nPartition Guide

HP Integrity Servers with Microsoft® Windows® Server 2003

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1 Introduction

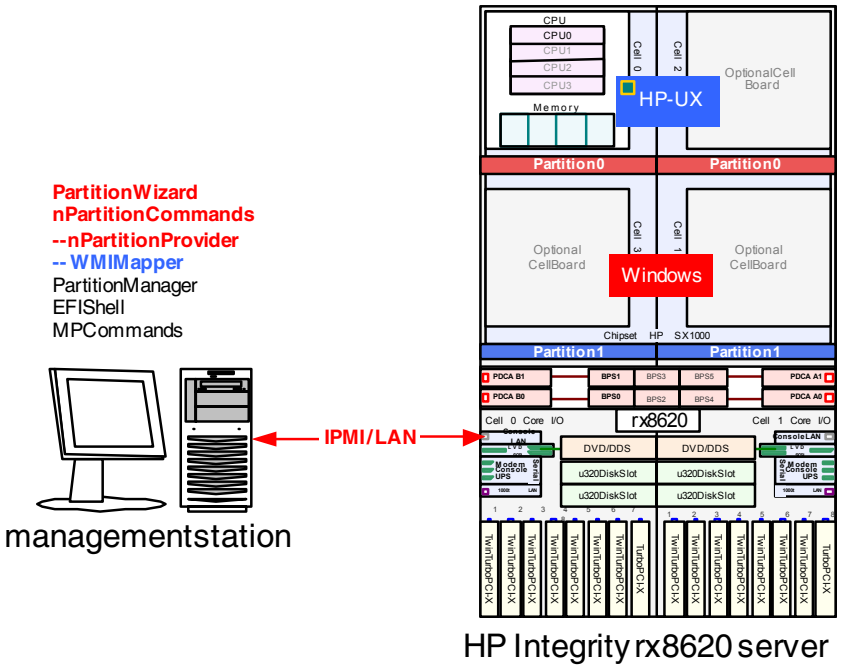
A cell-based HP Integrity server, such as the rx7620, the rx8620, or the Superdome, can be configured either as a single system or partitioned into several independent systems. Partitioning provides hardware and software isolation, where each partition is assigned memory, processors, I/O resources for its exclusive use, and executes its own operating system image. This chapter introduces node partitions on cell-based HP Integrity servers running Microsoft® Windows® Server 2003 and the tools to manage them.

Quick Start

This section provides an overview of the installation and configuration steps needed to get you up and running as quickly as possible.

The following figure shows the hardware, software, and most commonly used connection method. All components are described in greater detail later in this chapter.

Figure 1-1 System overview



The most common setup for nPartition management of HP Integrity servers running Windows involves a remote management station. This dedicated management station hosts the management tools and issues commands over a network connection to the server's management processor.

To set up and configure the management station:

Step 1. Establish a dedicated management station for your HP Integrity server.
See "Setting up the management station" on page 21.

Step 2. Install the management software on the management station.
See "Option 1: Installing for the IPMI over LAN connection" on page 31.

Step 3. Verify installation of the management software.
See "Verifying the installation" on page 35.

An example of the Windows nPartition management cycle

The following procedure describes the tasks involved in a typical management cycle for Windows nPartitions. It assumes the tools are run from a remote management station using the IPMI-over-LAN connection method, with a server management processor network name of “HP-MP” and IPMI password of “password”.

Step 1. Prepare the nPartitions and cells for management.

a. Power on all of the nPartitions and cells that will be affected.

b. Place the active Windows nPartitions in a “shutdown for reconfig” state.
See “Shut down to a shutdown for reconfig (inactive) state” on page 82.

Step 2. If you are a first-time user, perform nPartition management from the remote management station using the Par Wizard tool. See “Using the Par Wizard” on page 37.

Step 3. If you are an advanced user, perform nPartition management from the remote management station using the nPartition Commands. See “nPartitioning Procedures” on page 59 and “nPartition Commands Reference” on page 117.

a. View the current complex layout by issuing the following command:
```
parstatus -h HP-MP -g password
```

b. View the “verbose” details on nPartition 0 with the following command:
```
parstatus -h HP-MP -g password -p 1 -V
```

c. Create a new nPartition using Cell 0 and Cell 1 with 100% CLM:
```
parcreate -h HP-MP -g password -P winPar -c 0::: -c 1::: -L 100%
```

d. Add Cell 2 and Cell 3 to Partition 0 with 100% CLM:
```
parmodify -h HP-MP -g password -p 0 -a 2:::100% -a 3:::100%
```

e. Remove Partition 0:
```
parremove -h HP-MP -g password -p 0
```

Step 4. Activate the new nPartitions:

a. Boot the affected nPartitions. See “Boot an inactive nPartition” on page 85.

b. Run ACPICONFIG from the EFI shell on the affected nPartitions. See “ACPI configuration for Windows must be “windows”” on page 73.

Step 5. Boot Windows on the new nPartitions. See “Boot Windows Server 2003” on page 73.

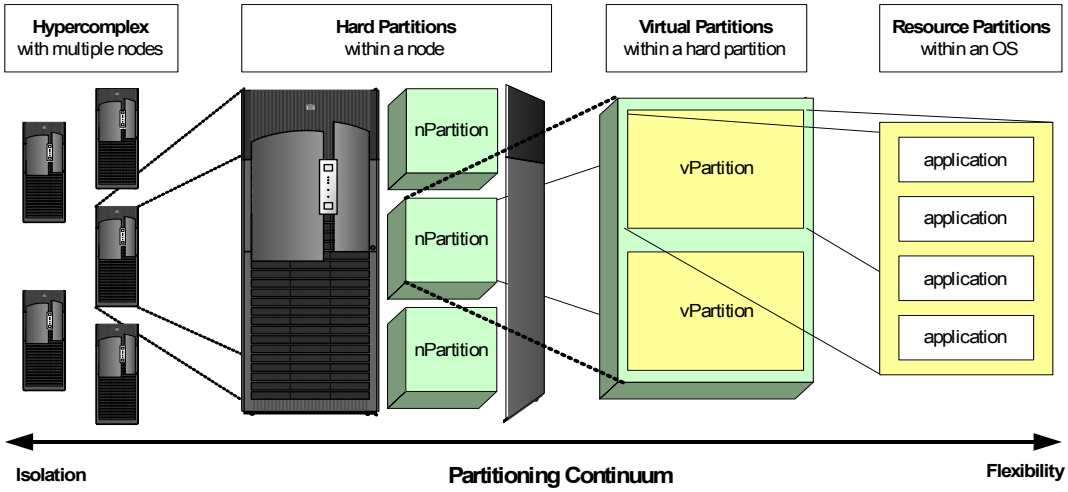
Getting to know nPartitions

Partitions are physical or logical mechanisms for demarcating operational environments within a single system or across multiple systems. Partitioning lets you consolidate systems, allocate computing resources in response to fluctuations in demand, maximize resource utilization, and protect operating environments from disruptive events.

Partitioning continuum

HP offers a continuum of partitioning technologies, as shown in Figure 1-2.

Figure 1-2 Partitioning continuum



Hyperplex A Hyperplex is a configuration of up to 1024 server nodes, managed as a single system. Each node in a Hyperplex is a hard partition that includes dedicated processor, memory, and I/O resources, and executes its own operating system image. *Windows Server 2003 is not supported in a Hyperplex*.

node Partition An node partition (**nPartition**) is a hard partition within a cell-based server. Cell-based servers can be configured either as a single large symmetric multiprocessor or as several independent systems. An nPartition has exclusive use of the memory, processor, and I/O resources belonging to the cells that are assigned to that partition, and can execute its own operating system image.

virtual Partition A virtual partition is a soft partition within a node or an nPartition. A vPartition uses a subset of the system processor, memory, and I/O resources, and includes OS and application-related software. *Windows Server 2003 is not supported in a vPartition*.

resource Partition A resource partition is a soft partition within either hard partitions or virtual partitions and is controlled by workload management services within the operating system. Resource partitions allow an OS instance to allocate resources between competing applications. *Windows Server 2003 does not support resource partitions*.

This book focuses on nPartitions running Microsoft Windows Server 2003.

Cell structure of nPartitions

HP Integrity servers based on the HP Superscalable Processor chipset (sx1000), such as rx7620, rx8620, and Superdome, are composed of basic building blocks known as **cells** or **cell boards**. A cell consists of a symmetric multi-processor (up to 4 processors), up to 16 GB of main memory, an optional I/O chassis (12-slot PCI card cage), and I/O devices attached to the cards in the I/O chassis. A server cabinet may have several I/O chassis. Some cell-based servers support I/O expansion cabinets to provide additional I/O chassis.

The hardware of a cell-based server—including all cells, I/O expansion cabinets, cables, cabinet hardware, fans, and power and utilities components—is known as a **server complex**.

- A Superdome server complex can consist of one or two server cabinets, and can also include one or two I/O expansion cabinets (which provide additional I/O chassis).
- An rx8620 server complex consists of a single server cabinet. It may include one I/O expansion cabinet (which provides two additional I/O chassis).
- An rx7620 server complex consists of a single server cabinet only.

An **nPartition** is a partition of the server complex that you can reconfigure without physically modifying the server hardware. An nPartition contains one or more cells communicating coherently over a high-bandwidth, low-latency, crossbar fabric. Special firmware in each cell defines the boundaries of an nPartition to ensure isolation from other nPartitions.

Each nPartition has exclusive use of the memory, processor, and I/O resources belonging to the cells that are assigned to that nPartition. An nPartition must have at least one core I/O card to support console services, booting, and management operations. Each nPartition has its own system boot interface, boots independently, and executes its own operating system image.

Properties of nPartitions

An nPartition has the following properties:

Partition Numbers

Each nPartition is identified by a unique partition number. When you create an nPartition, it is assigned the lowest available number. That is, the first nPartition always is partition number 0 and the second nPartition is partition number 1.

When you remove an nPartition, its partition number is released and can be reused while creating a new nPartition. Consider a server with partitions numbered 0, 1, 2, and 3. When you remove partition 2, for example, and then create a new nPartition, the new nPartition is identified as partition 2.

Assigned and Unassigned Cells

If a cell in a server complex is not assigned to an nPartitions, the cell is considered unassigned. If an I/O chassis is attached to an assigned cell, then the chassis is likewise assigned to that nPartition. Cells that are unassigned are considered to be available resources; they are free to be assigned to any existing nPartition or used to create a new nPartition.

Base Cells All cells within an nPartition are base cells. If you do not specify the cell type, the nPartition administration tools automatically set the cell type to base cell.

Active and Inactive Cells

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

Cells that are inactive are either not assigned to an nPartition or have not participated in **partition rendezvous** to form an nPartition with other cells in the nPartition. (Partition rendezvous is the event during the nPartition boot process when all available cells in an nPartition join to determine which cells are active for the current boot of the nPartition.) The resources belonging to inactive cells are not actively used by an nPartition.

Core Cell The core cell is an active cell that is attached to an I/O chassis with a functional core I/O. Each nPartition must have one core cell. 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 cell is selected by system firmware in the early stages of the nPartition boot process. When none of the core cell choices can serve as the active core cell, the nPartition attempts to select an eligible cell.

The core I/O in the I/O chassis connected to the core cell provides console access for the nPartition through the management processor. The monarch processor in the core cell runs the Extensible Firmware Interface (EFI) while all other processors are idle until an operating system is booted.

Cell Local Memory (CLM)

CLM is a portion of the memory in a cell that can be accessed quickly by processors residing on the same cell. You can configure CLM for each cell either as a percentage of the total memory in the cell or as an absolute number of gigabytes.

Cell Property Details

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

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).

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 (EFI) has loaded and been displayed through the nPartition console. An operating system may be loaded and run from the system boot interface on an active 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.

Genesis partition

The **Genesis Partition** is the initial, single-cell nPartition connected to an I/O chassis with the core I/O in a server complex. The Genesis Partition always is partition number 0. It is like any other nPartition except that its creation wipes out all previous nPartition configuration data.

NOTE If the server complex has its nPartitions pre-configured by HP, you do not need to create a Genesis Partition. Also, HP recommends against creating a Genesis Partition for any server complex under a capacity for demand (iCOD) or pay per use (PPU) contract because of the resulting loss of configuration data.

The Genesis Partition must have a bootable disk (or a disk onto which you can install an operating system). If an OS is not installed on any disk in the Genesis Partition, you can boot the Genesis Partition to the system boot interface (EFI) and then install the OS. This installation requires either access to a remote installation server or a CD-ROM drive (or DVD-ROM drive) attached to an I/O chassis belonging to the nPartition.

You can use nPartition management tools running on the Genesis Partition to configure all nPartitions in the complex. After you create additional nPartitions, you do not need to use the Genesis partition to manage these nPartitions. Instead, you can manage them remotely from a qualified PC running a 32-bit Microsoft Windows operating system.

Cell and nPartition boot process

The nPartition boot process on HP Integrity servers involves two phases:

Cell boot phase

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 independent of 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 as follows:

1. 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.
2. Firmware on the cell performs self-tests and discovery operations on the hardware components of the cell. 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).
3. The firmware completes self-tests and discovery, reports the hardware configuration of the cell to the management processor, informs the management processor the cell is “waiting at BIB”, and then waits for the cell BIB flag to be cleared.

nPartition boot phase

After its cells have completed their self-tests, the nPartition is booted. The “nPartition rendezvous” occurs during this phase. Not all cells assigned to the nPartition need to participate in the rendezvous. Only one core-capable cell that has completed its cell boot phase is needed for the nPartition boot phase to begin. By default, all cells assigned to the nPartition that have a “y” use-on-next-boot value are expected to participate in rendezvous. The management processor waits for up to ten minutes for 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 as follows:

1. The management 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.

   (The “Complex Profile” represents the configurable aspects of a server complex. The Stable Complex Configuration Data contains complex-wide configuration details and the Partition Configuration Data contains details specific to the nPartition. See the *HP System Partitions Guide* for more information.)

2. The management 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 management 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 release for a cell, the cell is considered to be active.

3. 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.

4. The active cells in the nPartition negotiate to select a core cell.

5. The chosen core cell manages the rest of the nPartition boot process. A processor on the core cell runs the nPartition system boot environment (EFI). The core cell hands off control to an operating system loader when the OS boot process is initiated.

Choosing a management tool

You can manage nPartitions using the following tools:

Partition Wizard

Partition Wizard is a graphical interface to common nPartition management tasks such as creating, configuring, and removing nPartitions. Partition Wizard is available for Windows (32-bit) operating systems.

You *cannot* run Partition Wizard on the complex or from an nPartition in the complex. You *must* run the wizard on a Superdome Support Management Station (SMS) or a qualified PC running Windows 2000 SP3 or later, Windows XP, or Windows Server 2003 (32-bit edition) connected to the server complex.

nPartition commands

You can manage nPartitions using commands such as `parcreate`, `parmodify`, `parremove`, `parstatus`, `parunlock`, `fruled`, `frupower`, and `cplxmodify`. These commands are available for the HP-UX 11.23, HP-UX 11.11, and Windows (32-bit) operating systems.

- You can run the HP-UX implementations on the server complex or in an nPartition in the complex. The commands can also run on any system running HP-UX 11.23 or HP-UX 11.11 that is connected to the server complex.
- You *cannot* run nPartition commands for Windows on the complex or from an nPartition in the complex. You *must* run the commands on a Superdome Support Management Station (SMS) or a qualified PC running Windows 2000 SP3 or later, Windows XP, or Windows Server 2003 (32-bit edition) connected to the server complex.

EFI Boot Manager and EFI Shell commands

Extensible Firmware Interface (EFI) provides support for 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.

Management Processor (MP) menus

Management processor menus provide a service interface that allows access to all hardware and nPartitions in the complex. The MP is always available, whether or not any nPartitions are configured or booted in the server complex.

Partition Manager

Partition Manager provides a graphical interface for managing nPartitions.

Partition Manager implementations are available for HP-UX B.11.11 and HP-UX B.11.23 operating systems. Partition Manager is not available for the Windows (32-bit or 64-bit) operating systems.

You can run Partition Manager on the complex or in an nPartition running HP-UX 11.23 or HP-UX 11.11. The tool can also run on any HP-UX 11.23 or HP-UX 11.11 system connected to the complex.

Choosing a management interface

You can manage nPartitions remotely using one of two management interfaces: Intelligent Platform Management Interface (**IPMI**) and Web-Based Enterprise Management infrastructure (**WBEM**). This section provides a brief overview of these interfaces.

Intelligent Platform Management Interface (IPMI)

On cell-based HP Integrity servers, the management processor supports the Intelligent Platform Management Interface (IPMI). IPMI is an industry-standard interface that defines common, message-based interfaces to platform management hardware and common records for describing devices and their characteristics. The IPMI specification supports extensions, such as the nPartition and server complex management features introduced by HP. On cell-based servers, the management processor supports two of the communication paths defined by the IPMI specification: **Block Transfer** and **IPMI over LAN**.

IPMI Block Transfer (IPMI BT)

IPMI Block Transfer (IPMI BT) provides a communication path between the MP and the operating system running in an nPartition. The IPMI BT path is supported only between the MP and the HP-UX B.11.23 operating system. IPMI BT uses the (`/dev/ipmi`) driver in HP-UX B.11.23 and a hardware buffer on each cell to establish a private path (using the block transfer hardware on the core cell) from each nPartition to the MP.

The **nPartition Configuration Privilege** allows you to control the access of a user managing an nPartition on a complex. To set the nPartition Configuration Privilege, run the `PARPERM` command at the MP. The nPartition Configuration Privilege has two settings:

Unrestricted — The default, which allows the user to manage other nPartitions in the complex.

Restricted — Restricts use of the IPMI BT interface to the following capabilities:

- Retrieving information about the server, including everything displayed by Partition Manager and the `parstatus` command.
- Changing the local nPartition's Partition Configuration Data.
- Manipulating any of the attention indicators (LEDs).
- Powering cells and I/O chassis belonging to the local nPartition.

The nPartition Configuration Privilege does not restrict deallocation of processors across nPartition boundaries. When the nPartition Configuration Privilege is restricted, some management tasks require IPMI over LAN instead.

IPMI over LAN

IPMI over LAN enables the management tool to communicate directly (without going through an nPartition) with the MP via its LAN port. To enable IPMI LAN access to the MP, use the `SA` command at the MP Command menu. The MP accepts IPMI requests at its LAN port only if the request is accompanied by the correct password. To set the IPMI password use the `SO` command at the MP Command menu.

To secure communication between the client and the server, the IPMI specification uses the MD5 algorithm (RFC1321) to encrypt the IPMI password and to authenticate both the server and the client. Other security mechanisms protect against replay attacks.

When the management tool sends a request, the nPartition Provider first downloads a large data structure containing static configuration information about the server from the MP. This allows the Provider to request dynamic information about the server. When an nPartition command accesses a particular complex for the first time using IPMI over LAN, it can take a long time (two minutes or more) to complete, depending on network latency between the PC and the server MP.

The nPartition Provider caches the static data and reuses it for subsequent requests so that future command usage will not incur that initial overhead. If the PC is rebooted or the nPartition Provider is restarted, the cached data is lost. The first request to the MP after the restart requires the same initial overhead.

Also, IPMI specifies that data be sent as UDP datagrams over the LAN. Note that UDP does *not* guarantee delivery of individual datagrams. If datagrams fail to arrive in a reasonable amount of time, the nPartition Provider retries a number of times. But if the network connection between the PC and MP is too unreliable or too slow, the provider eventually times out and returns an error. The error is often seen as the message: `[X] data is not available`, where `[X]` is a cell, I/O chassis, cabinet, or other element in the complex.

The speed and reliability of the network between the management station and the MP has a large effect on the reliability of command execution. When managing remotely via IPMI over a LAN, the management station should be on the same subnet as and physically close to the target complex. If you cannot access the management station directly, you can use a Remote Desktop application or equivalent tool to connect to it from a remote terminal.

Web-Based Enterprise Management (WBEM)

Web-Based Enterprise Management (WBEM) is an industry initiative that establishes management infrastructure standards and provides a way to combine data from various hardware and software management systems. WBEM specifies standards that enable access to data from various technologies and platforms, and the presentation of that data in a consistent fashion. Client applications can then use this information to manage an enterprise computing environment.

Because WBEM supports a distributed management architecture, client applications (nPartition management tools, for example) can run on a remote system and use the WBEM infrastructure to send requests to the managed servers.

Partition Manager for HP-UX B.11.23 is one such WBEM client application. Partition Manager for HP-UX B.11.23 uses WBEM when retrieving information about a server complex. Partition Manager for HP-UX B.11.23 and HP-UX B.11.11 use the nPartition commands for all other operations. The nPartition commands on HP-UX B.11.23 and on Microsoft Windows are also WBEM client applications.

The nPartition commands for Windows are supported by several software components. The Windows operating system provides the Windows Management Instrumentation (WMI) software, which is an implementation of the WBEM standards. HP provides the WMI Mapper and the WMI-based nPartition Provider.

The nPartition commands and the Partition Manager send management messages to the nPartition Provider. The nPartition Provider handles all communication with the MP, either locally, using the IPMI BT path (on HP-UX B.11.23 only), or by IPMI over LAN. On HP-UX B.11.23, the nPartition Provider is already present. On Windows, you must install it separately.

NOTE To use WBEM for remote nPartition management, nPartition in the target complex must be booted to HP-UX multi-user mode. Also, the remote nPartition must be configured to accept remote WBEM requests (enabled by default on HP-UX B.11.23).

Securing the WBEM connection

WBEM secures the management connection using an SSL authentication process, which requires the following files:

- **WBEM SSL Certificate (server.pem 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 a Windows system, the SSL Certificate file is in the location specified by the `sslCertificateFilePath` entry in the `%PEGASUS_HOME%\cimcerver_current.conf` file.

- **WBEM Trust Certificate Store (client.pem file)**

  The Trust Certificate Store file resides on the system from which WBEM remote management commands are issued. On a Windows system, the Trust Certificate Store file resides in the `%HP_SSL_SHARE%` directory.

  The Trust Certificate Store must contain a copy of server certificate as well as the client certificate. That is, the `client.pem` file contains the `CERTIFICATE` data from the SSL Certificate file (`server.pem`) on the remote server. The `CERTIFICATE` data includes all text from the `-----BEGIN CERTIFICATE-----` line through the `-----END CERTIFICATE-----` line.

Managing nPartitions using IPMI over LAN

Using IPMI over LAN, you can manage remote nPartitions directly. The management tool on the management station communicates with the local nPartition Provider using a WBEM connection. The nPartition Provider then communicates with the MP on the remote complex using IPMI over LAN. Select this method if any of the following conditions is true:

- *All* of the nPartitions on the target server are running Windows Server 2003.
- N*one* of the nPartitions have been booted or configured yet.

To use IPMI over LAN, enable IPMI LAN Access at the MP, set the MP IPMI password, and install the nPartition commands, the Partition Wizard, WMI Mapper, and the nPartition Provider on your management station. You can then use any of the nPartition management tools to manage the remote nPartitions.

Running nPartition commands using IPMI over LAN

To run nPartitions commands remotely using IPMI over LAN, you must include two command-line options with each command:

- `-g [password]`

  The `password` is the management processor's IPMI password.

- `-h hostname | IPaddress`

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

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

Running Partition Manager using IPMI over LAN

You can run Partition Manager using IPMI over LAN in one of two ways:

- Run Partition Manager on an nPartition.
  From the **Tools** menu, select the **Switch Complexes** task. In the **Switch Complexes** dialog, enter the hostname or IP address of the MP in the target complex, and type that MP's IPMI password.
- Run Partition Manager on any system (not an nPartition) running HP-UX B.11.23. The Partition Manager automatically displays the **Switch Complexes** dialog. Enter the hostname or IP address of the MP in the target complex, and type that MP's IPMI password.

Managing nPartitions using WBEM

Using WBEM, you can manage remote nPartitions indirectly, via an existing HP-UX B.11.23 nPartition on the server.

NOTE

You *cannot* use WBEM to manage nPartitions remotely if any of the following conditions is true:

- *All* of the nPartitions on the target server are running Windows Server 2003.
- *None* of the nPartitions on the target server have been booted or configured yet.

To use WBEM, install the WMI Mapper and the nPartition commands software on your management station. After you install the tools, enable secure HTTP communication by configuring the trusted certificate store. You can then use the Partition Manager or the nPartition commands to manage remote nPartitions. You *cannot* run the Partition Wizard using WBEM.

Running nPartition commands using WBEM

To manage nPartitions remotely using WBEM, you must include two command-line options with each nPartition command:

- `-u username:[password]`

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

  For the `parstatus` and `fruled` commands, you can specify any username on the remote nPartition, whereas for the other commands you must select 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 command sends appropriate WBEM requests to the remote nPartition. At the remote partition, the nPartition Provider handles the requests by using the IPMI device driver (`/dev/ipmi`) to communicate with the management processor in the target complex.

Running Partition Manager using WBEM

You can run Partition Manager with WBEM in one 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.

  To merely display information about the target complex, specify any user defined on the remote nPartition. To make changes to the target complex, 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 displays the **Switch Complexes** dialog.

Setting up the management station

A management station is required to configure and administer the nPartitions on your HP Integrity server.

If your management station was provided by HP (for example, the PC-SMS management system supplied with Superdome servers), then all of the nPartition tools and support components have already been installed on that system.

However, if you are providing your own PC as a management station (for example, you have an HP Integrity rx7620 or rx8620 server) then you must install the tools and components on that system, using the Smart Setup media provided with your server. In addition, you must also install the tools on any PC used to remotely connect to that management station.

nPartition tools and components are supported on 32-bit management station PC's running one of the following operating systems:

- Windows 2000, SP3 or later
- Windows XP
- Windows Server 2003 (32-bit edition)

Connecting the management station to the nPartition

To enable remote management of nPartitions, you can connect the management station to the remote nPartition in several ways:

- You can connect a management station, the nPartition, and the MP to a general purpose LAN. The management station can access both the nPartition and the MP. The management station PC need not be dedicated to nPartition management.

  The security of this method is limited to the encryption in the HTTPS connection to the nPartition, whereas IPMI data remains largely unencrypted. This method also makes the MP widely accessible to the network.

- You can connect the management station to the MP on a dedicated management LAN, separated physically from the general purpose LAN. This configuration is more secure than using the general purpose LAN, but requires the use of a PC dedicated to nPartition management.

- You can connect a management station containing two network interface cards (NICs) to both the general purpose LAN and the dedicated management LAN. You can then use the general purpose LAN to connect to an nPartition running HP-UX via WBEM and the management LAN for IPMI over LAN connections to the MP. This method keeps partition management traffic off the general purpose LAN while allowing the management station PC to be used for other purposes.

  Similarly, you can connect the two LANs with an intelligent router or access server that can allow only authorized users or systems access to the management LAN. This method, however, puts encrypted passwords and other data out on the general use LAN.

Controlling the management station remotely

The management station running the nPartition tools should be located close to the server being managed in order to minimize the likelihood of UDP datagrams being lost in transmission. If, as a result, you cannot access the management station directly, you can use a remote desktop control or telnet application to access the management station remotely. To connect to the management station remotely, you can use any of the following applications.

Remote Control

To view the desktop of the management station from a remote terminal running an OS other than Windows Server 2003, Windows XP, or Windows Server 2000, use third-party remote control software such as the free VNC (www.realvnc.com) or Symantec's PCAnywhere®.

Terminal Services

Windows Server 2000 and Windows Server 2003 include a Terminal Services feature that allows you to create a login session different from the console, leaving the console available for other administration tasks.

To enable Terminal Services on the management station, click its checkbox in **Add Windows Components**. Windows 2000 Professional and some Windows Server editions do not include a client for Terminal Services. Download the free client from www.microsoft.com.

Remote Desktop

If you are running Windows Server 2000 with Terminal Services, Windows Server 2003, or Windows XP on the management station and Windows Server 2003 or Windows XP on the remote terminal, you can take advantage of the remote desktop display feature provided by these operating systems.

The Remote Desktop Connection feature is not enabled by default in Windows XP or Windows Server 2003. To enable Remote Desktop Connections on the management station:

Step 1. Click **My Computer > System Properties > Remote > Remote Desktop**.

Step 2. Select `Allow users to connect remotely to this computer`.

To connect to the management station from the remote terminal:

- On Windows XP, click **Start > All Programs > Accessories > Communications > Remote Desktop Connection**.
- On Windows Server 2003, click **Start > Administrative > Tools > Remote Desktops**. To connect to a Windows 2003 console, use the `/console` switch with the Remote Desktop Connection application. This is present on the latest version available at www.microsoft.com and on Windows Server 2003 (This version is a 32-bit program available on both the 32-bit and 64-bit Windows Server 2003 operating systems).

Telnet

Because the nPartition commands are executed from a command prompt, you can use a telnet application (either the telnet command in Windows or a third-party application such as Reflection® 1) to open a command prompt on the management station. The management station must have the Telnet service installed and started.

To execute nPartition commands via a telnet connection to the management station:

Step 1. Invoke telnet on the remote terminal, providing the hostname or IP address of the management station.

Step 2. Login to the telnet server with a valid username and password.

Step 3. From the command prompt, execute nPartition commands as usual.

NOTE There may be limitations on the number of telnet connections permitted into the management station by its host operating system. Also, you cannot use nPartition management tools with a GUI such as Partition Wizard or the Partition Manager using this method.

Performing nPartition management tasks

This section provides an overview of common nPartition management tasks.

Listing the status of an nPartition or complex

To list server complex hardware details and nPartition configuration details:

Using the Management Processor Command menu

You can list hardware and nPartition status with the following commands, which are available from the management 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.

Using the EFI Shell

EFI Shell methods 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.

Using the nPartition commands

nPartition Commands for listing hardware and nPartition status are as follows:

`parstatus -C`
List cell configurations.

`parstatus -V -c#`
List detailed cell information.

`parstatus -I`
List I/O chassis and card slot details.

`parstatus -B`
List server cabinet summaries for the complex.

`parstatus -V -b#`
List detailed server cabinet status.

`parstatus -X`
List product and serial numbers.

`parstatus -P`
List a configuration summary for all nPartitions.

`parstatus -V -p#`
List detailed nPartition configuration information.

`parstatus -w`
List the local nPartition number.

`frupower -d -C` or `frupower -d -I`
List power status for all cells (`-C`) or all I/O chassis (`-I`).

Creating nPartitions

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.

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* in the *HP System Partitions Guide*.

The method you choose for creating an nPartition depends 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 one of the following tasks:

- Create a Genesis partition (as described below)
- From a remote HP-UX B.11.23 system or Windows system, use the `parcreate` command with the `-g... -h...` set of options.

Creating a Genesis Partition for a server complex

To create a Genesis Partition, use the management processor `CC` command to specify that an initial, one-cell nPartition be created within the server complex. The complex must not have any nPartitions defined or all nPartitions must be shutdown for reconfig (inactive).

Creating additional nPartitions in a server complex

You can use one of two methods to create nPartitions in a complex where one or more nPartitions already are defined:

Create 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.

Create a new nPartition remotely
To create a new nPartition remotely, execute the `parcreate` command using either the WBEM or with IPMI-over-LAN method. For remote administration using WBEM, the tool 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 accesses the management processor (for example, by the -g... -h... set of options).

Modifying nPartitions

Modifying an nPartition involves using an nPartition administration tool to revise one or more parts of the server Complex Profile data, which determines how hardware is assigned to and used by nPartitions.

- Use parmodify or Partition Manager from an nPartition running HP-UX in the same complex as the nPartition. Some nPartition details can also be modified locally from an nPartition console by using EFI Shell commands.
- Use parmodify or Partition Manager running on a remote HP-UX B.11.23 system or Windows system.
  - — Using WBEM, the tool accesses HP-UX B.11.23 running on an nPartition in the target complex. Use the -u... -h... set of parmodify options.
  - — Using IPMI over LAN, the tool accesses the management processor of the target complex. Use the -g... -h... set of parmodify options.

Modifying nPartition includes 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 (-p#, where # is the partition number).

Remove (delete) an nPartition
: Use the parremove -p# command to remove a specified nPartition (-p#, where # is the partition number).

Renaming an nPartition
: Use the parmodify -p# -P name command to set the name for a specified nPartition (-p#, where # is the partition number).

Setting cell attributes
: Use the parmodify -p# -m#... command to modify cell attributes for a specified nPartition (-p#, where # is the partition number). Or, use the EFI Shell cellconfig command to set use-on-next-boot values.

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). Or, use the EFI Shell rootcell command to set core cell choices.

Setting nPartition boot paths
: Boot paths can be listed and configured only from the local nPartition. Or, use the EFI Shell bcfg command to configure boot paths.

Booting and resetting nPartitions

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

Using the Management Processor Command menu

The management processor provides the following commands, available from the Command menu, to support boot and reset operations:

RS	Reset an nPartition. Reset an nPartition only after all self tests and partition rendezvous have completed.
RR	Perform a shutdown for reconfig of an nPartition. Reset an nPartition only after all self tests and partition rendezvous have completed.
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.

Using the EFI Shell

EFI Shell provides the following commands to support boot and reset operations:

`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, Windows, or Linux can boot on the nPartition. To boot Windows Server 2003, 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. 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.

Using Microsoft Windows commands

Microsoft Windows includes the following commands for shutting down and rebooting an 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. You can use the EFI Shell command `acpiconfig disable softpowerdown` instead to make all cells remain at a “wait at BIB” state.

2 Installation

If your management station was provided by HP (for example, the PC-SMS management system supplied with Superdome servers), then the installation portion of this chapter does not apply to you. The nPartition tools and support components needed to manage Integrity servers are pre-installed on systems supplied by HP.

However, if you are providing your own PC as a management station (for example, you have an HP Integrity rx7620 or rx8620 server) then you must install these tools and components on that system, as described below.

NOTE The installation files described in this chapter are located on the HP Smart Setup media delivered with your server. The tools cannot be installed on, or run from, the target server. They can only be installed on and used from a management station running a supported Windows operating system.

Installing the tools and additional components

Use one of the following procedures to install the nPartition management tools on your management station. Which procedure you should follow is determined by how you connect your management station to the server.

NOTE In order to use the Par Wizard to manage your nPartitions, you must use the IPMI over LAN connection method.

Option 1: Installing for the IPMI over LAN connection

If you are managing your server with the IPMI over LAN method, use the following procedure to configure the server and install the nPartition tools and supporting files:

Step 1. At the server, enable the LAN port for IPMI communications:

a. Login to the server's management processor through its serial port.

b. At the MP Main menu, enter the `CM` command to access the Command menu.

c. From the Command menu, enter the `SA` command. A list of remote access methods displays.

d. Enter `I`, for "`IPMI LAN Access`", and then `Y` (for "`Yes`") at the prompt to enable IPMI communications through the management processor LAN port.

Step 2. At the server, set the management processor IPMI password:

a. While still connected to the management processor serial port, enter the `CM` command to access the Command menu.

b. From the Command menu, enter the `SO` command. A list of password choices displays.

c. Enter `3`, for "`IPMI Password`", and then enter a password between 5 and 15 characters in length to set the MP IPMI password.

Step 3. At the management station, insert the HP Smart Setup media that came with your server.

Step 4. In the End User License Agreement screen, click **Agree**.

Step 5. In the Smart Setup screen, click on the desired server model number (**Superdome**, **rx8620**, or **rx7620**).

Step 6. In the Software and Drivers screen, locate the section at the bottom called "32-bit utilities for 64-bit servers" and click on **Partition Command Line Interface (ParCLI)** (located at \contents\utilities\parmgt on the media).

Step 7. Double-click to install the following patches and hotfixes, depending on your management station operating system:

- For Windows 2000 Server or Professional with Service Pack 3 or later: Install the WMI extension (**wmirdist.msi**). Also install Hotfix Q332207 for Windows 2000 (**Q332207_W2K_SP3_X86_ENU.EXE**). Reboot if requested.

- For Windows XP with Service Pack 1 or later:
  Install Hotfix Q332207 for Windows XP only (**Q332207_WXP_SP2_X86_ENU.EXE**).
  Reboot if requested.
- For Windows Server 2003:
  No patches or hotfixes required.

Step 8. Install the WMI Mapper component (**WMIMapper.msi**) by double-clicking on it. Follow the on-screen instructions to complete the installation.

Step 9. Install the nPartitions Commands tool (**nParCommands.msi**) by double-clicking on it. Follow the on-screen instructions to complete the installation.

Step 10. Install the nPartition Provider component (**WMInParProvider.msi**) by double-clicking on it. Follow the on-screen instructions to complete the installation.

Step 11. Reboot the system.

Step 12. Insert the HP Smart Setup media, click **Agree** at the license screen, and click on your server model number again.

Step 13. In the Software and Drivers screen, go to the "32-bit utilities for 64-bit servers" section again and click on **Par Commands Wizard** (located at \contents\utilities\parwrapper on the media).

Step 14. Install the Par Wizard (**ParCommandsWizard.msi**) by double-clicking on it. Follow the on-screen instructions to complete the installation.

Step 15. Reboot the system one more time, and the installation is complete.

Step 16. Verify the installation was successful. See "Verifying the installation" on page 35.

You can run the commands from any command prompt once the PC is rebooted after the installation, since the directory containing the commands is in the command PATH. And remember, when managing the server using IPMI over LAN, you must use the `-h` and `-g` options on the command line.

Refer to Chapter 5, nPartition Commands Reference, or the nPartition Commands on-line manual available from the Windows **Start** menu (**Start > Programs > Hewlett-Packard > nPar Management > nPar Commands Manual**), for more information on options and operation.

NOTE If you install the tools and support files remotely using a Terminal Services window, the required environment variables may not set themselves immediately. If you try to issue commands in this situation, Windows displays an error message stating that the command (or one or more DLL files) cannot be found. To correct the problem, log out of the Terminal Services window and log back in again. This resets the variables and makes the commands functional.

Option 2: Installing for the WBEM/WMI connection

If you are managing your server with the WBEM/WMI method, use the following procedure to configure the server and install the nPartition tools and supporting files:

Step 1. At the management station, insert the HP Smart Setup media that came with your server.

Step 2. In the End User License Agreement screen, click **Agree**.

Step 3. In the Smart Setup screen, click on the desired server model number (**Superdome**, **rx8620**, or **rx7620**).

Step 4. In the Software and Drivers screen, locate the section at the bottom called “32-bit utilities for 64-bit servers” and click on **Partition Command Line Interface (ParCLI)** (located at \contents\utilities\parmgt on the media).

Step 5. Double-click to install the following patches and hotfixes, depending on your management station operating system:

- For Windows 2000 Server or Professional with Service Pack 3 or later:
  Install the WMI extension (**wmirdist.msi**). Also install Hotfix Q332207 for Windows 2000 (**Q332207_W2K_SP3_X86_ENU.EXE**). Reboot if requested.
- For Windows XP with Service Pack 1 or later:
  Install Hotfix Q332207 for Windows XP only (**Q332207_WXP_SP2_X86_ENU.EXE**). Reboot if requested.
- For Windows Server 2003:
  No patches or hotfixes required.

Step 6. Install the WMI Mapper component (**WMIMapper.msi**) by double-clicking on it. Follow the on-screen instructions to complete the installation.

Step 7. Install the nPartitions Commands tool (**nParCommands.msi**) by double-clicking on it. Follow the on-screen instructions to complete the installation.

Step 8. Configure the trusted certificate store on the management station:

a. At the server, locate the configuration file on the remote HP-UX nPartition used to manage the server. The file is normally found here:
$PEGASUS_HOME/cimserver_current.conf.

b. Open the configuration file (cimserver_current.conf) with a text editor and locate the following entry: `sslCertificateFilePath=<path/filename>`.

If there is no sslCertificateFilePath entry in the file, the default value is:
`$PEGASUS_HOME\server.pem`.

The file named in the entry (or $PEGASUS_HOME\server.pem, if none is found) is the Server Certificate file.

c. Locate and open the Server Certificate file. Copy everything from the text starting with "`-----BEGIN CERTIFICATE-----`" to "`-----END CERTIFICATE-----`", inclusive.

d. Now locate and open the SSL Trusted Certificate Store on the management station. If the PC has been configured with the HP Shared Certificate Store, that file is found here: `%HP_SSL_SHARE%\client.pem`.

If not found there, the default location is: `%PEGASUS_HOME%\client.pem`.

e. Paste the data copied from the server certificate file to the end of the SSL Trusted Certificate Store (client.pem). Then save the client.pem file and exit.

Step 9. Reboot the system one more time, and the installation is complete.

You can run the commands from any command prompt once the PC is rebooted after the installation, since the directory containing the commands is in the command PATH. And remember, when managing the server using WBEM/WMI, you must use the `-h` and `-u` options on the command line.

Refer to Chapter 5, nPartition Commands Reference, or the nPartitions Commands on-line manual available from the Windows **Start** menu (**Start > Programs > Hewlett-Packard > nPar Management > nPar Commands Manual**), for more information on options and operation.

NOTE If you install the tools and support files remotely using a Terminal Services window, the required environment variables may not set themselves immediately. If you try to issue commands in this situation, Windows displays an error message stating that the command (or one or more DLL files) cannot be found. To correct the problem, log out of the Terminal Services window and log back in again. This resets the variables and makes the commands functional.

Verifying the installation

To verify correct server configuration and software installation, perform the following simple tests at the management station:

Step 1. Open a command prompt window and issue the following command:

```
C:\Windows> parstatus -X
```

This command attempts to display the server's attributes, but is actually being run against the management station PC itself, which is not a partitionable system. The command *should* be found in the system PATH however, and therefore elicit the following message (which is the expected response, and not an error):

```
Error: unsupported platform
```

Step 2. To verify access and communication with the server, as well as installation of the nPartition commands, enter the following command:

```
C:\Windows> parstatus -X -h <mp> -g <password>
```

where `<mp>` is either the IP address or the hostname of the server's management processor, and `<password>` is the management processor IPMI password. This command should result in the display of approximately 10 server attributes, including the server name, model number, and so on. There may be a delay of a few seconds, or even a minute or more, depending on network distance between the management station and the server.

NOTE The above example only works with the IPMI over LAN connection method. If using WBEM/WMI, substitute the `-u` option (for the `-g` option shown above).

Step 3. To verify installation of the Par Wizard, use a Windows menu path of **Start > Programs > Hewlett-Packard > nPar Management > Par Commands Wizard** to launch the Par Wizard. At the Warning screen, click **Next** to continue. At the Dialog screen, enter the MP Name or the MP IP Address in the first field, and the MP Password in the second field. Then click **OK** to continue.

After a delay of several minutes (while the Wizard gathers information about the system), the Select Inactive Partitions screen displays. This is the entry point screen for the Par Wizard tool. In the upper half of the screen is a scrolling text box containing system-wide information such as server name, management processor IP address, and so on. Verify the server information displays correctly and without errors. Then exit the Par Wizard. If you see any error messages, exit the Wizard and try launching it again to see if the same error appears.

If these tests do not give the desired results, you can perform additional tests to help pinpoint the problem. See “Checking component installation and operation” on page 146.

Miscellaneous installation issues

The installation-related issues described in this section apply to all users, all of the time. You should read them carefully.

Environment variables

On the management station, the commands and provider require that the `%PEGASUS_HOME%` environment variable is set. In addition, the `%PATH%` environment variable must contain the directory in which the nPartition commands are installed (typically %PEGASUS_HOME%\bin), or you have to run the command with its full directory path listed, as shown here:

```
c:\Program Files\Hewlett-Packard\nPar Management\parstatus.exe
```

Upgrading service packs later (after installation)

Until the required patches and hotfixes are incorporated into Windows service packs, it is possible that upgrading the service pack level of the OS after installing nPartition components could affect operation. The following are known issues:

- Windows XP Professional: Upgrading from Windows XP to Windows XP Service Pack 1 can overwrite a file replaced by the Q332207 hotfix with an older version. Reinstalling the hotfix corrects the problem.

3 Using the Par Wizard

The Par Wizard simplifies partition management by providing a graphical user interface for many of the nPartition commands. Use the Wizard to select inactive partitions for removal, create new partitions using unassigned cells, or recreate partitions with new cell layouts. When creating or reconfiguring partitions, you can use unassigned cells in

the complex as well as cells that have been freed from previously deleted partitions. You can also name newly created partitions, assign the ratio of cell local memory to interleaved memory, and select the primary core cell for each of your partitions.

NOTE You should familiarize yourself with the nPartition commands documentation before managing nPartitions using the Par Wizard. In addition, certain operations provided by the nPartition commands are not available from the Wizard. For advanced administration or enterprise system configuration, you should use the nPartition commands instead of the Wizard.

Once you have completed all of your management activities, click the Wizard's **Finish** button to write your changes to the complex. Canceling at any time before selecting **Finish** prevents your changes from being implemented, and leaves your original configuration intact. After implementing the changes, the various nPartition commands command lines used to perform the operations you selected are displayed, and then saved to a file. You should save these output commands and study them to help you with future partition management operations.

NOTE The Par Wizard does *not* display Cell Local Memory (CLM) versus Interleaved Memory data for partitions listed at program startup. To verify CLM vs. Interleaved Memory ratios for existing or newly created partitions, you must run the `parstatus` command from a DOS Command shell, using the `-V` option. For example, to check the CLM ratio of partition 1 on "MyComplex", you would enter the following command:

```
C:\> parstatus -h MyComplex -g PASSWORD -p 1 -V
```

NOTE Existing partitions must be in the **Shutdown for Reconfiguration** state before using this tool to alter them. For example, removing a cell from one partition and adding it to another requires that *both* partitions be in the **Shutdown for Reconfig** state before proceeding.

Basic procedures

In addition to the basic procedures listed in this chapter, you can also refer to the Par Wizard on-line help by using a Windows menu path of **Start > Programs > Hewlett-Packard > nPar Management > Par Commands Wizard Manual**.

Create a new nPartition

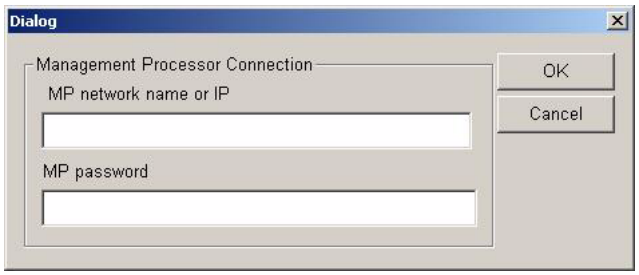
The following procedure describes the creation of a new, single-cell nPartition in a complex already having several existing partitions.

Step 1. Launch the Par Commands Wizard using a Windows menu path of **Start > Programs > Hewlett-Packard > nPar Management > Par Commands Wizard**.

Step 2. At the Warning screen, click **Next** to continue.

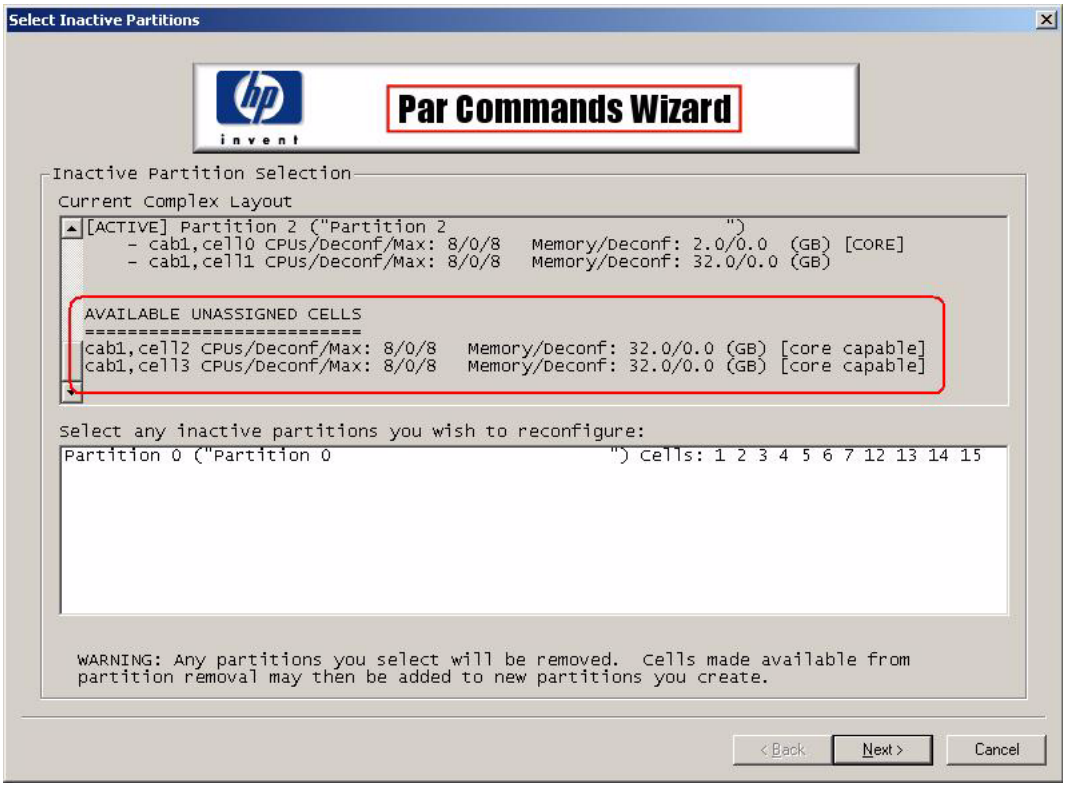
Step 3. In the Dialog screen, enter the management processor network name or IP address, then the password, and click **OK**. Several minutes will pass while the Wizard gathers information about the complex.

Figure 3-1 Dialog



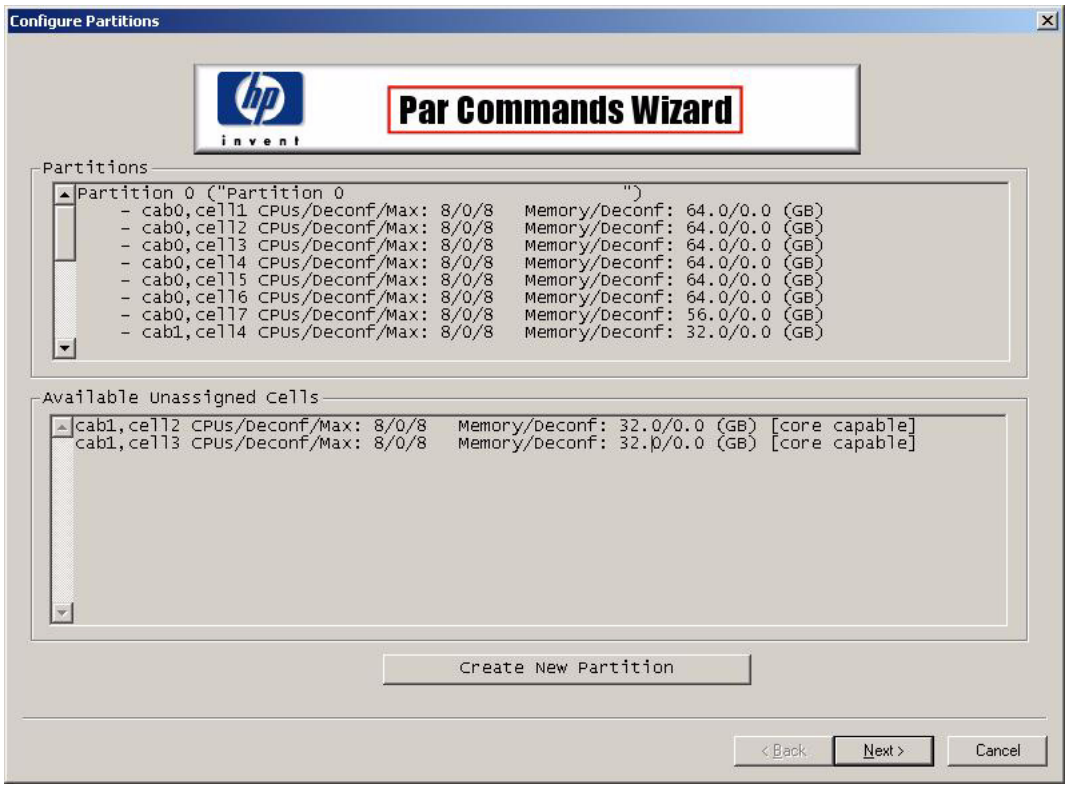
Step 4. In the Select Inactive Partition screen, scroll down to the bottom of the “Current Complex Layout” text box to see which cells are available and unassigned. Every partition must contain at least one cell to serve as the Core cell. Additional cells can be added, if available. Click **Next** to continue.

Figure 3-2 Select Inactive Partition



Step 5. In the Configure Partitions screen, click **Create New Partition** to continue.

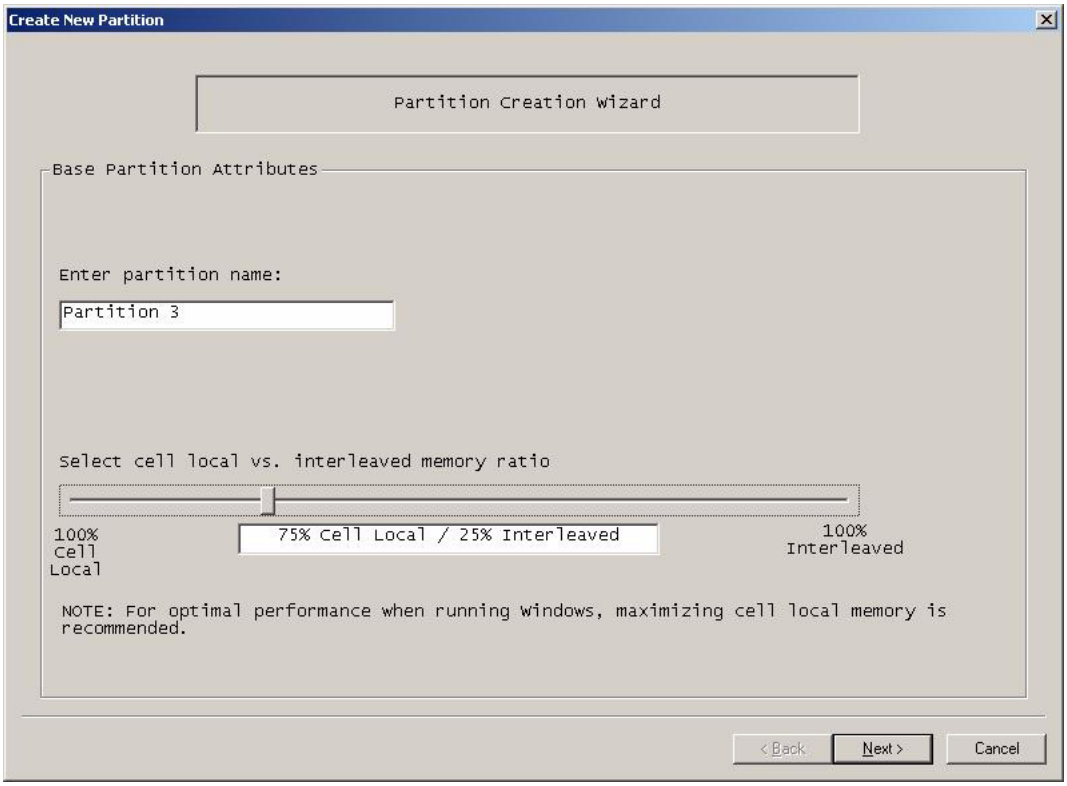
Figure 3-3 Configure Partitions



Step 6. In the Create New Partition screen, enter a name for the new partition (since we already have 3 existing partitions numbered 0, 1, and 2, we are naming this one “Partition 3”). Set the desired Cell Local-to-Interleaved memory ratio for the partition by dragging the slider. Then click **Next** to continue.

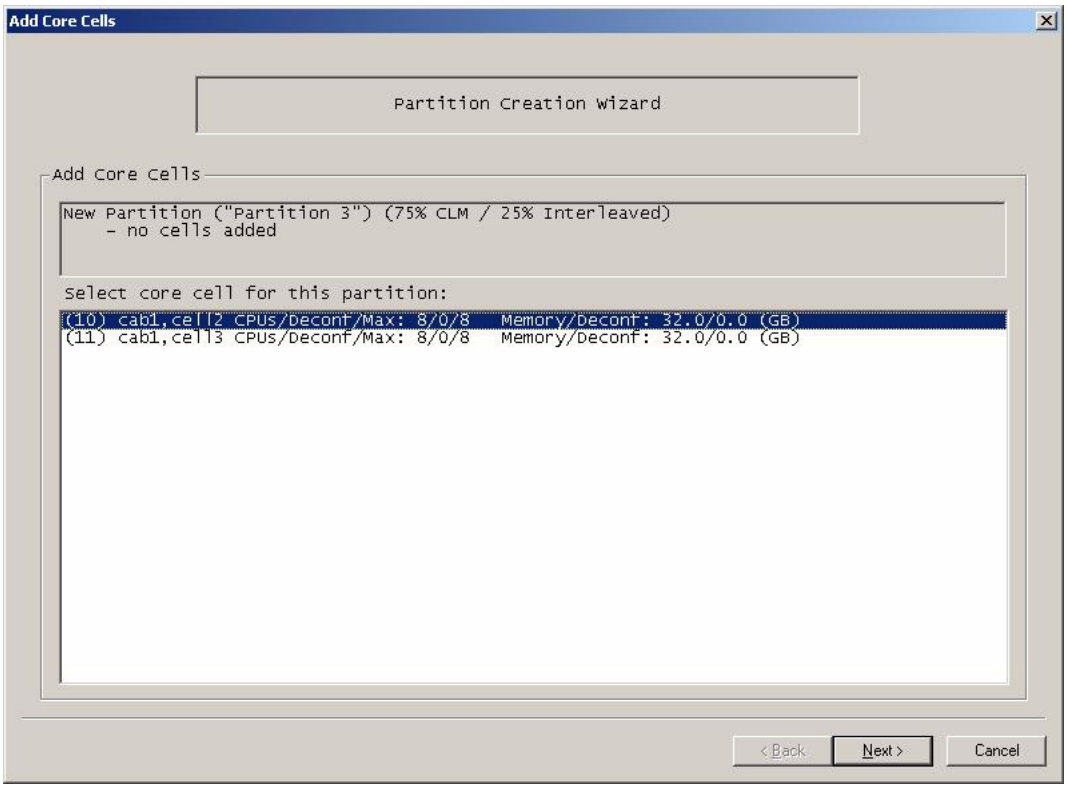
NOTE HP recommends that you assign a %100 Cell Local vs. Interleaved memory ratio. This is the optimum setting for most applications.

Figure 3-4 Create New Partition



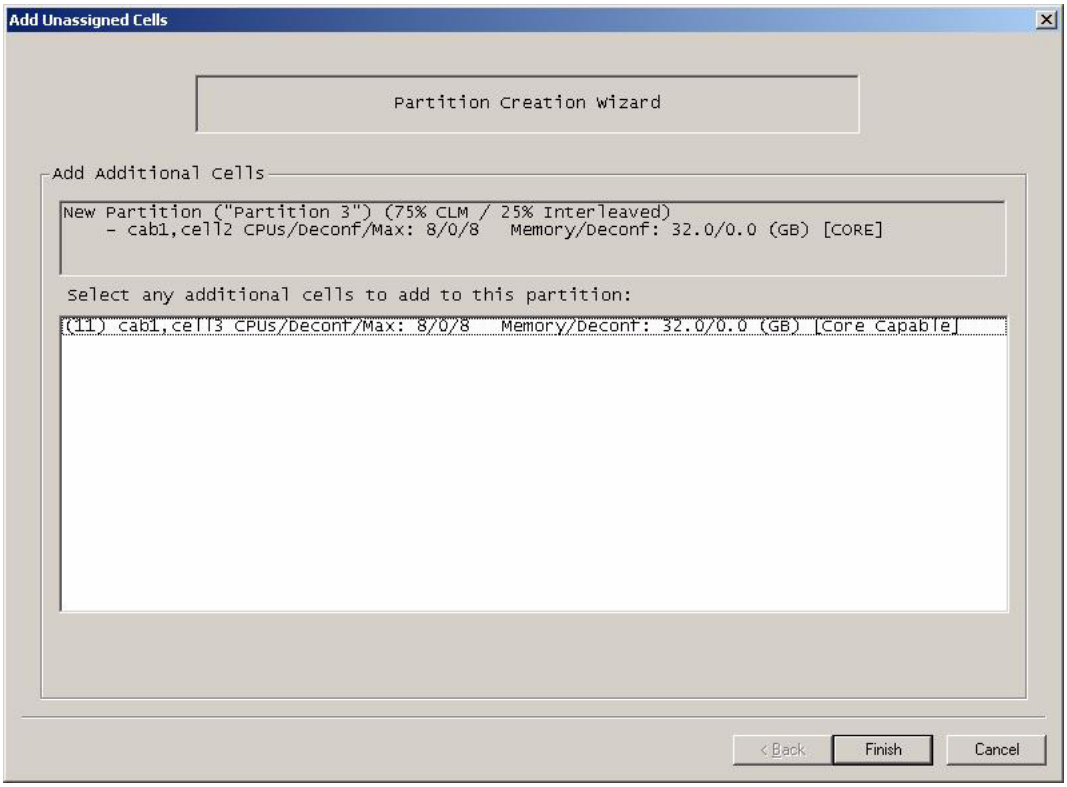
Step 7. In the Add Core Cells screen, select the desired core cell from the list (in this case, Cell #10). Then click **Next** to continue.

Figure 3-5 Add Core Cells



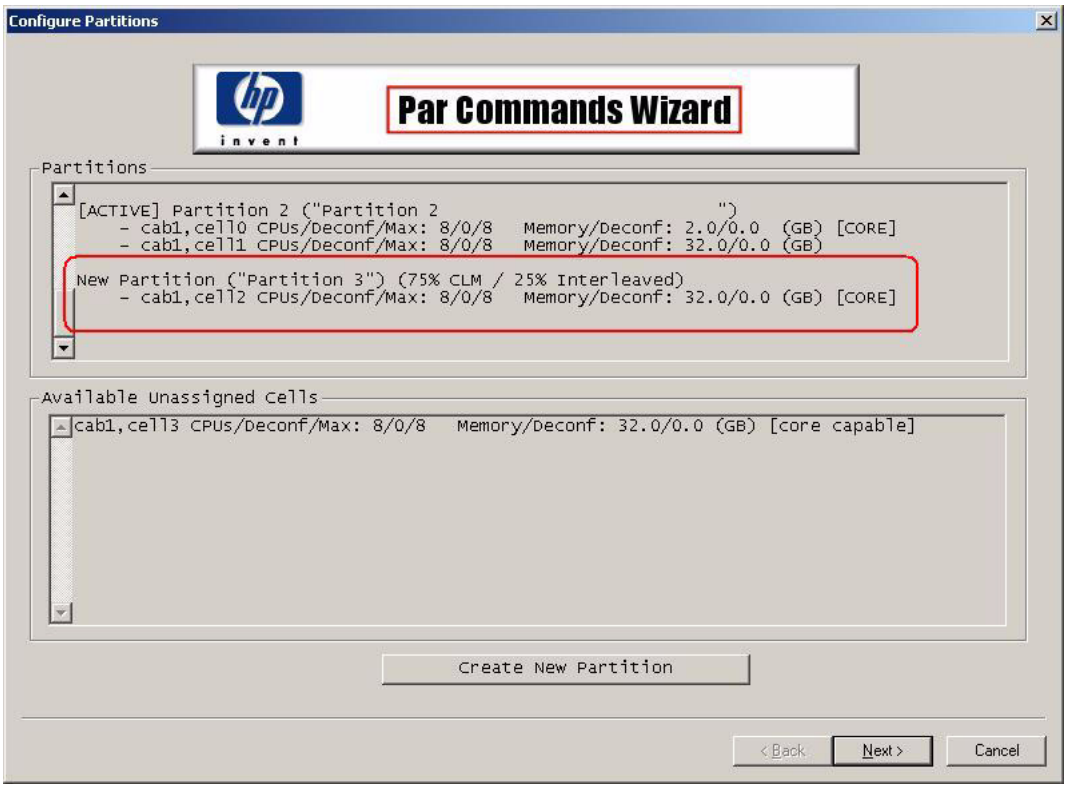
Step 8. In the Add Unassigned Cells screen, select additional cells if you want them in the partition (in this case we want a single-cell partition, so no additional cells are selected). Then click **Finish** to continue.

Figure 3-6 Add Unassigned Cells



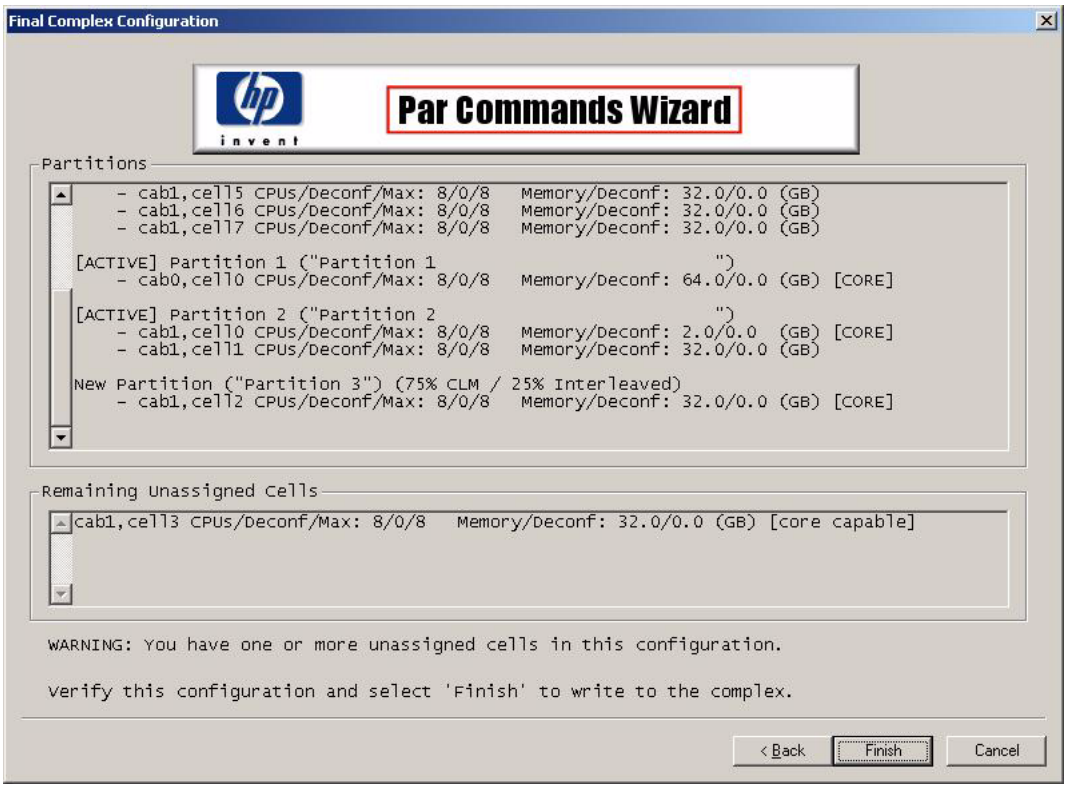
Step 9. In the Configure Partitions screen, scroll down to the bottom of the “Partitions” text box to verify the new configuration. Then click **Next** to continue.

Figure 3-7 Configure Partitions



Step 10. In the Final Complex Configuration screen, verify one last time. Then click **Finish** to write the new configuration to the complex.

Figure 3-8 Final Complex Configuration



Step 11. Login to the management processor and reboot the new partition using the BO command from the Command Menu.

Step 12. During the reboot, from the EFI shell, you must set the new nPartition's acpiconfig value to "Windows". See "ACPI configuration for Windows must be "windows"" on page 73 for detailed instructions on how to do this.

NOTE Creation of the new nPartition will fail if you do not set the acpiconfig value to "Windows".

Add cells to an existing nPartition

The following procedure describes how to add a new cell to an existing partition. Since the Par Wizard does not allow you to do this directly, you must first "deconstruct" or remove the existing partition and then recreate it using the original cells plus the new one.

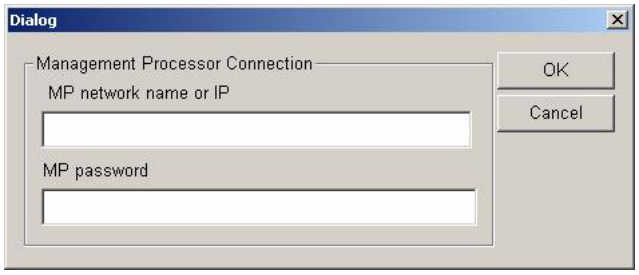
This procedure assumes the target partition has already been shutdown and put into a **Shutdown for Reconfig** state before running the Par Commands Wizard (using either the Windows **Start > Shutdown > Shutdown** menu path from the nPartition, or using the RR command from the management processor Command Menu).

Step 1. From the Management Station PC, launch the Par Commands Wizard using a Windows menu path of **Start > Programs > Hewlett-Packard > nPar Management > Par Commands Wizard**.

Step 2. At the Warning screen, click **Next** to continue.

Step 3. In the Dialog screen, enter the Management Processor network name or IP address, then the password, and click **OK**. Several minutes will pass while the Wizard gathers information about the complex.

Figure 3-9 Dialog



Step 4. In the Select Inactive Partitions screen, do the following:

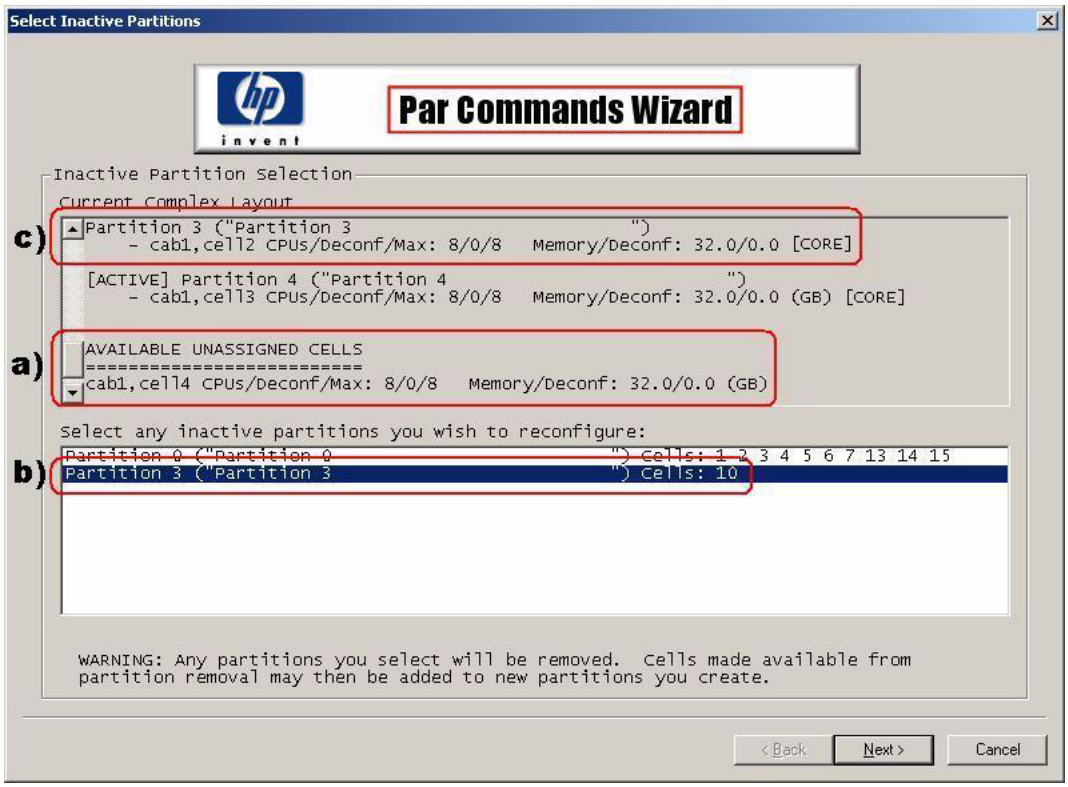
a. Scroll through the Current Complex Layout text box and verify that the desired cell (in this case, cab1/cell 4) is listed under the AVAILABLE UNASSIGNED CELLS section. Make sure the cell is powered on and listed correctly before continuing.

b. Before you can add the cell, the target partition must be removed first (you will re-create it later, using the original cells plus the new one). To do this, select the partition you want to reconfigure in the lower half of the screen (in this case, Partition 3).

c. Also, if you plan on re-using the core cell, scroll through the Current Complex Layout text box again. Locate the listing for the target partition and make a note of which cell currently serves as the core cell (in this case, cab1/cell2).

Then click **Next** to continue.

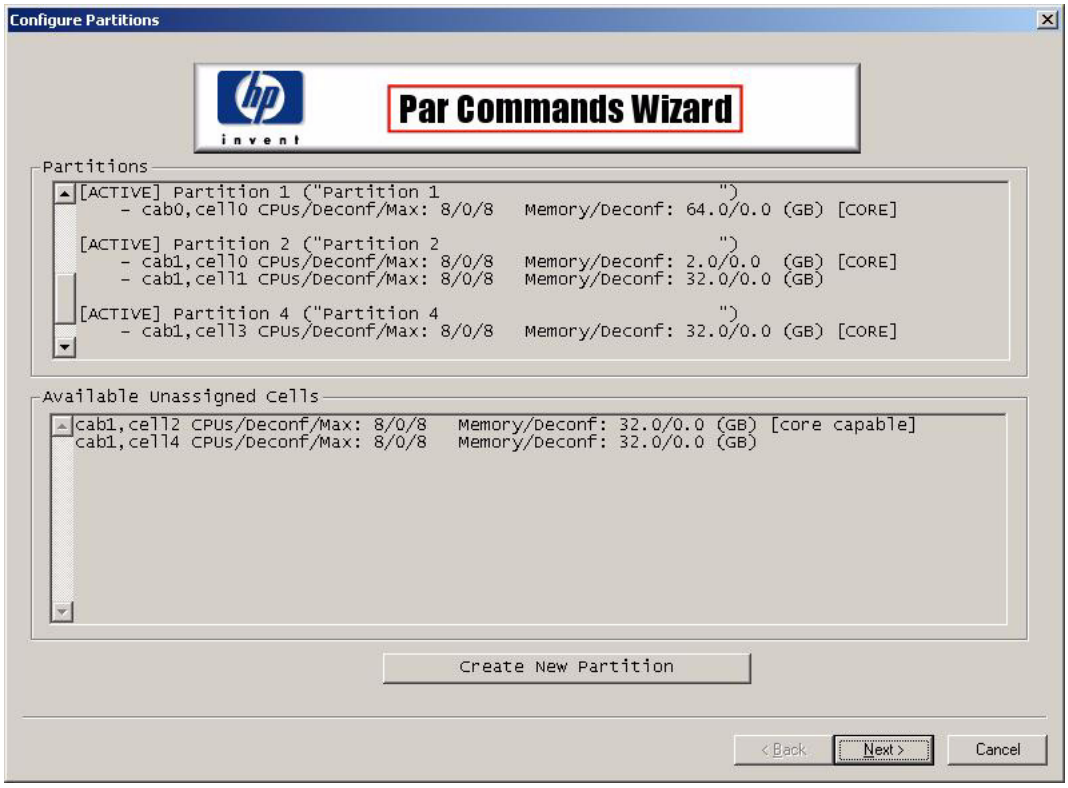
Figure 3-10 Select Inactive Partitions



NOTE You can also add the cell to the partition directly (without removing and re-creating the entire partition) by using the `parmodify` command. See “parmodify” on page 123.

Step 5. In the Configure Partitions screen, notice that Partition 3 has been removed and its cells are now listed as available. Click **Create New Partition** to continue.

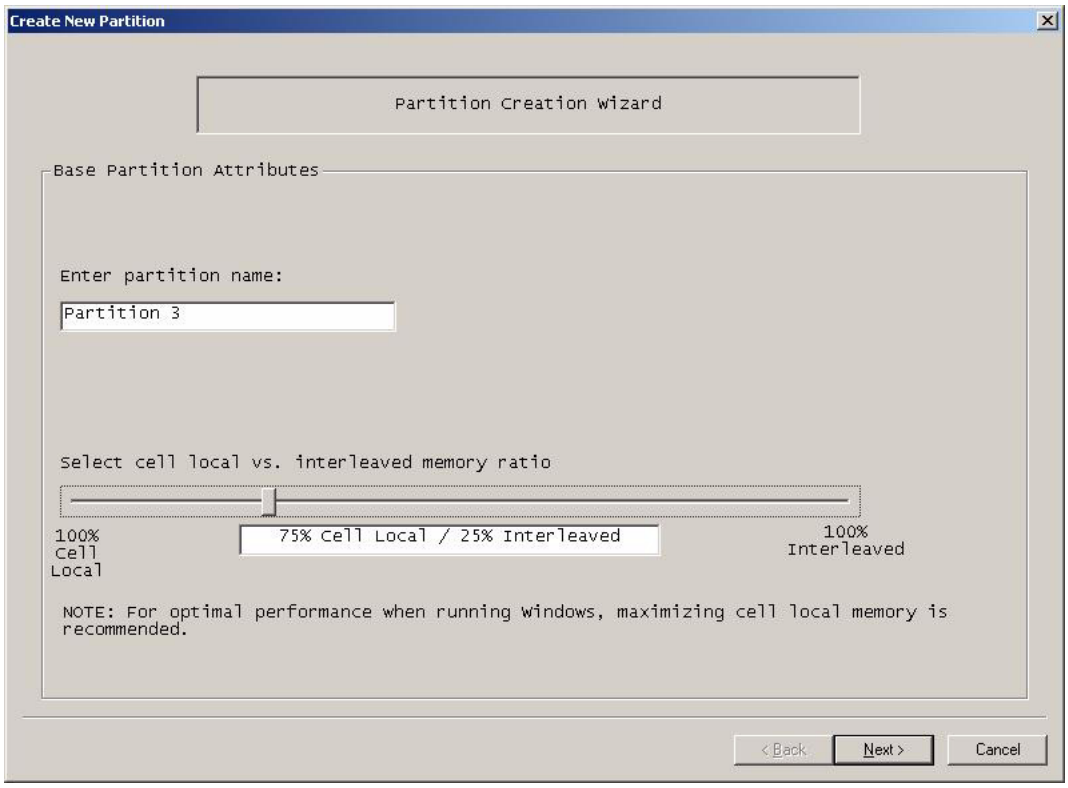
Figure 3-11 Configure Partitions



Step 6. In the Create New Partition screen, enter a name for the new partition in the text box (in this case we are using the same name as before, Partition 3). Then select the desired Cell Local Memory (CLM) vs. Interleaved Memory ratio by clicking on and dragging the slider, and click **Next**.

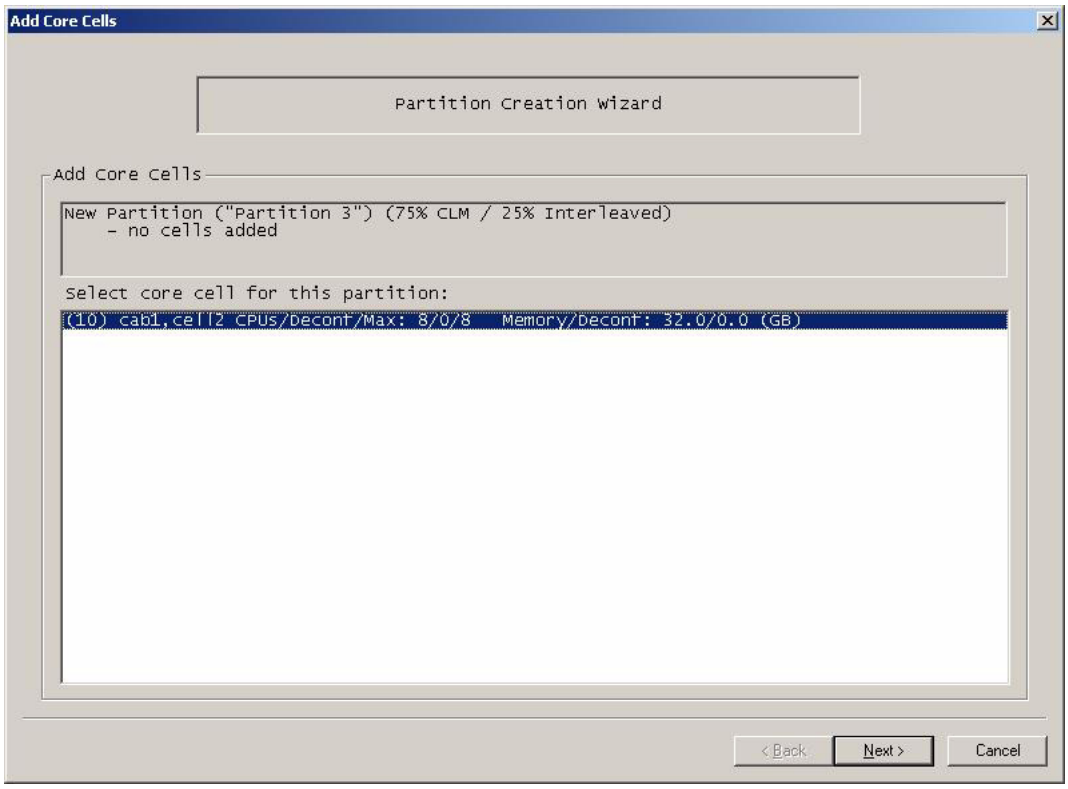
NOTE HP recommends that you assign a %100 Cell Local vs. Interleaved Memory ratio. This is the optimum setting for most applications.

Figure 3-12 Create New Partition



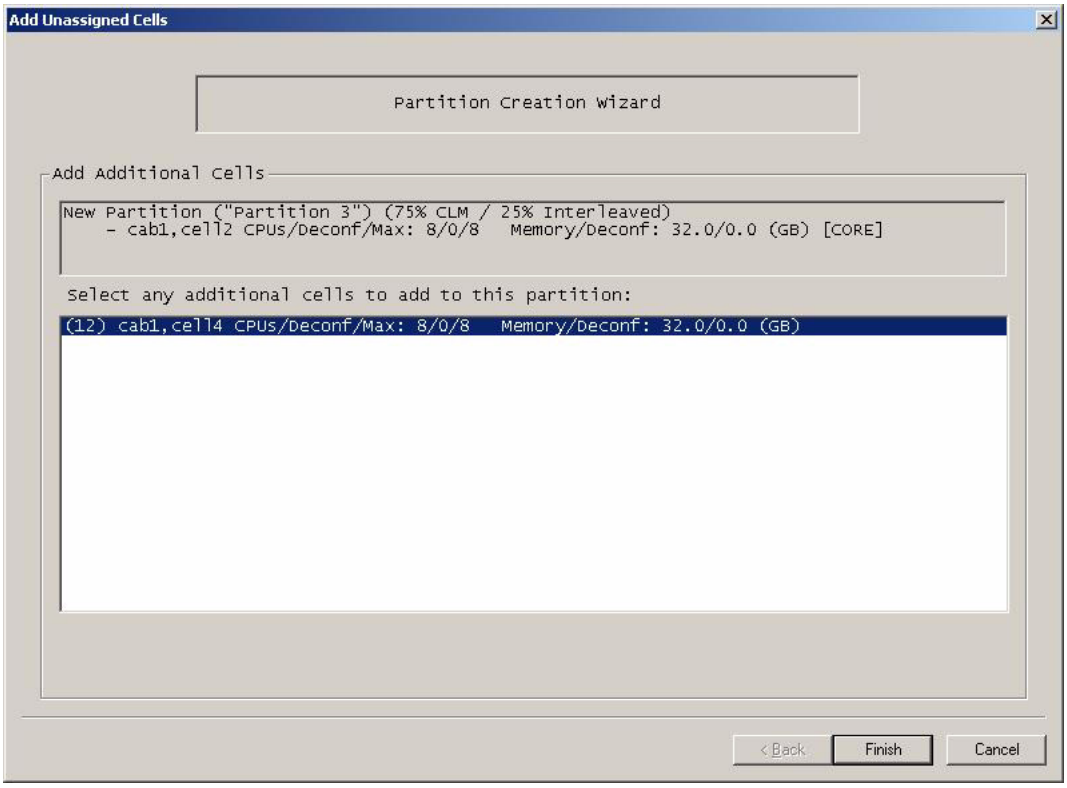
Step 7. In the Add Core Cells screen, select the core cell by clicking on it in the list. The cell you select must be listed as “core capable”. Then click **Next** to continue. In this example we are choosing the original core cell (cab1/cell2).

Figure 3-13 Add Core Cells



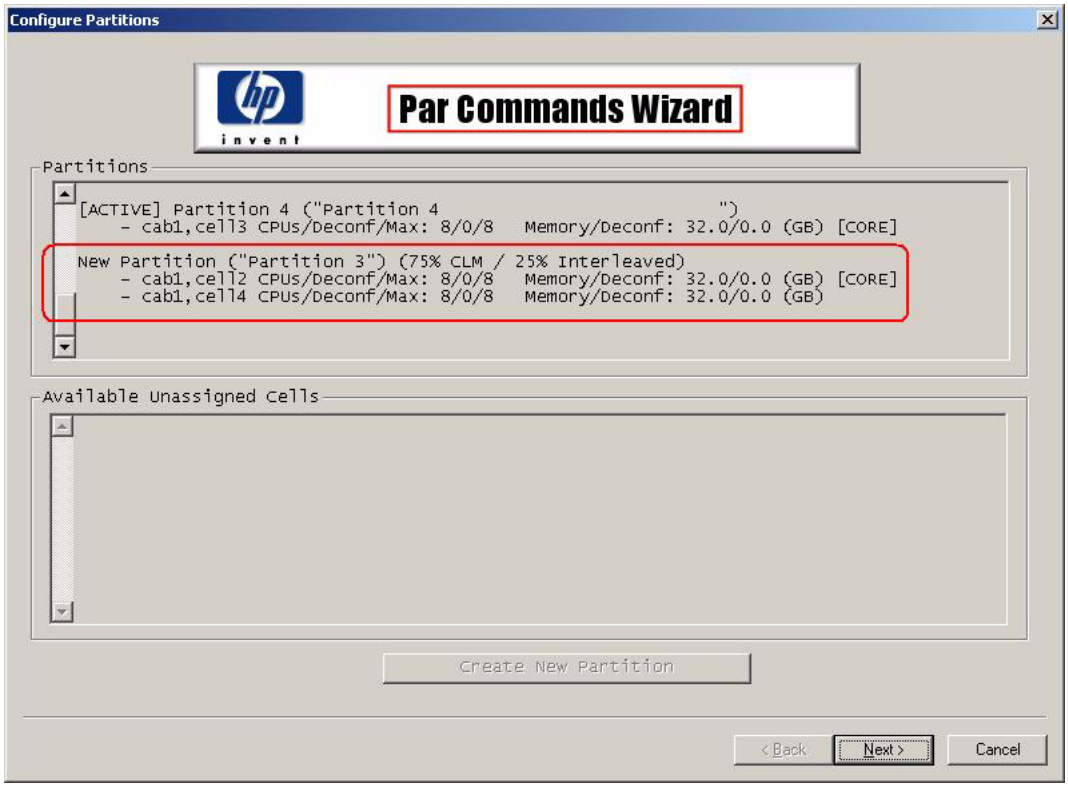
Step 8. In the Add Unassigned Cells screen, select any additional cells you want to add to the partition by clicking on them (in this example, cab1/cell4). Then click **Finish** to continue.

Figure 3-14 Add Unassigned Cells



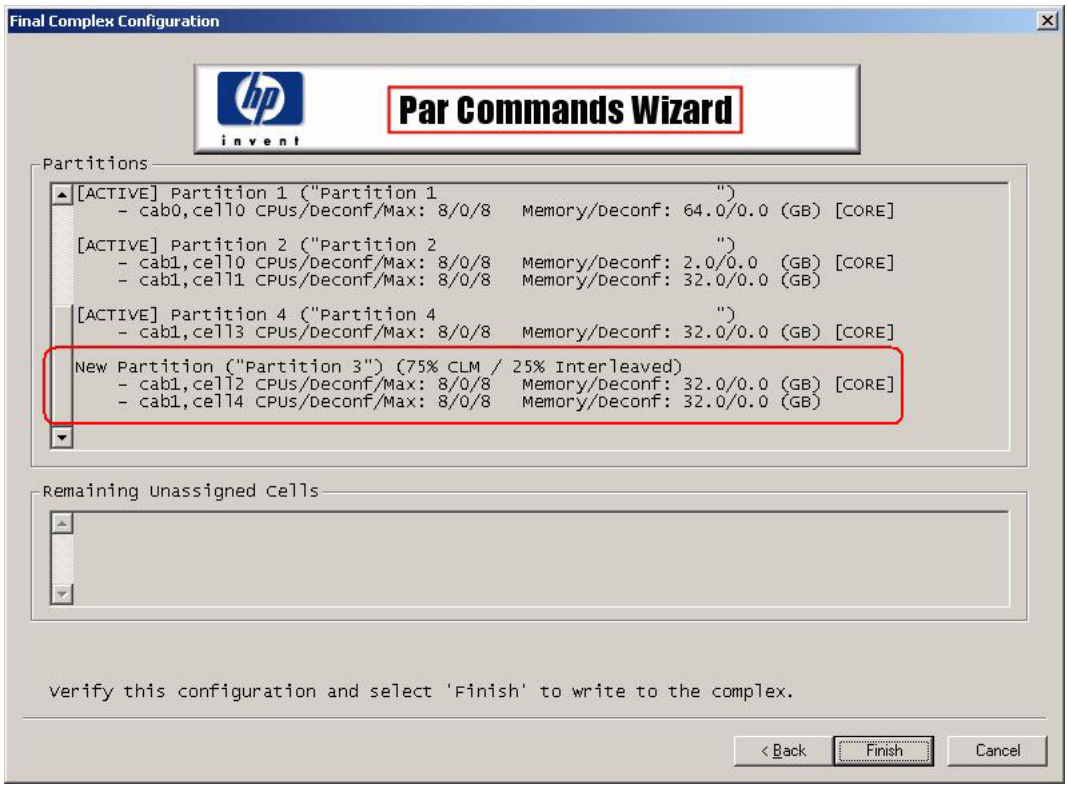
Step 9. In the Configure Partitions screen, notice the new partition is now listed, along with the original core cell and the new one. Click **Next** to continue.

Figure 3-15 Configure Partitions



Step 10. The Final Complex Configuration screen provides a final chance to review changes before implementing them. Verify the new partition name, layout, and cell memory ratios, then click **Finish** to write the new configuration to the complex.

Figure 3-16 Final Complex Configuration



Step 11. Login to the management processor and reboot the new partition using the BO command from the Command Menu.

Delete an nPartition

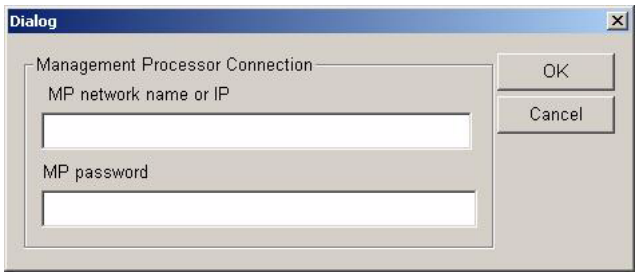
The following procedure describes the removal of Partition #3 from a complex containing four partitions. It assumes the target partition has already been shutdown and put into a **Shutdown for Reconfig** state before running the Par Commands Wizard (using either the Windows **Start > Shutdown > Shutdown** menu path from the nPartition, or using the RR command from the management processor Command Menu).

Step 1. Launch the Par Commands Wizard using a Windows menu path of **Start > Programs > Hewlett-Packard > nPar Management > Par Commands Wizard**.

Step 2. At the Warning screen, click **Next** to continue.

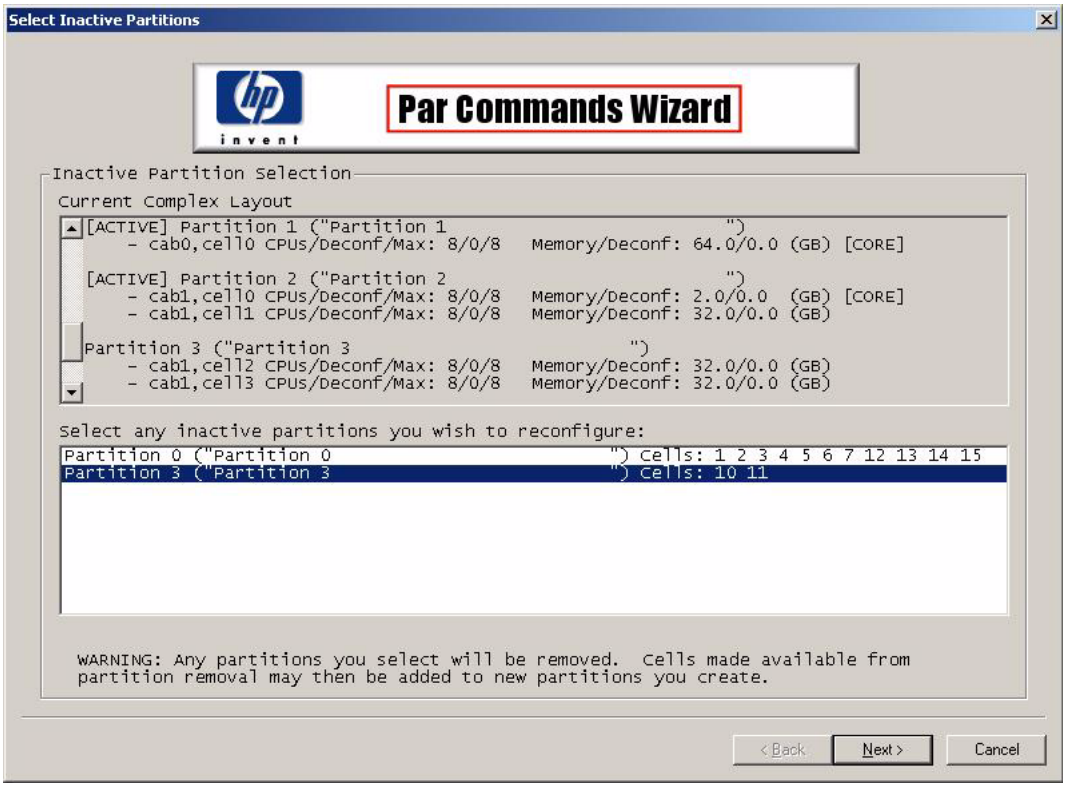
Step 3. In the Dialog screen, enter the management processor network name or IP address, then the password, and click **OK**. Several minutes will pass while the Wizard gathers information about the complex.

Figure 3-17 Dialog



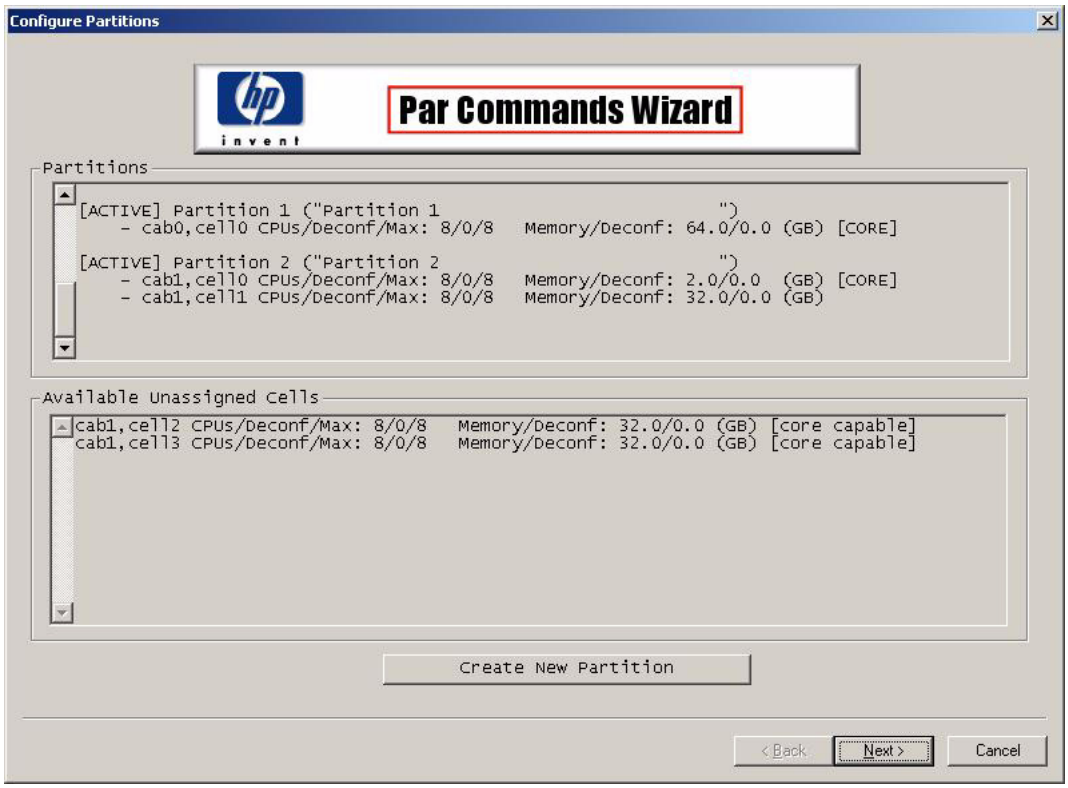
Step 4. In the lower half of the Select Inactive Partition screen, select the partition you want to remove (in this case Partition 3), and click **Next**.

Figure 3-18 Select Inactive Partition



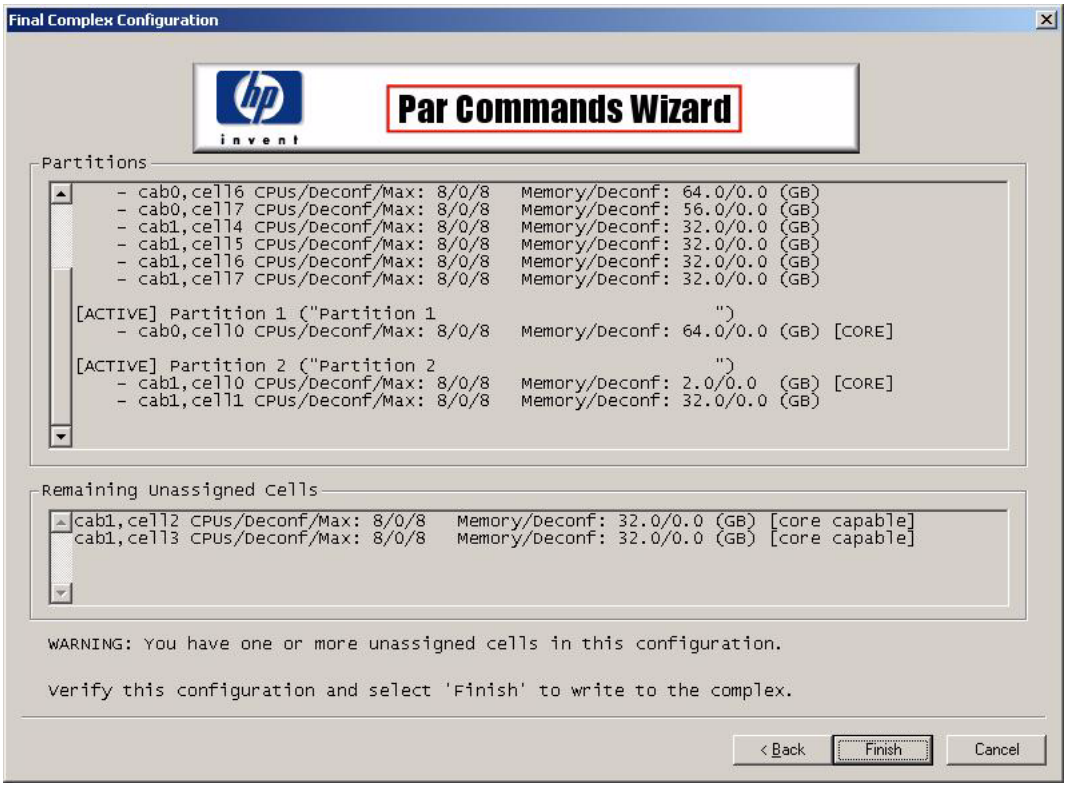
Step 5. In the Configure Partitions screen you can see that Partition 3 is no longer listed in the Partitions text box, and its cells are now listed as available. Click **Next** to continue.

Figure 3-19 Configure Partitions



Step 6. The Final Complex Configuration screen shows what the configuration will look like *after* your changes are implemented. Verify one last time that Partition 3 is no longer listed, and its cells are unassigned. Then click **Finish** to write the new configuration to the complex.

Figure 3-20 Final Complex Configuration



4 nPartitioning Procedures

This chapter describes some of the more advanced methods for managing nPartitions on HP Integrity servers. In many cases you can use the Par Wizard to perform these tasks, and HP recommends that you do so whenever possible.

HP also recommends that you put the target nPartition into a **Shutdown for Reconfig** state before changing any of its cell assignments, such as adding cells to the nPartition or deleting cells from it.

In addition, the ACPI flag must be enabled for modified and newly-created nPartitions *after* (not before) performing management tasks on them, by running the EFI's `acpiconfig windows` command, followed by a reset. See "ACPI configuration for Windows must be "windows"" on page 73 for details about how to do this.

Because the scope of this document is limited to HP Integrity Servers running Microsoft Windows Server 2003, emphasis is placed on the tools provided with that platform (like nPartition commands), even when other tools might also exist. For those procedures that *can* be performed with an nPartition command, that is the only method presented. However, for procedures that *cannot* be performed using an nPartition command, the alternate methods are provided (such as issuing commands from the MP or EFI Shell menus).

For a complete and comprehensive description of all the HP Integrity nPartitioning procedures, tools, and topics, on all supported platforms, refer to *HP System Partitions Guide: Administration for nPartitions*, found at:
http://docs.hp.com/hpux/multiOS/index.html.

Complex-level tasks

The following section describes tasks you can perform for the entire complex.

Rename a server complex

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).

Rename a server complex using the following procedure:

Renaming a server complex [par commands]

From the command line, use the `cplxmodify -N name` command to rename a server complex.

Step 1. Login to Windows on the Management Station PC.

Step 2. Issue the `cplxmodify -N name` command to rename the local server complex.

To list the current complex name, issue the `parstatus -X` command.

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in “nPartition Commands Reference” on page 117.

Unlock complex profile entries

The Complex Profile is a set of data that determines how hardware is assigned to and used by nPartitions in an nPartition-capable server complex. Each Complex Profile entry has its own lock which is used to restrict access to the entry.

In certain situations you might need to manually unlock a Complex Profile entry, for example when an nPartition configuration tool such as Partition Manager has prematurely exited before it sends revised Complex Profile entries and corresponding lock keys back to the management processor.

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

Unlock a Complex Profile entry using the following procedure:

Complex profile unlocking [par commands]

This procedure unlocks a Complex Profile entry by using the `parunlock` nPartition configuration command.

Step 1. Login to Windows on the Management Station PC.

Step 2. Issue the `parunlock` command with the command-line option appropriate for the Complex Profile entry or entries you want to unlock.

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in “nPartition Commands Reference” on page 117.

`parunlock` options for Windows

The Windows `parunlock` command supports the following options:

`-s`	Unlock the Stable Complex Configuration Data. On HP Integrity servers the `-s` option unlocks the “read lock” that controls read access to the current Stable Complex Configuration Data. See also the `-P` option.
`-d`	Unlock the Dynamic Complex Configuration Data.
`-p#`	Unlock the Partition Configuration Data for the nPartition whose number (`#`) is specified.
`-P`	Cancel any pending changes to the Stable Complex Configuration Data. On HP Integrity servers the `-P` option unlocks the “write lock” that controls write access to a modifiable copy of the Stable Complex Configuration Data. See also the `-s` option.
`-A`	Unlock the Stable Complex Configuration Data, Dynamic Complex Configuration Data, and the Partition Configuration Data for all nPartitions in the complex. On HP Integrity servers the `-A` option unlocks both the “read lock” and “write lock” for the Stable Complex Configuration Data.

Cancel pending changes to the complex profile

You can cancel a pending change to the Stable Complex Configuration Data for an nPartition-capable server by unlocking the Stable Complex Configuration Data before the management processor has pushed out the revised data for the entry.

For example, you can abort a cell assignment change when you have issued a request to unassign an active cell but manually unlock the effected Complex Profile entries before performing a reboot for reconfig of the nPartition to which the cell originally is assigned.

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

Aborting cell assignment changes

You can cancel a pending change to an active cell by using this procedure. Only changes involving the unassignment (deletion) of an active cell from an nPartition can practically be canceled.

Step 1. After issuing a request to unassign an active cell from its nPartition, do not perform a shutdown or reset of the nPartition.

When the cell assignment of an active cell is pending, the Stable Complex Configuration Data is not pushed out until the cell is at the boot is blocked (BIB) state, which occurs during a reboot for reconfig or shutdown for reconfig of its nPartition.

Step 2. Issue a request to unlock the Stable Complex Configuration Data for the server where the cell assignment change is pending.

Use the procedure given in “Unlock complex profile entries” on page 61.

List product and serial numbers

Product and serial number information is stored in the Stable Complex Configuration Data portion of the Complex Profile for an nPartition-capable server.

List product and serial numbers using the following procedure:

Listing product and serial numbers [par 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 Windows on the Management Station PC.

Step 2. Issue the `parstatus -X` command to display the product number and serial number.

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in “nPartition Commands Reference” on page 117.

nPartition-level tasks

The following section describes tasks you can perform on individual nPartitions within the complex.

Boot configuration options for nPartition systems

This section briefly discusses the system boot options you can configure on nPartition-capable servers. You can configure boot options that are specific to each nPartition in the server complex.

HP Integrity boot configuration options

On nPartition-capable HP Integrity servers you must properly specify the ACPI configuration value, which affects the OS startup process and on some servers can affect the shutdown behavior. You can also configure boot device paths and the autoboot setting for the nPartition. Details are given in the following list.

- **Boot options list**

  You can manage the boot options list for each nPartition either by using the `bcfg` command at the EFI Shell, or by using the **Add a Boot Option**, **Delete Boot Option(s)**, and **Change Boot Order** menu items at the EFI **Boot Option Maintenance menu**.

- **Autoboot setting**

  You can configure the autoboot setting for each nPartition either by using the `autoboot` command at the EFI Shell, or by using the **Set Auto Boot TimeOut** menu item at the EFI **Boot Option Maintenance menu**.

- **ACPI configuration value**

  You must set the proper ACPI configuration for the OS that will be booted on the nPartition. To check the ACPI configuration value, issue the `acpiconfig` command with no arguments at the EFI Shell. To boot or install the Windows operating system an nPartition must have its ACPI configuration value set to `windows`.

  For details, see “ACPI configuration for Windows must be “windows”” on page 73.

- **ACPI “softpowerdown” configuration—rx7620 and rx8620 OS shutdown behavior**

  On HP rx7620 servers and rx8620 servers you can configure the nPartition behavior when an OS is shutdown and halted. The two options are to have hardware power off when the OS is halted, or to have the nPartition be made inactive (all cells are in a boot-is-blocked state). The normal OS shutdown behavior on rx7620 servers and rx8620 servers depends on the ACPI configuration for the nPartition.

  You can run the `acpiconfig` command with no arguments to check the current ACPI configuration setting; however, softpowerdown information is displayed only when different from normal behavior.

To change the nPartition behavior when an OS is shutdown and halted use either the `acpiconfig enable softpowerdown` EFI Shell command or the `acpiconfig disable softpowerdown` command and then reset the nPartition to make the ACPI configuration change take effect.

— **acpiconfig enable softpowerdown**

When set, `acpiconfig enable softpowerdown` causes nPartition hardware to be powered off when the operating system issues a shutdown for reconfig command (for example, `shutdown -h` or `shutdown /s`).

This is the normal behavior on rx8620 and rx7620 servers with a `windows` ACPI configuration setting.

When softpowerdown is enabled on an rx7620 or rx8620 server, if one nPartition is defined in the server then halting the operating system powers off the server cabinet (including all cells and I/O chassis). On an rx7620 or rx8620 server with multiple nPartitions, halting the operating system from an nPartition with softpowerdown enabled causes only the resources on the local nPartition to be powered off.

To power on hardware that has been powered off, use the `PE` command at the management processor command menu.

— **acpiconfig disable softpowerdown**

When set, `acpiconfig disable softpowerdown` causes nPartition cells to remain at a boot-is-blocked state when the operating system issues a shutdown for reconfig command (for example, `shutdown -h` or `shutdown /s`). In this case an OS shutdown for reconfig makes the nPartition inactive.

This is the normal behavior on rx8620 and rx7620 servers with an ACPI configuration setting of `default` or `single-pci-domain`.

To make an inactive nPartition active, use the management processor `BO` command to boot the nPartition past the boot-is-blocked state.

Find bootable devices

Find bootable devices using the following procedure:

Find bootable devices [EFI shell]

From the EFI Shell environment, issue the `map` command to list bootable devices.

Step 1. Access the EFI Shell environment for the nPartition whose bootable devices you want to list.

Login to the management processor 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 `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 management processor interfaces if finished using them.

To exit the EFI environment type **^B** (**Control-B**); this exits the nPartition console and returns to the management processor Main Menu. To exit the management processor, type `X` at the Main Menu.

List nPartition configurations

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.

List nPartition configurations using the following procedure:

Listing nPartition configurations [par 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 Windows on the Management Station PC.

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).

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in “nPartition Commands Reference” on page 117.

List the local (current) nPartition number

The local nPartition number is the numerical identifier for the nPartition currently being accessed (where the command executes).

List the local nPartition number using the following procedure:

Listing the local (current) nPartition number [par commands]

From the command line, issue the `parstatus -w` command to list the local nPartition number.

Step 1. Login to Windows on the Management Station PC.

Step 2. Issue the `parstatus -w` command to list the local nPartition number.

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in "nPartition Commands Reference" on page 117.

List memory configurations

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.

List memory configurations using the following procedure:

Listing memory configurations [par 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 Windows on the Management Station PC.

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.
- `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.

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in "nPartition Commands Reference" on page 117.

Configure boot paths and options

CAUTION 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.

CAUTION With HP Integrity rx7620 & rx8620 systems, if Windows is installed on a drive attached to an IO chassis (rather than the core IO card), you must run the "search all" command from the EFI prompt any time the partition is reset (for example, using the management processor `RS` command), otherwise the boot drive will not be found when the partition boots.

Configure boot paths and boot options using any of the following procedures:

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.

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 management processor 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.

```
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 management processor interfaces if finished using them.

To exit the EFI environment type ^B (Control-B); this exits the nPartition console and returns to the management processor Main Menu. To exit the management 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.

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 management processor 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 management processor interfaces if finished using them.

To exit the EFI environment type ^B (Control-B); this exits the nPartition console and returns to the management processor Main Menu. To exit the management processor, type `X` at the Main Menu.

Configure autoboot options

Configure autoboot options using any of the following procedures:

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.

Step 1. Access the EFI Boot Manager menu for the nPartition whose autoboot options you want to configure.

Login to the management processor 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. 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 management processor interfaces if finished using them.

To exit the EFI environment type ^B (Control-B); this exits the nPartition console and returns to the management processor Main Menu. To exit the management 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.

Step 1. Access the EFI Shell environment for the nPartition whose autoboot options you want to configure.

Login to the management processor 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 management processor interfaces if finished using them.

To exit the EFI environment type `^B` (Control-B); this exits the nPartition console and returns to the management processor Main Menu. To exit the management processor, type `X` at the Main Menu.

Configure boot-time system tests

Configure boot-time system tests (self tests) for an nPartition by using the following procedure:

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.

Step 1. Access the EFI Shell environment for the nPartition whose boot-time tests you want to configure.

Login to the management processor 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 management processor interfaces if finished using them.

To exit the EFI environment type **^B** (**Control-B**); this exits the nPartition console and returns to the management processor Main Menu. To exit the management processor, type `X` at the Main Menu.

Boot Windows Server 2003

You can boot the Windows Server 2003 operating system on an HP Integrity server by using the EFI Boot Manager to select the appropriate Windows item from the boot options list.

CAUTION **ACPI configuration for Windows must be “windows”**

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, 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 enter the `acpiconfig windows` command, and then enter the `reset` command for the nPartition to reboot with the proper (`windows`) configuration for Windows.

NOTE **Microsoft Windows booting on HP Integrity servers**

The recommended method for booting Windows is to use the EFI Boot Manager menu to select a Windows entry from the boot options list. Using the `ia64ldr.efi` Windows loader from the EFI Shell is not recommended.

Booting Windows Server 2003 [EFI boot manager]

From the EFI Boot Manager menu, select an item from the boot options list to boot Windows using the selected boot option. See “ACPI configuration for Windows must be “windows”” on page 73 for required configuration details.

Step 1. Access the EFI Boot Manager menu for the system on which you want to boot Windows.

Login to the management processor 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 the SAC online help (type `?` at the `SAC>` prompt).

```
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 management processor interfaces if finished using them.

To exit the console environment type **^B** (**Control-B**); this exits the console and returns to the management processor Main menu. To exit the management processor, type `X` at the Main menu.

Boot over a network

Boot over a network by using one of the following procedures:

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.

Step 1. Access the EFI Boot Manager menu for the nPartition that you want to boot over a network.

Login to the management processor 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 management processor interfaces if finished using them.

To exit the EFI environment type ^B (Control-B); this exits the nPartition console and returns to the management processor Main Menu. To exit the management processor, type `X` at the Main Menu.

Booting over a network [EFI shell]

From the EFI Shell environment, use the `lanboot` command or `lanboot select` command to boot over a network.

Step 1. Access the EFI Shell environment for the nPartition that you want to boot over a network.

Login to the management processor 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 management processor interfaces if finished using them.

To exit the EFI environment type ^B (Control-B); this exits the nPartition console and returns to the management processor Main Menu. To exit the management processor, type `X` at the Main Menu.

Shut down Windows Server 2003

You can shut down the Windows Server 2003 operating system on HP Integrity servers using the **Start** menu or the `shutdown` command.

CAUTION

Do not shut down Windows using Special Administration Console (SAC) `restart` or `shutdown` commands under normal circumstances.

Issuing `restart` or `shutdown` at the `SAC>` prompt causes the system to restart or shutdown immediately and can result in the loss of data.

Instead use the Windows **Start** menu or the `shutdown` command to shut down gracefully.

To shut down Windows use either of the following methods.

- Select **Shut Down** from the **Start** menu and choose either **Restart** or **Shut down** from the pull-down menu.

  The **Restart** menu item shuts down and restart the system. The **Shut down** menu item shuts down the system.

  You can use this method when using a graphical interface to the system.

- Issue the `shutdown` command from the Windows command line.

  See the procedure “Shutting Windows down from the command line” on page 76 for details.

  You can issue this command from a command prompt through the Special Administration Console (SAC) or from any other command line.

  The Windows `shutdown` command includes the following options:

`/s`	Shut down the system. This is the equivalent of **Start > Shut Down > Shut down**.
`/r`	Shut down and restart the system. This is the equivalent of **Start > Shut Down > Restart**.
`/a`	Abort a system shutdown.
`/t xxx`	Set the timeout period before shutdown to `xxx` seconds. The timeout period can be 0–600, with a default of 30.

  Refer to the `help shutdown` Windows command for details.

NOTE

On HP rx8620 servers and HP rx7620 servers, performing a shutdown using `shutdown /s` (or the equivalent **Start > Shut Down > Shut down**) powers off the server cabinet or powers off the cells and I/O chassis assigned to the nPartition. On HP rx8620 servers and HP rx7620 servers this behavior can be customized.

On HP Integrity Superdome servers, the Windows `shutdown /s` command shuts down the system and keeps all cells at BIB (the boot is blocked, inactive state).

Shutting Windows down from the command line

From the Windows command line, issue the `shutdown` command to shut down the operating system.

Step 1. Login to Windows running on the system that you want to shut down.

For example, access the system console and use the Windows SAC interface to start a command prompt, from which you can issue Windows commands to shut down the system.

Step 2. Check to see whether any users are logged in.

Use the `query user` or `query session` command.

Step 3. Issue the `shutdown` command and the appropriate options to shut down the Windows Server 2003 on the system.

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 (either power down server hardware or put an nPartition into 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`

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.

Reboot and reset

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 (EFI).

NOTE If possible shut down the operating system before resetting an nPartition.

Reboot and reset nPartitions by using any one of the following procedures:

Rebooting and resetting nPartitions [management processor]

From the management processor issue the `RS` command to reset an nPartition. Under normal operation you first shut down the operating system.

Step 1. Login to the management processor 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.

The `RS` command resets all active cells in the nPartition and reboots them past partition rendezvous to the system boot environment (EFI) or an operating system.

NOTE On HP Integrity servers you should reset an nPartition only after all self tests and partition rendezvous have completed. For example, when the nPartition is inactive (all cells are at BIB) or is at EFI.

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 management 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 management processor account, you can select which of the nPartitions in the server complex you want to reset.

Step 3. To exit the management processor Command Menu, enter `MA` to return to the management processor Main Menu.

At the Main Menu, enter `X` to exit the management processor interface.

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.

Step 1. Access the EFI Boot Manager menu for the nPartition that you want to reboot.

Login to the management processor 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.

Step 3. Exit the console and management processor interfaces if finished using them.

To exit the EFI environment type ^B (Control-B); this exits the nPartition console and returns to the management processor Main Menu. To exit the management 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.

Step 1. Access the EFI Shell environment for the nPartition that you want to reboot.

Login to the management processor 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 management processor interfaces if finished using them.

To exit the EFI environment type ^B (Control-B); this exits the nPartition console and returns to the management processor Main Menu. To exit the management processor, type X at the Main Menu.

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).

CAUTION

Do not shut down Windows using Special Administration Console (SAC) `restart` or `shutdown` commands under normal circumstances.

Issuing `restart` or `shutdown` at the `SAC>` prompt causes the system to restart or shutdown immediately and can result in the loss of data.

Instead use the Windows **Start** menu or the `shutdown` command to shut down gracefully.

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.

Reboot for reconfiguration

During a reboot for reconfig of an nPartition, the command that you issue 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”).

Perform a reboot for reconfig using the following procedure:

Reboot for reconfig from Windows [Windows]

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.

CAUTION

Do not shut down Windows using Special Administration Console (SAC) `restart` or `shutdown` commands under normal circumstances.

Issuing `restart` or `shutdown` at the `SAC>` prompt causes the system to restart or shutdown immediately and can result in the loss of data.

Instead use the Windows **Start** menu or the `shutdown` command to shut down gracefully.

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.

Shut down to a shutdown for reconfig (inactive) state

NOTE On HP Superdome servers, performing a shutdown for reconfig always keeps all cells assigned to the nPartition at a boot-is-blocked state.

NOTE On HP rx7620 servers and rx8620 servers you can configure the nPartition behavior when an OS shuts down to the shutdown for reconfig state. The two options are to have hardware power off when the OS is halted, or to have the nPartition be made inactive (all cells are in a boot-is-blocked state).

On HP rx7620 servers and rx8620 servers, the normal Windows shutdown for reconfig (`shutdown /s`) behavior is for the nPartition hardware to be powered off.

When you use any of the methods to hold an nPartition at the shutdown for reconfig state, the command you issue performs the following tasks:

1. Shut down the operating system (if using the `shutdown` command) and reset all cells that are assigned to the nPartition, including any inactive cells.
2. Reconfigure the nPartition if necessary (if there is a pending change to the Stable Complex Configuration Data, it occurs during the reboot for reconfig).
3. Either keep all cells at a boot-is-blocked state (the nPartition and all cells assigned to it are inactive) or power off all cells and I/O chassis assigned to the nPartition.

   Only rx7620 and rx8620 servers can be configured to power off hardware upon shutdown for reconfig. For details, see “ACPI “softpowerdown” configuration—rx7620 and rx8620 OS shutdown behavior” on page 64.

You can reset an nPartition to shutdown for reconfig whenever you need for the nPartition and its cells to be inactive.

Shut down to a shutdown for reconfig (inactive) state using any one of the following procedures:

Shutting down to shutdown for reconfig [management processor]

From the management 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 management processor and enter `CM` to access the Command Menu.

Step 2. At the management 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 management 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 management 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 management processor Command Menu, enter `MA` to return to the management processor Main Menu.

At the Main Menu, enter `X` to exit the management processor interface.

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.

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 management processor 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 management processor interfaces if finished using them.

To exit the EFI environment type ^B (Control-B); this exits the nPartition console and returns to the management processor Main Menu. To exit the management processor, type X at the Main Menu.

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 or power off the nPartition hardware.

CAUTION Do not shut down Windows using Special Administration Console (SAC) `restart` or `shutdown` commands under normal circumstances.

Issuing `restart` or `shutdown` at the `SAC>` prompt causes the system to restart or shutdown immediately and can result in the loss of data.

Instead use the Windows **Start** menu or the `shutdown` command to shut down gracefully.

NOTE On HP rx8620 servers and HP rx7620 servers, performing a shutdown using `shutdown /s` (or the equivalent **Start > Shut Down > Shut down**) powers off the server cabinet or powers off the cells and I/O chassis assigned to the nPartition. On HP rx8620 servers and HP rx7620 servers this behavior can be customized. For details, see “ACPI “softpowerdown” configuration—rx7620 and rx8620 OS shutdown behavior” on page 64.

On HP Integrity Superdome servers, the Windows `shutdown /s` command shuts down the system and keeps all cells at BIB (the boot is blocked, 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.

Boot an inactive nPartition

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 management 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.

Boot an inactive nPartition using the following procedure:

Booting an Inactive nPartition [Par Commands]

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 a Windows system where the Par Commands tool is installed.

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in “nPartition Commands Reference” on page 117.

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.

Perform a transfer of control (TOC) reset

You can perform a transfer of control (TOC) reset by using the management processor TC command, as described in the following procedure.

If crash dump is configured for the operating system on the nPartition and you TOC the nPartition while it is running the operating system, then the nPartition performs a crash dump.

Performing a transfer of control (TOC) reset [management processor]

Use the Command menu TC command to perform a transfer-of-control (TOC) reset of an nPartition.

Step 1. Login to the management processor 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 management processor using a single-partition-user account, then 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.ior   = 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)
```

Create a genesis nPartition

Creating a Genesis Partition overwrites all nPartition-related complex profile data for the server and establishes one single-cell nPartition.

Creating a genesis nPartition [management processor]

Use the `CC` command and `G` option at the management 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.

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.

You can put it in a shutdown for reconfig state by using the `shutdown /s` command in Windows, the `reconfigreset` command at the EFI Shell, or the `RR` command at the management processor Command menu.

Step 4. Login to the management processor 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 management 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 EFI system boot environment.

```
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.

From the management 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.

Create a new nPartition

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.

Create a new nPartition using the following procedure:

Creating a new nPartition [par 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.

Step 1. Login to Windows on the Management Station PC. 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.

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in “nPartition Commands Reference” on page 117.

```
# parstatus -AC
[Cell]
                         CPU     Memory                                 Use
                         OK/     (GB)                          Core     On
Hardware    Actual       Failed/ OK/                           cell     Next Par
Location    Usage        Max     Failed  Connected To          Capable  Boot Num
=========== ============ ======= ======= ==================== ======= ==== ===
cab0,cell1 absent       -       -       -                     -       -    -
cab0,cell3 absent       -       -       -                     -       -    -
cab0,cell4 power on     4/0/4   2.0/0.0 cab 0,bay0,chassis3 yes     -    -
cab0,cell5 absent       -       -       -                     -       -    -
cab0,cell6 power on     4/0/4   2.0/0.0 cab 0,bay1,chassis1 yes     -    -
cab0,cell7 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.

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 management 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.

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 explanation

The `parcreate` command’s `-c...` option specifies the cell number(s) and attributes to be used when creating the new nPartition. The cell local memory attribute is optional.

- `-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 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).

— 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.

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 -p1 -P "hostname05"
Command succeeded.
# parmodify -p1 -r0/4 -r0/6
Command succeeded.
# parmodify -p1 -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.

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             :
Prmary 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)                            Core    On
Hardware   Actual       Failed/ OK/                             cell    Next Par
Location   Usage        Max     Failed    Connected To          Capable Boot Num
========== ============ ======= ========= ==================== ======= ==== ===
cab0,cell4 inactive     4/0/4    2.0/ 0.0 cab 0,bay0,chassis3 yes     yes  1
cab0,cell6 inactive     4/0/4    2.0/ 0.0 cab 0,bay1,chassis1 yes     yes  1
....
```

Step 5. Boot your newly-created nPartition past boot-is-blocked to make it active and make its system boot environment available.

Use the `BO` command at the management processor Command menu to boot the nPartition.

Once the nPartition is booted, you can access its system boot environment through its console. Use the management processor Console menu (enter `CO` at the management processor Main Menu).

Remove (delete) an nPartition

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 (`shutdown /s` command) as soon as possible after initiating the nPartition removal.

Unless you use the remote administration features supported by the Windows nPartition tools, you can delete only the local nPartition and inactive remote nPartitions.

Remove an nPartition using the following procedure:

Deleting an nPartition [par commands]

From the command line, use the `parremove` command to delete (remove) an nPartition.

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.

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in "nPartition Commands Reference" on page 117.

To check the local partition number, use the `parstatus -w` command.

If you are planning to remove a remote nPartition, check to see whether the remote nPartition is inactive.

- To make a remote nPartition inactive, you can perform any of the following tasks:
  - 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 EFI Shell.
  - Use the `RR` command at the management processor Command Menu to reset the nPartition to a shutdown for reconfig state.
- To remove an active remote nPartition, you must use the Windows nPartition tools remote administration options.

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.

- **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 (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 Windows nPartition tools.

  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.

     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 /s` from Windows on the nPartition being removed, `reconfigreset` from the EFI Shell for the nPartition, or `RR` from the management 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.

Add cells to an nPartition

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.

NOTE Adding or removing cells from an nPartition will change the amount of memory available to the nPartition, possibly significantly. You should consider how the memory change may affect the amount of swap space necessary for the nPartition and if needed adjust the swap space size.

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 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.

Add cells to an nPartition using the following procedure:

Adding cells to an nPartition [par 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.

Step 1. Use the `parstatus -A -C` command to list all available cells (the unassigned cells) in the server complex.

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in “nPartition Commands Reference” on page 117.

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).

To add multiple cells, you can specify the `-a` option multiple times in the same command.

`parmodify` command: -a attribute explanation

The `parmodify` command’s `-a...` option specifies a cell number and attributes, which are used when adding the cell to an existing nPartition. An additional cell local memory attribute is optional.

- For Windows Server 2003, the `parmodify` command’s `-a...` option is as follows:

  ```
  -a cell:[type]:[use]:[fail][:clm]
  ```

  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.
`use`	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.
`fail`	The cell failure usage: `ri` (reactivate with interleave) is the only supported failure usage policy and it is the default.

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.

`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).

Step 4. As needed, perform a reboot for reconfig on the modified nPartition.

See "Reboot for reconfig guidelines for adding cells" on page 95 for details on when to perform a reboot for reconfig.

Set core cell choices

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 and rx8620 servers, system firmware selects the lowest numbered eligible cell to be the active core cell for the nPartition.

By default on HP rx7620 servers, cell 1 is selected as the core cell.

Set the core cell choices for an nPartition using the following procedure:

Setting core cell choices [par 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).

Step 1. Login to Windows on the Management Station PC.

Step 2. Issue the `parstatus -V -p#` command to list the current core cell choices and core cell use for an nPartition.

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in “nPartition Commands Reference” on page 117.

The `parstatus -V -p#` command lists 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

....
```

```
                                 Core Connected  Par
Hardware Location   Usage        IO   To         Num
=================== ============ ==== ========== ===
cab0,bay0,chassis1  active       yes  cab0,cell0 0
cab0,bay1,chassis3  active       yes  cab0,cell2 0

#
```

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).

Rename an nPartition

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 management processor and other nPartition tools. Note that some tools display only the first 30 characters of nPartition names.

Change the name of an nPartition using the following procedure:

Renaming an nPartition [par 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).

Step 1. Login to Windows on the Management Station PC.

Step 2. Use the `parmodify -p# -P name` command to set the nPartition name for any of the nPartitions in the server complex.

NOTE

You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in "nPartition Commands Reference" on page 117.

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.

```
# parmodify -p1 -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`.

Cell-level tasks

The following section describes tasks you can perform on individual cells within an nPartition.

List processor configurations

Processor (CPU) configuration details include the CPU population, CPU type, and the clock speed.

List processor configurations using the following procedure:

Listing processor configurations [par 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).

Step 1. Login to Windows on the Management Station PC.

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).

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in “nPartition Commands Reference” on page 117.

List cell configurations

Cell configuration details include the list of the cells installed in the server, and cell assignments to nPartitions.

List the cell configurations in an nPartition-capable server using one of the following procedures:

Listing cell configurations [par commands]

From the command line, use the `parstatus -C` command to list cell configuration details.

Step 1. Login to Windows on the Management Station PC.

Step 2. Issue the `parstatus -C` command to list details about the cells installed in the server complex and their nPartition assignments.

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in "nPartition Commands Reference" on page 117.

Unassign (remove) cells from an nPartition

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.

NOTE Adding or removing cells from an nPartition will change the amount of memory available to the nPartition, possibly significantly. You should consider how the memory change may affect the amount of swap space necessary for the nPartition and if needed adjust the swap space size.

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 Windows 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 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.

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.

You can remove cells from an nPartition by using the following procedure:

Removing cells from an nPartition [par 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.

Step 1. Login to the Windows system.

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in "nPartition Commands Reference" on page 117.

If using remote administration features to modify an nPartition, you can login to any Windows system.

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 a Windows system to remotely administer a server, 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.

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 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 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 101 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 management processor Command menu.

Set cell attributes

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 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.

Set the attributes for a cell using any one of the following procedures:

Setting cell attributes [par 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).

Step 1. Login to Windows on the Management Station PC.

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)

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in "nPartition Commands Reference" on page 117.

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.

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 explanation

The `parmodify` command's `-m...` option specifies a cell number and attributes, which are used to modify the configuration of the specified cell.

- For Windows Server 2003, the `parmodify` command's `-m...` option is as follows:

  ```
  -m cell:[type]:[use]:[fail][:clm]
  ```

  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.
`use`	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.
`fail`	The cell failure usage: `ri` (reactivate with interleave) is the only supported failure usage policy and it is the default.

  The `clm` value specifies the amount of memory that will be configured as cell local memory for the cell.

  ##### Cell local memory specification

  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.

Step 4. Reboot the nPartition to use the cells' new attribute values.

If you have changed cell local memory (CLM) values then you must reboot 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 Windows `shutdown /r` command (or the **Start > Shut Down** action and **Restart** pull-down menu option).

  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 Windows `shutdown /r` command (or the **Start > Shut Down** action and **Restart** pull-down menu option).

  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.

Power-, status-, and hardware-level tasks

The following section describes tasks you can perform in order to manage or view the status of I/O components or other hardware within the complex, or individual nPartitions, or individual cells.

List input/output (I/O) configurations

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.

List I/O configurations using the following procedure:

Listing input/output (I/O) configurations [par commands]

From the command line, use the `parstatus -I` command to list details about all I/O chassis in the server complex.

Step 1. Login to Windows on the Management Station PC.

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 Windows.

Step 2. Issue the command 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.

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in “nPartition Commands Reference” on page 117.

List cabinets in a server complex

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.

List the cabinets in a server complex using the following procedure:

Listing cabinets in a server complex [par 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 Windows on the Management Station PC.

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).

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in "nPartition Commands Reference" on page 117.

List power status and power supplies

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.

List the power status and supplies using the following procedure:

Listing power status and power supplies [par 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 Windows on the Management Station PC.

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.

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in "nPartition Commands Reference" on page 117.

List fan and blower status

Fan and blower status includes lists of cabinet blowers and I/O fans, and their status (whether `ok` or `failed`).

List fan and blower status using the following procedure:

Listing fan and blower status [par 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 Windows on the Management Station PC.

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).

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in "nPartition Commands Reference" on page 117.

Turn attention indicators (LEDs) on and off

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 4-1 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 4-1 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 nPartition-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-capable 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 rx7620 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 management processor chassis logs or event logs viewer.

Turn hardware attention indicators (LEDs) on or off using the following procedure:

Turning attention indicators (LEDs) on and off [par commands]

From the command line, you can turn attention indicators on or off by using the `fruled` command.

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).

Step 1. Login to Windows on the Management Station PC.

Step 2. Use the `fruled` command to manage (turn on, off, or blink) the attention indicator for a system hardware component.

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in "nPartition Commands Reference" on page 117.

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#`).

Power server cabinets on and off

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 management processor 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 management processor Command menu do not check whether system hardware is in use before powering it off.

Power on or power off server cabinets using any one of the following procedures:

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 management processor for the server complex and access the Virtual Front Panel for the system.

From the management 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 management 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 [management processor]

Use the Virtual Front Panel, and then use the Command menu `PE` command to turn 48-volt cabinet power on or off from the management processor.

Step 1. Login to the management processor for the server and access the Virtual Front Panel for the system.

From the management 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 management processor (using the `WHO` command at the Command menu).

Step 5. Access the management processor Command menu, issue the `PE` command, then select the cabinet to power on or power off.

From the management 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)
```

Power cells and I/O chassis on and off

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 management 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.

Power on or power off cells and I/O chassis using the following procedure:

Powering cells and I/O chassis on and off [par 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).

Step 1. Login to Windows on the Management Station PC.

To manage power for a cell, you must login to the nPartition to which the cell is assigned.

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.

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in “nPartition Commands Reference” on page 117.

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.

Configure and deconfigure cells

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.

Configure and deconfigure cells using the following procedure:

Configuring and deconfiguring cells [par 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).

Step 1. Login to Windows on the Management Station PC.

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)

NOTE You must include the correct remote administration options when issuing par commands (`-h` and `-g` for IPMI over LAN connections; `-h` and `-u` for WBEM/WMI connections). For a complete explanation of these options, refer to the command description in "nPartition Commands Reference" on page 117.

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.

You must specify both the nPartition (`-p#` where `#` is the nPartition number) and the cell (`-m#...` where `#` is the cell number).

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 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 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.

Configure and deconfigure processors (CPUs)

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.

Configure and deconfigure processors using the following procedure:

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.

Step 1. Access the EFI Shell environment for the nPartition whose processors you want to configure or deconfigure.

Login to the management processor 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 management processor interfaces if finished using them.

To exit the EFI environment type **^B** (**Control-B**); this exits the nPartition console and returns to the management processor Main Menu. To exit the management processor, type `X` at the Main Menu.

Configure and deconfigure memory (DIMMs)

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.

Configure and deconfigure memory using the following procedure:

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.

Step 1. Access the EFI Shell environment for the nPartition whose memory you want to configure or deconfigure.

Login to the management processor 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 (`dimm`) 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 management processor interfaces if finished using them.

To exit the EFI environment type **^B** (**Control-B**); this exits the nPartition console and returns to the management processor Main Menu. To exit the management processor, type `X` at the Main Menu.

5 nPartition Commands Reference

This chapter provides a reference of the syntax, options, and arguments usage for all nPartition commands. For detailed descriptions of the options and arguments available for any of the nPartition commands listed below, you can also refer to the on-line help by using a Windows menu path of **Start > Programs > Hewlett-Packard > nPar Management > nPar Commands Manual**.

parcreate

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`.

Synopsis

```
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 `-h... -g...` options must be specified to cause the command to send its management request using IPMI over LAN to a management processor in another server complex (but can also be used as a “loopback access” to the management processor in the local complex).
- The `-h... -u...` set of options must 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` and `-u` options are mutually exclusive.

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.

`-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.

- 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.

Note: For Windows nPartitions on HP Integrity servers, boot paths cannot be viewed or set using nPartition commands. Use the EFI Boot Manager or the Windows `bootcfg` command to view/configure boot paths for Windows nPartitions.

`-t path`

Specifies the alternate boot path.

Note: For Windows nPartitions on HP Integrity servers, boot paths cannot be viewed or set using nPartition commands. Use the EFI Boot Manager or the Windows `bootcfg` command to view/configure boot paths for Windows nPartitions.

`-s path`

Specifies the secondary boot path.

Note: For Windows nPartitions on HP Integrity servers, boot paths cannot be viewed or set using nPartition commands. Use the EFI Boot Manager or the Windows `bootcfg` command to view/configure boot paths for Windows nPartitions.

`-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]`

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]` Allows access to the complex specified by the `-h` option. The accessed complex is then considered the target complex. Access is through the management processor LAN port.

The `-h` option is required if this option is used.

`passwd` specifies the IPMI password of the management 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 management processor (`-g`).

Example

In the following example, you connect to the server's management processor (MP) from your management station. The MP IP number is 192.168.24.68, and the MP password is "password". Since you are connecting remotely using IPMI over LAN, you must include the `-h... -g...` options with each command.

You use the `parstatus` command first (with the `-AC` option) to find out which cells are free and available in the complex. After viewing that information you create a new nPartition with two free cells, using the `parcreate` command. You include options in your `parcreate` command to assign the cells (`-c`), set the core cell (`-R`), name the nPartition (`-P`), and force it to boot automatically afterwards (`-B`).

Finally, you issue the `parstatus` command again to verify the change.

Step 1. Open a command window on the management station (**Start > Run >** type **cmd >** click **OK**).

Step 2. At the command prompt, type the following:

```
parstatus -h 192.168.24.68 -g password -AC
```

and press **Enter**.

Step 3. Information about the available cells appears (cab1/cell2 and cab1/cell4). Since there are 8 cells per cabinet, and the cabinets are named starting from zero (cab0, cab1, cab2, and so on), you determine that "cab1/cell2" is actually "Cell #10", and "cab1/cell4" is "Cell #12".

Type the following to create the new nPartition:

```
parcreate -c 10::: -c 12::: -r 10 -P Frodo -h 192.168.24.68 -g password -B
```

and press **Enter**.

Cells #10 and #12 are assigned to the nPartition, Cell #10 becomes the core cell, the nPartition is named “Frodo”, and the nPartition boots automatically after being created.

Step 4. Verify the change by typing:

```
parstatus -h 192.168.24.68 -g password -P
```

and pressing **Enter**.

The sequence of commands and results is shown here. Notice at the end that “Frodo” is active:

```
C:\>parstatus -h 192.168.24.68 -g password -AC
Note: The -g option may require up to 2 minutes to complete.  Please wait...


[Cell]
                        CPU     Memory                                  Use
                        OK/     (GB)                            Core    On
Hardware   Actual       Deconf/ OK/                             Cell    Next Par
Location   Usage        Max     Deconf    Connected To          Capable Boot Num
========== ============ ======= ========= ==================== ======= ==== ===
cab1,cell2 Inactive     8/0/8   32.0/0.0  cab1,bay0,chassis1  yes     -    -
cab1,cell4 Inactive     8/0/8   32.0/0.0  cab1,bay1,chassis1  no      -    -

Notes: * = Cell has no interleaved memory.

C:\>parcreate -c 10::: -r 10 -c 12::: -P Frodo -h 192.168.24.68 -g password -B
Note: The -g option may require up to 2 minutes to complete.  Please wait...
Partition Created. The partition number is: 3

C:\>parstatus -h 192.168.24.68 -g password -P
Note: The -g option may require up to 2 minutes to complete.  Please wait...

[Partition]
Par              # of  # of I/O
Num Status       Cells Chassis  Core cell  Partition Name (first 30 chars)
=== ============ ===== ======== ========== ================================
0   Active       8     5        cab0,cell4 Partition 0
1   Inactive     1     1        ?          Partition 1
```

```
2    Active       2     2        cab1,cell0 Partition 2
3    Active       2     2        cab1,cell2 Frodo
4    Inactive     1     1        ?          Partition 4
5    Active       2     1        cab0,cell2 Partition 5
```

parmodify

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
  - 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.

Synopsis

```
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 -h... -g... options must be specified to cause the command to send its management request using IPMI over LAN to a management processor in another server complex (but can also be used as a “loopback access” to the management processor in the local complex).
- The -h... -u... set of options must 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 and -u 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.

`-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.

- 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.

`-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 `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.

Note: For Windows nPartitions on HP Integrity servers, boot paths cannot be viewed or set using nPartition commands. Use the EFI Boot Manager or the Windows `bootcfg` command to view/configure boot paths for Windows nPartitions.

`-t path`

Specifies the alternate boot path.

Note: For Windows nPartitions on HP Integrity servers, boot paths cannot be viewed or set using nPartition commands. Use the EFI Boot Manager or the Windows `bootcfg` command to view/configure boot paths for Windows nPartitions.

`-s path`

Specifies the secondary boot path.

Note: For Windows nPartitions on HP Integrity servers, boot paths cannot be viewed or set using nPartition commands. Use the EFI Boot Manager or the Windows `bootcfg` command to view/configure boot paths for Windows nPartitions.

`-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 modify 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]`

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]` Allows access to the complex specified by the `-h` option. The accessed complex is then considered the target complex. Access is through the management processor LAN port.

The `-h` option is required if this option is used.

`passwd` specifies the IPMI password of the management 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 management processor (`-g`).

Example

In the following example, you connect to the server's management processor (MP) from your management station. The MP IP number is 192.168.24.68, and the MP password is "password". Since you are connecting remotely using IPMI over LAN, you must include the `-h... -g...` options with each command.

You use the `parstatus` command first (with the `-P` option) to gather information about the nPartitions in the complex. After viewing that information, you change the name of nPartition #3 ("Lab3") to "Goldilocks", using the `parmodify` command (with the `-P` option).

Finally, you issue the `parstatus` command again to verify the change.

Step 1. Open a command window on the management station (**Start > Run >** type **cmd >** click **OK**).

Step 2. At the command prompt, type the following:

```
parstatus -h 192.168.24.68 -g password -P
```

and press **Enter**.

Step 3. After the information displays, you change the name of nPartition #3 from "Lab3" to "Goldilocks" by typing the following:

```
parmodify -h 192.168.24.68 -g password -p 3 -P Goldilocks
```

and pressing **Enter**.

Step 4. After a brief period the command prompt reappears, indicating the change was successful. Verify the change by typing the following:

```
parstatus -h 192.168.24.68 -g password -P
```

and pressing **Enter**.

The entire sequence is shown here:

```
C:\>parstatus -h 192.168.24.68 -g password -P
Note: The -g option may require up to 2 minutes to complete.  Please wait...
```

```
[Partition]
Par              # of  # of I/O
Num Status       Cells Chassis  Core cell  Partition Name (first 30 chars)
=== ============ ===== ======== ========== ================================
0   Active       8     5        cab0,cell4 Partition 0
1   Inactive     1     1        ?          Partition 1
2   Active       2     2        cab1,cell0 Partition 2
3   Inactive     2     2        ?          Lab3
4   Inactive     1     1        ?          Partition 4
5   Active       2     1        cab0,cell2 Partition 5

C:\>parmodify -h 192.168.24.68 -g password -p 3 -P Goldilocks
Note: The -g option may require up to 2 minutes to complete.  Please wait...

C:\>parstatus -h 192.168.24.68 -g password -P
Note: The -g option may require up to 2 minutes to complete.  Please wait...

[Partition]
Par              # of  # of I/O
Num Status       Cells Chassis  Core cell  Partition Name (first 30 chars)
=== ============ ===== ======== ========== ================================
0   Active       8     5        cab0,cell4 Partition 0
1   Inactive     1     1        ?          Partition 1
2   Active       2     2        cab1,cell0 Partition 2
3   Inactive     2     2        ?          Goldilocks
4   Inactive     1     1        ?          Partition 4
5   Active       2     1        cab0,cell2 Partition 5
```

parremove

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. The local nPartition is either 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.
- parremove can remove an active, remote nPartition when both the -F option and the -h... -g... set of options are specified.

Synopsis

```
parremove -p PartitionNumber [-F]
```

- The -h... -g... options must be specified to cause the command to send its management request using IPMI over LAN to a management processor in another server complex (but can also be used as a "loopback access" to the management processor in the local complex).
- The -h... -u... set of options must 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 and -u options are mutually exclusive.

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]`

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]`

Allows access to the complex specified by the -h option. The accessed complex is then considered the target complex. Access is through the management processor LAN port.

The -h option is required if this option is used.

passwd specifies the IPMI password of the management 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 management processor (`-g`).

Example

In the following example, you connect to the server's management processor (MP) from your management station. The MP IP number is 192.168.24.68, and the MP password is "password". Since you are connecting remotely using IPMI over LAN, you must include the `-h... -g...` options with each command.

You use the `parstatus` command first (with the `-P` option) to gather information about the nPartitions in the complex. After viewing that information, you delete nPartition #3 (the one named "Goldilocks"), using the `parremove` command (with the `-F` option).

Finally, you issue the `parstatus` command again to verify the change.

Step 1. Open a command window on the management station (**Start > Run >** type **cmd >** click **OK**).

Step 2. At the command prompt, type the following:

```
parstatus -h 192.168.24.68 -g password -P
```

and press **Enter**.

Step 3. After the information displays, you delete nPartition #3 (the one named "Goldilocks") by typing the following:

```
parremove -h 192.168.24.68 -g password -p3 -F
```

and pressing **Enter**.

Step 4. The system indicates that now you must put the deleted nPartition into a "Shutdown for Reconfig" state for the change to take effect. Do this by issuing an `RR` command from the MP interface, or by logging into Windows on the deleted nPartition and issuing a "shutdown /r" command (**Start > Run >** type **shutdown /r > OK**).

Step 5. After shutting down the target nPartition, verify it is no longer active by typing:

```
parstatus -h 192.168.24.68 -g password -P
```

and pressing **Enter**.

The sequence of commands and results is shown here. Notice at the end how nPartition #3 is gone:

```
C:\>parstatus -h 192.168.24.68 -g password -P
Note: The -g option may require up to 2 minutes to complete.  Please wait...

[Partition]
Par              # of  # of I/O
Num Status       Cells Chassis  Core cell  Partition Name (first 30 chars)
```

```
=== ============ ===== ======== ========== ================================
0   Inactive     8     5        ?          Partition 0
1   Inactive     1     1        ?          Partition 1
2   Active       2     2        cab1,cell0 Partition 2
3   Active       2     2        cab1,cell2 Goldilocks
4   Inactive     1     1        ?          Partition 4
5   Active       2     1        cab0,cell2 Partition 5


C:\>parremove -h 192.168.24.68 -g password -p3 -F
Note: The -g option may require up to 2 minutes to complete.  Please wait...
Note: The specified partition has been marked for removal.
The partition must be shutdown for reconfiguration to complete the removal,
and to unlock the Stable Complex Configuration Data to allow modification of
other partitions.
On HP-UX use "shutdown -RH".
On Windows, shut down the OS on the partition using the Start menu or "shutdown -s" at a
Command Prompt.
If the partition is at the system firmware prompt, use the RR command on the MP.
```

NOTE Although not shown, here is the point where the deleted nPartition is put into a "Shutdown for Reconfig" state. Do this by issuing the `RR` command from the MP interface, or by logging into Windows on the deleted nPartition and issuing a "shutdown /r" command (**Start > Run >** type **shutdown /r >** click **OK**).

```
C:\>parstatus -h 192.168.24.68 -g password -P
Note: The -g option may require up to 2 minutes to complete.  Please wait...


[Partition]
Par              # of  # of I/O
Num Status       Cells Chassis  Core cell  Partition Name (first 30 chars)
=== ============ ===== ======== ========== ================================
0   Active       8     5        cab0,cell4 Partition 0
1   Inactive     1     1        ?          Partition 1
2   Active       2     2        cab1,cell0 Partition 2
4   Inactive     1     1        ?          Partition 4
5   Active       2     1        cab0,cell2 Partition 5
```

parstatus

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.

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...]
```

- The `-h... -g...` options must be specified to cause the command to send its management request using IPMI over LAN to a management processor in another server complex (but can also be used as a "loopback access" to the management processor in the local complex).
- The `-h... -u...` set of options must 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` and `-u` options are mutually exclusive.

Options

`-s`	Indicate (through `parstatus` exit status) whether the system is an HP server that supports nPartitions. Not supported with the `-h... -g...` options.
`-w`	Display the nPartition number for the local nPartition. Not supported with the `-h... -g...` options.
`-X`	Display the server complex attributes.
`-A`	Only display the available resources in the complex.
`-V`	Increase the amount of information displayed. 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]`

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]` Allows access to the complex specified by the `-h` option. The accessed complex is then considered the target complex. Access is through the management processor LAN port.

The `-h` option is required if this option is used.

`passwd` specifies the IPMI password of the management 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 management processor (`-g`).

Example

In the following example, you connect to the server's management processor (MP) from your management station to request status information about all of the nPartitions in the complex (`-P` option). The MP IP number is 192.168.24.68, and the MP password is "password". Since you are connecting remotely using IPMI over LAN, you must include the `-h... -g...` options.

Step 1. Open a command window on the management station (**Start > Run >** type **cmd >** click **OK**).

Step 2. At the command prompt, type the following:

```
parstatus -h 192.168.24.68 -g password -P
```

and press **Enter**.

Step 3. After a brief delay, the information displays. For example:

```
C:\>parstatus -h 192.168.24.68 -g password -P
Note: The -g option may require up to 2 minutes to complete.  Please wait...

[Partition]
Par              # of  # of I/O
Num Status       Cells Chassis  Core cell  Partition Name (first 30 chars)
=== ============ ===== ======== ========== ================================
0   Active       8     5        cab0,cell4 Partition 0
1   Inactive     1     1        ?          Partition 1
2   Active       2     2        cab1,cell0 Partition 2
3   Inactive     2     2        ?          Lab3
4   Inactive     1     1        ?          Partition 4
5   Active       2     1        cab0,cell2 Partition 5
```

parunlock

The `parunlock` command unlocks the Stable Complex Configuration Data or Partition Configuration Data. It can also unlock Dynamic Complex 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.

Synopsis

```
parunlock [-p PartitionNumber] [-s]

parunlock -A

parunlock [-b] [-c cell] [-P]
```

- The `-h... -g...` options must be specified to cause the command to send its management request using IPMI over LAN to a management processor in another server complex (but can also be used as a "loopback access" to the management processor in the local complex).
- The `-h... -u...` set of options must 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` and `-u` 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` Unlocks the Dynamic Complex Configuration Data of the target complex.

`-c cell` Unlocks the cell data of the specified `cell`.

`-P` Cancels any pending changes to the Stable Complex Configuration Data of the target complex.

`-A` Unlocks the Complex Configuration Data, the Dynamic Complex Configuration Data, and the Partition Configuration Data of all the nPartitions in the target complex.

`-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.
- `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 management processor LAN port.

The `-h` option is required if this option is used.

`passwd` specifies the IPMI password of the management 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 management processor (`-g`).

fruled

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.

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...]
```

- The `-h... -g...` options must be specified to cause the command to send its management request using IPMI over LAN to a management processor in another server complex (but can also be used as a “loopback access” to the management processor in the local complex).
- The `-h... -u...` set of options must 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` and `-u` options are mutually exclusive.

Options

`-f` Turn off specified attention LED(s). This is the default.

The `-f` and `-o` options are mutually exclusive.

`-o` Start blinking the specified attention LED(s). The `-o` option is unavailable with `-C` or `-I`.

`-B` Start or stop blinking the cabinet number LCD of the cabinet that contains the cell or I/O chassis.

The `-B` option is only available with `-c` and `-i`.

`-c cell`

link 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]`

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]` Allows access to the complex specified by the `-h` option. The accessed complex is then considered the target complex. Access is through the management processor LAN port.

The `-h` option is required if this option is used.

`passwd` specifies the IPMI password of the management 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 management processor (`-g`).

Example

In the following example, you connect to the server's management processor (MP) from your management station. The MP IP number is 192.168.24.68, and the MP password is "password". Since you are connecting remotely using IPMI over LAN, you must include the `-h... -g...` options with each command.

You want to find the core cell in nPartition #3 ("Frodo") so you can add more memory to it. But you're not sure which cell is the core, or where it's located in the cabinet.

You use the `parstatus` command first (with the `-P` option) to find out which cell is the core. Then you use the `fruled` command to turn off *all* cell indicator LEDs in the complex (-C option). Then you use the `fruled` command again to make the LEDs blink on the target cabinet and the cell itself (`-B` and `-c` options).

Step 1. Open a command window on the management station (**Start > Run >** type **cmd >** click **OK**).

Step 2. At the command prompt, type the following:

```
parstatus -h 192.168.24.68 -g password -P
```

and press **Enter**.

Step 3. You see that in "cab1/cell2" is the core cell in nPartition #3.

Type the following to turn off the indicator lights for all cells in the complex:

```
fruled -h 192.168.24.68 -g password -C
```

and press **Enter**.

Step 4. Type the following to make the indicator light blink on the target cell (indicated by "1/2", for "cab1/cell2"), and to make the number blink on the front of the cell cabinet:

```
fruled -h 192.168.24.68 -g password -o -B -c 1/2
```

The sequence of commands and results is shown here:

```
C:\>parstatus -h 192.168.24.68 -g password -P
Note: The -g option may require up to 2 minutes to complete.  Please wait...

[Partition]
Par              # of  # of I/O
Num Status       Cells Chassis  Core cell  Partition Name (first 30 chars)
=== ============ ===== ======== ========== ================================
0   Active       8     5        cab0,cell4 Partition 0
1   Inactive     1     1        ?          Partition 1
2   Active       2     2        cab1,cell0 Partition 2
3   Active       2     2        cab1,cell2 Frodo
4   Inactive     1     1        ?          Partition 4
5   Active       2     1        cab0,cell2 Partition 5

C:\>fruled -h 192.168.24.68 -g password -C
Note: No action specified. Default behaviour is (-f).
Note: The -g option may require up to 2 minutes to complete.  Please wait...

C:\>fruled -h 192.168.24.68 -g password -o -B -c 1/2
Note: The -g option may require up to 2 minutes to complete.  Please wait...

C:\>
```

frupower

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.
- The target nPartition may be different from the local nPartition when the `-u... -h...` options are specified.

CAUTION

When using the `frupower -h... -g...` 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.

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...]
```

- The `-h... -g...` options must be specified to cause the command to send its management request using IPMI over LAN to a management processor in another server complex (but can also be used as a “loopback access” to the management processor in the local complex).
- The `-h... -u...` set of options must 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` and `-u` options are mutually exclusive.

Options

`-d` Display power status of the specified cells or I/O chassis. This is the default.

`-o` Power on the specified cells or I/O chassis.

The `-o` and `-f` options are mutually exclusive. The `-o` and `-f` options are unavailable with `-C` and `-I`.

`-f` Power off the specified cells or I/O chassis.

`-c cell`

The specified `cell` is powered on/off or the power status is displayed.

A `cell` can be specified either in the local (`cabinet/slot`) or global (`cell_ID`) format.

`-i IOchassis`

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]`

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]` Allows access to the complex specified by the `-h` option. The accessed complex is then considered the target complex. Access is through the management processor LAN port.

The `-h` option is required if this option is used.

`passwd` specifies the IPMI password of the management 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 management processor (`-g`).

Example

In the following example, you connect to the server's management processor (MP) from your management station. The MP IP number is 192.168.24.68, and the MP password is "password". Since you are connecting remotely using IPMI over LAN, you must include the `-h... -g...` options with each command.

You want to view the power status for all cells in the complex. You use the `frupower` command (with the `-C` option). Then you use the `fruled` command to turn off *all* cell indicator LEDs in the complex (-C option). Then you use the `fruled` command again to make the LEDs blink on the target cabinet and the cell itself (`-B` and `-c` options).

Step 1. Open a command window on the management station (**Start > Run >** type **cmd >** click **OK**).

Step 2. At the command prompt, type the following:

```
frupower -h 192.168.24.68 -g password -C
```

and press **Enter**.

The sequence of commands and results is shown here:

```
C:\>frupower -h 192.168.24.68 -g password -C
Note: The -g option may require up to 2 minutes to complete.  Please wait...
Global cell 0; cabinet 0, cell 0 is powered off.
Global cell 1; cabinet 0, cell 1 is powered on.
Global cell 2; cabinet 0, cell 2 is powered on.
Global cell 3; cabinet 0, cell 3 is powered on.
Global cell 4; cabinet 0, cell 4 is powered on.
Global cell 5; cabinet 0, cell 5 is powered on.
Global cell 6; cabinet 0, cell 6 is powered on.
Global cell 7; cabinet 0, cell 7 is powered on.
Global cell 8; cabinet 1, cell 0 is powered on.
Global cell 9; cabinet 1, cell 1 is powered on.
Global cell 10; cabinet 1, cell 2 is powered on.
Global cell 11; cabinet 1, cell 3 is powered off.
Global cell 12; cabinet 1, cell 4 is powered on.
Global cell 13; cabinet 1, cell 5 is powered on.
Global cell 14; cabinet 1, cell 6 is powered on.
Global cell 15; cabinet 1, cell 7 is powered on.
```

cplxmodify

The cplxmodify command modifies attributes of an nPartition-capable server complex, such as the complex name.

Root permission is required to run this command.

Synopsis

```
cplxmodify -N ComplexName [ -u username:[passwd] -h IPaddress|hostname |
-g [passwd] -h IPaddress|hostname ]
```

- The -h... -g... options must be specified to cause the command to send its management request using IPMI over LAN to a management processor in another server complex (but can also be used as a “loopback access” to the management processor in the local complex).
- The -h... -u... set of options must 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 and -u 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.
- 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 management processor LAN port.

The -h option is required if this option is used.

passwd specifies the IPMI password of the management 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 management processor (-g).

6 Troubleshooting

Additional information about failures or error messages is usually obtained by examining the Application Event Log, or AEL. Locate the AEL by right-clicking on the **My Computer** icon on nPartition Window Server 2003 desktop and selecting **Manage** from the pop-up menu. In the Computer Management window, expand the **System**

Tools and **Event Viewer** items, then select **Application** by clicking on it. A list of system-wide Error, Warning, and Informational messages displays in the right pane of the window. To view detailed information about a specific message, double-click on it.

Installation problems

Services (WMI Mapper + nPartition Provider) fail to start during installation

Possible causes for this error are:

- You must be logged in with privileges (an account in the local Administrators group) to install/uninstall these components on the local system
- The Services Control Panel (**Start > Control Panel > Administrative Tools > Services**) was open during installation; it cannot be open during installation or the services will fail

nPartition Provider fails to start during installation

This problem is caused by a conflict between the version of the OpenSSL libraries used by nPartition commands/nPartition Provider and the versions installed by other tools. Currently, ActivCard Gold software is one source of this conflict.

Until the problem is resolved, reinstalling WMI Mapper (WMIMapper.msi) might fix the problem temporarily, but may also break the other software that relies on the incompatible version of OpenSSL.

A workaround for this problem is:

Step 1. Copy the OpenSSL dynamic link library files, or .dll's (LIBEAY32.dll and SSLEAY32.dll) from the %PEGASUS_HOME%\bin directory (usually at C:\Program Files\The Open Group\WMI Mapper\bin) to:

a) the WMINParProvider directory (usually C:\Program Files\Hewlett-Packard\WMINParProvider), and

b) the ParCLI directory (usually C:\Program Files\Hewlett-Packard\nParCommands)

Step 2. Move the string "%PEGASUS_HOME%\bin" from the front of the system path to the end of the system path (right-click: **My Computer > Properties > Advanced > Environment Variables**, and so on).

This should fix the problem for both the nPartition Tools and the other applications that were relying on the incompatible version of OpenSLL. This problem will be fixed in a future release of the nPartition Tools software.

Checking component installation and operation

Verify WMI Mapper installation

To verify that the WMI Mapper files are installed correctly, and are accessible via the current system PATH, open a Command Prompt window and run the following command:

```
wmiop ei Win32_ComputerSystem
```

This command requests that WMI enumerate the instances of all known objects of type Win32_ComputerSystem. If the WMI Mapper is installed and operating correctly, then output similar to the following should result (the specific values will be different for each machine; if obvious errors occur, you should uninstall and then reinstall the WMI Mapper component):

```
Instances of [Win32_ComputerSystem] (1 instances):

Instance of Win32_ComputerSystem:

{

 AdminPasswordStatus = 3

 AutomaticResetBootOption = TRUE

 AutomaticResetCapability = TRUE

 BootROMSupported = TRUE

 BootupState = "Normal"

 Caption = "FCTMARTIN"

 ChassisBootupState = 3

 CreationClassName = "Win32_ComputerSystem"

 CurrentTimeZone = -420

 DaylightInEffect = FALSE

 Description = "AT/AT COMPATIBLE"

 Domain = "DOMAIN-NAME"

 DomainRole = 3

 FrontPanelResetStatus = 3

 InfraredSupported = FALSE

 KeyboardPasswordStatus = 3

 Manufacturer = "Hewlett-Packard"

 Model = "HP Kayak PC"

 Name = "HOSTNAME"

 NetworkServerModeEnabled = TRUE
```

```
 NumberOfProcessors = 1
 OEMStringArray[?] = "SMBIOS 2.3 BIOS with HP DMI extensions "
 PauseAfterReset = -1
 PowerOnPasswordStatus = 3
 PowerState = 0
 PowerSupplyState = 3
 PrimaryOwnerName = "Joe Owner"
 ResetCapability = 1
 ResetCount = -1
 ResetLimit = -1
 Roles[?] = "LM_Workstation LM_Server NT Server_NT Backup_Browser "
 Status = "OK"
 SystemStartupDelay = 30
 SystemStartupOptions[?] = ""Microsoft Windows 2000 Server" /fastdetect "
 SystemStartupSetting = 0
 SystemType = "X86-based PC"
 ThermalState = 3
 TotalPhysicalMemory = 1341636608
 UserName = "DOMAIN-NAME\jowner"
 WakeUpType = 6
}
```

Verify WMI Mapper service with HTTP connection

This set of commands verifies that the WMI Mapper service is running and properly responding to client requests. Note that running the nPartition commands with the `-g` option (to connect remotely to the Management Processor on the partitionable system) does *not* go through the WMI Mapper service, so this test does not apply for those cases.

The following test uses a basic HTTP connection to the service, which eliminates any possible SSL/certificate problems. By default, the WMI Mapper service is configured for HTTPS/SSL connections only. Therefore this test will not work without first reconfiguring the service for HTTP connections. See the installed file %PEGASUS_HOME%\ConfigREADME.txt for instructions on how to configure the service. To test the default configuration (HTTPS connections), you should skip this test and use the next one instead.

Open a Command Prompt window and run the following commands:

```
set CIM_HOST=localhost
set CIM_USER=<domain\username>
set CIM_PASSWORD=<password for user, above>
```

```
set CIM_NOSSL=1

wmiop ei Win32_ComputerSystem
```

The output should be the same as in the previous test. If an error occurs, ensure that the WMI Mapper service is started. If not, start it and repeat the test. If it is running, you should uninstall and then reinstall the WMI Mapper component.

If you see the following error:

```
Cannot connect to localhost: 5988. Connection failed.
```

the most likely cause is that the server is not configured for HTTP connections.

As noted above, the default configuration is for HTTPS connections only. To configure the service for HTTP connections, open the %PEGASUS_HOME%\cimserver_planned.conf file and add/edit the following entry:

```
enableHttpConnection=true
```

Then restart (or stop, then start) the Pegasus WMI Mapper service from the **Services** control panel applet for the change to take effect.

Verify WMI Mapper service with HTTPS connection

This set of commands verifies that the WMI Mapper service is running and properly responding to client requests by secure HTTP. Note that running the nPartition commands with the `-g` option (to connect remotely to the Management Processor on the partitionable system) does not go through the WMI Mapper service, so this test does not apply for those cases.

The following test uses HTTPS/SSL connections to the service, which assumes the default WMI Mapper configuration for HTTPS/SSL connections. See the installed file %PEGASUS_HOME%\ConfigREADME.txt for instructions on how to configure the service.

Open a Command Prompt window and run the following commands:

```
set CIM_HOST=localhost

set CIM_USER=<domain\username>

set CIM_PASSWORD=<password for user, above>
```

The current directory must be where the client.pem file resides (either the PEGASUS_HOME or the HP_SSL_SHARE directories) so enter the following command:

```
cd %PEGASUS_HOME%
```

Finally, run the `wmiop` command:

```
wmiop ei Win32_ComputerSystem
```

The output should be the same as in the previous test. If an error occurs, you should uninstall and then reinstall the WMI Mapper component. If an SSL certificate problem is suspected, try deleting the entire %PEGASUS_HOME% and %HP_SSL_SHARE% directories after uninstalling and before reinstalling. This deletes all of the installed certificates, causing the certificates to be re-generated during installation.

Verify WMI nPartition Provider registration

To check if the nPartition Provider is properly registered in WMI, open a command prompt and run the following commands:

```
set CIM_NAMESPACE=root/cimv2/npar

wmiop ecn
```

The output should appear like this, indicating the nPartition Provider is properly registered in WMI:

```
Classes in namespace [root/cimv2/npar]:

__SystemClass

__NAMESPACE

__Provider

__Win32Provider

HP_DecoupledProvider

__ProviderRegistration

__ObjectProviderRegistration

__InstanceProviderRegistration

__ClassProviderRegistration

__PropertyProviderRegistration

__MethodProviderRegistration

__EventProviderRegistration

__EventConsumerProviderRegistration

__CIMOMIdentification

__IndicationRelated

__Event

__ExtrinsicEvent

__SystemEvent

__EventDroppedEvent

__EventQueueOverflowEvent

__ConsumerFailureEvent

__NamespaceOperationEvent

__NamespaceCreationEvent
```

```
__NamespaceDeletionEvent
__NamespaceModificationEvent
__ClassOperationEvent
__ClassCreationEvent
__ClassDeletionEvent
__ClassModificationEvent
__InstanceOperationEvent
__InstanceCreationEvent
__InstanceDeletionEvent
__InstanceModificationEvent
__TimerEvent
__AggregateEvent
__EventConsumer
__EventFilter
__FilterToConsumerBinding
__EventGenerator
__TimerInstruction
__AbsoluteTimerInstruction
__IntervalTimerInstruction
__TimerNextFiring
__NotifyStatus
__ExtendedStatus
__SecurityRelatedClass
__NTLMUser9X
__PARAMETERS
__SystemSecurity
CIM_ManagedElement
CIM_ManagedSystemElement
CIM_LogicalElement
HP_NParSlot
HP_NParCellSlot
HP_NParIOChassisSlot
HP_NParCabinet
HP_NParPowerCoolingDomain
HP_NParPotentialErrorObject
HP_NParComponent
```

```
HP_NParCell
HP_NParIOChassis
HP_NParProfile
HP_NParComplex
HP_NParPartition
HP_NParDynamicProfile
HP_NParCellConnectedToIOChassis
HP_NParComponentInSlot
HP_NParIOChassisInSlot
HP_NParCellInSlot
HP_NParSlotInCabinet
HP_NParCellSlotInCabinet
HP_NParIOChassisSlotInCabinet
HP_NParCellSlotInPartition
HP_NParDomainInCabinet
HP_NParLocalPartition
HP_NParRemoteComplex
```

If an obvious error occurs, or if the output looks significantly different from what is shown above, you should uninstall and then reinstall the nPartition Provider. This will re-register the provider with WMI.

Verify WMI nPartition Provider operation

To check if the nPartition Provider is running properly and responding to client requests, open a command prompt and run the following commands:

```
set CIM_NAMESPACE=root/cimv2/npar
wmiop ci HP_NParRemoteComplex
```

When prompted, enter the following information:

```
[ key ] string Address? <Management Processor hostname or IP>
string Password? <MP Admin password>
```

If successful, you should see the following message:

```
Instance [root/cimv2/npar:HP_NParRemoteComplex.Address="<mp address>"]
successfully created!
```

Otherwise, if you see the following error:

```
Error: [6] CIM_ERR_NOT_FOUND: The requested object could not be found.
```

This indicates that the nPartition Provider is either not running, or not handling requests appropriately. Verify that the WMI nPartition Provider service is started. If not, start it from the Services control panel, or reboot and repeat the test. If the service is started, you should uninstall and then reinstall the nPartition Provider.

Operational problems

The problems described below are generally associated with the use of specific commands. They are grouped in alphabetical order, by command, with any generic or non-specific problems listed at the end.

All commands: ordinal not found

This problem may be due to a conflict between the version of the OpenSSL libraries used by the nPartition commands and nPartition Provider and the versions installed by other tools. Currently, ActivCard Gold software is one source of this conflict.

This problem manifests itself in other ways too. For a complete description and solution, refer to “nPartition Provider fails to start during installation” on page 145.

All commands: required data unavailable or locked

Because of data locking within the MP, issuing an nPartition command may display an error message stating that required data is temporarily unavailable or locked. For example, this can happen if multiple daemons, services, applications or administrators are simultaneously accessing cell information, the stable complex configuration data, or the partition configuration data on the MP. It can also happen when long or unreliable network connections exist between the MP and the remote management PC, or if the MP is busy with some other internal operation.

This condition is normally transient. If it occurs, retry the command; it should succeed when tried again. If the locked data condition persists it can be remedied with the `parunlock` command. Use the `parunlock` command carefully, however. Make sure the locked data is not currently being used by another user or process before issuing the command.

`Fruled`: LED error messages (rx8620 and rx7620 only)

When using the `fruled` command with the rx8620 or rx7620, you will see the following error message:

```
Error: LED operation on cabinet number failed.
Error: LED operation on component number failed.
```

This is not really an error, since the HP Integrity rx8620 and rx7620 do not have I/O chasses or cabinet LEDs.

`Frupower`: cannot power off error

When using the `frupower` command, you may see the following error message:

```
ERROR: Cannot power off I/O chassis x/x/x (your chassis number).
Chassis is attached to inactive cell x (your cell number).
Please turn cell power off.
```

You will see this error message if you try to power off an I/O chassis independently from its attached cell. This can only be done successfully in very limited circumstances. See the on-line documentation for the `frupower` command for those circumstances. HP recommends that customers power off the cell, which automatically powers off the I/O chassis.

`Parcreate -c -v`: apparent incorrect output

This issue occurs when the `parcreate -c -V` command *appears* to give incorrect output. In reality this is not an error, since the output displayed for "CPU Type" is only relevant with PA-RISC systems. This output should be ignored, since it is not valid for Integrity servers running Windows Server 20003.

`Parcreate -p -v`: apparent incorrect output

This issue occurs when the `parcreate -p -V` command *appears* to give incorrect output. In reality these are not errors at all, since the output displayed for "PDC Revision" should be interpreted as your "system firmware revision". Also, the output displayed for "IODCH Version" (seen as "`FFFF`") is only relevant with PA-RISC systems. This output should be ignored, since it is not valid for Integrity servers running Windows Server 20003.

`Parcreate` and `parmodify`: cell local memory warnings

When using the `parcreate` or `parmodify` commands along with the option to set or modify the amount of Cell Local Memory (CLM), you may see the following warning:

```
WARNING: Unable to determine if the target partition supports cell local
memory.
```

This is normal behavior. The OS that is running (or will be installed) on the partition cannot be determined remotely by `parcreate` or `parmodify`, but Windows 2003 Server does in fact support CLM.

`Parcreate`, `parmodify`, and `parremove`: failure to update stable complex configuration data (SCCD)

You may see the following errors when using `parcreate` or `parmodify` to add or remove cells from a partition, or to modify the CLM values for cells in a partition, or when using `parremove` to remove a partition.

```
ERROR: The Partition Configuration Data was written out, but could not
write Stable Complex Configuration Data. Attempts to undo the Partition
Configuration Data changes have failed. As a result, options which cause
partition reconfiguration i.e., addition or deletion of cells have
failed, all other options have succeeded.
```

Subsequent attempts to run other commands may result in either:

```
ERROR: Unable to update the Stable Configuration Data.
```

or:

```
ERROR: Failed to connect to target partition or complex.
```

This error can occur when the command attempts to update the SCCD with the complex name set to its initial default value of 20 blank spaces.

To troubleshoot this problem take the following steps:

Step 1. Verify you have network connectivity by telnetting to the MP and successfully logging in.

Step 2. Verify that the nPartition provider is running. To do this, go to the Windows Service Management Console by using a Windows menu path of **Start > Control Panel > Administrative Tools > Services**. Find the service named WMINParProvider and make sure it is started. If it hasn't, click on the WMINParProvider service and use the Start context menu action to start it. If the service is missing, you must re-install it (See "Installing the tools and additional components" on page 31).

Step 3. If you see errors in updating the SCCD, ensure that the SCCD is unlocked by issuing the command: `parunlock -s -g -h <hostname of MP>.`

Step 4. Check whether the complex name has been set with the `parstatus -X -g -h <hostname of MP>` command. Set the complex name to any string other than all blanks (this is the default setting) using the `cplxmodify` command:

```
cplxmodify -N yourcomplexname -g -h <hostname of MP>
```

See the on-line documentation or refer to "cplxmodify" on page 142 for details on the valid syntax of complex names.

At this point, you should be able to continue to successfully create and modify your nPartitions.

NOTE HP recommends that the complex name be set immediately as the first action, once a complex is set up, to prevent this error.

NOTE The message, `Error: Unable to update the Stable Complex Configuration Data`, can also occur if some other administrator or application has locked the SCCD at the time the `parcreate`, `parmodify`, or `parremove` commands were run.

`Parremove`: shutdown and reset instructions

After using the `parremove` command to remove an active partition, you may see the following message:

```
C:\>parremove -x x -x -x xx.xxx.xx.xxx -g Admin
```

NOTE The -g option may take up to 2 full minutes to complete, so please be patient.

The correct response to this message is to first perform a Windows operating system shut-down for the partition, using either the `Shutdown` command or a Windows menu path of **Start > Shutdown**. Once the partition is back at the system firmware (EFI) prompt, login to the MP and use the `RR` command to put the partition into the Shutdown for Reconfiguration mode. Another method is to just enter `reset` at the EFI shell. Either method propagates the configuration changes to all of the cells in the partition.

HP recommends that in the future you place the OS into this mode *before* using the `parremove` command.

`Parstatus:` local partition error

After using the `parstatus` command you may see the following message:

```
Note: The -g option may require up to 2 minutes to complete. Please
wait...
Error: Unable to get the local partition number.
```

This error occurs when the `-w` and `-g` options are used in the same command. This is actually a syntax error, since there is no local partition when using the `-g` option.

`Parstatus:` unable to get read lock error

After using the `parstatus` command you may see the following message:

```
Note: The -g option may require up to 2 minutes to complete. Please
wait...
Error: Unable to get read lock for partition.
```

This error occurs when a lock has been placed on the partition. The lock may have been issued by an Administrator or by an application. If it was issued by an application that has terminated, you can remove it using the `parunlock` command.

Using WMIOP.EXE to pinpoint problems

When relying on multiple software components that are running simultaneously, locating the source of a problem can sometimes be difficult. In cases where an error message does not adequately describe the source of the problem, or when the error could have multiple causes, using the “wmiop.exe” utility that is included with the WMI Mapper component can help track the problem down.

Wmiop.exe is installed in the %PEGASUS_HOME%\bin directory. Since this directory is added to the PATH during installation, wmiop can be executed from any directory. If it cannot, that is your first indication that something is wrong, most likely that your PATH environment variable is not set correctly (See “Environment variables” on page 36).

Syntax for the wmiop utility is described below (an abbreviated usage explanation can also be viewed from the command line by running `wmiop` with no options):

Usage:

```
wmiop <cimoperation> [arg, ...]
```

Implemented operations (not case sensitive) are:

```
getClass|gc <class>
enumerateClassNames|ecn [ <class> ]
getInstance|gi <class> [ list ]
enumerateInstances|ei <class>
enumerateInstanceNames|ein <class>
getProperty|gp <class> { ask | list } [ <propnam> ]
setProperty|sp <class> { ask | list } [ <propnam> [ <value> ] ]
deleteClass|dc <class>
createInstance|ci <class>
modifyInstance|mi <class> [ list ]
deleteInstance|di <class> [ list ]
```

Examples:

```
wmiop ecn
wmiop enumerateinstancenames Win32_OperatingSystem
wmiop gi Win32_Process list
wmiop ei Win32_ComputerSystem
```

Environment variables:

CIM_NAMESPACE -- if not defined use root/cimv2

CIM_HOST -- local connect if not defined

CIM_PORT -- port number (default determined by CIM_NOSSL)

CIM_NOSSL -- if defined, connect unencrypted to 5988, else 5989

CIM_USER -- user

CIM_PASSWORD -- password

Notes:

- Set the value for CIM_NAMESPACE appropriately, so that instances of __Namespace can be enumerated, created, and deleted.
- Set the CIM_NAMESPACE variable to the correct and desired namespace before running the WMIOP application.
- If an invalid classname is provided, the application will abort.
- Do not redirect WMIOP output to a file. Some operations require user input after the command line call and these inputs cannot be omitted.

Error messages and corrective actions

nPartition commands messages

The following messages are written to standard output by the commands. This list does not include messages resulting from syntax errors, or errors caused by attempting a change that is not valid for the current configuration (for example, removing a cell from a partition when the cell was not assigned to that partition in the first place). Those messages are generally self-explanatory.

Table 6-1 nPartition commands messages

Message	Cause	Recommended Action
Cannot connect.	1. The nPar Provider you are attempting to use is not running. If using the `-h` option, check your local management system's nPar provider. If you are using the `-u` option, verify the nPar provider on the remote target nPartition. 2. MP is not available on the network. 3. MP settings are incorrect.	1. Make sure the nPar Provider component is installed. On Windows, verify the nPar provider service is running using the **Start > Control Panel > Administrative Tools > Services** applet. 2. Verify you have network connectivity by telnetting to the MP and successfully logging in. 3. Telnet to the MP. Enter Commands Menu and enable IPMI LAN access with the `SA` command, and set an IPMI password with the `SO` command.
Unsupported platform.	1. Command was run on the local system, which is not a partitionable server. 2. With `-u` and `-h` options, target host is not a partitionable server.	1. Use the `-g` and `-h` options or the `-u` and `-h` options to specify a partitionable complex as the target of the operation. 2. Specify the hostname or IP address of an nPartition.
The nPartition Configuration Privilege of the target complex is restricted.	The MP is set to disallow changes to the configuration of any nPartition except the one from which the request is made.	This can only occur when using the `-u` option. In that case, specify the nPartition that will be altered as the target in the `-h` option.

Table 6-1 nPartition commands messages (Continued)

Message	Cause	Recommended Action
Cannot determine the state of the nPartition Configuration Privilege.	The command cannot retrieve this data from the provider. In most cases, this is caused by excessive lost packets during data retrieval.	Retry the command, or use a management PC with more reliable network communications to the MP.
Cannot determine if the platform is partitionable.	1. See "Unsupported Platform" above. 2. The command cannot retrieve this data from the provider. In most cases, this is caused by excessive lost packets during data retrieval.	1. See "Unsupported Platform" above. 2. Retry the command or use a management PC with more reliable network communications to the MP.
Cannot write the Stable Complex Configuration Data. Cannot write the Partition Configuration Data. Unable to update the Stable Complex Configuration Data.	The referenced data is inaccessible or was left in a locked state. See the AEL entry for more information.	If the data was left locked, use the `parunlock` command to unlock it. See "parunlock" on page 134, or the on-line help for the `parunlock` command.
Cannot lock Stable Complex Configuration Data. Unable to read lock for partition. Cannot lock Partition Configuration Data. Cannot lock cell data for cell <n>.	The referenced data was locked when the command attempted to access it.	First retry the command. The data is normally locked only for short periods. If the data remains locked, use the `parunlock` command to unlock it. See "parunlock" on page 134, or the on-line help for the `parunlock` command.

Table 6-1 nPartition commands messages (Continued)

Message	Cause	Recommended Action
Cannot read <info>. Unable to read <info>. Unable to get <info>. No information available for <component>. <Component> information unavailable.	In most cases, these messages are caused by lost datagrams over an unreliable network connection. See the AEL entry for more information. <info> identifies the specific data that is not available. <component> identifies the specific component for which data was not available.	Retry the command, or use a management PC with a more reliable network connection to the target MP or nPartition. NOTE: This error may occur if `-w` and `-g` options are used in the same command. This condition should be reported by the `parstatus` command as a syntax error because there is never a local partition when using the `-g` and `-h` option combination.
LED operation on <component> failed.	Attempted to turn on or off an LED that does not exist on the target complex. Only Superdome servers support all LEDs. Midrange partitionable servers (like rx8620) do not have cabinet or I/O chassis LEDs. See the AEL entry to confirm this.	Do not specify a non-existent LED.

Application Event Log messages

Due to limitations in the Microsoft WMI implementation, some of the error message data returned by the nPartition provider are not transmitted through the WMI server to the client command when the error occurs. However, under Windows, the provider logs the error data in the Application Event Log (AEL). Additional information about an error is obtained by examining the most recent entries logged by the nPartition provider in the AEL.

Access the AEL from the context menu of the **My Computer** desktop icon. Select **My Computer > Manage**, and when the application opens select **System Tools > Event Viewer > Application** in the left hand pane. Select the desired entry in the right hand pane and then choose **Properties** from the context menu to see the message itself.

After retrieving the error message from the AEL, refer to the following table to locate that message and see the recommended course of action. In some cases, additional information will follow the general message shown in the table below.

Table 6-2 Application Event Log messages

Message	Cause	Recommended Action
Operation failed.	Request could not be completed.	See additional information in AEL.
Firmware error.	System firmware failed to perform the requested operation.	
Service processor error.	MP firmware failed to perform requested operation.	
The power-on request could not be satisfied because an N- power condition would result.	There is insufficient system power to service a cell that was specified to be powered on.	Add additional power supplies or replace a defective power supply.
The power-on request could not be satisfied because an insufficient cooling condition would result.	There is insufficient system cooling to service a cell that was specified to be powered on.	Add additional fans or blower units or replace a defective fan or blower.
Timed out waiting for a response.	Datagram was lost.	Retry command or use a management PC with a more reliable connection to the target MP or nPartition.
Insufficient privilege to perform the operation.	Requesting user does not have permission to perform the requested operation.	Run the command as Administrator or “root”.
Invalid user name.	Username specified in the request was not valid on the target nPartition.	Use a valid username.
Operation is only supported by the local operating system.	The requested operation can only be performed by a provider running on the nPartition. It cannot be performed through the MP.	Use the `-u` option with the command.
Operation is not supported by the firmware.	The system firmware does not support the requested operation.	Cannot perform the request on this target system. May require updating the system firmware.

Table 6-2 Application Event Log messages (Continued)

Message	Cause	Recommended Action
Operation is not supported by either operating system or firmware.	Neither the local OS nor system firmware supports the requested operation.	Cannot perform the request on this target system. May require updating the OS or system firmware.
Operation is not supported by the provider.	The provider does not support the requested operation.	Update the provider to the most current revision.
Invalid parameter	Invalid data passed with the request; for example, an invalid cell id.	
The specified item does not exist.	The specified component does not exist; for example, a cell that is not installed in the complex.	
The system interface version does not match that expected by the provider.	The version of IPMI on the target MP is unexpected. This is normally caused when the target platform has an MP that supports IPMI, but is not partitionable.	Specify a partitionable complex MP as the target of the operation.
The service processor does not support I/O expansion cabinets.	A request for data about an I/O expansion cabinet was requested on a platform that does not support them (for example, the rx7620).	Cannot perform the requested operation on this platform.
Operation is not supported by the platform.	A request was made that is supported by the platform. Generally, this would be caused by running a command intended for a later model of a system on an earlier model that does not support the feature.	Cannot perform the requested operation.
Locking or unlocking the target failed.	The target of the lock was already locked, or the lock was held by a different process.	Retry the command. If necessary, use the `parunlock` command to unlock the data.

Table 6-2 Application Event Log messages (Continued)

Message	Cause	Recommended Action
Command processing resources are temporarily unavailable.	The MP is busy with another request.	Retry the command.
IPMI session error.	Error in the IPMI communication between the provider and the MP.	Retry the command.
No changes can be made because the profile is already in the process of being changed.	Another user has initiated a complex reconfiguration. Until the MP has completed that configuration, you cannot perform another.	Retry the command at a later time.
Locking or unlocking the target failed because the MP has target locked.	The MP has locked the requested data for internal use.	Retry the command at a later time.
The platform is not supported.	The target is not a partitionable complex.	
The system is not using a compatible version of IPMI.	The target of the operation is not a partitionable complex.	