell into the nPartition as normally occurs.

- HP-UX B.11.23 and Windows SMS only.

The *clm* value specifies the amount of memory that will be configured as cell local memory for the cell.

You can specify the *clm* value in either of two forms: percentage or absolute amount of memory. The default is 0 (no cell local memory).

- Percentage cell-local memory (CLM).

The percent number can be any number in the range 0–100 with a suffix of %.

This number is rounded to 12.5%, 25%, 37.5%, 50%, 62.5%, 75%, 87.5% or 100%. If the cell contains less than 4 GBytes of memory, then the percentage is rounded to 25%, 50%, 75% or 100%. Percentages are rounded up or down to the nearest value, but are not rounded up to 100%.

- Absolute CLM specification. (The default.)

The absolute number is interpreted as an absolute number of gigabytes of memory and can optionally have a suffix of GB.

As needed, an absolute CLM specification is rounded up to the nearest 0.5 GBytes.

If the *clm* value is rounded, the command reports the final value used.

HP-UX B.11.11:

`-m cell:[type]:[use_on_next_boot]:[failure_usage]`

HP-UX B.11.23 and Windows SMS:

`-m cell:[type]:[use_on_next_boot]:[failure_usage][:clm]`

Modifies attributes of a cell already assigned to the nPartition.

See the `-a` option descriptions for details on the *type*, *use_on_next_boot*, *failure_usage*, and (for HP-UX B.11.23 and Windows SMS) *clm* cell attributes.

`-I IPaddress`

Specifies the IP address that can be used by management tools to address this nPartition. This value should be consistent with the IP address used by the nPartition when an operating system is booted.

`-r cell`

Specifies the core cell choices. One to four core cell choices can be specified.

`-d cell`

Remove the specified cell from the nPartition.

`-b path`

Specifies the primary boot path.

For HP 9000 servers, this is the PRI boot path.

For HP Integrity servers `-b` sets the first item in the boot options list displayed by the EFI Boot Manager, and only boot options for the local nPartition can be modified.

`-t path`

Chapter 10 nPartition Commands

parmodify Command

Specifies the alternate boot path.

For HP 9000 servers, this is the ALT boot path.

For HP Integrity servers `-t` sets the third item in the boot options list displayed by the EFI Boot Manager, and only boot options for the local nPartition can be modified.

`-s path`

Specifies the secondary boot path.

For HP 9000 servers, this is the HAA boot path.

For HP Integrity servers `-s` sets the second item in the boot options list displayed by the EFI Boot Manager, and only boot options for the local nPartition can be modified.

`-P PartitionName`

Specifies the name of the nPartition.

`-B`

Specifies whether to boot the nPartition. The default is not to boot.

When you modify an inactive nPartition and specify the `-B` option, the nPartition is booted (and becomes active) immediately after it is modified.

When you modifying an active nPartition and specify the `-B` option, you must perform a reboot for reconfig of the modified nPartition. You must perform this reboot for reconfig before any other cell assignments can take place in the server complex.

`-u username: [passwd]` HP-UX B.11.23 and Windows SMS only.

Specifies the account and authorization to access an nPartition other than the local nPartition.

The `-h` option is required if this option is used.

- `username` specifies a configured user name on the target nPartition.
- `passwd` specifies the password associated with the `username`. If this field is empty, the command prompts for the password.

- `-g [passwd]` HP-UX B.11.23 and Windows SMS only. Allows access to the complex specified by the `-h` option. The accessed complex is then considered the target complex. Access is through the service processor LAN port.
- The `-h` option is required if this option is used.
- `passwd` specifies the IPMI password of the service processor. If this field is omitted, the command prompts for the password.
- `-h IPaddress|hostname` HP-UX B.11.23 and Windows SMS only. This option is only used in combination with either the `-u` or `-g` option. `IPaddress|hostname` specifies the IP address or hostname of the target *nPartition* (`-u`) or service processor (`-g`).

parremove Command

The `parremove` command removes an existing `nPartition`. This removes all cells from the `nPartition` and destroys the `nPartition` definition. Root permission or IPMI LAN access is required to run this command.

- To remove the local `nPartition`, you must specify the `-F` option.

For HP-UX B.11.11, the local `nPartition` is the one from which you issue the `parremove` command.

For HP-UX B.11.23 or a Windows SMS, the local `nPartition` either is the one where the command is issued, or if the `-u...` `-h...` options are specified it is the `nPartition` whose host is specified by `-h`.

- To remove a remote `nPartition` from HP-UX B.11.11, the remote `nPartition` must be inactive: it must be shutdown for reconfig or the `parremove` command will not be able to remove the `nPartition`.

From HP-UX B.11.23 or a Windows SMS, `parremove` can remove an active, remote `nPartition` when both the `-F` option and the `-g...` `-h...` set of options are specified.

NOTE

On servers based on the HP `sx1000` chipset, when the `nPartition Configuration Privilege` is restricted the `parremove` command cannot remove an `nPartition` unless the command is issued with the `-g...` `-h...` options.

Refer to the `parremove (1M)` manpage for complete details.

Synopsis

```
parremove -p PartitionNumber [-F]
```

HP-UX B.11.23 and Windows SMS Notes

- The `-u...` `-h...` set of options may be specified to cause the command to send its management request using WBEM to an `nPartition` other than the local `nPartition` (but can also be used as a “loopback access” to the local `nPartition`).

- The `-g...` `-h...` options may be specified to cause the command to send its management request using IPMI over LAN to a service processor in another server complex (but can also be used as a “loopback access” to the service processor in the local complex).

The `-u` and `-g` options are mutually exclusive.

Chapter 10 nPartition Commands

parremove Command

Options

- `-p PartitionNumber`
Specifies the nPartition number to be removed.
- `-F`
Forcibly remove the nPartition. If the nPartition is inactive, the nPartition is removed. If the nPartition is active and if it is the local nPartition, the nPartition is removed.

If the nPartition is active but is not the local nPartition, then the nPartition will not be removed.
- `-u username:[passwd]` HP-UX B.11.23 and Windows SMS only.
Specifies the account and authorization to access an nPartition other than the local nPartition.

The `-h` option is required if this option is used.
- `username` specifies a configured user name on the target nPartition.
 - `passwd` specifies the password associated with the `username`. If this field is empty, the command prompts for the password.
- `-g [passwd]` HP-UX B.11.23 and Windows SMS only. Allows access to the complex specified by the `-h` option. The accessed complex is then considered the target complex. Access is through the service processor LAN port.

The `-h` option is required if this option is used.

`passwd` specifies the IPMI password of the service processor. If this field is omitted, the command prompts for the password.
- `-h IPaddress|hostname` HP-UX B.11.23 and Windows SMS only. This option is only used in combination with either the `-u` or `-g` option. `IPaddress|hostname` specifies the IP address or hostname of the target nPartition (`-u`) or service processor (`-g`).

parstatus Command

The `parstatus` command displays information about the `nPartitions` or hardware within a server complex. If you specify no arguments, `parstatus` lists information about several of the major components of the server complex.

You can specify an individual entity (cell, I/O chassis, cabinet, or `nPartition`) to restrict the output to information about that component.

All users can issue this command.

Refer to the `parstatus` (1) manpage for complete details.

Synopsis

```
parstatus -s
parstatus -w
parstatus [-X]
parstatus [-A] [-M] -C|-I
parstatus [-M] -B|-P
parstatus [-M] -i IOchassis [-i...]
parstatus [-V|-M] -c cell [-c...]
parstatus [-V|-M] -b cabinet [-b...]
parstatus [-V|-M] -p PartitionNumber [-p...]
```

HP-UX B.11.23 and Windows SMS Notes

- The `-u...` `-h...` set of options may be specified to cause the command to send its management request using WBEM to an `nPartition` other than the local `nPartition` (but can also be used as a “loopback access” to the local `nPartition`).
- The `-g...` `-h...` options may be specified to cause the command to send its management request using IPMI over LAN to a service processor in another server complex (but can also be used as a “loopback access” to the service processor in the local complex).

The `-u` and `-g` options are mutually exclusive.

Chapter 10 nPartition Commands

parstatus Command

Options

- s** Indicate (through `parstatus` exit status) whether the system is an HP server that supports nPartitions. Not supported with the `-g...` `-h...` options.
- w** Display the nPartition number for the local nPartition. Not supported with the `-g...` `-h...` options.
- X** Display the server complex attributes.
- A** Only display the available resources in the complex.
- V** Increase the amount of information displayed.
For HP-UX B.11.23 and Windows SMS, this option includes interleaved and cell local memory settings when cell (`-c cell`) or nPartition (`-p partition`) details are displayed.
- M** Produce output suitable for machine parsing.
- C** Show information for all the cells in the complex.
- I** Show information for all I/O chassis in the complex.
- B** Show information for all cabinets in the complex.
- P** Show information for all nPartitions in the complex.
- c cell**
Show information about the specified cell.
- i IOchassis**
Show information about the specified I/O chassis.
- b cabinet**
Show information about the specified cabinet.
- p partition**
Show information about the specified nPartition.
- u username: [passwd]** HP-UX B.11.23 and Windows SMS only.
Specifies the account and authorization to access an nPartition other than the local nPartition.
The `-h` option is required if this option is used.
- `username` specifies a configured user name on the target nPartition.

- *passwd* specifies the password associated with the *username*. If this field is empty, the command prompts for the password.

-g [*passwd*]

HP-UX B.11.23 and Windows SMS only. Allows access to the complex specified by the -h option. The accessed complex is then considered the target complex. Access is through the service processor LAN port.

The -h option is required if this option is used.

passwd specifies the IPMI password of the service processor. If this field is omitted, the command prompts for the password.

-h *IPaddress|hostname* HP-UX B.11.23 and Windows SMS only. This option is only used in combination with either the -u or -g option. *IPaddress|hostname* specifies the IP address or hostname of the target nPartition (-u) or service processor (-g).

parunlock Command

The `parunlock` command unlocks the Stable Complex Configuration Data or Partition Configuration Data.

On HP-UX B.11.23 and Windows SMS, `parunlock` also can unlock Dynamic Configuration Data and cell data and can cancel pending changes to the Stable Complex Configuration Data.

Use this command with caution.

Root permission is required to run this command.

NOTE

On servers based on the HP sx1000 chipset, when the the `nPartition Configuration Privilege` is restricted the `parunlock` command

- cannot unlock the Partition Configuration Data of non-local `nPartitions`,
- cannot unlock the Dynamic Configuration Data or Stable Complex Configuration Data for the local complex,
- cannot cancel pending changes to the Stable Complex Configuration Data, and
- cannot unlock the cell data of cells not assigned to the local `nPartition`.

These restrictions do not apply when using the `-g...` `-h...` options.

Refer to the *parunlock* (1M) manpage for details.

Synopsis

```
parunlock [-p PartitionNumber] [-s]
```

```
parunlock -A
```

HP-UX B.11.23 and Windows SMS only:

```
parunlock [-b] [-c cell] [-P]
```

HP-UX B.11.23 and Windows SMS Notes

- The `-u...` `-h...` set of options may be specified to cause the command to send its management request using WBEM to an *nPartition* other than the local *nPartition* (but can also be used as a “loopback access” to the local *nPartition*).
- The `-g...` `-h...` options may be specified to cause the command to send its management request using IPMI over LAN to a service processor in another server complex (but can also be used as a “loopback access” to the service processor in the local complex).

The `-u` and `-g` options are mutually exclusive.

Options

```
-p PartitionNumber
```

Unlock the Partition Configuration Data of the specified *nPartition*.

```
-s
```

Unlocks the Stable Complex Configuration Data of the target complex.

```
-b
```

HP-UX B.11.23 and Windows SMS only. Unlocks the Dynamic Configuration Data of the target complex.

```
-c cell
```

HP-UX B.11.23 and Windows SMS only. Unlocks the cell data of the specified *cell*.

```
-P
```

HP-UX B.11.23 and Windows SMS only. Cancels any pending changes to the Stable Complex Configuration Data of the target complex.

```
-A
```

This option differs slightly for HP-UX B.11.11 and other releases.

- For HP-UX 11.11, `-A` unlocks the Stable Complex Configuration Data and the Partition Configuration Data of all the *nPartitions* in the complex.

Chapter 10 nPartition Commands

parunlock Command

- For HP-UX B.11.23 and Windows SMS, `-A` unlocks the Complex Configuration Data, the Dynamic Configuration Data, and the Partition Configuration Data of all the nPartitions in the target complex.

`-u username:[passwd]` HP-UX B.11.23 and Windows SMS only. Specifies the account and authorization to access an nPartition other than the local nPartition.

The `-h` option is required if this option is used.

- `username` specifies a configured user name on the target nPartition.
- `passwd` specifies the password associated with the `username`. If this field is empty, the command prompts for the password.

`-g [passwd]` HP-UX B.11.23 and Windows SMS only. Allows access to the complex specified by the `-h` option. The accessed complex is then considered the target complex. Access is through the service processor LAN port.

The `-h` option is required if this option is used.

`passwd` specifies the IPMI password of the service processor. If this field is omitted, the command prompts for the password.

`-h IPaddress|hostname` HP-UX B.11.23 and Windows SMS only. This option is only used in combination with either the `-u` or `-g` option. `IPaddress|hostname` specifies the IP address or hostname of the target nPartition (`-u`) or service processor (`-g`).

fruled Command

The `fruled` command blinks hardware attention indicators (LEDs) or turns them off.

This command can control the cell attention LEDs in all HP *nPartition* servers, as well as the I/O chassis LEDs on Superdome servers. The `fruled` command also can start and stop blinking the cabinet number LCDs on HP Superdome compute cabinets and I/O expansion cabinets.

Refer to the *fruled* (1) manpage for details.

Synopsis

```
fruled [-f|-o] [-B] -c cell [-c...]
fruled [-f|-o] [-B] -i IOchassis [-i...]
fruled [-f|-o] -b cabinet [-b...]
fruled [-f] -C [-l cabinet] [-l...]
fruled [-f] -I [-l cabinet] [-l...]
```

HP-UX B.11.23 and Windows SMS Notes

- The `-u...` `-h...` set of options may be specified to cause the command to send its management request using WBEM to an *nPartition* other than the local *nPartition* (but can also be used as a “loopback access” to the local *nPartition*).
- The `-g...` `-h...` options may be specified to cause the command to send its management request using IPMI over LAN to a service processor in another server complex (but can also be used as a “loopback access” to the service processor in the local complex).

The `-u` and `-g` options are mutually exclusive.

Options

- | | |
|-----------------|--|
| <code>-f</code> | Turn off specified attention LED(s). This is the default.
The <code>-f</code> and <code>-o</code> options are mutually exclusive. |
| <code>-o</code> | Start blinking the specified attention LED(s). The <code>-o</code> option is unavailable with <code>-C</code> or <code>-I</code> . |
| <code>-B</code> | Start or stop blinking the cabinet number LCD of the cabinet that contains the cell or I/O chassis. |

Chapter 10 nPartition Commands

fruled Command

The `-B` option is only available with `-c` and `-i`.

`-c cell`

Blink or turn off the specified `cell` attention LED.

`cell` can be specified either in the local (`cabinet/slot`) or global (`cell_ID`) format.

`-i IOchassis`

Blink or turn off the specified `IOchassis` attention LED.

`-b cabinet`

Start or stop blinking the cabinet number LCD of the specified `cabinet`.

`-C`

Turn off all cell attention LEDs.

`-l cabinet`

Limit the scope of the `-C` or `-I` option to a given `cabinet`.

`-u username:[passwd]` HP-UX B.11.23 and Windows SMS only. Specifies the account and authorization to access an nPartition other than the local nPartition.

The `-h` option is required if this option is used.

- `username` specifies a configured user name on the target nPartition.
- `passwd` specifies the password associated with the `username`. If this field is empty, the command prompts for the password.

`-g [passwd]`

HP-UX B.11.23 and Windows SMS only. Allows access to the complex specified by the `-h` option. The accessed complex is then considered the target complex. Access is through the service processor LAN port.

The `-h` option is required if this option is used.

`passwd` specifies the IPMI password of the service processor. If this field is omitted, the command prompts for the password.

`-h IPaddress|hostname` HP-UX B.11.23 and Windows SMS only. This option is only used in combination with either the `-u` or `-g` option. `IPaddress|hostname` specifies the IP address or hostname of the target *nPartition* (`-u`) or service processor (`-g`).

frupower Command

The `frupower` command turns on, turns off, or displays the current status of power for cells and I/O chassis in nPartition servers.

Root permission is required to run this command.

- By default, the `frupower` command permits you to power on or off inactive cells and I/O chassis that either are assigned to the target nPartition or are not assigned to any nPartition.
- I/O chassis power is turned on or off when the cell to which it is connected is powered on or off. However, you also can control I/O chassis power separately from cell power in certain situations.
 - You can turn on I/O chassis power when a powered-off I/O chassis is attached to an active cell assigned to the target nPartition. The nPartition must be rebooted for the power on to become effective.
 - You can turn off I/O chassis power when the I/O chassis is not assigned to an nPartition and (on HP Integrity Superdome servers) when nPartition Configuration Privilege is unrestricted.
- For HP-UX B.11.11 systems, the target and local nPartition are the same. For HP-UX B.11.23 systems, the target nPartition may be different from the local nPartition when the `-u...` `-h...` options are specified.

CAUTION

On HP-UX B.11.23 and Windows SMS, when using the `frupower -g...` `-h...` command and options all power operations are allowed on all cells or I/O chassis in the target complex, even if this results in turning power off for a component of an active nPartition.

NOTE

On servers based on the HP `sx1000` chipset, you cannot turn cell or I/O chassis power on or off for free cells or I/O chassis when nPartition Configuration Privilege is restricted and when not using the `-g...` `-h...` options.

The *nPartition* Configuration Privilege setting does not affect the ability to control power using the `frupower -g... -h...` command and option.

Command syntax and options for `frupower` follow. Refer to the *frupower* (1M) manpage for details.

Syntax

```
frupower [ -d | -o | -f ] -c cell [-c...]
frupower [ -d | -o | -f ] -i IOchassis [-i...]
frupower [-d] -C [-l cabinet] [-l...]
frupower [-d] -I [-l cabinet] [-l...]
```

HP-UX B.11.23 and Windows SMS Notes

- The `-u... -h...` set of options may be specified to cause the command to send its management request using WBEM to an *nPartition* other than the local *nPartition* (but can also be used as a “loopback access” to the local *nPartition*).
- The `-g... -h...` options may be specified to cause the command to send its management request using IPMI over LAN to a service processor in another server complex (but can also be used as a “loopback access” to the service processor in the local complex).

The `-u` and `-g` options are mutually exclusive.

Options

<code>-d</code>	Display power status of the specified cells or I/O chassis. This is the default.
<code>-o</code>	Power on the specified cells or I/O chassis. The <code>-o</code> and <code>-f</code> options are mutually exclusive. The <code>-o</code> and <code>-f</code> options are unavailable with <code>-C</code> and <code>-I</code> .
<code>-f</code>	Power off the specified cells or I/O chassis.
<code>-c <i>cell</i></code>	The specified <i>cell</i> is powered on/off or the power status is displayed. A <i>cell</i> can be specified either in the local (<i>cabinet/slot</i>) or global (<i>cell_ID</i>) format.
<code>-i <i>IOchassis</i></code>	

Chapter 10 nPartition Commands

frupower Command

- The specified *IOchassis* is powered on/off or the power status is displayed.
- C Display power status of all cells. By default the scope is the entire complex if the *-l* option is not specified.
- I Display power status of all I/O chassis. The scope is the entire complex if the *-l* option is not specified.
- l cabinet*
- Limit the scope of the *-C* or *-I* option to the specified *cabinet*.
- u username: [passwd]* HP-UX B.11.23 and Windows SMS only. Specifies the account and authorization to access an nPartition other than the local nPartition.
- The *-h* option is required if this option is used.
- *username* specifies a configured user name on the target nPartition.
 - *passwd* specifies the password associated with the *username*. If this field is empty, the command prompts for the password.
- g [passwd]* HP-UX B.11.23 and Windows SMS only. Allows access to the complex specified by the *-h* option. The accessed complex is then considered the target complex. Access is through the service processor LAN port.
- The *-h* option is required if this option is used.
- passwd* specifies the IPMI password of the service processor. If this field is omitted, the command prompts for the password.
- h IPaddress|hostname* HP-UX B.11.23 and Windows SMS only. This option is only used in combination with either the *-u* or *-g* option. *IPaddress|hostname* specifies the IP address or hostname of the target nPartition (*-u*) or service processor (*-g*).

cplxmodify Command

The `cplxmodify` command modifies attributes of an *nPartition*-capable server complex, such as the complex name.

NOTE

HP-UX B.11.23 and Windows SMS Only.

The `cplxmodify` command is only supported by the HP-UX B.11.23 and Windows SMS releases.

Root permission is required to run this command.

Refer to the `cplxmodify` (1M) manpage for details.

Synopsis

```
cplxmodify -N ComplexName [ -u username:[passwd]
-h IPAddress|hostname | -g [passwd] -h IPAddress|hostname ]
```

- The `-u...` `-h...` set of options may be specified to cause the command to send its management request using WBEM to an *nPartition* other than the local *nPartition* (but can also be used as a “loopback access” to the local *nPartition*).
- The `-g...` `-h...` options may be specified to cause the command to send its management request using IPMI over LAN to a service processor in another server complex (but can also be used as a “loopback access” to the service processor in the local complex).

The `-u` and `-g` options are mutually exclusive.

Options

`-N ComplexName` Changes the name of the target complex to *ComplexName*.

`-u username:[passwd]` Specifies the account and authorization to access an *nPartition* other than the local *nPartition*.

The `-h` option is required if this option is used.

- *username* specifies a configured user name on the target *nPartition*.

Chapter 10 nPartition Commands

cplxmodify Command

- *passwd* specifies the password associated with the *username*. If this field is empty, the command prompts for the password.

-g [*passwd*] Allows access to the complex specified by the **-h** option. The accessed complex is then considered the target complex. Access is through the service processor LAN port.

The **-h** option is required if this option is used.

passwd specifies the IPMI password of the service processor. If this field is omitted, the command prompts for the password.

-h *IPaddress* | *hostname* This option is only used in combination with either the **-u** or **-g** option. *IPaddress* | *hostname* specifies the IP address or hostname of the target nPartition (**-u**) or service processor (**-g**).

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