ESCALA

Live Partition Mobility

REFERENCE
86 A1 85FA 01

ESCALA

Live Partition Mobility

Hardware

May 2009

BULL CEDOC
357 AVENUE PATTON
B.P.20845
49008 ANGERS CEDEX 01
FRANCE

REFERENCE
86 A1 85FA 01

The following copyright notice protects this book under Copyright laws which prohibit such actions as, but not limited to, copying, distributing, modifying, and making derivative works.

Copyright © Bull SAS 2009

Printed in France

Trademarks and Acknowledgements

We acknowledge the rights of the proprietors of the trademarks mentioned in this manual.

All brand names and software and hardware product names are subject to trademark and/or patent protection.

Quoting of brand and product names is for information purposes only and does not represent trademark misuse.

The information in this document is subject to change without notice. Bull will not be liable for errors contained herein, or for incidental or consequential damages in connection with the use of this material.

Contents

Live Partition Mobility 1
What's new in Live Partition Mobility 1
PDF file for Live Partition Mobility 2
Live Partition Mobility PDF 2
Live Partition Mobility HMC-managed systems. 3
Partition Mobility overview for HMC 3
Benefits of Partition Mobility 3
Partition Mobility process for HMC. 3
Configuration validation for Partition Mobility 5
Logical partition attributes that change after the logical partition moves to the destination system 8
Processor compatibility modes 9
Processor compatibility mode definitions 9
Current and preferred processor compatibility modes 11
Enhanced processor compatibility modes 13
Migration combinations of processor compatibility modes 14
Examples: Using processor compatibility modes in Partition Mobility 19
Partition Mobility environment 21
Source and destination servers in a Partition Mobility environment. 21
Hardware Management Console in a Partition Mobility environment 22
Source and destination Virtual I/O Server logical partitions in a Partition Mobility environment 23
Mobile partition managed by an HMC in a Partition Mobility environment 27
Software applications that recognize Partition Mobility 28
Network configuration in a Partition Mobility environment 29
Storage configuration in a Partition Mobility environment 29
Preparing for Partition Mobility 32
Preparing the source and destination servers for Partition Mobility 32
Determining the available physical memory on the destination server 34
Determining the available I/O entitled memory on the destination server 34
Determining available processors on the destination server 36
Preparing the HMC for Partition Mobility 36
Verifying SSH authentication between the source and destination HMCs 37
Preparing the source and destination Virtual I/O Server logical partitions for Partition Mobility 38
Enabling the source and destination mover service partitions. 39
Verifying that the destination shared memory pool contains an available paging space device 39
Synchronizing the time-of-day clocks of the source and destination Virtual I/O Server logical partitions 41
Preparing the mobile partition for Partition Mobility 41
Verifying RMC connections for the mobile partition 43
Verifying the processor compatibility mode of the mobile partition 44
Disabling the mobile partition for redundant error path reporting 45
Disabling virtual serial adapters for the mobile partition 46
Removing the mobile partition from a partition workload group 46
Disabling BSR arrays for the mobile partition 47
Disabling huge pages for the mobile partition 48
Removing Logical Host Ethernet Adapters from the mobile partition 48
Preparing the network configuration for Partition Mobility 49
Preparing the virtual SCSI configuration for Partition Mobility 50
Setting the reserve policy attributes of a device 50
Verifying the virtual adapter connections between the mobile partition and the Virtual I/O Server logical partitions on the source server 51
Verifying that the mobile partition has access to its physical storage 52
Preparing the virtual fibre channel configuration for Partition Mobility 53
Identifying the WWPNs that are assigned to a virtual fibre channel adapter 54
Verifying the virtual adapter connections between the mobile partition and the Virtual I/O Server logical partitions on the source server 55
Validating the configuration for Partition Mobility 56
Moving the mobile partition. 56

© Copyright IBM Corp. 2007, 2009

Adding the mobile partition to a partition workload group . . . 58
Troubleshooting Partition Mobility . . . 59
Troubleshooting active Partition Mobility . . . 59
Troubleshooting inactive Partition Mobility . . . 60
Live Partition Mobility on IVM-managed systems . . . 60
Partition Mobility overview for IVM . . . 60
Benefits of Partition Mobility . . . 61
Partition Mobility process for IVM . . . 61
Configuration validation for Partition Mobility . . . 63
Logical partition attributes that change after the logical partition moves to the destination system . . . 66
Processor compatibility modes . . . 66
Processor compatibility mode definitions . . . 67
Current and preferred processor compatibility modes . . . 68
Enhanced processor compatibility modes . . . 71
Migration combinations of processor compatibility modes . . . 72
Examples: Using processor compatibility modes in Partition Mobility . . . 77
Partition Mobility environment . . . 79
Source and destination servers in a Partition Mobility environment . . . 79
Integrated Virtualization Manager in a Partition Mobility environment . . . 80
Software applications that recognize Partition Mobility . . . 81
Network configuration in a Partition Mobility environment . . . 82
Storage configuration in a Partition Mobility environment . . . 82
Preparing for Partition Mobility . . . 85
Preparing the source and destination servers for Partition Mobility . . . 85
Determining the available physical memory on the destination server . . . 86
Determining the available I/O entitled memory on the destination server . . . 87
Determining available processors on the destination server . . . 88
Preparing the source and destination management partitions for Partition Mobility . . . 89
Verifying that the destination shared memory pool contains an available paging space device . . . 89
Preparing the mobile partition for Partition Mobility . . . 90
Verifying the processor compatibility mode of the mobile partition . . . 91
Removing the mobile partition from a partition workload group . . . 93
Preparing the network configuration for Partition Mobility . . . 93
Preparing the virtual SCSI configuration for Partition Mobility . . . 94
Setting the reserve policy attributes of a device . . . 95
Verifying that the mobile partition has access to its physical storage . . . 95
Preparing the virtual fibre channel configuration for Partition Mobility . . . 96
Verifying the number of physical fibre channel ports that are available on the destination management partition . . . 97
Validating the configuration for Partition Mobility . . . 98
Moving the mobile partition . . . 98

Appendix. Notices . . . 101
Programming interface information . . . 102
Trademarks . . . 102
Terms and conditions . . . 103

Live Partition Mobility

Live Partition Mobility, a component of the PowerVM™ Enterprise Edition hardware feature, provides the ability to move AIX® and Linux® logical partitions from one system to another. The mobility process transfers the system environment including the processor state, memory, attached virtual devices, and connected users.

Active Partition Mobility allows you to move AIX and Linux logical partitions that are running, including the operating system and applications, from one system to another. The logical partition and the applications running on that migrated logical partition do not need to be shut down.

Inactive Partition Mobility allows you to move a powered off AIX and Linux logical partition from one system to another.

Because the Hardware Management Console (HMC) always migrates the latest activated profile, an inactive logical partition that has never been activated cannot be migrated. The Integrated Virtualization Manager (IVM) allows you to migrate a logical partition that has never been activated.

Related information

IBM PowerVM Live Partition Mobility

What's new in Live Partition Mobility

Read about new or significantly changed information in Live Partition Mobility since the previous update of this topic collection.

May 2009

You can move a logical partition that uses shared memory (hereafter referred to as a *shared memory partition*) from one server with a shared memory pool to another server with a shared memory pool. The following information is new or updated for moving shared memory partitions.

Table 1. New or updated information for moving shared memory partitions

Hardware Management Console (HMC)	Integrated Virtualization Manager (IVM)
• "Configuration validation for Partition Mobility" on page 5 • "Source and destination servers in a Partition Mobility environment" on page 21 • "Source and destination Virtual I/O Server logical partitions in a Partition Mobility environment" on page 23 • "Preparing the source and destination servers for Partition Mobility" on page 32 • "Determining the available I/O entitled memory on the destination server" on page 34 • "Preparing the source and destination Virtual I/O Server logical partitions for Partition Mobility" on page 38 • "Verifying that the destination shared memory pool contains an available paging space device" on page 39	• "Configuration validation for Partition Mobility" on page 63 • "Source and destination servers in a Partition Mobility environment" on page 79 • "Preparing the source and destination servers for Partition Mobility" on page 85 • "Determining the available I/O entitled memory on the destination server" on page 87 • "Preparing the source and destination management partitions for Partition Mobility" on page 89 • "Verifying that the destination shared memory pool contains an available paging space device" on page 89

© Copyright IBM Corp. 2007, 2009

November 2008

The following updates have been made to the content:

- Processor compatibility modes enable you to move logical partitions between servers with different processor types without upgrading the operating environments installed in the logical partitions. The following information is new for processor compatibility modes:

Table 2. New or updated information for processor compatibility modes

HMC	IVM
• "Processor compatibility modes" on page 9 • "Verifying the processor compatibility mode of the mobile partition" on page 44	• "Processor compatibility modes" on page 9 • "Verifying the processor compatibility mode of the mobile partition" on page 91

- You can move a logical partition that is configured to access storage over a fibre channel network that supports N_Port ID Virtualization (NPIV) using virtual fibre channel adapters. The following information is new or updated for virtual fibre channel adapters:

Table 3. New or updated information for virtual fibre channel adapters

HMC	IVM
• "Storage configuration in a Partition Mobility environment" on page 29 • "Preparing the virtual fibre channel configuration for Partition Mobility" on page 53	• "Storage configuration in a Partition Mobility environment" on page 82 • "Preparing the virtual fibre channel configuration for Partition Mobility" on page 96

- PowerHA™ (or High Availability Cluster Multi-Processing) clustering software is aware of Partition Mobility. You can move a mobile partition that is running the PowerHA clustering software to another server without restarting the PowerHA clustering software.
- You can move a logical partition from a server that is managed by an HMC to a server that is managed by a different HMC. The following information is new or updated:
  - "Hardware Management Console in a Partition Mobility environment" on page 22
  - "Preparing the HMC for Partition Mobility" on page 36

PDF file for Live Partition Mobility

You can view and print a PDF of the Live Partition Mobility information.

Live Partition Mobility PDF

Live Partition Mobility, a component of the PowerVM Enterprise Edition hardware feature, provides the ability to move AIX and Linux logical partitions from one system to another. The mobility process transfers the system environment including the processor state, memory, attached virtual devices, and connected users.

To view the PDF file of Live Partition Mobility, approximately 1 MB in size, see

http://publib.boulder.ibm.com/infocenter/systems/scope/hw/topic/iphc3/iphc3.pdf .

Saving PDF files

Large PDF files can be difficult to open online. For best results, save the PDF to your local drive for viewing or printing. Follow these steps:

1. Right-click the PDF link in your browser.
2. Click the option that saves the PDF locally.
3. Navigate to the directory in which you want to save the PDF.

4. Click **Save**.

Downloading Adobe® Reader

You need Adobe Reader installed on your system to view or print these PDF files. You can download a free copy from the Adobe Reader Web site at http://www.adobe.com/products/acrobat/readstep2.html .

Live Partition Mobility HMC-managed systems

You can use the Hardware Management Console (HMC) to move an active or inactive logical partition from one server to another.

Partition Mobility overview for HMC

You can learn about the benefits of Partition Mobility, how the Hardware Management Console (HMC) performs active and inactive Partition Mobility, and about the configuration that is required to successfully move a logical partition from one system to another.

Related tasks

"Preparing for Partition Mobility" on page 32
You need to verify that the source and destination systems are configured correctly so that you can successfully move the mobile partition from the source system to the destination system. This includes verifying the configuration of the source and destination servers, the Hardware Management Console (HMC), the Virtual I/O Server logical partitions, the mobile partition, the virtual storage configuration, and the virtual network configuration.

Benefits of Partition Mobility

Partition Mobility provides systems management flexibility and is designed to improve system availability.

For example:

- You can avoid planned outages for hardware or firmware maintenance by moving logical partitions to another server and then performing the maintenance. Partition Mobility can help because you can use it to work around scheduled maintenance activities.
- You can avoid downtime for a server upgrade by moving logical partitions to another server and then performing the upgrade. This allows you to continue your work without disruption.
- If a server indicates a potential failure, you can move its logical partitions to another server before the failure occurs. Partition Mobility can help avoid unplanned downtime.
- You can consolidate workloads running on several small, underused servers onto a single large server.
- You can move workloads from server to server to optimize resource use and workload performance within your computing environment. With active Partition Mobility, you can manage workloads with minimal downtime.

However, while Partition Mobility provides many benefits, it does not do the following:

- Partition Mobility does not provide automatic workload balancing.
- Partition Mobility does not provide a bridge to new functions. Logical partitions must be restarted and possibly reinstalled to take advantage of new features.

Partition Mobility process for HMC

Learn about how the Hardware Management Console (HMC) moves an active or inactive logical partition from one server to another server.

The following table describes the steps that take place during the process of active and inactive Partition Mobility on the HMC.

Table 4. The steps involved in the process of active and inactive Partition Mobility on the HMC

Partition Mobility step	Active mobility step	Inactive mobility step
1. You ensure that all requirements are satisfied and all preparation tasks are completed.	X	X
2. You shut down the mobile partition.		X
3. You initiate Partition Mobility using the Partition Migration wizard on the HMC.	X	X
4. The HMC extracts the physical device description for each physical adapter on the Virtual I/O Server logical partitions on the source server. The HMC uses the extracted information to determine whether the Virtual I/O Server logical partitions on the destination server can provide the mobile partition with the same virtual SCSI, virtual Ethernet, and virtual fibre channel configuration that exists on the source server. This includes verifying that the Virtual I/O Server logical partitions on the destination server have enough available slots to accommodate the virtual adapter configuration of the mobile partition. The HMC uses all of this information to generate a list of recommended virtual adapter mappings for the mobile partition on the destination server. Where possible, the HMC preserves multipath I/O configurations. The HMC displays a list of recommended virtual adapter mappings (as well as all of the possible virtual adapter mappings) for the mobile partition on the destination server. You can either use the virtual adapter mappings that are recommended by the HMC, or you can select different virtual adapter mappings for the mobile partition on the destination server.	X	X
5. The HMC prepares the source and destination environments for Partition Mobility. This includes using the virtual adapter mappings from step 4 for mapping the virtual adapters on the mobile partition to the virtual adapters on the Virtual I/O Server logical partitions on the destination server.	X	X
6. The HMC transfers the logical partition state from the source environment to the destination environment. This includes all the partition profiles that are associated with the mobile partition. The HMC modifies the active partition profile of the mobile partition to reflect the new virtual adapter mappings on the destination server.	In active partition mobility, the following additional steps occur: • The source mover service partition extracts the logical partition state information from the source server and sends it to the destination mover service partition over the network. • The destination mover service partition receives the logical partition state information and installs it on the destination server.	X
7. The HMC suspends the mobile partition on the source server. The source mover service partition continues to transfer the logical partition state information to the destination mover service partition.	X	
8. The hypervisor resumes the mobile partition on the destination server.	X	

Table 4. The steps involved in the process of active and inactive Partition Mobility on the HMC (continued)

Partition Mobility step	Active mobility step	Inactive mobility step
9. The HMC completes the migration. All resources that were consumed by the mobile partition on the source server are reclaimed by the source server: • The HMC removes the virtual SCSI adapters and the virtual fibre channel adapters (that were connected to the mobile partition) from the source Virtual I/O Server logical partitions. • The HMC removes the virtual SCSI adapters, virtual Ethernet adapters, and virtual fibre channel adapters (that were connected to the mobile partition) from the partition profiles associated with the Virtual I/O Server logical partitions on the source server. • For a mobile partition that uses shared memory, the HMC deactivates the paging space device that was used by the mobile partition and releases it so that it becomes available for other shared memory partitions to use.	X	X
10. You activate the mobile partition on the destination server. (The processor and memory resources configured for the mobile partition remain unassigned until you activate the mobile partition on the destination server.)		X
11. You perform postrequisite tasks, such as adding dedicated I/O adapters to the mobile partition or adding the mobile partition to a partition workload group.	X	X

Configuration validation for Partition Mobility

You can learn about the tasks that the Partition Migration wizard on the Hardware Management Console (HMC) performs to validate your system configuration for active and inactive Partition Mobility.

Before you attempt to migrate an active logical partition, you need to validate your environment. You can use the validation function on the HMC to validate your system configuration. If the HMC detects a configuration or connection problem, it displays an error message with information to help you resolve the problem.

The following tables list validation tasks that the HMC performs to verify that the source and destination systems are ready for active or inactive Partition Mobility.

General compatibility

Table 5. Validation tasks performed by the HMC to verify general compatibility for active and inactive Partition Mobility

Validation task	Active mobility task	Inactive mobility task
Checks that the HMC that manages the source server can successfully communicate with the HMC that manages the destination server, if they are different HMCs.	X	X
Checks that the resource monitoring and control (RMC) connections are established.	Checks the RMC connections to the mobile partition, the source and destination Virtual I/O Servers, and the connection between the source and destination mover service partitions.	Checks the RMC connections to the source and destination Virtual I/O Servers.

Table 5. Validation tasks performed by the HMC to verify general compatibility for active and inactive Partition Mobility (continued)

Validation task	Active mobility task	Inactive mobility task
Checks mobility capability and compatibility.	Checks the source and destination servers, POWER6™ hypervisor, Virtual I/O Servers, and mover service partitions.	Checks the Virtual I/O Server and POWER6 hypervisor.
Checks the number of current migrations against the number of supported migrations.	Checks the number of current active migrations against the number of supported active migrations.	Checks the number of current inactive migrations against the number of supported inactive migrations.

Server compatibility

Table 6. Validation tasks performed by the HMC to verify server compatibility for active and inactive Partition Mobility

Validation task	Active mobility task	Inactive mobility task
Checks that the necessary processing resources are available to create a shell logical partition on the destination system.	X	X
Checks that the necessary memory resources are available to create a shell logical partition on the destination system.	• For a mobile partition that uses dedicated memory, checks that enough physical memory is available on the destination system. • For a mobile partition that uses shared memory, checks that a shared memory pool is configured on the destination server and that it has enough physical memory to satisfy the entitled memory requirements of the mobile partition.	For a mobile partition that uses dedicated memory, checks that enough physical memory is available on the destination system.
Checks that the necessary I/O adapter resources are available to create a shell logical partition on the destination system. During validation, the HMC extracts the device description for each virtual adapter on the Virtual I/O Server logical partitions on the source server. The HMC uses the extracted information to determine whether the Virtual I/O Server logical partitions on the destination server can provide the mobile partition with the same virtual SCSI, virtual Ethernet, and virtual fibre channel configuration that exists on the source server. This includes verifying that the Virtual I/O Server logical partitions on the destination server have enough available slots to accommodate the virtual adapter configuration of the mobile partition.	X	X
Checks that the logical memory block size is the same on the source and destination servers.	X	

Virtual I/O Server compatibility

Table 7. Validation tasks performed by the HMC to verify the source and destination Virtual I/O Server logical partitions for active and inactive Partition Mobility

Validation task	Active mobility task	Inactive mobility task
Checks that all required I/O devices are connected to the mobile partition through a Virtual I/O Server logical partition. That is, no physical adapters are assigned to the mobile partition and no virtual serial adapters are in virtual slots higher than 1.	X	X
Checks that no virtual SCSI disks are backed by logical volumes and that no virtual SCSI disks are attached to internal disks (not on the SAN).	X	X
Checks that the virtual SCSI disks assigned to the logical partition are accessible by the Virtual I/O Server logical partitions on the destination server.		X
Checks that the required virtual LAN IDs are available on the destination Virtual I/O Server logical partitions.	X	X
For a mobile partition that uses shared memory, checks the following configuration: • Checks the number of active Virtual I/O Server logical partitions (hereafter referred to as *paging VIOS partitions*) that are assigned to the shared memory pool on the destination server. • Checks that an available paging space device exists on the destination server and that the device satisfies the following requirements: – It satisfies the redundancy preferences that you specify. – It meets the size requirements of the mobile partition (it is at least the size of the maximum logical memory of the mobile partition). For example, you specify that the mobile partition uses redundant paging VIOS partitions on the destination server. You can move the mobile partition if the destination server provides the following configuration: • Two paging VIOS partitions are assigned to the shared memory pool. • An available paging space device exists. • The paging space device meets the size requirements of the mobile partition. • Both paging VIOS partitions on the destination server have access to the paging space device.	X	

Mobile partition compatibility

Table 8. Validation tasks performed by the HMC to verify that the mobile partition can successfully move to the destination server by using active or inactive Partition Mobility

Validation task	Active mobility task	Inactive mobility task
Checks that the operating system on the mobile partition is the AIX or Linux operating system.	X	X

Table 8. Validation tasks performed by the HMC to verify that the mobile partition can successfully move to the destination server by using active or inactive Partition Mobility (continued)

Validation task	Active mobility task	Inactive mobility task
Checks that the mobile partition has an active partition profile on the HMC.		X
Checks the mobile partition, its operating system, and its applications for migration capability. The AIX operating system passes the check migration request to those applications and kernel extensions that have registered to be notified of dynamic reconfiguration events. The operating system either accepts or rejects the migration.	X	
Checks that the mobile partition is not the redundant error path reporting logical partition.	X	X
Checks that the mobile partition is not in a partition workload group.	X	X
Checks the uniqueness of the virtual MAC addresses or the mobile partition.	X	X
Checks the state of the mobile partition.	Checks that the mobile partition state is Active or Running.	Checks that the mobile partition state is Not Activated.
Checks that the name of the mobile partition is not already in use on the destination server.	X	X
Checks that the mobile partition is not configured with barrier synchronization register (BSR) arrays.	X	
Checks that the mobile partition is not configured with huge pages.	X	
Checks that the mobile partition does not have a Host Ethernet Adapter (or Integrated Virtual Ethernet).	X	

Related tasks

"Validating the configuration for Partition Mobility" on page 56
You can use the Partition Migration wizard on the Hardware Management Console (HMC) to validate the configuration of the source and destination systems for Partition Mobility. If the HMC detects a configuration or connection problem, it displays an error message with information to help you resolve the problem.

Logical partition attributes that change after the logical partition moves to the destination system

When you move a logical partition from one server to another, some of its attributes might change (such as the logical partition ID number) and some of its attributes remain the same (such as the logical partition configuration).

The following table describes the logical partition attributes that remain the same and the logical partition attributes that might change after you move a logical partition to the destination server.

Table 9. Logical partition attributes that might change or remain the same after a logical partition moves to the destination server

Attributes that remain the same	Attributes that might change
• The logical partition name • The logical partition type (dedicated processor or shared processor) • The logical partition configuration • The processor architecture • The Simultaneous Multi-Threading (SMT) state of each processor • The virtual MAC addresses, IP addresses, and LUN mapping to the target devices	• The logical partition ID number • The machine type, model, and serial number • The model class of the underlying server • The processor version and type • The processor frequency • The affinity characteristics of the logical memory blocks (LMB) • The maximum number of hot pluggable and installed physical processors • The L1 and L2 cache size

Processor compatibility modes

Processor compatibility modes enable you to move logical partitions between servers that have different processor types without upgrading the operating environments installed in the logical partitions.

You can run several versions of the AIX, Linux, and Virtual I/O Server operating environments in logical partitions on POWER5™ processor-based servers, POWER6 processor-based servers, and POWER6+™ processor-based servers. Sometimes older versions of these operating environments do not support the capabilities that are available with new processors. This can limit your flexibility to move logical partitions between servers that have different processor types.

A processor compatibility mode is a value assigned to a logical partition by the hypervisor that specifies the processor environment in which the logical partition can successfully operate. When you move a logical partition to a destination server that has a different processor type from the source server, the processor compatibility mode enables that logical partition to run in a processor environment on the destination server in which it can successfully operate. In other words, the processor compatibility mode enables the destination server to provide the logical partition with a subset of processor capabilities that are supported by the operating environment that is installed in the logical partition.

Related tasks

"Verifying the processor compatibility mode of the mobile partition" on page 44
You can use the Hardware Management Console (HMC) to determine whether the processor compatibility mode of the mobile partition is supported on the destination server, and update the mode, if necessary, so that you can successfully move the mobile partition to the destination server.

"Verifying the processor compatibility mode of the mobile partition" on page 91
You can use the Integrated Virtualization Manager (IVM) to determine whether the processor compatibility mode of the mobile partition is supported on the destination server, and update the mode, if necessary, so that you can successfully move the mobile partition to the destination server.

Processor compatibility mode definitions:

You can learn about each processor compatibility mode and the servers on which each mode can run.

The following table describes each processor compatibility mode and the servers on which the logical partitions that use each processor compatibility mode can successfully operate.

Table 10. Processor compatibility modes

Processor compatibility mode	Description	Supported servers
POWER5	The POWER5 processor compatibility mode allows you to run operating-system versions that use all the standard features of the POWER5 processor.	Logical partitions that use the POWER5 processor compatibility mode can run on POWER5 processor-based servers, POWER6 processor-based servers, and POWER6+ processor-based servers. **Restriction:** A POWER6 processor cannot emulate all features of a POWER5 processor. For example, certain types of performance monitoring might not be available for a logical partition if the current processor compatibility mode of a logical partition is set to the POWER5 mode.
POWER6	The POWER6 processor compatibility mode allows you to run operating-system versions that use all the standard features of the POWER6 processor.	Logical partitions that use the POWER6 processor compatibility mode can run on POWER6 processor-based servers and POWER6+ processor-based servers.
POWER6+	The POWER6+ processor compatibility mode allows you to run operating-system versions that use all the standard features of the POWER6+ processor.	Logical partitions that use the POWER6+ processor compatibility mode can run on POWER6+ processor-based servers.
POWER6 enhanced	The POWER6 enhanced processor compatibility mode allows you to run operating-system versions that use all the standard features of the POWER6 processor and also provides additional floating-point instructions to applications that use the POWER6 processor.	Logical partitions that use the POWER6 enhanced processor compatibility mode can run on POWER6 processor-based servers.
POWER6+ enhanced	The POWER6+ enhanced processor compatibility mode allows you to run operating-system versions that use all the standard features of the POWER6+ processor and also provides additional floating-point instructions to applications that use the POWER6+ processor.	Logical partitions that use the POWER6+ enhanced processor compatibility mode can run on POWER6+ processor-based servers.

Table 10. Processor compatibility modes (continued)

Processor compatibility mode	Description	Supported servers
default	The default processor compatibility mode is a preferred processor compatibility mode that enables the hypervisor to determine the current mode for the logical partition. When the preferred mode is set to default, the hypervisor sets the current mode to the most fully featured mode supported by the operating environment. In most cases, this is the processor type of the server on which the logical partition is activated. For example, the preferred mode is set to default and the logical partition is running on a POWER6 processor-based server. The operating environment supports the POWER6 processor capabilities so the hypervisor sets the current processor compatibility mode to POWER6.	The servers on which logical partitions with the preferred processor compatibility mode of default can run depend on the current processor compatibility mode of the logical partition. For example, if the hypervisor determines that the current mode is POWER6, then the logical partition can run on POWER6 processor-based severs and POWER6+ processor-based servers.

Related concepts

"Current and preferred processor compatibility modes"
The processor compatibility mode in which the logical partition currently operates is the *current* processor compatibility mode of the logical partition. The *preferred* processor compatibility mode of a logical partition is the mode in which you want the logical partition to operate.

"Enhanced processor compatibility modes" on page 13
The POWER6 enhanced and POWER6+ enhanced processor compatibility modes provide additional floating-point instructions to applications that use the POWER6 or POWER6+ processor.

"Examples: Using processor compatibility modes in Partition Mobility" on page 19
You can view examples of how processor compatibility modes are used when moving an active or inactive logical partition between servers with different processor types.

Related reference

"Migration combinations of processor compatibility modes" on page 14
View all the combinations of the processor types of the source server, the processor types of the destination server, the current and preferred processor compatibility modes of the logical partition before the migration, and the current and preferred processor compatibility modes of the logical partition after the migration.

Current and preferred processor compatibility modes:

The processor compatibility mode in which the logical partition currently operates is the *current* processor compatibility mode of the logical partition. The *preferred* processor compatibility mode of a logical partition is the mode in which you want the logical partition to operate.

The hypervisor sets the current processor compatibility mode for a logical partition using the following information:

- The processor features supported by the operating environment running in the logical partition.
- The preferred processor compatibility mode that you specify.

When you activate the logical partition, the hypervisor checks the preferred processor compatibility mode and determines whether the operating environment supports that mode. If the operating environment supports the preferred processor compatibility mode, the hypervisor assigns the logical partition the

preferred processor compatibility mode. If the operating environment does not support the preferred processor compatibility mode, the hypervisor assigns the logical partition the most fully featured processor compatibility mode that is supported by the operating environment.

The following table describes when each processor compatibility mode can be current mode or the preferred mode.

Table 11. Current and preferred processor compatibility modes

Processor compatibility mode	**Can it be the current mode?**	**Can it be the preferred mode?**
POWER5	Yes The POWER5 processor compatibility mode can be the current processor compatibility mode of a logical partition.	No You cannot specify POWER5 as the preferred processor compatibility mode. The only situation in which a logical partition will run in the POWER5 processor compatibility mode is when it is the only processor environment supported by the operating environment installed in the logical partition.
POWER6	Yes The POWER6 processor compatibility mode can be the current processor compatibility mode of a logical partition.	Yes You can specify POWER6 as the preferred processor compatibility mode for a logical partition.
POWER6+	Yes The POWER6+ processor compatibility mode can be the current processor compatibility mode of a logical partition.	Yes You can specify POWER6+ as the preferred processor compatibility mode for a logical partition.
POWER6 enhanced	Yes The POWER6 enhanced processor compatibility mode can be the current processor compatibility mode of a logical partition.	Yes You can specify POWER6 enhanced as the preferred processor compatibility mode for a logical partition.
POWER6+ enhanced	Yes The POWER6+ enhanced processor compatibility mode can be the current processor compatibility mode of a logical partition.	Yes You can specify POWER6+ enhanced as the preferred processor compatibility mode for a logical partition.
default	No The default processor compatibility mode is a preferred processor compatibility mode.	Yes You can specify default as the preferred processor compatibility mode. Also, if you do not specify a preferred mode, the system automatically sets the preferred mode to default.

The following table shows the current and preferred processor compatibility modes supported on each server type.

Table 12. Processor compatibility modes supported by server type

Server processor type	Supported current modes	Supported preferred modes
POWER6+ processor-based server	POWER5, POWER6, POWER6+, POWER6+ enhanced	default, POWER6+, POWER6, POWER6+ enhanced
POWER6 processor-based server	POWER5, POWER6, POWER6 enhanced	default, POWER6, POWER6 enhanced

The preferred processor compatibility mode is the highest mode that the hypervisor can assign to a logical partition. If the operating environment installed in the logical partition does not support the preferred mode, the hypervisor can set the current mode to a lower mode than the preferred mode, but it can not set the current mode to a higher mode than the preferred mode. For example, a logical partition runs on a POWER6+ processor-based server and you specify POWER6+ as the preferred mode. The operating environment installed in the logical partition does not support the POWER6+ processor capabilities, but it does support the POWER6 processor capabilities. When you activate the logical partition, the hypervisor assigns the POWER6 processor compatibility mode as the current mode for the logical partition because the POWER6 mode is the most fully featured mode that the operating environment supports and it is a lower mode than the preferred mode of POWER6+.

You cannot dynamically change the current processor compatibility of a logical partition. To change the current processor compatibility mode, you must change the preferred processor compatibility mode, shut down the logical partition, and restart the logical partition. The hypervisor attempts to set the current processor compatibility mode to the preferred mode that you specified.

When you move an active logical partition between servers with different processor types, both the current and preferred processor compatibility modes of the logical partition must be supported by the destination server. When you move an inactive logical partition between servers with different processor types, only the preferred mode of the logical partition must be supported by the destination server.

If you specify the default mode as the preferred mode for an inactive logical partition, you can move that inactive logical partition to a server of any processor type. Because all servers support the default processor compatibility mode, you can move an inactive logical partition with the preferred mode of default to a server with any processor type. When the inactive logical partition is activated on the destination server, the preferred mode remains set to default, and the hypervisor determines the current mode for the logical partition.

Related concepts

"Enhanced processor compatibility modes"
The POWER6 enhanced and POWER6+ enhanced processor compatibility modes provide additional floating-point instructions to applications that use the POWER6 or POWER6+ processor.

"Examples: Using processor compatibility modes in Partition Mobility" on page 19
You can view examples of how processor compatibility modes are used when moving an active or inactive logical partition between servers with different processor types.

"Processor compatibility mode definitions" on page 9
You can learn about each processor compatibility mode and the servers on which each mode can run.

Related reference

"Migration combinations of processor compatibility modes" on page 14
View all the combinations of the processor types of the source server, the processor types of the destination server, the current and preferred processor compatibility modes of the logical partition before the migration, and the current and preferred processor compatibility modes of the logical partition after the migration.

Enhanced processor compatibility modes:

The POWER6 enhanced and POWER6+ enhanced processor compatibility modes provide additional floating-point instructions to applications that use the POWER6 or POWER6+ processor.

If you want a logical partition to run in an enhanced mode, you must specify the enhanced mode as the preferred mode for the logical partition. If the operating environment supports the corresponding non-enhanced mode, then the hypervisor assigns the enhanced mode to the logical partition when you activate the logical partition. In other words, if you specify the POWER6+ enhanced mode as the preferred mode, and the operating environment supports the POWER6+ mode, the hypervisor assigns the POWER6+ enhanced mode to the logical partition when you activate the logical partition. Similarly, if you specify the POWER6 enhanced mode as the preferred mode, and the operating environment supports the POWER6 mode, the hypervisor assigns the POWER6 enhanced mode to the logical partition when you activate the logical partition.

Logical partitions in the POWER6 enhanced processor compatibility mode can only run on POWER6 processor-based servers, and logical partitions in the POWER6+ enhanced processor compatibility mode can only run on POWER6+ processor-based servers. Therefore, if a logical partition runs in the POWER6 enhanced mode, you can only move the logical partition to POWER6 processor-based servers. Likewise, if a logical partition runs in the POWER6+ enhanced mode, you can only move the logical partition to POWER6+ processor based servers. If you want to move a logical partition in the POWER6 enhanced processor compatibility mode to a POWER6+ processor-based server, then you need to change the preferred mode to the default or POWER6 processor compatibility mode and restart the logical partition.

Related concepts

"Examples: Using processor compatibility modes in Partition Mobility" on page 19
You can view examples of how processor compatibility modes are used when moving an active or inactive logical partition between servers with different processor types.

"Current and preferred processor compatibility modes" on page 11
The processor compatibility mode in which the logical partition currently operates is the *current* processor compatibility mode of the logical partition. The *preferred* processor compatibility mode of a logical partition is the mode in which you want the logical partition to operate.

"Processor compatibility mode definitions" on page 9
You can learn about each processor compatibility mode and the servers on which each mode can run.

Related reference

"Migration combinations of processor compatibility modes"
View all the combinations of the processor types of the source server, the processor types of the destination server, the current and preferred processor compatibility modes of the logical partition before the migration, and the current and preferred processor compatibility modes of the logical partition after the migration.

Migration combinations of processor compatibility modes:

View all the combinations of the processor types of the source server, the processor types of the destination server, the current and preferred processor compatibility modes of the logical partition before the migration, and the current and preferred processor compatibility modes of the logical partition after the migration.

Related concepts

"Examples: Using processor compatibility modes in Partition Mobility" on page 19
You can view examples of how processor compatibility modes are used when moving an active or inactive logical partition between servers with different processor types.

"Enhanced processor compatibility modes" on page 13
The POWER6 enhanced and POWER6+ enhanced processor compatibility modes provide additional floating-point instructions to applications that use the POWER6 or POWER6+ processor.

"Current and preferred processor compatibility modes" on page 11
The processor compatibility mode in which the logical partition currently operates is the *current* processor compatibility mode of the logical partition. The *preferred* processor compatibility mode of a logical partition is the mode in which you want the logical partition to operate.

"Processor compatibility mode definitions" on page 9
You can learn about each processor compatibility mode and the servers on which each mode can run.

Migration combinations of processor compatibility modes for active Partition Mobility:

When you move an active logical partition between servers with different processor types, both the current and preferred processor compatibility modes of the logical partition must be supported by the destination server.

The following table describes the processor compatibility mode combinations for active migrations. It shows the processor type of the source server and the preferred and current processor compatibility modes of the logical partition on the source server before the migration. It also shows the processor type of the destination server and the preferred and current processor compatibility modes of the logical partition on the destination server after the migration.

Table 13. Processor compatibility mode combinations for active migrations

Source environment			**Destination environment**		
Source server	**Preferred mode before migration**	**Current mode before migration**	**Destination server**	**Preferred mode after migration**	**Current mode after migration**
POWER6 processor-based server	default	POWER6 or POWER5	POWER6 processor-based server	default	POWER6 or POWER5
POWER6 processor-based server	POWER6	POWER6 or POWER5	POWER6 processor-based server	POWER6	POWER6 or POWER5
POWER6 processor-based server	POWER6 enhanced	POWER6 enhanced or POWER5	POWER6 processor-based server	POWER6 enhanced	POWER6 enhanced or POWER5
POWER6 processor-based server	default	POWER6 or POWER5	POWER6+ processor-based server	default	POWER6+ (after you restart the logical partition), POWER6, or POWER5
POWER6 processor-based server	POWER6	POWER6 or POWER5	POWER6+ processor-based server	POWER6	POWER6 or POWER5

Table 13. Processor compatibility mode combinations for active migrations (continued)

Source environment			**Destination environment**		
Source server	**Preferred mode before migration**	**Current mode before migration**	**Destination server**	**Preferred mode after migration**	**Current mode after migration**
POWER6 processor-based server	POWER6 enhanced	POWER6 enhanced or POWER5	POWER6+ processor-based server	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6 enhanced).	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6 enhanced).
POWER6+ processor-based server	default	POWER6+, POWER6, or POWER5	POWER6+ processor-based server	default	POWER6+, POWER6, or POWER5
POWER6+ processor-based server	POWER6+	POWER6+, POWER6, or POWER5	POWER6+ processor-based server	POWER6+	POWER6+, POWER6, or POWER5
POWER6+ processor-based server	POWER6+ enhanced	POWER6+ enhanced or POWER5	POWER6+ processor-based server	POWER6+ enhanced	POWER6+ enhanced or POWER5
POWER6+ processor-based server	POWER6	POWER6 or POWER5	POWER6+ processor-based server	POWER6	POWER6 or POWER5
POWER6+ processor-based server	default	POWER6+, POWER6, or POWER5	POWER6 processor-based server	default	If the current mode on the source server is POWER6+, you cannot migrate the logical partition because the destination server does not support the current mode (POWER6+). If the current mode on the source server is POWER6 or POWER5, then the current mode on the destination server is POWER6 or POWER5.
POWER6+ processor-based server	POWER6+	POWER6+, POWER6, or POWER5	POWER6 processor-based server	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6+).	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6+).

Table 13. Processor compatibility mode combinations for active migrations (continued)

Source environment			Destination environment		
Source server	**Preferred mode before migration**	**Current mode before migration**	**Destination server**	**Preferred mode after migration**	**Current mode after migration**
POWER6+ processor-based server	POWER6+ enhanced	POWER6+ enhanced or POWER5	POWER6 processor-based server	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6+ enhanced).	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6+ enhanced).
POWER6+ processor-based server	POWER6	POWER6 or POWER5	POWER6 processor-based server	POWER6	POWER6 or POWER5

Related reference

"Migration combinations of processor compatibility modes for inactive Partition Mobility"
When you move an inactive logical partition between servers with different processor types, only the preferred mode of the logical partition must be supported by the destination server.

"Migration combinations for version 1.5, and earlier, of the IVM" on page 76
Learn about the processor compatibility mode combinations for migrations where versions 1.5 (and earlier) of the Integrated Virtualization Manager (IVM) manage the source server and versions 2.1 (and later) of the IVM manage the destination server.

Migration combinations of processor compatibility modes for inactive Partition Mobility:

When you move an inactive logical partition between servers with different processor types, only the preferred mode of the logical partition must be supported by the destination server.

The following table describes the processor compatibility mode combinations for inactive migrations. It shows the processor type of the source server and the preferred processor compatibility modes of the logical partition on the source server before the migration. It also shows the processor type of the destination server and the preferred and current processor compatibility modes of the logical partition on the destination server after the migration.

Table 14. Processor compatibility mode combinations for inactive migrations

Source environment		Destination environment		
Source server	**Preferred mode before migration**	**Destination server**	**Preferred mode before migration**	**Current mode after migration**
POWER6 processor-based server	default	POWER6 processor-based server	default	POWER6 or POWER5
POWER6 processor-based server	POWER6	POWER6 processor-based server	POWER6	POWER6 or POWER5
POWER6 processor-based server	POWER6 enhanced	POWER6 processor-based server	POWER6 enhanced	POWER6 enhanced or POWER5
POWER6 processor-based server	default	POWER6+ processor-based server	default	POWER6+, POWER6, or POWER5

Table 14. Processor compatibility mode combinations for inactive migrations (continued)

Source environment		**Destination environment**		
Source server	**Preferred mode before migration**	**Destination server**	**Preferred mode before migration**	**Current mode after migration**
POWER6 processor-based server	POWER6	POWER6+ processor-based server	POWER6	POWER6 or POWER5
POWER6 processor-based server	POWER6 enhanced	POWER6+ processor-based server	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6 enhanced).	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6 enhanced).
POWER6+ processor-based server	default	POWER6+ processor-based server	default	POWER6+, POWER6, or POWER5
POWER6+ processor-based server	POWER6+	POWER6+ processor-based server	POWER6+	POWER6+, POWER6, or POWER5
POWER6+ processor-based server	POWER6	POWER6+ processor-based server	POWER6	POWER6 or POWER5
POWER6+ processor-based server	POWER6+ enhanced	POWER6+ processor-based server	POWER6+ enhanced	POWER6+ enhanced or POWER5
POWER6+ processor-based server	default	POWER6 processor-based server	default	POWER6 or POWER5
POWER6+ processor-based server	POWER6+	POWER6 processor-based server	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6+).	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6+).
POWER6+ processor-based server	POWER6	POWER6 processor-based server	POWER6	POWER6 or POWER5
POWER6+ processor-based server	POWER6+ enhanced	POWER6 processor-based server	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6+ enhanced).	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6+ enhanced).

Related reference

"Migration combinations of processor compatibility modes for active Partition Mobility" on page 15
When you move an active logical partition between servers with different processor types, both the current and preferred processor compatibility modes of the logical partition must be supported by the destination server.

"Migration combinations for version 1.5, and earlier, of the IVM" on page 76
Learn about the processor compatibility mode combinations for migrations where versions 1.5 (and earlier) of the Integrated Virtualization Manager (IVM) manage the source server and versions 2.1 (and later) of the IVM manage the destination server.

Examples: Using processor compatibility modes in Partition Mobility:

You can view examples of how processor compatibility modes are used when moving an active or inactive logical partition between servers with different processor types.

Moving an active logical partition from a POWER6 processor-based server to a POWER6+ processor-based server

You want to move an active logical partition from a POWER6 processor-based server to a POWER6+ processor-based server so that the logical partition can take advantage of the additional capabilities available with the POWER6+ processor. To accomplish this task, you might perform the following steps:

1. You set the preferred processor compatibility mode to the default mode. When you activate the logical partition on the POWER6 processor-based server, it runs in the POWER6 mode.
2. You move the logical partition to the POWER6+ processor-based server. Both the current and preferred modes remain unchanged for the logical partition until you restart the logical partition.
3. You restart the logical partition on the POWER6+ processor-based server. The hypervisor evaluates the configuration. Because the preferred mode is set to default and the logical partition now runs on a POWER6+ processor-based server, the highest mode available is the POWER6+ mode. The hypervisor determines that the most fully featured mode supported by the operating environment installed in the logical partition is the POWER6+ mode and changes the current mode of the logical partition to the POWER6+ mode.

At this point, the current processor compatibility mode of the logical partition is the POWER6+ mode and the logical partition runs on the POWER6+ processor-based server.

Moving the active logical partition back to the POWER6 processor-based server

A problem arises and you need to move the active logical partition back to the POWER6 processor-based server. Because the logical partition now runs in the POWER6+ mode and the POWER6+ mode is not supported on the POWER6 processor-based server, you need to adjust the preferred mode for the logical partition so that the hypervisor can reset the current mode to a mode that is supported by the POWER6 processor-based server. To move the logical partition back to the POWER6 processor-based server, you might perform the following steps:

1. You change the preferred mode from the default mode to the POWER6 mode.
2. You restart the logical partition on the POWER6+ processor-based server. The hypervisor evaluates the configuration. Because the preferred mode is set to POWER6, the hypervisor does not set the current mode to a higher mode than POWER6. Remember, the hypervisor first determines whether it can set the current mode to the preferred mode. If not, it determines whether it can set the current mode to the next highest mode, and so on. In this case, the operating environment supports the POWER6 mode, so the hypervisor sets the current mode to the POWER6 mode.
3. Now that the logical partition runs in the POWER6 mode and the POWER6 mode is supported on the POWER6 processor-based server, you move the logical partition back to the POWER6 processor-based server.

Moving an active logical partition between different processor types without making configuration changes

Depending on how often you need to move logical partitions, you might want to maintain the flexibility to move an active logical partition between a POWER6 processor-based server and a POWER6+ processor-based server so that you can move the logical partition back and forth without making configuration changes. The easiest way to maintain this type of flexibility is to determine the processor compatibility mode supported on both the source and destination servers and set the preferred processor compatibility mode of the logical partition to the highest mode supported by both servers. To accomplish this flexibility, you might perform the following steps:

1. You set the preferred processor compatibility mode to the POWER6 mode because the POWER6 mode is the highest mode supported by both POWER6 processor-based servers and POWER6+ processor-based servers.
2. You move the logical partition from the POWER6 processor-based server to the POWER6+ processor-based server.
3. When you restart the logical partition on the POWER6+ processor-based server, the hypervisor evaluates the configuration. Remember, the hypervisor does not set the current mode higher than the preferred mode. First, the hypervisor determines whether it can set the current mode to the preferred mode. If not, it then determines whether it can set the current mode to the next highest mode, and so on. In this case, the operating environment supports the POWER6 mode, so the hypervisor sets the current mode to the POWER6 mode.
4. Because the POWER6 mode is supported on the POWER6 processor-based server, you do not need to make any configuration changes to move the logical partition back to the POWER6 processor-based server.
5. You move the logical partition back to the POWER6 processor-based server.
6. When you restart the logical partition on the POWER6 processor-based server, the hypervisor evaluates the configuration. The hypervisor determines that the operating environment supports the preferred mode of POWER6, and sets the current mode to the POWER6 mode.

Moving an inactive logical partition between servers with different processor types

The same logic from the previous examples applies to inactive Partition Mobility, except inactive Partition Mobility does not need the current processor compatibility mode of the logical partition because the logical partition is inactive. After you move an inactive logical partition to the destination server and activate that logical partition on the destination server, the hypervisor evaluates the configuration and sets the current mode for the logical partition just like it does when you restart a logical partition after active Partition Mobility. The hypervisor attempts to set the current mode to the preferred mode. If it cannot, it checks the next highest mode and so on.

Related concepts

"Enhanced processor compatibility modes" on page 13
The POWER6 enhanced and POWER6+ enhanced processor compatibility modes provide additional floating-point instructions to applications that use the POWER6 or POWER6+ processor.

"Current and preferred processor compatibility modes" on page 11
The processor compatibility mode in which the logical partition currently operates is the *current* processor compatibility mode of the logical partition. The *preferred* processor compatibility mode of a logical partition is the mode in which you want the logical partition to operate.

"Processor compatibility mode definitions" on page 9
You can learn about each processor compatibility mode and the servers on which each mode can run.

Related reference

"Migration combinations of processor compatibility modes" on page 14
View all the combinations of the processor types of the source server, the processor types of the destination server, the current and preferred processor compatibility modes of the logical partition before the migration, and the current and preferred processor compatibility modes of the logical partition after the migration.

Partition Mobility environment

You can learn about each component of the Partition Mobility environment and its contribution in enabling successful Partition Mobility. Components of the Partition Mobility environment include the source and destination servers, the Hardware Management Console (HMC), the source and destination Virtual I/O Server logical partitions, the mobile partition, the networking configuration, and the storage configuration.

Related tasks

"Preparing for Partition Mobility" on page 32
You need to verify that the source and destination systems are configured correctly so that you can successfully move the mobile partition from the source system to the destination system. This includes verifying the configuration of the source and destination servers, the Hardware Management Console (HMC), the Virtual I/O Server logical partitions, the mobile partition, the virtual storage configuration, and the virtual network configuration.

Source and destination servers in a Partition Mobility environment:

Two servers are involved in Partition Mobility that is managed by a Hardware Management Console (HMC). The *source server* is the server from which you want to move the logical partition, and the *destination server* is the server to which you want to move the logical partition.

The source and destination servers must be POWER6 processor-based servers to participate in Partition Mobility. The destination server must have enough available processor and memory resources to allow the mobile partition to run on its server.

Huge Pages

Huge pages can improve performance in specific environments what require a high degree of parallelism, such as in DB2® partitioned database environments. You can specify the minimum, desired, and maximum number of huge pages to assign to a logical partition when you create the logical partition or partition profile.

A logical partition cannot participate in active Partition Mobility if huge pages are used. However, an inactive partition migration can be performed if the mobile partition uses huge pages. The partition profile will maintain the huge page resources, but the specified number of huge page resources may not be available on the destination server, in which case the logical partition will boot without some or all of these huge pages after the inactive migration.

Barrier synchronization register (BSR)

The barrier synchronization register (BSR) is a memory register that is located on certain processors based on POWER® technology. A parellel-processing application running on the AIX operating system can use a BSR to perform barrier synchronization, which is a method for synchronizing the threads in the parallel-processing application.

A logical partition cannot participate in active partition migration if BSR is used. However, you can use inactive Partition Mobility if you do not want to disable BSR.

Shared memory pool

Shared memory is physical memory that is assigned to the shared memory pool and shared among multiple logical partitions. The *shared memory pool* is a defined collection of physical memory blocks that are managed as a single memory pool by the hypervisor. Logical partitions that you assign to the shared memory pool share the memory in the pool with other logical partitions that you assign to the pool.

If the mobile partition uses shared memory on the source server, the destination server must also have a shared memory pool to which the mobile partition can be assigned. If the mobile partition uses dedicated memory on the source server, it must also use dedicated memory on the destination server.

Related tasks

"Preparing the source and destination servers for Partition Mobility" on page 32
You need to verify that the source and destination servers are configured correctly so that you can successfully move the mobile partition from the source server to the destination server by using the Hardware Management Console (HMC). This includes tasks such as verifying the logical memory block size of the source and destination servers, and verifying the available memory and processor resources of the destination server.

Related information

Overview of shared memory

Hardware Management Console in a Partition Mobility environment:

Learn about the Hardware Management Console (HMC) and how you can use its Partition Migration wizard to move an active or inactive logical partition from one server to another server.

The HMC is a system that controls managed systems, including the management of logical partitions and the use of Capacity on Demand. Using service applications, the HMC communicates with managed systems to detect, consolidate, and send information to IBM® for analysis.

Partition Mobility can include one or more HMCs as follows:

- Both the source and destination servers are managed by the same HMC (or redundant HMC pair). In this case, the HMC must be at version 7 release 3.2, or later.
- The source server is managed by one HMC and the destination server is managed by a different HMC. In this case, both the source HMC and the destination HMC must meet the following requirements:
  - The source HMC and the destination HMC must be connected to the same network so that they can communicate with each other.
  - The source HMC and the destination HMC must be at version 7, release 3.4.

The HMC can handle multiple migrations simultaneously. However, the maximum number of concurrent partition migrations is limited by the processing capacity of the HMC.

The Partition Mobility wizard that is provided on the HMC helps you validate and complete a partition migration. The HMC determines the appropriate type of migration to use based on the state of the logical partition. If the logical partition is in the Running state, then the migration is active. If the logical

partition is in the Not Activated state, then the migration is inactive. Before the migration starts, the HMC validates your logical partition environment. During this validation, the HMC determines if the migration will be successful. If the validation fails, the HMC provides error messages and suggestions to help you resolve the configuration problems.

Related tasks

"Preparing the HMC for Partition Mobility" on page 36
You need to verify that the Hardware Management Console (HMC) or HMCs that manage the source and destination servers are configured correctly so that you can successfully move the mobile partition from the source server to the destination server.

Source and destination Virtual I/O Server logical partitions in a Partition Mobility environment:

Partition Mobility that is managed by a Hardware Management Console (HMC) requires at least one Virtual I/O Server logical partition on the source server and at least one Virtual I/O Server logical partition on the destination server.

Server partition

At least one Virtual I/O Server logical partition on the source server and at least one Virtual I/O Server logical partition on the destination server must provide storage and networking resources to the mobile partition so that the mobile partition has access to the same storage from both the source and destination servers.

Mover service partition

For active Partition Mobility, one of the Virtual I/O Server logical partitions on the source server and one of the Virtual I/O Server logical partitions on the destination server must be designated as mover service partitions. A *mover service partition* is a Virtual I/O Server logical partition with the following characteristics:

- The mover service partition attribute indicates that the Virtual I/O Server logical partition is capable of supporting active partition migration.
- Both Virtual I/O Servers must be at version 1.5 or later.

The source and destination mover service partitions communicate with each other over the network. On both the source and destination servers, the Virtual Asynchronous Services Interface (VASI) device provides communication between the mover service partition and the hypervisor. These connections facilitate active Partition Mobility as follows:

- On the source server, the mover service partition extracts the logical partition state information of the mobile partition from the hypervisor.
- The mover service partition on the source server sends the logical partition state information to the mover service partition on the destination server.
- On the destination server, the mover service partition installs the logical partition state information on the hypervisor.

Paging VIOS partition

A Virtual I/O Server (VIOS) logical partition that is assigned to the shared memory pool (hereafter referred to as a *paging VIOS partition*) provides access to the paging space devices for the logical partitions that use shared memory.

You are not required to maintain the same number of paging VIOS partitions for the mobile partition from the source server to the destination server. For example, a mobile partition that uses redundant paging VIOS partitions on the source server can move to a destination server with only one paging VIOS partition assigned to the shared memory pool. Similarly, a mobile partition that uses a single paging

VIOS partition on the source server can use redundant paging VIOS partitions on the destination server, provided that two paging VIOS partitions are assigned to the shared memory pool on the destination server. The following table describes these redundancy options in more detail.

When you validate the configuration for active Partition Mobility, the HMC checks that the paging VIOS partitions on the destination system have access to a paging space device that meets the size requirements of the mobile partition as well as the redundancy preferences that you specify. The HMC selects and assigns paging space devices to the mobile partition on the destination system using the same process as used during partition activation. For details, see Paging space devices on systems that are managed by an HMC.

Table 15. Redundancy options for the paging VIOS partitions that are assigned to the mobile partition

Number of paging VIOS partitions that are used by the mobile partition on the source server	**Number of paging VIOS partitions that are assigned to the shared memory pool on the destination server**
1 The mobile partition uses a single paging VIOS partition to access its paging space device on the source system.	1 Because there is only one paging VIOS partition that is assigned to the shared memory pool on the destination system, the mobile partition must continue to use a single paging VIOS partition to access a paging space device on the destination system. To successfully move the mobile partition in this situation, you can perform one of the following actions: • Do not specify a redundancy preference. By default, the HMC attempts to maintain the current redundancy configuration on the destination system. In this case, the mobile partition continues to use a single paging VIOS partition to access a paging space device on the destination system. • Specify that the mobile partition does not use redundant paging VIOS partitions. The mobile partition continues to use a single paging VIOS partition to access a paging space device on the destination system. • Specify that the mobile partition uses redundant paging VIOS partitions, if possible. Use this option if you do not know whether the mobile partition can use redundant paging VIOS partitions on the destination system. The HMC examines the destination system to determine whether it is configured to support redundant paging VIOS partitions. In this case, the HMC finds that the mobile partition cannot use redundant paging VIOS partitions because only one paging VIOS partition is assigned to the shared memory pool on the destination server. Instead, the mobile partition continues to use a single paging VIOS partition to access a paging space device on the destination system.

Table 15. Redundancy options for the paging VIOS partitions that are assigned to the mobile partition (continued)

Number of paging VIOS partitions that are used by the mobile partition on the source server	**Number of paging VIOS partitions that are assigned to the shared memory pool on the destination server**
1 The mobile partition uses a single paging VIOS partition to access its paging space device on the source system.	2 To successfully move the mobile partition in this situation, you can perform one of the following actions: • Do not specify a redundancy preference. By default, the HMC attempts to maintain the current redundancy configuration on the destination system. In this case, the mobile partition continues to use a single paging VIOS partition to access a paging space device on the destination system. • Specify that the mobile partition does not use redundant paging VIOS partitions. The mobile partition continues to use a single paging VIOS partition to access a paging space device on the destination system. • Specify that the mobile partition uses redundant paging VIOS partitions, if possible. Use this option if you want the mobile partition to use redundant paging VIOS partitions on the destination system or if you do not know whether the mobile partition can use redundant VIOS partitions on the destination system. The HMC examines the destination system to determine whether it is configured to support redundant paging VIOS partitions. In this case, the HMC finds that the mobile partition can use redundant paging VIOS partitions because two paging VIOS partitions are assigned to the shared memory pool on the destination server. The mobile partition uses redundant paging VIOS partitions to access a paging space device on the destination system.

Table 15. Redundancy options for the paging VIOS partitions that are assigned to the mobile partition (continued)

Number of paging VIOS partitions that are used by the mobile partition on the source server	**Number of paging VIOS partitions that are assigned to the shared memory pool on the destination server**
2 The mobile partition uses redundant paging VIOS partitions to access its paging space device on the source system.	1 Because only one paging VIOS partition is assigned to the shared memory pool on the destination server, the mobile partition cannot continue to use redundant paging VIOS partitions to access a paging space device on the destination system. Instead, it must use a single paging VIOS partition to access a paging space device. To successfully move the mobile partition in this situation, you can perform one of the following actions: • Specify that the mobile partition does not use redundant paging VIOS partitions. The mobile partition uses a single paging VIOS partition to access a paging space device on the destination system. • Specify that the mobile partition uses redundant paging VIOS partitions, if possible. Use this option if you do not know whether the mobile partition can use redundant paging VIOS partitions on the destination system. The HMC examines the destination system to determine whether it is configured to support redundant paging VIOS partitions. In this case, the HMC finds that the mobile partition cannot use redundant paging VIOS partitions because only one paging VIOS partition is assigned to the shared memory pool on the destination server. Instead, the mobile partition uses a single paging VIOS partition to access a paging space device on the destination system.

Table 15. Redundancy options for the paging VIOS partitions that are assigned to the mobile partition (continued)

Number of paging VIOS partitions that are used by the mobile partition on the source server	Number of paging VIOS partitions that are assigned to the shared memory pool on the destination server
2 The mobile partition uses redundant paging VIOS partitions to access its paging space device on the source system.	2 To successfully move the mobile partition in this situation, you can perform one of the following actions: • Do not specify a redundancy preference. By default, the HMC attempts to maintain the current redundancy configuration on the destination system. In this case, the mobile partition continues to use redundant paging VIOS partitions to access a paging space device on the destination system. • Specify that the mobile partition does not use redundant paging VIOS partitions. The mobile partition uses a single paging VIOS partition to access a paging space device on the destination system. • Specify that the mobile partition uses redundant paging VIOS partitions, if possible. Use this option if you want the mobile partition to use redundant paging VIOS partitions on the destination system or if you do not know whether the mobile partition can use redundant VIOS partitions on the destination system. The HMC examines the destination system to determine whether it is configured to support redundant paging VIOS partitions. In this case, the HMC finds that the mobile partition can use redundant paging VIOS partitions because two paging VIOS partitions are assigned to the shared memory pool on the destination server. The mobile partition continues to use redundant paging VIOS partitions to access a paging space device on the destination system.

Related concepts

"Storage configuration in a Partition Mobility environment" on page 29
Learn about the virtual SCSI and virtual fibre channel configuration required for Partition Mobility that is managed by the Hardware Management Console (HMC).

Related tasks

"Preparing the source and destination Virtual I/O Server logical partitions for Partition Mobility" on page 38
You need to verify that the source and destination Virtual I/O Server logical partitions are configured correctly so that you can successfully move the mobile partition from the source server to the destination server by using the Hardware Management Console (HMC). This includes tasks such as verifying the version of the Virtual I/O Servers and enabling the mover service partitions.

"Verifying that the destination shared memory pool contains an available paging space device" on page 39
You can verify that the shared memory pool on the destination server contains a paging space device that satisfies the size requirements and redundancy configuration of the mobile partition by using the Hardware Management Console (HMC).

Related information

Paging VIOS partition

Mobile partition managed by an HMC in a Partition Mobility environment:

A *mobile partition* is a logical partition that you want to move from the source server to the destination server. You can move a running mobile partition, or active mobile partition, or you can move a powered off mobile partition, or inactive mobile partition, from the source server to the destination server.

The HMC creates a migration profile for the mobile partition on the destination server that matches the current configuration of the logical partition. During the migration, the HMC migrates all of the profiles associated with the mobile partition to the destination server. Only the current partition profile (or a new one, if specified) will be converted during the migration process. This conversion includes mapping the client virtual SCSI slot and the client virtual fibre channel slot to the corresponding target virtual SCSI slot and the corresponding target virtual fibre channel slot on the destination Virtual I/O Server logical partitions, if required.

A logical partition cannot be migrated if any logical partition exists on the destination server with the same name. The HMC creates a new migration profile containing the logical partition's current state if you do not specify a profile name. The profile replaces the existing profile that was last used to activate the logical partition. If you specify an existing profile name, the HMC replaces that profile with the new migration profile. If you want to keep the logical partition's existing profiles, specify a new and unique profile name before the migration begins.

Considerations for configuring I/O

Do not assign any physical or required I/O adapters to a mobile partition using the active partition migration. All of the I/O adapters on the mobile partition must be virtual devices. To remove the physical adapters on the mobile partition, you can use the dynamic logical partition removal task.

A mobile partition with dedicated adapters can participate in inactive Partition Mobility; however, the dedicated adapters will be removed from the partition profile. Thus, the logical partition will boot with only virtual I/O resources after an inactive migration. If dedicated I/O resources were assigned to the logical partition on the source server, these resources will become available when the logical partition is deleted from the source server.

Related tasks

"Preparing the mobile partition for Partition Mobility" on page 41
You need to verify that the mobile partition is configured correctly so that you can successfully move it from the source server to the destination server by using the Hardware Management Console (HMC). This includes tasks such as satisfying adapter requirements and operating system requirements for Partition Mobility.

Software applications that recognize Partition Mobility:

Software applications might be designed to recognize and adapt to changes in the system hardware after being moved from one system to another.

Most software applications running in AIX and Linux logical partitions will not require any changes to work correctly during active Partition Mobility. Some applications might have dependencies on characteristics that change between the source and destination servers and other applications might need to adjust to support the migration.

PowerHA (or High Availability Cluster Multi-Processing) clustering software is aware of Partition Mobility. You can move a mobile partition that is running the PowerHA clustering software to another server without restarting the PowerHA clustering software.

Examples of applications that would benefit if they were aware of Partition Mobility:

- Software applications that use processor and memory affinity characteristics to tune their behavior because affinity characteristics might change as a result of migration. The application's functions remain the same, but performance variations may be observed.

- Applications that use processor binding will maintain their binding to the same logical processors across migrations, but in reality the physical processors will change. Binding is usually done to maintain hot caches, but the physical processor move operation will require a cache hierarchy on the destination system. This usually occurs very quickly and should not be visible to the users.
- Applications that are tuned for given cache architectures, such as hierarchy, size, line-size, and associativity. These applications are usually limited to high-performance computing applications, but the just-in-time (JIT) compiler of the Java™ virtual machine is also optimized for the cache-line size of the processor on which it was opened.
- Performance analysis, capacity planning, and accounting tools and their agents are usually migration-aware because the processor performance counters might change between the source and destination servers, as might the processor type and frequency. Additionally, tools that calculate an aggregate system load based on the sum of the loads in all hosted logical partitions must be aware that a logical partition has left the system or that a new logical partition arrived.
- Workload managers

Network configuration in a Partition Mobility environment:

In Partition Mobility that is managed by the Hardware Management Console (HMC), the network between the source and destination servers is used to pass the mobile partition state information and other configuration data from the source environment to the destination environment. The mobile partition uses the virtual LAN for network access.

The virtual LAN must be bridged to a physical network using a Shared Ethernet Adapter in the Virtual I/O Server logical partition. The LAN must be configured so that the mobile partition can continue to communicate with other necessary clients and servers after a migration is completed.

Active Partition Mobility has no specific requirements on the mobile partition's memory size or the type of network that is connecting the mover service partitions. The memory transfer is a procedure that does not interrupt a mobile partition's activity and may take time when a large memory configuration is busy on a slow network. Because of this, you might want to use a high-bandwidth connection, such as Gigabit Ethernet or faster, between the Virtual I/O Server logical partitions that are providing the mover service partition capability.

The maximum distance between the source and destination servers is dictated by the network and storage configuration used by the servers and the ability of the applications to continue to operate when its storage is separated from the server by such a distance. If both servers are on the same network and are connected to the same shared storage, then active Partition Mobility validation succeeds. The time it takes to move the mobile partition, and the application performance after a move across a long distance, is dependent on the effective network distance between the source and destination servers and application sensitivity to increased storage latency.

Related tasks

"Preparing the network configuration for Partition Mobility" on page 49
You need to verify that the network configuration is configured correctly so that you can successfully move the mobile partition from the source server to the destination server by using the Hardware Management Console (HMC). This includes tasks such as creating a Shared Ethernet Adapter on the source and destination Virtual I/O Server logical partitions and creating at least one virtual Ethernet adapter on the mobile partition.

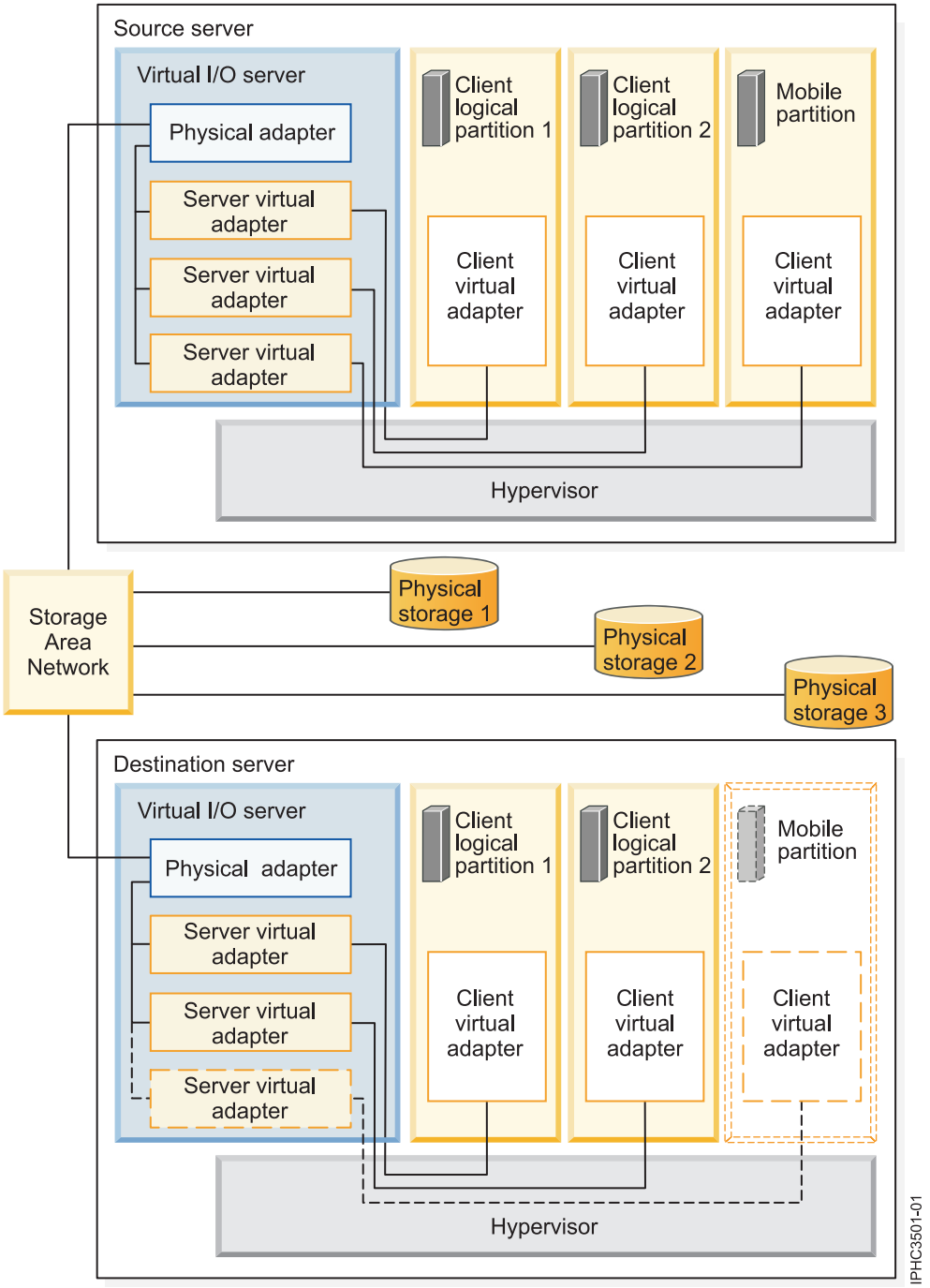
Storage configuration in a Partition Mobility environment:

Learn about the virtual SCSI and virtual fibre channel configuration required for Partition Mobility that is managed by the Hardware Management Console (HMC).

The mobile partition moves from one server to another by the source server sending the logical partition state information to the destination server over a local area network (LAN). However, partition disk data

cannot pass from one system to another system over a network. Thus, for Partition Mobility to succeed, the mobile partition must use storage resources that are managed by a storage area network (SAN) so that it can access the same storage from both the source and destination servers.

The following figure shows an example of the storage configuration required for Partition Mobility.



The physical storage that the mobile partition uses, Physical storage 3, is connected to the SAN. At least one physical adapter that is assigned to the source Virtual I/O Server logical partition is connected to the SAN, and at least one physical adapter that is assigned to the destination Virtual I/O Server logical partition is also connected to the SAN.

If the mobile partition connects to Physical storage 3 through virtual fibre channel adapters, the physical adapters that are assigned to the source and destination Virtual I/O Server logical partitions must support N_Port ID Virtualization (NPIV).

The mobile partition can use virtual I/O resources that are provided by one or more Virtual I/O Server logical partitions on the source server. To ensure successful mobility, configure the same number of Virtual I/O Server logical partitions on the destination server as are configured on the source server.

The physical adapter on the source Virtual I/O Server logical partition connects to one or more virtual adapters on the source Virtual I/O Server logical partition. Similarly, the physical adapter on the destination Virtual I/O Server logical partition connects to one or more virtual adapters on the destination Virtual I/O Server logical partition. If the mobile partition connects to Physical storage 3 through virtual SCSI adapters, the virtual adapters on both the source and destination Virtual I/O Server logical partitions are assigned to access the logical unit numbers (LUNs) of Physical storage 3.

Each virtual adapter on the source Virtual I/O Server logical partition connects to at least one virtual adapter on a client logical partition. Similarly, each virtual adapter on the destination Virtual I/O Server logical partition connects to at least one virtual adapter on a client logical partition.

Each virtual fibre channel adapter that is created on the mobile partition (or any client logical partition) is assigned a pair of worldwide port names (WWPNs). Both WWPNs in the WWPN pair are assigned to access the LUNs of the physical storage that the mobile partition uses, or Physical storage 3. During normal operation, the mobile partition uses one WWPN to log on to the SAN and access Physical Storage 3. When you move the mobile partition to the destination server, there is a brief period of time where the mobile partition runs on both the source and destination servers. Because the mobile partition cannot log on to the SAN from both the source and destination servers at the same time using the same WWPN, the mobile partition uses the second WWPN to log on to the SAN from the destination server during the migration. The WWPNs of each virtual fibre channel adapter move with the mobile partition to the destination server.

When you move the mobile partition to the destination server, the HMC (that manages the destination server) performs the following tasks on the destination server:

- Creates virtual adapters on the destination Virtual I/O Server logical partition
- Connects the virtual adapters on the destination Virtual I/O Server logical partition to the virtual adapters on the mobile partition

Related concepts

"Source and destination Virtual I/O Server logical partitions in a Partition Mobility environment" on page 23
Partition Mobility that is managed by a Hardware Management Console (HMC) requires at least one Virtual I/O Server logical partition on the source server and at least one Virtual I/O Server logical partition on the destination server.

Related tasks

"Preparing the virtual SCSI configuration for Partition Mobility" on page 50
You need to verify that the virtual SCSI configuration is configured correctly so that you can successfully move the mobile partition from the source server to the destination server by using the Hardware Management Console (HMC). This includes tasks such as verifying the reserve_policy of the physical volumes, and verifying that the virtual devices have the same unique identifier, physical identifier, or IEEE volume attribute.

"Preparing the virtual fibre channel configuration for Partition Mobility" on page 53
You need to verify that the virtual fibre channel configuration is configured correctly so that you can successfully move the mobile partition from the source server to the destination server by using the Hardware Management Console (HMC). This includes tasks such as verifying the worldwide port names (WWPNs) of the virtual fibre channel adapters on the mobile partition, and verifying that the physical fibre channel adapters and the physical fibre channel switches support N_Port ID Virtualization (NPIV).

Related information

Redundancy configuration using virtual fibre channel adapters

Virtual fibre channel

Preparing for Partition Mobility

You need to verify that the source and destination systems are configured correctly so that you can successfully move the mobile partition from the source system to the destination system. This includes verifying the configuration of the source and destination servers, the Hardware Management Console (HMC), the Virtual I/O Server logical partitions, the mobile partition, the virtual storage configuration, and the virtual network configuration.

Related concepts

"Partition Mobility overview for HMC" on page 3
You can learn about the benefits of Partition Mobility, how the Hardware Management Console (HMC) performs active and inactive Partition Mobility, and about the configuration that is required to successfully move a logical partition from one system to another.

"Partition Mobility environment" on page 21
You can learn about each component of the Partition Mobility environment and its contribution in enabling successful Partition Mobility. Components of the Partition Mobility environment include the source and destination servers, the Hardware Management Console (HMC), the source and destination Virtual I/O Server logical partitions, the mobile partition, the networking configuration, and the storage configuration.

Preparing the source and destination servers for Partition Mobility

You need to verify that the source and destination servers are configured correctly so that you can successfully move the mobile partition from the source server to the destination server by using the Hardware Management Console (HMC). This includes tasks such as verifying the logical memory block size of the source and destination servers, and verifying the available memory and processor resources of the destination server.

To prepare the source and destination servers for active or inactive Partition Mobility, complete the following tasks.

Table 16. Preparation tasks for the source and destination servers

Server planning tasks	Active mobility task	Inactive mobility task	Information resources
1. Ensure that the source and destination servers are one of the following POWER6 models: • 8203-E4A • 8204-E8A • 8234-EMA • 9117-MMA • 9119-FHA • 9125-F2A • 9406-MMA • 9407-M15 • 9408-M25 • 9409-M50	X	X	
2. Ensure that both the source and destination servers are at firmware level 01EX320, or later.	X	X	• To view the existing firmware (Licensed Internal Code) levels by using the HMC, see View system information • To get server firmware and power subsystem firmware fixes and upgrades, see Managed system updates
3. Ensure that the source and destination servers are managed by an HMC in one of the following ways: • The source and destination servers are managed by the same HMC (or redundant HMC pair). • The source server is managed by one HMC and the destination server is managed by a different HMC.	X	X	
4. Ensure that the logical memory block size is the same on the source and destination servers.	X	X	Changing the logical memory block size
5. Ensure that the destination server is not running on battery power. If the destination server is running on battery power, return the server to its regular power source before moving a logical partition.	X	X	
6. If the mobile partition uses shared memory, ensure that the shared memory pool is created on the destination server.	X	X	Configuring the shared memory pool
7. Ensure that the destination server has enough available memory to support the mobile partition.	X		• If the mobile partition uses dedicated memory, see "Determining the available physical memory on the destination server" on page 34. • If the mobile partition uses shared memory, see "Determining the available I/O entitled memory on the destination server" on page 34.
8. Ensure that the destination server has enough available processors to support the mobile partition.	X		"Determining available processors on the destination server" on page 36

Table 16. Preparation tasks for the source and destination servers (continued)

Server planning tasks	Active mobility task	Inactive mobility task	Information resources
9. Verify that the source and destination mover service partitions can communicate with each other.	X		

Related concepts

"Source and destination servers in a Partition Mobility environment" on page 21
Two servers are involved in Partition Mobility that is managed by a Hardware Management Console (HMC). The *source server* is the server from which you want to move the logical partition, and the *destination server* is the server to which you want to move the logical partition.

Determining the available physical memory on the destination server:

You can determine whether the destination server has enough physical memory available to support the mobile partition and then make more physical memory available, if necessary, by using the Hardware Management Console (HMC).

You must be a super administrator to perform this task.

To determine whether the destination server has enough physical memory available to support the mobile partition, complete the following steps from the HMC:

1. Identify the amount of physical memory that the mobile partition requires:
   a. In the navigation pane, expand **Systems Management** → **Servers**.
   b. Click the source server on which the mobile partition is located.
   c. In the work pane, select the mobile partition.
   d. From the Tasks menu, click **Properties**. The Partition Properties window is displayed.
   e. Click the **Hardware** tab.
   f. Click the **Memory** tab.
   g. Record the dedicated minimum, assigned, and maximum memory settings.
   h. Click **OK**.
2. Identify the amount of physical memory that is available on the destination server:
   a. In the navigation pane, expand **Systems Management** and click **Servers**.
   b. In the work pane, select the destination server to which you plan to move the mobile partition.
   c. From the **Tasks** menu, click **Properties**.
   d. Click the **Memory** tab.
   e. Record the **Current memory available for partition usage**.
   f. Click **OK**.
3. Compare the values from steps 1 and 2. If the destination server does not have enough physical memory available to support the mobile partition, you can add more available physical memory to the destination server by performing one or more of the following tasks:
   - Dynamically remove physical memory from logical partitions that use dedicated memory. For instructions, see Removing dedicated memory dynamically.
   - If the destination server is configured with a shared memory pool, dynamically remove physical memory from the shared memory pool. For instructions, see Changing the size of the shared memory pool.

Determining the available I/O entitled memory on the destination server:

You can determine whether the shared memory pool on the destination server has enough available memory to accommodate the I/O entitled memory required by the mobile partition. You can then allocate more physical memory to the shared memory pool, if necessary, by using the Hardware Management Console (HMC).

You must be a super administrator to perform this task.

To determine whether the shared memory pool on the destination server has enough available memory to accommodate the I/O entitled memory required by the mobile partition, complete the following steps from the HMC:

1. Identify the amount of I/O entitled memory that the mobile partition requires:
   a. In the navigation pane, expand **Systems Management** → **Servers**.
   b. Click the source server on which the mobile partition is located.
   c. In the work pane, select the mobile partition.
   d. From the Tasks menu, click **Properties**. The Partition Properties window is displayed.
   e. Click the **Hardware** tab.
   f. Click the **Memory** tab.
   g. Click **Memory Statistics**. The Memory Statistics panel is displayed.
   h. Record the **Assigned I/O Entitled Memory**. This is the amount of I/O entitled memory that the mobile partition requires on the destination server.
2. Identify the amount of available physical memory in the shared memory pool on the destination server:
   a. In the navigation pane, expand **Systems Management** and click **Servers**.
   b. In the work pane, select the destination server to which you plan to move the mobile partition.
   c. From the **Tasks** menu, click **Configuration** → **Virtual Resources** → **Shared Memory Pool Management**.
   d. Record the **Available pool memory** and click **OK**.
3. Compare the amount of available memory (from step 2) with the amount of I/O entitled memory required by the mobile partition (from step 1).
   - If more memory is available than the amount of I/O entitled memory required by the mobile partition, the shared memory pool on the destination server has enough available memory to support the mobile partition on the destination server.
   - If the amount of I/O entitled memory required by the mobile partition is greater than the amount of available memory, perform one or more of the following tasks:
     – Add memory to the shared memory pool so that the shared memory pool has enough available memory to accommodate the I/O entitled memory required by the mobile partition. For instructions, see Changing the size of the shared memory pool.
     – Remove one or more shared memory partitions from the shared memory pool until the shared memory pool has enough available memory to accommodate the I/O entitled memory required by the mobile partition. You can remove a logical partition from the shared memory pool by changing the memory mode of the logical partition from shared to dedicated. For instructions, see Changing the memory mode of a logical partition.
     – Remove I/O adapters from the mobile partition so that it requires less memory for I/O operations. For instructions, see Removing virtual adapters dynamically.
   - If the amount of I/O entitled memory that is required by the mobile partition is equal to, or almost equal to, the amount of available memory, the shared memory pool is probably greatly overcommitted, which can affect performance. Consider adding more memory to the shared memory pool to reduce the degree to which the shared memory is overcommitted.

Attention: If you move an active logical partition whose I/O entitled memory mode is set to auto, the HMC does not automatically recalculate and reassign the I/O entitled memory for the mobile partition until you restart the mobile partition on the destination server. If you restart the mobile partition on the destination server and you plan to move the mobile partition back to the source server, you must verify that the shared memory pool on the source server has enough available memory to accommodate the new amount of I/O entitled memory required by the mobile partition.

Related information

Performance considerations for overcommitted shared memory partitions

Determining available processors on the destination server:

You can determine the available processors on the destination server and allocate more processors, if necessary, by using the Hardware Management Console (HMC).

You must be a super administrator to perform this task.

To determine the available processors on the destination server using the HMC, complete the following steps:

1. Determine how many processors the mobile partition requires:
   a. In the navigation pane, open **Systems Management** and select **Servers**.
   b. Select the managed server of your choice in the navigation pane.
   c. In the work pane, select the logical partition of your choice.
   d. Select **Properties** and select the **Hardware** tab and the **Processors** tab.
   e. View the Processor section and record the minimum, maximum, and available processor settings.
   f. Click **OK**.
2. Determine the processors available on the destination server:
   a. In the navigation pane, open **Systems Management** and select **Servers**.
   b. Select the managed server of your choice in the navigation pane.
   c. Select **Properties** and the **Processors** tab.
   d. Record the **Available processors**.
   e. Click **OK**.
3. Compare the values from steps 1 and 2.
   - If the destination server has enough available processors to support the mobile partition, continue to “Preparing the source and destination servers for Partition Mobility” on page 32.
   - If the destination server does not have enough available processors to support the mobile partition, use the HMC, to dynamically remove the processors from the logical partition or you can remove processors from logical partitions on the destination server.

Preparing the HMC for Partition Mobility

You need to verify that the Hardware Management Console (HMC) or HMCs that manage the source and destination servers are configured correctly so that you can successfully move the mobile partition from the source server to the destination server.

To prepare the HMC or HMCs for active or inactive Partition Mobility, complete the following tasks.

Table 17. Preparation tasks for the HMC

HMC planning tasks	Active mobility task	Inactive mobility task	Information resources
1. If the source and destination servers are managed by the same HMC, then ensure that the HMC is at version 7, release 3.2 or later. If the source server is managed by one HMC and the destination server is managed by a different HMC, then ensure that both HMCs are at version 7, release 3.4 or later.	X	X	• Determining your HMC machine code version and release • Updating your HMC software
2. If the source server is managed by one HMC and the destination server is managed by a different HMC, verify that the secure shell (SSH) authentication keys are set up correctly between the HMC that manages the source server and the HMC that manages the destination server.	X	X	"Verifying SSH authentication between the source and destination HMCs"

Related concepts

"Hardware Management Console in a Partition Mobility environment" on page 22
Learn about the Hardware Management Console (HMC) and how you can use its Partition Migration wizard to move an active or inactive logical partition from one server to another server.

Verifying SSH authentication between the source and destination HMCs:

You can run the mkauthkeys command from the Hardware Management Console (HMC) that manages the source server to verify that the secure shell (SSH) authentication keys are correctly set up between the HMC that manages the source server and the HMC that manages the destination server. SSH authentication allows the HMCs to send and receive Partition Mobility commands to and from each other.

To verify that the SSH authentication keys are set up correctly between the HMC that manages the source server and the HMC that manages the destination server, complete the following steps:

1. Run the following command from the HMC command line of the HMC that manages the source server:

   ```
   mkauthkeys -u <remoteUserName> --ip <remoteHostName> --test
   ```

   Where:

   - *remoteUserName* is the name of the user on the HMC that manages the destination server. This parameter is optional. If you do not specify a user name for the HMC that manages the destination server, then the migration process uses the current user name as the *remoteUserName*.
   - *remoteHostName* is the IP address or the hostname of the HMC that manages the destination server.

   If this command produces a return code of `0`, then the SSH authentication keys are set up correctly between the HMC that manages the source server and the HMC that manages the destination server.

   If this command produces an error code, then continue to the next step to set up the SSH authentication keys between the HMC that manages the source server and the HMC that manages the destination server.
2. Run the following command to set up the SSH authentication keys between the HMC that manages the source server and the HMC that manages the destination server:

   ```
   mkauthkeys -u <remoteUserName> --ip <remoteHostName> -g
   ```

Where *remoteUserName* and *remoteHostName* represent the same values that they represented in the previous step.

The –g option automatically sets up the SSH authentication keys from the HMC that manages the source server to the HMC that manages the destination server, and it automatically sets up the SSH authentication keys from the HMC that manages the destination server to the HMC that manages the source server. If you do not include the –g option, the command automatically sets up the SSH authentication keys from the HMC that manages the source server to the HMC that manages the destination server, but the command does not automatically set up the SSH authentication keys from the HMC that manages the destination server to the HMC that manages the source server.

Preparing the source and destination Virtual I/O Server logical partitions for Partition Mobility

You need to verify that the source and destination Virtual I/O Server logical partitions are configured correctly so that you can successfully move the mobile partition from the source server to the destination server by using the Hardware Management Console (HMC). This includes tasks such as verifying the version of the Virtual I/O Servers and enabling the mover service partitions.

To prepare the source and destination Virtual I/O Server logical partitions for active or inactive Partition Mobility, complete the following tasks.

Table 18. Preparation tasks for the source and destination Virtual I/O Server logical partitions

Virtual I/O Server planning tasks	Active mobility task	Inactive mobility task	Information resources
1. Ensure that the PowerVM Enterprise Edition hardware feature is activated.	X	X	Entering the activation code for PowerVM Editions using the HMC version 7
2. Ensure that at least one Virtual I/O Server logical partition is installed and activated on both the source and destination servers. If the mobile partition receives virtual I/O resources from more than one Virtual I/O Server logical partition on the source server, ensure that the same number of Virtual I/O Server logical partitions are installed on the destination server.	X	X	Installing the Virtual I/O Server and client logical partitions
3. Ensure that the source and destination Virtual I/O Server logical partitions are at release level 1.5, or later. If you plan to move a mobile partition that uses virtual fibre channel adapters, ensure that the source and destination Virtual I/O Server logical partitions are at release level 2.1, or later.	X	X	• Virtual I/O Server and Integrated Virtualization Manager commands • Migrating the Virtual I/O Server • Updating the Virtual I/O Server
4. Ensure that the Mover Service Partition is enabled on one or more source and destination Virtual I/O Server logical partitions.	X		"Enabling the source and destination mover service partitions" on page 39
5. If the mobile partition uses shared memory, verify that at least one Virtual I/O Server logical partition is assigned to the shared memory pool on the destination server (hereafter referred to as a *paging VIOS partition*) and that it is at release level 2.1.1, or later. If the mobile partition accesses its paging space device redundantly through two paging VIOS partitions and you want to maintain this redundancy on the destination server, verify that two paging VIOS partitions are assigned to the shared memory pool on the destination server.	X	X	• Configuring the shared memory pool • Adding a paging VIOS partition to the shared memory pool

Table 18. Preparation tasks for the source and destination Virtual I/O Server logical partitions (continued)

Virtual I/O Server planning tasks	Active mobility task	Inactive mobility task	Information resources
6. If the mobile partition uses shared memory, verify that the shared memory pool on the destination server contains a paging space device that satisfies the size requirements and redundancy configuration of the mobile partition.	X	X	"Verifying that the destination shared memory pool contains an available paging space device"
7. Optional: Synchronize the time-of-day clocks for the source and destination Virtual I/O Server logical partitions.	X		"Synchronizing the time-of-day clocks of the source and destination Virtual I/O Server logical partitions" on page 41

Related concepts

"Source and destination Virtual I/O Server logical partitions in a Partition Mobility environment" on page 23
Partition Mobility that is managed by a Hardware Management Console (HMC) requires at least one Virtual I/O Server logical partition on the source server and at least one Virtual I/O Server logical partition on the destination server.

Enabling the source and destination mover service partitions:

You can enable the mover service partition attribute on a Virtual I/O Server logical partition by using the Hardware Management Console (HMC).

You must be a super administrator or operator to complete this task.

There must be at least one mover service partition on the source and destination Virtual I/O Server for the mobile partition to participate in active Partition Mobility. If the mover service partition is disabled on either the source or destination Virtual I/O Server, the mobile partition can participate only in inactive Partition Mobility.

To enable the source and destination mover service partition using the HMC, complete the following steps:

1. In the navigation pane, open **Systems Management** and select **Servers**.
2. Select the managed server of your choice in the navigation pane.
3. In the work pane, select a Virtual I/O Server logical partition and select **Properties**.
4. On the **General** tab, select **Mover Service Partition**, and click **OK**.
5. Repeat steps 3 and 4 for the destination server.

Verifying that the destination shared memory pool contains an available paging space device:

You can verify that the shared memory pool on the destination server contains a paging space device that satisfies the size requirements and redundancy configuration of the mobile partition by using the Hardware Management Console (HMC).

To verify that the shared memory pool on the destination server contains a paging space device that satisfies the size requirements and redundancy configuration of the mobile partition, complete the following steps from the HMC:

1. Identify the size requirements of the mobile partition. The paging space device for an AIX or Linux logical partition that uses shared memory (hereafter referred to as a *shared memory partition*) must be at least the size of the maximum logical memory of the shared memory partition. To view the maximum logical memory of the mobile partition, complete the following steps:

a. In the navigation pane, expand **Systems Management** → **Servers**, and click the system on which the mobile partition is located.
b. In the work pane, select the mobile partition, click the **Tasks** button, and click **Properties**. The Partition Properties window is displayed.
c. Click the **Hardware** tab.
d. Click the **Memory** tab.
e. Record the maximum logical memory. This is the size requirement for the paging space device for the mobile partition.

2. Identify the redundancy configuration of the mobile partition. In the **Memory** tab of the Partition Properties of the mobile partition, record the number of Virtual I/O Server (VIOS) logical partitions (hereafter referred to as *paging VIOS partitions*) that are assigned to the mobile partition:
   - If the mobile partition is assigned a primary paging VIOS partition and no secondary paging VIOS partition is assigned, then the mobile partition does not use redundant paging VIOS partitions. In this case, the mobile partition uses a paging space device that can only be accessed by one paging VIOS partition in the shared memory pool.
   - If the mobile partition is assigned a primary paging VIOS partition and a secondary paging VIOS partition, then the mobile partition uses redundant paging VIOS partitions. In this case, the mobile partition uses a paging space device that can be accessed redundantly by both paging VIOS partitions in the shared memory pool.
3. View the paging space devices that are currently assigned to the shared memory pool on the destination server:
   a. In the navigation pane, expand **Systems Management** and click **Servers**.
   b. In the work pane, select the destination server.
   c. From the **Tasks** menu, click **Configuration** → **Virtual Resources** → **Shared Memory Pool Management**. The Shared Memory Pool Management window is displayed.
   d. Click the **Paging Devices** tab.
   e. Take note of the available paging space devices, their size, and whether they are capable of redundancy.
4. Determine whether the shared memory pool on the destination server has a suitable paging space device for the mobile partition.
   a. If the mobile partition *does not use* redundant paging VIOS partitions, verify that there is an active paging space device that is not capable of redundancy and meets the size requirement of the mobile partition. If no such device exists, you have the following options:
      - You can add a paging space device to the shared memory pool on the destination server. For instructions, see Adding and removing paging space devices to and from the shared memory pool.
      - If the shared memory pool contains an available paging space device that satisfies the size requirements of the mobile partition, but is capable of redundancy, you can move the mobile partition to the destination server. In this case, when you move the mobile partition to the destination server (active Partition Mobility) or when you activate the mobile partition on the destination server (inactive Partition Mobility), the HMC assigns the paging space device that is capable of redundancy to the mobile partition.
   b. If the mobile partition *uses* redundant paging VIOS partitions, verify that an active paging space device is capable of redundancy and meets the size requirements of the mobile partition. If no such device exists, you have the following options:
      - You can add a paging space device to the shared memory pool on the destination server. For instructions, see Adding and removing paging space devices to and from the shared memory pool.
      - If the shared memory pool contains an available paging space device that satisfies the size requirements of the mobile partition, but is not capable of redundancy, you can move the mobile partition to the destination server. When you move the mobile partition to the

destination server (active Partition Mobility) or when you activate the mobile partition on the destination server (inactive Partition Mobility), the HMC assigns the paging space device that is not capable of redundancy to the mobile partition. However, instead of using redundant paging VIOS partitions on the destination server, the mobile partition uses only the paging VIOS partition that has access to the paging space device that is not capable of redundancy.

Related information

Paging space devices on systems that are managed by an HMC

Synchronizing the time-of-day clocks of the source and destination Virtual I/O Server logical partitions:

You can synchronize the time-of-day clocks for the source and destination Virtual I/O Server logical partitions by using the Hardware Management Console (HMC).

You must be a super administrator to complete this task.

Synchronizing the time-of-day clocks for the source and destination Virtual I/O Server logical partitions is an optional step for active partition mobility. If you choose not to complete this step, the source and destination servers will synchronize the clocks while the mobile partition is moving from the source server to the destination server. Completing this step before the mobile partition is moved can prevent possible errors.

To synchronize the time-of-day clocks on the source and destination Virtual I/O Servers logical partition using the HMC, complete the following steps:

1. In the navigation pane, open **Systems Management** and select **Servers**.
2. Select the managed server of your choice in the navigation pane.
3. In the work pane, select a Virtual I/O Server logical partition and select **Properties**.
4. Click the **Settings** tab.
5. Select **Enable** for Time reference and click **OK**.
6. Repeat steps 3 through 5 for the destination server and the destination Virtual I/O Server.

Preparing the mobile partition for Partition Mobility

You need to verify that the mobile partition is configured correctly so that you can successfully move it from the source server to the destination server by using the Hardware Management Console (HMC). This includes tasks such as satisfying adapter requirements and operating system requirements for Partition Mobility.

To prepare the mobile partition for active or inactive Partition Mobility, complete the following tasks.

Table 19. Preparation tasks for the mobile partition

Mobile partition planning tasks	Active mobility task	Inactive mobility task	Information resources
1. Ensure that the operating system running in the mobile partition is either the AIX or Linux operating system. **Restriction:** The mobile partition cannot be a Virtual I/O Server logical partition or an IBM i logical partition.	X	X	

Table 19. Preparation tasks for the mobile partition (continued)

Mobile partition planning tasks	Active mobility task	Inactive mobility task	Information resources
2. Ensure that the operating system is at one of the following levels: • AIX 5L™ Version 5.3 with the 5300-07 Technology Level, or later • Red Hat Enterprise Linux version 5 Update 1, or later • SUSE Linux Enterprise Server 10 Service Pack 1, or later Earlier versions of the AIX and Linux operating systems can participate in inactive Partition Mobility if the operating systems support virtual devices and POWER6 processor-based servers.	X		
3. If the operating system that is running in the mobile partition is Linux, ensure that the DynamicRM tool package is installed.	X		Service and productivity tools for Linux on POWER systems
4. Ensure that Resource Monitoring and Control (RMC) connections are established with the mobile partition, the source and destination Virtual I/O Servers, and the source and destination mover service partitions.	X		"Verifying RMC connections for the mobile partition" on page 43
5. Verify that the processor compatibility mode of the mobile partition is supported on the destination server.	X	X	"Verifying the processor compatibility mode of the mobile partition" on page 44
6. Ensure that the mobile partition is not enabled for redundant error path reporting.	X	X	"Disabling the mobile partition for redundant error path reporting" on page 45
7. Ensure that the mobile partition is only using a virtual serial adapter for virtual terminal connections.	X	X	"Disabling virtual serial adapters for the mobile partition" on page 46
8. Ensure that the mobile partition is not part of a partition workload group.	X	X	"Removing the mobile partition from a partition workload group" on page 46
9. Ensure that the mobile partition is not using barrier synchronization register (BSR) arrays.	X		"Disabling BSR arrays for the mobile partition" on page 47
10. Ensure that the mobile partition is not using huge pages.	X		"Disabling huge pages for the mobile partition" on page 48
11. Ensure that the mobile partition does not have physical I/O adapters.	X		• Moving physical I/O devices and slots dynamically • Removing physical I/O devices and slots dynamically
12. Ensure that the mobile partition does not use Host Ethernet Adapters (or Integrated Virtual Ethernet).	X		"Removing Logical Host Ethernet Adapters from the mobile partition" on page 48
13. If the mobile partition is a diskless AIX logical partition and its dynamic logical partitioning (DLPAR) scripts are located in the default directory `/usr/lib/dr/scripts/all`, use the drmgr command to change the directory to a directory with write access.	X		drmgr Command

Table 19. Preparation tasks for the mobile partition (continued)

Mobile partition planning tasks	Active mobility task	Inactive mobility task	Information resources
14. Optional: Determine the name of the partition profile for the mobile partition on the destination server.	X	X	
15. Ensure that the applications running in the mobile partition are mobility-safe or mobility-aware.	X		"Software applications that recognize Partition Mobility" on page 28
16. If you changed any partition profile attributes, shut down and activate the new profile for the new values to take effect.	X	X	Shutting down and restarting logical partitions

Related concepts

"Mobile partition managed by an HMC in a Partition Mobility environment" on page 27
A *mobile partition* is a logical partition that you want to move from the source server to the destination server. You can move a running mobile partition, or active mobile partition, or you can move a powered off mobile partition, or inactive mobile partition, from the source server to the destination server.

Verifying RMC connections for the mobile partition:

You can verify the Resource Monitoring and Control (RMC) connection between the mobile partition and the Hardware Management Console (HMC). This RMC connection is required to perform active Partition Mobility.

You must be a super administrator to complete this task.

RMC is a no-charge feature of the AIX operating system that can be configured to monitor resources and perform an action in response to a defined condition. With RMC, you can configure response actions or scripts that manage general system conditions with little or no involvement from the system administrator. On the HMC, RMC is used as the main communication channel between AIX and Linux logical partitions and the HMC.

To verify an RMC connection for the mobile partition, complete the following steps:

1. Using the HMC command line, enter `lspartition -dlpar` .

   Your command results will look similar to this example:

   ```
   ze25b:/var/ct/IW/log/mc/IBM.LparCmdRM # lspartition -dlpar
   <#0> Partition:<5*8203-E4A*1000xx, servername1.austin.ibm.com, x.x.xxx.xx>
   Active:<0>, OS:< , , >, DCaps:<0x2f>, CmdCaps:<0x0b, 0x0b>, PinnedMem:<0>
   <#1> Partition:<4*8203-E4A*10006xx, servername2.austin.ibm.com, x.x.xxx.xx>
   Active:<0>, OS:<AIX>, DCaps:<0x2f>, CmdCaps:<0x0b, 0x0b>, PinnedMem:<0>
   <#2> Partition:<3*8203-E4A*10006xx, servername3.austin.ibm.com, x.x.xxx.xx>
   Active:<1>, OS:<AIX>, DCaps:<0x2f>, CmdCaps:<0x0b, 0x0b>, PinnedMem:<340>
   <#4> Partition:<5*8203-E4A*10006xx, servername4.austin.ibm.com, x.x.xxx.xx>
   Active:<1>, OS:<AIX>, DCaps:<0x2f>, CmdCaps:<0x0b, 0x0b>, PinnedMem:<140>
   </AIX></AIX></AIX>
   ```

   - If the results for your logical partition are `<Active 1>`, then the RMC connection is established. Skip the rest of this procedure and return to "Preparing the mobile partition for Partition Mobility" on page 41.
   - If the results for your logical partition are `<Active 0>` or your logical partition is not displayed in the command results, continue to the next step.
2. Verify that the RMC firewall port on the HMC is disabled.
   - If the RMC firewall port is disabled, skip to step 3.

- If the RMC firewall port is enabled, change your HMC firewall setting. Repeat step 1.

3. Use telnet to access the logical partition. If you cannot use telnet, open a virtual terminal on the HMC to set up the network on the logical partition.
4. If the logical partition network has been set up correctly and there is still no RMC connection, verify that the RSCT fileset is installed.
   - If the RSCT fileset is installed, use telnet to the HMC from the logical partition to verify if the network is working correctly and that the firewall has been disabled. After verifying these tasks, repeat step 1. If you continue to have problems establishing an RMC connection for your mobile partition, contact your next level of support.
   - If the RSCT fileset is not installed, use your AIX installation CD to install the fileset.

Important: It takes approximately five minutes for RMC connection to establish the connection after the network setup has been changed or after activating the logical partition.

Verifying the processor compatibility mode of the mobile partition:

You can use the Hardware Management Console (HMC) to determine whether the processor compatibility mode of the mobile partition is supported on the destination server, and update the mode, if necessary, so that you can successfully move the mobile partition to the destination server.

To verify that the processor compatibility mode of the mobile partition is supported on the destination server by using the HMC, complete the following steps:

1. Identify the processor compatibility modes that are supported by the destination server by entering the following command on the command line of the HMC that manages the destination server:

   ```
   lssyscfg -r sys -F lpar_proc_compat_modes
   ```

   Record these values so that you can refer to them later.
2. Identify the preferred processor compatibility mode of the mobile partition:
   a. In the navigation pane of the HMC that manages the source server, open **Systems Management** → **Servers** and select the source server.
   b. In the work pane, select the mobile partition.
   c. From the Tasks menu, select **Configuration** → **Manage Profiles**. The Managed Profiles window is displayed.
   d. Select the active partition profile of the mobile partition or select the partition profile from which the mobile partition was last activated.
   e. From the Actions menu, click **Edit**. The Logical Partition Profile Properties window is displayed.
   f. Click the **Processors** tab to view the preferred processor compatibility mode. Record this value so that you can refer to it later.
3. Identify the current processor compatibility mode of the mobile partition. If you plan to perform an inactive migration, skip this step and go to step 4.
   a. In the navigation pane of the HMC that manages the source server, expand **Systems Management** → **Servers** and select the source server.
   b. In the work pane, select the mobile partition and click **Properties**.
   c. Select the **Hardware** tab and view the Processor Compatibility Mode. This is the current processor compatibility mode of the mobile partition. Record this value so that you can refer to it later.
4. Verify that the preferred and current processor compatibility modes that you identified in steps 2 and 3 are in the list of supported processor compatibility modes that you identified in step 1 for the destination server. For active migrations, both the preferred and current processor compatibility modes of the mobile partition must be supported by the destination server. For inactive migrations, only the preferred processor compatibility mode must be supported by the destination server.

Attention: If the current processor compatibility mode of the mobile partition is the POWER5 mode, be aware that the POWER5 mode does not appear in the list of modes supported by the destination server. However, the destination server supports the POWER5 mode even though it does not appear in the list of supported modes.

5. If the preferred processor compatibility mode of the mobile partition is not supported by the destination server, use step 2 on page 44 to change the preferred mode to a mode that is supported by the destination server. For example, the preferred mode of the mobile partition is the POWER6+ mode and you plan to move the mobile partition to a POWER6 processor-based server. The POWER6 processor-based server does not support the POWER6+ mode, but it does support the POWER6 mode. Therefore, you change the preferred mode to the POWER6 mode.
6. If the current processor compatibility mode of the mobile partition is not supported by the destination server, try the following solutions:
   - If the mobile partition is active, it is possible that the hypervisor has not had the opportunity to update the current mode of the mobile partition. Restart the mobile partition so that the hypervisor can evaluate the configuration and update the current mode of the mobile partition.
   - If the current mode of the mobile partition still does not match the list of supported modes that you identified for the destination server, use step 2 to change the preferred mode of the mobile partition to a mode that is supported by the destination server.

     Then, restart the mobile partition so that the hypervisor can evaluate the configuration and update the current mode of the mobile partition.

     For example, the mobile partition runs on a POWER6+ processor-based server and its current mode is the POWER6+ mode. You want to move the mobile partition to a POWER6 processor-based server, which does not support the POWER6+ mode. You change the preferred mode of the mobile partition to the POWER6 mode and restart the mobile partition. The hypervisor evaluates the configuration and sets the current mode to the POWER6 mode, which is supported on the destination server.

Related concepts

"Processor compatibility modes" on page 9
Processor compatibility modes enable you to move logical partitions between servers that have different processor types without upgrading the operating environments installed in the logical partitions.

Disabling the mobile partition for redundant error path reporting:

You can disable the mobile partition for redundant error path reporting by using the Hardware Management Console (HMC) so that you can move the mobile partition from the source server to the destination server.

You must be a super administrator to complete this task.

Redundant error path reporting allows a logical partition to report common server hardware problems and logical partition hardware errors to the HMC. If you want to move a logical partition, disable the redundant error path reporting.

To disable the mobile partition for redundant error path reporting using the HMC, complete the following steps:

1. In the navigation pane, open **Systems Management** and select **Servers**.
2. Select the managed server of your choice in the navigation pane.
3. In the work pane, select the logical partition of your choice.
4. Select **Configuration > Manage Profiles.**
5. Select the profile of your choice and select **Actions > Edit**.
6. Click the **Settings** tab.

7. Deselect **Enable redundant error path reporting** and click **OK**. For this change to take effect, activate this logical partition with this profile.

Disabling virtual serial adapters for the mobile partition:

You can disable unreserved virtual serial adapters for the mobile partition by using the Hardware Management Console (HMC) so that you can move the mobile partition from the source server to the destination server.

You must be a super administrator to complete this task.

Virtual serial adapters are often used for virtual terminal connections to the operating system. The first two virtual serial adapters (slots 0 and 1) are reserved for the HMC. For a logical partition to participate in Partition Mobility , it cannot have any virtual serial adapters, except for the two that are reserved for the HMC.

To disable unreserved virtual serial adapters using the HMC, complete the following steps:

1. In the navigation pane, open **Systems Management** and select **Servers**.
2. Select the managed server of your choice in the navigation pane.
3. In the work pane, select the logical partition of your choice.
4. Select **Configuration > Manage Profiles.**
5. Select the profile of your choice and select **Actions > Edit**.
6. Select the **Virtual Adapter** tab.
7. If there are more than two virtual serial adapters listed, then ensure that the additional adapters beyond 0 and 1 are not selected as **Required**.
   - If you have additional virtual serial adapters listed as **Required**, select the adapter that you would like to remove. Then select **Actions > Delete** to remove the adapter from the partition profile.
   - You can select **Dynamic Logical Partitioning > Virtual Adapters**. The Virtual Adapters panel is displayed. Select the adapter that you would like to remove and select **Actions > Delete** to remove the adapter from the partition profile.
8. Click **OK**.

Removing the mobile partition from a partition workload group:

You can remove the mobile partition from a partition workload group by using the Hardware Management Console (HMC) so that you can move the mobile partition from the source server to the destination server.

You must be a super administrator to complete this task.

A partition workload group identifies a set of logical partitions that are located on the same physical system. The partition profile specifies the name of the partition workload group that it belongs to, if applicable. A partition workload group is defined when you use the HMCto configure a logical partition. For a logical partition to participate in Partition Mobility, it cannot be assigned to a partition workload group.

To remove the mobile partition from a partition workload group using the HMC, complete the following steps:

1. In the navigation pane, open **Systems Management** and select **Servers**.
2. Select the managed server of your choice in the navigation pane.
3. In the work pane, select the logical partition of your choice.
4. Select **Configuration > Manage Profiles.**

5. Select the profile of your choice and select **Actions > Edit**.
6. Click the **Settings** tab.
7. In the Workload Management area, select **(None)** and click **OK**.
8. Repeat steps 1 through 7 for all partition profiles associated with the mobile partition. For this change to take effect, you will need to activate this logical partition with this profile.

Disabling BSR arrays for the mobile partition:

You can disable barrier synchronization register (BSR) arrays for the mobile partition by using the Hardware Management Console (HMC) so that you can perform active Partition Mobility.

You must be a super administrator to perform this task.

BSR is a memory register that is located on certain POWER processor-based systems. A parallel-processing application running on the AIX operating system can use a BSR to perform barrier synchronization, which is a method for synchronizing the threads in the parallel-processing application.

For a logical partition to participate in active Partition Mobility, it cannot use BSR arrays. If the mobile partition uses BSR, the logical partition can participate in inactive Partition Mobility.

To disable BSR for the mobile partition using the HMC, complete the following steps:

1. In the navigation pane, select **Systems Management** and select **Servers**.
2. In the navigation pane, select the managed server of your choice and select **Properties**.
3. Click the **Capabilities** tab.
   - If barrier synchronization register (BSR) Capable is **True**, click **OK** and continue with the next step.
   - If barrier synchronization register (BSR) Capable is **False**, the server does not support BSR. Skip the rest of this procedure and continue to "Preparing the mobile partition for Partition Mobility" on page 41.
4. In the navigation pane, open **Systems Management** and select **Servers**.
5. Select the managed server of your choice in the navigation pane.
6. In the work pane, select the logical partition of your choice, click the **Tasks** button, and select **Properties**.
7. Click the **Hardware** tab.
8. Click the **Memory** tab.
   - If the number of BSR arrays equals zero, the mobile partition can participate in active or inactive Partition Mobility. Skip the rest of this procedure and continue to "Preparing the mobile partition for Partition Mobility" on page 41.
   - If the number of BSR arrays is not equal to zero, then take one of the following actions:
     - Perform an inactive movement instead of an active movement.
     - Click **OK** and continue to the next step to prepare the mobile partition for an active movement.
9. Select the mobile partition, and then select **Configuration > Manage Profiles**.
10. Select the partition profile with which you will reactivate the mobile partition, and select **Action > Edit**.
11. Click the **Memory** tab.
    - If the number of BSR arrays equals 0, the mobile partition can participate in active or inactive Partition Mobility. Skip the rest of this procedure and continue to "Preparing the mobile partition for Partition Mobility" on page 41.
    - If the number of BSR arrays is not equal to 0, then take the following action to change BSR to 0 if you want to do an active migration:

- Enter 0 in the field for the BSR arrays.
- Click **OK** and continue to the next step to prepare the mobile partition for an active movement.

12. Activate this logical partition with this profile in order for this change to take effect.

Disabling huge pages for the mobile partition:

You can disable huge pages for the mobile partition by using the Hardware Management Console (HMC) so that you can perform active Partition Mobility.

You must be a super administrator to perform this task.

Huge pages can improve performance in specific environments that require a high degree of parallelism, such as in DB2 partitioned database environments. You can specify the minimum, desired, and maximum number of huge pages to assign to a logical partition when you create the logical partition or partition profile.

For a logical partition to participate in active Partition Mobility, it cannot use huge pages. If the mobile partition uses huge pages, it can participate in inactive Partition Mobility.

To disable huge pages for the mobile partition using the HMC, complete the following steps:

1. In the navigation pane, open **Systems Management** and select **Servers**.
2. In the work pane, select the managed server of your choice, click the **Tasks** button, and select **Properties**.
3. Click the **Capabilities** tab.
   - If Huge Page Capable is **True**, then click **OK** and continue with the next step.
   - If Huge Page Capable is **False**, then the source server does not support huge pages. The mobile partition can participate in active or inactive Partition Mobility. Skip the rest of this procedure and continue to "Preparing the mobile partition for Partition Mobility" on page 41.
4. In the navigation pane, open **Systems Management** and select **Servers**.
5. Select the managed server of your choice in the navigation pane.
6. In the work pane, select the logical partition of your choice.
7. Select **Properties** and the **Hardware** tab and then the **Memory** tab.
   - If the current huge page memory equals 0, then skip the rest of this procedure and continue to "Preparing the mobile partition for Partition Mobility" on page 41.
   - If the current huge page memory is not equal to 0, then take one of the following actions:
     - Perform an inactive movement instead of an active movement.
     - Click **OK** and continue with the next step to prepare the mobile partition for an active movement.
8. In the navigation pane, open **Systems Management** and select **Servers**.
9. Select the managed server of your choice in the navigation pane.
10. In the work pane, select the logical partition of your choice.
11. Select **Configuration > Manage Profiles.**
12. Select the profile of your choice and select **Actions > Edit**.
13. Click the **Memory** tab.
14. Enter **0** in the field for desired huge page memory, and click **OK**.
15. Activate this logical partition with this profile in order for this change to take effect.

Removing Logical Host Ethernet Adapters from the mobile partition:

You can remove a Logical Host Ethernet Adapter (LHEA) from a mobile partition by using the Hardware Management Console (HMC) so that you can perform active Partition Mobility.

You must be a super administrator to perform this task.

For a logical partition to participate in active Partition Mobility, it cannot be assigned any Logical Host Ethernet Adapters. If the mobile partition is assigned one or more LHEAs, it can participate in inactive Partition Mobility.

To remove a Logical Host Ethernet Adapter from the mobile partition using the HMC, complete the following steps:

1. In the navigation pane, open **Systems Management** and select **Servers**.
2. Select the managed server of your choice in the navigation pane.
3. Select the mobile partition and select **Configuration > Manage Profiles**.
4. Select the partition profile of your choice and select **Actions > Edit**.
5. Select the **Logical Host Ethernet Adapters (LHEA)** tab.
6. Select the physical port locations that have a logical port ID assigned to it and click **Reset**.
7. Click **OK**.

Preparing the network configuration for Partition Mobility

You need to verify that the network configuration is configured correctly so that you can successfully move the mobile partition from the source server to the destination server by using the Hardware Management Console (HMC). This includes tasks such as creating a Shared Ethernet Adapter on the source and destination Virtual I/O Server logical partitions and creating at least one virtual Ethernet adapter on the mobile partition.

To prepare the network configuration for active or inactive Partition Mobility, complete the following tasks.

Table 20. Planning tasks for the network

Network planning tasks	Active mobility task	Inactive mobility task	Information resources
1. Create a Shared Ethernet Adapter on the source and destination Virtual I/O Server logical partition using the HMC.	X	X	Creating a Shared Ethernet Adapter for a VIOS logical partition using the HMC
2. Configure virtual Ethernet adapters on the source and destination Virtual I/O Server logical partitions.	X	X	Configuring a virtual Ethernet adapter using the HMC
3. Create at least one virtual Ethernet adapter on the mobile partition.	X		Configuring a virtual Ethernet adapter using the HMC
4. Activate the mobile partition to establish communication between the virtual Ethernet adapter and Virtual I/O Server virtual Ethernet adapter.	X		Activating a logical partition
5. Verify that the operating system of the mobile partition recognizes the new Ethernet adapter.	X		
6. Set up the LAN so that the mobile partition can continue to communicate with other necessary clients and servers after the migration is completed.	X	X	

Related concepts

"Network configuration in a Partition Mobility environment" on page 29
In Partition Mobility that is managed by the Hardware Management Console (HMC), the network between the source and destination servers is used to pass the mobile partition state information and other configuration data from the source environment to the destination environment. The mobile partition uses the virtual LAN for network access.

Preparing the virtual SCSI configuration for Partition Mobility

You need to verify that the virtual SCSI configuration is configured correctly so that you can successfully move the mobile partition from the source server to the destination server by using the Hardware Management Console (HMC). This includes tasks such as verifying the reserve_policy of the physical volumes, and verifying that the virtual devices have the same unique identifier, physical identifier, or IEEE volume attribute.

The destination server must provide the same virtual SCSI configuration as the source server so that the mobile partition can access its physical storage on the storage area network (SAN) after it moves to the destination server.

To prepare the virtual SCSI configuration for active or inactive Partition Mobility, complete the following tasks.

Table 21. Preparation tasks for the virtual SCSI configuration on systems that are managed by the HMC

Storage planning tasks	Active mobility task	Inactive mobility task	Information resources
1. Verify that the physical storage that is used by the mobile partition is assigned to at least one Virtual I/O Server logical partition on the source server and to at least one Virtual I/O Server logical partition on the destination server.	X	X	IBM System Storage™ SAN Volume Controller
2. Verify that the reserve_policy attributes on the physical volumes are set to no_reserve.	X	X	"Setting the reserve policy attributes of a device"
3. Verify that the virtual devices have the same unique identifier, physical identifier, or an IEEE volume attribute.	X	X	Identifying exportable disks
4. Verify that the virtual SCSI adapters on the mobile partition can access the virtual SCSI adapters on the source Virtual I/O Server logical partition.	X	X	"Verifying the virtual adapter connections between the mobile partition and the Virtual I/O Server logical partitions on the source server" on page 51
5. Verify that the mobile partition has access to the physical storage on the SAN.	X	X	"Verifying that the mobile partition has access to its physical storage" on page 52
6. If you changed any partition profile attributes, restart the mobile partition for the new values to take effect.	X	X	Shutting down and restarting logical partitions

Related concepts

"Storage configuration in a Partition Mobility environment" on page 29
Learn about the virtual SCSI and virtual fibre channel configuration required for Partition Mobility that is managed by the Hardware Management Console (HMC).

Setting the reserve policy attributes of a device:

In some configurations, you must consider the reservation policy of the device on the Virtual I/O Server.

The following table explains the situations in which the reservation policy of the device on the Virtual I/O Server is important for systems that are managed by the Hardware Management Console (HMC) and the Integrated Virtualization Manager (IVM).

Table 22. Situations where the reservation policy of a device is important

HMC-managed systems	IVM-managed systems
• To use an Multipath I/O (MPIO) configuration at the client, none of the virtual SCSI devices on the Virtual I/O Server can be reserving the virtual SCSI device. • For Live Partition Mobility, the reserve attribute on the physical storage that is used by the mobile partition must be set to no reserve for the mobile partition to access it from both the source and destination servers. • For PowerVM Active Memory™ Sharing, the Virtual I/O Server automatically sets the reserve attribute on the physical volume to no reserve when you add a paging space device to the shared memory pool.	For Live Partition Mobility, the reserve attribute on the physical storage that is used by the mobile partition must be set to no reserve for the mobile partition to access it from both the source and destination servers.

In these configurations, you need to ensure that the **reserve_policy** attribute of the device is set to `no_reserve`.

1. From a Virtual I/O Server logical partition, list the disks (or paging space devices) to which the Virtual I/O Server has access. Run the following command:

   ```
   lsdev -type disk
   ```

2. To determine the reserve policy of a disk, run the following command, where *hdiskX* is the name of the disk that you identified in step 1. For example, hdisk5.

   ```
   lsdev -dev hdiskX -attr reserve_policy
   ```

   If the reserve_policy value is anything other than `no_reserve`, it must be changed so that you can use the disk in any of the above configurations. The results might look similar to the following:

   ```
   ..
   reserve_policy  no_reserve                      Reserve Policy                  True
   ```

3. To set the reserve_policy to `no_reserve`, run the following command, where *hdiskX* is the name of the disk for which you want to set the reserve_policy attribute to `no_reserve`.

   ```
   chdev -dev hdiskX -attr reserve_policy=no_reserve
   ```

4. Repeat this procedure from the other Virtual I/O Server logical partition. Although the reserve_policy attribute is an attribute of the device, each Virtual I/O Server saves the value of the attribute. You must set the reserve_policy attribute from both Virtual I/O Server logical partitions so that both Virtual I/O Server logical partitions recognize that the reserve_policy of the device is set to no_reserve.

Verifying the virtual adapter connections between the mobile partition and the Virtual I/O Server logical partitions on the source server:

You can verify the virtual adapter connections between the mobile partition and the Virtual I/O Server logical partitions on the source server so that the Hardware Management Console (HMC) correctly configures the virtual adapters on the destination server when you move the mobile partition.

To verify the virtual adapter connections between the mobile partition and the source Virtual I/O Server logical partitions, complete the following steps from the HMC:

1. Verify the virtual adapter configuration of the mobile partition:
   a. In the navigation pane, expand **Systems Management** → **Servers**.
   b. Click the managed system on which the mobile partition is located.

c. In the work pane, select the mobile partition.
d. From the Tasks menu, click **Properties**. The Partition Properties window is displayed.
e. Click the **Virtual Adapters** tab.
f. Record the **Connecting Partition** and the **Connecting Adapter** for each virtual adapter on the mobile partition.
   - The **Connecting Partition** is the Virtual I/O Server logical partition that contains the server virtual adapter to which the virtual adapter on the mobile partition connects.
   - The **Connecting Adapter** is the ID of the virtual adapter on the Virtual I/O Server logical partition to which the virtual adapter on the mobile partition connects.

   An example follows:

Table 23. Example information for virtual adapters on the mobile partition

Adapter ID	Connecting Partition	Connecting Adapter
2	VIOS1	11
4	VIOS1	12

g. Click **OK** to exit the Partition Properties window.

2. Verify the virtual adapter configuration of each Connecting Partition, or Virtual I/O Server logical partition, that you identified in the previous step:
   a. In the navigation pane, expand **Systems Management** → **Servers**.
   b. Click the managed system on which the mobile partition is located.
   c. In the work pane, select a Virtual I/O Server logical partition from which the mobile partition receives virtual I/O resources.
   d. From the Tasks menu, click **Properties**. The Partition Properties window is displayed.
   e. Click the **Virtual Adapters** tab.
   f. Verify that the virtual adapters on the Virtual I/O Server logical partition are connected to the virtual adapters on the mobile partition:
      - The **Adapter ID** of the virtual adapter on the Virtual I/O Server logical partition corresponds to the **Connecting Adapter** that you recorded for the virtual adapter on the mobile partition.
      - The **Connecting Adapter** of the virtual adapter on the Virtual I/O Server logical partition corresponds to the **Adapter ID** that you recorded for the virtual adapter on the mobile partition. The value for virtual SCSI adapters can also be set to **Any Partition Slot**.

      An example follows:

Table 24. Example information for virtual adapters on the Virtual I/O Server logical partition

Adapter ID	Connecting Partition	Connecting Adapter
11	Mobile Partition	2
12	Mobile Partition	Any Partition Slot

   g. Click **OK** to exit the Partition Properties window.

3. If all of the virtual SCSI adapters on the Virtual I/O Server logical partition allow access to virtual SCSI adapters of every logical partition (the **Connecting Partition** for every virtual SCSI adapter is set to **Any Partition**), complete one the following steps:
   - Create a new virtual SCSI adapter on the Virtual I/O Server logical partition and allow only a virtual SCSI adapter on the mobile partition to access it.
   - Change the connection specifications of a virtual SCSI adapter on the Virtual I/O Server logical partition so that it only allows access to a virtual SCSI adapter on the mobile partition.

Verifying that the mobile partition has access to its physical storage:

You can use the Hardware Management Console (HMC) to verify that the mobile partition has access to its physical storage on the storage area network (SAN) so that the mobile partition can access its physical storage after it moves to the destination server.

For Partition Mobility to be successful, the mobile partition must have access to the same physical storage from both the source and destination environments. In the source environment, the following connections must exist:

- Each virtual SCSI adapter on the mobile partition must have access to a target virtual SCSI adapter on the source Virtual I/O Server logical partition.
- The target virtual SCSI adapters on the source Virtual I/O Server logical partition must have access to a SAN host-attached adapter on the source Virtual I/O Server logical partition.
- The SAN host-attached adapter on the source Virtual I/O Server logical partition must be connected to a storage area network and have access to the physical storage devices you want the mobile partition to have access to in the storage area network.

In the destination environment, the following connections must exist:

- The destination Virtual I/O Server logical partition has unused Virtual slots available.
- The SAN host-attached adapter on the destination Virtual I/O Server logical partition must be connected to the same storage area network as the source Virtual I/O Server logical partition and have access to the same mobile partition physical storage as the source Virtual I/O Server logical partition.

You must be a super administrator to complete this task.

To verify these connections using the HMC, complete the following steps:

1. In the navigation pane, open **Systems Management** and select **Servers**.
2. Select the managed server of your choice in the navigation pane.
3. In the work pane, select the source Virtual I/O Server, click the **Tasks** button, and select **Hardware (Information) >Virtual Adapters > SCSI**.
4. Verify the following information and click **OK**:
   - Virtual Adapter
   - Backing Device
   - Remote Partition
   - Remote Adapter
   - Remote Backing Device

   Tip: The virtual SCSI adapter fields might be blank if the mobile partition is powered off or if the physical disk has not been linked to the Virtual I/O Server's virtual SCSI adapter.

   If the information is incorrect, return to "Preparing the virtual SCSI configuration for Partition Mobility" on page 50 and complete the task associated with the incorrect information.

Preparing the virtual fibre channel configuration for Partition Mobility

You need to verify that the virtual fibre channel configuration is configured correctly so that you can successfully move the mobile partition from the source server to the destination server by using the Hardware Management Console (HMC). This includes tasks such as verifying the worldwide port names (WWPNs) of the virtual fibre channel adapters on the mobile partition, and verifying that the physical fibre channel adapters and the physical fibre channel switches support N_Port ID Virtualization (NPIV).

The destination server must provide the same virtual fibre channel configuration as the source server so that the mobile partition can access its physical storage on the storage area network (SAN) after it moves to the destination server.

To prepare the virtual fibre channel configuration for active or inactive Partition Mobility, complete the following tasks.

Table 25. Preparation tasks for the virtual fibre channel configuration on systems that are managed by the HMC

Storage planning tasks	Active mobility task	Inactive mobility task	Information resources
1. For each virtual fibre channel adapter on the mobile partition, verify that both WWPNs are assigned to the same set of logical unit numbers (LUNs) on the SAN.	X	X	• "Identifying the WWPNs that are assigned to a virtual fibre channel adapter" • IBM System Storage SAN Volume Controller
2. Verify that the physical fibre channel adapters that are assigned to the source and destination Virtual I/O Server logical partitions support NPIV. Run the lsnports command to view the physical ports on the physical fibre channel adapters that support NPIV.	X	X	Virtual I/O Server and Integrated Virtualization Manager commands
3. Verify that the switches to which the physical fibre channel adapters on both the source and destination Virtual I/O Server logical partitions are cabled support NPIV. Run the lsnports command to view the `fabric support` of the physical ports on the physical fibre channel adapters. If the `fabric support` is 1, the physical port is cabled to a switch that supports NPIV.	X	X	Virtual I/O Server and Integrated Virtualization Manager commands
4. Verify that the mobile partition has access to the virtual fibre channel adapters on the source Virtual I/O Server logical partition.	X	X	"Verifying the virtual adapter connections between the mobile partition and the Virtual I/O Server logical partitions on the source server" on page 51
5. If you changed any partition profile attributes, restart the mobile partition for the new values to take effect.	X	X	Shutting down and restarting logical partitions

Related concepts

"Storage configuration in a Partition Mobility environment" on page 29
Learn about the virtual SCSI and virtual fibre channel configuration required for Partition Mobility that is managed by the Hardware Management Console (HMC).

Related information

Redundancy configuration using virtual fibre channel adapters

Identifying the WWPNs that are assigned to a virtual fibre channel adapter:

You can identify the worldwide port names (WWPNs) that are assigned to the virtual fibre channel adapters on the mobile partition by using the Hardware Management Console (HMC) to view the partition properties of the mobile partition.

To identify the WWPNs that are assigned to a virtual fibre channel adapter using the HMC, complete the following steps:

1. In the navigation pane, expand **Systems Management** → **Servers**.
2. Click the server on which the mobile partition is located.
3. In the navigation pane, select the mobile partition.
4. From the **Tasks** menu, client **Properties**. The Partition Properties window is displayed.
5. Click the **Virtual Adapters** tab.
6. Select a virtual fibre channel adapter.

7. From the **Actions** menu, click **Properties**. The Virtual Fibre Channel Adapter Properties window is displayed.
8. Repeat steps 6 on page 54 and 7 for each virtual fibre channel adapter on the mobile partition.
9. Click **Close** to return to the Partition Properties window.

Verifying the virtual adapter connections between the mobile partition and the Virtual I/O Server logical partitions on the source server:

You can verify the virtual adapter connections between the mobile partition and the Virtual I/O Server logical partitions on the source server so that the Hardware Management Console (HMC) correctly configures the virtual adapters on the destination server when you move the mobile partition.

To verify the virtual adapter connections between the mobile partition and the source Virtual I/O Server logical partitions, complete the following steps from the HMC:

1. Verify the virtual adapter configuration of the mobile partition:
   a. In the navigation pane, expand **Systems Management** → **Servers**.
   b. Click the managed system on which the mobile partition is located.
   c. In the work pane, select the mobile partition.
   d. From the Tasks menu, click **Properties**. The Partition Properties window is displayed.
   e. Click the **Virtual Adapters** tab.
   f. Record the **Connecting Partition** and the **Connecting Adapter** for each virtual adapter on the mobile partition.
      - The **Connecting Partition** is the Virtual I/O Server logical partition that contains the server virtual adapter to which the virtual adapter on the mobile partition connects.
      - The **Connecting Adapter** is the ID of the virtual adapter on the Virtual I/O Server logical partition to which the virtual adapter on the mobile partition connects.

      An example follows:

Table 26. Example information for virtual adapters on the mobile partition

Adapter ID	Connecting Partition	Connecting Adapter
2	VIOS1	11
4	VIOS1	12

   g. Click **OK** to exit the Partition Properties window.
2. Verify the virtual adapter configuration of each Connecting Partition, or Virtual I/O Server logical partition, that you identified in the previous step:
   a. In the navigation pane, expand **Systems Management** → **Servers**.
   b. Click the managed system on which the mobile partition is located.
   c. In the work pane, select a Virtual I/O Server logical partition from which the mobile partition receives virtual I/O resources.
   d. From the Tasks menu, click **Properties**. The Partition Properties window is displayed.
   e. Click the **Virtual Adapters** tab.
   f. Verify that the virtual adapters on the Virtual I/O Server logical partition are connected to the virtual adapters on the mobile partition:
      - The **Adapter ID** of the virtual adapter on the Virtual I/O Server logical partition corresponds to the **Connecting Adapter** that you recorded for the virtual adapter on the mobile partition.
      - The **Connecting Adapter** of the virtual adapter on the Virtual I/O Server logical partition corresponds to the **Adapter ID** that you recorded for the virtual adapter on the mobile partition. The value for virtual SCSI adapters can also be set to **Any Partition Slot**.

An example follows:

Table 27. Example information for virtual adapters on the Virtual I/O Server logical partition

Adapter ID	Connecting Partition	Connecting Adapter
11	Mobile Partition	2
12	Mobile Partition	Any Partition Slot

g. Click **OK** to exit the Partition Properties window.

3. If all of the virtual SCSI adapters on the Virtual I/O Server logical partition allow access to virtual SCSI adapters of every logical partition (the **Connecting Partition** for every virtual SCSI adapter is set to **Any Partition**), complete one the following steps:
   - Create a new virtual SCSI adapter on the Virtual I/O Server logical partition and allow only a virtual SCSI adapter on the mobile partition to access it.
   - Change the connection specifications of a virtual SCSI adapter on the Virtual I/O Server logical partition so that it only allows access to a virtual SCSI adapter on the mobile partition.

Validating the configuration for Partition Mobility

You can use the Partition Migration wizard on the Hardware Management Console (HMC) to validate the configuration of the source and destination systems for Partition Mobility. If the HMC detects a configuration or connection problem, it displays an error message with information to help you resolve the problem.

If the source server is managed by one HMC and the destination server is managed by a different HMC, verify that the secure shell (SSH) authentication keys are set up correctly between the HMC that manages the source server and the HMC that manages the destination server. For instructions, see "Verifying SSH authentication between the source and destination HMCs" on page 37.

You must be a super administrator to validate the partition mobility environment.

To validate the source and destination systems for Partition Mobility using the HMC, complete the following steps:

1. In the navigation pane, open **Systems Management**.
2. Select **Servers**.
3. In the navigation pane, select the source server.
4. Select the mobile partition and expand **Operations > Mobility > Validate**. The Partition Migration Validation window opens.
5. Specify information about the Partition Mobility environment, and then click **Validate**. The Virtual Storage assignments table populates with suggested virtual adapter settings.
6. Review the available virtual adapter settings on the destination system.
7. Click **Validate** again to confirm that the changed settings are still acceptable for Partition Mobility.

Related concepts

"Configuration validation for Partition Mobility" on page 5
You can learn about the tasks that the Partition Migration wizard on the Hardware Management Console (HMC) performs to validate your system configuration for active and inactive Partition Mobility.

Moving the mobile partition

You can move an active or inactive logical partition from one server to another server by using the Partition Migration wizard on the Hardware Management Console (HMC).

Prerequisites

Before you move a logical partition from one server to another server, complete the following tasks from the HMC.

Table 28. Prerequisite tasks for moving a logical partition

Partition Mobility prerequisite tasks	Active mobility task	Inactive mobility task	Information resources
1. Verify that you have completed all of the required preparation tasks for Partition Mobility.	X	X	"Preparing for Partition Mobility" on page 32
2. Verify that the source and destination servers are in the Operating state.	X	X	To power on a managed system, see Power on
3. Verify that the mobile partition is powered off. **Requirement:** If you want to actively move the logical partition and the logical partition is in a crashed or failed state, you need to return the logical partition to an Operating state.		X	• Shutting down and restarting logical partitions • Reference Code finder
4. Verify that the mobile partition is in the Operating state.	X		Activating a logical partition using the HMC
5. Verify that the source and destination Virtual I/O Servers are active.	X	X	Activating a logical partition using the HMC
6. Verify that all tape and CD jobs are completed or stopped.	X		
7. Verify that no dynamic logical partitioning (DLPAR) operations are running on any of the logical partitions on the source server and destination server. Do not perform any DLPAR operations on any of the logical partitions on the source server and the destination server until the mobile partition successfully moves to the destination server.	X	X	
8. If the source server is managed by one HMC and the destination server is managed by a different HMC, verify that the secure shell (SSH) authentication keys are set up correctly between the HMC that manages the source server and the HMC that manages the destination server.	X	X	"Verifying SSH authentication between the source and destination HMCs" on page 37
9. Run the migration verification tool on the HMC to verify that the servers, Virtual I/O Servers, mobile partition, storage, and network are ready for Partition Mobility.	X	X	"Validating the configuration for Partition Mobility" on page 56

Moving a logical partition using the HMC

To move a logical partition from one server to another server by using the HMC, complete the following tasks:

1. In the navigation pane, open **Systems Management**.
2. Select **Servers**.
3. In the work pane, open the source server.
4. Select the mobile partition and select **Operations > Mobility > Migrate**.
5. Complete the wizard.

Postrequisites

After you move a logical partition from one server to another server, complete the following tasks.

Table 29. Postrequisite tasks for moving a logical partition

Partition Mobility postrequisite tasks	Active mobility task	Inactive mobility task	Information resources
1. Activate the mobile partition on the destination server.		X	Activating a logical partition using the HMC
2. (Optional) Add dedicated I/O adapters to the mobile partition on the destination server.	X	X	Adding physical I/O devices and slots dynamically
3. If any virtual terminal connections were lost during the migration, re-establish the connections on the destination server.	X	X	
4. (Optional) Assign the mobile partition to a logical partition workload group.	X	X	"Adding the mobile partition to a partition workload group"
5. If mobility-unaware applications were terminated on the mobile partition prior to its movement, then restart those applications on the destination.	X		
6. If you changed any partition profile attributes, shut down and activate the new profile for the new values to take effect.	X	X	Shutting down and restarting logical partitions
7. (Optional) Back up the Virtual I/O Server logical partitions on the destination server to preserve the new virtual device mappings.	X	X	Backing up the Virtual I/O Server

Adding the mobile partition to a partition workload group

You can add the mobile partition to a partition workload group by using the Hardware Management Console (HMC) after you move the mobile partition from the source server to the destination server.

You must be a super administrator to complete this task.

A partition workload group identifies a set of logical partitions that are located on the same physical system. Workload management tools use partition workload groups to identify which logical partitions they can manage.

Prior to moving the mobile partition from the source environment to the destination environment, you might have removed the mobile partition from a partition workload group. Now that you have successfully moved the mobile partition to the destination environment, you can add it to a partition workload group.

To add the mobile partition to a partition workload group using the HMC, complete the following steps:

1. In the navigation pane, open **Systems Management** and select **Servers**.
2. Select the managed server of your choice in the navigation pane.
3. Select the logical partition of your choice in the work pane.
4. Select **Configuration > Manage Profiles**.
5. Select the profile of your choice and select **Actions > Edit.**.
6. Click the **Settings** tab.
7. In the Workload Management area, select (None) and click **OK**.
8. Repeat steps 1 through 7 for all partition profiles associated with the mobile partition. In order for this change to take affect, you will need to activate this logical partition with this profile.

This can also be changed using DLPAR by selecting the logical partition > **Properties > Other** tab.

Troubleshooting Partition Mobility

Learn how to understand, isolate, and resolve problems related to active and inactive Partition Mobility by using the Hardware Management Console (HMC).

Sometimes you will be able to resolve a problem on your own, while at other times you will need to gather information to help the service technicians resolve your problem in a timely manner.

Troubleshooting active Partition Mobility

Learn how to troubleshoot problems that might occur with active Partition Mobility by using the Hardware Management Console (HMC).

The following table lists possible errors and ways to recover.

Table 30. Known problems and solutions for active Partition Mobility

Problem	Solution
You receive the following error: `HSCL3656 There is an insufficient amount of memory available on the destination managed system for the configuration of the partition. Please perform one or both of the following actions: 1. Remove memory from any shutdown dedicated memory partitions on the destination managed system. 2. Remove memory from any running dedicated memory partitions on the destination managed system.`	1. To make physical memory available for the mobile partition, dynamically remove physical memory from inactive logical partitions that use dedicated memory (hereafter referred to as *dedicated memory partitions*) on the destination server by running the chhwres command from the HMC command line. For example, `chhwres -r mem -m <destination_server> -o r -p <logical_partition> -q <memory>`, where: • *<destination_server>* is the name of the server to which you want to move the mobile partition. • *<logical_partition>* is the name of the logical partition from which you want to remove physical memory. • *<memory>* is the amount of physical memory, in MB, that you want to remove from the logical partition. 2. If you cannot satisfy the memory requirement of the mobile partition by removing physical memory from dedicated memory partitions that are inactive, then dynamically remove physical memory from dedicated memory partitions that are active on the destination server by performing one of the following tasks: • Removing dedicated memory dynamically using the HMC • Running the chhwres command from the HMC command line.
If the operating system running in the mobile partition does not explicitly support the processor version register of the destination server, and the processor determines that explicit support is required, then the processor will not allow the migration to proceed.	Either: • Move the logical partition to another system. • Update the operating system to a level that supports the target system processor version registers.
You receive an error concerning the operating system while attempting to migrate a logical partition.	1. Examine the operating system error logs for operating system-related failures. 2. Examine the HMC log for application-related failures.

Table 30. Known problems and solutions for active Partition Mobility (continued)

Problem	Solution
You receive an HMC error concerning insufficient physical memory on the destination server. **Important:** Sufficient physical memory includes the amount of available physical memory on the server and the amount of available contiguous physical memory on the server. If the mobile partition requires more contiguous physical memory, making more physical memory available will not solve the problem.	Either: • Move the logical partition to a different server. • Make more physical memory available on the destination server. See "Determining the available physical memory on the destination server" on page 34 for instructions.
The HMC and managed systems lost their connection while the migration was in progress.	1. In the HMC navigation pane, select **Partition Migration**. 2. In the work pane, select either the source or destination system and select **Recovery**. 3. From the Migration Recovery panel, click **Recover**.
While attempting to change resources dynamically, you receive an error that the Resource Monitoring and Control (RMC) daemon is not connected.	This error typically occurs when there is a network connection problem between the logical partitions and the HMC. To resolve this error, check your system network setup.

Related information

Live Partition Mobility known issues

Troubleshooting inactive Partition Mobility

Learn how to troubleshoot problems with inactive Partition Mobility using the Hardware Management Console (HMC).

The following table lists possible errors and ways to recover.

Table 31. Known problems and solutions for inactive Partition Mobility

Problem	Solution
If the mobile partition is moved to a server that the operating system does not support (and explicit support is required), then the boot of the logical partition on the destination server will fail.	Move the logical partition to a different server.
You receive an HMC error concerning insufficient physical memory on the destination server. **Important:** Sufficient physical memory includes the amount of available physical memory on the server and the amount of available contiguous physical memory on the server. If the mobile partition requires more contiguous physical memory, making more physical memory available will not solve the problem.	Either: • Move the logical partition to a different server. • Make more physical memory available on the destination server. See "Determining the available physical memory on the destination server" on page 34 for instructions.

Live Partition Mobility on IVM-managed systems

You can use the Integrated Virtualization Manager (IVM) to move an active or inactive logical partition from one server to another.

Partition Mobility overview for IVM

You can learn about the benefits of Partition Mobility, how the Integrated Virtualization Manager (IVM) performs active and inactive Partition Mobility, and about the configuration that is required to successfully move a logical partition from one system to another.

Related tasks

"Preparing for Partition Mobility" on page 85
You need to verify that the source and destination systems are configured correctly so that you can successfully move the mobile partition from the source system to the destination system. This includes verifying the configuration of the source and destination servers, the Integrated Virtualization Manager (IVM) management partitions, the mobile partition, the virtual storage configuration, and the virtual network configuration.

Benefits of Partition Mobility

Partition Mobility provides systems management flexibility and is designed to improve system availability.

For example:

- You can avoid planned outages for hardware or firmware maintenance by moving logical partitions to another server and then performing the maintenance. Partition Mobility can help because you can use it to work around scheduled maintenance activities.
- You can avoid downtime for a server upgrade by moving logical partitions to another server and then performing the upgrade. This allows you to continue your work without disruption.
- If a server indicates a potential failure, you can move its logical partitions to another server before the failure occurs. Partition Mobility can help avoid unplanned downtime.
- You can consolidate workloads running on several small, underused servers onto a single large server.
- You can move workloads from server to server to optimize resource use and workload performance within your computing environment. With active Partition Mobility, you can manage workloads with minimal downtime.

However, while Partition Mobility provides many benefits, it does not do the following:

- Partition Mobility does not provide automatic workload balancing.
- Partition Mobility does not provide a bridge to new functions. Logical partitions must be restarted and possibly reinstalled to take advantage of new features.

Partition Mobility process for IVM

Learn about how the Integrated Virtualization Manager (IVM) moves an active or inactive logical partition from one server to another server.

The following table describes the steps that take place during the process of active and inactive Partition Mobility on the IVM.

Table 32. The steps involved in the process of active and inactive Partition Mobility on the IVM

Partition Mobility step	Active mobility step	Inactive mobility step
1. You ensure that all requirements are satisfied and all preparation tasks are completed.	X	X
2. You shut down the mobile partition.		X
3. You initiate Partition Mobility by starting the migration task on the IVM.	X	X

Table 32. The steps involved in the process of active and inactive Partition Mobility on the IVM (continued)

Partition Mobility step	Active mobility step	Inactive mobility step
4. The IVM extracts the physical device description for each physical adapter on the Virtual I/O Server management partition on the source server. The IVM uses the extracted information to determine whether the Virtual I/O Server management partition on the destination server can provide the mobile partition with the same virtual SCSI, virtual Ethernet, and virtual fibre channel configuration that exists on the source server. This includes verifying that the Virtual I/O Server management partition on the destination server has enough available slots to accommodate the virtual adapter configuration of the mobile partition. The IVM uses all of this information to generate a list of recommended virtual adapter mappings for the mobile partition on the destination server.	X	X
5. The IVM prepares the source and destination environments for Partition Mobility. This includes using the virtual adapter mappings from step 4 for mapping the virtual adapters on the mobile partition to the virtual adapters on the Virtual I/O Server management partition on the destination server.	X	X
6. The IVM transfers the logical partition state from the source environment to the destination environment.	In active partition mobility, the following additional steps occur: • The source mover service partition extracts the logical partition state information from the source server and sends it to the destination mover service partition over the network. • The destination mover service partition receives the logical partition state information and installs it on the destination server.	X
7. The IVM suspends the mobile partition on the source server. The source mover service partition continues to transfer the logical partition state information to the destination mover service partition.	X	
8. The hypervisor resumes the mobile partition on the destination server.	X	
9. The IVM completes the migration. All resources that were consumed by the mobile partition on the source server are reclaimed by the source server: • The IVM removes the virtual SCSI adapters and the virtual fibre channel adapters (that were connected to the mobile partition) from the source Virtual I/O Server management partition. • For a mobile partition that uses shared memory, the IVM deactivates the paging space device that was used by the mobile partition and removes the paging space device (if it was automatically created).	X	X
10. You activate the mobile partition on the destination server.		X
11. You perform postrequisite tasks, such as adding dedicated I/O adapters to the mobile partition or adding the mobile partition to a partition workload group.	X	X

Configuration validation for Partition Mobility

You can learn about the tasks that the Integrated Virtualization Manager (IVM) performs to validate your system configuration for active and inactive Partition Mobility.

Before you attempt to migrate an active logical partition, you need to validate your environment. You can use the validation function on the IVM to validate your system configuration. If the IVM detects a configuration or connection problem, it displays an error message with information to help you resolve the problem.

The following tables list validation tasks that the IVM performs to verify that the source and destination systems are ready for active or inactive Partition Mobility.

General compatibility

Table 33. Validation tasks performed by the IVM to verify general compatibility for active and inactive Partition Mobility

Validation task	Active mobility task	Inactive mobility task
Checks that the resource monitoring and control (RMC) connections are established.	Checks the RMC connections to the mobile partition, the source and destination Virtual I/O Server management partitions, and the connection between the source and destination mover service partitions.	Checks the RMC connections to the source and destination Virtual I/O Server management partitions.
Checks mobility capability and compatibility.	Checks the source and destination servers, POWER6 hypervisor, Virtual I/O Server management partitions, and mover service partitions.	Checks the Virtual I/O Server management partitions and the POWER6 hypervisor.
Checks the number of current migrations against the number of supported migrations.	Checks the number of current active migrations against the number of supported active migrations.	Checks the number of current inactive migrations against the number of supported inactive migrations.

Server compatibility

Table 34. Validation tasks performed by the IVM to verify server compatibility for active and inactive Partition Mobility

Validation task	Active mobility task	Inactive mobility task
Checks that the necessary processing resources are available to create a shell logical partition on the destination system.	X	X

Table 34. Validation tasks performed by the IVM to verify server compatibility for active and inactive Partition Mobility (continued)

Validation task	Active mobility task	Inactive mobility task
Checks that the necessary memory resources are available to create a shell logical partition on the destination system.	• For a mobile partition that uses dedicated memory, checks that enough physical memory is available on the destination system. • For a mobile partition that uses shared memory, checks that a shared memory pool is configured on the destination server and that it has enough physical memory to satisfy the entitled memory requirements of the mobile partition.	For a mobile partition that uses dedicated memory, checks that enough physical memory is available on the destination system.
Checks that the necessary I/O adapter resources are available to create a shell logical partition on the destination system. During validation, the IVM extracts the device description for each virtual adapter on the Virtual I/O Server management partition on the source server. The IVM uses the extracted information to determine whether the Virtual I/O Server management partition on the destination server can provide the mobile partition with the same virtual SCSI, virtual Ethernet, and virtual fibre channel configuration that exists on the source server. This includes verifying that the Virtual I/O Server management partition on the destination server has enough available slots to accommodate the virtual adapter configuration of the mobile partition.	X	X
Checks that the logical memory block size is the same on the source and destination servers.	X	

Virtual I/O Server compatibility

Table 35. Validation tasks performed by the IVM to verify the source and destination Virtual I/O Server management partitions for active and inactive Partition Mobility

Validation task	Active mobility task	Inactive mobility task
Checks that all required I/O devices are connected to the mobile partition through the Virtual I/O Server management partition. That is, no physical adapters are assigned to the mobile partition and no virtual serial adapters are in virtual slots higher than 1.	X	X
Checks that no virtual SCSI disks are backed by logical volumes and that no virtual SCSI disks are attached to internal disks (not on the SAN).	X	X
Checks that the virtual SCSI disks assigned to the logical partition are accessible by the Virtual I/O Server management partition on the destination server.		X

Table 35. Validation tasks performed by the IVM to verify the source and destination Virtual I/O Server management partitions for active and inactive Partition Mobility (continued)

Validation task	Active mobility task	Inactive mobility task
Checks that the required virtual LAN IDs are available on the destination Virtual I/O Server management partition.	X	X
For a mobile partition that uses shared memory, the IVM checks for an available paging space device in one of the following ways: • Checks that the paging storage pool on the destination server has enough available space to create a paging space device for the mobile partition. • Checks that the management partition on the destination server has access to an available paging space device that meets the size requirements of the mobile partition.	X	

Mobile partition compatibility

Table 36. Validation tasks performed by the IVM to verify that the mobile partition can successfully move to the destination server by using active or inactive Partition Mobility

Validation task	Active mobility task	Inactive mobility task
Checks that the operating system on the mobile partition is the AIX or Linux operating system.	X	X
Checks the mobile partition, its operating system, and its applications for migration capability. The AIX operating system passes the check migration request to those applications and kernel extensions that have registered to be notified of dynamic reconfiguration events. The operating system either accepts or rejects the migration.	X	
Checks that the mobile partition is not the redundant error path reporting logical partition.	X	X
Checks that the mobile partition is not in a partition workload group.	X	X
Checks the uniqueness of the virtual MAC addresses or the mobile partition.	X	X
Checks the state of the mobile partition.	Checks that the mobile partition state is Active or Running.	Checks that the mobile partition state is Not Activated.
Checks that the name of the mobile partition is not already in use on the destination server.	X	X
Checks that the mobile partition is not configured with barrier synchronization register (BSR) arrays.	X	
Checks that the mobile partition is not configured with huge pages.	X	
Checks that the mobile partition does not have a Host Ethernet Adapter (or Integrated Virtual Ethernet).	X	

Related tasks

"Validating the configuration for Partition Mobility" on page 98
You can use the Integrated Virtualization Manager (IVM) to validate the configuation of the source and destination systems for Partition Mobility. If the IVM detects a configuration or connection problem, it displays an error message with information to help you resolve the problem.

Logical partition attributes that change after the logical partition moves to the destination system

When you move a logical partition from one server to another, some of its attributes might change (such as the logical partition ID number) and some of its attributes remain the same (such as the logical partition configuration).

The following table describes the logical partition attributes that remain the same and the logical partition attributes that might change after you move a logical partition to the destination server.

Table 37. Logical partition attributes that might change or remain the same after a logical partition moves to the destination server

Attributes that remain the same	Attributes that might change
• The logical partition name • The logical partition type (dedicated processor or shared processor) • The logical partition configuration • The processor architecture • The Simultaneous Multi-Threading (SMT) state of each processor • The virtual MAC addresses, IP addresses, and LUN mapping to the target devices	• The logical partition ID number • The machine type, model, and serial number • The model class of the underlying server • The processor version and type • The processor frequency • The affinity characteristics of the logical memory blocks (LMB) • The maximum number of hot pluggable and installed physical processors • The L1 and L2 cache size

Processor compatibility modes

Processor compatibility modes enable you to move logical partitions between servers that have different processor types without upgrading the operating environments installed in the logical partitions.

You can run several versions of the AIX, Linux, and Virtual I/O Server operating environments in logical partitions on POWER5 processor-based servers, POWER6 processor-based servers, and POWER6+ processor-based servers. Sometimes older versions of these operating environments do not support the capabilities that are available with new processors. This can limit your flexibility to move logical partitions between servers that have different processor types.

A processor compatibility mode is a value assigned to a logical partition by the hypervisor that specifies the processor environment in which the logical partition can successfully operate. When you move a logical partition to a destination server that has a different processor type from the source server, the processor compatibility mode enables that logical partition to run in a processor environment on the destination server in which it can successfully operate. In other words, the processor compatibility mode enables the destination server to provide the logical partition with a subset of processor capabilities that are supported by the operating environment that is installed in the logical partition.

Related tasks

"Verifying the processor compatibility mode of the mobile partition" on page 44
You can use the Hardware Management Console (HMC) to determine whether the processor compatibility mode of the mobile partition is supported on the destination server, and update the mode, if necessary, so that you can successfully move the mobile partition to the destination server.

"Verifying the processor compatibility mode of the mobile partition" on page 91
You can use the Integrated Virtualization Manager (IVM) to determine whether the processor compatibility mode of the mobile partition is supported on the destination server, and update the mode, if necessary, so that you can successfully move the mobile partition to the destination server.

Processor compatibility mode definitions:

You can learn about each processor compatibility mode and the servers on which each mode can run.

The following table describes each processor compatibility mode and the servers on which the logical partitions that use each processor compatibility mode can successfully operate.

Table 38. Processor compatibility modes

Processor compatibility mode	Description	Supported servers
POWER5	The POWER5 processor compatibility mode allows you to run operating-system versions that use all the standard features of the POWER5 processor.	Logical partitions that use the POWER5 processor compatibility mode can run on POWER5 processor-based servers, POWER6 processor-based servers, and POWER6+ processor-based servers. **Restriction:** A POWER6 processor cannot emulate all features of a POWER5 processor. For example, certain types of performance monitoring might not be available for a logical partition if the current processor compatibility mode of a logical partition is set to the POWER5 mode.
POWER6	The POWER6 processor compatibility mode allows you to run operating-system versions that use all the standard features of the POWER6 processor.	Logical partitions that use the POWER6 processor compatibility mode can run on POWER6 processor-based servers and POWER6+ processor-based servers.
POWER6+	The POWER6+ processor compatibility mode allows you to run operating-system versions that use all the standard features of the POWER6+ processor.	Logical partitions that use the POWER6+ processor compatibility mode can run on POWER6+ processor-based servers.
POWER6 enhanced	The POWER6 enhanced processor compatibility mode allows you to run operating-system versions that use all the standard features of the POWER6 processor and also provides additional floating-point instructions to applications that use the POWER6 processor.	Logical partitions that use the POWER6 enhanced processor compatibility mode can run on POWER6 processor-based servers.

Table 38. Processor compatibility modes (continued)

Processor compatibility mode	Description	Supported servers
POWER6+ enhanced	The POWER6+ enhanced processor compatibility mode allows you to run operating-system versions that use all the standard features of the POWER6+ processor and also provides additional floating-point instructions to applications that use the POWER6+ processor.	Logical partitions that use the POWER6+ enhanced processor compatibility mode can run on POWER6+ processor-based servers.
default	The default processor compatibility mode is a preferred processor compatibility mode that enables the hypervisor to determine the current mode for the logical partition. When the preferred mode is set to default, the hypervisor sets the current mode to the most fully featured mode supported by the operating environment. In most cases, this is the processor type of the server on which the logical partition is activated. For example, the preferred mode is set to default and the logical partition is running on a POWER6 processor-based server. The operating environment supports the POWER6 processor capabilities so the hypervisor sets the current processor compatibility mode to POWER6.	The servers on which logical partitions with the preferred processor compatibility mode of default can run depend on the current processor compatibility mode of the logical partition. For example, if the hypervisor determines that the current mode is POWER6, then the logical partition can run on POWER6 processor-based severs and POWER6+ processor-based servers.

Related concepts

"Current and preferred processor compatibility modes" on page 11
The processor compatibility mode in which the logical partition currently operates is the *current* processor compatibility mode of the logical partition. The *preferred* processor compatibility mode of a logical partition is the mode in which you want the logical partition to operate.

"Enhanced processor compatibility modes" on page 13
The POWER6 enhanced and POWER6+ enhanced processor compatibility modes provide additional floating-point instructions to applications that use the POWER6 or POWER6+ processor.

"Examples: Using processor compatibility modes in Partition Mobility" on page 19
You can view examples of how processor compatibility modes are used when moving an active or inactive logical partition between servers with different processor types.

Related reference

"Migration combinations of processor compatibility modes" on page 14
View all the combinations of the processor types of the source server, the processor types of the destination server, the current and preferred processor compatibility modes of the logical partition before the migration, and the current and preferred processor compatibility modes of the logical partition after the migration.

Current and preferred processor compatibility modes:

The processor compatibility mode in which the logical partition currently operates is the *current* processor compatibility mode of the logical partition. The *preferred* processor compatibility mode of a logical partition is the mode in which you want the logical partition to operate.

The hypervisor sets the current processor compatibility mode for a logical partition using the following information:

- The processor features supported by the operating environment running in the logical partition.
- The preferred processor compatibility mode that you specify.

When you activate the logical partition, the hypervisor checks the preferred processor compatibility mode and determines whether the operating environment supports that mode. If the operating environment supports the preferred processor compatibility mode, the hypervisor assigns the logical partition the preferred processor compatibility mode. If the operating environment does not support the preferred processor compatibility mode, the hypervisor assigns the logical partition the most fully featured processor compatibility mode that is supported by the operating environment.

The following table describes when each processor compatibility mode can be current mode or the preferred mode.

Table 39. Current and preferred processor compatibility modes

Processor compatibility mode	**Can it be the current mode?**	**Can it be the preferred mode?**
POWER5	Yes The POWER5 processor compatibility mode can be the current processor compatibility mode of a logical partition.	No You cannot specify POWER5 as the preferred processor compatibility mode. The only situation in which a logical partition will run in the POWER5 processor compatibility mode is when it is the only processor environment supported by the operating environment installed in the logical partition.
POWER6	Yes The POWER6 processor compatibility mode can be the current processor compatibility mode of a logical partition.	Yes You can specify POWER6 as the preferred processor compatibility mode for a logical partition.
POWER6+	Yes The POWER6+ processor compatibility mode can be the current processor compatibility mode of a logical partition.	Yes You can specify POWER6+ as the preferred processor compatibility mode for a logical partition.
POWER6 enhanced	Yes The POWER6 enhanced processor compatibility mode can be the current processor compatibility mode of a logical partition.	Yes You can specify POWER6 enhanced as the preferred processor compatibility mode for a logical partition.
POWER6+ enhanced	Yes The POWER6+ enhanced processor compatibility mode can be the current processor compatibility mode of a logical partition.	Yes You can specify POWER6+ enhanced as the preferred processor compatibility mode for a logical partition.

Table 39. Current and preferred processor compatibility modes (continued)

Processor compatibility mode	Can it be the current mode?	Can it be the preferred mode?
default	No The default processor compatibility mode is a preferred processor compatibility mode.	Yes You can specify default as the preferred processor compatibility mode. Also, if you do not specify a preferred mode, the system automatically sets the preferred mode to default.

The following table shows the current and preferred processor compatibility modes supported on each server type.

Table 40. Processor compatibility modes supported by server type

Server processor type	Supported current modes	Supported preferred modes
POWER6+ processor-based server	POWER5, POWER6, POWER6+, POWER6+ enhanced	default, POWER6+, POWER6, POWER6+ enhanced
POWER6 processor-based server	POWER5, POWER6, POWER6 enhanced	default, POWER6, POWER6 enhanced

The preferred processor compatibility mode is the highest mode that the hypervisor can assign to a logical partition. If the operating environment installed in the logical partition does not support the preferred mode, the hypervisor can set the current mode to a lower mode than the preferred mode, but it can not set the current mode to a higher mode than the preferred mode. For example, a logical partition runs on a POWER6+ processor-based server and you specify POWER6+ as the preferred mode. The operating environment installed in the logical partition does not support the POWER6+ processor capabilities, but it does support the POWER6 processor capabilities. When you activate the logical partition, the hypervisor assigns the POWER6 processor compatibility mode as the current mode for the logical partition because the POWER6 mode is the most fully featured mode that the operating environment supports and it is a lower mode than the preferred mode of POWER6+.

You cannot dynamically change the current processor compatibility of a logical partition. To change the current processor compatibility mode, you must change the preferred processor compatibility mode, shut down the logical partition, and restart the logical partition. The hypervisor attempts to set the current processor compatibility mode to the preferred mode that you specified.

When you move an active logical partition between servers with different processor types, both the current and preferred processor compatibility modes of the logical partition must be supported by the destination server. When you move an inactive logical partition between servers with different processor types, only the preferred mode of the logical partition must be supported by the destination server.

If you specify the default mode as the preferred mode for an inactive logical partition, you can move that inactive logical partition to a server of any processor type. Because all servers support the default processor compatibility mode, you can move an inactive logical partition with the preferred mode of default to a server with any processor type. When the inactive logical partition is activated on the destination server, the preferred mode remains set to default, and the hypervisor determines the current mode for the logical partition.

Related concepts

"Enhanced processor compatibility modes" on page 13
The POWER6 enhanced and POWER6+ enhanced processor compatibility modes provide additional floating-point instructions to applications that use the POWER6 or POWER6+ processor.

"Examples: Using processor compatibility modes in Partition Mobility" on page 19
You can view examples of how processor compatibility modes are used when moving an active or inactive logical partition between servers with different processor types.

"Processor compatibility mode definitions" on page 9
You can learn about each processor compatibility mode and the servers on which each mode can run.

Related reference

"Migration combinations of processor compatibility modes" on page 14
View all the combinations of the processor types of the source server, the processor types of the destination server, the current and preferred processor compatibility modes of the logical partition before the migration, and the current and preferred processor compatibility modes of the logical partition after the migration.

Enhanced processor compatibility modes:

The POWER6 enhanced and POWER6+ enhanced processor compatibility modes provide additional floating-point instructions to applications that use the POWER6 or POWER6+ processor.

If you want a logical partition to run in an enhanced mode, you must specify the enhanced mode as the preferred mode for the logical partition. If the operating environment supports the corresponding non-enhanced mode, then the hypervisor assigns the enhanced mode to the logical partition when you activate the logical partition. In other words, if you specify the POWER6+ enhanced mode as the preferred mode, and the operating environment supports the POWER6+ mode, the hypervisor assigns the POWER6+ enhanced mode to the logical partition when you activate the logical partition. Similarly, if you specify the POWER6 enhanced mode as the preferred mode, and the operating environment supports the POWER6 mode, the hypervisor assigns the POWER6 enhanced mode to the logical partition when you activate the logical partition.

Logical partitions in the POWER6 enhanced processor compatibility mode can only run on POWER6 processor-based servers, and logical partitions in the POWER6+ enhanced processor compatibility mode can only run on POWER6+ processor-based servers. Therefore, if a logical partition runs in the POWER6 enhanced mode, you can only move the logical partition to POWER6 processor-based servers. Likewise, if a logical partition runs in the POWER6+ enhanced mode, you can only move the logical partition to POWER6+ processor based servers. If you want to move a logical partition in the POWER6 enhanced processor compatibility mode to a POWER6+ processor-based server, then you need to change the preferred mode to the default or POWER6 processor compatibility mode and restart the logical partition.

Related concepts

"Examples: Using processor compatibility modes in Partition Mobility" on page 19
You can view examples of how processor compatibility modes are used when moving an active or inactive logical partition between servers with different processor types.

"Current and preferred processor compatibility modes" on page 11
The processor compatibility mode in which the logical partition currently operates is the *current* processor compatibility mode of the logical partition. The *preferred* processor compatibility mode of a logical partition is the mode in which you want the logical partition to operate.

"Processor compatibility mode definitions" on page 9
You can learn about each processor compatibility mode and the servers on which each mode can run.

Related reference

"Migration combinations of processor compatibility modes" on page 14
View all the combinations of the processor types of the source server, the processor types of the destination server, the current and preferred processor compatibility modes of the logical partition before the migration, and the current and preferred processor compatibility modes of the logical partition after the migration.

Migration combinations of processor compatibility modes:

View all the combinations of the processor types of the source server, the processor types of the destination server, the current and preferred processor compatibility modes of the logical partition before the migration, and the current and preferred processor compatibility modes of the logical partition after the migration.

Related concepts

"Examples: Using processor compatibility modes in Partition Mobility" on page 19
You can view examples of how processor compatibility modes are used when moving an active or inactive logical partition between servers with different processor types.

"Enhanced processor compatibility modes" on page 13
The POWER6 enhanced and POWER6+ enhanced processor compatibility modes provide additional floating-point instructions to applications that use the POWER6 or POWER6+ processor.

"Current and preferred processor compatibility modes" on page 11
The processor compatibility mode in which the logical partition currently operates is the *current* processor compatibility mode of the logical partition. The *preferred* processor compatibility mode of a logical partition is the mode in which you want the logical partition to operate.

"Processor compatibility mode definitions" on page 9
You can learn about each processor compatibility mode and the servers on which each mode can run.

Migration combinations of processor compatibility modes for active Partition Mobility:

When you move an active logical partition between servers with different processor types, both the current and preferred processor compatibility modes of the logical partition must be supported by the destination server.

The following table describes the processor compatibility mode combinations for active migrations. It shows the processor type of the source server and the preferred and current processor compatibility modes of the logical partition on the source server before the migration. It also shows the processor type of the destination server and the preferred and current processor compatibility modes of the logical partition on the destination server after the migration.

Table 41. Processor compatibility mode combinations for active migrations

Source environment			**Destination environment**		
Source server	**Preferred mode before migration**	**Current mode before migration**	**Destination server**	**Preferred mode after migration**	**Current mode after migration**
POWER6 processor-based server	default	POWER6 or POWER5	POWER6 processor-based server	default	POWER6 or POWER5
POWER6 processor-based server	POWER6	POWER6 or POWER5	POWER6 processor-based server	POWER6	POWER6 or POWER5
POWER6 processor-based server	POWER6 enhanced	POWER6 enhanced or POWER5	POWER6 processor-based server	POWER6 enhanced	POWER6 enhanced or POWER5
POWER6 processor-based server	default	POWER6 or POWER5	POWER6+ processor-based server	default	POWER6+ (after you restart the logical partition), POWER6, or POWER5
POWER6 processor-based server	POWER6	POWER6 or POWER5	POWER6+ processor-based server	POWER6	POWER6 or POWER5
POWER6 processor-based server	POWER6 enhanced	POWER6 enhanced or POWER5	POWER6+ processor-based server	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6 enhanced).	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6 enhanced).
POWER6+ processor-based server	default	POWER6+, POWER6, or POWER5	POWER6+ processor-based server	default	POWER6+, POWER6, or POWER5
POWER6+ processor-based server	POWER6+	POWER6+, POWER6, or POWER5	POWER6+ processor-based server	POWER6+	POWER6+, POWER6, or POWER5
POWER6+ processor-based server	POWER6+ enhanced	POWER6+ enhanced or POWER5	POWER6+ processor-based server	POWER6+ enhanced	POWER6+ enhanced or POWER5
POWER6+ processor-based server	POWER6	POWER6 or POWER5	POWER6+ processor-based server	POWER6	POWER6 or POWER5

Table 41. Processor compatibility mode combinations for active migrations (continued)

Source environment			Destination environment		
Source server	**Preferred mode before migration**	**Current mode before migration**	**Destination server**	**Preferred mode after migration**	**Current mode after migration**
POWER6+ processor-based server	default	POWER6+, POWER6, or POWER5	POWER6 processor-based server	default	If the current mode on the source server is POWER6+, you cannot migrate the logical partition because the destination server does not support the current mode (POWER6+). If the current mode on the source server is POWER6 or POWER5, then the current mode on the destination server is POWER6 or POWER5.
POWER6+ processor-based server	POWER6+	POWER6+, POWER6, or POWER5	POWER6 processor-based server	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6+).	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6+).
POWER6+ processor-based server	POWER6+ enhanced	POWER6+ enhanced or POWER5	POWER6 processor-based server	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6+ enhanced).	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6+ enhanced).
POWER6+ processor-based server	POWER6	POWER6 or POWER5	POWER6 processor-based server	POWER6	POWER6 or POWER5

Related reference

"Migration combinations of processor compatibility modes for inactive Partition Mobility" on page 17
When you move an inactive logical partition between servers with different processor types, only the preferred mode of the logical partition must be supported by the destination server.

"Migration combinations for version 1.5, and earlier, of the IVM" on page 76
Learn about the processor compatibility mode combinations for migrations where versions 1.5 (and earlier) of the Integrated Virtualization Manager (IVM) manage the source server and versions 2.1 (and later) of the IVM manage the destination server.

Migration combinations of processor compatibility modes for inactive Partition Mobility:

When you move an inactive logical partition between servers with different processor types, only the preferred mode of the logical partition must be supported by the destination server.

The following table describes the processor compatibility mode combinations for inactive migrations. It shows the processor type of the source server and the preferred processor compatibility modes of the logical partition on the source server before the migration. It also shows the processor type of the destination server and the preferred and current processor compatibility modes of the logical partition on the destination server after the migration.

Table 42. Processor compatibility mode combinations for inactive migrations

Source environment		**Destination environment**		
Source server	**Preferred mode before migration**	**Destination server**	**Preferred mode before migration**	**Current mode after migration**
POWER6 processor-based server	default	POWER6 processor-based server	default	POWER6 or POWER5
POWER6 processor-based server	POWER6	POWER6 processor-based server	POWER6	POWER6 or POWER5
POWER6 processor-based server	POWER6 enhanced	POWER6 processor-based server	POWER6 enhanced	POWER6 enhanced or POWER5
POWER6 processor-based server	default	POWER6+ processor-based server	default	POWER6+, POWER6, or POWER5
POWER6 processor-based server	POWER6	POWER6+ processor-based server	POWER6	POWER6 or POWER5
POWER6 processor-based server	POWER6 enhanced	POWER6+ processor-based server	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6 enhanced).	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6 enhanced).
POWER6+ processor-based server	default	POWER6+ processor-based server	default	POWER6+, POWER6, or POWER5
POWER6+ processor-based server	POWER6+	POWER6+ processor-based server	POWER6+	POWER6+, POWER6, or POWER5

Table 42. Processor compatibility mode combinations for inactive migrations (continued)

Source environment		Destination environment		
Source server	**Preferred mode before migration**	**Destination server**	**Preferred mode before migration**	**Current mode after migration**
POWER6+ processor-based server	POWER6	POWER6+ processor-based server	POWER6	POWER6 or POWER5
POWER6+ processor-based server	POWER6+ enhanced	POWER6+ processor-based server	POWER6+ enhanced	POWER6+ enhanced or POWER5
POWER6+ processor-based server	default	POWER6 processor-based server	default	POWER6 or POWER5
POWER6+ processor-based server	POWER6+	POWER6 processor-based server	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6+).	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6+).
POWER6+ processor-based server	POWER6	POWER6 processor-based server	POWER6	POWER6 or POWER5
POWER6+ processor-based server	POWER6+ enhanced	POWER6 processor-based server	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6+ enhanced).	You cannot migrate the logical partition because the destination server does not support the preferred mode (POWER6+ enhanced).

Related reference

"Migration combinations of processor compatibility modes for active Partition Mobility" on page 15
When you move an active logical partition between servers with different processor types, both the current and preferred processor compatibility modes of the logical partition must be supported by the destination server.

"Migration combinations for version 1.5, and earlier, of the IVM"
Learn about the processor compatibility mode combinations for migrations where versions 1.5 (and earlier) of the Integrated Virtualization Manager (IVM) manage the source server and versions 2.1 (and later) of the IVM manage the destination server.

Migration combinations for version 1.5, and earlier, of the IVM:

Learn about the processor compatibility mode combinations for migrations where versions 1.5 (and earlier) of the Integrated Virtualization Manager (IVM) manage the source server and versions 2.1 (and later) of the IVM manage the destination server.

The following table shows the processor type of the source server and the processor compatibility mode of the logical partition on the source server before the migration. It also shows the processor type of the destination server and the preferred and current processor compatibility modes of the logical partition on the destination server after the migration.

Table 43. Processor compatibility mode combinations for mixed versions of the IVM

Source environment		Destination environment		
Source server	**Mode before migration**	**Destination server**	**Preferred mode after migration**	**Current mode after migration**
POWER6 processor-based server	default	POWER6 processor-based server	POWER6	POWER6
POWER6 processor-based server	POWER6 enhanced	POWER6 processor-based server	POWER6 enhanced	POWER6 enhanced or POWER6
POWER6 processor-based server	default	POWER6+ processor-based server	POWER6	POWER6
POWER6 processor-based server	POWER6 enhanced	POWER6+ processor-based server	You cannot migrate the logical partition because the destination server does not support the enhanced mode.	You cannot migrate the logical partition because the destination server does not support the enhanced mode.

Requirement: The previous table does not list POWER6+ process-based servers as the source server. If you plan to manage a POWER6+ processor-based server with the IVM, the IVM must be at version 2.1, or later.

Related reference

"Migration combinations of processor compatibility modes for active Partition Mobility" on page 15
When you move an active logical partition between servers with different processor types, both the current and preferred processor compatibility modes of the logical partition must be supported by the destination server.

"Migration combinations of processor compatibility modes for inactive Partition Mobility" on page 17
When you move an inactive logical partition between servers with different processor types, only the preferred mode of the logical partition must be supported by the destination server.

Examples: Using processor compatibility modes in Partition Mobility:

You can view examples of how processor compatibility modes are used when moving an active or inactive logical partition between servers with different processor types.

Moving an active logical partition from a POWER6 processor-based server to a POWER6+ processor-based server

You want to move an active logical partition from a POWER6 processor-based server to a POWER6+ processor-based server so that the logical partition can take advantage of the additional capabilities available with the POWER6+ processor. To accomplish this task, you might perform the following steps:

1. You set the preferred processor compatibility mode to the default mode. When you activate the logical partition on the POWER6 processor-based server, it runs in the POWER6 mode.
2. You move the logical partition to the POWER6+ processor-based server. Both the current and preferred modes remain unchanged for the logical partition until you restart the logical partition.
3. You restart the logical partition on the POWER6+ processor-based server. The hypervisor evaluates the configuration. Because the preferred mode is set to default and the logical partition now runs on a POWER6+ processor-based server, the highest mode available is the POWER6+ mode. The hypervisor determines that the most fully featured mode supported by the operating environment installed in the logical partition is the POWER6+ mode and changes the current mode of the logical partition to the POWER6+ mode.

At this point, the current processor compatibility mode of the logical partition is the POWER6+ mode and the logical partition runs on the POWER6+ processor-based server.

Moving the active logical partition back to the POWER6 processor-based server

A problem arises and you need to move the active logical partition back to the POWER6 processor-based server. Because the logical partition now runs in the POWER6+ mode and the POWER6+ mode is not supported on the POWER6 processor-based server, you need to adjust the preferred mode for the logical partition so that the hypervisor can reset the current mode to a mode that is supported by the POWER6 processor-based server. To move the logical partition back to the POWER6 processor-based server, you might perform the following steps:

1. You change the preferred mode from the default mode to the POWER6 mode.
2. You restart the logical partition on the POWER6+ processor-based server. The hypervisor evaluates the configuration. Because the preferred mode is set to POWER6, the hypervisor does not set the current mode to a higher mode than POWER6. Remember, the hypervisor first determines whether it can set the current mode to the preferred mode. If not, it determines whether it can set the current mode to the next highest mode, and so on. In this case, the operating environment supports the POWER6 mode, so the hypervisor sets the current mode to the POWER6 mode.
3. Now that the logical partition runs in the POWER6 mode and the POWER6 mode is supported on the POWER6 processor-based server, you move the logical partition back to the POWER6 processor-based server.

Moving an active logical partition between different processor types without making configuration changes

Depending on how often you need to move logical partitions, you might want to maintain the flexibility to move an active logical partition between a POWER6 processor-based server and a POWER6+ processor-based server so that you can move the logical partition back and forth without making configuration changes. The easiest way to maintain this type of flexibility is to determine the processor compatibility mode supported on both the source and destination servers and set the preferred processor compatibility mode of the logical partition to the highest mode supported by both servers. To accomplish this flexibility, you might perform the following steps:

1. You set the preferred processor compatibility mode to the POWER6 mode because the POWER6 mode is the highest mode supported by both POWER6 processor-based servers and POWER6+ processor-based servers.
2. You move the logical partition from the POWER6 processor-based server to the POWER6+ processor-based server.
3. When you restart the logical partition on the POWER6+ processor-based server, the hypervisor evaluates the configuration. Remember, the hypervisor does not set the current mode higher than the preferred mode. First, the hypervisor determines whether it can set the current mode to the preferred mode. If not, it then determines whether it can set the current mode to the next highest mode, and so on. In this case, the operating environment supports the POWER6 mode, so the hypervisor sets the current mode to the POWER6 mode.
4. Because the POWER6 mode is supported on the POWER6 processor-based server, you do not need to make any configuration changes to move the logical partition back to the POWER6 processor-based server.
5. You move the logical partition back to the POWER6 processor-based server.
6. When you restart the logical partition on the POWER6 processor-based server, the hypervisor evaluates the configuration. The hypervisor determines that the operating environment supports the preferred mode of POWER6, and sets the current mode to the POWER6 mode.

Moving an inactive logical partition between servers with different processor types

The same logic from the previous examples applies to inactive Partition Mobility, except inactive Partition Mobility does not need the current processor compatibility mode of the logical partition because the logical partition is inactive. After you move an inactive logical partition to the destination server and activate that logical partition on the destination server, the hypervisor evaluates the configuration and sets the current mode for the logical partition just like it does when you restart a logical partition after active Partition Mobility. The hypervisor attempts to set the current mode to the preferred mode. If it cannot, it checks the next highest mode and so on.

Related concepts

"Enhanced processor compatibility modes" on page 13
The POWER6 enhanced and POWER6+ enhanced processor compatibility modes provide additional floating-point instructions to applications that use the POWER6 or POWER6+ processor.

"Current and preferred processor compatibility modes" on page 11
The processor compatibility mode in which the logical partition currently operates is the *current* processor compatibility mode of the logical partition. The *preferred* processor compatibility mode of a logical partition is the mode in which you want the logical partition to operate.

"Processor compatibility mode definitions" on page 9
You can learn about each processor compatibility mode and the servers on which each mode can run.

Related reference

"Migration combinations of processor compatibility modes" on page 14
View all the combinations of the processor types of the source server, the processor types of the destination server, the current and preferred processor compatibility modes of the logical partition before the migration, and the current and preferred processor compatibility modes of the logical partition after the migration.

Partition Mobility environment

You can learn about each component of the Partition Mobility environment and its contribution in enabling successful Partition Mobility. Components of the Partition Mobility environment include the source and destination servers, the Integrated Virtualization Manager (IVM), the mobile partition, the networking configuration, and the storage configuration.

Related tasks

"Preparing for Partition Mobility" on page 85
You need to verify that the source and destination systems are configured correctly so that you can successfully move the mobile partition from the source system to the destination system. This includes verifying the configuration of the source and destination servers, the Integrated Virtualization Manager (IVM) management partitions, the mobile partition, the virtual storage configuration, and the virtual network configuration.

Source and destination servers in a Partition Mobility environment:

Two servers are involved in Partition Mobility that is managed by the Integrated Virtualization Manager (IVM). The *source server* is the server from which you want to move the logical partition, and the *destination server* is the server to which you want to move the logical partition.

The source and destination servers must be POWER6 processor-based servers to participate in Partition Mobility. The destination server must have enough available processor and memory resources to allow the mobile partition to run on its server.

Shared memory is physical memory that is assigned to the shared memory pool and shared among multiple logical partitions. The *shared memory pool* is a defined collection of physical memory blocks that are managed as a single memory pool by the hypervisor. Logical partitions that you assign to the shared memory pool share the memory in the pool with other logical partitions that you assign to the pool.

If the mobile partition uses shared memory on the source server, the destination server must also have a shared memory pool to which the mobile partition can be assigned. If the mobile partition uses dedicated memory on the source server, it must also use dedicated memory on the destination server.

Related tasks

"Preparing the source and destination servers for Partition Mobility" on page 85
You need to verify that the source and destination servers are configured correctly so that you can successfully move the mobile partition from the source server to the destination server by using the Integrated Virtualization Manager (IVM). This includes tasks such as verifying the logical memory block size of the source and destination servers, and verifying the available memory and processor resources of the destination server.

Related information

Overview of shared memory

Integrated Virtualization Manager in a Partition Mobility environment:

Learn about the Integrated Virtualization Manager (IVM) and how you can use it to move an active or inactive logical partition from one server to another server.

When you install the Virtual I/O Server on a system that is not managed by an HMC or an IBM BladeCenter® blade server, the Virtual I/O Server becomes the management partition and provides the IVM for systems management. The IVM provides a Web-based and command-line interface that you can use to migrate a logical partition from one POWER6 processor-based system to another.

The Migration task on the IVM helps you validate and complete a partition migration. The IVM determines the appropriate type of migration to use based on the state of the logical partition. If the logical partition is in the *Running* state, then the migration is active. If the logical partition is in the *Not Activated* state, then the migration is inactive. Before migrating your logical partition, conduct a validation check to ensure your migration will complete successfully.

The following table describes the services that the management partitions on the source and destination servers provide to the mobile partition (and other client partitions).

Table 44. Services provided by the management partition

Service provided by the management partitions	Description
Server partition	The management partition on the source server and the management partition on the destination server must provide storage and networking resources to the mobile partition so that the mobile partition has access to the same storage from both the source and destination servers.

Table 44. Services provided by the management partition (continued)

Service provided by the management partitions	Description
Mover service partition	For active Partition Mobility, the management partition on the source server and the management partition on the destination server automatically become mover service partitions. During active Partition Mobility, the mover service partitions transfer the mobile partition from the source server to the destination server as follows: • On the source server, the mover service partition extracts the logical partition state information of the mobile partition from the hypervisor. • The mover service partition on the source server sends the logical partition state information to the mover service partition on the destination server. • On the destination server, the mover service partition installs the logical partition state information on the hypervisor.
Paging VIOS partition	A Virtual I/O Server (VIOS) logical partition that is assigned to the shared memory pool (hereafter referred to as a *paging VIOS partition*) provides access to the paging space devices for the logical partitions that use shared memory. The management partition on the source server is the paging VIOS partition on the source server, and the management partition on the destination server is the paging VIOS partition on the destination server. When you validate a mobile partition (that uses shared memory) for active Partition Mobility, the IVM checks that the paging storage pool on the destination system contains an available paging space device that meets the size requirements of the mobile partition. If the paging storage pool does not contain such a device, the IVM checks that the paging storage pool has enough space for it to automatically create a paging space device that meets the size requirements of the mobile partition.

Related concepts

"Preparing the source and destination management partitions for Partition Mobility" on page 89
You need to verify that the source and destination management partitions are configured correctly so that you can successfully move the mobile partition from the source server to the destination server. This includes verifying the version of the Integrated Virtualization Manager (IVM) and activating the PowerVM Enterprise Edition hardware feature.

Software applications that recognize Partition Mobility:

Software applications might be designed to recognize and adapt to changes in the system hardware after being moved from one system to another.

Most software applications running in AIX and Linux logical partitions will not require any changes to work correctly during active Partition Mobility. Some applications might have dependencies on characteristics that change between the source and destination servers and other applications might need to adjust to support the migration.

PowerHA (or High Availability Cluster Multi-Processing) clustering software is aware of Partition Mobility. You can move a mobile partition that is running the PowerHA clustering software to another server without restarting the PowerHA clustering software.

Examples of applications that would benefit if they were aware of Partition Mobility:

- Software applications that use processor and memory affinity characteristics to tune their behavior because affinity characteristics might change as a result of migration. The application's functions remain the same, but performance variations may be observed.
- Applications that use processor binding will maintain their binding to the same logical processors across migrations, but in reality the physical processors will change. Binding is usually done to maintain hot caches, but the physical processor move operation will require a cache hierarchy on the destination system. This usually occurs very quickly and should not be visible to the users.
- Applications that are tuned for given cache architectures, such as hierarchy, size, line-size, and associativity. These applications are usually limited to high-performance computing applications, but the just-in-time (JIT) compiler of the Java virtual machine is also optimized for the cache-line size of the processor on which it was opened.
- Performance analysis, capacity planning, and accounting tools and their agents are usually migration-aware because the processor performance counters might change between the source and destination servers, as might the processor type and frequency. Additionally, tools that calculate an aggregate system load based on the sum of the loads in all hosted logical partitions must be aware that a logical partition has left the system or that a new logical partition arrived.
- Workload managers

Network configuration in a Partition Mobility environment:

In Partition Mobility that is managed by the Integrated Virtualization Manager (IVM), the network between the source and destination servers is used to pass the mobile partition state information and other configuration data from the source environment to the destination environment. The mobile partition uses the virtual LAN for network access.

During active Partition Mobility, it is important that the two management partitions be able to communicate with each other. The virtual LAN must be bridged to a physical network using a virtual Ethernet bridge in the management partition. The LAN must be configured so that the mobile partition can continue to communicate with other necessary clients and servers after a migration is completed.

Active Partition Mobility has no specific requirements on the mobile partition's memory size. The memory transfer is a procedure that does not interrupt a mobile partition's activity and may take time when a large memory configuration is involved on a slow network. Because of this, use a high-bandwidth connection, such as Gigabit Ethernet.

Related tasks

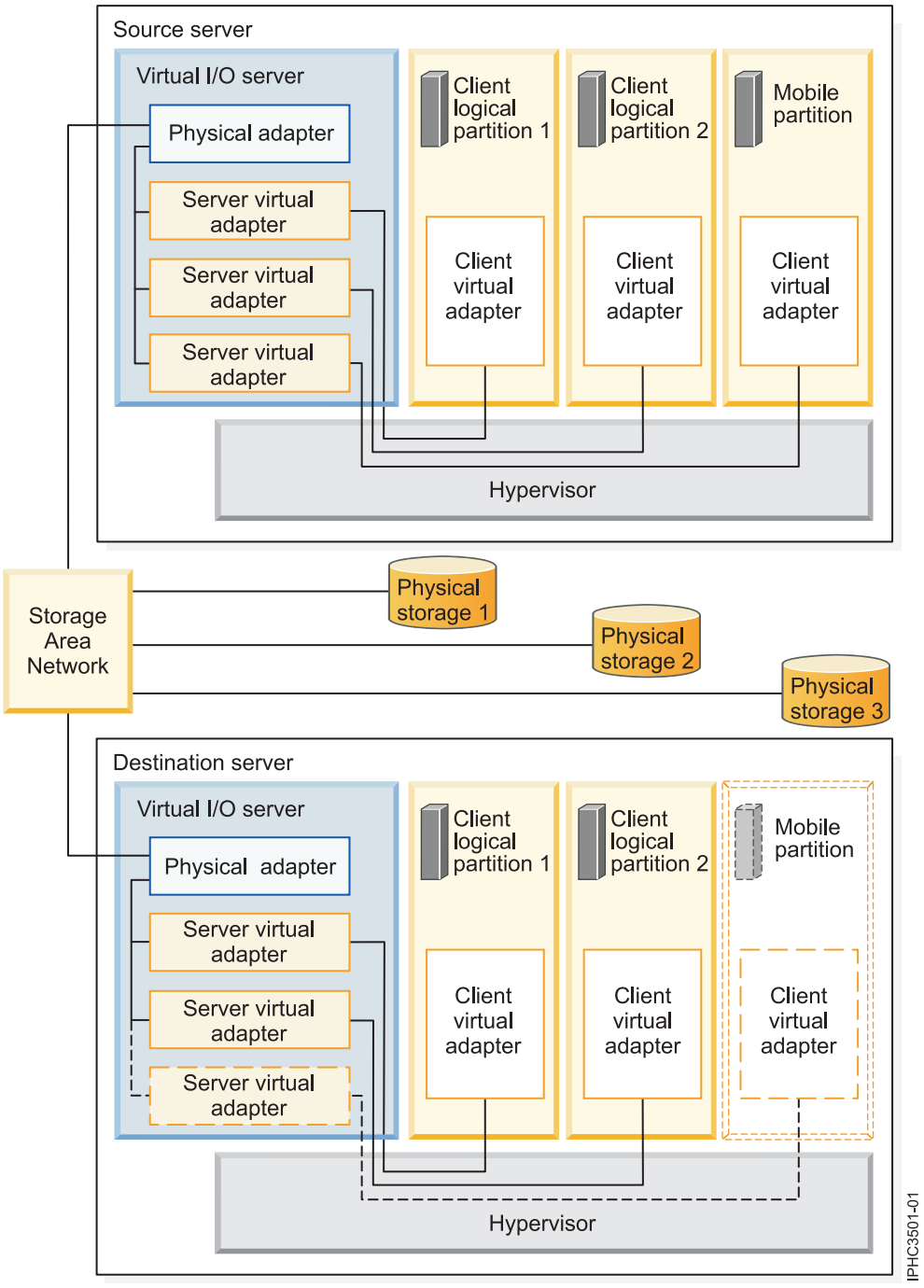
"Preparing the network configuration for Partition Mobility" on page 93
You need to verify that the network configuration is configured correctly so that you can successfully move the mobile partition from the source server to the destination server by using the Integrated Virtualization Manager (IVM). This includes tasks such as configuring a virtual Ethernet bridge on the source and destination management partitions and creating at least one virtual Ethernet adapter on the mobile partition.

Storage configuration in a Partition Mobility environment:

Learn about the virtual SCSI and virtual fibre channel configuration required for Partition Mobility that is managed by the Integrated Virtualization Manager (IVM).

The mobile partition moves from one server to another by the source server sending the logical partition state information to the destination server over a local area network (LAN). However, partition disk data cannot pass from one system to another system over a network. Thus, for Partition Mobility to succeed, the mobile partition must use storage resources that are managed by a storage area network (SAN) so that it can access the same storage from both the source and destination servers.

The following figure shows an example of the storage configuration required for Partition Mobility.



The physical storage that the mobile partition uses, Physical storage 3, is connected to the SAN. At least one physical adapter that is assigned to the source Virtual I/O Server management partition is connected to the SAN, and at least one physical adapter that is assigned to the destination Virtual I/O Server management partition is also connected to the SAN.

If the mobile partition connects to Physical storage 3 through virtual fibre channel adapters, the physical adapters that are assigned to the source and destination Virtual I/O Server management partitions must support N_Port ID Virtualization (NPIV).

The physical adapter on the source Virtual I/O Server management partition connects to one or more virtual adapters on the source Virtual I/O Server management partition. Similarly, the physical adapter

on the destination Virtual I/O Server management partition connects to one or more virtual adapters on the destination Virtual I/O Server management partition. If the mobile partition connects to Physical storage 3 through virtual SCSI adapters, the virtual adapters on both the source and destination Virtual I/O Server management partitions are assigned to access the logical unit numbers (LUNs) of Physical storage 3.

Each virtual adapter on the source Virtual I/O Server management partition connects to at least one virtual adapter on a client logical partition. Similarly, each virtual adapter on the destination Virtual I/O Server management partition connects to at least one virtual adapter on a client logical partition.

Each virtual fibre channel adapter that is created on the mobile partition (or any client logical partition) is assigned a pair of worldwide port names (WWPNs). Both WWPNs in the WWPN pair are assigned to access the LUNs of the physical storage that the mobile partition uses, or Physical storage 3. During normal operation, the mobile partition uses one WWPN to log on to the SAN and access Physical Storage 3. When you move the mobile partition to the destination server, there is a brief period of time where the mobile partition runs on both the source and destination servers. Because the mobile partition cannot log on to the SAN from both the source and destination servers at the same time using the same WWPN, the mobile partition uses the second WWPN to log on to the SAN from the destination server during the migration. The WWPNs of each virtual fibre channel adapter move with the mobile partition to the destination server.

When you move the mobile partition to the destination server, the IVM (that manages the destination server) performs the following tasks on the destination server:

- Creates virtual adapters on the destination Virtual I/O Server logical partition
- Connects the virtual adapters on the destination Virtual I/O Server logical partition to the virtual adapters on the mobile partition

Important: The IVM automatically creates and manages the virtual adapters previously described. The IVM automatically adds and removes virtual SCSI adapters to and from the management partition and the logical partitions when you create and delete a logical partition. The IVM automatically adds and removes virtual fibre channel adapters to and from the management partition and the logical partitions when you assign and unassign logical partitions to and from physical fibre channel ports using the graphical user interface.

Related concepts

"Integrated Virtualization Manager in a Partition Mobility environment" on page 80
Learn about the Integrated Virtualization Manager (IVM) and how you can use it to move an active or inactive logical partition from one server to another server.

Related tasks

"Preparing the virtual SCSI configuration for Partition Mobility" on page 94
You need to verify that the virtual SCSI configuration is configured correctly so that you can successfully move the mobile partition from the source server to the destination server by using the Integrated Virtualization Manager (IVM). This includes tasks such as verifying the reserve_policy of the physical volumes, and verifying that the virtual devices have the same unique identifier, physical identifier, or IEEE volume attribute.

"Preparing the virtual fibre channel configuration for Partition Mobility" on page 96
You need to verify that the virtual fibre channel configuration is configured correctly so that you can successfully move the mobile partition from the source server to the destination server by using the Integrated Virtualization Manager (IVM). This includes tasks such as verifying the worldwide port names (WWPNs) of the virtual fibre channel adapters on the mobile partition, and verifying that the physical fibre channel adapters and the physical fibre channel switches support N_Port ID Virtualization (NPIV).

Related information

Redundancy configuration using virtual fibre channel adapters

Preparing for Partition Mobility

You need to verify that the source and destination systems are configured correctly so that you can successfully move the mobile partition from the source system to the destination system. This includes verifying the configuration of the source and destination servers, the Integrated Virtualization Manager (IVM) management partitions, the mobile partition, the virtual storage configuration, and the virtual network configuration.

Related concepts

"Partition Mobility overview for IVM" on page 60
You can learn about the benefits of Partition Mobility, how the Integrated Virtualization Manager (IVM) performs active and inactive Partition Mobility, and about the configuration that is required to successfully move a logical partition from one system to another.

"Partition Mobility environment" on page 79
You can learn about each component of the Partition Mobility environment and its contribution in enabling successful Partition Mobility. Components of the Partition Mobility environment include the source and destination servers, the Integrated Virtualization Manager (IVM), the mobile partition, the networking configuration, and the storage configuration.

Preparing the source and destination servers for Partition Mobility

You need to verify that the source and destination servers are configured correctly so that you can successfully move the mobile partition from the source server to the destination server by using the Integrated Virtualization Manager (IVM). This includes tasks such as verifying the logical memory block size of the source and destination servers, and verifying the available memory and processor resources of the destination server.

To prepare the source and destination servers for active or inactive Partition Mobility, complete the following tasks.

Table 45. Preparation tasks for the source and destination servers

Server planning tasks	Active mobility task	Inactive mobility task	Information resources
1. Ensure that the source and destination servers are one of the following POWER6 models: • 8203-E4A • 8204-E8A • 9407-M15 • 9408-M25 • 9409-M50 • BladeCenter JS12 Express™ Express • BladeCenter JS22 Express Express	X	X	
2. Ensure that the logical memory block size is the same on the source and destination servers. Determine the logical memory block size of each server, and update the sizes if necessary.	X	X	Viewing and modifying system properties
3. If the mobile partition uses shared memory, ensure that the shared memory pool is created on the destination server.	X	X	Defining the shared memory pool by using the Integrated Virtualization Manager
4. Ensure that the destination server has enough available memory to support the mobile partition.	X	X	• If the mobile partition uses dedicated memory, see "Determining the available physical memory on the destination server." • If the mobile partition uses shared memory, see "Determining the available I/O entitled memory on the destination server" on page 87.
5. Ensure that the destination server has enough available processors to support the mobile partition.	X	X	"Determining available processors on the destination server" on page 88
6. Verify that the source and destination Virtual I/O Server can communicate with each other.	X	X	

Related concepts

"Source and destination servers in a Partition Mobility environment" on page 79
Two servers are involved in Partition Mobility that is managed by the Integrated Virtualization Manager (IVM). The *source server* is the server from which you want to move the logical partition, and the *destination server* is the server to which you want to move the logical partition.

Determining the available physical memory on the destination server:

You can determine whether the destination server has enough physical memory available to support the mobile partition. You can then make more physical memory available, if necessary, by using the Integrated Virtualization Manager (IVM).

Use any role other than View Only to perform this task. Users with the Service Representative (SR) user role cannot view or modify storage values.

To determine whether the destination server has enough physical memory available to support the mobile partition, complete the following steps from the IVM:

1. Identify the amount of physical memory that the mobile partition requires:
   a. From the **Partition Management** menu, click **View/Modify Partitions**. The View/Modify Partition panel is displayed.
   b. Select the mobile partition.
   c. From the **Tasks** menu, click **Properties**. The Partition Properties window is displayed.
   d. Click the **Memory** tab.
   e. Record the minimum, assigned, and maximum memory settings.
   f. Click **OK**
2. Identify the amount of physical memory that is available on the destination server:
   a. From the **Partition Management** menu, click **View/Modify System Properties**. The View/Modify System Properties window is displayed.
   b. Click the **Memory** tab.
   c. From the **General** section, record the **Current memory available** and the **Reserved firmware memory**.
3. Compare the values from steps 1 and 2.

   Keep in mind that when you move the mobile partition to the destination server, the destination server requires more reserved firmware memory to manage the mobile partition. If the destination server does not have enough physical memory available to support the mobile partition, you can add more available physical memory to the destination server by performing one or more of the following tasks:
   - Dynamically remove physical memory from logical partitions that use dedicated memory. For instructions, see Dynamically managing memory.
   - If the destination server is configured with a shared memory pool, dynamically remove physical memory from the shared memory pool. For instructions, see Changing the shared memory pool size by using the Integrated Virtualization Manager.

Determining the available I/O entitled memory on the destination server:

You can determine whether the shared memory pool on the destination server has enough available memory to accommodate the I/O entitled memory required by the mobile partition. You can then allocate more physical memory to the shared memory pool, if necessary, by using the Integrated Virtualization Manager (IVM).

To determine whether the shared memory pool on the destination server has enough available memory to accommodate the I/O entitled memory required by the mobile partition, complete the following steps from the IVM:

1. Identify the amount of I/O entitled memory that the mobile partition requires:
   a. In the navigation pane, click **View/Modify Partitions** under **Partition Management**. The View/Modify Partitions page is displayed.
   b. Select the mobile partition.
   c. From the **Tasks** menu, click **Properties**. The Partition Properties page is displayed.
   d. Click the **Memory** tab.
   e. Record the **I/O entitled memory**.
2. Identify the amount of available physical memory in the shared memory pool on the destination server:
   a. In the navigation pane, click **View/Modify Shared Memory Pool** under **Partition Management**. The View/Modify System Properties page is displayed.
   b. Note the amount of available memory shown in the **Shared memory pool size** field.
3. Compare the amount of available memory (from step 2) with the amount of I/O entitled memory required by the mobile partition (from step 1).

- If more memory is available than the amount of I/O entitled memory required by the mobile partition, the shared memory pool on the destination server has enough available memory to support the mobile partition on the destination server.
- If the amount of I/O entitled memory required by the mobile partition is greater than the amount of available memory, perform one or more of the following tasks:
  - Add memory to the shared memory pool so that the shared memory pool has enough available memory to accommodate the I/O entitled memory required by the mobile partition. For instructions, see Changing the shared memory pool size by using the Integrated Virtualization Manager.
  - Remove one or more shared memory partitions from the shared memory pool until the shared memory pool has enough available memory to accommodate the I/O entitled memory required by the mobile partition. You can remove a logical partition from the shared memory pool by changing the memory mode of the logical partition from shared to dedicated. For instructions, see Managing memory properties for shared memory partitions.
- If the amount of I/O entitled memory that is required by the mobile partition is equal to, or almost equal to, the amount of available memory, the shared memory pool is probably greatly overcommitted, which can affect performance. Consider adding more memory to the shared memory pool to reduce the degree to which the shared memory is overcommitted.

Attention: If you move an active logical partition whose I/O entitled memory mode is set to auto, the IVM does not automatically recalculate and reassign the I/O entitled memory for the mobile partition until you restart the mobile partition on the destination server. If you restart the mobile partition on the destination server and you plan to move the mobile partition back to the source server, you must verify that the shared memory pool on the source server has enough available memory to accommodate the new amount of I/O entitled memory required by the mobile partition.

Related information

Performance considerations for overcommitted shared memory partitions

Determining available processors on the destination server:

You can determine the available processors on the destination server and allocate more processors, if necessary, by using the Integrated Virtualization Manager (IVM).

You must be a super administrator to perform this task.

To determine the available processors on the destination server using the using the IVM, complete the following steps:

1. Determine how many processors the mobile partition requires:
   a. From the Partition Management menu, click **View/Modify Partition**. The View/Modify Partition panel is displayed.
   b. Select the logical partition for which you want to view the properties.
   c. From the Tasks menu, click **Properties**. The Partition Properties panel is displayed.
   d. Click the **Processing** tab and record the minimum, maximum, and available processing units settings.
   e. Click **OK**
2. Determine the processors available on the destination server:
   a. From the **Partition Management** menu, click **View/Modify System Properties**. The View/Modify System Properties panel is displayed.
   b. Select the**Processing** tab.
   c. Record the **Current processing units available**.
   d. Click **Apply**.
3. Compare the values from steps 1 and 2.

- If the destination server has enough available processors to support the mobile partition, then continue with "Preparing the source and destination servers for Partition Mobility" on page 85.
- If the destination server does not have enough available processors to support the mobile partition, use the IVM to dynamically remove the processors from the logical partition or you can remove processors from logical partitions on the destination server.

Preparing the source and destination management partitions for Partition Mobility

You need to verify that the source and destination management partitions are configured correctly so that you can successfully move the mobile partition from the source server to the destination server. This includes verifying the version of the Integrated Virtualization Manager (IVM) and activating the PowerVM Enterprise Edition hardware feature.

To prepare the source and destination management partitions for active or inactive Partition Mobility, complete the following tasks.

Table 46. Preparation tasks for the IVM

IVM planning tasks	Active mobility task	Inactive mobility task	Information resources
1. Ensure that the source and destination servers are using IVM version 2.1, or later.	X	X	Updating the Integrated Virtualization Manager
2. Ensure that the PowerVM Enterprise Edition hardware feature is activated.	X	X	Entering the activation code for PowerVM Editions with the Integrated Virtualization Manager
3. If the mobile partition uses shared memory, verify that the shared memory pool on the destination server contains a paging space device that satisfies the size requirements of the mobile partition.	X	X	"Verifying that the destination shared memory pool contains an available paging space device"

Related concepts

"Integrated Virtualization Manager in a Partition Mobility environment" on page 80
Learn about the Integrated Virtualization Manager (IVM) and how you can use it to move an active or inactive logical partition from one server to another server.

Verifying that the destination shared memory pool contains an available paging space device:

You can verify that the shared memory pool on the destination server contains a paging space device that satisfies the size requirements of the mobile partition by using the Integrated Virtualization Manager (IVM).

To verify that the shared memory pool on the destination server contains a paging space device that satisfies the size requirements of the mobile partition, complete the following steps from the IVM:

1. Identify the size requirements of the mobile partition. The paging space device for an AIX or Linux logical partition that uses shared memory (hereafter referred to as a *shared memory partition*) must be at least the size of the maximum logical memory of the shared memory partition. To view the maximum logical memory of the mobile partition, complete the following steps:
   a. In the navigation pane, click **View/Modify Partitions** under **Partition Management**. The View/Modify Partitions page is displayed.
   b. Select the mobile partition.
   c. From the **Tasks** menu, click **Properties**. The Partition Properties page is displayed.
   d. Click the **Memory** tab.
   e. Note the maximum logical memory. This is the size requirement for the paging space device for the mobile partition.

2. View the paging space devices that are currently assigned to the shared memory pool on the destination server:
   a. In the navigation pane, click **View/Modify Shared Memory Pool** under **Partition Management**. The View/Modify System Properties page is displayed.
   b. Expand **Paging Space Devices - Advanced**.
   c. Take note of the size of each paging space device that is not assigned to any shared memory partitions.
3. Identify the amount of available space in the paging storage pool:
   a. In the navigation pane, click **View/Modify Virtual Storage** under **Virtual Storage Management**. The View/Modify Virtual Storage page is displayed.
   b. Click the **Storage Pools** tab.
   c. Select the paging storage pool.
   d. From the **Tasks** menu, click **Properties**. The Storage Pool Properties page is displayed.
   e. Note the available size of the paging storage pool.
4. Determine whether the shared memory pool on the destination server has a suitable paging space device for the mobile partition. The shared memory pool on the destination server has a suitable paging space device if one of the following situations is true:
   - The paging storage pool has enough space to meet the size requirements of the mobile partition (the result of step 3 less the result of step 1 on page 89 is greater than or equal to zero). When you move the mobile partition to the destination server (active Partition Mobility) or when you activate the mobile partition on the destination server (inactive Partition Mobility), the IVM automatically creates a paging space device for the mobile partition.
   - The shared memory pool contains a paging space device that is not assigned to any shared memory partitions and meets the size requirements of the mobile partition.
5. If the shared memory pool on the destination server does not have a suitable paging space device, complete one of the following tasks:
   - Extend the size of the paging storage pool until there is enough space for the IVM to automatically create a paging space device for the mobile partition. For instructions, see Modifying storage pools using the Integrated Virtualization Manager.
   - Add a paging space device that meets the size requirements of the mobile partition to the shared memory pool. For instructions, see Adding or removing paging space devices by using the Integrated Virtualization Manager.

Related concepts

"Integrated Virtualization Manager in a Partition Mobility environment" on page 80
Learn about the Integrated Virtualization Manager (IVM) and how you can use it to move an active or inactive logical partition from one server to another server.

Related information

Paging space devices on systems that are managed by the Integrated Virtualization Manager

Preparing the mobile partition for Partition Mobility

You need to verify that the mobile partition is configured correctly so that you can successfully move it from the source server to the destination server by using the Integrated Virtualization Manager (IVM). This includes tasks such as satisfying adapter requirements and operating system requirements for Partition Mobility.

To prepare the mobile partition for active or inactive Partition Mobility, complete the following tasks.

Table 47. Preparation tasks for the mobile partition

Mobile partition planning tasks	Active mobility task	Inactive mobility task	Information resources
1. Ensure that the operating system running in the mobile partition is either the AIX or Linux operating system.	X	X	
2. Ensure that the operating system is at one of the following levels: • AIX 5L Version 5.3 with the 5300-07 Technology Level, or later • Red Hat Enterprise Linux version 5 Update 1, or later • SUSE Linux Enterprise Server 10 Service Pack 1, or later Earlier versions of the AIX and Linux operating systems can participate in inactive Partition Mobility if the operating systems support virtual devices and POWER6 processor-based servers.	X	X	
3. If the operating system that is running in the mobile partition is Linux, ensure that the DynamicRM tool package is installed.	X		Service and productivity tools for Linux on POWER systems
4. Ensure that the source and destination management partitions can communicate to each other.	X	X	
5. Verify that the processor compatibility mode of the mobile partition is supported on the destination server.	X	X	"Verifying the processor compatibility mode of the mobile partition"
6. Ensure that the mobile partition is not part of a partition workload group.	X	X	"Removing the mobile partition from a partition workload group" on page 93
7. Ensure that the mobile partition does not have physical I/O adapters. **Attention:** During inactive migration, the IVM automatically removes any physical I/O adapters that are assigned to the mobile partition.	X		Dynamically managing physical adapters
8. Ensure that the mobile partition does not use Host Ethernet Adapters (or Integrated Virtual Ethernet).			Assigning Host Ethernet Adapter port to a logical partition
9. If the mobile partition is a diskless AIX logical partition and its dynamic logical partitioning (DLPAR) scripts are located in the default directory `/usr/lib/dr/scripts/all`, use the drmgr command to change the directory to a directory with write access.	X		drmgr Command
10. Ensure that the applications running in the mobile partition are mobility-safe or mobility-aware.	X		"Software applications that recognize Partition Mobility" on page 28

Verifying the processor compatibility mode of the mobile partition:

You can use the Integrated Virtualization Manager (IVM) to determine whether the processor compatibility mode of the mobile partition is supported on the destination server, and update the mode, if necessary, so that you can successfully move the mobile partition to the destination server.

To verify that the processor compatibility mode of mobile partition is supported on the destination server using the IVM, complete the following steps:

1. Identify the processor compatibility modes that are supported by the destination server by entering the following command in the command line of the IVM on the destination server:

   ```
   lssyscfg -r sys -F lpar_proc_compat_modes
   ```

   Record these values so that you can refer to them later.
2. Identify the processor compatibility mode of the mobile partition on the source server:
   a. From the Partition Management menu, click **View/Modify Partitions**. The View/Modify Partitions window is displayed.
   b. In the work pane, select the mobile partition.
   c. From the Tasks menu, select **Properties**. The Partition Properties window is displayed.
   d. Select the **Processing** tab.
   e. View the current and preferred processor compatibility modes for the mobile partition. Record these values so that you can refer to them later.

      Restriction: If versions earlier than 2.1 of the IVM manage the source server, the IVM displays only the current processor compatibility mode for the mobile partition.
3. Verify that the processor compatibility mode that you identified in step 2 is on the list of supported processor compatibility modes that you identified in step 1 for the destination server. For active migrations, both the preferred and current processor compatibility modes of the mobile partition must be supported by the destination server. For inactive migrations, only the preferred processor compatibility mode must be supported by the destination server.

   Attention: If the current processor compatibility mode of the mobile partition is the POWER5 mode, be aware that the POWER5 mode does not appear in the list of modes supported by the destination server. However, the destination server supports the POWER5 mode even though it does not appear in the list of supported modes.
4. If the preferred processor compatibility mode of the mobile partition is not supported by the destination server, use step 2 to change the preferred mode to a mode that is supported by the destination server. For example, the preferred mode of the mobile partition is the POWER6+ mode and you plan to move the mobile partition to a POWER6 processor-based server. The POWER6 processor-based server does not support the POWER6+ mode, but it does support the POWER6 mode. Therefore, you change the preferred mode to the POWER6 mode.
5. If the current processor compatibility mode of the mobile partition is not supported by the destination server, try the following solutions:
   - If the mobile partition is active, it is possible that the hypervisor has not had the opportunity to update the current mode of the mobile partition. Restart the mobile partition so that the hypervisor can evaluate the configuration and update the current mode of the mobile partition.
   - If the current mode of the mobile partition still does not match the list of supported modes that you identified for the destination server, use step 2 to change the preferred mode of the mobile partition to a mode that is supported by the destination server.

     Then, restart the mobile partition so that the hypervisor can evaluate the configuration and update the current mode of the mobile partition.

     For example, the mobile partition runs on a POWER6+ processor-based server and its current mode is the POWER6+ mode. You want to move the mobile partition to a POWER6 processor-based server, which does not support the POWER6+ mode. You change the preferred mode of the mobile

partition to the POWER6 mode and restart the mobile partition. The hypervisor evaluates the configuration and sets the current mode to the POWER6 mode, which is supported on the destination server.

Related concepts

"Processor compatibility modes" on page 9
Processor compatibility modes enable you to move logical partitions between servers that have different processor types without upgrading the operating environments installed in the logical partitions.

Removing the mobile partition from a partition workload group:

You can remove the mobile partition from a partition workload group by using the Integrated Virtualization Manager (IVM) so that you can move the mobile partition from the source server to the destination server.

A partition workload group identifies a set of logical partitions that are located on the same physical system. A partition workload group is defined when you use the IVM to configure a logical partition. The partition workload group is intended for applications that manage software groups. For a logical partition to participate in Partition Mobility, it cannot be assigned to a partition workload group.

To remove the mobile partition from a partition workload group using the IVM, complete the following steps:

1. From the Partition Management menu, click **View/Modify Partition**. The View/Modify Partition window is shown.
2. Select the logical partition that you want to remove from the partition workload group.
3. From the Tasks menu, and click **Properties**. The Partition Properties window is shown.
4. In the General tab, deselect **Partition workload group participant**.
5. Click **OK**.

Preparing the network configuration for Partition Mobility

You need to verify that the network configuration is configured correctly so that you can successfully move the mobile partition from the source server to the destination server by using the Integrated Virtualization Manager (IVM). This includes tasks such as configuring a virtual Ethernet bridge on the source and destination management partitions and creating at least one virtual Ethernet adapter on the mobile partition.

To prepare the network configuration for active or inactive Partition Mobility, complete the following tasks.

Table 48. Preparation tasks for the network

Network planning tasks	Active mobility task	Inactive mobility task	Information resources
1. Configure a virtual Ethernet bridge on the source and destination management partitions using the IVM.	X	X	Configuring virtual Ethernet bridges on the managed system
2. Ensure you connect the virtual Ethernet bridges on the source and destination management partitions to the network.	X	X	
3. Create at least one virtual Ethernet adapter on the mobile partition.	X		Creating a virtual Ethernet adapter
4. Activate the mobile partition to establish communication between the virtual Ethernet and management partition virtual Ethernet adapter.	X		Activating logical partitions

Table 48. Preparation tasks for the network (continued)

Network planning tasks	Active mobility task	Inactive mobility task	Information resources
5. Verify that the operating system of the mobile partition recognizes the new Ethernet adapter.	X		Adapter management and configuration
6. Set up the LAN so that the mobile partition can continue to communicate with other necessary clients and servers after the migration is completed.	X	X	

Related concepts

"Network configuration in a Partition Mobility environment" on page 82
In Partition Mobility that is managed by the Integrated Virtualization Manager (IVM), the network between the source and destination servers is used to pass the mobile partition state information and other configuration data from the source environment to the destination environment. The mobile partition uses the virtual LAN for network access.

Preparing the virtual SCSI configuration for Partition Mobility

You need to verify that the virtual SCSI configuration is configured correctly so that you can successfully move the mobile partition from the source server to the destination server by using the Integrated Virtualization Manager (IVM). This includes tasks such as verifying the reserve_policy of the physical volumes, and verifying that the virtual devices have the same unique identifier, physical identifier, or IEEE volume attribute.

The destination server must provide the same virtual SCSI configuration as the source server so that the mobile partition can access its physical storage on the storage area network (SAN) after it moves to the destination server.

To prepare the virtual SCSI configuration for active or inactive Partition Mobility, complete the following tasks.

Table 49. Preparation tasks for the virtual SCSI configuration on systems that are managed by the IVM

Storage planning tasks	Active mobility task	Inactive mobility task	Information resources
1. Verify that the physical storage that is used by the mobile partition is assigned to the management partition on the source server and to the management partition on the destination server.	X	X	IBM System Storage SAN Volume Controller
2. Verify that the reserve_policy attributes on the physical volumes are set to no_reserve.	X	X	"Setting the reserve policy attributes of a device" on page 50
3. Verify that the virtual devices have the same unique identifier, physical identifier, or an IEEE volume attribute.	X	X	Identifying exportable disks
4. Verify that the mobile partition has access to the physical storage on the SAN.	X	X	"Verifying that the mobile partition has access to its physical storage" on page 95

Related concepts

"Storage configuration in a Partition Mobility environment" on page 82
Learn about the virtual SCSI and virtual fibre channel configuration required for Partition Mobility that is managed by the Integrated Virtualization Manager (IVM).

Setting the reserve policy attributes of a device:

In some configurations, you must consider the reservation policy of the device on the Virtual I/O Server.

The following table explains the situations in which the reservation policy of the device on the Virtual I/O Server is important for systems that are managed by the Hardware Management Console (HMC) and the Integrated Virtualization Manager (IVM).

Table 50. Situations where the reservation policy of a device is important

HMC-managed systems	IVM-managed systems
• To use an Multipath I/O (MPIO) configuration at the client, none of the virtual SCSI devices on the Virtual I/O Server can be reserving the virtual SCSI device. • For Live Partition Mobility, the reserve attribute on the physical storage that is used by the mobile partition must be set to no reserve for the mobile partition to access it from both the source and destination servers. • For PowerVM Active Memory Sharing, the Virtual I/O Server automatically sets the reserve attribute on the physical volume to no reserve when you add a paging space device to the shared memory pool.	For Live Partition Mobility, the reserve attribute on the physical storage that is used by the mobile partition must be set to no reserve for the mobile partition to access it from both the source and destination servers.

In these configurations, you need to ensure that the **reserve_policy** attribute of the device is set to `no_reserve`.

1. From a Virtual I/O Server logical partition, list the disks (or paging space devices) to which the Virtual I/O Server has access. Run the following command:

   ```
   lsdev -type disk
   ```

2. To determine the reserve policy of a disk, run the following command, where *hdiskX* is the name of the disk that you identified in step 1 on page 51. For example, hdisk5.

   ```
   lsdev -dev hdiskX -attr reserve_policy
   ```

   If the reserve_policy value is anything other than `no_reserve`, it must be changed so that you can use the disk in any of the above configurations. The results might look similar to the following:

   ```
   ..
   reserve_policy  no_reserve                      Reserve Policy                  True
   ```

3. To set the reserve_policy to `no_reserve`, run the following command, where *hdiskX* is the name of the disk for which you want to set the reserve_policy attribute to `no_reserve`.

   ```
   chdev -dev hdiskX -attr reserve_policy=no_reserve
   ```

4. Repeat this procedure from the other Virtual I/O Server logical partition. Although the reserve_policy attribute is an attribute of the device, each Virtual I/O Server saves the value of the attribute. You must set the reserve_policy attribute from both Virtual I/O Server logical partitions so that both Virtual I/O Server logical partitions recognize that the reserve_policy of the device is set to no_reserve.

Verifying that the mobile partition has access to its physical storage:

You can use the Integrated Virtualization Manager (IVM) to verify that the mobile partition has access to its physical storage on the storage area network (SAN) so that the mobile partition can access its physical storage after it moves to the destination server.

For Partition Mobility to be successful, the mobile partition must have access to the same physical storage from both the source and destination environments. In the destination environment, the SAN host-attached adapter on the destination management partition must be connected to the same storage area network as the source management partition and have access to the same mobile partition physical storage as the source management partition

To verify these connections using the IVM, complete the following steps:

1. From the Virtual Storage Management menu, click **View/Modify Virtual Storage**.
2. On the Virtual Disk tab, verify that the logical partition does not own any virtual disk.
3. On the Physical Volumes tab, verify the physical volumes mapped to the mobile partition are exportable. See Identifying exportable disks for more information.

   If the information is incorrect, return to "Preparing the virtual SCSI configuration for Partition Mobility" on page 94 and complete the task associated with the incorrect information.

Preparing the virtual fibre channel configuration for Partition Mobility

You need to verify that the virtual fibre channel configuration is configured correctly so that you can successfully move the mobile partition from the source server to the destination server by using the Integrated Virtualization Manager (IVM). This includes tasks such as verifying the worldwide port names (WWPNs) of the virtual fibre channel adapters on the mobile partition, and verifying that the physical fibre channel adapters and the physical fibre channel switches support N_Port ID Virtualization (NPIV).

The destination server must provide the same virtual fibre channel configuration as the source server so that the mobile partition can access its physical storage on the storage area network (SAN) after it moves to the destination server.

To prepare the virtual fibre channel configuration for active or inactive Partition Mobility, complete the following tasks.

Table 51. Preparation tasks for the virtual fibre channel configuration on systems that are managed by the IVM

Storage planning tasks	Active mobility task	Inactive mobility task	Information resources
1. For each virtual fibre channel adapter on the mobile partition, verify that both WWPNs are assigned to the same set of logical unit numbers (LUNs) on the SAN.	X	X	• To view the WWPNs that are assigned to a virtual fibre channel adapter, see Modifying partition properties • IBM System Storage SAN Volume Controller
2. Verify that the physical fibre channel adapters that are assigned to the source and destination management partitions support NPIV. Run the lsnports command to view the physical ports on the physical fibre channel adapters that support NPIV.	X	X	Virtual I/O Server and Integrated Virtualization Manager commands
3. Verify that the switches to which the physical fibre channel adapters on both the source and destination management partitions are cabled support NPIV. Run the lsnports command to view the `fabric support` of the physical ports on the physical fibre channel adapters. If the `fabric support` is `1`, the physical port is cabled to a switch that supports NPIV.	X	X	Virtual I/O Server and Integrated Virtualization Manager commands

Table 51. Preparation tasks for the virtual fibre channel configuration on systems that are managed by the IVM (continued)

Storage planning tasks	Active mobility task	Inactive mobility task	Information resources
4. Verify that the destination server provides enough available physical ports to support the virtual fibre channel configuration of the mobile partition.	X	X	"Verifying the number of physical fibre channel ports that are available on the destination management partition"

Related concepts

"Storage configuration in a Partition Mobility environment" on page 82
Learn about the virtual SCSI and virtual fibre channel configuration required for Partition Mobility that is managed by the Integrated Virtualization Manager (IVM).

Related information

Redundancy configuration using virtual fibre channel adapters

Verifying the number of physical fibre channel ports that are available on the destination management partition:

You can use the Integrated Virtualization Manager (IVM) to verify that the management partition on the destination server provides a sufficient number of available physical ports for the mobile partition to maintain access to its physical storage on the storage area network (SAN) from the destination server.

To verify the number of physical ports that are available on the management partition on the destination server using the IVM, complete the following steps:

Tip: You can also use the lslparmigr command to verify that the destination server provides enough available physical ports to support the virtual fibre channel configuration of the mobile partition

1. Determine the number of physical ports that the mobile partition uses on the source server:
   a. From the **Partition Management** menu, click **View/Modify Partitions**. The View/Modify Partitions panel is displayed.
   b. Select the mobile partition.
   c. From the **Tasks** menu, click **Properties**. The Partition Properties panel is displayed.
   d. Click the **Storage** tab.
   e. Expand the **Virtual Fibre Channel** section
   f. Record the number of physical ports that are assigned to the mobile partition and click **OK**.
2. Determine the number of physical ports that are available on the management partition on the destination server:
   a. From the **I/O Adapter Management** menu, click **View/Modify Virtual Fibre Channel**. The View/Modify Virtual Fibre Channel panel is displayed.
   b. Record the number of physical ports with available connections.
3. Compare the information that you identified in step 1 to the information that you identified in step 2.
   - If the number of physical ports with available connections from step 2 is greater than or equal to the number of physical ports that are assigned to the mobile partition from step 1, the destination server provides enough available physical ports to support the mobile partition on the destination server.
   - If the number of physical ports with available connections from step 2 is less than the number of physical ports that are assigned to the mobile partition from step 1, you need to add a physical fibre channel adapter (that supports N_Port ID Virtualization) to the destination server.

Related information

Virtual I/O Server and Integrated Virtualization Manager commands

Validating the configuration for Partition Mobility

You can use the Integrated Virtualization Manager (IVM) to validate the configuation of the source and destination systems for Partition Mobility. If the IVM detects a configuration or connection problem, it displays an error message with information to help you resolve the problem.

To validate the source and destination systems for Partition Mobility using the IVM, complete the following steps:

1. From the Partition Management menu, click **View/Modify Partitions**. The View/Modify Partitions panel is displayed.
2. Select the logical partition for which you want to migrate and from the Tasks menu, select **Migrate**.
3. Enter the **Remote IVM or HMC**, **Remote user ID**, and **Password** of the logical partition you plan to migrate.
4. Click **Validate** to confirm that the changed settings are acceptable for Partition Mobility.

Related concepts

"Configuration validation for Partition Mobility" on page 63
You can learn about the tasks that the Integrated Virtualization Manager (IVM) performs to validate your system configuration for active and inactive Partition Mobility.

Moving the mobile partition

You can move an active or inactive logical partition from one server to another server by using the Integrated Virtualization Manager (IVM).

Prerequisites

Before you move a logical partition from one server to another server, complete the following tasks from the IVM.

Table 52. Prerequisite tasks for moving a logical partition

Partition Mobility prerequisite tasks	Active mobility task	Inactive mobility task	Information resources
1. Verify that you have completed all of the required preparation tasks for Partition Mobility.	X	X	"Preparing for Partition Mobility" on page 85
2. Verify that the memory and processor resources are synchronized after dynamically adding or removing resources.	X	X	• Dynamically managing memory • Dynamically managing processing power
3. Verify that the source and destination servers are in the Operating state.	X	X	Viewing and modifying system properties
4. Verify that the mobile partition is powered off.		X	Modifying partition properties
5. Verify that the mobile partition is in the Operating state.	X		• Modifying partition properties • Activating a logical partition
6. Verify that the source and destination Virtual I/O Servers are active.	X	X	Activating a logical partition
7. Verify that all tape and CD jobs are completed or stopped.	X		

Table 52. Prerequisite tasks for moving a logical partition (continued)

Partition Mobility prerequisite tasks	Active mobility task	Inactive mobility task	Information resources
8. Run the migration validation tool on the IVM to verify that the servers, mobile partition, storage, and network are ready for Partition Mobility.	X	X	"Validating the configuration for Partition Mobility" on page 98

Moving a logical partition using the IVM

To move a logical partition from one server to another server by using the IVM, complete the following tasks:

1. From the Partition Management menu, click **View/Modify Partitions**. The View/Modify Partitions panel is displayed.
2. Select the logical partition that you want to move from the Tasks menu and select **Migrate**.
3. Enter the **Remote IVM**, **Remoter user ID**, and **Password** of the logical partition you plan to move.
4. Click **Migrate**.

Postrequisites

After you move a logical partition from one server to another server, complete the following tasks.

Table 53. Postrequisite tasks for moving a logical partition

Partition Mobility postrequisite tasks	Active mobility task	Inactive mobility task	Information resources
1. Activate the mobile partition on the destination server.		X	Activating a logical partition
2. (Optional) Add dedicated I/O adapters to the mobile partition on the destination server.	X	X	Dynamically managing physical adapters
3. If any virtual terminal connections were lost during the migration, re-establish the connections on the destination server.	X	X	Opening a virtual terminal session
4. (Optional) Assign the mobile partition to a logical partition workload group.	X	X	Adding a client logical partition to the partition workload group
5. If mobility-unaware applications were terminated on the mobile partition prior to its movement, then restart those applications on the destination.	X		
6. (Optional) Back up the Virtual I/O Server management partition on the destination server to preserve the new virtual device mappings.	X	X	Backing up the Virtual I/O Server

Appendix. Notices

This information was developed for products and services offered in the U.S.A.

The manufacturer may not offer the products, services, or features discussed in this document in other countries. Consult the manufacturer's representative for information on the products and services currently available in your area. Any reference to the manufacturer's product, program, or service is not intended to state or imply that only that product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any intellectual property right of the manufacturer may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any product, program, or service.

The manufacturer may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to the manufacturer.

For license inquiries regarding double-byte character set (DBCS) information, contact the Intellectual Property Department in your country or send inquiries, in writing, to the manufacturer.

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: THIS INFORMATION IS PROVIDED "AS IS " WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. The manufacturer may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to Web sites not owned by the manufacturer are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this product and use of those Web sites is at your own risk.

The manufacturer may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact the manufacturer.

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement, IBM License Agreement for Machine Code, or any equivalent agreement between us.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have

© Copyright IBM Corp. 2007, 2009

been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning products not produced by this manufacturer was obtained from the suppliers of those products, their published announcements or other publicly available sources. This manufacturer has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to products not produced by this manufacturer. Questions on the capabilities of products not produced by this manufacturer should be addressed to the suppliers of those products.

All statements regarding the manufacturer's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

The manufacturer's prices shown are the manufacturer's suggested retail prices, are current and are subject to change without notice. Dealer prices may vary.

This information is for planning purposes only. The information herein is subject to change before the products described become available.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to the manufacturer, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. The manufacturer, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs.

Each copy or any portion of these sample programs or any derivative work, must include a copyright notice as follows:

© (your company name) (year). Portions of this code are derived from IBM Corp. Sample Programs. © Copyright IBM Corp. _enter the year or years_. All rights reserved.

If you are viewing this information in softcopy, the photographs and color illustrations may not appear.

Programming interface information

This Live Partition Mobility publication documents intended Programming Interfaces that allow the customer to write programs to obtain the services of IBM AIX Version 6.1, IBM AIX 5L Version 5.3, and Virtual I/O Server version 2.1.1.

Trademarks

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at Copyright and trademark information at www.ibm.com/legal/copytrade.shtml.

Linux is a trademark of Linus Torvalds in the United States, other countries, or both.

Red Hat, the Red Hat "Shadow Man" logo, and all Red Hat-based trademarks and logos are trademarks or registered trademarks of Red Hat, Inc., in the United States and other countries.

Java and all Java-based trademarks and logos are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

Other company, product, or service names may be trademarks or service marks of others.

Terms and conditions

Permissions for the use of these publications is granted subject to the following terms and conditions.

Personal Use: You may reproduce these publications for your personal, noncommercial use provided that all proprietary notices are preserved. You may not distribute, display or make derivative works of these publications, or any portion thereof, without the express consent of the manufacturer.

Commercial Use: You may reproduce, distribute and display these publications solely within your enterprise provided that all proprietary notices are preserved. You may not make derivative works of these publications, or reproduce, distribute or display these publications or any portion thereof outside your enterprise, without the express consent of the manufacturer.

Except as expressly granted in this permission, no other permissions, licenses or rights are granted, either express or implied, to the publications or any data, software or other intellectual property contained therein.

The manufacturer reserves the right to withdraw the permissions granted herein whenever, in its discretion, the use of the publications is detrimental to its interest or, as determined by the manufacturer, the above instructions are not being properly followed.

You may not download, export or re-export this information except in full compliance with all applicable laws and regulations, including all United States export laws and regulations.

THE MANUFACTURER MAKES NO GUARANTEE ABOUT THE CONTENT OF THESE PUBLICATIONS. THESE PUBLICATIONS ARE PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT, AND FITNESS FOR A PARTICULAR PURPOSE.

BULL CEDOC
357 AVENUE PATTON
B.P.20845
49008 ANGERS CEDEX 01
FRANCE

REFERENCE
86 A1 85FA 01