COMPAQ

AlphaServer GS80/160/320

Getting Started with Partitions

Order Number: EK-GSPAR-RM. A01

This manual is for users and field service engineers for *Compaq AlphaServer* GS80/160/320 systems. It describes the partitioning capabilities provided by the firmware for these systems.

Compaq Computer Corporation

First Printing, September 2000

FCC Notice

This equipment generates, uses, and may emit radio frequency energy. The equipment has been type tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC rules, which are designed to provide reasonable protection against such radio frequency interference.

Operation of this equipment in a residential area may cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Any modifications to this device—unless expressly approved by the manufacturer—can void the user's authority to operate this equipment under part 15 of the FCC rules.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Compaq Computer Corporation may void the user's authority to operate the equipment.

Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Taiwanese Notice

警告使用者:

這是甲類的資訊產品，在居住的
環境中使用時，可能會造成射頻
干擾，在這種情況下，使用者會
被要求採取某些適當的對策。

Japanese Notice

に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Canadian Notice

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Avis Canadien

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union Notice

Products with the CE Marking comply with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms (in brackets are the equivalent international standards):

EN55022 (CISPR 22) - Electromagnetic Interference

EN50082-1 (IEC801-2, IEC801-3, IEC801-4) - Electromagnetic Immunity

EN60950 (IEC950) - Product Safety

Warning!

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Achtung!

Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

Attention!

Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.

Contents

Chapter 5 Defining Soft Partitions

Chapter 6 Displaying Soft Partition Status

Chapter 7 Setting Up and Booting Partitions

Chapter 8 Tips and Troubleshooting

Appendix A Blank Forms for Planning Partitions

Index

Examples

Figures

Tables

Preface

Intended Audience

This manual is for users and field service engineers for *Compaq AlphaServer* GS80/160/320 systems. It describes the partitioning capabilities provided by the firmware for these systems.

Document Structure

This manual uses a structured documentation design. Topics are organized into small sections, usually consisting of two facing pages. Most topics begin with an abstract that provides an overview of the section, followed by an illustration or example. The facing page contains descriptions, procedures, and syntax definitions.

This manual has eight chapters and one appendix.

- **Chapter 1, Introduction,** briefly describes hard and soft partitions and their uses.
- **Chapter 2, Configuration Rules and Tips,** describes the hardware, firmware, and software requirements for partitioning a system, as well as tips for planning and operating a partitioned system.
- **Chapter 3, Defining Hard Partitions,** describes the SCM environment variables that must be set to define hard partitions, and the SCM **power on** command that initializes hard partitions.
- **Chapter 4, Displaying Hard Partition Status,** describes the SCM and SRM commands that can be used to display the makeup and components of hard partitions on your system.
- **Chapter 5, Defining Soft Partitions,** describes the steps used to define soft partitions, including setting SRM environment variables and the SRM **lpinit** command.
- **Chapter 6, Displaying Soft Partition Status,** describes the SCM and SRM commands that can be used to display the makeup and components of soft partitions on your system.

- **Chapter 7, Final Preparation and Booting an Operating System,** discusses the environment variables that must be set in each partition prior to booting, and shows examples of booting an operating system in a partition.
- **Chapter 8, Tips and Troubleshooting,** describes some things you may want to do after you have started using partitions on your system.
- **Appendix A, Blank Forms for Planning Partitions,** provides blank diagrams you may use to plan partitions on your system.

Documentation Titles

Table 1 Compaq Hardware Documentation

Title	Order Number
AlphaServer GS80/160/320 Documentation Kit	QA-6GAAA-G8
AlphaServer GS80/160/320 User's Guide	EK-GS320-UG
AlphaServer GS80/160/320 Firmware Reference Manual	EK-GS320-RM
AlphaServer GS80/160/320 Getting Started with Partitions	EK-GSPAR-RM
AlphaServer G160/320 Installation Guide	EK-GS320-IN
AlphaServer GS80 Installation Guide	EK-GSR80-IN
AlphaServer GS80/160/320 User Information CD (HTML files)	AG-RKSWB-BE
AlphaServer GS80/160/320 User Information CD (translations)	AG-RLVJA-BE
AlphaServer GS80/160/320 Service Documentation Kit	QA-6GAAB-G8
AlphaServer GS80/160/320 Service Manual	EK-GS320-SV
AlphaServer GS80/160/320 Firmware Reference Manual	EK-GS320-RM
AlphaServer GS80/160/320 Service Information CD	AG-RKSZ*-BE
AlphaServer GS80/160/320 System Management Console Installation and User's Guide	EK-GSCON-IN
AlphaServer GS160/320 Upgrade Manual	EK-GS320-UP
AlphaServer GS80 Upgrade Manual	EK-GSR80-UP
AlphaServer GS80/160/320 Site Preparation	EK-GS320-SP

Table 2 Related Software Documentation

Title	Order Number
Tru64 UNIX Installation Guide	AA-RH8SC-TE
Tru64 UNIX System Management	AA-RH9FC-TE
OpenVMS Alpha Version 7.2-1H1 New Features and Release Notes	AA-RLMUA-TE
OpenVMS Alpha Galaxy and Partitioning Guide	AA-REZQC-TE

Information on the Internet

Visit the Compaq Web site at http://www.compaq.com/site_index.html for service tools and more information about the system.

Chapter 1
Introduction

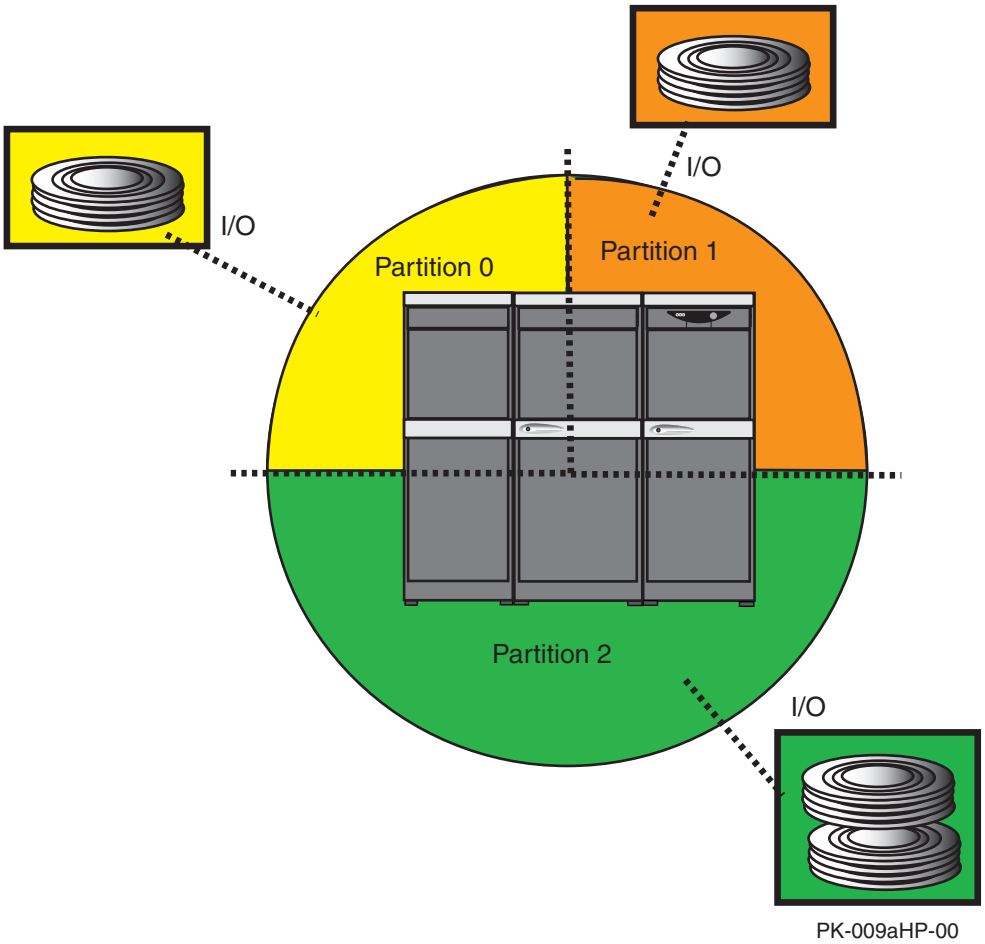
This chapter introduces partitions on the *Compaq AlphaServer* GS80, GS160, and GS320 systems. Sections include:

- Dividing a System into Partitions
- Using Partitions
- Accessing Partitions at the System Management Console
- Hard and Soft Partitions
  - Hard Partitions
  - Soft Partitions
- Overview of the Partitioning Process

1.1 Dividing a System into Partitions

Firmware on the AlphaServer GS80/160/320 systems allows the system to be divided into separate partitions, each running an instance of an operating system.

Figure 1–1 Dividing a System into Partitions



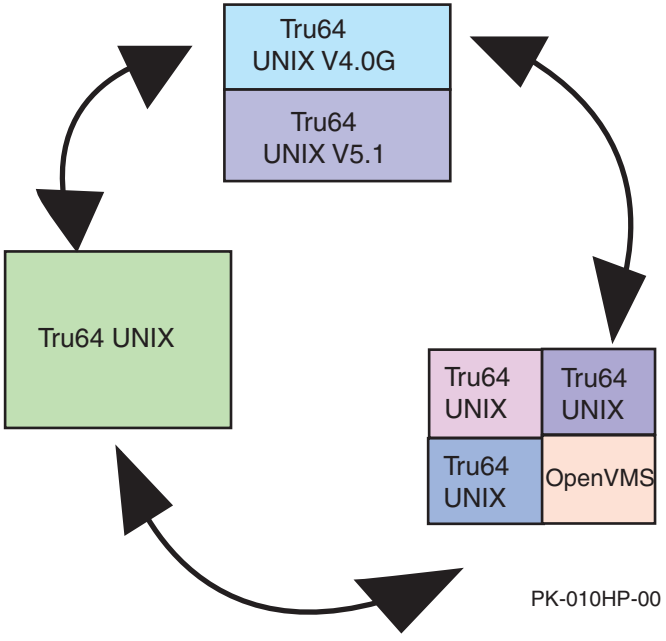
Multiple copies, or *instances*, of the *Tru64 UNIX* and/or *OpenVMS* operating systems can be run on *AlphaServer* GS80/160/320 systems. With partitions, one of these systems can be segmented into several smaller systems. Figure 1–1 illustrates the concept of partitioning; one *AlphaServer* GS320 system, including processors, memory, and I/O, is divided into three separate partitions.

For example, suppose that an installation has requirements to run applications under the *OpenVMS* operating system, and also needs to run applications under the *Tru64 UNIX* operating system. Partitioning is one way of dividing hardware resources such that separate operating systems, each with their own applications, can run in each partition.

For another example, suppose that you wish to upgrade your *Tru64 UNIX* V4.0G operating system to V5.1, but wish to keep running the old applications at the same time as testing the revisions for the upgrade. Separate partitions can be defined so that one partition runs V4.0G and another partition runs V5.1.

Further, partitions can be reallocated as required. Figure 1–2 shows how partitions might be reallocated over a period of time on a system.

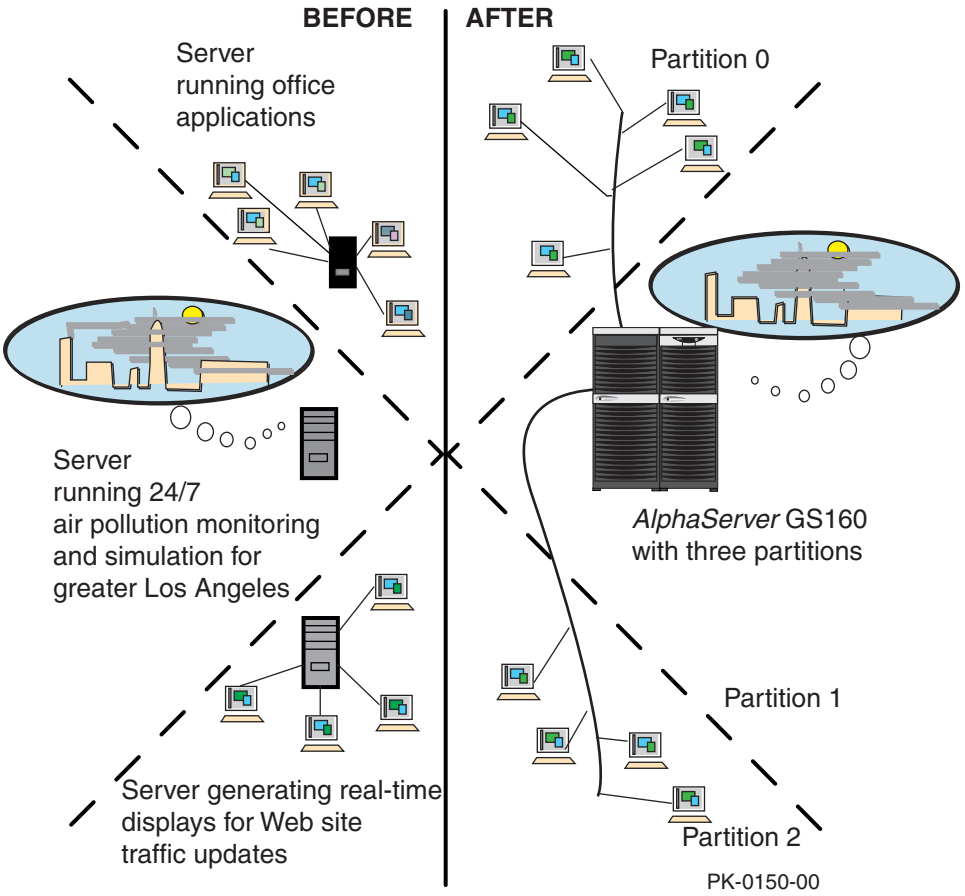
Figure 1–2 Reallocation of Partitions



1.2 Using Partitions

Partitions can be used to consolidate the work done by separate, small servers into one larger server.

Figure 1–3 Using Partitions to Consolidate Resources



One reason for using partitions is to consolidate resources, as shown in Figure 1–3.

The left side of the figure shows three separate servers, each performing user tasks in a separate environment. The right side of the figure shows that these same functions can be performed on one larger server, using partitions.

In a partitioned system, most hardware failures affect only the partition in which they occur. Thus, partitions maintain system reliability by isolating such hardware failures.

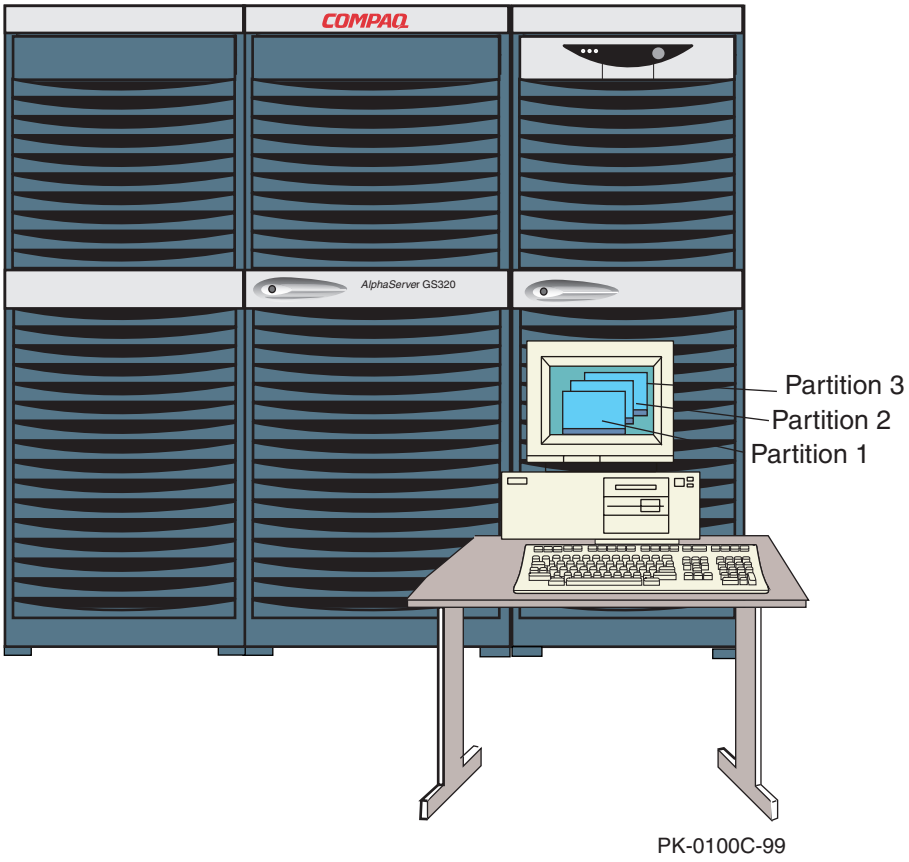
Also, businesses may wish to support applications on a known, tested system at the same time as debugging a new system. Partitions provide the means to separate the activities in different partitions.

These and other applications of partitioning are described for *Tru64 UNIX* systems in the Compaq white paper *Managing Workload with System Partitions and Resource Management* (http://tru64unix.compaq.com/unix/literature.htm) *OpenVMS Galaxy* partitioning opportunities are discussed in the white paper *on Reducing Business Risk with the New Compaq AlphaServer GS Series Systems Running OpenVMS* (http://www.openvms.compaq.com/gsseries/index.html).

1.3 Accessing Partitions at the System Management Console

A local user or service engineer interacts with partitions through the system management console. The system management console is connected directly to the system. A user may also communicate with a partition remotely through the use of a modem.

Figure 1–4 System Management Console



Partitions are accessed through either a local or remote *console device*. A console device may consist of a serial display monitor and a keyboard, or a terminal emulator on a PC, UNIX, or VMS workstation attached to the system.

Figure 1–4 shows the system management console monitor with windows for three partitions open on the monitor screen. (See the *AlphaServer GS80/160/320 System Management Console Installation and User's Guide* for information about this console device.) In this case, a terminal emulator displays the screens; the commands typed at each screen direct the firmware to perform the actions requested within a particular partition.

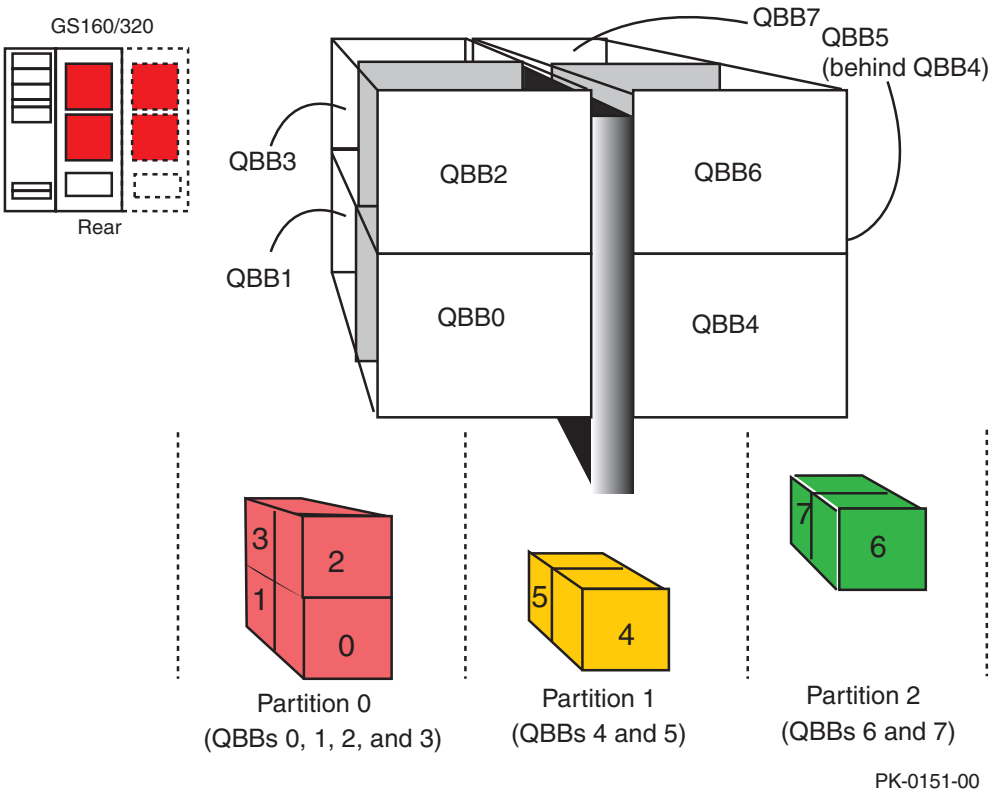
1.4 Hard and Soft Partitions

The firmware supports two types of partitions: hard (for *OpenVMS* and *Tru64 UNIX* systems) and soft (for *OpenVMS Galaxy* systems).

1.4.1 Hard Partitions (Tru64 UNIX and OpenVMS)

Hard partitions are defined using the SCM firmware by naming the QBBs in each partition. Resources cannot be shared between hard partitions.

Figure 1–5 Hard Partitions



As shown in Figure 1–5, hard partitions are defined along QBB boundaries. The figure shows a GS320 system containing eight QBBs divided into three hard partitions.

There is no sharing of CPU, memory, or I/O resources between hard partitions. The boundaries of these partitions are considered "hard." An instance of an operating system may run in each hard partition; these instances run completely independently of each other.

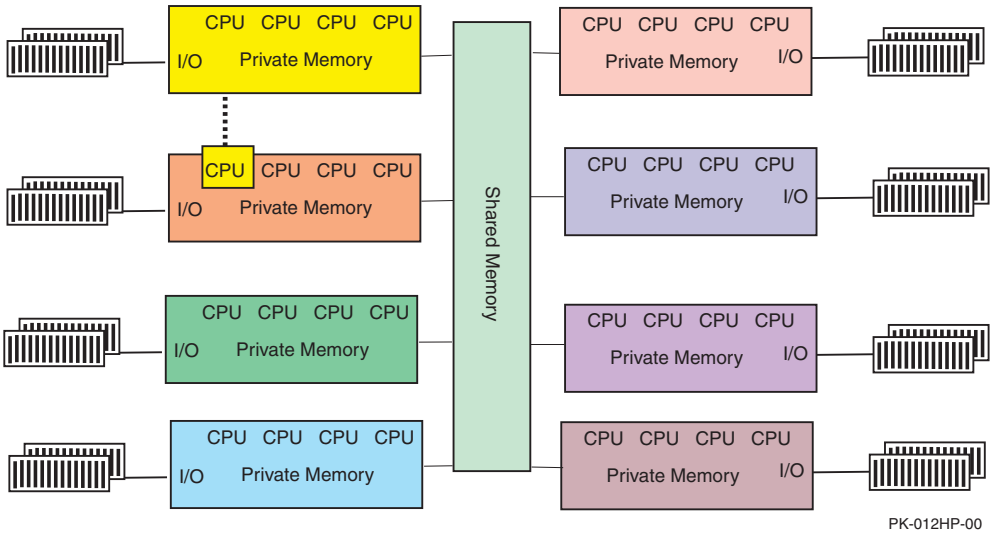
Tru64 UNIX instances do support individual applications using a specified percentage of a given resource, such as processor sets. This type of resource partitioning is described in detail in the *Tru64 UNIX System Management* manual.

OpenVMS implements resource sharing differently, building on SRM firmware-based entities called *soft partitions,* discussed next.

1.4.2 Soft Partitions (OpenVMS Galaxy)

Soft partitions are defined by naming the specific CPUs, memory allocation, and I/O modules comprising each partition. CPUs can be reassigned from one instance to another as computation load changes. Also, soft partitions allow instances to share memory. *OpenVMS Galaxy* is an implementation of soft partitions.

Figure 1–6 Soft Partitions – Memory Sharing and Dynamic CPU Allocation



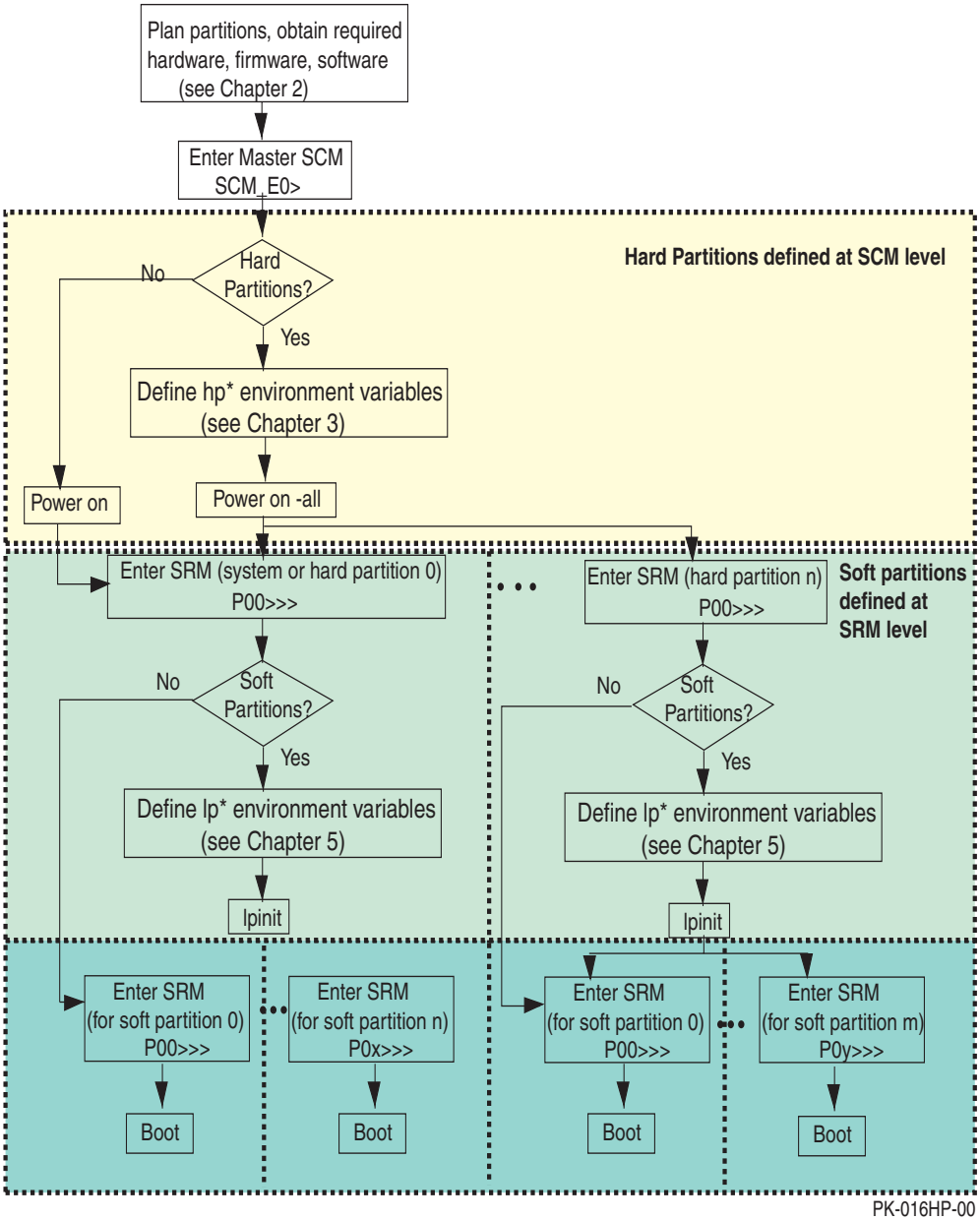
Soft partitions allow the definition of a portion of memory as shared memory; they also allow CPUs to be reassigned by agreement of the operating system instances running in the partitions. The boundaries defined by the firmware are thus considered "soft."

Figure 1–6 shows a GS320 system with eight soft partitions set up on QBB boundaries. Each partition has private memory. In addition, you can allocate shared memory that all instances can use, as shown in the center of the diagram.

In addition to shared memory, soft partitions differ from hard partitions in that, with soft partitions, operating system instances may agree to share CPU resources. CPUs can be reassigned to different instances as load varies.

Soft partitions are defined using the SRM firmware. The division of resources defined can be thought of as a starting point. Once operating system instances are running in each soft partition, resources can be reassigned as needed at the operating system level. See the *OpenVMS Alpha Galaxy and Partitioning Guide* for more information on this type of resource sharing.

1.5 Overview of the Partitioning Process



The figure on the facing page gives an overview of the partitioning process:

- **Planning.** There are hardware, firmware, and software requirements and restrictions to meet before you can run partitions. Chapter 2 describes the major hardware configuration rules as of this printing. However, you should check the *QuickSpecs* for the most up-to-date information on the hardware, firmware, and software required. The *QuickSpecs* also list hardware that is not supported for partitioned systems and which must be removed from your system before partitions will run. The *QuickSpecs* are available on the web at http://www.compaq.com/alphaserver/.
- **Defining Hard Partitions (if any).** Defining hard partitions involves setting certain environment variables from the SCM. Settings for these environment variables are discussed in Chapter 3, as well as the **power on** command that initializes the settings.
- **Defining Soft Partitions (if any).** Defining soft partitions involves setting environment variables and issuing an **lpinit** command from the SRM. If hard partitions have been defined, you can define soft partitions from each hard partition's console window. Chapters 4 and 6 provide **show config** and **show device** examples that illustrate the different SRMs for each hard or soft partition. Chapter 5 discusses the environment variables for setting up soft partitions and the **lpinit** command.
- **Booting Instances of an Operating System.** Once hard and/or soft partitions are set up, you boot an instance of the operating system from within each partition. Chapter 7 discusses booting. Maintenance and troubleshooting are described in Chapter 8.

Chapter 2
Configuration Rules and Tips

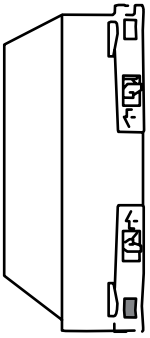
This chapter describes the configuration requirements for hard and soft partitions. Sections include:

- Hardware Required for a Hard or Soft Partition
- System Management Console
- Master and Slave SCMs
- SCM Functionality from Master and Slave SCMs
- Firmware and Software Requirements
- Planning Partitions
- Important Considerations for Partitioned Systems

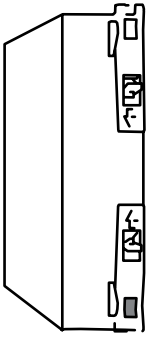
2.1 Hardware Required for a Hard or Soft Partition

A partition (hard or soft) requires at least one CPU, 64 Mbytes of memory, and an I/O riser module that is connected to a master PCI box with a standard I/O module.

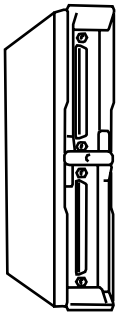
Figure 2–1 Hardware Requirements for Each Partition



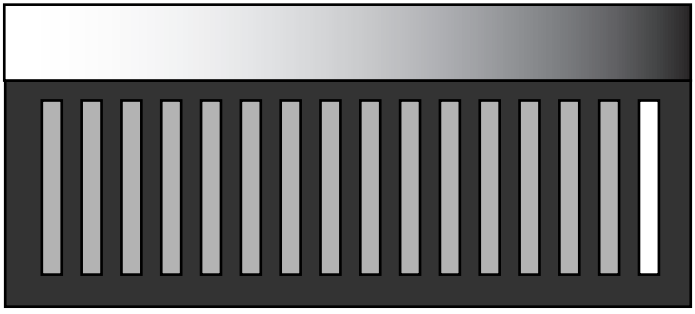
1 CPU Module



64 MB Memory



1 IOP (I/O Riser 0)



1 PCI master box with a standard I/O module

PK-003HP-99

A hard or soft partition requires at least one CPU (resident in the QBB with I/O) and 64 Mbytes of memory. I/O requirements are that at least one local I/O riser[1] (IOR 0) be present per partition connected to a master PCI box. A master PCI box is one with a DVD/CD-ROM drive and keyboard and mouse ports, etc., and contains a standard I/O module with local and modem ports for connection to a console device.

With hard partitions, at least one QBB is required per partition. Soft partitions allow more flexible assignment of resources; however, the two I/O riser modules in a QBB cannot be split between partitions.

The maximum number of partitions varies according to the configuration. With hard partitions, a two-drawer GS80 supports two hard partitions. A partition may include more than one QBB. For example, an 8-QBB GS320 system could have two partitions, one with five QBBs and one with three QBBs.

With partitions, a 2-QBB system supports two partitions and an 8-QBB GS320 system supports up to eight partitions. The number of soft partitions is limited by the constraint that the two I/O riser modules in a QBB cannot be split between partitions.

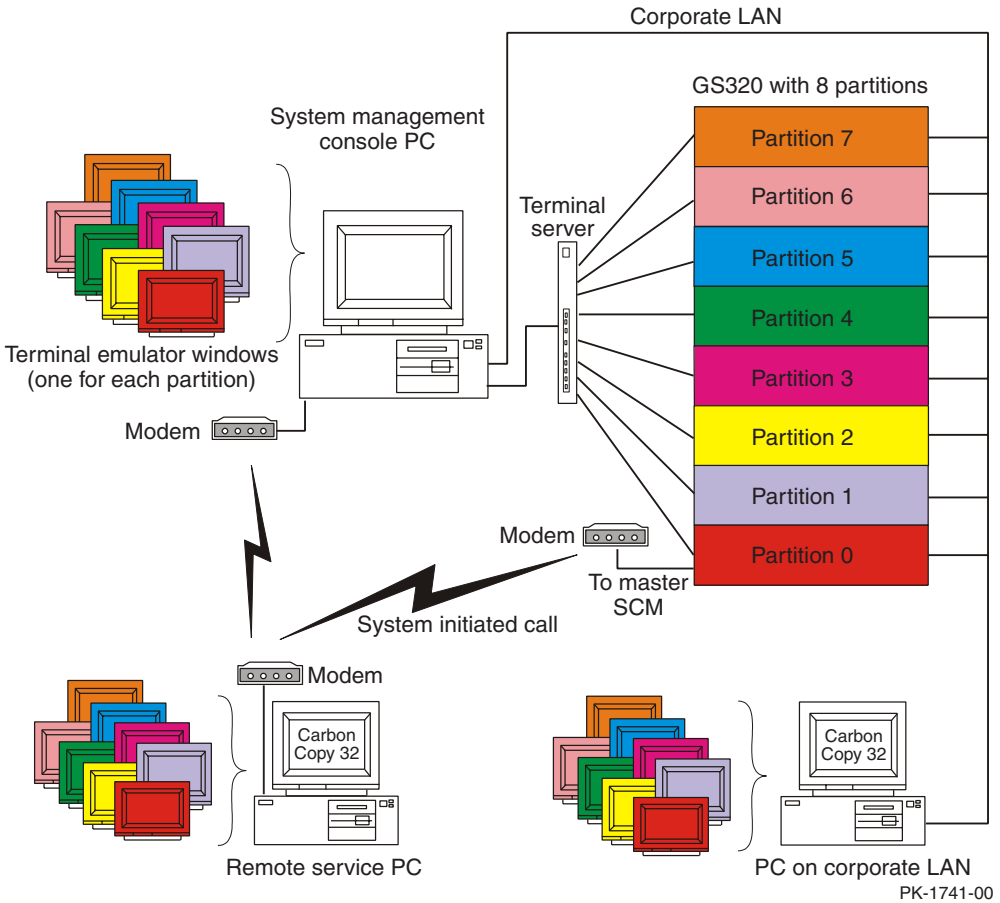
Each partition must include a master PCI box with a standard I/O module. The standard I/O module contains both SRM firmware and SCM firmware. Hard partitions are defined using the SCM firmware. Soft partitions are defined using the SRM firmware.

[1] The QBB backplane contains logic for an I/O port (IOP) with connectors for two I/O risers. One I/O riser is shown in Figure 2–1; should two I/O risers be present in a QBB, they cannot be split between partitions. Thus, I/O for partitions is defined along QBB boundaries.

2.2 System Management Console

The system management console makes it possible to manage multiple partitions with a single console device.

Figure 2–2 System Management Console



To manage partitions, it is necessary to have access to each hard or soft partition. With the system management console, an *AlphaServer* GS80/160/320 system with multiple console lines can be managed with a single device. The system management console consists of a DECserver 90M terminal server, a *Compaq Deskpro* PC, and associated hardware and software. Figure 2–2 shows an *AlphaServer* GS320 system with eight partitions.

The eight-port terminal server can connect to a maximum of eight partitions. The PC on the system management console is connected to the management channel connector on the terminal server, and each port in the terminal server is connected to a standard I/O module in a master PCI box that is defined as part of a partition. The console for each partition is displayed on the PC in a terminal emulator window.

The PC contains two network interface cards. The first connects to the terminal server via private network. The second connects to the corporate LAN, enabling remote operation of the system management console through Carbon Copy 32.

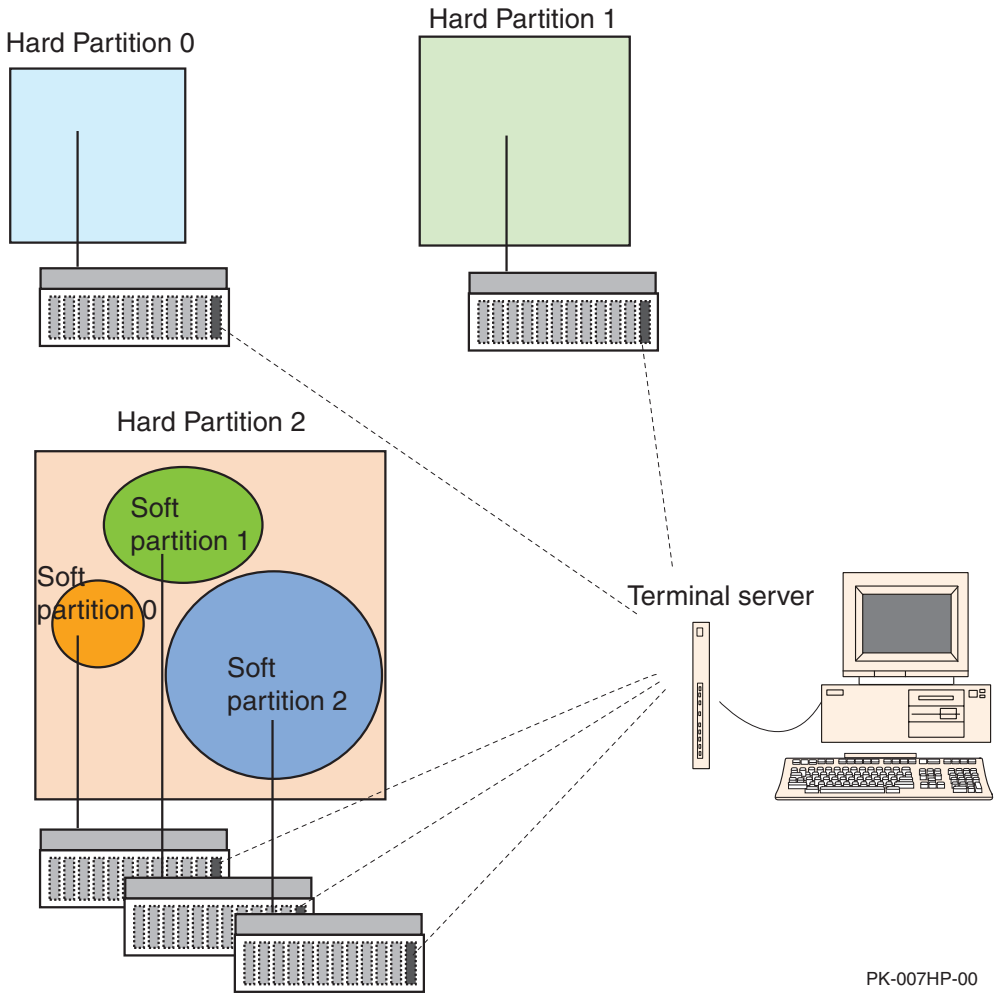
The PC also has an attached modem, which can provide Compaq Services remote access to the system with Carbon Copy 32.

For information on the system management console, its use and installation, see the *AlphaServer GS80/160/320 System Management Console Installation and User's Guide*.

2.3 Master and Slave SCMs

Multiple standard I/O modules are needed for hard or soft partitions, introducing the need for master and secondary SCMs. The master SCM controls the console serial bus (CSB). Other SCMs are secondary.

Figure 2–3 Multiple SCMs in a Partitioned System



A user needs access to an individual partition for maintenance and debugging. This access is provided through the requirement that each partition, hard or soft, must be attached to a master PCI box with a standard I/O module.

The standard I/O module contains both SCM and SRM firmware. Only one SCM can control the console serial bus (CSB) at any given time. This SCM is called the *master SCM*. All other SCMs are called *secondary* (or *slave*) *SCMs*.

A master SCM must be:

- Attached to the operator control panel (OCP).
- Have its **scm_csb_master_eligible** environment variable set to 1. (By default, each SCM's **scm_csb_master_eligible** environment variable is set to 1. You can override a particular SCM's eligibility by setting this environment variable to 0 from the console connected to that SCM.)

Figure 2–3 shows a system divided into three hard partitions. One hard partition is divided into three soft partitions. Each of these partitions has a master PCI box with a standard I/O module containing SCM and SRM firmware. Note that hard partition 2 is connected to three master PCI boxes. The SRM that controls the definition of soft partitions within hard partition 2 is the SRM residing on the standard I/O module in the master PCI box with the lowest-numbered hose connection to that partition.

At Vaux power-up on a system with multiple SCMs, the master SCM is selected as the one with the lowest-numbered CSB address (determined by the node ID switch setting on the PCI box) that is also connected to the OCP and has the **scm_csb_master_eligible** environment variable set to 1. The standby SCM is selected as the one with the next-lowest CSB address that is also connected to the OCP and has the **scm_csb_master_eligible** environment variable set to 1.

2.4 SCM Functionality from Master and Slave SCMs

Systemwide functionality is provided by the master SCM; hard-partition-dependent functionality is provided at the local (master or slave) level.

Figure 2–4 Systemwide Functionality

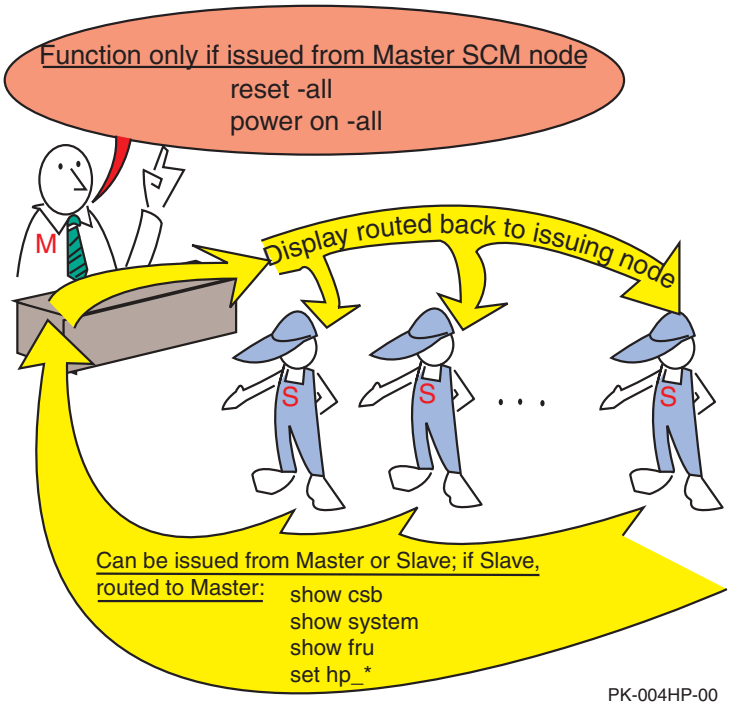


Figure 2–4 shows which SCM commands affect the whole system (systemwide functionality). As shown, commands that affect all nodes on the console serial bus can be executed only from the master SCM. For example, commands that display information for all CSB nodes are routed through the master SCM for execution.

Figure 2–5 shows those SCM commands providing hard-partition-specific functionality. The **halt**, **reset**, and **power** commands affect only the hard partition in which they are executed; however, they do have **–partition** options that can affect other partitions if executed from the master SCM.

Figure 2–5 Partition-Dependent Functionality

Take action from local SCM (Master or Slave):

build EEPROM	el	help	show status
clear alert	erase	init	show nvr
deposit	examine	quit	test alert
disable	hangup	set*	

(*Set hp_* routed to master SCM)

Routed to Master SCM; affects only the hard partition from which it is issued (hp_count≠0):

halt [in, out]
power [off, on]
reset
fault

PK-005HP-00

2.5 Firmware and Software Requirements

You must have versions of the firmware and operating system software that support hard and/or soft partitions.

Example 2–1 Firmware Requirements

```
P00>>> show config

                        Compaq Computer Corporation
                       Compaq AlphaSever GS320 6/731
                ❶
SRM Console     V5.8-1, built on May 26 2000 at 12:15:01
PALcode         OpenVMS PALcode V1.81-1, Tru64 UNIX PALcode V1.75-1
Micro Firmware V5.6  ❷

QBB 0           Hard QBB 0
 Quad Switch                                 QSA rev 4, QSD revs 0/0/0/0
 Duplicate Tag              Up To 4 MB Caches DTag revs 1/1/1/1
 Processor 0    CPU 0       4 MB Cache        EV67 pass 2.4, 731 MHz
 Processor 1    CPU 1       4 MB Cache        EV67 pass 2.4, 731 MHz
      .
      .
      .
```

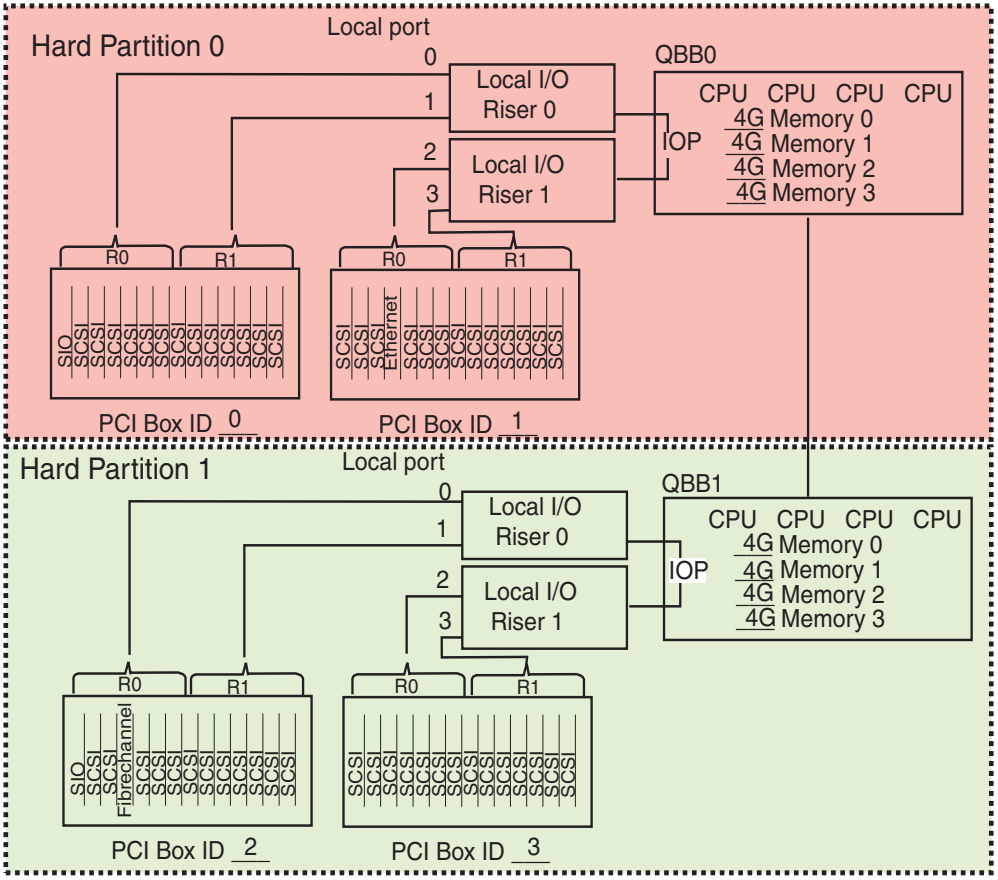
The **show config** command displays the version numbers of the SRM console firmware code as well as the micro firmware comprising the SCM. You must have micro firmware Version 5.6 or greater and SRM firmware V5.8-1 or greater to be able to run partitions.

Regarding operating system software, you must have *Tru64 UNIX* Version 4.0 G or *Tru64 UNIX* Version 5.1 or versions later than 5.1, or *OpenVMS* Alpha Version 7.2-1H1 or later with the appropriate *OpenVMS* Galaxy license or licenses.

2.6 Planning Partitions

To visualize how you want to allocate partitions, draw a diagram of the relevant resources on your system.

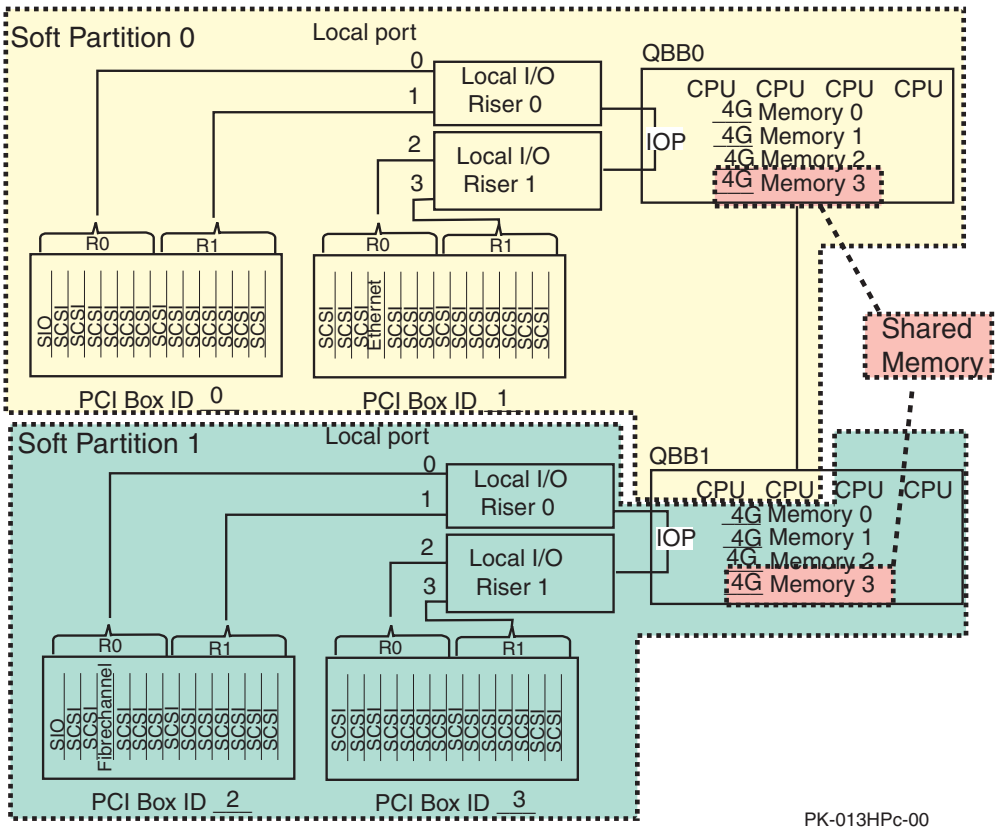
Figure 2–6 Diagram of Hard Partitions



A picture of the system helps you to plan partitions. Figure 2–6 shows such a diagram for two hard partitions on a 2-QBB system. Hard partitions are allocated on QBB boundaries; here, hard partition 0 consists of QBB0 and hard partition 1, QBB1.

Figure 2–7 shows the same system with two soft partitions. Soft partition 0 has 6 CPUs and 12 GB of local memory. Soft partition 1 has 2 CPUs and 12 GB of local memory. There are 8 GB of shared memory.

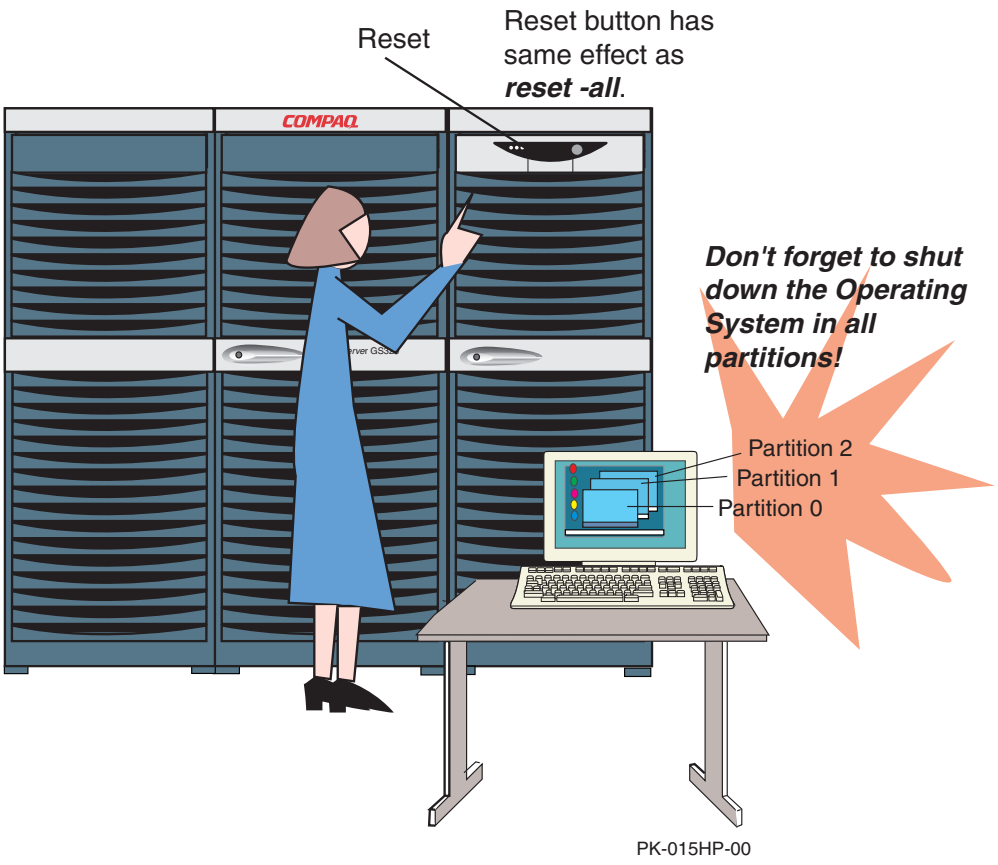
Figure 2–7 Diagram of Soft Partitions



2.7 Important Considerations for Partitioned Systems

Here are some important considerations for partitioned *AlphaServer* GS80/160/320 systems.

Figure 2–8 Halt, Fault, and Reset Buttons: Use Caution with Partitioned Systems



There are some important things to be aware of when using partitions:

- **Halt, Fault, and Reset Buttons**. Once partitions are up and running separate instances of an operating system, pressing the Halt, Fault, or Reset pushbuttons on the control panel causes the system to stop whatever is going on in all partitions. The pushbutton has the same effect as using the **–all** option on the SCM commands **halt, fault,** or **reset** from the master SCM. **To halt operations in an orderly manner, you must shut down the operating system for each partition at the appropriate console window before using these buttons.**
- **Keeping Partitions within a System Box.** You can maximize reliability by defining either hard or soft partitions on system box boundaries, since these are powered by one power subrack. In the unlikely circumstance of a power failure of one subrack, only one partition would go down; the others would continue operation.
- **Increasing Memory Access Efficiency in Soft Partitions.** While the configuration shown in Figure 2–7 is valid, memory access is more efficient within one QBB. In Figure 2–7, two CPUs in QBB1 must access memory in QBB0. If the instance in soft partition 0 occasionally needs the extra compute power of the two extra CPUs, it is better to shift them as required through resource sharing handled by the operating system, rather than to define them as part of the soft partition**.**
- **Keeping Track of Where You Are.** You will see a variety of prompts on the console screen while you are managing partitions. The following is a list of possible prompts and where you are when you see them.

SCM_E*n*	Prompt given by the master SCM; *n* is the PCI box ID of the master PCI box containing the standard I/O running the master SCM. If your configuration is typical, you are most likely in (hard or soft) partition 0.
SLV_E*n*	Prompt given by a secondary, or slave SCM; *n* is the PCI box ID of the master PCI box containing the standard I/O running this slave SCM. If your configuration is typical, you are most likely in (hard or soft) partition 1 – 8.
P*nn*>>>	Prompt given by the SRM, where *nn* is the processor number.
$	*OpenVMS* operating system prompt.
#	*Tru64 UNIX* operating system prompt.

Chapter 3
Defining Hard Partitions

Both *Tru64 UNIX* and *OpenVMS* recognize hard partitions. Hard partitions are divided along QBB boundaries, as discussed in Chapter 1. This chapter describes the environment variables you set from the SCM console to define hard partitions, as well as the **power on** commands used to initialize partitions.

Sections include:

- SCM Commands That Define Hard Partitions
- Detailed Directions for **hp_qbb_mask**
- Dividing a System into Hard Partitions

3.1 SCM Commands That Define Hard Partitions

Use the SCM set command for the hp_count and hp_qbb_maskn environment variables, and the power on command for initialization.

Figure 3–1 SCM Commands for Hard Partitions

SCM environment variables

define:

1. Number of partitions:
   hp_count (0, 2, 3, ... 8)

```
SCM_E0> set hp_count 3
```

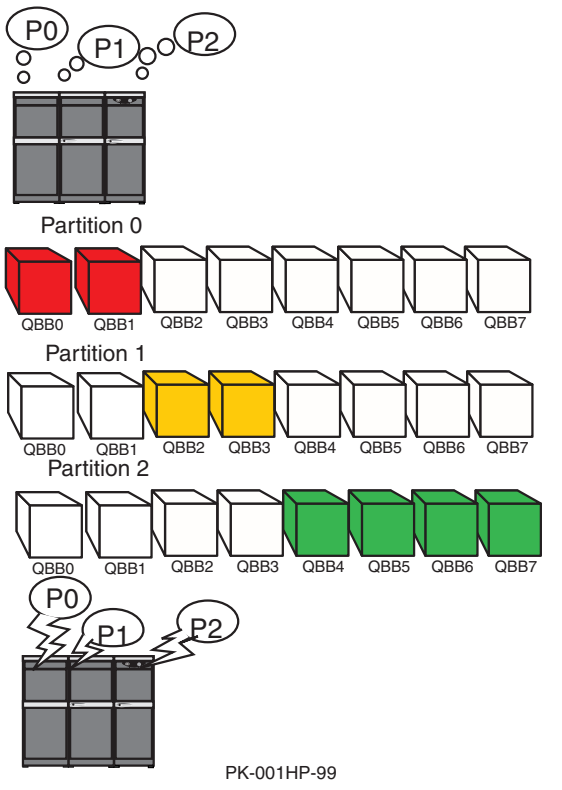
2. QBBs in each partition:
   hp_qbb_mask* (bit mask)

```
SCM_E0> set hp_qbb_mask0 = 3
SCM_E0> set hp_qbb_mask1 = C
SCM_E0> set hp_qbb_mask2 = F0
```

Power on commands

initialize partitions defined:

```
SCM_E0> power on -all
```



At the SCM prompt, you set a value for the **hp_count** environment variable to define the number of hard partitions on your system, and values for **hp_qbb_mask*n*** environment variables to define the QBBs in each partition. Figure 3–1 and Table 3–1 give an overview of the environment variables and what they do. Environment variable settings for the **hp_qbb_mask*n*** are discussed in the next section.

Table 3–1 SCM Environment Variables for Hard Partitions

Environment Variable	Definition
hp_count *n*	The number of hard partitions you wish to create on the system. Possible values are 0 (partitions disabled), 1 (for one partition), 2 (for two partitions), 3 (for three partitions), and so forth, to a maximum of 8.
hp_qbb_mask* *x*	For the *, you supply the number of the partition, which may be 0, 1, 2, up to 7. (Partition numbers must be in sequence; for example, you could not have partitions 0, 3, and 8 only.) The value *x* gives a binary mask indicating which QBBs you want included as part of the partition. See Section 3.2 for detailed examples.

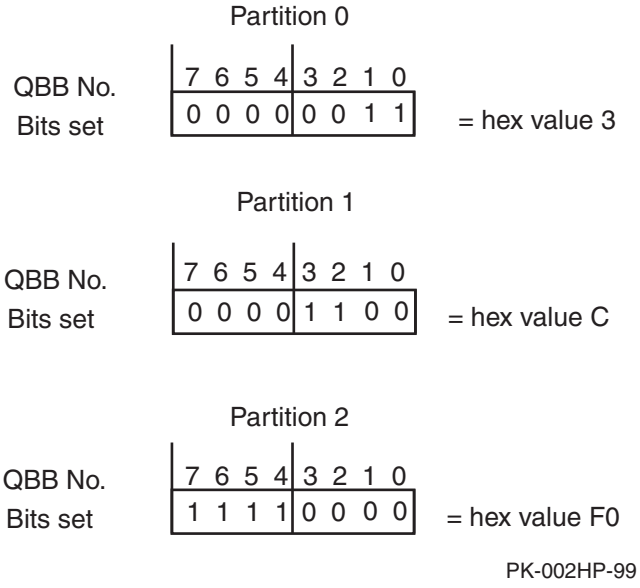
Note that if the **hp_*** environment variables are set, they will not change value unless you use the **set** command to change them. The firmware uses the **hp_count** environment variable to determine how many of the **hp_qbb_mask*n*** environment variables to use in setting up partitions.

For example, if you change the partition settings from a three-hard-partition setup to a two-hard-partition setup, and change **hp_count** from 3 to 2, the firmware will use only **hp_qbb_mask0** and **hp_qbb_mask1** to define the size of the partitions. Any settings for other **hp_qbb_mask*n*** environment variables will remain.

3.2 Detailed Directions for hp_qbb_mask

The hp_qbb_mask environment variable is set to a value that creates a binary mask in which a bit set to 1 indicates that an individual QBB belongs to a partition.

Figure 3–2 Sample QBB Bit Masks



PK-002HP-99

QBBs can be assigned to partitions in any order, although there are considerations for maximum efficiency and reliability, as described in Section 2.7 Bit values for one nibble of data are as follows:

Hex	Binary	Hex	Binary
0	0000	8	1000
1	0001	9	1001
2	0010	A	1010
3	0011	B	1011
4	0100	C	1100
5	0101	D	1101
6	0110	E	1110
7	0111	F	1111

Example 3–1 shows the SCM commands used to create hard partitions for the configuration shown in Figure 3–1.

Example 3–1 Sample Hard Partition Setup

```
SCM_E0> set hp_count 3
SCM_E0> set hp_qbb_mask0 3
SCM_E0> set hp_qbb_mask2 C
SCM_E0> set hp_qbb_mask1 F
SCM_E0> power on -all
Powering on Hard_partition_0 consisting of:
QBB0
QBB1
Powering on PCI Box 0
Powering on PCI Box 1
    .
    .
    .
```

3.3 Dividing a System into Hard Partitions

You can divide a system into hard partitions from a powered on state or a powered off state.

Example 3–2 Creating Hard Partitions from a Powered Off State

```
[shut down the operating system] ❶

SYSTEM1> [Esc][Esc]scm    ❷
SCM_E0> power off -all    ❸
      .
      .
      .
SCM_E0> show nvram    ❹
COM1_PRINT_EN                  1
HP_COUNT                       0
HP_QBB_MASK0                   0
HP_QBB_MASK1                   0
HP_QBB_MASK2                   0
HP_QBB_MASK3                   0
HP_QBB_MASK4                   0
HP_QBB_MASK5                   0
HP_QBB_MASK6                   0
HP_QBB_MASK7                   0
    .
    .
    .
SCM_SIZING_TIME                c
SCM_E0> set hp_count 2    ❺
SCM_E0> set hp_qbb_mask0 f
SCM_E0> set hp_qbb_mask1 f0
SCM_E0> power on -all    ❻
```

A **power on –par *n*** command supplies power to the specified partition, which goes through its own power-up process displayed at the partition's console window. You can also issue a **power on –all** command to initialize all hard partitions, as shown in Example 3–2.

❶ If necessary, shut down the operating system.

❷ Issue the escape sequence to return to the SCM firmware command-line interpreter.

❸ Power off the entire system.

❹ At the master SCM prompt (SCM_En>) check the current settings of the **hp_count** and **hp_qbb_mask*n*** environment variables. The values shown in Example 3–2 show that the system is unpartitioned.

Note that if the **hp_*** environment variables are set, they will not change value unless you use the **set** command to change them. The firmware uses the **hp_count** environment variable to determine how many of the **hp_qbb_mask*n*** environment variables to use in setting up partitions.

For example, if you change the partition settings from a three-hard-partition setup to a two-hard-partition setup, and change **hp_count** from 3 to 2, the firmware will use only **hp_qbb_mask0** and **hp_qbb_mask1** to define the size of the partitions. Any settings for other **hp_qbb_mask*n*** environment variables will remain.

❺ Set the desired environment variables.

❻ Here, the **power on –all** command is used to initialize all partitions.

If you are defining partitions on a system that is already powered on, issue a **reset –all** command to initialize the system with the new partition definitions. For example, simply eliminate the **power off –all** command in Example 3–2, set the desired environment variables as shown in Example 3–3, and issue a **reset –all** command.

Example 3–3 Creating Hard Partitions from a Powered On State

```
SCM_E0> set hp_count 2
SCM_E0> set hp_qbb_mask0 f
SCM_E0> set hp_qbb_mask1 f0
SCM_E0> reset -all
   .
   .
   .
```

Chapter 4
Displaying Hard Partition Status

This chapter gives examples of the SCM commands to set up hard partitions and the SCM and SRM **show** commands that you use to display information about the hard partitions defined.

Sections include:

- **Show Nvram** Command (SCM)
- Setting Up for Hard Partitions (SCM)
- **Show System** Command (SCM)
- **Show Config** Command for Hard Partitions (SRM)
- **Show Device** Command for Hard Partitions (SRM)

4.1 Show Nvram Command (SCM)

The show nvram command displays the current settings of the hp_* environment variables. Here, no hard partitions have been defined.

Example 4–1 Show Nvram with No Hard Partitions

```
SCM_E0> show nvram    ❶
COM1_PRINT_EN                 1
HP_COUNT                      0      ❷
HP_QBB_MASK0                  0
HP_QBB_MASK1                  0
HP_QBB_MASK2                  0
HP_QBB_MASK3                  0
HP_QBB_MASK4                  0
HP_QBB_MASK5                  0
HP_QBB_MASK6                  0
HP_QBB_MASK7                  0
SROM_MASK                     ff f
XSROM_MASK                    ff ff ff ff ff ff ff ff ff 1 0
0
PRIMARY_CPU                   ff
PRIMARY_QBB0                  ff
AUTO_QUIT_SCM                 1
FAULT_TO_SYS                  0
DIMM_READ_DIS                 1
SCM_CSB_MASTER_ELIGIBLE       1
PERF_MON                      0
SCM_FORCE_FSL                 0
OCP_TEXT                      Uninitialized
AUTO_FAULT_RESTART            1
SCM_SIZING_TIME               c
```

❶ The **show nvram** command displays values stored in nonvolatile RAM on the standard I/O module containing the SCM for the hard partition. Since this system has not yet been divided into hard partitions, the SCM_E0> prompt shows that the master SCM resides on CSB node 0. This will remain the prompt for the master SCM.

❷ The **show nvram** command displays the current settings of the **hp_count** and **hp_qbb_mask*n*** environment variables. The values shown in Example 4–1 shows that the system is unpartitioned.

4.2 Setting Up for Hard Partitions (SCM)

This section gives an example of setting environment variables for hard partitions and powering on the partitions. These settings form the hard partitioning displayed by the show config and show device commands in later sections.

Example 4–2 Show Nvram with Hard Partitions

```
SCM_E0> set HP_COUNT 2    ❶
SCM_E0> set HP_QBB_MASK0 3
SCM_E0> set HP_QBB_MASK1 c
SCM_E0> show nvram    ❷
COM1_PRINT_EN                   1
HP_COUNT                        2
HP_QBB_MASK0                    3
HP_QBB_MASK1                    c
HP_QBB_MASK2                    0
HP_QBB_MASK3                    0
HP_QBB_MASK4                    0
HP_QBB_MASK5                    0
HP_QBB_MASK6                    0
HP_QBB_MASK7                    0
SROM_MASK                       ff f
XSROM_MASK                      ff ff ff ff ff ff ff ff ff 1 0 0
PRIMARY_CPU                     ff
PRIMARY_QBB0                    ff
AUTO_QUIT_SCM                   1
FAULT_TO_SYS                    0
DIMM_READ_DIS                   1
SCM_CSB_MASTER_ELIGIBLE         1
PERF_MON                        0
SCM_FORCE_FSL                   0
OCP_TEXT                        Uninitialized
AUTO_FAULT_RESTART              1
SCM_SIZING_TIME                 c
```

❶ Example 4–2 shows the **hp_*** environment variables being set from the master SCM to define two hard partitions. The first partition consists of QBBs 0 and 1, and the second hard partition consists of QBBs 2 and 3.

❷ Here, the **show nvram** reveals that the **hp_count** environment variable has been set to 2, to indicate that two hard partitions are being defined. The hexadecimal value 3 defines QBBs 0 and 1 as hard partition 0, and the hexadecimal value C defines hard partition 1 as QBBs 2 and 3.

If you need to determine the master SCM, from which the **hp_*** environment variables can be set, the **show csb** command displays the CSB address of the master SCM. This address will appear in the SCM prompt.

Note that once **hp_*** environment variables have been set, they will not change value unless you use the **set** command from the master SCM to change them. The firmware uses the **hp_count** environment variable to determine how many of the **hp_qbb_mask*n*** environment variables to use in setting up partitions.

For example, if you change the partition settings from a three-hard-partition setup to a two-hard-partition setup, and change **hp_count** from 3 to 2, the firmware will only use **hp_qbb_mask0** and **hp_qbb_mask1** to define the size of the partitions. Any settings for other **hp_qbb_mask*n*** environment variables are ignored.

4.3 Show System Command (SCM)

You can use the SCM show system command to display the system's current partitioning, if any, as well as to find information needed to divide the system into hard partitions.

Example 4–3 Show System Command for an Unpartitioned System

```
SCM_E0> show system
System Primary QBB0 : 0
System Primary CPU  : 0 on QBB0


Par hrd/csb CPU  Mem   IOR3 IOR2 IOR1 IOR0  GP  QBB  Dir PS  Temp
    QBB#    3210 3210     (pci_box.rio)     Mod BP   Mod 321 (:C)
 ❶
(-)  0/30   PPPP --PP  --.- --.- P0.1 P0.0   P   P    P  PP-  26.5
(-)  1/31   PPPP --PP  --.- --.- P1.1 P1.0   P   P    P  PP-  24.5
(-)  2/32   PPPP --PP  --.- --.- P2.1 P2.0   P   P    P  PP-  24.5
(-)  3/33   PPPP --PP  --.- --.- P3.1 P3.0   P   P    P  PP-  25.5

HSwitch  Type    Cables 7 6 5 4 3 2 1 0    Temp(:C)

HPM40    4-port         - - - - P P P P     30.5

PCI Rise1-1  Rise1-0  Rise0-1  Rise0-0   RIO  PS  Temp
Cab 7 6 5 4   3 2 1   7 6 5 4   3 2 1    1 0  21  (:C)

10  - L - -   - L L   - L - -   M M S    * *  PP  28.5
11  L - L -   L - L   - - M -   - M S    * *  PP  28.5
12  - - - -   L L L   - - - M   - M S    * *  PP  29.0
13  - - - -   - L -   L - M -   L M S    * *  PP  28.5
```

Example 4–3 shows an example of an SCM **show system** command for an unpartitioned system. The dashes in the "Par" column (see ❶) indicate no partitions have been defined.

Example 4–4 shows the same system, divided into two partitions. As shown in the column at ❷, partition 0 consists of hard QBBs 0 and 1; and partition 1 consists of QBBs 2 and 3.

Example 4–4 Show System for a Partitioned System

```
Par hrd/csb CPU  Mem   IOR3 IOR2 IOR1 IOR0  GP  QBB  Dir PS  Temp
    QBB#    3210 3210     (pci_box.rio)     Mod BP   Mod 321 (:C)
 ❷
(0)  0/30   PPPP --PP  --.- --.- P0.1 P0.0   P   P    P  PP-  25.5
(0)  1/31   PPPP --PP  --.- --.- P1.1 P1.0   P   P    P  PP-  24.0
(1)  2/32   PPPP --PP  --.- --.- P2.1 P2.0   P   P    P  PP-  24.0
(1)  3/33   PPPP --PP  --.- --.- P3.1 P3.0   P   P    P  PP-  24.5

HSwitch  Type    Cables 7 6 5 4 3 2 1 0    Temp(:C)

HPM40    4-port         - - - - P P P P     30.5

PCI Rise1-1  Rise1-0  Rise0-1  Rise0-0   RIO  PS  Temp
Cab 7 6 5 4   3 2 1   7 6 5 4   3 2 1    1 0  21  (:C)

10  - L - -   - L L   - L - -   M M S    * *  PP  28.5
11  L - L -   L - L   - - M -   - M S    * *  PP  28.5
12  - - - -   L L L   - - - M   - M S    * *  PP  29.0
13  - - - -   - L -   L - M -   L M S    * *  PP  28.5
```

4.4 Show Config Command for Hard Partitions (SRM)

The SRM show config command displays configuration information.

4.4.1 Show Config for the Unpartitioned System

This example includes the show config display for the unpartitioned system.

Example 4–5 Show Config for the System

```
P00>>> show config
                 Compaq Computer Corporation
                Compaq AlphaServer GS160 6/731

SRM Console     V5.8-11, built on Jul 12 2000 at 16:04:25
PALcode         OpenVMS PALcode V1.83-1, Tru64 UNIX PALcode V1.78-1
Micro Firmware V5.6
```

Show Config – QBB Section (●)

```
●                                                                    ●
QBB 0           Hard QBB 0      ❶
Quad Switch                                     QSA rev 4, QSD revs 0/0/0/0
Duplicate Tag   ❷               Up To 4 MB Caches  DTag revs 1/1/1/1
Processor 0     CPU 0           4 MB Cache         EV67 pass 2.4, 731 MHz
Processor 1     CPU 1           4 MB Cache         EV67 pass 2.4, 731 MHz
Processor 2     CPU 2           4 MB Cache         EV67 pass 2.4, 731 MHz
Processor 3     CPU 3           4 MB Cache         EV67 pass 2.4, 731 MHz
Memory 0                                        MPA rev 2, MPD revs 1/1
Memory 1                                        MPA rev 2, MPD revs 1/1
Directory                                       DMA rev 1, DMD rev 1
IOP                                             IOA rev 2, IOD revs 0/0
Local Link 0    IOR 0   ❸                       NE ML rev 2
Remote Link 0                                   FE ML rev 2
I/O Port 0                                      PCA rev 3
PCI Box 0       Riser 0         Right Side      Backplane rev 3
PCI Bus 0       Hose 0          64 Bit, 33 MHz  PCI rev 2.1 compliant
PCI Bus 1       Hose 1          64 Bit, 33 MHz  PCI rev 2.1 compliant
Local Link 1    IOR 1   ❸                       NE ML rev 2
Remote Link 1                                   FE ML rev 2
I/O Port 1                                      PCA rev 3
PCI Box 0       Riser 1         Left Side       Backplane rev 3
PCI Bus 0       Hose 2          64 Bit, 33 MHz  PCI rev 2.1 compliant
PCI Bus 1       Hose 3          64 Bit, 33 MHz  PCI rev 2.1 compliant
Global Port                                     GPA rev 2, GPD revs 0/0
```

[*Continued on following page*]

❶ This example is an unpartitioned, 4-QBB system, the soft and hard QBB numbers are the same. On these two pages, QBBs 0 and 1 are displayed. On the following page, QBBs 2 and 3 are displayed.

❷ Soft CPU numbers range from 0 – 7 on this page, and continue on the following page with numbers 8 – 15.

❸ Logical I/O port numbers. Constructed of the decimal equivalent for the low nibble of the CSB address for the port as shown on a **show csb** command. For QBB0, IORs 0 and 1 are occupied. (IORs 2 and 3 for QBB 0 are unoccupied.) QBB1 includes IORs 4 and 5. (IORs 6 and 7 are unoccupied.) QBB2 includes IORs 8 and 9. (IORs 10 and 11 are unoccupied.) QBB3 includes IORs 12 and 13 (IORs 14 and 15 are unoccupied.)

Example 4–5 Show Config for the System (Continued)

```
QBB 1           Hard QBB 1    ❶
Quad Switch                                 QSA rev 4, QSD revs 0/0/0/0
Duplicate Tag     ❷         Up To 4 MB Caches  DTag revs 1/1/1/1
Processor 0     CPU 4       4 MB Cache         EV67 pass 2.4, 731 MHz
Processor 1     CPU 5       4 MB Cache         EV67 pass 2.4, 731 MHz
Processor 2     CPU 6       4 MB Cache         EV67 pass 2.4, 731 MHz
Processor 3     CPU 7       4 MB Cache         EV67 pass 2.4, 731 MHz
Memory 0                                    MPA rev 2, MPD revs 1/1
Memory 1                                    MPA rev 2, MPD revs 1/1
Directory                                   DMA rev 1, DMD rev 1
IOP                                         IOA rev 2, IOD revs 0/0
Local Link 0    IOR 4    ❸                  NE ML rev 2
Remote Link 0                               FE ML rev 2
I/O Port 0                                  PCA rev 3
PCI Box 1       Riser 0     Right Side      Backplane rev 3
PCI Bus 0       Hose 8      64 Bit, 33 MHz  PCI rev 2.1 compliant
PCI Bus 1       Hose 9      64 Bit, 33 MHz  PCI rev 2.1 compliant
Local Link 1    IOR 5    ❸                         NE ML rev 2
Remote Link 1                               FE ML rev 2
I/O Port 1                                  PCA rev 3
PCI Box 1       Riser 1     Left Side       Backplane rev 3
PCI Bus 0       Hose 10     64 Bit, 33 MHz  PCI rev 2.1 compliant
PCI Bus 1       Hose 11     64 Bit, 33 MHz  PCI rev 2.1 compliant
Global Port                                 GPA rev 2, GPD revs 0/0
                                        [Continued on following page]
```

Example 4–5 Show Config for the System (Continued)

```
QBB 2           Hard QBB 2     ❶
Quad Switch                                  QSA rev 4, QSD revs 0/0/0/0
Duplicate Tag     ❷          Up To 4 MB Caches  DTag revs 1/1/1/1
Processor 0     CPU 8        4 MB Cache         EV67 pass 2.4, 731 MHz
Processor 1     CPU 9        4 MB Cache         EV67 pass 2.4, 731 MHz
Processor 2     CPU 10       4 MB Cache         EV67 pass 2.4, 731 MHz
Processor 3     CPU 11       4 MB Cache         EV67 pass 2.4, 731 MHz
Memory 0                                     MPA rev 2, MPD revs 1/1
Memory 1                                     MPA rev 2, MPD revs 1/1
Directory                                    DMA rev 1, DMD rev 1
IOP                                          IOA rev 2, IOD revs 0/0
Local Link 0    IOR 8     ❸                  NE ML rev 2
Remote Link 0                                FE ML rev 2
I/O Port 0                                   PCA rev 3
PCI Box 2       Riser 0      Right Side      Backplane rev 3
PCI Bus 0       Hose 16      64 Bit, 33 MHz  PCI rev 2.1 compliant
PCI Bus 1       Hose 17      64 Bit, 33 MHz  PCI rev 2.1 compliant
Local Link 1    IOR 9     ❸                  NE ML rev 2
Remote Link 1                                FE ML rev 2
I/O Port 1                                   PCA rev 3
PCI Box 2       Riser 1      Left Side       Backplane rev 3
PCI Bus 0       Hose 18      64 Bit, 33 MHz  PCI rev 2.1 compliant
PCI Bus 1       Hose 19      64 Bit, 33 MHz  PCI rev 2.1 compliant
Global Port                                  GPA rev 2, GPD revs 0/0

QBB 3           Hard QBB 3     ❶
Quad Switch                                  QSA rev 4, QSD revs 0/0/0/0
Duplicate Tag     ❷          Up To 4 MB Caches  DTag revs 1/1/1/1
Processor 0     CPU 12       4 MB Cache         EV67 pass 2.4, 731 MHz
Processor 1     CPU 13       4 MB Cache         EV67 pass 2.4, 731 MHz
Processor 2     CPU 14       4 MB Cache         EV67 pass 2.4, 731 MHz
Processor 3     CPU 15       4 MB Cache         EV67 pass 2.4, 731 MHz
Memory 0                                     MPA rev 2, MPD revs 1/1
Memory 1                                     MPA rev 2, MPD revs 1/1
Directory                                    DMA rev 1, DMD rev 1
IOP                                          IOA rev 2, IOD revs 0/0
Local Link 0    IOR 12    ❸                  NE ML rev 2
Remote Link 0                                FE ML rev 2
I/O Port 0                                   PCA rev 3
PCI Box 3       Riser 0      Right Side      Backplane rev 3
PCI Bus 0       Hose 24      64 Bit, 33 MHz  PCI rev 2.1 compliant
PCI Bus 1       Hose 25      64 Bit, 33 MHz  PCI rev 2.1 compliant
Local Link 1    IOR 13    ❸                        NE ML rev 2
Remote Link 1                                FE ML rev 2
I/O Port 1                                   PCA rev 3
PCI Box 3       Riser 1      Left Side       Backplane rev 3
PCI Bus 0       Hose 26      64 Bit, 33 MHz  PCI rev 2.1 compliant
PCI Bus 1       Hose 27      64 Bit, 33 MHz  PCI rev 2.1 compliant
Global Port                                  GPA rev 2, GPD revs 0/0
●                                                                    ●
```

[*Continued on following page*]

❶ This page continues the QBB section of a **show config** for an unpartitioned, 4-QBB system. On the facing page, information for QBBs 2 and 3 are displayed.

❷ Soft CPU numbers range from 8 – 15 on this page.

❸ Logical I/O port numbers. Constructed of the decimal equivalent for the low nibble of the CSB address for the port as shown on a **show csb** command. QBB2 includes IORs 8 and 9. (IORs 10 and 11 are unoccupied.) QBB3 includes IORs 12 and 13 (IORs 14 and 15 are unoccupied.)

Example 4–5 Show Config for the System (Continued)

Show Config – H-Switch, Memory, and Standard I/O Summary (■)

```
■                                                                    ■
Hierarchical Switch    ❶                      HSA revs 1/1, HSD revs 1/1/1/1

QBB     Size    Interleave ❷                  System Memory 16 GB
0       4 GB      8-Way
1       4 GB      8-Way
2       4 GB      8-Way
3       4 GB      8-Way

Hose   IOP   PCI Box      ❸                   Standard I/O Modules
0      0       0           Primary            Acer Labs M1543C rev A1-D
8      1       1                              Acer Labs M1543C rev A1-D
16     2       2                              Acer Labs M1543C rev A1-E
24     3       3                              Acer Labs M1543C rev A1-E
■                                                                    ■
```

Show Config – Memory Detail (▲)

```
▲                                                                    ▲
System Memory 16 GB  ❹

Board   Set   Array    Size      Address     QBB 0 Memory
 0      0      0       2 GB   00000000000
 1      0      1       2 GB   00000000000
Total Available         4 GB   8-Way Interleave

Board   Set   Array    Size      Address     QBB 1 Memory
 0      0      0       2 GB   01000000000
 1      0      1       2 GB   01000000000
Total Available         4 GB   8-Way Interleave

Board   Set   Array    Size      Address     QBB 2 Memory
 0      0      0       2 GB   02000000000
 1      0      1       2 GB   02000000000
Total Available         4 GB   8-Way Interleave

Board   Set   Array    Size      Address     QBB 3 Memory
 0      0      0       2 GB   03000000000
 1      0      1       2 GB   03000000000
Total Available         4 GB   8-Way Interleave
▲                                                                    ▲
                                                  [Continued on following page]
```

The **show config** listing continues with an entry for the hierarchical switch, a memory summary, and a standard I/O summary. This section is followed by a section giving detail for the memory boards on the system.

❶ The hierarchical switch is present on a 4-QBB system.

❷ The memory summary shows the memory present in each QBB. QBBs 0 through 3 each have 4 Gbytes of memory.

❸ This section shows the standard I/O modules present on designated hoses.

❹ Detailed memory listing. The total system memory is 16 Gbytes. Memory is listed by board number for each QBB in the system. In this case, each QBB has two 2-Gbyte boards.

Example 4–5 Show Config for the System (Continued)

Show Config – I/O Adapters Listed in Order by PCI Box ID Number (✔)

✔ ✔

PCI	Box ❶	Riser ❷	Slot	Option	Hose	Bus	Slot	Function	Name
0	0	1		Standard I/O Module	0	❸			
			+	Acer Labs M1543C	0	0	7		
			+	Acer Labs M1543C IDE	0	0	15		dqa
			+	Acer Labs M1543C USB	0	0	19		
			+	QLogic ISP10x0	0	0	1		pka
0	0	2		ELSA GLoria Synergy	0	0	2		vga
0	0	3		DECchip 21154-AA	0	0	3		
			+	DE602-AA	0	2	4		eia
			+	DE602-AA	0	2	5		eib
0	0	6		QLogic ISP10x0	1	0	6		pkb
0	1	1		QLogic ISP10x0	2	0	1		pkc
0	1	2		DEC PCI FDDI	2	0	2		fwa
0	1	6		QLogic ISP10x0	3	0	6		pkd
1	0	1		Standard I/O Module	8	❸			
			+	Acer Labs M1543C	8	0	7		
			+	Acer Labs M1543C IDE	8	0	15		dqb
			+	Acer Labs M1543C USB	8	0	19		
			+	QLogic ISP10x0	8	0	1		pke
1	0	2		ELSA GLoria Synergy	8	0	2		vgb
1	0	5		DECchip 21154-AA	9	0	5		
			+	DE602-AA	9	2	4		eic
			+	DE602-AA	9	2	5		eid
1	1	1		QLogic ISP10x0	10	0	1		pkf
1	1	3		QLogic ISP10x0	10	0	3		pkg
1	1	5		QLogic ISP10x0	11	0	5		pkh
1	1	7		DEC PCI FDDI	11	0	7		fwb
2	0	1		Standard I/O Module	16	❸			
			+	Acer Labs M1543C	16	0	7		
			+	Acer Labs M1543C IDE	16	0	15		dqc
			+	Acer Labs M1543C USB	16	0	19		
			+	QLogic ISP10x0	16	0	1		pki
2	0	2		ELSA GLoria Synergy	16	0	2		vgc
2	0	4		DECchip 21154-AA	17	0	4		
			+	DE602-AA	17	2	4		eie
			+	DE602-AA	17	2	5		eif
2	1	1		QLogic ISP10x0	18	0	1		pkj
2	1	2		QLogic ISP10x0	18	0	2		pkk
2	1	3		QLogic ISP10x0	18	0	3		pkl
3	0	1		Standard I/O Module	24	❸			
			+	Acer Labs M1543C	24	0	7		

[*Continued on following page*]

Example 4–5 Show Config for the System (Continued)

```
                  + Acer Labs M1543C IDE          24    0    15            dqd
                  + Acer Labs M1543C USB          24    0    19
                  + QLogic ISP10x0                24    0     1            pkm
 3        0       2   ELSA GLoria Synergy         24    0     2            vgd
 3        0       3   QLogic ISP10x0              24    0     3            pkn
 3        0       5   DECchip 21154-AA            25    0     5
                  + DE602-AA                      25    2     4            eig
                  + DE602-AA                      25    2     5            eih
 3        0       7   QLogic ISP10x0              25    0     7            pko
 3        1       2   QLogic ISP10x0              26    0     2            pkp
✔                                                                         ✔
```

Show Config – Logical Hose Summary (✚)

```
✚
  ❹
Hose   QBB   PCA   PCI Bus   Slots
 0     0     0       0       1-3
 1     0     0       1       4-7
 2     0     1       0       1-3
 3     0     1       1       4-7
 8     1     0       0       1-3
 9     1     0       1       4-7
10     1     1       0       1-3
11     1     1       1       4-7
16     2     0       0       1-3
17     2     0       1       4-7
18     2     1       0       1-3
19     2     1       1       4-7
24     3     0       0       1-3
25     3     0       1       4-7
26     3     1       0       1-3
27     3     1       1       4-7
✚                                                                       ✚

                                                    [Continued on following page]
```

❶ I/O adapters on the system are listed in order for the PCI box IDs in ascending order.

❷ Within PCI box, the connecting I/O riser in the QBB is listed (0 or 1).

❸ Standard I/O modules are of interest in partitions. Here, each QBB is connected to a PCI box containing a standard I/O module.

❹ Logical hoses in the system are listed here in ascending order.

Example 4–5 Show Config for the System (Continued)

Show Config – I/O Adapters and Devices in Order by Logical Hose Number (✿)

✿ ✿

❶

```
Slot    Option                Hose 0, Bus 0, PCI
 1      QLogic ISP10x0        pka0.7.0.1.0          SCSI Bus ID 7
                              dka0.0.0.1.0          COMPAQ BB00921B91
 2      ELSA GLoria Synergy   vga0.0.0.2.0
 3      DECchip 21154-AA                            Bridge to Bus 2, PCI
 7      Acer Labs M1543C                            Bridge to Bus 1, ISA
15      Acer Labs M1543C IDE  dqa.0.0.15.0
                              dqa0.0.0.15.0         COMPAQ CDR-8435
19      Acer Labs M1543C USB

Slot    Option                Hose 0, Bus 2, PCI
 4      DE602-AA              eia0.0.0.2004.0       00-50-8B-CF-1E-06
 5      DE602-AA              eib0.0.0.2005.0       00-50-8B-CF-1E-07

Slot    Option                Hose 1, Bus 0, PCI
 6      QLogic ISP10x0        pkb0.7.0.6.1          SCSI Bus ID 7
                              dkb400.4.0.6.1        RZ2ED-LS

Slot    Option                Hose 2, Bus 0, PCI
 1      QLogic ISP10x0        pkc0.7.0.1.2          SCSI Bus ID 7
                              dkc0.0.0.1.2          RZ2ED-LS
                              dkc100.1.0.1.2        RZ2ED-LS
                              dkc200.2.0.1.2        RZ2ED-LS
                              dkc300.3.0.1.2        RZ2ED-LS
 2      DEC PCI FDDI          fwa0.0.0.2.2          00-60-6D-DF-F1-E6

Slot    Option                Hose 3, Bus 0, PCI
 6      QLogic ISP10x0        pkd0.7.0.6.3          SCSI Bus ID 7
                              dkd0.0.0.6.3          RZ2ED-LS
                              dkd100.1.0.6.3        RZ2ED-LS
                              dkd200.2.0.6.3        RZ2ED-LS

Slot    Option                Hose 8, Bus 0, PCI
 1      QLogic ISP10x0        pke0.7.0.1.8          SCSI Bus ID 7
                              dke0.0.0.1.8          COMPAQ BB00921B91
 2      ELSA GLoria Synergy   vgb0.0.0.2.8
 7      Acer Labs M1543C                            Bridge to Bus 1, ISA
15      Acer Labs M1543C IDE  dqb.0.0.15.8
                              dqb0.0.0.15.8         COMPAQ DVD-ROM GD-5000
19      Acer Labs M1543C USB

Slot    Option                Hose 9, Bus 0, PCI
 5      DECchip 21154-AA                            Bridge to Bus 2, PCI
```

[*Continued on following page*]

This section of the **show config** display lists devices connected to the system. The format for device names is:

ddau.n.c.s.h

where the fields are as defined in Table 4–1. Note in the middle column (❶) that the adapter ID (**a**) and the unit numbers (**u)** proceed in alphabetic or numeric order for the whole system. These identifiers change when partitions are defined for the system.

Table 4–1 SRM Device Naming Conventions

Field	Meaning	Description
dd	Device driver	Two-letter designator for a port or class device driver. Usually one of: dk SCSI drive or CD dq IDE CD-ROM dr RAID set device dw Ethernet token ring ei Ethernet port fw FDDI device mc Memory channel mk SCSI tape pk SCSI port
a	Adapter ID	Specifies the one-letter designator for adapter ID. One of a, b, c,…. If more than 26, continue with aa, bb, etc.
u	Unit number	Specifies the device unit number. For MSCP devices, this is a unique increasing number. For SCSI devices, this is 100 times the bus node no.
n	Node number	Specifies the bus node ID.
c	Channel number	Specifies the channel or PCI function number. Only meaningful for multi-channel or multi-function devices.
s	Slot number	Specifies the device's logical slot number. The output of a **show config** command indicates the logical slot numbers for devices in a system.
h	Logical hose number	Specifies the device's logical hose number.

Example 4–5 Show Config for the System (Continued)

```
Slot    Option                Hose 9, Bus 2, PCI
 4      DE602-AA              eic0.0.0.2004.9        00-50-8B-CF-1D-DA
 5      DE602-AA              eid0.0.0.2005.9        00-50-8B-CF-1D-DB


Slot    Option                Hose 10, Bus 0, PCI
 1      QLogic ISP10x0        pkf0.7.0.1.10          SCSI Bus ID 7
 3      QLogic ISP10x0        pkg0.7.0.3.10          SCSI Bus ID 7
                              dkg0.0.0.3.10          RZ2ED-LS
                              dkg100.1.0.3.10        RZ2ED-LS
                              dkg200.2.0.3.10        RZ2DD-LS
                              dkg300.3.0.3.10        RZ2ED-LS

Slot    Option                Hose 11, Bus 0, PCI
 5      QLogic ISP10x0        pkh0.7.0.5.11          SCSI Bus ID 7
                              dkh0.0.0.5.11          RZ2ED-LS
                              dkh100.1.0.5.11        RZ2ED-LS
                              dkh200.2.0.5.11        RZ2ED-LS
 7      DEC PCI FDDI          fwb0.0.0.7.11          00-60-6D-12-E8-6B

Slot    Option                Hose 16, Bus 0, PCI
 1      QLogic ISP10x0        pki0.7.0.1.16          SCSI Bus ID 7
                              dki0.0.0.1.16          COMPAQ BB00921B91
 2      ELSA GLoria Synergy   vgc0.0.0.2.16
 7      Acer Labs M1543C                             Bridge to Bus 1, ISA
15      Acer Labs M1543C IDE  dqc.0.0.15.16
                              dqc0.0.0.15.16         COMPAQ CDR-8435
19      Acer Labs M1543C USB

Slot    Option                Hose 17, Bus 0, PCI
 4      DECchip 21154-AA                             Bridge to Bus 2, PCI

Slot    Option                Hose 17, Bus 2, PCI
 4      DE602-AA              eie0.0.0.2004.17       00-50-8B-CF-1F-DE
 5      DE602-AA              eif0.0.0.2005.17       00-50-8B-CF-1F-DF

Slot    Option                Hose 18, Bus 0, PCI
 1      QLogic ISP10x0        pkj0.7.0.1.18          SCSI Bus ID 7
                              dkj400.4.0.1.18        RZ2ED-LS
 2      QLogic ISP10x0        pkk0.7.0.2.18          SCSI Bus ID 7
                              dkk0.0.0.2.18          RZ2ED-LS
                              dkk100.1.0.2.18        RZ2ED-LS
                              dkk200.2.0.2.18        RZ2ED-LS
                              dkk300.3.0.2.18        RZ2ED-LS
 3      QLogic ISP10x0        pkl0.7.0.3.18          SCSI Bus ID 7
                              dkl0.0.0.3.18          RZ2ED-LS
                              dkl100.1.0.3.18        RZ2ED-LS
                              dkl200.2.0.3.18        RZ2ED-LS
```

[*Continued on following page*]

Example 4–5 Show Config for the System (Continued)

```
Slot    Option                Hose 24, Bus 0, PCI
 1      QLogic ISP10x0        pkm0.7.0.1.24          SCSI Bus ID 7
                              dkm0.0.0.1.24          COMPAQ BB00921B91
 2      ELSA GLoria Synergy   vgd0.0.0.2.24
 3      QLogic ISP10x0        pkn0.7.0.3.24          SCSI Bus ID 7
 7      Acer Labs M1543C                             Bridge to Bus 1, ISA
15      Acer Labs M1543C IDE  dqd.0.0.15.24
                              qd0.0.0.15.24          COMPAQ DVD-ROM GD-5000
9       Acer Labs M1543C USB

Slot    Option                Hose 25, Bus 0, PCI
 5      DECchip 21154-AA                             Bridge to Bus 2, PCI
 7      QLogic ISP10x0        pko0.7.0.7.25          SCSI Bus ID 7
                              dko0.0.0.7.25          RZ2ED-LS
                              dko100.1.0.7.25        RZ2ED-LS
                              dko200.2.0.7.25        RZ2ED-LS
                              dko300.3.0.7.25        RZ2ED-LS

Slot    Option                Hose 25, Bus 2, PCI
 4      DE602-AA              eig0.0.0.2004.25       00-50-8B-CF-1C-AC
 5      DE602-AA              eih0.0.0.2005.25       00-50-8B-CF-1C-AD

Slot    Option                Hose 26, Bus 0, PCI
 2      QLogic ISP10x0        pkp0.7.0.2.26          SCSI Bus ID 7
                              dkp0.0.0.2.26          RZ2ED-LS
                              dkp100.1.0.2.26        RZ2ED-LS
                              dkp200.2.0.2.26        RZ2ED-LS
✿                                                                    ✿
P00>>>
```

4.4.2 Show Config for Hard Partition 0

This example displays hard partition 0, consisting of hard QBBs 0 and 1.

Example 4–6 Show Config for Hard Partition 0

```
P00>>> show config

                        Compaq Computer Corporation
                      Compaq AlphaServer GS160 6/731

SRM Console     V5.8-11, built on Jul 12 2000 at 16:04:25
PALcode         OpenVMS PALcode V1.83-1, Tru64 UNIX PALcode V1.78-1
Micro Firmware V5.6
```

Show Config – QBB Section (●)

```
●                                                                    ●
QBB 0           Hard QBB 0      ❶
 Quad Switch                                    QSA rev 4, QSD revs 0/0/0/0
 Duplicate Tag   ❷          Up To 4 MB Caches   DTag revs 1/1/1/1
 Processor 0    CPU 0       4 MB Cache          EV67 pass 2.4, 731 MHz
 Processor 1    CPU 1       4 MB Cache          EV67 pass 2.4, 731 MHz
 Processor 2    CPU 2       4 MB Cache          EV67 pass 2.4, 731 MHz
 Processor 3    CPU 3       4 MB Cache          EV67 pass 2.4, 731 MHz
 Memory 0                                       MPA rev 2, MPD revs 1/1
 Memory 1                                       MPA rev 2, MPD revs 1/1
 Directory                                      DMA rev 1, DMD rev 1
 IOP                                            IOA rev 2, IOD revs 0/0
  Local Link 0 IOR 0 ❸                                 NE ML rev 2
  Remote Link 0                                        FE ML rev 2
  I/O Port 0                                    PCA rev 3
   PCI Box 0    Riser 0     Right Side          Backplane rev 3
    PCI Bus 0   Hose 0      64 Bit, 33 MHz      PCI rev 2.1 compliant
    PCI Bus 1   Hose 1      64 Bit, 33 MHz      PCI rev 2.1 compliant
  Local Link 1 IOR 1 ❸                                 NE ML rev 2
  Remote Link 1                                        FE ML rev 2
  I/O Port 1                                    PCA rev 3
   PCI Box 0    Riser 1     Left Side           Backplane rev 3
    PCI Bus 0   Hose 2      64 Bit, 33 MHz      PCI rev 2.1 compliant
    PCI Bus 1   Hose 3      64 Bit, 33 MHz      PCI rev 2.1 compliant
 Global Port                                    GPA rev 2, GPD revs 0/0

QBB 1           Hard QBB 1      ❶
 Quad Switch                                    QSA rev 4, QSD revs 0/0/0/0
 Duplicate Tag   ❷          Up To 4 MB Caches   DTag revs 1/1/1/1
 Processor 0    CPU 4       4 MB Cache          EV67 pass 2.4, 731 MHz
 Processor 1    CPU 5       4 MB Cache          EV67 pass 2.4, 731 MHz
 Processor 2    CPU 6       4 MB Cache          EV67 pass 2.4, 731 MHz
 Processor 3    CPU 7       4 MB Cache          EV67 pass 2.4, 731 MHz
 Memory 0                                       MPA rev 2, MPD revs 1/1
 Memory 1                                       MPA rev 2, MPD revs 1/1
 Directory                                      DMA rev 1, DMD rev 1
                                               [Continued on following page]
```

Example 4–6 Show Config for Hard Partition 0 (Continued)

```
IOP                                                IOA rev 2, IOD revs 0/0
  Local Link 0 IOR 4    ❸                                NE ML rev 2
  Remote Link 0                                          FE ML rev 2
  I/O Port 0                                       PCA rev 3
   PCI Box 1   Riser 0     Right Side              Backplane rev 3
    PCI Bus 0  Hose 8      64 Bit, 33 MHz          PCI rev 2.1 compliant
    PCI Bus 1  Hose 9      64 Bit, 33 MHz          PCI rev 2.1 compliant
  Local Link 1 IOR 5    ❸                                NE ML rev 2
  Remote Link 1                                          FE ML rev 2
  I/O Port 1                                       PCA rev 3
   PCI Box 1   Riser 1     Left Side               Backplane rev 3
    PCI Bus 0  Hose 10     64 Bit, 33 MHz          PCI rev 2.1 compliant
    PCI Bus 1  Hose 11     64 Bit, 33 MHz          PCI rev 2.1 compliant
 Global Port                                       GPA rev 2, GPD revs 0/0
●                                                                          ●
```

❶ In hard partition 0, the hard and soft QBB numbers are still equivalent. Both start at 0. In this case, the partition consists of hard QBBS 0 and 1. (Assuming the **hp_*** environment variables were set as in Section 4.1.)

❷ Soft CPU numbers start with 0 and continue through 8, as was the case in Section 4.4.1.

❸ The IOR numbers are as they were for the **show config** for the entire system (see Section 4.4.1).

Example 4–6 Show Config for Hard Partition 0 (Continued)

Show Config – H-Switch, Memory, and Standard I/O Summary (■)

```
■                                                                    ■
Hierarchical Switch    ❶                          HSA revs 1/1, HSD revs 1/1/1/1

 QBB     Size    Interleave    ❷                   System Memory 8 GB
  0       4 GB      8-Way
  1       4 GB      8-Way

 Hose   IOP   PCI Box       ❸                     Standard I/O Modules
   0     0       0          Primary               Acer Labs M1543C rev A1-D
   8     1       1                                Acer Labs M1543C rev A1-D
■                                                                    ■
```

Show Config – Memory Detail (▲)

```
▲                                                                    ▲
System Memory 8 GB       ❹

 Board   Set   Array    Size      Address    QBB 0 Memory
   0      0      0      2 GB   00000000000
   1      0      1      2 GB   00000000000
 Total Available         4 GB   8-Way Interleave

 Board   Set   Array    Size      Address    QBB 1 Memory
   0      0      0      2 GB   01000000000
   1      0      1      2 GB   01000000000
 Total Available         4 GB   8-Way Interleave
▲                                                                    ▲
```

The **show config** listing continues with an entry for the hierarchical switch, a memory summary, and a standard I/O summary for the partition. This section is followed by a section giving detail for the memory boards in the partition.

❶ The hierarchical switch is considered a part of the partition.

❷ The memory summary shows the memory present in each QBB in the partition. QBBs 0 and 1 each have 4 Gbytes of memory each. Note that the heading "System Memory" lists total memory for this partition only.

❸ This section shows the standard I/O modules present on designated hoses within the partition.

❹ Detailed memory listing. The total system memory (actually, for the partition only) is 8 Gbytes. Memory is listed by board number for each QBB in the partition. In this case, QBBs 0 and 1 each have two 2-Gbyte boards.

Example 4–6 Show Config for Hard Partition 0 (Continued)

Show Config – I/O Adapters Listed in Order by PCI Box ID Number (✔)

✔ ✔

❶ ❷

PCI Box	Riser	Slot	Option	Hose	Bus	Slot	Function	Name
0	0	1	Standard I/O Module	0	❸			
			+ Acer Labs M1543C	0	0	7		
			+ Acer Labs M1543C IDE	0	0	15		dqa
			+ Acer Labs M1543C USB	0	0	19		
			+ QLogic ISP10x0	0	0	1		pka
0	0	2	ELSA GLoria Synergy	0	0	2		vga
0	0	3	DECchip 21154-AA	0	0	3		
			+ DE602-AA	0	2	4		eia
			+ DE602-AA	0	2	5		eib
0	0	6	QLogic ISP10x0	1	0	6		pkb
0	1	1	QLogic ISP10x0	2	0	1		pkc
0	1	2	DEC PCI FDDI	2	0	2		fwa
0	1	6	QLogic ISP10x0	3	0	6		pkd
1	0	1	Standard I/O Module	8	❸			
			+ Acer Labs M1543C	8	0	7		
			+ Acer Labs M1543C IDE	8	0	15		dqb
			+ Acer Labs M1543C USB	8	0	19		
			+ QLogic ISP10x0	8	0	1		pke
1	0	2	ELSA GLoria Synergy	8	0	2		vgb
1	0	5	DECchip 21154-AA	9	0	5		
			+ DE602-AA	9	2	4		eic
			+ DE602-AA	9	2	5		eid
1	1	1	QLogic ISP10x0	10	0	1		pkf
1	1	3	QLogic ISP10x0	10	0	3		pkg
1	1	5	QLogic ISP10x0	11	0	5		pkh
1	1	7	DEC PCI FDDI	11	0	7		fwb

✔ ✔

Show Config – Logical Hose Summary (✚)

✚ ❹ ✚

Hose	QBB	PCA	PCI Bus	Slots
0	0	0	0	1-3
1	0	0	1	4-7
2	0	1	0	1-3
3	0	1	1	4-7
8	1	0	0	1-3
9	1	0	1	4-7
10	1	1	0	1-3
11	1	1	1	4-7

✚ ✚

❶ I/O adapters in the partition are listed in order for the PCI box IDs in ascending order. Comparing this to the display for the whole system in Example 4–5 shows that the PCI boxes connected to QBBs 0 and 1 are listed here.

❷ The I/O riser in the QBB providing the connection to the PCI box is listed here.

❸ Two standard I/O modules are resident in hard partition 0.

❹ Logical hose numbers attached to QBBs 0 and 1 (hard partition 0) are listed here.

Example 4–6 Show Config for Hard Partition 0 (Continued)

Show Config – I/O Adapters and Devices in Order by Logical Hose Number (✿)

✿ ✿

❶

```
Slot   Option                Hose 0, Bus 0, PCI
  1    QLogic ISP10x0         pka0.7.0.1.0           SCSI Bus ID 7
                              dka0.0.0.1.0           COMPAQ BB00921B91
  2    ELSA GLoria Synergy    vga0.0.0.2.0
  3    DECchip 21154-AA                              Bridge to Bus 2, PCI
  7    Acer Labs M1543C                              Bridge to Bus 1, ISA
 15    Acer Labs M1543C IDE   dqa.0.0.15.0
                              dqa0.0.0.15.0          COMPAQ CDR-8435
 19    Acer Labs M1543C USB

Slot   Option                Hose 0, Bus 2, PCI
  4    DE602-AA               eia0.0.0.2004.0        00-50-8B-CF-1E-06
  5    DE602-AA               eib0.0.0.2005.0        00-50-8B-CF-1E-07

Slot   Option                Hose 1, Bus 0, PCI
  6    QLogic ISP10x0         pkb0.7.0.6.1           SCSI Bus ID 7
                              dkb0.0.0.6.1           COMPAQ BA03611C9B
                              dkb100.1.0.6.1         RZ2DD-LS

Slot   Option                Hose 2, Bus 0, PCI
  1    QLogic ISP10x0         pkc0.7.0.1.2           SCSI Bus ID 7
                              dkc0.0.0.1.2           RZ2ED-LS
                              dkc100.1.0.1.2         RZ2ED-LS
                              dkc200.2.0.1.2         RZ2ED-LS
                              dkc300.3.0.1.2         RZ2ED-LS
  2    DEC PCI FDDI           fwa0.0.0.2.2           00-60-6D-DF-F1-E6

Slot   Option                Hose 3, Bus 0, PCI
  6    QLogic ISP10x0         pkd0.7.0.6.3           SCSI Bus ID 7
                              dkd0.0.0.6.3           RZ2ED-LS
                              dkd100.1.0.6.3         RZ2ED-LS
                              dkd200.2.0.6.3         RZ2ED-LS

Slot   Option                Hose 8, Bus 0, PCI
  1    QLogic ISP10x0         pke0.7.0.1.8           SCSI Bus ID 7
                              dke0.0.0.1.8           COMPAQ BB00921B91
  2    ELSA GLoria Synergy    vgb0.0.0.2.8
  7    Acer Labs M1543C                              Bridge to Bus 1, ISA
 15    Acer Labs M1543C IDE   dqb.0.0.15.8
                              dqb0.0.0.15.8          COMPAQ DVD-ROM GD-5000
 19    Acer Labs M1543C USB

Slot   Option                Hose 9, Bus 0, PCI
  5    DECchip 21154-AA                              Bridge to Bus 2, PCI

Slot   Option                Hose 9, Bus 2, PCI
  4    DE602-AA               eic0.0.0.2004.9        00-50-8B-CF-1D-DA
  5    DE602-AA               eid0.0.0.2005.9        00-50-8B-CF-1D-DB
```

[*Continued on following page*]

Example 4–6 Show Config for Hard Partition 0 (Continued)

```
Slot    Option                Hose 10, Bus 0, PCI
   1    QLogic ISP10x0        pkf0.7.0.1.10          SCSI Bus ID 7
   3    QLogic ISP10x0        pkg0.7.0.3.10          SCSI Bus ID 7
                              dkg0.0.0.3.10          RZ2ED-LS
                              dkg100.1.0.3.10        RZ2ED-LS
                              dkg200.2.0.3.10        RZ2DD-LS
                              dkg300.3.0.3.10        RZ2ED-LS

 Slot   Option                Hose 11, Bus 0, PCI
   5    QLogic ISP10x0        pkh0.7.0.5.11          SCSI Bus ID 7
                              dkh0.0.0.5.11          RZ2ED-LS
                              dkh100.1.0.5.11        RZ2ED-LS
                              dkh200.2.0.5.11        RZ2ED-LS
   7    DEC PCI FDDI          fwb0.0.0.7.11          00-60-6D-12-E8-6B
✿                                                                    ✿
```

```
P00>>>
```

This section of the **show config** for partition 0 shows the devices connected to the partition (❶). In this case, for partition 0, the device adapter IDs and the unit numbers remain the same as for the listing for the entire system, since they are connected to QBBs 0 and 1.

4.4.3 Show Config for Hard Partition 1

This example displays information for hard partition 1.

Example 4–7 Show Config for Hard Partition 1

```
P00>>> show config

                        Compaq Computer Corporation
                      Compaq AlphaServer GS160 6/731

SRM Console     V5.8-11, built on Jul 12 2000 at 16:04:25
PALcode         OpenVMS PALcode V1.83-1, Tru64 UNIX PALcode V1.78-1
Micro Firmware V5.6
```

Show Config – QBB Section (●)

```
●                                                                    ●
QBB 0           Hard QBB 2     ❶
 Quad Switch                                    QSA rev 4, QSD revs 0/0/0/0
 Duplicate Tag  ❷       Up To 4 MB Caches       DTag revs 1/1/1/1
 Processor 0    CPU 0   4 MB Cache              EV67 pass 2.4, 731 MHz
 Processor 1    CPU 1   4 MB Cache              EV67 pass 2.4, 731 MHz
 Processor 2    CPU 2   4 MB Cache              EV67 pass 2.4, 731 MHz
 Processor 3    CPU 3   4 MB Cache              EV67 pass 2.4, 731 MHz
 Memory 0                                       MPA rev 2, MPD revs 1/1
 Memory 1                                       MPA rev 2, MPD revs 1/1
 Directory                                      DMA rev 1, DMD rev 1
 IOP                                            IOA rev 2, IOD revs 0/0
  Local Link 0 IOR 0  ❸                         NE ML rev 2
  Remote Link 0                                        FE ML rev 2
  I/O Port 0                                    PCA rev 3
   PCI Box 2    Riser 0    Right Side           Backplane rev 3
    PCI Bus 0   Hose 16    64 Bit, 33 MHz       PCI rev 2.1 compliant
    PCI Bus 1   Hose 17    64 Bit, 33 MHz       PCI rev 2.1 compliant
  Local Link 1 IOR 1  ❸                                NE ML rev 2
  Remote Link 1                                        FE ML rev 2
  I/O Port 1                                    PCA rev 3
   PCI Box 2    Riser 1    Left Side            Backplane rev 3
    PCI Bus 0   Hose 18    64 Bit, 33 MHz       PCI rev 2.1 compliant
    PCI Bus 1   Hose 19    64 Bit, 33 MHz       PCI rev 2.1 compliant
 Global Port                                    GPA rev 2, GPD revs 0/0

QBB 1           Hard QBB 3     ❶
 Quad Switch                                    QSA rev 4, QSD revs 0/0/0/0
 Duplicate Tag  ❷       Up To 4 MB Caches       DTag revs 1/1/1/1
 Processor 0    CPU 4   4 MB Cache              EV67 pass 2.4, 731 MHz
                                        [Continued on following page]
```

Example 4–7 Show Config for Hard Partition 1 (Continued)

```
Processor 1   CPU 5       4 MB Cache          EV67 pass 2.4, 731 MHz
Processor 2   CPU 6       4 MB Cache          EV67 pass 2.4, 731 MHz
Processor 3   CPU 7       4 MB Cache          EV67 pass 2.4, 731 MHz
Memory 0                                      MPA rev 2, MPD revs 1/1
Memory 1                                      MPA rev 2, MPD revs 1/1
Directory                                     DMA rev 1, DMD rev 1
IOP                                           IOA rev 2, IOD revs 0/0
 Local Link 0 IOR 4  ❸                               NE ML rev 2
 Remote Link 0                                       FE ML rev 2
 I/O Port 0                                   PCA rev 3
  PCI Box 3   Riser 0     Right Side          Backplane rev 3
   PCI Bus 0  Hose 24     64 Bit, 33 MHz      PCI rev 2.1 compliant
   PCI Bus 1  Hose 25     64 Bit, 33 MHz      PCI rev 2.1 compliant
 Local Link 1 IOR 5  ❸                               NE ML rev 2
 Remote Link 1                                       FE ML rev 2
 I/O Port 1                                   PCA rev 3
  PCI Box 3   Riser 1     Left Side           Backplane rev 3
   PCI Bus 0  Hose 26     64 Bit, 33 MHz      PCI rev 2.1 compliant
   PCI Bus 1  Hose 27     64 Bit, 33 MHz      PCI rev 2.1 compliant
Global Port                                   GPA rev 2, GPD revs 0/0
●                                                                       ●
```

❶ In this example, hard partition 1 consists of hard QBBs 2 and 3. Note that the soft partition numbers begin again with 0.

❷ Soft CPU numbers also restart at 0 within hard partition 1. Here, they range from 0 through 7.

❸ The logical I/O port numbers also restart at 0 within hard partition 1.

Example 4–7 Show Config for Hard Partition 1 (Continued)

Show Config – H-Switch, Memory, and Standard I/O Summary (■)

```
■                                                                    ■

Hierarchical Switch    ❶                        HSA revs 1/1, HSD revs 1/1/1/1

 QBB     Size    Interleave  ❷                          System Memory 8 GB
  0       4 GB      8-Way
  1       4 GB      8-Way

 Hose   IOP   PCI Box  ❸                                 Standard I/O Modules
  16     0       2         Primary            Acer Labs M1543C rev A1-E
  24     1       3                            Acer Labs M1543C rev A1-E
■                                                                    ■
```

Show Config – Memory Detail (▲)

```
▲                                                                    ▲

System Memory 8 GB    ❹

 Board   Set   Array    Size      Address    QBB 0 Memory
   0      0      0       2 GB   00000000000
   1      0      1       2 GB   00000000000
 Total Available         4 GB   8-Way Interleave

 Board   Set   Array    Size      Address    QBB 1 Memory
   0      0      0       2 GB   01000000000
   1      0      1       2 GB   01000000000
 Total Available         4 GB   8-Way Interleave
▲                                                                    ▲
```

❶ The hierarchical switch is shown as present in hard partition 1.

❷ The memory summary shows the memory present in each QBB. Note that soft QBB numbers are used in this display.

❸ This section shows the standard I/O modules present in hard partition 1. Note that the hose numbers are not restarted at 0. Hose numbers remain constant regardless of partitioning.

❹ Detailed memory listing. The "System Memory" refers to the memory for the hard partition. Each QBB contains two boards of 2 GB each.

Example 4–7 Show Config for Hard Partition 1 (Continued)

Show Config – I/O Adapters Listed in Order by PCI Box ID Number (✔)

```
✔                                                                          ✔
    ❶    ❷
PCI Box  Riser  Slot  Option                  Hose  Bus  Slot  Function  Name
    2       0     1   Standard I/O Module      16   ❸
                      + Acer Labs M1543C       16    0     7
                      + Acer Labs M1543C IDE   16    0    15              dqa
                      + Acer Labs M1543C USB   16    0    19
                      + QLogic ISP10x0         16    0     1              pka
    2       0     2   ELSA GLoria Synergy      16    0     2              vga
    2       0     4   DECchip 21154-AA         17    0     4
                      + DE602-AA               17    2     4              eia
                      + DE602-AA               17    2     5              eib
    2       1     1   QLogic ISP10x0           18    0     1              pkb
    2       1     2   QLogic ISP10x0           18    0     2              pkc
    2       1     3   QLogic ISP10x0           18    0     3              pkd
    3       0     1   Standard I/O Module      24   ❸
                      + Acer Labs M1543C       24    0     7
                      + Acer Labs M1543C IDE   24    0    15              dqb
                      + Acer Labs M1543C USB   24    0    19
                      + QLogic ISP10x0         24    0     1              pke
    3       0     2   ELSA GLoria Synergy      24    0     2              vgb
    3       0     3   QLogic ISP10x0           24    0     3              pkf
    3       0     5   DECchip 21154-AA         25    0     5
                      + DE602-AA               25    2     4              eic
                      + DE602-AA               25    2     5              eid
    3       0     7   QLogic ISP10x0           25    0     7              pkg
    3       1     2   QLogic ISP10x0           26    0     2              pkh
✔                                                                          ✔
```

Show Config – Logical Hose Summary (✚)

```
✚                                                                          ✚
    ❹
 Hose  QBB  PCA  PCI Bus  Slots
  16    0    0       0     1-3
  17    0    0       1     4-7
  18    0    1       0     1-3
  19    0    1       1     4-7
  24    1    0       0     1-3
  25    1    0       1     4-7
  26    1    1       0     1-3
  27    1    1       1     4-7
✚                                                                          ✚
```

❶ I/O adapters on the system are listed in order for the PCI box IDs in ascending order. Note that the PCI box IDs remain the same whether or not the system is partitioned. They are the settings on the node ID switches of the PCI boxes, and are unique and constant through the system.

❷ Within PCI box, the connecting I/O riser in the QBB is listed (0 or 1).

❸ Standard I/O modules are of interest in partitions. Hard partition 1 contains two standard I/O modules.

❹ Logical hoses in hard partition 1 are listed here. Note that these numbers remain the same whether or not the system is partitioned.

Example 4–7 Show Config for Hard Partition 1 (Continued)

Show Config – I/O Adapters and Devices in Order by Logical Hose Number (✿)

```
✿                                                                    ✿

                                    ❶
Slot   Option                 Hose 16, Bus 0, PCI
  1    QLogic ISP10x0          pka0.7.0.1.16          SCSI Bus ID 7
                               dka0.0.0.1.16          COMPAQ BB00921B91
  2    ELSA GLoria Synergy     vga0.0.0.2.16
  7    Acer Labs M1543C                               Bridge to Bus 1, ISA
 15    Acer Labs M1543C IDE    dqa.0.0.15.16
                               dqa0.0.0.15.16         COMPAQ CDR-8435
 19    Acer Labs M1543C USB

Slot   Option                 Hose 17, Bus 0, PCI
  4    DECchip 21154-AA                               Bridge to Bus 2, PCI

Slot   Option                 Hose 17, Bus 2, PCI
  4    DE602-AA               eia0.0.0.2004.17       00-50-8B-CF-1F-DE
  5    DE602-AA               eib0.0.0.2005.17       00-50-8B-CF-1F-DF

Slot   Option                 Hose 18, Bus 0, PCI
  1    QLogic ISP10x0          pkb0.7.0.1.18          SCSI Bus ID 7
                               dkb0.0.0.1.18          COMPAQ BA03611C9B
                               dkb100.1.0.1.18        RZ2DD-LS
  2    QLogic ISP10x0          pkc0.7.0.2.18          SCSI Bus ID 7
                               dkc0.0.0.2.18          RZ2ED-LS
                               dkc100.1.0.2.18        RZ2ED-LS
                               dkc200.2.0.2.18        RZ2ED-LS
                               dkc300.3.0.2.18        RZ2ED-LS
  3    QLogic ISP10x0          pkd0.7.0.3.18          SCSI Bus ID 7
                               dkd0.0.0.3.18          RZ2ED-LS
                               dkd100.1.0.3.18        RZ2ED-LS
                               dkd200.2.0.3.18        RZ2ED-LS

Slot   Option                 Hose 24, Bus 0, PCI
  1    QLogic ISP10x0          pke0.7.0.1.24          SCSI Bus ID 7
                               dke0.0.0.1.24          COMPAQ BB00921B91
  2    ELSA GLoria Synergy     vgb0.0.0.2.24
  3    QLogic ISP10x0          pkf0.7.0.3.24          SCSI Bus ID 7
  7    Acer Labs M1543C                               Bridge to Bus 1, ISA
 15    Acer Labs M1543C IDE    dqb.0.0.15.24
                               dqb0.0.0.15.24         COMPAQ DVD-ROM GD-5000
 19    Acer Labs M1543C USB
```

[*Continued on next page*]

```
Slot    Option               Hose 25, Bus 0, PCI
   5    DECchip 21154-AA                         Bridge to Bus 2, PCI
   7    QLogic ISP10x0       pkg0.7.0.7.25       SCSI Bus ID 7
                             dkg0.0.0.7.25       RZ2ED-LS
                             dkg100.1.0.7.25     RZ2ED-LS
                             dkg200.2.0.7.25     RZ2ED-LS
                             dkg300.3.0.7.25     RZ2ED-LS

 Slot   Option               Hose 25, Bus 2, PCI
   4    DE602-AA             eic0.0.0.2004.25    00-50-8B-CF-1C-AC
   5    DE602-AA             eid0.0.0.2005.25    00-50-8B-CF-1C-AD

 Slot   Option               Hose 26, Bus 0, PCI
   2    QLogic ISP10x0       pkh0.7.0.2.26       SCSI Bus ID 7
                             dkh0.0.0.2.26       RZ2ED-LS
                             dkh100.1.0.2.26     RZ2ED-LS
                             dkh200.2.0.2.26     RZ2ED-LS
✿                                                                    ✿
P00>>>
```

This section of the **show config** display lists devices connected to hard partition 1 (see ❶).

NOTE: *The device name's adapter ID and unit number are restarted at "a" and "0", respectively, for second and consecutive hard partitions. This is significant when you are defining the boot device and other parameters for a hard partition.*

4.5 Show Device Command for Hard Partitions (SRM)

The show device command displays information about the I/O devices connected to the system.

4.5.1 Show Device for Unpartitioned System

This example displays a show device for the same system as used in Section 4.4.1.

Example 4–8 Show Device for Unpartitioned System

```
P00>>> show device
dka0.0.0.1.0               DKA0              COMPAQ BB00921B91  3B05    ❶
dkb400.4.0.6.1             DKB400                 RZ2ED-LS      0306
dkc0.0.0.1.2               DKC0                   RZ2ED-LS      0306
dkc100.1.0.1.2             DKC100                 RZ2ED-LS      0306
dkc200.2.0.1.2             DKC200                 RZ2ED-LS      0306
dkc300.3.0.1.2             DKC300                 RZ2ED-LS      0306
dkd0.0.0.6.3               DKD0                   RZ2ED-LS      0306
dkd100.1.0.6.3             DKD100                 RZ2ED-LS      0306
dkd200.2.0.6.3             DKD200                 RZ2ED-LS      0306
dke0.0.0.1.8               DKE0              COMPAQ BB00921B91  3B05
dkg0.0.0.3.10              DKG0                   RZ2ED-LS      0306
dkg100.1.0.3.10            DKG100                 RZ2ED-LS      0306
dkg200.2.0.3.10            DKG200                 RZ2DD-LS      0306
dkg300.3.0.3.10            DKG300                 RZ2ED-LS      0306
dkh0.0.0.5.11              DKH0                   RZ2ED-LS      0306
dkh100.1.0.5.11            DKH100                 RZ2ED-LS      0306
dkh200.2.0.5.11            DKH200                 RZ2ED-LS      0306
dki0.0.0.1.16              DKI0              COMPAQ BB00921B91  3B05    ❶
dkj400.4.0.1.18            DKJ400                 RZ2ED-LS      0306
dkk0.0.0.2.18              DKK0                   RZ2ED-LS      0306
dkk100.1.0.2.18            DKK100                 RZ2ED-LS      0306
dkk200.2.0.2.18            DKK200                 RZ2ED-LS      0306
dkk300.3.0.2.18            DKK300                 RZ2ED-LS      0306
dkl0.0.0.3.18              DKL0                   RZ2ED-LS      0306
dkl100.1.0.3.18            DKL100                 RZ2ED-LS      0306
dkl200.2.0.3.18            DKL200                 RZ2ED-LS      0306
dkm0.0.0.1.24              DKM0              COMPAQ BB00921B91  3B05
dko0.0.0.7.25              DKO0                   RZ2ED-LS      0306
dko100.1.0.7.25            DKO100                 RZ2ED-LS      0306
dko200.2.0.7.25            DKO200                 RZ2ED-LS      0306
dko300.3.0.7.25            DKO300                 RZ2ED-LS      0306
dkp0.0.0.2.26              DKP0                   RZ2ED-LS      0306
dkp100.1.0.2.26            DKP100                 RZ2ED-LS      0306
dkp200.2.0.2.26            DKP200                 RZ2ED-LS      0306
```

```
dqa0.0.0.15.0              DQA0                COMPAQ CDR-8435  0013      ❷
dqb0.0.0.15.8              DQB0          COMPAQ DVD-ROM GD-5000  0211
dqc0.0.0.15.16             DQC0                COMPAQ CDR-8435  0013      ❷
dqd0.0.0.15.24             DQD0          COMPAQ DVD-ROM GD-5000  0211
eia0.0.0.2004.0            EIA0               00-50-8B-CF-1E-06            ❸
eib0.0.0.2005.0            EIB0               00-50-8B-CF-1E-07
eic0.0.0.2004.9            EIC0               00-50-8B-CF-1D-DA
eid0.0.0.2005.9            EID0               00-50-8B-CF-1D-DB
eie0.0.0.2004.17           EIE0               00-50-8B-CF-1F-DE            ❸
eif0.0.0.2005.17           EIF0               00-50-8B-CF-1F-DF
eig0.0.0.2004.25           EIG0               00-50-8B-CF-1C-AC
eih0.0.0.2005.25           EIH0               00-50-8B-CF-1C-AD
fwa0.0.0.2.2               FWA0               00-60-6D-DF-F1-E6            ❹
fwb0.0.0.7.11              FWB0               00-60-6D-12-E8-6B
pka0.7.0.1.0               PKA0                  SCSI Bus ID 7  5.57       ❺
pkb0.7.0.6.1               PKB0                  SCSI Bus ID 7  5.57
pkc0.7.0.1.2               PKC0                  SCSI Bus ID 7  5.57
pkd0.7.0.6.3               PKD0                  SCSI Bus ID 7  5.57
pke0.7.0.1.8               PKE0                  SCSI Bus ID 7  5.57
pkf0.7.0.1.10              PKF0                  SCSI Bus ID 7  5.57
pkg0.7.0.3.10              PKG0                  SCSI Bus ID 7  5.57
pkh0.7.0.5.11              PKH0                  SCSI Bus ID 7  5.57
pki0.7.0.1.16              PKI0                  SCSI Bus ID 7  5.57       ❺
pkj0.7.0.1.18              PKJ0                  SCSI Bus ID 7  5.57
pkk0.7.0.2.18              PKK0                  SCSI Bus ID 7  5.57
pkl0.7.0.3.18              PKL0                  SCSI Bus ID 7  5.57
pkm0.7.0.1.24              PKM0                  SCSI Bus ID 7  5.57
pkn0.7.0.3.24              PKN0                  SCSI Bus ID 7  5.57
pko0.7.0.7.25              PKO0                  SCSI Bus ID 7  5.57
pkp0.7.0.2.26              PKP0                  SCSI Bus ID 7  5.57
P00>>>
```

❶ Looking back at the cutoff points for logical hose numbers for the two partitions as shown by the **show config** displays for partition 0 and partition 1 of this system, we can predict the division point in this example for the **dk** devices (SCSI). The break is at logical hose 16. (Remember from Table 4–1 that the logical hose number is the last number in the device name.)

❷ Likewise, for **dq** (IDE CD-ROM) devices, the devices are divided beginning with the second partition at logical hose 16.

❸ For Ethernet ports, the division occurs at logical hose 17.

❹ Both FDDI devices are in partition 0.

❺ The **pk** (SCSI ports) divide at logical hose 16.

4.5.2 Show Device for Hard Partition 0

This example shows the display provided by a show device command for hard partition 0.

Example 4–9 Show Device for Hard Partition 0

```
P00>>> show device
dka0.0.0.1.0               DKA0              COMPAQ BB00921B91  3B05     ❶
dkb0.0.0.6.1               DKB0              COMPAQ BA03611C9B  3B06
dkb100.1.0.6.1             DKB100                     RZ2DD-LS  0306
dkc0.0.0.1.2               DKC0                       RZ2ED-LS  0306
dkc100.1.0.1.2             DKC100                     RZ2ED-LS  0306
dkc200.2.0.1.2             DKC200                     RZ2ED-LS  0306
dkc300.3.0.1.2             DKC300                     RZ2ED-LS  0306
dkd0.0.0.6.3               DKD0                       RZ2ED-LS  0306
dkd100.1.0.6.3             DKD100                     RZ2ED-LS  0306
dkd200.2.0.6.3             DKD200                     RZ2ED-LS  0306
dke0.0.0.1.8               DKE0              COMPAQ BB00921B91  3B05
dkg0.0.0.3.10              DKG0                       RZ2ED-LS  0306
dkg100.1.0.3.10            DKG100                     RZ2ED-LS  0306
dkg200.2.0.3.10            DKG200                     RZ2DD-LS  0306
dkg300.3.0.3.10            DKG300                     RZ2ED-LS  0306
dkh0.0.0.5.11              DKH0                       RZ2ED-LS  0306
dkh100.1.0.5.11            DKH100                     RZ2ED-LS  0306
dkh200.2.0.5.11            DKH200                     RZ2ED-LS  0306
dqa0.0.0.15.0              DQA0                COMPAQ CDR-8435  0013     ❷
dqb0.0.0.15.8              DQB0          COMPAQ DVD-ROM GD-5000  0211
eia0.0.0.2004.0            EIA0              00-50-8B-CF-1E-06            ❸
eib0.0.0.2005.0            EIB0              00-50-8B-CF-1E-07
eic0.0.0.2004.9            EIC0              00-50-8B-CF-1D-DA
eid0.0.0.2005.9            EID0              00-50-8B-CF-1D-DB
fwa0.0.0.2.2               FWA0              00-60-6D-DF-F1-E6            ❹
fwb0.0.0.7.11              FWB0              00-60-6D-12-E8-6B
pka0.7.0.1.0               PKA0                 SCSI Bus ID 7  5.57     ❺
pkb0.7.0.6.1               PKB0                 SCSI Bus ID 7  5.57
pkc0.7.0.1.2               PKC0                 SCSI Bus ID 7  5.57
pkd0.7.0.6.3               PKD0                 SCSI Bus ID 7  5.57
pke0.7.0.1.8               PKE0                 SCSI Bus ID 7  5.57
pkf0.7.0.1.10              PKF0                 SCSI Bus ID 7  5.57
pkg0.7.0.3.10              PKG0                 SCSI Bus ID 7  5.57
pkh0.7.0.5.11              PKH0                 SCSI Bus ID 7  5.57
P00>>>
```

❶ As determined from the last section, partition 0 contains the 18 **dk** devices connected to the logical hoses that are part of partition 0. Their numbering here in partition 0 is the same as it was for the entire system.

❷ The two expected **dq** devices are shown here as part of partition 0.

❸ The four Ethernet ports in partition 0 are shown here.

❹ Both FDDI devices on the system are, as predicted, part of partition 0.

❺ The eight Ethernet ports that are part of partition 0 are listed here.

4.5.3 Show Device for Hard Partition 1

This example shows the display provided by a show device command for hard partition 1.

Example 4–10 Show Device for Hard Partition 1

```
P00>>> show device
dka0.0.0.1.16              DKA0              COMPAQ BB00921B91  3B05     ❶
dkb0.0.0.1.18              DKB0              COMPAQ BA03611C9B  3B06
dkb100.1.0.1.18            DKB100                    RZ2DD-LS  0306
dkc0.0.0.2.18              DKC0                      RZ2ED-LS  0306
dkc100.1.0.2.18            DKC100                    RZ2ED-LS  0306
dkc200.2.0.2.18            DKC200                    RZ2ED-LS  0306
dkc300.3.0.2.18            DKC300                    RZ2ED-LS  0306
dkd0.0.0.3.18              DKD0                      RZ2ED-LS  0306
dkd100.1.0.3.18            DKD100                    RZ2ED-LS  0306
dkd200.2.0.3.18            DKD200                    RZ2ED-LS  0306
dke0.0.0.1.24              DKE0              COMPAQ BB00921B91  3B05
dkg0.0.0.7.25              DKG0                      RZ2ED-LS  0306
dkg100.1.0.7.25            DKG100                    RZ2ED-LS  0306
dkg200.2.0.7.25            DKG200                    RZ2ED-LS  0306
dkg300.3.0.7.25            DKG300                    RZ2ED-LS  0306
dkh0.0.0.2.26              DKH0                      RZ2ED-LS  0306
dkh100.1.0.2.26            DKH100                    RZ2ED-LS  0306
dkh200.2.0.2.26            DKH200                    RZ2ED-LS  0306
dqa0.0.0.15.16             DQA0                COMPAQ CDR-8435  0013     ❷
dqb0.0.0.15.24             DQB0          COMPAQ DVD-ROM GD-5000  0211
eia0.0.0.2004.17           EIA0              00-50-8B-CF-1F-DE            ❸
eib0.0.0.2005.17           EIB0              00-50-8B-CF-1F-DF
eic0.0.0.2004.25           EIC0              00-50-8B-CF-1C-AC
eid0.0.0.2005.25           EID0              00-50-8B-CF-1C-AD
pka0.7.0.1.16              PKA0                 SCSI Bus ID 7  5.57     ❺
pkb0.7.0.1.18              PKB0                 SCSI Bus ID 7  5.57
pkc0.7.0.2.18              PKC0                 SCSI Bus ID 7  5.57
pkd0.7.0.3.18              PKD0                 SCSI Bus ID 7  5.57
pke0.7.0.1.24              PKE0                 SCSI Bus ID 7  5.57
pkf0.7.0.3.24              PKF0                 SCSI Bus ID 7  5.57
pkg0.7.0.7.25              PKG0                 SCSI Bus ID 7  5.57
pkh0.7.0.2.26              PKH0                 SCSI Bus ID 7  5.57
```

❶ The 18 SCSI devices with logical hose connections 16 and up appear here as part of hard partition 1. Note that the adapter ID lettering begins again at a. That is, the **dka**… device is listed as **dki**….in Example 4–8.

❷ Logical hoses 16 and 24 are attached to partition 1, so these two IDE CD-ROM-devices are listed here. Again, adapter ID lettering begins again at a.

❸ The four Ethernet ports in hard partition 1 appear here. Again, adapter ID lettering begins again at a.

❹ (There are no FDDI devices attached to hard partition 1, as there were in partition 0.)

❺ The eight Ethernet ports that are part of hard partition 1 are listed here. Again, adapter ID lettering restarts at a.

Chapter 5
Defining Soft Partitions

OpenVMS Galaxy recognizes soft partitions as well as hard partitions. Soft partitions are the basis for dynamic resource sharing for *OpenVMS*, as discussed in Chapter 1. (See the *OpenVMS Alpha Galaxy and Partitioning Guide* for more information.) This chapter describes the SRM environment variables you set to define soft partitions, as well as the **lpinit** command used to initialize soft partitions.

Sections include:

- SRM Commands That Define Soft Partitions
- Console Window for Soft Partitions
- Detailed Directions for **lp_io_mask**
- Detailed Directions for **lp_cpu_mask**
- Detailed Directions for **lp_mem_size**
- Detailed Directions for **lp_shared_mem_size**
- **Lpinit** Command
- Soft Partitions Within Hard Partitions

5.1 SRM Commands That Define Soft Partitions

Soft partitions are defined by setting environment variables that define the number of partitions, as well as the CPUs, I/O risers, and memory sizes of each partition, the size of shared memory, and the partition to receive error interrupts. Soft partitions are initialized with the lpinit command.

Figure 5–1 Soft Partitions on a GS160 System

SRM environment variables

define:

1. Number of partitions:
   lp_count (0, 1, 2, 3, ... 8)

```
P00>>>> set lp_count 3
```

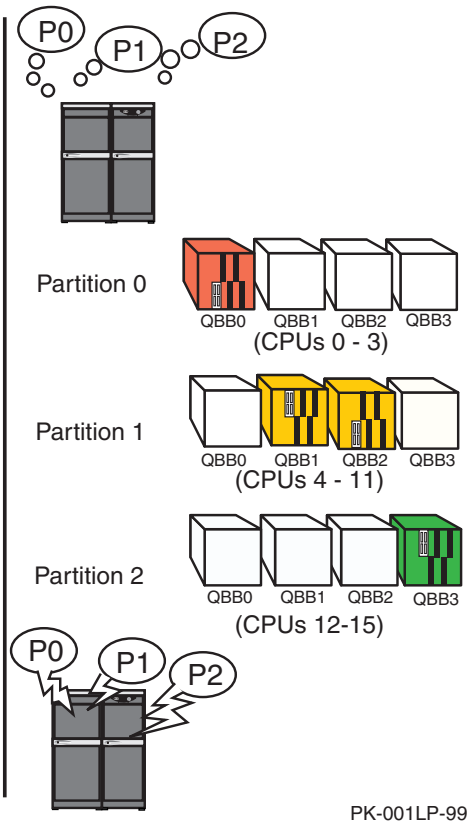
2. Resources in each partition:

```
P00>>> set lp_io_mask0 1
P00>>> set lp_cpu_mask0 F
P00>>> set lp_mem_size0 6GB

P00>>> set lp_io_mask1 6
P00>>> set lp_cpu_mask1 FF0
P00>>> set lp_mem_size1 12GB

P00>>> set lp_io_mask2 8
P00>>> set lp_cpu_mask2 F000
P00>>> set_mem_size2  10GB

P00>>> set lp_shared_mem_size 4GB
P00>>> set lp_error_target 0
```

Lpinit command

initialize partitions defined:

```
P00>>> lpinit
```



You set values for environment variables to define the number of partitions, the CPU, memory, and I/O resources belonging to each partition, the amount of shared memory, and the partition to receive error interrupts. Figure 5–1 and Table 5–1 give an overview of the environment variables and what they do.

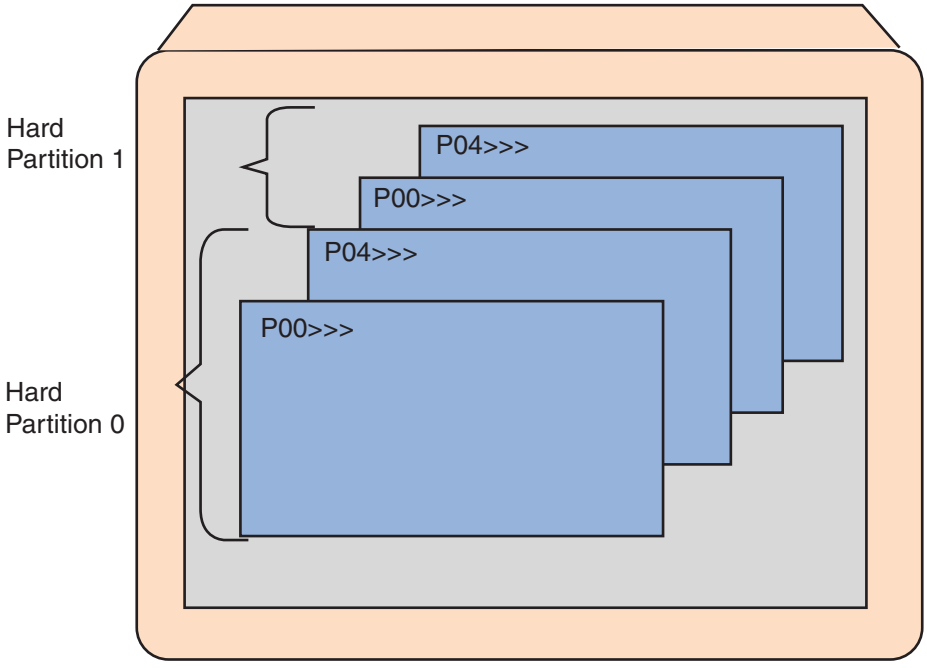
Table 5–1 SRM Environment Variables for Soft Partitions

Environment Variable	Definition
lp_count *n*	The number of soft partitions to create. Possible values: 0 Default. All IOPs, CPUs, and memory are assigned to one soft partition. No shared memory is defined. 1 One soft partition is created (partition 0). 2-8 From two to eight soft partitions can be defined.
lp_io_mask* *x*	For the *, supply the partition number (0 – 7). The value *x* gives a binary mask indicating the soft QBB numbers (as displayed by **show config** as discussed in Chapter 4) for QBBs (containing I/O risers) to be included in the partition. See Section 5.2 for details.
lp_cpu_mask* *x*	For the *, supply the partition number. The value *x* gives a binary mask indicating which CPUs (using "soft" CPU numbers, as displayed by **show config** as discussed in Chapter 4) are part of the partition. See Section 5.4 for details.
lp_mem_size* *n*	For the *, you supply the number of the partition. The value *n* can be a size or list of sizes. See Section 5.5 for details.
lp_shared_mem_size *n*	Size of memory shared by all partitions. See Section 5.6 for details.
lp_error_target	The number of the soft partition that is to receive error interrupts. The primary CPU of this soft partition will receive the interrupts. If **lp_count** is 0, **lp_error_target** is ignored.

5.2 Console Window for Soft Partitions

If your system has soft partitions within hard partitions, you must select the right console window to define the lp_* environment variables and issue the lpinit command. This is the window whose SRM is on the standard I/O with the lowest hose number within the partition.

Figure 5–2 Console Window Whose SRM Is Connected to the Lowest-Numbered Hose in the Hard Partition



PK-019HP-00

You must have a standard I/O module for each hard or soft partition on your system. When you define soft partitions, you must choose the SRM console that resides on the standard I/O module that controls the hard partition in which it is resident. This is the standard I/O module connected to the lowest-numbered hose in the hard partition. If cabling for the system is standard, the SRM prompt in each case will be P00>>>.

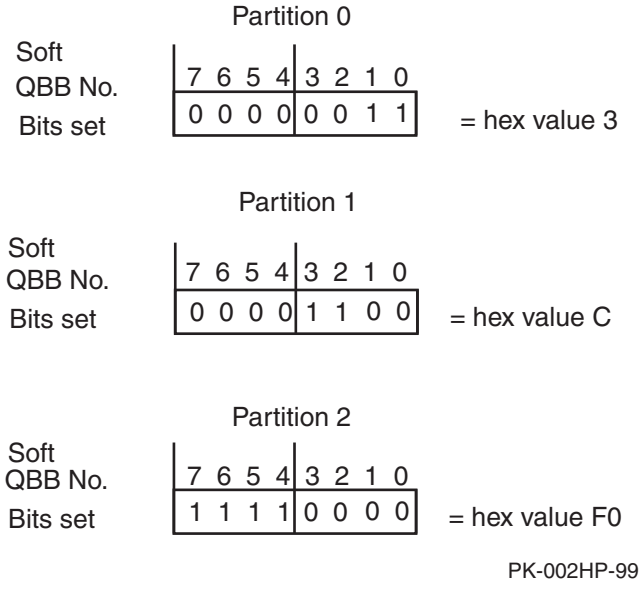
For example, in Figure 5–2, there are two hard partitions defined on a system with four standard I/O modules. To define soft partitions within the hard partitions, you would choose the console window with the prompt P00>>> to define soft partitions within hard partition 0. You would also choose the console window with the prompt P00>>> to define soft partitions within hard partition 1.

If you cannot be sure from the SRM prompt which console window to use to define soft partitions within a hard partition, find the one within the hard partition from which the command **show lp*** works. This is the one from which you can define the **lp*** environment variables.

5.3 Detailed Directions for lp_io_mask

The lp_io_mask environment variable is set to a value that creates a binary mask in which a bit set to 1 indicates that an individual IOP (same as soft QBB number) belongs to a soft partition.

Figure 5–3 Sample lp_io_mask Bit Masks



I/O ports (IOPs), defined by the soft QBB number for the QBB in which they reside, can be assigned to logical partitions in any order. Soft QBB numbers are displayed by a **show config** command. Each soft partition must contain at least one IOP with an I/O riser connected to a master PCI box with a standard I/O module.

Bit values for one nibble of data are as follows:

Hex	Binary	Hex	Binary
0	0000	8	1000
1	0001	9	1001
2	0010	A	1010
3	0011	B	1011
4	0100	C	1100
5	0101	D	1101
6	0110	E	1110
7	0111	F	1111

Example 5–1 Sample lp_io_mask Setup

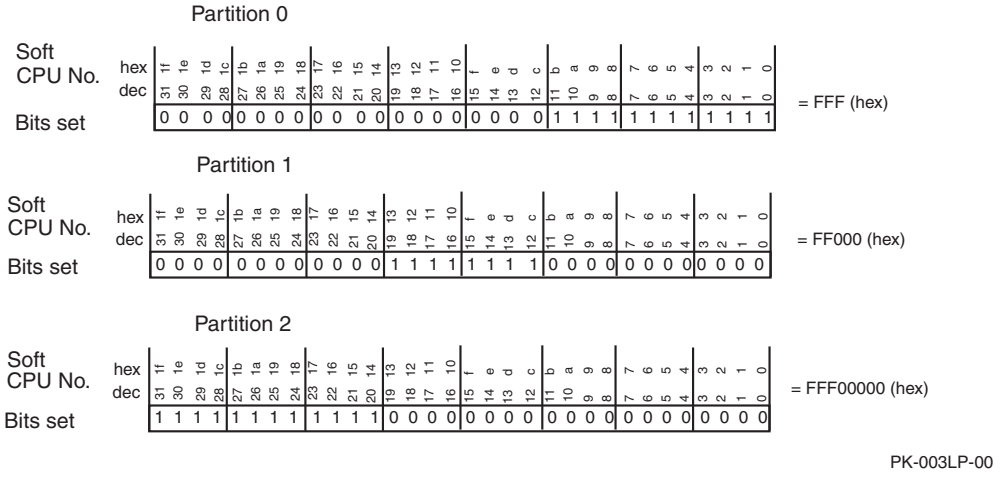
```
P00>>> set lp_io_mask0 3
P00>>> set lp_io_mask1 C
P00>>> set lp_io_mask2 F0
```

In Example 5–1, the first command defines the IOPs in QBBS 0 and 1 as part of soft partition 0. The second command defines the IOPs in QBBs 2 and 3 as part of soft partition 1. The third command defines the IOPs in QBBs 4, 5, 6, and 7 as part of soft partition 2.

5.4 Detailed Directions for lp_cpu_mask

The lp_cpu_mask environment variable is set to a value that creates a binary mask in which a bit set to 1 indicates that an individual CPU belongs to a soft partition. The CPU numbers used in the definition are the "soft" numbers displayed in the show config command, as described in Chapter 4.

Figure 5–4 Sample lp_cpu_mask Bit Masks for 32-Processor System with No Hard Partitions



PK-003LP-00

Figure 5–4 shows some examples of bit masks for the **lp_cpu_mask** environment variable on a fully populated GS320 system (up to 32 processors) with no hard partitions. Both hexadecimal and decimal are given for bit place values.

Note that if you are defining a soft partition within a hard partition, the SCM firmware, when the hard partition is powered on, supplies new "soft" CPU numbers from 0 with the QBB with the lowest hard QBB number within the partition and proceeding upward. An SRM **show config** display for the partition will show the soft CPU numbers, as described in Chapter 4. You can use the table on page 5-7 to construct values for as many hexadecimal digits as you need to form a bit mask.

Example 5–2 shows the SRM commands used to create **lp_cpu_mask** environment variables for the configuration shown in Figure 5–4.

Example 5–2 Sample lp_cpu_mask Setup

```
P00>>> set lp_cpu_mask0 FFF
P00>>> set lp_cpu_mask1 FF000
P00>>> set lp_cpu_mask2 FFF00000
```

5.5 Detailed Directions for lp_mem_size

The lp_mem_size environment variable is set to a value, or a list of values, that define the amount of private memory allocated to a soft partition.

Example 5–3 Example for Constructing lp_mem_size

```
P00>>> show config ❶

                  Compaq AlphaServer GS320 6/731

QBB 0         Hard QBB 0
    .
    .
    .
QBB      Size    Interleave              System Memory 64 GB  ❷
  0       16 GB     32-Way  ❸
  1       16 GB     32-Way
  2       16 GB     32-Way
  3       16 GB     32-Way
```

As shown in Example 5–3, the SRM command **show config** (see ❶) displays the system memory size (see ❷). From this number, you assign the amount of memory in each soft partition. The total amount of memory for all partitions and that allocated for shared memory (see next section) cannot exceed this total. Note that if *less* than the total amount of memory is allocated for partitions and shared memory, the unallocated memory is unusable by any partition.

The format of the command is:

set lp_mem_size* [*size* | *list-of-sizes*]

where:

*	Partition number (0 – 7).
size	Can be specified in hexadecimal bytes, decimal megabytes (MB) or decimal gigabytes (GB). The size must be on a 64 MB boundary. The size must also be at least as much memory required by the operating system that will be booted in soft partition *n*. For example, *OpenVMS* requires 64 MB. Can be bound to a QBB by using the form

n = size

where *n* is the QBB number and *size* is as described previously.

Only one unbound (not attached to a QBB) *size* may be given for any partition. Note that if **lp_shared_mem_size** allocates memory that is bound to specific QBBs, so must the **lp_mem_size** allocations be bound to specific QBBs.

list-of -sizes A comma-separated list of sizes from particular QBBs (see ❸ in Example 5–3) for soft partition *n*. One element in the list of sizes must be at least the minimum amount of memory required by the operating system that will be booted in soft partition *n*. Each size can be specified in hexadecimal bytes, decimal megabytes (MB), or decimal gigabytes (GB). Each size must be on a 64 MB boundary.

No more than one size can be bound to an individual QBB. No more than one unbound size can be given. Note that if **lp_shared_mem_size** allocates memory from specific QBBs, so must the **lp_mem_size*n*** allocations be bound to specific QBBs.

Example 5–4 Examples of lp_mem_size

```
P00>>> set lp_mem_size0 100000000   ❶
P00>>> set lp_mem_size1 1024 MB   ❷
P00>>> set lp_mem_size2 0=64 MB, 2=2 GB   ❸
```

❶ Soft partition 0 is assigned 100000000 hex bytes from any QBBs in the system (or hard partition). (If neither MB or GB is specified, the number is taken as hex.)

❷ Soft partition 1 is assigned 1024 (decimal) Mbytes from any QBBs in the system (or hard partition).

❸ Soft partition 2 is assigned 64 Mbytes from QBB0 and 2 Gbytes from QBB2 in the system (or hard partition).

Example 5–5 Illegal Use of lp_mem_size

```
P00>>> set lp_mem_size_0 0=64 MB, 0=128MB
P00>>> set lp_mem_size_1 1=100 MB
```

❶ Two allocations are bound to QBB0.

❷ Allocation is not on a 64 MB boundary.

5.6 Detailed Directions for lp_shared_mem_size

The lp_shared_mem_size environment variable defines the amount of memory to be shared by the defined soft partitions.

Example 5–6 Example of Constructing lp_shared_mem_size

```
P00>>> show config ❶

                    Compaq AlphaServer GS320 6/731
SRM Console    V5.8-11, built on Jul 12 2000 at 16:04:25
PALcode        OpenVMS PALcode V1.83-1, Tru64 UNIX PALcode V1.78-1
Micro Firmware V5.6

QBB 0          Hard QBB 0
 Quad Switch                              QSA rev 2, QSD revs 0/0/0/0
 Duplicate Tag                 Up To 4 MB Caches      DTag revs 1/1/1/1
 CPU 0         CPU 0      4 MB Cache              EV67 pass 2.2.3
 CPU 1         CPU 1      4 MB Cache              EV67 pass 2.2.3
 CPU 2         CPU 2      4 MB Cache              EV67 pass 2.2.3
 CPU 3         CPU 3      4 MB Cache              EV67 pass 2.2.3
      .
      .
      .
Hierarchical Switch                      HSA revs 1/1, HSD revs 1/1/1/1
      .
      .
      .
 QBB      Size     Interleave                    System Memory 64 GB ❷
  0       16 GB      32-Way ❸
  1       16 GB      32-Way
  2       16 GB      32-Way
  3       16 GB      32-Way
```

As shown in Example 5–6, the SRM command **show config** (❶) displays the system memory size (see ❷). From this number, you assign the amount of memory to be shared. The total amount of memory for all partitions (see previous section) and that allocated for shared memory cannot exceed this total. Note that if *less* than the total amount of memory is allocated for partitions and shared memory, the unallocated memory is unusable by any partition.

The format of the command is:

set lp_shared_mem_size [*size* | *list-of-sizes*]

where:

size Can be specified in hexadecimal bytes, decimal megabytes (MB) or decimal gigabytes (GB). The size must be on a 64-MB boundary.

Can be bound to a QBB by using the form

n = *size*

where *n* is the QBB number and *size* is as described previously.

list-of -sizes A comma-separated list of sizes from particular QBBs (see ❸ in Example 5–6) for shared memory. Each size can be specified in hexadecimal bytes, decimal megabytes (MB), or decimal gigabytes (GB). Each size must be on a 64-MB boundary. No more than one size can be bound to an individual QBB. No more than one unbound size may be given. Also, if **lp_shared_mem_size** is allocated from specific QBBs, so must the **lp_mem_size** allocations.

Example 5–7 Examples of lp_shared_mem_size

```
P00>>> set lp_shared_ mem_size 100000000   ❶
P00>>> set lp_shared_mem_size 1024 MB   ❷
P00>>> set lp_shared_mem_size  0 = 64 MB, 2 = 2 GB   ❸
```

❶ 100000000 hex bytes from any QBBs in the system is allocated for memory to be shared by all soft partitions.

❷ 1024 (decimal) Mbytes from any QBBs in the system is allocated for memory to be shared by all soft partitions.

❸ 64 Mbytes from QBB0 and 2 Gbytes from QBB2 is allocated for memory to be shared by all soft partitions.

5.7 Lpinit Command

An lpinit command initializes the soft partitions defined, either for the system (no hard partitions) or within a hard partition, at the system (or partition) console device.

Example 5–8 Show Config Command for a Hard Partition

```
P00>>> show config
                          Compaq Computer Corporation
                          Compaq AlphaServer GS320 6/731

SRM Console    V5.8-11, built on Jul 12 2000 at 16:04:25
PALcode        OpenVMS PALcode V1.83-1, Tru64 UNIX PALcode V1.78-1
Micro Firmware V5.6


 QBB 0           Hard QBB 1     ❶
  Quad Switch                                    QSA rev 2, QSD revs 0/0/0/0
  Duplicate Tag                 Up To 4 MB Caches DTag revs 1/1/1/1
     ❷              ❸
  CPU 0           CPU 0         4 MB Cache       EV67 pass 2.2.3
  CPU 1           CPU 1         4 MB Cache       EV67 pass 2.2.3
  CPU 2           CPU 2         4 MB Cache       EV67 pass 2.2.3
  CPU 3           CPU 3         4 MB Cache       EV67 pass 2.2.3
  Memory 0                                       MPA rev 2, MPD revs 1/1
  Memory 1                                       MPA rev 2, MPD revs 1/1
  Memory 2                                       MPA rev 2, MPD revs 1/1
  Memory 3                                       MPA rev 2, MPD revs 1/1
    .
    .
    .

QBB 1           Hard QBB 2     ❶
  Quad Switch                                    QSA rev 2, QSD revs 0/0/0/0
  Duplicate Tag                 Up To 4 MB Caches DTag revs 1/1/1/1
     ❷              ❸
  CPU 0           CPU 4         4 MB Cache       EV67 pass 2.2.3
  CPU 1           CPU 5         4 MB Cache       EV67 pass 2.2.3
  CPU 2           CPU 6         4 MB Cache       EV67 pass 2.2.3
  CPU 3           CPU 7         4 MB Cache       EV67 pass 2.2.3
  Memory 0                                       MPA rev 2, MPD revs 1/1
  Memory 1                                       MPA rev 2, MPD revs 1/1
  Memory 2                                       MPA rev 2, MPD revs 1/1
  Memory 3                                       MPA rev 2, MPD revs 1/1
```

Soft partitions within hard partitions are discussed in the next section. For convenience, simply assume for now that the **show config** command in Example 5–8 was issued from the console device for the second hard partition of a 3-hard-partition system.

Note the QBB numbering. A "soft QBB number" is given on the left, and the hard QBB number is given on the right (see ❶).

Note the processor numbering: two columns are given. The first column gives the processor numbers shown on the QBB (see ❷). The second column gives what we might call the "soft CPU numbers," running from 0 through 7, so that there is a unique CPU number for each CPU in the hard partition (see ❸).

Example 5–9 shows how two soft partitions might be set up within this hard partition. Note that soft CPU numbers 0, 1, 2, and 3 are allocated to soft partition 0, and soft CPU numbers 4, 5, 6, and 7 are allocated to soft partition 1 (see ❶). Likewise, soft QBB numbers are used in setting the **lp_io_mask** environment variables.

Shared memory is divided between the two QBBs.

The **lpinit** command initializes the soft partitions defined, and the soft partitions are started up with displays at their respective console devices.

Example 5–9 Setting Up Soft Partitions

```
P00>>> set lp_count 2
P00>>> set lp_cpu_mask0 f    ❶
P00>>> set lp_cpu_mask1 f0
P00>>> set lp_error_target 0
P00>>> set lp_io_mask0 1      ❷
P00>>> set lp_io_mask1 2
P00>>> set lp_mem_size0  0 = 3 GB
P00>>> set lp_mem_size1  0 = 3 GB
P00>>> set lp_shared_mem_size 0=1GB, 1=1GB
P00>>> lpinit
```

5.8 Soft Partitions Within Hard Partitions

It is possible to define soft partitions within hard partitions in a system.

Table 5–2 Example of Soft Partitions Within Hard Partitions

	Hard Part. 0	Hard Part. 1	Hard Partition 2		
			Soft Part. 0	Soft Part. 1	Soft Part. 2
Hard QBB Number	0, 1	2, 3	4	5, 6	6, 7
Soft QBB Number	0, 1	0, 1	0	1, 2	2, 3
Systemwide CPU Number	0–7	8–15	16–19	20, 21, 24, 25	22, 23, 26–31
Soft CPU Number	0–7	0–7	0–3	4, 5, 8, 9	6, 7, 10–15
Number of PCI Boxes	4; 2 with SIO	4; 1 with SIO	2; 1 with SIO (from soft QBB0)	2 with SIO (from sofy QBB1)	4; 2 with SIO (from soft QBB2 and 3)
Memory	From QBB0 and 1	From QBB2 and 3	1 GB	2 GB	2 GB
			Shared memory: 5 GB		

Table 5–2 shows how a system might be divided into hard partitions and soft partitions. The table shows three hard partitions. The third hard partition is then divided into three soft partitions. An example of the commands that would define such partitioning is given below.

Example 5–10 Soft Partitions Within Hard Partitions

```
SCM_E0> set hp_count 3
SCM_E0> set hp_qbb_mask0 3
SCM_E0> set hp_qbb_mask1 c
SCM_E0> set hp_qbb_mask2 f0
SCM_E0> power on -all
    .
    .
    .
SCM_E0> quit
    .
    .
    .
  [go to the console device or terminal emulator screen
  that controls hard partition 2]


P00>>> set lp_count 3
P00>>> set lp_cpu_mask0 f
P00>>> set lp_cpu_mask1 330
P00>>> set lp_cpu_mask2 fcc0
P00>>> set lp_error_target 0
P00>>> set lp_io_mask0 1
P00>>> set lp_io_mask1 2
P00>>> set lp_io_mask2 c
P00>>> set lp_mem_size0 1GB
P00>>> set lp_mem_size1 2GB
P00>>> set lp_mem_size2 2GB
P00>>> set lp_shared_mem_size 0 = 5GB, 1 = 5GB,2 = 5GB
P00>>> lpinit
```

Chapter 6
Displaying Soft Partition Status

This chapter describes the SCM and SRM **show** commands that are useful with partitions.

Sections include:

- Setting Up for Soft Partitions
- **Show Config** for Soft Partitions
- **Show Device** for Soft Partitions

6.1 Setting Up for Soft Partitions

The examples in this and following subsections deals with a four-QBB system divided into two soft partitions.

Example 6–1 Setting the lp_* Environment Variables

```
P00>>> set lp_count 2    ❶
P00>>> set lp_cpu_mask0 FF
P00>>> set lp_cpu_mask1 FF00
P00>>> set lp_io_mask0 3
P00>>> set lp_io_mask1 C
P00>>> set lp_shared_mem_size 2gb
P00>>> set lp_mem_size0 0=2gb
P00>>> set lp_mem_size1 1=1gb
P00>>> show lp*    ❷
lp_count                2
lp_cpu_mask0            FF
lp_cpu_mask1            FF00
lp_cpu_mask2            0
lp_cpu_mask3            0
lp_cpu_mask4            0
lp_cpu_mask5            0
lp_cpu_mask6            0
lp_cpu_mask7            0
lp_error_target         0
lp_io_mask0             3
lp_io_mask1             C
lp_io_mask2             0
lp_io_mask3             0
lp_io_mask4             0
lp_io_mask5             0
lp_io_mask6             0
lp_io_mask7             0
lp_mem_size0            0=2gb
lp_mem_size1            1=1gb
lp_mem_size2            0
lp_mem_size3            0
lp_mem_size4            0
lp_mem_size5            0
lp_mem_size6            0
lp_mem_size7            0
lp_shared_mem_size      2gb
P00>>> lpinit    ❸
the system is currently partitioned
proceeding will cause the system to be repartitioned automatically

do you want to proceed?  [Y/(N)]  y
unpartitioning system
```

[*Continued on following page*]

Example 6–1 Setting the lp_* Environment Variables (Continued)

```
OpenVMS PALcode V1.83-1, Tru64 UNIX PALcode V1.78-1

system = QBB 0 1 2 3          + HS

 QBB 0 = CPU 0 1 2 3 + Mem 0 1     + Dir + IOP + PCA 0 1     + GP  (Hard QBB 0)
 QBB 1 = CPU 0 1 2 3 + Mem 0 1     + Dir + IOP + PCA 0 1     + GP  (Hard QBB 1)
 QBB 2 = CPU 0 1 2 3 + Mem 0 1     + Dir + IOP + PCA 0 1     + GP  (Hard QBB 2)
 QBB 3 = CPU 0 1 2 3 + Mem 0 1     + Dir + IOP + PCA 0 1     + GP  (Hard QBB 3)
micro firmware version is V5.6
shared RAM version is 1.4
hose 0 has a standard I/O module
starting console on CPU 0
     .
     .
     .

P00>>>
```

❶ Here, the system is divided into two soft partitions. CPUs 0 – 7 are defined as part of partition 0; CPUs 8 – 15 are defined as part of partition 1. The I/O in QBBs 0 and 1 are defined as part of partition 0; and the I/O in QBBs 2 and 3 are defined as part of partition 1. To test a system with a limited amount of memory, partition 0 is set up with 2 GB memory, partition 1, with 1 GB, and shared memory allocated is 2 GB. The remaining 11 GB is unallocated in this partitioning setup.

❷ The **show lp*** command displays the recently defined environment variables.

❸ The **lpinit** command initializes the partitions defined by the environment variables. In this case, the firmware informs the user that the system is already (soft) partitioned, and asks if the system is to be repartitioned as defined. The user answers yes, so the new partitioning is initialized. If the user had answered no, the old partitions would have remained in effect, although the environment variables would remain with the new settings.

6.2 Show Config for Soft Partitions

6.2.1 Show Config for Soft Partition 0

In this example, a four-QBB system has been divided into two soft partitions. The example shows the show config for soft partition 0.

Example 6–2 Show Config for Soft Partition 0

```
P00>>> show config

                        Compaq Computer Corporation
                       Compaq AlphaServer GS160 6/731

SRM Console    V5.8-11, built on Jul 12 2000 at 16:04:25
PALcode        OpenVMS PALcode V1.83-1, Tru64 UNIX PALcode V1.78-1
Micro Firmware V5.6
```

Show Config – QBB Information for Hard Partition (●)

```
●                                                                    ●
QBB 0  ❶              Hard QBB 0
 Quad Switch                                  QSA rev 4, QSD revs 0/0/0/0
 Duplicate Tag      ❷ Up To 4 MB Caches       DTag revs 1/1/1/1
 Processor 0   CPU 0       4 MB Cache         EV67 pass 2.4, 731 MHz
 Processor 1   CPU 1       4 MB Cache         EV67 pass 2.4, 731 MHz
 Processor 2   CPU 2       4 MB Cache         EV67 pass 2.4, 731 MHz
 Processor 3   CPU 3       4 MB Cache         EV67 pass 2.4, 731 MHz
 Memory 0                                     MPA rev 2, MPD revs 1/1
 Memory 1                                     MPA rev 2, MPD revs 1/1
 Directory                                    DMA rev 1, DMD rev 1
 IOP                                          IOA rev 2, IOD revs 0/0
  Local Link 0 IOR 0                          NE ML rev 2
  Remote Link 0                               FE ML rev 2
  I/O Port 0                                  PCA rev 3
   PCI Box 0   Riser 0     Right Side         Backplane rev 3
    PCI Bus 0  Hose 0      64 Bit, 33 MHz     PCI rev 2.1 compliant
    PCI Bus 1  Hose 1      64 Bit, 33 MHz     PCI rev 2.1 compliant
  Local Link 1 IOR 1                          NE ML rev 2
  Remote Link 1                               FE ML rev 2
  I/O Port 1                                  PCA rev 3
   PCI Box 0   Riser 1     Left Side          Backplane rev 3
    PCI Bus 0  Hose 2      64 Bit, 33 MHz     PCI rev 2.1 compliant
    PCI Bus 1  Hose 3      64 Bit, 33 MHz     PCI rev 2.1 compliant
 Global Port                                  GPA rev 1, GPD revs 0/0

                                        [Continued on following pages]
```

The information in this section is for the entire system, since no hard partitions have been defined. If hard partitions had been defined, this information would apply to the entire hard partition from which the **show config** command had been issued. The information in this section is chiefly useful for establishing:

❶ The soft QBB numbers used in defining the I/O that is included in a given partition.

❷ The soft CPU numbers used in defining the CPU resources that are included in a given partition.

Example 6–2 Show Config for Soft Partition 0 (Continued)

```
QBB 1 ❶       Hard QBB 1
 Quad Switch                                  QSA rev 4, QSD revs 0/0/0/0
 Duplicate Tag ❷    Up To 4 MB Caches         DTag revs 1/1/1/1
 Processor 0   CPU 4       4 MB Cache         EV67 pass 2.4, 731 MHz
 Processor 1   CPU 5       4 MB Cache         EV67 pass 2.4, 731 MHz
 Processor 2   CPU 6       4 MB Cache         EV67 pass 2.4, 731 MHz
 Processor 3   CPU 7       4 MB Cache         EV67 pass 2.4, 731 MHz

Memory 0                                      MPA rev 2, MPD revs 1/1
 Memory 1                                     MPA rev 2, MPD revs 1/1
 Directory                                    DMA rev 1, DMD rev 1
 IOP                                          IOA rev 2, IOD revs 0/0
  Local Link 0 IOR 4                          NE ML rev 2
  Remote Link 0                                      FE ML rev 2
  I/O Port 0                                  PCA rev 3
   PCI Box 1   Riser 0     Right Side         Backplane rev 3
    PCI Bus 0  Hose 8      64 Bit, 33 MHz     PCI rev 2.1 compliant
    PCI Bus 1  Hose 9      64 Bit, 33 MHz     PCI rev 2.1 compliant
  Local Link 1 IOR 5                          NE ML rev 2
  Remote Link 1                                      FE ML rev 2
  I/O Port 1                                  PCA rev 3
   PCI Box 1   Riser 1     Left Side          Backplane rev 3
    PCI Bus 0  Hose 10     64 Bit, 33 MHz     PCI rev 2.1 compliant
    PCI Bus 1  Hose 11     64 Bit, 33 MHz     PCI rev 2.1 compliant
 Global Port                                  GPA rev 1, GPD revs 0/0

QBB 2 ❶              Hard QBB 2
 Quad Switch                                  QSA rev 4, QSD revs 0/0/0/0
 Duplicate Tag ❷         Up To 4 MB Caches    DTag revs 1/1/1/1
 Processor 0   CPU 8      4 MB Cache         EV67 pass 2.4, 731 MHz
 Processor 1   CPU 9      4 MB Cache         EV67 pass 2.4, 731 MHz
 Processor 2   CPU 10     4 MB Cache         EV67 pass 2.4, 731 MHz
 Processor 3   CPU 11     4 MB Cache         EV67 pass 2.4, 731 MHz
 Memory 0                                     MPA rev 2, MPD revs 1/1
 Memory 1                                     MPA rev 2, MPD revs 1/1
 Directory                                    DMA rev 1, DMD rev 1
 IOP                                          IOA rev 2, IOD revs 0/0
  Local Link 0 IOR 8                          NE ML rev 2
  Remote Link 0                                      FE ML rev 2
  I/O Port 0                                  PCA rev 3
   PCI Box 2   Riser 0     Right Side         Backplane rev 3
    PCI Bus 0  Hose 16     64 Bit, 33 MHz     PCI rev 2.1 compliant
    PCI Bus 1  Hose 17     64 Bit, 33 MHz     PCI rev 2.1 compliant
  Local Link 1 IOR 9                          NE ML rev 2
  Remote Link 1                                      FE ML rev 2
  I/O Port 1                                  PCA rev 3
   PCI Box 2   Riser 1     Left Side          Backplane rev 3
    PCI Bus 0  Hose 18     64 Bit, 33 MHz     PCI rev 2.1 compliant
    PCI Bus 1  Hose 19     64 Bit, 33 MHz     PCI rev 2.1 compliant
 Global Port                                  GPA rev 1, GPD revs 0/0
```

[*Continued on next page*]

Example 6–2 Show Config for Soft Partition 0 (Continued)

```
QBB 3 ❶                 Hard QBB 3
 Quad Switch                                    QSA rev 4, QSD revs 0/0/0/0
 Duplicate Tag    ❷          Up To 4 MB Caches  DTag revs 1/1/1/1
 Processor 0    CPU 12       4 MB Cache         EV67 pass 2.4, 731 MHz
 Processor 1    CPU 13       4 MB Cache         EV67 pass 2.4, 731 MHz
 Processor 2    CPU 14       4 MB Cache         EV67 pass 2.4, 731 MHz
 Processor 3    CPU 15       4 MB Cache         EV67 pass 2.4, 731 MHz
 Memory 0                                       MPA rev 2, MPD revs 1/1
 Memory 1                                       MPA rev 2, MPD revs 1/1
 Directory                                      DMA rev 1, DMD rev 1
 IOP                                            IOA rev 2, IOD revs 0/0
  Local Link 0 IOR 12                           NE ML rev 2
  Remote Link 0                                        FE ML rev 2
  I/O Port 0                                    PCA rev 3
   PCI Box 3    Riser 0     Right Side          Backplane rev 3
    PCI Bus 0   Hose 24     64 Bit, 33 MHz      PCI rev 2.1 compliant
    PCI Bus 1   Hose 25     64 Bit, 33 MHz      PCI rev 2.1 compliant
  Local Link 1 IOR 13                           NE ML rev 2
  Remote Link 1                                        FE ML rev 2
  I/O Port 1                                    PCA rev 3
   PCI Box 3    Riser 1     Left Side           Backplane rev 3
    PCI Bus 0   Hose 26     64 Bit, 33 MHz      PCI rev 2.1 compliant
    PCI Bus 1   Hose 27     64 Bit, 33 MHz      PCI rev 2.1 compliant
 Global Port                                    GPA rev 1, GPD revs 0/0
●                                                                       ●
```

Example 6–2 Show Config for Soft Partition 0 (Continued)

Show Config – H-Switch, Memory, and Standard I/O Summary and Memory Detail for Hard Partition (■)

```
■                                                                    ■
Hierarchical Switch                          HSA revs 1/1, HSD revs 1/1/1/1

 QBB     Size    Interleave                  System Memory 16 GB
  0       4 GB       8-Way
  1       4 GB       8-Way
  2       4 GB       8-Way
  3       4 GB       8-Way

 Hose   IOP   PCI Box                        Standard I/O Modules
   0     0       0         Primary           Acer Labs M1543C rev A1-D
   8     1       1                           Acer Labs M1543C rev A1-D
  16     2       2
  24     3       3

System Memory 16 GB

 Board   Set   Array    Size      Address    QBB 0 Memory
   0      0      0       2 GB   00000000000
   1      0      1       2 GB   00000000000
 Total Available         4 GB   8-Way Interleave

 Board   Set   Array    Size      Address    QBB 1 Memory
   0      0      0       2 GB   01000000000
   1      0      1       2 GB   01000000000
 Total Available         4 GB   8-Way Interleave

 Board   Set   Array    Size      Address    QBB 2 Memory
   0      0      0       2 GB   02000000000
   1      0      1       2 GB   02000000000
 Total Available         4 GB   8-Way Interleave

 Board   Set   Array    Size      Address    QBB 3 Memory
   0      0      0       2 GB   03000000000
   1      0      1       2 GB   03000000000
 Total Available         4 GB   8-Way Interleave
                                             [Continued on following pages]
■                                                                    ■
```

The information given on the facing page shows memory for the entire system, since there are no hard partitions. If the system had been divided into hard partitions, this section would list the memory for the hard partition of which this soft partition is a part.

Example 6–2 Show Config for Soft Partition 0 (Continued)

Show Config – I/O Adapters for the Soft Partition (✔)

```
✔                                                                    ✔
    ❶      ❷
PCI Box  Riser  Slot  Option                  Hose  Bus  Slot  Function  Name
    0       0     1   Standard I/O Module      0    ❸
                      + Acer Labs M1543C       0    0     7
                      + Acer Labs M1543C IDE   0    0    15              dqa
                      + Acer Labs M1543C USB   0    0    19
+ QLogic ISP10x0          0    0     1            pka
    0       0     2   ELSA GLoria Synergy      0    0     2              vga
    0       0     3   QLogic ISP10x0           0    0     3              pkb
    0       0     5   QLogic ISP10x0           1    0     5              pkc
    0       0     6   DEC PCI FDDI             1    0     6              fwa
    0       1     3   QLogic ISP10x0           2    0     3              pkd
    0       1     4   DEGPA-SA                 3    0     4
    0       1     7   DECchip 21154-AA         3    0     7
                      + DE602-AA               3    2     4              eia
                      + DE602-AA               3    2     5              eib
    1       0     1   Standard I/O Module      8    ❸
                      + Acer Labs M1543C       8    0     7
                      + Acer Labs M1543C IDE   8    0    15              dqb
                      + Acer Labs M1543C USB   8    0    19
                      + QLogic ISP10x0         8    0     1              pke
    1       0     2   ELSA GLoria Synergy      8    0     2              vgb
    1       0     3   QLogic ISP10x0           8    0     3              pkf
    1       0     6   DEC PCI FDDI             9    0     6              fwb
    1       1     3   QLogic ISP10x0          10    0     3              pkg
    1       1     4   DEGPA-SA                11    0     4
    1       1     7   DECchip 21154-AA        11    0     7
                      + DE602-AA              11    2     4              eic
                      + DE602-AA              11    2     5              eid
    2       0     1   Standard I/O Module     16❸
    3       0     1   Standard I/O Module     24
✔                                                                    ✔
```

Show Config – Logical Hose Summary for the Soft Partition (✚)

```
✚ ❹                                                                  ✚
 Hose  QBB  PCA  PCI Bus  Slots
   0    0    0       0     1-3
   1    0    0       1     4-7
   2    0    1       0     1-3
   3    0    1       1     4-7
   8    1    0       0     1-3
   9    1    0       1     4-7
  10    1    1       0     1-3
  11    1    1       1     4-7
✚                                                                    ✚
```

❶ I/O adapters for the soft partition are listed for the PCI box IDs in ascending order. Note that the PCI box IDs remain the same whether or not the system is partitioned. They are the settings on the node ID switches of the PCI boxes, and are unique and constant through the system.

❷ Within the PCI box, the connecting I/O riser in the QBB is listed (0 or 1).

❸ Standard I/O modules are of interest in partition. All standard I/O modules in the system or hard partition are listed. Soft partition 0 contains only two standard I/O modules, however. By looking at the logical hose numbers (❹) you determine which standard I/Os belong to which soft partition.

❹ Logical hoses in soft partition 0 are listed here. Note that these numbers remain the same whether or not the system is partitioned.

Example 6–2 Show Config for Soft Partition 0 (Continued)

Show Config – I.O Adapters and Devices in Order by Logical Hose Number (✿)

```
✿                                                                    ✿
                                    ❶
Slot    Option                  Hose 0, Bus 0, PCI
   1    QLogic ISP10x0          pka0.7.0.1.0            SCSI Bus ID 7
                                dka0.0.0.1.0            COMPAQ BB00921B91
   2    ELSA GLoria Synergy     vga0.0.0.2.0
   3    QLogic ISP10x0          pkb0.7.0.3.0            SCSI Bus ID 7
                                dkb0.0.0.3.0            COMPAQ BB00911CA0
                                dkb100.1.0.3.0          COMPAQ BB00911CA0
                                dkb200.2.0.3.0          COMPAQ BB00911CA0
                                dkb300.3.0.3.0          COMPAQ BB00911CA0
                                dkb400.4.0.3.0          COMPAQ BB00911CA0
                                dkb500.5.0.3.0          COMPAQ BB00911CA0
                                dkb600.6.0.3.0          COMPAQ BB00911CA0
   7    Acer Labs M1543C                                Bridge to Bus 1, ISA
  15    Acer Labs M1543C IDE    dqa.0.0.15.0
                                dqa0.0.0.15.0           COMPAQ S C-140S
  19    Acer Labs M1543C USB

 Slot   Option                  Hose 1, Bus 0, PCI
   5    QLogic ISP10x0          pkc0.7.0.5.1            SCSI Bus ID 7
                                dkc0.0.0.5.1            COMPAQ BB00911CA0
                                dkc100.1.0.5.1          COMPAQ BB00911CA0
                                dkc200.2.0.5.1          COMPAQ BB00911CA0
                                dkc300.3.0.5.1          COMPAQ BB00911CA0
   6    DEC PCI FDDI            fwa0.0.0.6.1            00-60-6D-DF-F0-9A

 Slot   Option                  Hose 2, Bus 0, PCI
   3    QLogic ISP10x0          pkd0.7.0.3.2            SCSI Bus ID 7
                                dkd0.0.0.3.2            RZ2ED-LS
                                dkd100.1.0.3.2          COMPAQ BB00911CA0
                                dkd200.2.0.3.2          COMPAQ BB00911CA0

 Slot   Option                  Hose 3, Bus 0, PCI
   4    DEGPA-SA
   7    DECchip 21154-AA                                Bridge to Bus 2, PCI

 Slot   Option                  Hose 3, Bus 2, PCI
   4    DE602-AA                eia0.0.0.2004.3         00-50-8B-95-01-C6
   5    DE602-AA                eib0.0.0.2005.3         00-50-8B-95-01-C7

 Slot   Option                  Hose 8, Bus 0, PCI
   1    QLogic ISP10x0          pke0.7.0.1.8            SCSI Bus ID 7
                                dke0.0.0.1.8            COMPAQ BB009235B6
   2    ELSA GLoria Synergy     vgb0.0.0.2.8
   3    QLogic ISP10x0          pkf0.7.0.3.8            SCSI Bus ID 7
                                dkf0.0.0.3.8            COMPAQ BB00911CA0
                                dkf100.1.0.3.8          COMPAQ BB00911CA0
                                dkf200.2.0.3.8          COMPAQ BB00911CA0
                                dkf300.3.0.3.8          COMPAQ BB00911CA0
                                dkf400.4.0.3.8          COMPAQ BB00911CA0
                                dkf500.5.0.3.8          COMPAQ BB00911CA0
                                dkf600.6.0.3.8          RZ2ED-LS
                                          [Continued on next page]
```

```
  7    Acer Labs M1543C                              Bridge to Bus 1, ISA
 15    Acer Labs M1543C IDE   dqb.0.0.15.8
                              dqb0.0.0.15.8          COMPAQ S C-140S
 19    Acer Labs M1543C USB

Slot   Option                Hose 9, Bus 0, PCI
  6    DEC PCI FDDI          fwb0.0.0.6.9           00-60-6D-DF-F1-E3

Slot   Option                Hose 10, Bus 0, PCI
  3    QLogic ISP10x0        pkg0.7.0.3.10          SCSI Bus ID 7
                              dkg0.0.0.3.10          RZ2ED-LS
                              dkg100.1.0.3.10        COMPAQ BB00911CA0
                              dkg200.2.0.3.10        COMPAQ BB00911CA0

Slot   Option                Hose 11, Bus 0, PCI
  4    DEGPA-SA
  7    DECchip 21154-AA                              Bridge to Bus 2, PCI

Slot   Option                Hose 11, Bus 2, PCI
  4    DE602-AA              eic0.0.0.2004.11       00-50-8B-95-03-5E
  5    DE602-AA              eid0.0.0.2005.11       00-50-8B-95-03-5F
✿                                                                      ✿
```

This section of the **show config** display lists devices connected to soft partition 0. The devices are listed in order by logical hose number (❶).

6.2.2 Show Config for Soft Partition 1

This example displays the show config for soft partition 1.

Example 6–3 Show Config for Soft Partition 1

❶

```
P08>>> show config

                        Compaq Computer Corporation
                      Compaq AlphaServer GS160 6/731

SRM Console     V5.8-11, built on Jul 12 2000 at 16:04:25
PALcode         OpenVMS PALcode V1.83-1, Tru64 UNIX PALcode V1.78-1
Micro Firmware V5.6
```

Show Config – QBB Information for Hard Partition (●)

●

```
QBB 0  ❷       Hard QBB 0
 Quad Switch                                  QSA rev 4, QSD revs 0/0/0/0
 Duplicate Tag  ❸     Up To 4 MB Caches       DTag revs 1/1/1/1
 Processor 0    CPU 0       4 MB Cache        EV67 pass 2.4, 731 MHz
 Processor 1    CPU 1       4 MB Cache        EV67 pass 2.4, 731 MHz
 Processor 2    CPU 2       4 MB Cache        EV67 pass 2.4, 731 MHz
 Processor 3    CPU 3       4 MB Cache        EV67 pass 2.4, 731 MHz
 Memory 0                                     MPA rev 2, MPD revs 1/1
 Memory 1                                     MPA rev 2, MPD revs 1/1
 Directory                                    DMA rev 1, DMD rev 1
 IOP                                          IOA rev 2, IOD revs 0/0
  Local Link 0 IOR 0                          NE ML rev 2
  Remote Link 0                               FE ML rev 2
  I/O Port 0                                  PCA rev 3
   PCI Box 0   Riser 0     Right Side         Backplane rev 3
     PCI Bus 0  Hose 0     64 Bit, 33 MHz     PCI rev 2.1 compliant
     PCI Bus 1  Hose 1     64 Bit, 33 MHz     PCI rev 2.1 compliant
  Local Link 1 IOR 1                          NE ML rev 2
  Remote Link 1                               FE ML rev 2
  I/O Port 1                                  PCA rev 3
   PCI Box 0   Riser 1     Left Side          Backplane rev 3
     PCI Bus 0  Hose 2     64 Bit, 33 MHz     PCI rev 2.1 compliant
     PCI Bus 1  Hose 3     64 Bit, 33 MHz     PCI rev 2.1 compliant
 Global Port                                  GPA rev 1, GPD revs 0/0
```

[*Continued on following pages*]

The information in this section is for the entire system, since no hard partitions have been defined. If hard partitions had been defined, this information would apply to the entire hard partition from which the **show config** had been issued.

❶ Note that the processor prompt for soft partition 1 denotes soft processor number 8, the lowest soft processor number for a CPU in this partition.

❷ The soft QBB numbers used in defining the I/O that is included in the soft partition.

❸ The soft CPU numbers used in defining the CPU resources that are included in the partition.

Example 6–3 Show Config for Soft Partition 1 (Continued)

```
QBB 1      ❷    Hard QBB 1
 Quad Switch                                    QSA rev 4, QSD revs 0/0/0/0
 Duplicate Tag      ❸ Up To 4 MB Caches         DTag revs 1/1/1/1
 Processor 0   CPU 4       4 MB Cache          EV67 pass 2.4, 731 MHz
 Processor 1   CPU 5       4 MB Cache          EV67 pass 2.4, 731 MHz
 Processor 2   CPU 6       4 MB Cache          EV67 pass 2.4, 731 MHz
 Processor 3   CPU 7       4 MB Cache          EV67 pass 2.4, 731 MHz
 Memory 0                                       MPA rev 2, MPD revs 1/1
 Memory 1                                       MPA rev 2, MPD revs 1/1
 Directory                                      DMA rev 1, DMD rev 1
 IOP                                            IOA rev 2, IOD revs 0/0
  Local Link 0 IOR 4                            NE ML rev 2
  Remote Link 0                                 FE ML rev 2
  I/O Port 0                                    PCA rev 3
   PCI Box 1   Riser 0     Right Side           Backplane rev 3
    PCI Bus 0  Hose 8      64 Bit, 33 MHz       PCI rev 2.1 compliant
    PCI Bus 1  Hose 9      64 Bit, 33 MHz       PCI rev 2.1 compliant
  Local Link 1 IOR 5                            NE ML rev 2
  Remote Link 1                                 FE ML rev 2
  I/O Port 1                                    PCA rev 3
   PCI Box 1   Riser 1     Left Side            Backplane rev 3
    PCI Bus 0  Hose 10     64 Bit, 33 MHz       PCI rev 2.1 compliant
    PCI Bus 1  Hose 11     64 Bit, 33 MHz       PCI rev 2.1 compliant
 Global Port                                    GPA rev 1, GPD revs 0/0

QBB 2      ❷    Hard QBB 2
 Quad Switch                                    QSA rev 4, QSD revs 0/0/0/0
 Duplicate Tag      ❸ Up To 4 MB Caches         DTag revs 1/1/1/1
 Processor 0   CPU 8       4 MB Cache          EV67 pass 2.4, 731 MHz
 Processor 1   CPU 9       4 MB Cache          EV67 pass 2.4, 731 MHz
 Processor 2   CPU 10      4 MB Cache          EV67 pass 2.4, 731 MHz
 Processor 3   CPU 11      4 MB Cache          EV67 pass 2.4, 731 MHz
 Memory 0                                       MPA rev 2, MPD revs 1/1
 Memory 1                                       MPA rev 2, MPD revs 1/1
 Directory                                      DMA rev 1, DMD rev 1
 IOP                                            IOA rev 2, IOD revs 0/0
  Local Link 0 IOR 8                            NE ML rev 2
  Remote Link 0                                 FE ML rev 2
  I/O Port 0                                    PCA rev 3
   PCI Box 2   Riser 0     Right Side           Backplane rev 3
    PCI Bus 0  Hose 16     64 Bit, 33 MHz       PCI rev 2.1 compliant
    PCI Bus 1  Hose 17     64 Bit, 33 MHz       PCI rev 2.1 compliant
  Local Link 1 IOR 9                            NE ML rev 2
  Remote Link 1                                 FE ML rev 2
  I/O Port 1                                    PCA rev 3
   PCI Box 2   Riser 1     Left Side            Backplane rev 3
    PCI Bus 0  Hose 18     64 Bit, 33 MHz       PCI rev 2.1 compliant
    PCI Bus 1  Hose 19     64 Bit, 33 MHz       PCI rev 2.1 compliant
 Global Port                                    GPA rev 1, GPD revs 0/0
```

[*Continued on next page*]

Example 6–3 Show Config for Soft Partition 1 (Continued)

```
QBB 3  ❷       Hard QBB 3
 Quad Switch                                  QSA rev 4, QSD revs 0/0/0/0
 Duplicate Tag       ❸      Up To 4 MB Caches  DTag revs 1/1/1/1
 Processor 0    CPU 12       4 MB Cache        EV67 pass 2.4, 731 MHz
 Processor 1    CPU 13       4 MB Cache        EV67 pass 2.4, 731 MHz
 Processor 2    CPU 14       4 MB Cache        EV67 pass 2.4, 731 MHz
 Processor 3    CPU 15       4 MB Cache        EV67 pass 2.4, 731 MHz
 Memory 0                                     MPA rev 2, MPD revs 1/1
 Memory 1                                     MPA rev 2, MPD revs 1/1
 Directory                                    DMA rev 1, DMD rev 1
 IOP                                          IOA rev 2, IOD revs 0/0
  Local Link 0 IOR 12                         NE ML rev 2
  Remote Link 0                               FE ML rev 2
  I/O Port 0                                  PCA rev 3
   PCI Box 3    Riser 0      Right Side       Backplane rev 3
    PCI Bus 0   Hose 24      64 Bit, 33 MHz   PCI rev 2.1 compliant
    PCI Bus 1   Hose 25      64 Bit, 33 MHz   PCI rev 2.1 compliant
  Local Link 1 IOR 13                         NE ML rev 2
  Remote Link 1                               FE ML rev 2
  I/O Port 1                                  PCA rev 3
   PCI Box 3    Riser 1      Left Side        Backplane rev 3
    PCI Bus 0   Hose 26      64 Bit, 33 MHz   PCI rev 2.1 compliant
    PCI Bus 1   Hose 27      64 Bit, 33 MHz   PCI rev 2.1 compliant
 Global Port                                  GPA rev 1, GPD revs 0/0
                                    [Continued on next page]
```

Example 6–3 Show Config for Soft Partition 1 (Continued)

Show Config – H-Switch, Memory, and Standard I/O Summary and Memory Detail for Hard Partition (■)

```
■                                                                    ■
Hierarchical Switch                          HSA revs 1/1, HSD revs 1/1/1/1

 QBB     Size    Interleave                  System Memory 16 GB
  0       4 GB      8-Way
  1       4 GB      8-Way
  2       4 GB      8-Way
  3       4 GB      8-Way

 Hose   IOP   PCI Box                        Standard I/O Modules
   0     0       0
   8     1       1
  16     2       2         Primary           Acer Labs M1543C rev A1-D
  24     3       3                           Acer Labs M1543C rev A1-D

System Memory 16 GB

 Board   Set   Array    Size      Address    QBB 0 Memory
   0      0      0       2 GB   00000000000
   1      0      1       2 GB   00000000000
 Total Available         4 GB   8-Way Interleave

 Board   Set   Array    Size      Address    QBB 1 Memory
   0      0      0       2 GB   01000000000
   1      0      1       2 GB   01000000000
 Total Available         4 GB   8-Way Interleave

 Board   Set   Array    Size      Address    QBB 2 Memory
   0      0      0       2 GB   02000000000
   1      0      1       2 GB   02000000000
 Total Available         4 GB   8-Way Interleave

 Board   Set   Array    Size      Address    QBB 3 Memory
   0      0      0       2 GB   03000000000
   1      0      1       2 GB   03000000000
 Total Available         4 GB   8-Way Interleave
■                                                                    ■
```

The information given on the facing page shows memory for the entire system. If the system had been divided into hard partitions, this section would list the memory for the hard partition of which this soft partition is a part.

Note that the hose summary is also for the entire system (hard partition).

Example 6–3 Show Config for Soft Partition 1 (Continued)

Show Config – I/O Adapters for the Soft Partition (✔)

```
✔                                                                    ✔
    ❶    ❷
 PCI Box  Riser  Slot  Option                  Hose  Bus  Slot  Function
Name
    0       0      1   Standard I/O Module      0   ❸
    1       0      1   Standard I/O Module      8
    2       0      1   Standard I/O Module     16
                       + Acer Labs M1543C      16    0     7
                       + Acer Labs M1543C IDE  16    0    15              dqa
                       + Acer Labs M1543C USB  16    0    19
                       + QLogic ISP10x0        16    0     1              pka
    2       0      2   ELSA GLoria Synergy     16    0     2              vga
    2       0      3   QLogic ISP10x0          16    0     3              pkb
    2       0      6   DEC PCI FDDI            17    0     6              fwa
    2       1      3   QLogic ISP10x0          18    0     3              pkc
    2       1      4   DEGPA-SA                19    0     4
    2       1      7   DECchip 21154-AA        19    0     7
                       + DE602-AA              19    2     4              eia
                       + DE602-AA              19    2     5              eib
    3       0      1   Standard I/O Module     24   ❸
                       + Acer Labs M1543C      24    0     7
                       + Acer Labs M1543C IDE  24    0    15              dqb
                       + Acer Labs M1543C USB  24    0    19
                       + QLogic ISP10x0        24    0     1              pkd
    3       0      2   ELSA GLoria Synergy     24    0     2              vgb
    3       0      3   QLogic ISP10x0          24    0     3              pke
    3       0      5   QLogic ISP10x0          25    0     5              pkf
    3       0      6   DEC PCI FDDI            25    0     6              fwb
    3       1      3   QLogic ISP10x0          26    0     3              pkg
    3       1      4   DEGPA-SA                27    0     4
    3       1      7   DECchip 21154-AA        27    0     7
                       + DE602-AA              27    2     4              eic
                       + DE602-AA              27    2     5              eid
✔                                                                    ✔
```

Show Config – Logical Hose Summary for the Soft Partition (✚)

```
✚ ❹                                                                  ✚
 Hose  QBB  PCA  PCI Bus  Slots
  16    2    0      0      1-3
  17    2    0      1      4-7
  18    2    1      0      1-3
  19    2    1      1      4-7
  24    3    0      0      1-3
  25    3    0      1      4-7
  26    3    1      0      1-3
  27    3    1      1      4-7
✚                                                                    ✚
```

[*Continued on following pages*]

❶ IO adapters for soft partition 1 are listed here for the PCI box IDs in ascending order. Note that the PCI box IDs remain the same whether or not the system is partitioned. They are the settings on the node ID switches of the PCI boxes, and are unique and constant throughout the system.

❷ Within the PCI box, the connecting I/O riser in the QBB is listed (0 or 1).

❸ Standard I/O modules are of interest in partitions. All standard I/O modules in the system or hard partition are listed. Soft partition 1 contains only two standard I/O modules, however. By looking at the logical hose numbers (❹), you determine which standard I/Os belong to which soft partition.

❹ Logical hoses in soft partition 1 are listed here. Note that these numbers remain the same whether or not the system is partitioned.

Example 6–3 Show Config for Soft Partition 1 (Continued)

Show Config – I/O Adapters and Devices in Order by Logical Hose Number (✿)

```
✿                                                                    ✿
                                    ❶
Slot    Option                Hose 16, Bus 0, PCI
  1     QLogic ISP10x0        pka0.7.0.1.16          SCSI Bus ID 7
                              dka0.0.0.1.16          COMPAQ BB00921B91
  2     ELSA GLoria Synergy   vga0.0.0.2.16
  3     QLogic ISP10x0        pkb0.7.0.3.16          SCSI Bus ID 7
                              dkb100.1.0.3.16        RZ2DD-LS
                              dkb200.2.0.3.16        COMPAQ BB00911CA0
                              dkb300.3.0.3.16        COMPAQ BB00911CA0
                              dkb400.4.0.3.16        COMPAQ BB00911CA0
                              dkb500.5.0.3.16        COMPAQ BB00911CA0
                              dkb600.6.0.3.16        COMPAQ BB00911CA0
  7     Acer Labs M1543C                             Bridge to Bus 1, ISA
 15     Acer Labs M1543C IDE  dqa.0.0.15.16
                              dqa0.0.0.15.16         COMPAQ S C-140S
 19     Acer Labs M1543C USB

Slot    Option                Hose 17, Bus 0, PCI
  6     DEC PCI FDDI          fwa0.0.0.6.17          00-60-6D-DF-F0-65

Slot    Option                Hose 18, Bus 0, PCI
  3     QLogic ISP10x0        pkc0.7.0.3.18          SCSI Bus ID 7
                              dkc0.0.0.3.18          RZ2ED-LS
                              dkc100.1.0.3.18        COMPAQ BB00911CA0
                              dkc200.2.0.3.18        COMPAQ BB00911CA0
                              dkc500.5.0.3.18        COMPAQ BB00911CA0
                              dkc600.6.0.3.18        RZ2ED-LS

Slot    Option                Hose 19, Bus 0, PCI
  4     DEGPA-SA
  7     DECchip 21154-AA                             Bridge to Bus 2, PCI

Slot    Option                Hose 19, Bus 2, PCI
  4     DE602-AA              eia0.0.0.2004.19       00-50-8B-95-03-26
  5     DE602-AA              eib0.0.0.2005.19       00-50-8B-95-03-27

Slot    Option                Hose 24, Bus 0, PCI
  1     QLogic ISP10x0        pkd0.7.0.1.24          SCSI Bus ID 7
                              dkd0.0.0.1.24          COMPAQ BB00921B91
  2     ELSA GLoria Synergy   vgb0.0.0.2.24
  3     QLogic ISP10x0        pke0.7.0.3.24          SCSI Bus ID 7
                              dke0.0.0.3.24          COMPAQ BB00911CA0
                              dke100.1.0.3.24        RZ2DD-LS
                              dke200.2.0.3.24        COMPAQ BB00911CA0
                              dke300.3.0.3.24        COMPAQ BB00911CA0
                              dke400.4.0.3.24        COMPAQ BB00911CA0
                                                [Continued on next page]
```

```
                            dke500.5.0.3.24         COMPAQ BB00911CA0
                            dke600.6.0.3.24         RZ2ED-LS
  7    Acer Labs M1543C                             Bridge to Bus 1, ISA
 15    Acer Labs M1543C IDE  dqb.0.0.15.24
                            dqb0.0.0.15.24          COMPAQ S C-140S
 19    Acer Labs M1543C USB

Slot   Option                Hose 25, Bus 0, PCI
  5    QLogic ISP10x0        pkf0.7.0.5.25           SCSI Bus ID 7
                            dkf0.0.0.5.25           COMPAQ BB00911CA0
                            dkf100.1.0.5.25         COMPAQ BB00911CA0
                            dkf200.2.0.5.25         COMPAQ BB00911CA0
                            dkf300.3.0.5.25         COMPAQ BB00911CA0
  6    DEC PCI FDDI          fwb0.0.0.6.25           00-60-6D-12-E9-B8

Slot   Option                Hose 26, Bus 0, PCI
  3    QLogic ISP10x0        pkg0.7.0.3.26           SCSI Bus ID 7
                            dkg0.0.0.3.26           RZ2ED-LS
                            dkg100.1.0.3.26         COMPAQ BB00911CA0
                            dkg200.2.0.3.26         COMPAQ BB00911CA0

Slot   Option                Hose 27, Bus 0, PCI
  4    DEGPA-SA
  7    DECchip 21154-AA                            Bridge to Bus 2, PCI

Slot   Option                Hose 27, Bus 2, PCI
  4    DE602-AA              eic0.0.0.2004.27        00-50-8B-95-01-EA
  5    DE602-AA              eid0.0.0.2005.27        00-50-8B-95-01-EB
```

This section of the **show config** display lists devices connected to soft partition 1. The devices are listed in order by logical hose number (❶).

NOTE: *The device name's adapter ID and unit number are restarted at "a" and "0", respectively, for second and consecutive soft partitions. This is significant when you are defining the boot device and other parameters for a soft partition.*

6.3 Show Device for Soft Partitions

6.3.1 Show Device for Soft Partition 0

This example shows the display provided by a show device command for soft partition 0 of the system shown in Section 6.1.

Example 6–4 Show Device for Soft Partition 0

```
P00>>> show device
dka0.0.0.1.0               DKA0              COMPAQ BB00921B91  3B05    ❶
dkb0.0.0.3.0               DKB0              COMPAQ BB00911CA0  3B05
dkb100.1.0.3.0             DKB100            COMPAQ BB00911CA0  3B05
dkb200.2.0.3.0             DKB200            COMPAQ BB00911CA0  3B05
dkb300.3.0.3.0             DKB300            COMPAQ BB00911CA0  3B05
dkb400.4.0.3.0             DKB400            COMPAQ BB00911CA0  3B05
dkb500.5.0.3.0             DKB500            COMPAQ BB00911CA0  3B05
dkb600.6.0.3.0             DKB600            COMPAQ BB00911CA0  3B07
dkc0.0.0.5.1               DKC0              COMPAQ BB00911CA0  3B05
dkc100.1.0.5.1             DKC100            COMPAQ BB00911CA0  3B05
dkc200.2.0.5.1             DKC200            COMPAQ BB00911CA0  3B05
dkc300.3.0.5.1             DKC300            COMPAQ BB00911CA0  3B05
dkd0.0.0.3.2               DKD0                    RZ2ED-LS     0306
dkd100.1.0.3.2             DKD100            COMPAQ BB00911CA0  3B05
dkd200.2.0.3.2             DKD200            COMPAQ BB00911CA0  3B05
dke0.0.0.1.8               DKE0              COMPAQ BB009235B6  B013
dkf0.0.0.3.8               DKF0              COMPAQ BB00911CA0  3B05
dkf100.1.0.3.8             DKF100            COMPAQ BB00911CA0  3B05
dkf200.2.0.3.8             DKF200            COMPAQ BB00911CA0  3B05
dkf300.3.0.3.8             DKF300            COMPAQ BB00911CA0  3B05
dkf400.4.0.3.8             DKF400            COMPAQ BB00911CA0  3B05
dkf500.5.0.3.8             DKF500            COMPAQ BB00911CA0  3B05
dkf600.6.0.3.8             DKF600                  RZ2ED-LS     0306
dkg0.0.0.3.10              DKG0                    RZ2ED-LS     0306
dkg100.1.0.3.10            DKG100            COMPAQ BB00911CA0  3B05
dkg200.2.0.3.10            DKG200            COMPAQ BB00911CA0  3B05
dqa0.0.0.15.0              DQA0                COMPAQ S C-140S  SE05    ❷
dqb0.0.0.15.8              DQB0                COMPAQ S C-140S  SE05
eia0.0.0.2004.3            EIA0              00-50-8B-95-01-C6         ❸
eib0.0.0.2005.3            EIB0              00-50-8B-95-01-C7
eic0.0.0.2004.11           EIC0              00-50-8B-95-03-5E
eid0.0.0.2005.11           EID0              00-50-8B-95-03-5F
fwa0.0.0.6.1               FWA0              00-60-6D-DF-F0-9A         ❹
fwb0.0.0.6.9               FWB0              00-60-6D-DF-F1-E3
pka0.7.0.1.0               PKA0                 SCSI Bus ID 7  5.      ❺
pkb0.7.0.3.0               PKB0                 SCSI Bus ID 7  5.57
pkc0.7.0.5.1               PKC0                 SCSI Bus ID 7  5.57
pkd0.7.0.3.2               PKD0                 SCSI Bus ID 7  5.57
pke0.7.0.1.8               PKE0                 SCSI Bus ID 7  5.57
pkf0.7.0.3.8               PKF0                 SCSI Bus ID 7  5.57
pkg0.7.0.3.10              PKG0                 SCSI Bus ID 7  5.57
```

❶ The 26 SCSI devices connected to the logical hoses that are connected to soft partition 0 are listed here.

❷ Two IDE CD-ROM devices are connected to soft partition 0.

❸ Four Ethernet ports are connected to soft partition 0.

❹ Two FDDI devices are connected to soft partition 0.

❺ Seven Ethernet ports are connected to soft partition 0.

6.3.2 Show Device for Soft Partition 1

This example shows the display provided by a show device command for soft partition 1 defined by the commands in Section 6.1.

Example 6–5 Show Device for Soft Partition 1

```
P08>>> show device
dka0.0.0.1.16              DKA0              COMPAQ BB00921B91  3B05     ❶
dkb100.1.0.3.16            DKB100                 RZ2DD-LS      0306
dkb200.2.0.3.16            DKB200            COMPAQ BB00911CA0  3B05
dkb300.3.0.3.16            DKB300            COMPAQ BB00911CA0  3B05
dkb400.4.0.3.16            DKB400            COMPAQ BB00911CA0  3B05
dkb500.5.0.3.16            DKB500            COMPAQ BB00911CA0  3B05
dkb600.6.0.3.16            DKB600            COMPAQ BB00911CA0  3B05
dkc0.0.0.3.18              DKC0                   RZ2ED-LS      0306
dkc100.1.0.3.18            DKC100            COMPAQ BB00911CA0  3B05
dkc200.2.0.3.18            DKC200            COMPAQ BB00911CA0  3B05
dkc500.5.0.3.18            DKC500            COMPAQ BB00911CA0  3B05
dkc600.6.0.3.18            DKC600                 RZ2ED-LS      0306
dkd0.0.0.1.24              DKD0              COMPAQ BB00921B91  3B05
dke0.0.0.3.24              DKE0              COMPAQ BB00911CA0  3B05
dke100.1.0.3.24            DKE100                 RZ2DD-LS      0306
dke200.2.0.3.24            DKE200            COMPAQ BB00911CA0  3B05
dke300.3.0.3.24            DKE300            COMPAQ BB00911CA0  3B05
dke400.4.0.3.24            DKE400            COMPAQ BB00911CA0  3B05
dke500.5.0.3.24            DKE500            COMPAQ BB00911CA0  3B05
dke600.6.0.3.24            DKE600                 RZ2ED-LS      0306
dkf0.0.0.5.25              DKF0              COMPAQ BB00911CA0  3B05
dkf100.1.0.5.25            DKF100            COMPAQ BB00911CA0  3B05
dkf200.2.0.5.25            DKF200            COMPAQ BB00911CA0  3B05
dkf300.3.0.5.25            DKF300            COMPAQ BB00911CA0  3B05
dkg0.0.0.3.26              DKG0                   RZ2ED-LS      0306
dkg100.1.0.3.26            DKG100            COMPAQ BB00911CA0  3B05
dkg200.2.0.3.26            DKG200            COMPAQ BB00911CA0  3B05
dqa0.0.0.15.16             DQA0                COMPAQ S C-140S  SE05     ❷
dqb0.0.0.15.24             DQB0                COMPAQ S C-140S  SE05
eia0.0.0.2004.19           EIA0              00-50-8B-95-03-26          ❸
eib0.0.0.2005.19           EIB0              00-50-8B-95-03-27
eic0.0.0.2004.27           EIC0              00-50-8B-95-01-EA
eid0.0.0.2005.27           EID0              00-50-8B-95-01-EB
fwa0.0.0.6.17              FWA0              00-60-6D-DF-F0-65          ❹
fwb0.0.0.6.25              FWB0              00-60-6D-12-E9-B8
pka0.7.0.1.16              PKA0                 SCSI Bus ID 7  5.57     ❺
pkb0.7.0.3.16              PKB0                 SCSI Bus ID 7  5.57
pkc0.7.0.3.18              PKC0                 SCSI Bus ID 7  5.57
pkd0.7.0.1.24              PKD0                 SCSI Bus ID 7  5.57
pke0.7.0.3.24              PKE0                 SCSI Bus ID 7  5.57
pkf0.7.0.5.25              PKF0                 SCSI Bus ID 7  5.57
pkg0.7.0.3.26              PKG0                 SCSI Bus ID 7  5.57
```

❶ The 27 SCSI devices with logical hose connections 16 and up appear here as part of soft partition 1. Note that the adaper ID lettering begins again at a.

❷ Logical hoses 16 and 24 are attached to soft partition 1, so these two IDE CD-ROM devices are listed here. Again, adapter ID lettering begins again at a.

❸ The four Ethernet ports in soft partition 1 appear here. Again, adapter ID lettering begins again at a.

❹ The two FDDI devices attached to soft partition 1 appear here.

❺ The seven Ethernet ports that are part of soft partition 1 are listed here. Again, adapter ID lettering restarts at a.

Chapter 7
Setting Up and Booting Partitions

This chapter describes how to initialize environment variables within each partition and indicates how to install and boot an operating system in each partition.

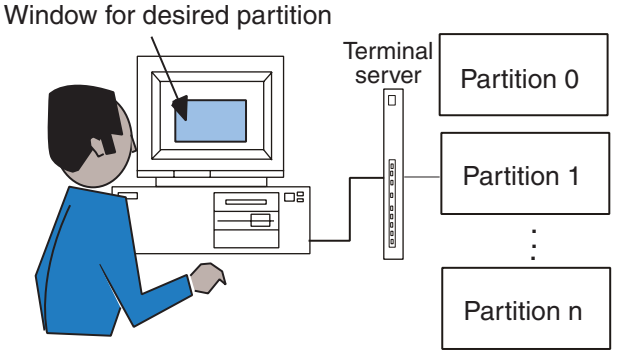
Sections include:

- Set Environment Variables for Each Partition
- Installing and Booting an Operating System in Each Partition

7.1 Set Environment Variables for Each Partition

You must set certain SRM environment variables within each partition.

Figure 7–1 Select Specific Partitions at System Management Console



PK-017HP-00

Once you have defined and initialized hard and/or soft partitions on each system, you must set SRM environment variables as required for each partition. First, display the desired partition window at the system management console. Directions on displaying partition windows in a system are given in the *AlphaServer GS80/160/320 System Management Console Installation and User's Guide.*

Next, set the SRM environment variable unique to each partition. Some examples follow.

Example 7–1 Examples of Partition-Specific Environment Variables

```
P00>>> set auto_action halt    ❶
P00>>> set os_type unix    ❷
P00>>> set bootdef_dev dka0  ❸
       .
       .
       .
```

❶ In general, it is reasonable to set **auto_action** to **halt** in each partition when you are first starting up. Once you are sure that the partitions have been defined as you wish, you can install and boot the operating system in each partition. Once you have partitions running smoothly, you can make changes to **auto_action** as desired. Options are **halt** (system halts on reset and returns to the SRM console prompt), **boot** (system boots on reset), or **restart** (system attempts to restart operating system from where it was).

❷ Be sure to define the operating system to be run in the partition.

❸ Using the **show device** listings discussed in Chapters 4 and 6, define your default boot device and other boot parameters for each partition.

7.2 Installing and Booting an Operating System in Each Partition

Within each partition, install and boot the desired operating system.

Example 7–2 Booting the OpenVMS Operating System

```
P00>>> boot -fl 0
(boot dkb0.0.0.3.0 -flags 0)
block 0 of dkb0.0.0.3.0 is a valid boot block
reading 926 blocks from dkb0.0.0.3.0
bootstrap code read in
base = 4e0000, image_start = 0, image_bytes = 73c00
initializing HWRPB at 2000
GCT base = 200000
initializing page table at 7fbe8000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code


    OpenVMS (TM) Alpha Operating System, Version V7.2-1H1


%SMP-I-SECMSG, CPU #01 message:   START
   .
   .
   .

  Accounting information:
  Buffered I/O count:              34447      Peak working set size:
8800
  Direct I/O count:                11247      Peak virtual size:
1363584
  Page faults:                     12711      Mounted volumes:
26
%PBA0 CPU00:  02-AUG-2000 14:42:17 Port is Reinitializing.
  Charged CPU time:        0 00:00:24.08      Elapsed time:       0
00:04:37.40¨

 Welcome to OpenVMS (TM) Alpha Operating System, Version V7.2-1H1

Username: SYSTEM
Password:
```

If the operating system has not yet been installed in the partition, do so. See the *Tru64 UNIX Installation Guide* or the *OpenVMS Alpha Galaxy Guide* for information on installing an operating system in a partition.

Once installed, boot the operating system from each partition, as shown in Example 7–2.

Chapter 8
Tips and Troubleshooting

This chapter describes some things you may want to do after you have defined and initialized partitions on your system. Sections include:

- How to Stop a Hung Partition
- Halting All Partitions to Reconfigure
- Correcting Errors in Environment Variables
- Using Tools to Debug a Partition
- Powering Off or Resetting a Hard Partition

8.1 How to Stop a Hung Partition

You can stop a hung operating system instance in a hard partition by issuing an SCM halt in –partition command from the master SCM. To stop an instance within a soft partition, issue an SRM halt command using the CPU number for the primary CPU for the instance.

Example 8–1 Halting a Hung OS Instance in a Hard Partition

```
SCM_E0> halt in -par 2
```

Example 8–2 Halting a Hung OS Instance in a Soft Partition

```
$ [Ctrl/P]
P00>>>
```

To halt an operating system instance in a hard partition, you connect to the master SCM for the system and issue a **halt in –par** command for the desired partition (see Example 8–1). This leaves the partition at the SRM console; you would connect to the partition for further debugging.

To halt an operating system instance in a soft partition, you connect to the hard partition in which the soft partition resides. Do a **show config**, if necessary, to determine the soft CPU number for the boot processor for the desired soft partition, and issue a Ctrl/P to halt the operating system (see Example 8–2).

8.2 Halting All Partitions to Reconfigure

You may wish to change the allocations set for partitions on your system. Shut down the operating system in each partition. For hard partitions, change the SCM hp_* environment variables in each partition and reset the system. For soft partitions, change the SRM lp_* environment variables and issue an lpinit command.

Example 8–3 Reconfiguring Hard Partitions

```
[shut down the operating system]  ❶
    .
    .
    .
P00>>> [Esc][Esc]scm      ❷
SCM_E0> show nvram        ❸
COM1_PRINT_EN                   1
HP_COUNT                        3       ❹
HP_QBB_MASK0                    7
HP_QBB_MASK1                    78
HP_QBB_MASK2                    80
HP_QBB_MASK3                    0
HP_QBB_MASK4                    0
HP_QBB_MASK5                    0
HP_QBB_MASK6                    0
HP_QBB_MASK7                    0
SROM_MASK                       ff f
XSROM_MASK                      ff ff ff ff ff ff ff ff ff 1 0 0
PRIMARY_CPU                     ff
PRIMARY_QBB0                    ff
AUTO_QUIT_SCM                   1
FAULT_TO_SYS                    0
DIMM_READ_DIS                   1
SCM_CSB_MASTER_ELIGIBLE         1
PERF_MON                        0
SCM_FORCE_FSL                   0
OCP_TEXT                        Uninitialized
AUTO_FAULT_RESTART              1
SCM_SIZING_TIME                 c
SCM_E0> set hp_count 2    ❺
SCM_E0> set hp_qbb_mask0 f
SCM_E0> set hp_qbb_mask1 f0
SCM_E0> reset -all        ❻
```

In Example 8–3, a 3-partition system is reconfigured to a 2-partition system.

❶ Shut down the operating system in each hard partition currently defined.

❷ At the console window showing the master SCM, escape to the SCM.

❸ A **show nvram** from an SCM in any of the hard partitions reveals the current **hp_*** environment variable settings.

❹ In this case, the system is set up with partition 0 consisting of QBBs 0, 1, and 2, partition 1 consisting of QBBs 3, 4, 5, and 6, and partition 2 consisting of QBB 7.

❺ In this example, two partitions are defined, with partition 0 consisting of QBBs 0, 1, 2, and 3, and partition 1 consisting of QBBS 4, 5, 6, and 7.

❻ The **reset –all** command resets the entire system.

Example 8–4 Reconfiguring Soft Partitions

```
[shut down operating system in all soft partitions]
   .
   .
   .
P00>>> show lp*   ❶
lp_count 2
lp_cpu_mask0 fff
lp_cpu_mask1 fffff000
lp_error_target 0
lp_io_mask0 1
lp_io_mask1 2
lp_mem_size0 0= 3 GB
lp_mem_size1 1 = 3 GB
lp_shared_mem_size 0,1 = 1 GB
P00>>> set lp_count 0   ❷
P00>>> init   ❸
Are you sure you want to reset ALL partitions? (Y/N) Y   ❹
 .
 .
 .
P00>>> set lp_count 2   ❺
P00>>> set lp_cpu_mask0 ffff
P00>>> set lp_cpu_mask1 fff00000
P00>>> set lp_error_target 0
P00>>> set lp_io_mask0 1
P00>>> set lp_io_mask1 2
P00>>> set lp_mem_size0  0 = 3 GB
P00>>> set lp_mem_size1  1 = 3 GB
P00>>> set lp_shared_mem_size 0,1 = 1GB
P00>>> lpinit   ❻
    .
    .
    .
```

In Example 8–4, the system is reconfigured from three partitions to two partitions.

❶ Shut down the operating system in all soft partitions. At the window from which the **lpinit** was issued, start with a **show lp*** to display the current settings for soft partition environment variables. (If the **show lp*** command does not show these environment variables, you are at the wrong window. If you do not remember the window from which the **lpinit** was issued, move from window to window until **show lp*** works.)

❷ Set the **lp_count** environment variable to 0.

❸ Issue an **init** command to disable partitions with the **lp_count** variable set to 0.

❹ The **init** command queries to determine if you want to reset all partitions. Type Y for yes.

❺ Key in the new settings for the **lp_*** environment variables.

❻ Issue an **lpinit** command.

8.3 Correcting Errors in Environment Variables

To correct a mistake in setting bit masks for partitioning environment variables, issue an init, change the definition, and issue an lpinit. (When you initialize partitions, any doubly allocated modules will be noted at the master SCM console window.)

Example 8–5 Correcting a Bad Bit Mask

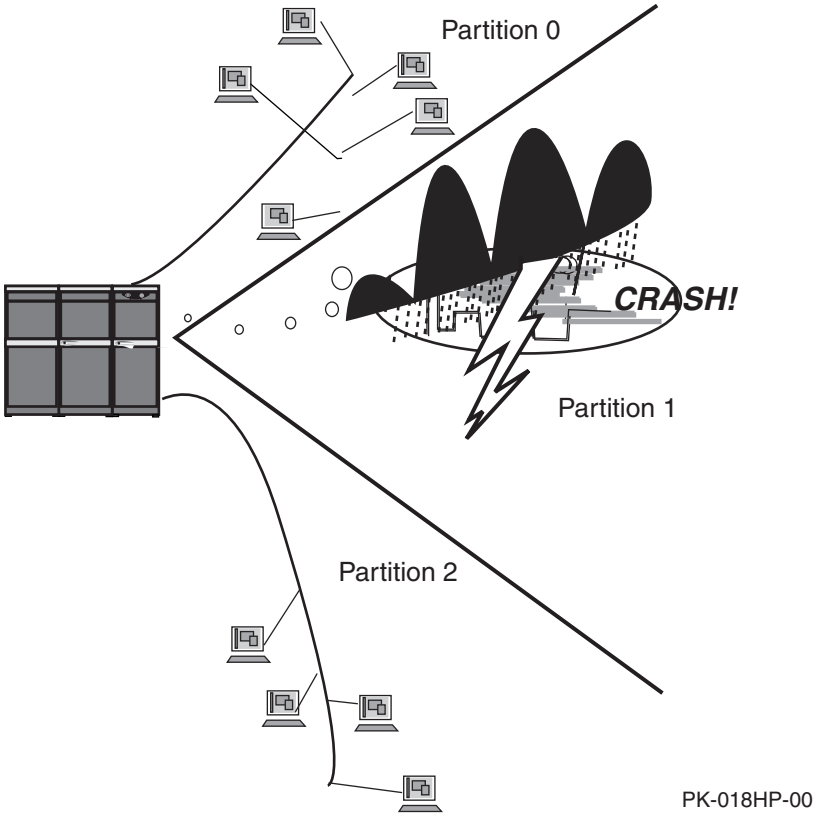
```
P00>>> init    ❶
Are you sure you want to reset ALL partitions? (Y/<N>) Y
   .
   .
   .
P00>>> set lp_cpu_mask1 ffff0000    ❷
P00>>> lpinit
```

Continuing from the previous section, where not all processors were allocated, we do an **init** to reset all partitions (❶). At ❷, we correct the bit mask for partition 0 to include the CPUs in QBB4 and issue an **lpinit** to initialize the partitions.

8.4 Using Tools to Debug a Partition

You can analyze crash dumps and run WEBES from a partition while other partitions are operating normally.

Figure 8–1 Debugging One Partition



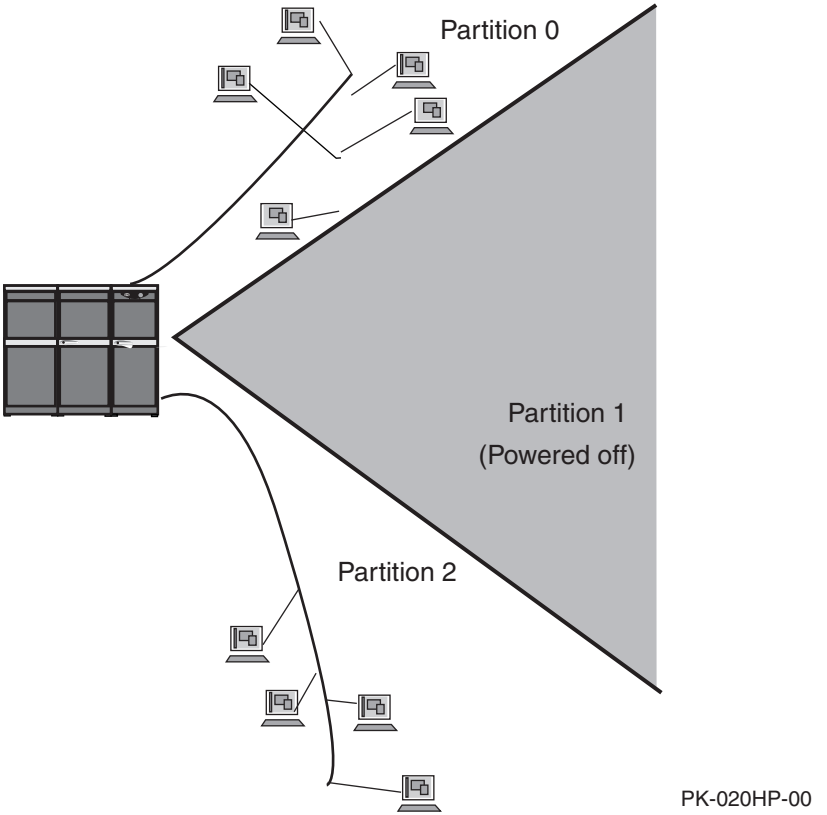
A partition can crash, while other partitions remain up and running. You can use the same tools to debug the problem partition as you would for a non-partitioned system. You must first ensure that the tool has been installed on each partition. For information on how to install the *Compaq* Web-Based Enterprise Service (WEBES), go to http://www.compaq.com and search for WEBES.

Note that in the case of faults, if a partition consists of more than one QBB, a fault will cause faults to occur on other partitions with more than one QBB. If a partition consists of one QBB, a fault causes no other fault in other partitions.

8.5 Powering Off or Resetting a Hard Partition

If a faulty component is found in a hard partition, you can power off this partition for removal and replacement while leaving other hard partitions running.

Figure 8–2 Powering Off One Partition



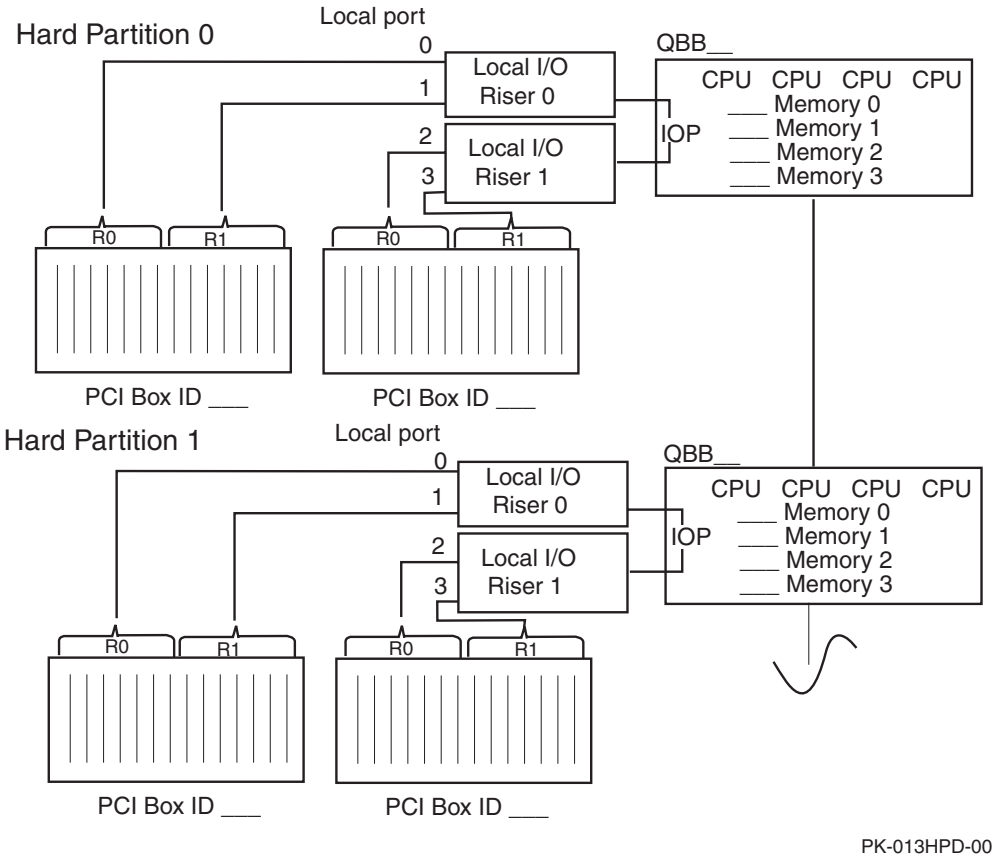
If you identify a faulty component within a hard partition, you can issue a **power off** command (no qualifiers) from the SRM console prompt for the partition to remove power from the QBBs in the hard partition.

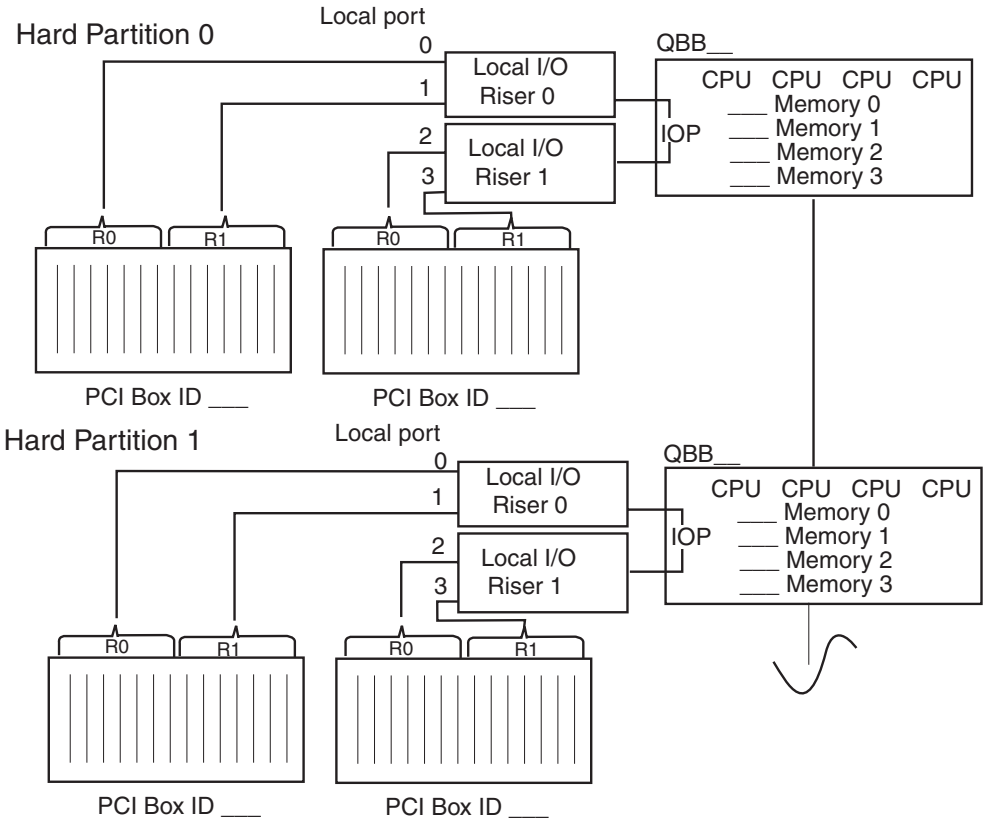
WARNING: The power off command from the SRM within a hard partition does not remove power from PCI boxes connected to the partition.

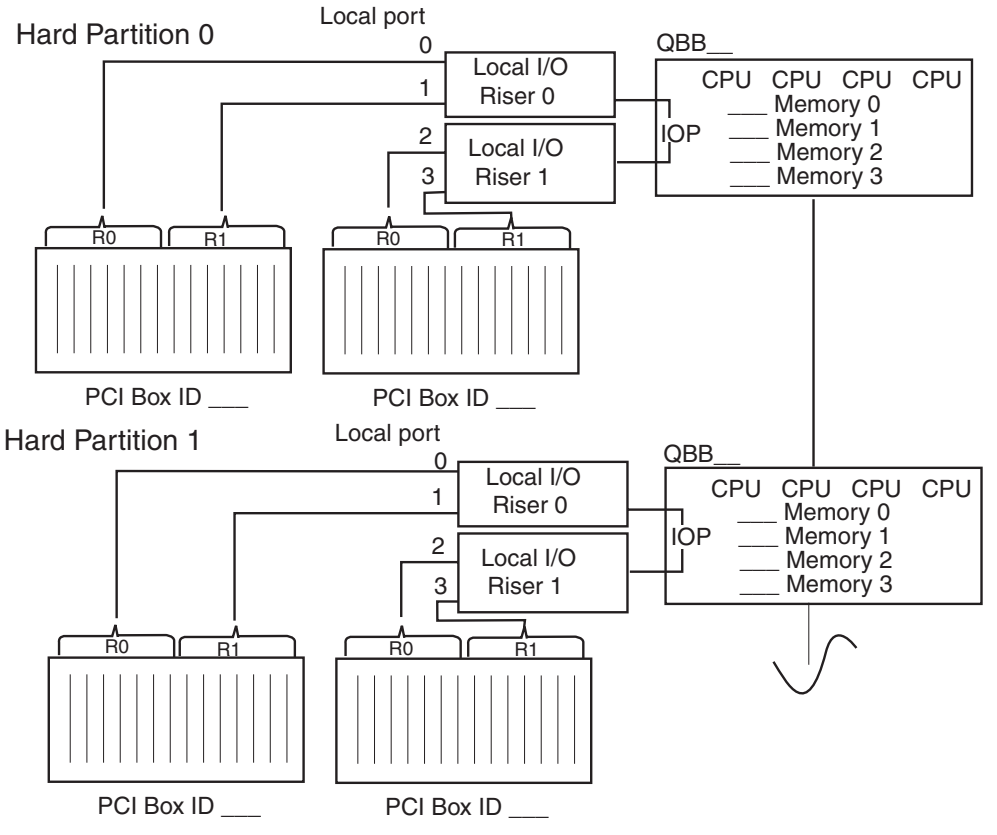
Similarly, you can issue a **reset** command from the SRM within a hard partition to reinitialize all registers for the partition.

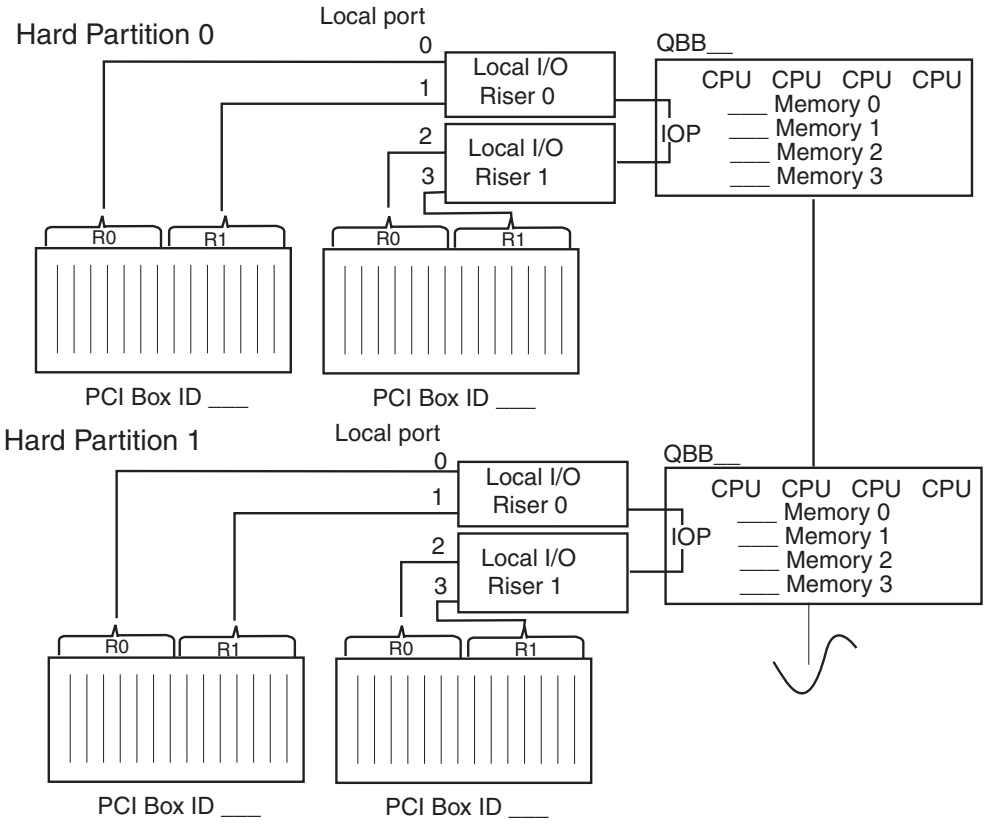
Appendix A
Blank Forms for Planning Partitions

Blank diagrams like those in Section 2.6 for planning partitions are included here for your use.


Hard Partition 0
Local port
0
1
2
3
Local I/O
Riser 0
Local I/O
Riser 1
QBB__
CPU CPU CPU CPU
___ Memory 0
___ Memory 1
___ Memory 2
___ Memory 3
IOP
R0
R1
R0
R1
PCI Box ID ___
PCI Box ID ___
Hard Partition 1
Local port
0
1
2
3
Local I/O
Riser 0
Local I/O
Riser 1
QBB__
CPU CPU CPU CPU
___ Memory 0
___ Memory 1
___ Memory 2
___ Memory 3
IOP
R0
R1
R0
R1
PCI Box ID ___
PCI Box ID ___
PK-013HPD-00


Hard Partition 0
Local port
0
1
2
3
Local I/O
Riser 0
Local I/O
Riser 1
QBB__
CPU CPU CPU CPU
___ Memory 0
___ Memory 1
___ Memory 2
___ Memory 3
IOP
R0
R1
R0
R1
PCI Box ID ___
PCI Box ID ___
Hard Partition 1
Local port
0
1
2
3
Local I/O
Riser 0
Local I/O
Riser 1
QBB__
CPU CPU CPU CPU
___ Memory 0
___ Memory 1
___ Memory 2
___ Memory 3
IOP
R0
R1
R0
R1
PCI Box ID ___
PCI Box ID ___
PK-013HPD-00


Hard Partition 0
Local port
0
1
2
3
Local I/O
Riser 0
Local I/O
Riser 1
QBB__
CPU CPU CPU CPU
___ Memory 0
___ Memory 1
___ Memory 2
___ Memory 3
IOP
R0
R1
R0
R1
PCI Box ID ___
PCI Box ID ___
Hard Partition 1
Local port
0
1
2
3
Local I/O
Riser 0
Local I/O
Riser 1
QBB__
CPU CPU CPU CPU
___ Memory 0
___ Memory 1
___ Memory 2
___ Memory 3
IOP
R0
R1
R0
R1
PCI Box ID ___
PCI Box ID ___
PK-013HPD-00


Hard Partition 0
Local port
0
1
2
3
Local I/O
Riser 0
Local I/O
Riser 1
QBB__
CPU CPU CPU CPU
___ Memory 0
___ Memory 1
___ Memory 2
___ Memory 3
IOP
R0
R1
R0
R1
PCI Box ID ___
PCI Box ID ___
Hard Partition 1
Local port
0
1
2
3
Local I/O
Riser 0
Local I/O
Riser 1
QBB__
CPU CPU CPU CPU
___ Memory 0
___ Memory 1
___ Memory 2
___ Memory 3
IOP
R0
R1
R0
R1
PCI Box ID ___
PCI Box ID ___
PK-013HPD-00

Index

T

W