

Hardware Information

Partitioning for Linux with an
HMC

ESCALA POWER5



REFERENCE
86 A1 33EW 00

ESCALA POWER5

Hardware Information

Partitioning for Linux with an HMC

Hardware

July 2006

BULL CEDOC

357 AVENUE PATTON

B.P.20845

49008 ANGERS CEDEX 01

FRANCE

REFERENCE

86 A1 33EW 00

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Partitioning for Linux with an HMC

Partitioning for Linux with an HMC includes information about configuring and managing partitions that run the Linux operating system on servers.

Partitioning for Linux with an HMC contains information about configuring and managing logical partitions which run the Linux operating system on servers.

- **[What's new for Partitioning for Linux with an HMC](#)**

Use this information to see the new or changed information in Linux partitioning.

- **[Printable PDF](#)**

Use this to view and print a PDF of this information.

- **[Scenarios for Linux logical partitions](#)**

Use this information to understand related functions for Linux logical partitions.

- **[Planning for logical partitions](#)**

This topic provides you with a checklist of things to consider before creating or changing logical partitions. See this checklist for information about preparing to partition your server.

- **[Supported virtual devices for Linux logical partitions](#)**

This topic provides a list of device drivers for virtual devices and adapters supported for Linux on servers.

- **[Configuring Linux logical partitions](#)**

Use this information to learn about logical partition configuration and resource requirements for a Linux installation.

- **[Managing Linux logical partitions](#)**

Use this information to learn about procedures for managing Linux logical partitions.

- **[Using Linux installed on a logical partition](#)**

Find information about using Linux when it is installed on a logical partition.

- **[Troubleshooting Linux logical partitions](#)**

Use this information to learn how to resolve Linux logical partition errors.

- **[Related information for Linux logical partitions](#)**

Use this information to find related material for Linux logical partitions, including Web sites, , and ESCALA Power5 Hardware Information topics.

What's new for Partitioning for Linux with an HMC

Use this information to see the new or changed information in Linux partitioning.

The scenario [Scenario: Configuring the model 710 with Linux on two logical partitions using virtual I/O](#) has been updated.

The title of this topic has changed from Partitioning for Linux to Partitioning for Linux with an HMC.

The [Functional differences](#) section describes the primary differences between LPAR components.

Parent topic: [Partitioning for Linux with an HMC](#)

Printable PDF

Use this to view and print a PDF of this information.

To view or download the PDF version of this document, select [Partitioning for Linux with an HMC](#) (about 926 KB)

You can view or download these related topics:

- [Partitioning for AIX with an HMC](#) (about 470 KB) contains the following topics:
 - ◆ What's new for Partitioning for AIX with an HMC
 - ◆ General concepts for partitioning the server
 - ◆ Scenarios for AIX logical partitions
 - ◆ Creating partitions from a system plan
 - ◆ Configuring AIX logical partitions
 - ◆ Configuring resource management for AIX partitions with the Partition Load Manager
 - ◆ Managing AIX logical partitions
 - ◆ Using AIX installed on a logical partition
 - ◆ Troubleshooting AIX logical partitions
 - ◆ Related information for AIX logical partitions

Other information

You can also view or print any of the following PDFs:

IBM Redbooks:

- [Partitioning Implementations for server Servers](#) (about 3 MB)
- [Linux Handbook: A Guide Linux Solutions and Resources](#) (about 7 MB)
- [AIX and Linux Interoperability](#) (about 4.3 MB)
- [Linux on the model Server: An Implementation Guide](#) (about 4.6 MB)

Saving PDF files

To save a PDF on your workstation for viewing or printing:

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 PDFs. You can download a free copy from the [Adobe Web site](http://www.adobe.com/products/acrobat/readstep2.html) (www.adobe.com/products/acrobat/readstep2.html).

Parent topic: [Partitioning for Linux with an HMC](#)

Scenarios for Linux logical partitions

Use this information to understand related functions for Linux logical partitions.

These scenarios describe common configurations of Linux logical partitions on servers.

- **[Scenario: Creating a Linux logical partition and partition profile](#)**
Use this scenario to help become familiar with the details involved with creating a Linux logical partition.
- **[Scenario: Using partition profiles](#)**
- **[Scenario: Using system profiles](#)**

- **Scenario: Power On Demand for Linux**

Use this scenario to become familiar with the steps of planning, ordering, and using Power On Demand for Linux logical partitions on servers.

Parent topic: [Partitioning for Linux with an HMC](#)

Scenario: Creating a Linux logical partition and partition profile

Use this scenario to help become familiar with the details involved with creating a Linux logical partition.

Situation

You are the system administrator responsible for configuring and managing a server. You would like to know how to create a Linux partition profile.

Objectives

The objective of this scenario is to create a Linux logical partition and [partition profile](#) on a server.

Prerequisites and assumptions

This scenario assumes that the following prerequisite steps have been completed and are operational prior to beginning the configuration steps:

1. The [Hardware Management Console](#) was set up.
 - ◆ The Hardware Management Console (HMC) was [cabled](#).
 - ◆ You completed the planning process and you understand how you want to [configure](#) your HMC.
 - ◆ You used the [Guided Setup wizard](#) or the [HMC configuration checklist](#) to set up the HMC.
2. You understand the [concepts](#) for partitioning the server.
3. You completed the tasks recommended for [planning for logical partitions](#).
4. You logged onto the HMC with one of the following [user roles](#):
 - ◆ Super administrator
 - ◆ Operator
5. You used the [Facts and features report](#) to see hardware-support information for Linux on POWER.

Configuration steps

Ensure that all the prerequisites for this scenario have been completed prior to completing these tasks:

To create a new logical partition on your server using the HMC, follow these steps:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which you want to create the partition profile.
4. Right-click Partitions, and click Create > Logical Partitions.
5. Follow the steps in the Create Logical Partitions wizard to create a logical partition and a partition profile.

Parent topic: [Scenarios for Linux logical partitions](#)

Scenario: Using partition profiles

Situation

You are the system administrator for a business recovery service center. You use your server primarily to test disaster-recovery strategies for your clients. Each of your clients has a different system configuration. This means that, each time a client comes into the office, you must change the system configuration of your managed system.

On each logical partition on your server, you create one profile for each client that uses the logical partition. When a client returns to the business recovery service center, you can reconfigure the managed system for that client simply by activating the partition profiles for that client.

You have just finished testing for Client 1. You must now reconfigure the server for Client 2, who comes into the office tomorrow.

Note: This is one example of how to change your system configuration. Depending on your operating system, business needs, and resource allocation, you could resolve this situation by dynamically moving resources.

Objectives

The objective of this scenario is to change the configuration of your managed system by using partition profiles.

Details

Your managed system has three logical partitions. The managed system has eight processors and 12 GB of memory. Each logical partition has one or two partition profiles. The following table illustrates how the logical partitions and partition profiles are set up.

Logical partition ID	Name of logical partition	Name of partition profile	Processor resources	Memory resources
Partition 1	Test 1	Profile 1: Client 1	5 dedicated processors	8 GB
		Profile 2: Client 2	7 dedicated processors	10 GB
Partition 2	Test 2	Profile 1: Client 1	2 dedicated processors	3 GB
		Profile 2: Client 2	1 dedicated processor	2 GB
Partition 3	Test 3	Profile 1: Client 1	1 dedicated processor	1 GB

Prerequisites and assumptions

This scenario assumes that the following prerequisite steps have been completed prior to beginning the configuration steps:

1. The Hardware Management Console (HMC) was set up.
 - ◆ The HMC was cabled.
 - ◆ You completed the planning process and you understand how you want to configure your HMC.
 - ◆ You used the Guided Setup wizard or the HMC configuration checklist to set up the HMC.
2. You understand the concepts for partitioning the server.
3. You completed the tasks recommended for logical partition planning.

4. You logged in to the HMC with one of the following user roles:
 - ◆ Super administrator
 - ◆ Service representative
 - ◆ Product engineer
5. You created the logical partitions and partition profiles.
6. You activated the partition profiles for Client 1.

The following table lists the partition profiles that are currently active for each logical partition on the managed system.

Logical partition ID	Name of logical partition	Name of partition profile	Processor resources	Memory resources
Partition 1	Test 1	Profile 1: Client 1	5 dedicated processors	8 GB
Partition 2	Test 2	Profile 1: Client 1	2 dedicated processors	3 GB
Partition 3	Test 3	Profile 1: Client 1	1 dedicated processor	1 GB

Configuration steps

To change the configuration of your managed system so that it is ready for Client 2, you must first shut down the logical partitions by using usual operating system procedures.

After shutting down the logical partitions, you can activate the partition profiles for Client 2. To do this, complete the following steps on your HMC:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server.
4. Open Partitions.
5. In the contents area, right-click the Test 1 logical partition and select Activate.
6. Select the Profile 2 partition profile and click OK.
7. Right-click the Test 2 logical partition and select Activate.
8. Select the Profile 2 partition profile and click OK.

After activating the partition profile, the managed system is configured according to the needs of Client 2. The following table lists the partition profiles that are currently active for each logical partition on the managed system.

Logical partition ID	Name of logical partition	Name of partition profile	Processor resources	Memory resources
Partition 1	Test 1	Profile 2: Client 2	7 dedicated processors	10 GB
Partition 2	Test 2	Profile 2: Client 2	1 dedicated processor	2 GB

Parent topic: [Scenarios for Linux logical partitions](#)

Scenario: Using system profiles

Situation

You are the system administrator for a business recovery service center. You use your server primarily to test disaster-recovery strategies for your clients. Each of your clients has a different system configuration. This means that, each time a client comes in, you must change the system configuration of your managed system.

You decide to create and use system profiles to change the system configuration of your managed system. First, on each logical partition on your server, you create a partition profile for each client that uses the logical partition. Then, you create a system profile for each client. Each system profile contains the partition profiles that you want to activate for the client. When a client returns to the business recovery service center, you can reconfigure the managed system for that client simply by activating the system profile for that client.

You have just finished testing for Client 1. You must now reconfigure the managed system for Client 2, who comes in tomorrow.

Note: This is one example of how to change your system configuration. Depending on your operating system, business needs, and resource allocation, you could resolve this situation by dynamically moving resources.

Objectives

The objective of this scenario is to change the configuration of your managed system by using system profiles.

Details

Your managed system has eight processors and 12 GB of memory. You have created two system profiles on this managed system. Each system profile divides the resources of the managed system between two or three logical partitions.

The following table shows how the system profiles are set up:

System Profile	Logical partition ID	Name of logical partition	Name of partition profile	Processor resources	Memory resources
Client 1	Partition 1	Test 1	Profile 1: Client 1	5 dedicated processors	8 GB
	Partition 2	Test 2	Profile 1: Client 1	2 dedicated processors	3 GB
	Partition 3	Test 3	Profile 1: Client 1	1 dedicated processor	1 GB
Client 2	Partition 1	Test 1	Profile 2: Client 2	7 dedicated processors	10 GB
	Partition 2	Test 2	Profile 2: Client 2	1 dedicated processor	2 GB

Prerequisites and assumptions

This scenario assumes that the following prerequisite steps have been completed prior to beginning the configuration steps:

1. The Hardware Management Console (HMC) was set up.
 - ◆ The HMC was cabled.
 - ◆ You completed the planning process and you understand how you want to configure your HMC.
 - ◆ You used the Guided Setup wizard or the HMC configuration checklist to set up the HMC.
2. You understand the concepts for partitioning the server.
3. You completed the tasks recommended for logical partition planning.
4. You logged in to the HMC with one of the following user roles:
 - ◆ Super administrator
 - ◆ Service representative
 - ◆ Product engineer
5. You created the logical partitions, partition profiles, and system profiles described.
6. You activated the system profile for Client 1.

The following table lists the system profile that is currently active on the managed system.

System Profile	Logical partition ID	Name of logical partition	Name of partition profile	Processor resources	Memory resources
Client 1	Partition 1	Test 1	Profile 1: Client 1	5 dedicated processors	8 GB
	Partition 2	Test 2	Profile 1: Client 1	2 dedicated processors	3 GB
	Partition 3	Test 3	Profile 1: Client 1	1 dedicated processor	1 GB

Configuration stepsTo change the configuration of your managed system so that it is ready for Client 2, you must first shut down the logical partitions by using usual operating system procedures.

After shutting down the logical partitions, you can activate the system profile for Client 2. To do this, complete the following steps on your HMC:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server.
4. Open System Profiles.
5. Right-click the Client 2 system profile and select Activate.
6. Select the activation settings you want to use and click Continue.

After activating the system profile, the managed system is configured according to the needs of Client 2. The following table lists the system profile that is currently active on the managed system.

System Profile	Logical partition ID	Name logical partition	Name of partition profile	Processor resources	Memory resources
Client 2	Partition 1	Test 1	Profile 2: Client 2	7 dedicated processors	10 GB
	Partition 2	Test 2	Profile 2: Client 2	1 dedicated processor	2 GB

Parent topic: [Scenarios for Linux logical partitions](#)

Scenario: Power On Demand for Linux

Use this scenario to become familiar with the steps of planning, ordering, and using Power On Demand for Linux logical partitions on servers.

Note: Power On Demand is not available on all hardware models. Power On Demand is not currently available with o/p models.

Power On Demand allows customers to activate inactive processors as their workload requires. The following scenario walks through the steps of planning for, ordering, and using this feature.

Situation

An server hardware server is operating with eight active processors and four inactive processors. As the server workload grows, the available processor resource utilization consistently approaches or exceeds 70% of the available capacity. Anticipating the need for additional resources, the system administrator decides to consider activating some of the inactive processors.

Objectives

- To test the effectiveness of increasing the number of available processors
- To increase the number of processors (if that change will improve performance)

Power On Demand preparation and activation

1. Before activating any processors, the system administrator [prepares the server for Power On Demand](#). This task involves performing a trend analysis to learn how many additional processors will be required, preparing the server to activate additional processors, and preparing to order the new capacity.
2. To investigate the benefits of activating the additional processors, the system administrator decides to activate the processors for a trial period. The trial period lasts 14 days.
3. After deciding that the performance improvement gained by activating the additional processors warrants purchasing the processors permanently, the system administrator contacts the Bull representative or Business Partner, or visits <http://www.ibm.com> to place an order for four processor activation features.
4. The Bull representative places the order in the configurator and receives a reminder to send the vital product data (VPD) from the server with the order. The VPD can be faxed or sent electronically with the Electronic Service Agent. (The Electronic Service Agent is located on your HMC and is designed to monitor events and to transmit server inventory information on a periodic, customer-definable timetable.)
5. The system administrator retrieves the activation codes from the Web and [activates the permanent capacity](#). This task involves entering the activation code on the target server and assigning the processors to a logical partition.

The server now has all eight processors available for use.

For more information, refer to [Working with Power On Demand](#).

Parent topic: [Scenarios for Linux logical partitions](#)

Supported virtual devices for Linux logical partitions

This topic provides a list of device drivers for virtual devices and adapters supported for Linux on servers.

Virtual devices

Servers support the following virtual devices.

Note: This list might not include all of the currently supported virtual devices.

Device	Driver	Linux supported functions
Virtual console	hvc	client
Virtual tape	st & ibmvscsic	client
Virtual CD	sr & ibmvscsic	client
Virtual disk unit	sd & ibmvscsic	client
Virtual SCSI	ibmvscsic	client
Virtual serial	HVSI	client
Virtual Ethernet	ibmveth	client/server

Parent topic: [Partitioning for Linux with an HMC](#)

Configuring Linux logical partitions

Use this information to learn about logical partition configuration and resource requirements for a Linux installation.

- **Partitioning a new or nonpartitioned server**
Find details on the procedure used to create logical partitions from the manufacturing default configuration.
- **Creating additional partition profiles**
A partition profile stores the required number of processors, memory, and hardware resources assigned to that profile. A partition profile is identified by partition ID and profile name.
- **Copying a partition profile**
You can use the Hardware Management Console (HMC) to create a copy of an existing partition profile. After you create a copy of the existing partition profile, you can change the resource allocations within the new partition profile. This allows you to create multiple, nearly identical partition profiles easily.
- **Creating a system profile**
A system profile is a collection of partition profiles. A system profile helps you change the managed system from one complete set of partition configurations to another. System profiles are useful to validate your partition profile. If a partition profile has overcommitted resources, you will not be able to add that profile to the system profile.
- **Copying a system profile**
You can use the Hardware Management Console (HMC) to create a copy of an existing system profile. After you create a copy of the existing system profile, you can change the partition profiles that are contained within the new system profile. This allows you to create multiple, nearly identical system profiles quickly and easily.

Parent topic: [Partitioning for Linux with an HMC](#)

Partitioning a new or nonpartitioned server

Find details on the procedure used to create logical partitions from the manufacturing default configuration.

When you receive your managed system from your service provider, the managed system is in what is known as the [manufacturing default configuration](#). You can install an operating system on the managed system and use the managed system in a nonpartitioned configuration. However, if you want to create [logical partitions](#) on the managed system, you must develop a partition plan for the managed system, validate the hardware on the managed system, move the hardware according to your partition plan, and create the logical partitions using the Hardware Management Console ().

The procedure used to create logical partitions from the manufacturing default configuration or the nonpartitioned configuration varies by server type. For more information, see the following:

Parent topic: [Configuring Linux logical partitions](#)

Creating additional partition profiles

A partition profile stores the required number of processors, memory, and hardware resources assigned to that profile. A partition profile is identified by partition ID and profile name.

To create a partition profile, you must be a super administrator or an operator. For more information about the role of a super administrator and operator, refer to [Tasks and roles](#).

To create a partition profile using the Hardware Management Console (HMC), follow these steps:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which you want to create the partition profile.
4. Open Partitions.
5. Right-click the logical partition for which you want to create the partition profile and select Create > Profile.
6. Follow the steps in the Create Partition Profile wizard to create the partition profile.

Parent topic: [Configuring Linux logical partitions](#)

Copying a partition profile

You can use the Hardware Management Console (HMC) to create a copy of an existing partition profile. After you create a copy of the existing partition profile, you can change the resource allocations within the new partition profile. This allows you to create multiple, nearly identical partition profiles easily.

To copy a partition profile, you must be a super administrator, operator, or product engineer. For more information about user roles, refer to [Tasks and roles](#).

To copy a partition profile using the HMC, follow these steps:

1. In the navigation area, open Server and Partition.
2. Select Server Management.

3. In the contents area, open the server on which the partition profile that you want to copy is located.
4. Open Partitions.
5. Open the logical partition for the partition profile that you want to copy.
6. Right-click the partition profile that you want to copy and select Copy.
7. Enter the name of the new partition profile and click OK.

Parent topic: [Configuring Linux logical partitions](#)

Creating a system profile

A system profile is a collection of partition profiles. A system profile helps you change the managed system from one complete set of partition configurations to another. System profiles are useful to validate your partition profile. If a partition profile has overcommitted resources, you will not be able to add that profile to the system profile.

To create a system profile, you must be a super administrator or an operator. For more information about the role of a super administrator and operator, refer to [Tasks and roles](#).

To create a system profile using the Hardware Management Console, follow these steps:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, right-click the server on which you want to create the system profile and select Create > System Profile.

Parent topic: [Configuring Linux logical partitions](#)

Copying a system profile

You can use the Hardware Management Console (HMC) to create a copy of an existing system profile. After you create a copy of the existing system profile, you can change the partition profiles that are contained within the new system profile. This allows you to create multiple, nearly identical system profiles quickly and easily.

To copy a system profile, you must be a super administrator, operator, or product engineer. For more information about user roles, refer to [Tasks and roles](#).

To copy a system profile using the HMC, follow these steps:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which the system profile that you want to copy is located.
4. Open System Profiles.
5. Right-click the system profile that you want to copy and select Copy.
6. Enter the name of the new system profile and click OK.

Parent topic: [Configuring Linux logical partitions](#)

Managing Linux logical partitions

Use this information to learn about procedures for managing Linux logical partitions.

- **[Managing partition profiles for logical partitions](#)**
This information provides an overview and procedures for functions that can help you manage your partition profiles. The partition profile functions are available through the Hardware Management Console (HMC).
- **[Managing system profiles for logical partitions](#)**
This information provides an overview and procedures for functions that can help you manage your system profiles. The system profile functions are available through the Hardware Management Console (HMC).
- **[Managing partitions remotely](#)**
You can access your Hardware Management Console (HMC) remotely by installing the remote client on your personal computer (PC).
- **[Dynamically managing Linux logical partition resources](#)**
Learn how you can dynamically add, remove, and move resources between partitions.
- **[Managing logical-partition and operating-system security](#)**
When all logical partitions are managed by the Hardware Management Console, you can control who has access to the HMC and the system. You can also use the ESCALA PL Series Security Planner to help you plan a basic security policy for each of the operating systems on your system.
- **[Backing up and recovering Linux installations](#)**
Learn how to back up and restore Linux installations on servers.

Parent topic: [Partitioning for Linux with an HMC](#)

Managing partition profiles for logical partitions

This information provides an overview and procedures for functions that can help you manage your partition profiles. The partition profile functions are available through the Hardware Management Console (HMC).

- **[Activating a partition profile](#)**
This procedure provides step-by-step instructions that explain how to activate a logical partition profile using the Hardware Management Console (HMC).
- **[Changing partition profile properties](#)**
This procedure provides step-by-step instructions that explain how to change logical partition profile properties using the Hardware Management Console (HMC).
- **[Deleting a partition profile](#)**
This procedure provides step-by-step instructions that explain how to delete a logical partition profile using the Hardware Management Console (HMC).

Parent topic: [Managing Linux logical partitions](#)

Activating a partition profile

This procedure provides step-by-step instructions that explain how to activate a logical partition profile using the Hardware Management Console (HMC).

To activate a partition profile, you must be a super administrator, operator, or product engineer. For more information about user roles, refer to [Tasks and roles](#).

A partition profile stores the required number of processors, memory, and hardware resources assigned to that profile.

To activate a partition profile using the HMC, follow these steps:

Copying a system profile

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which the partition profile is located.
4. Open Partitions.
5. Open the logical partition for the partition profile.
6. Right-click the partition profile and select Activate.
7. Select the partition profile you want to activate and click OK.

Parent topic: [Managing partition profiles for logical partitions](#)

Changing partition profile properties

This procedure provides step-by-step instructions that explain how to change logical partition profile properties using the Hardware Management Console (HMC).

To change partition profile properties, you must be a super administrator, service representative, operator, or product engineer. For more information about user roles, refer to [Tasks and roles](#).

A partition profile stores the required number of processors, memory, and hardware resources assigned to that profile. Any partition profile property changes will not be applied to the logical partition until the partition profile has been activated.

To change partition profile properties using the HMC, follow these steps:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which the partition profile is located.
4. Open Partitions.
5. Open the logical partition for the partition profile.
6. Right-click the partition profile and select Properties.
7. Make the appropriate changes and click OK.

Parent topic: [Managing partition profiles for logical partitions](#)

Deleting a partition profile

This procedure provides step-by-step instructions that explain how to delete a logical partition profile using the Hardware Management Console (HMC).

To delete a partition profile, you must be a super administrator or an operator. For more information about the role of a super administrator and operator, refer to [Tasks and roles](#).

Note: You cannot delete a partition profile that is the default partition profile for the logical partition. If the partition profile you want to delete is the default partition profile, you must first change the default profile to another partition profile.

A partition profile stores the required number of processors, memory, and hardware resources assigned to that profile.

To delete a partition profile using the HMC, follow these steps:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which the partition profile is located.
4. Open Partitions.
5. Open the logical partition for the partition profile.
6. Right-click the partition profile and select Delete.
7. Click OK to confirm.

Parent topic: [Managing partition profiles for logical partitions](#)

Managing system profiles for logical partitions

This information provides an overview and procedures for functions that can help you manage your system profiles. The system profile functions are available through the Hardware Management Console (HMC).

- **Activating a system profile**
This procedure provides step-by-step instructions that explain how to activate a system profile using the Hardware Management Console (HMC).
- **Deleting a system profile**
This procedure provides step-by-step instructions that explain how to delete a system profile using the Hardware Management Console (HMC).

Parent topic: [Managing Linux logical partitions](#)

Activating a system profile

This procedure provides step-by-step instructions that explain how to activate a system profile using the Hardware Management Console (HMC).

To activate a system profile, you must be a super administrator, operator, or product engineer. For more information about user roles, refer to [Tasks and roles](#).

A system profile is an ordered list of partition profiles. When you activate a system profile, the managed system will attempt to activate the partition profiles in order. A system profile helps you activate or change the managed system from one complete set of logical partition configurations to another.

To activate a system profile using the HMC, follow these steps:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which the system profile is located.
4. Open System Profiles.
5. Right-click the system profile and select Activate. Optionally, you may set the activation settings for your system profile.
6. Click Continue.

Parent topic: [Managing system profiles for logical partitions](#)

Deleting a system profile

This procedure provides step-by-step instructions that explain how to delete a system profile using the Hardware Management Console (HMC).

To delete a system profile, you must be a super administrator or an operator. For more information about the role of a super administrator and operator, refer to [Tasks and roles](#).

A system profile helps you activate or change the managed system from one complete set of logical partition configurations to another.

To delete a system profile using the HMC, follow these steps:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which the system profile is located.
4. Right-click the system profile and select Delete.
5. Click Yes to confirm.

Parent topic: [Managing system profiles for logical partitions](#)

Managing partitions remotely

You can access your Hardware Management Console (HMC) remotely by installing the remote client on your personal computer (PC).

For more information about the remote client and how to install it, refer to [Installing and uninstalling the remote client](#).

Parent topic: [Managing Linux logical partitions](#)

Dynamically managing Linux logical partition resources

Learn how you can dynamically add, remove, and move resources between partitions.

If you are using Linux distributions Red Hat Enterprise Linux version 4 or SUSE Linux Enterprise Server 9 or later, you can add, remove, or move resources between partitions without restarting a partition or system.

To dynamically add or remove Linux logical partitions, you need to [install additional software](#).

These RPM packages are available at the Service and productivity tools Web site at <https://www14.software.ibm.com/webapp/set2/sas/f/lopdiaqs/home.html>.

To add, remove, or move specific logical partition resources, refer to the following information:

- **[Dynamically managing physical I/O devices and slots on Linux](#)**
Learn how to dynamically add, remove, and move physical I/O devices and slots from one running logical partition to another using the Hardware Management Console (HMC). Learn how to make Linux recognize the changes in the available resources.
- **[Dynamically managing processing power on Linux](#)**
Learn how to dynamically move processors from one running logical partition to another using the HMC.
- **[Saving the partition configuration to a partition profile](#)**
Use this procedure to save the current configuration of a logical partition to a new partition profile using a Hardware Management Console (HMC). Use this procedure if you change the configuration of a logical partition using dynamic logical partitioning and you do not want to lose the changes when you reactivate the logical partition. This procedure allows you to save the changed configuration to a

new partition profile instead of having to enter the changed resource allocations manually.

Parent topic: [Managing Linux logical partitions](#)

Dynamically managing physical I/O devices and slots on Linux

Learn how to dynamically add, remove, and move physical I/O devices and slots from one running logical partition to another using the Hardware Management Console (HMC). Learn how to make Linux recognize the changes in the available resources.

This topic describes how to manage physical I/O devices and slots on Linux, limitations to this capability, and ways to work around those limitations.

Linux distributions Red Hat Enterprise Linux version 4 or SUSE Linux Enterprise Server 9 or later are required to dynamically move I/O devices and slots to or from a Linux logical partition.

If you add slots with adapters, the devices are automatically configured by Linux kernel modules (rpaphp and PCI Hotplug Core). However, after the devices have been added with the HMC, you must log in to the running Linux logical partition as root so you can set up those devices that have been added using the appropriate user space tools, such as the mount command or the ifup command.

If you remove adapters for storage devices, you must unmount the file systems on those devices before you remove the slots and adapters. Also, if you remove network adapters, you should shut down the network interfaces for those devices before removing the slots and adapters.

Logical partitions can have desired or required I/O devices or slots. When you specify that an I/O device or slot is desired (or shared), this means that the I/O device or slot is optional. When you specify that an I/O device or slot is required (or dedicated), then you cannot activate the logical partition if the I/O device or slot is unavailable or in use by another logical partition.

Note: If resources are moved dynamically, the configuration change is temporary and is not reflected in the partition profile. This means that all configuration changes will be lost the next time the partition profile is activated. To save your new partition configuration, modify the partition profile. For more information on changing the partition profile properties, see [Changing partition profile properties](#).

To add physical I/O devices or slots to a running logical partition, follow these steps on the HMC:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which the logical partitions are located.
4. Open Partitions.
5. Right-click the logical partition and select Dynamic Logical Partitioning > Adapter Resources > Add.
6. In the Current area, open the unit with the physical I/O device or slot, open the planar with the physical I/O device or slot, and select the line corresponding to the physical I/O device or slot.
7. Select the I/O pool for the physical I/O device or slot (if any).
8. Click Advanced and adjust the settings there. You might need to increase the value in the Timeout setting field to allow enough time for the HMC to complete the operation. These settings relate to how the managed system adds the physical I/O device or slot dynamically. These settings are not retained after the change is completed.
9. Click OK.

Parent topic: [Dynamically managing Linux logical partition resources](#)

Remove physical I/O devices or slots from a running logical partition

To remove physical I/O devices or slots from a running logical partition, follow these steps on the HMC:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which the logical partitions are located.
4. Open Partitions.
5. Right-click the logical partition and select Dynamic Logical Partitioning > Adapter Resources > Remove.
6. In the Current area, open the unit with the physical I/O device or slot, open the planar with the physical I/O device or slot, and select the line corresponding to the physical I/O device or slot.
7. Click Advanced and adjust the settings there. You might need to increase the value in the Timeout setting field to allow enough time for the HMC to complete the operation. These settings relate to how the managed system removes the physical I/O device or slot dynamically. These settings are not retained after the removal is completed.
8. Ensure that any devices attached to the I/O processor you want to remove are not busy. Unmount the file systems on any storage devices you are removing, and shut down any network interfaces on network devices you are removing.
9. Click OK.

Move physical I/O devices or slots

To move physical I/O devices or slots from one a running logical partition to another using the HMC, follow these steps:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which the logical partitions are located.
4. Open Partitions.
5. Right-click the logical partition and select Dynamic Logical Partitioning > Adapter Resources > Move.
6. In the Current area, open the unit with the physical I/O device or slot, open the planar with the physical I/O device or slot, and select the line corresponding to the physical I/O device or slot.
7. In Logical Partition, select the logical partition to which you want to move the physical I/O device or slot.
8. Click Advanced and adjust the settings there. You might need to increase the value in the Timeout setting field to allow enough time for the HMC to complete the operation. These settings relate to how the managed system moves the physical I/O device or slot dynamically. These settings are not retained after the move is completed.
9. Ensure that any devices attached to the I/O processor you want to remove are not busy. Unmount the file systems on any storage devices you are removing, and shut down any network interfaces on network devices you are removing.
10. Click OK.

Dynamically managing processing power on Linux

Learn how to dynamically move processors from one running logical partition to another using the HMC.

Linux distributions Red Hat Enterprise Linux version 4 or SUSE Linux Enterprise Server 9 or later are required in order to dynamically move processing power to or from a Linux logical partition.

The ability to move processor power dynamically becomes important when you need to adjust to changing workloads. Processing power can be moved based on the desired, minimum, and maximum values you

created for the profile. The desired processing value you establish is the amount of processing resources that you get if you do not overcommit the processing power. The minimum and maximum values enable you to establish a range within which you can dynamically move the processors.

For both shared and dedicated processors, you can specify a minimum value equal to the minimum amount of processing power needed to support the logical partition. The maximum value must be less than the amount of processing power available on the system.

Note: If resources are moved dynamically, the configuration change is temporary and is not reflected in the partition profile. This means that all configuration changes will be lost the next time the partition profile is activated. If you wish to save your new partition configuration, you should modify the partition profile. For more information on changing the partition profile properties, see [Changing partition profile properties](#).

To add processor resources dynamically to a running logical partition, follow these steps:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which the logical partitions are located.
4. Open Partitions.
5. Right-click the logical partition that is currently using the processor resources that you want to add, and select Dynamic Logical Partitioning > Processor Resources > Add.
6. Specify the amount of processor resources you want to add. If the logical partition uses processors from the shared processor pool, you can change the logical partition's sharing mode, uncapped weight, and number of virtual processors.
7. Click Advanced and adjust the settings there. You might need to increase the value in the Timeout setting field to allow enough time for the HMC to complete the operation. (These settings relate to how the managed system adds the processor resources dynamically. These settings are not retained after the addition is completed.)
8. Click OK.

Parent topic: [Dynamically managing Linux logical partition resources](#)

Remove processor resources dynamically

To remove processor resources dynamically from a running logical partition, follow these steps:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which the logical partitions are located.
4. Open Partitions.
5. Right-click the logical partition that is currently using the processor resources that you want to move, and select Dynamic Logical Partitioning > Processor Resources > Remove.
6. Specify the amount of processor resources you want to remove. If the logical partition uses processors from the shared processing pool, you can change the logical partition's sharing mode, uncapped weight, and number of virtual processors.
7. Click Advanced and adjust the settings there. You might need to increase the value in the Timeout setting field to allow enough time for the HMC to complete the operation. (These settings relate to how the managed system removes the processor resources dynamically. These settings are not retained after the removal is completed.)
8. Click OK.

Move processors from one running logical partition to another

To move processors from one running logical partition to another using the HMC, follow these steps:

1. In the navigation area, open Server and Partition.
 2. Select Server Management.
 3. In the contents area, open the server on which the logical partitions are located.
 4. Open Partitions.
 5. Right-click the logical partition that is currently using the processor resources that you want to move, and select Dynamic Logical Partitioning > Processor Resources > Move.
 6. Specify the amount of processor resources that you want to move and the logical partition to which you want to move the processor resources. If either logical partition uses processing resources from the shared processor pool, you can change the sharing mode, uncapped weight, and number of virtual processors for the logical partition.
 7. Click Advanced and adjust the settings there. You might need to increase the value in the Timeout setting field to allow enough time for the HMC to complete the operation. (These settings relate to how the managed system moves the processor resources dynamically. These settings are not retained after the move is completed.)
 8. Click OK.
-

Saving the partition configuration to a partition profile

Use this procedure to save the current configuration of a logical partition to a new partition profile using a Hardware Management Console (HMC). Use this procedure if you change the configuration of a logical partition using dynamic logical partitioning and you do not want to lose the changes when you reactivate the logical partition. This procedure allows you to save the changed configuration to a new partition profile instead of having to enter the changed resource allocations manually.

You can perform this procedure at any time after you initially activate a logical partition.

To save the current configuration of a logical partition to a new partition profile, you must be a super administrator, service representative, operator, or product engineer. For more information about user roles, refer to [Tasks and roles](#).

You can perform this procedure on active logical partitions and on logical partitions that are shut down. In either of these cases, the HMC reads the partition configuration that is stored for the logical partition in the server firmware and saves this partition configuration to the specified partition profile. For active logical partitions, the partition configuration that is stored in the server firmware is the current partition configuration of the logical partition. For logical partitions that are shut down, the partition configuration that is stored in the server firmware is the partition configuration at the time that you shut down the logical partition. Regardless of the state of the logical partition at the time that you perform this procedure, the procedure allows you to save the dynamic logical partitioning changes to a partition profile and use the partition profile to reactivate the logical partition without losing those changes.

After you shut down a logical partition, other logical partitions can use the resources that were used by that logical partition when the logical partition was active. Therefore, the resources available on the managed system might not support the logical partition configuration that is stored in the server firmware for the inactive logical partition. After you save the partition configuration of a logical partition that is shut down, verify that the resources available on the managed system can support the logical partition configuration that you saved to a partition profile.

When you save the partition configuration to a new partition profile, the desired amounts of memory, processors, processing units, and virtual processors in the new partition profile are set to the current amounts from the partition configuration. The minimum and maximum amounts of memory, processors, processing units, and virtual processors in the new partition profile are set to the minimum and maximum amounts from the partition configuration. For example, you start a logical partition using a partition profile that specifies a minimum of 512 MB of memory, a maximum of 2 GB of memory, and 1 GB as the desired amount of memory. The managed system has over 1 GB of memory available, so the logical partition has 1 GB of memory when it starts. You then add 1 GB of memory to the logical partition for a total of 2 GB of memory. If you shut down the logical partition, and then save the partition configuration, the resulting partition profile specifies a minimum of 512 MB of memory, a maximum of 2 GB of memory, and 2 GB as the desired amount of memory.

The physical and virtual I/O devices that are set as required in the active partition profile are saved as required devices in the new partition profile. The physical and virtual I/O devices that are set as desired in the

active partition profile or that were added to the logical partition through dynamic logical partitioning are saved as desired devices in the new partition profile. The partition workload group on the logical partition (if any) is saved as the partition workload group on the new partition profile.

To save the current configuration of a logical partition to a new partition profile, complete the following:

1. In the navigation area of the HMC, open the object with the same name as your HMC, open Server and Partition, and select Server Management.
2. In the contents area of the HMC, open the managed system, open Partitions, and right-click the logical partition whose configuration you want to save and select Save.
3. Enter the name of the new partition profile into New profile and click OK.

After you save the partition configuration to a new partition profile, verify that the new partition profile is set the way that you want. In particular, verify that the required and desired settings are set correctly for your I/O devices. By default, physical and virtual I/O devices that are added to the logical partition using dynamic logical partitioning are saved as desired devices in the new partition profile. If you want any of these I/O devices to be required, you must change the partition profile so that the I/O device is required. For more information on changing partition profiles, see [Changing partition profile properties](#).

Parent topic: [Dynamically managing Linux logical partition resources](#)

Managing logical-partition and operating-system security

When all logical partitions are managed by the Hardware Management Console, you can control who has access to the HMC and the system. You can also use the ESCALA PL Series Security Planner to help you plan a basic security policy for each of the operating systems on your system.

When all logical partitions are managed by the Hardware Management Console (HMC), the system administrator for the HMC can control who has access to the HMC and the managed systems by creating HMC user roles. The user roles control who can access different parts of the HMC and what tasks they can perform on the managed system.

For more information about securing the HMC and protecting your server, refer to [Working with users, roles, and passwords](#), [System Manager Security](#), or [Tasks and roles](#).

Parent topic: [Managing Linux logical partitions](#)

Backing up and recovering Linux installations

Learn how to back up and restore Linux installations on servers.

These topics provide instructions for backing up and restoring Linux installations on servers.

- [Backing up and recovering Linux](#)

This topic provides information for backing up and restoring a Linux installation on a server.

Parent topic: [Managing Linux logical partitions](#)

Backing up and recovering Linux

This topic provides information for backing up and restoring a Linux installation on a server.

It is crucial that you back up your data because you never know when you may need to do a server recovery. You may not be prepared to recover from certain types of disk failures if you do not regularly perform backups. For more information about planning a backup and recovery strategy for Linux data, refer to the following topic, Backing up and recovering partition data.

Backing up and recovering partitioned data

Linux on managed systems supports numerous file systems, but those file systems do not share a universal backup-and-restore function. The most commonly used journaling file systems are ext3, Reiser FS, SGI XFS, and IBM JFS. Backup of the ext3 file system is supported by the dump and restore programs. SGI XFS has its own pair of backup utilities: **xfsdump** and **xfstore**. The Reiser FS and IBM JFS do not have backup programs; the only method currently available for backing up Reiser FS and JFS on Linux is the GNU **tar** program.

Note: The GNU **tar** program supports file-system-level backups. It does not operate on the i-node level. It is slower than the **dump** utility, but it does not care about the underlying file system type. It supports incremental backups and backup of special devices, which is not common for **tar** implementations.

Backing up and restoring partition profile data

On servers, the is used to back up and restore partition profiles.

Back up profile data

To back up profile data, do the following.

1. In the Contents area, select the managed system.
2. From the menu bar, choose Selected > Profile Data > Backup to open the Profile Data Backup window.
3. Type the file name in the Backup filename field, then click OK. The backup file is saved in the **/var/hsc/profiles/MT-MDL*S/N** directory on the , as shown in the following example.

```
user1@remote_host$ ssh -l hscroot itsohmc.itsc.austin.ibm.com
```

```
hscroot@itsohmcs password: XXXXXX
```

```
hscroot@itsohmc$ cd /var/hsc/profiles/7040-681*021768A
```

```
hscroot@itsohmc 7040-681*021768A$ ls -l
```

```
total 40
```

```
-rw-r--r-- 1 root root 20464 Nov 27 12:00 backupFile
```

```
-rw-r--r-- 1 root root 20464 Nov 27 12:18 ITSO_p690
```

MT, MDL, and S/N are the system machine type, model, and serial number.

Restore profile data

To restore profile data, do the following:

1. In the Contents area, select the managed system.
2. From the menu bar, choose Selected > Profile Data > Restore to open the Profile Data Restore window.
3. Select the backup file name that you want to restore from the list.
4. Select one of the following options.

- ◆ Full restore from the selected backup file: Restores all profile data using only your backup file. Profile modifications performed after the selected backup file was created will be lost.
 - ◆ Backup priority merge current profile and backup: Merges the stored backup with recent profile activity. If information conflicts, the stored backup data is restored over the recent profile activity. Note: Select this option for a managed system in the Recovery state.
 - ◆ Managed system priority merge current profile and backup: Merges recent profile activity with the stored backup. If information conflicts, the recent profile activity is restored over the stored backup data.
5. Click OK.

Parent topic: [Backing up and recovering Linux installations](#)

Using Linux installed on a logical partition

Find information about using Linux when it is installed on a logical partition.

RPM packages are available at the Service and productivity tools Web site at <https://www14.software.ibm.com/webapp/set2/sas/f/lopdiags/home.html>.

The following topics contain information about using Linux installed on a logical partition.

- [Restarting and shutting down Linux in a logical partition](#)

Parent topic: [Partitioning for Linux with an HMC](#)

Restarting and shutting down Linux in a logical partition

You can shut down and restart Linux using the HMC. To find out how to shut down and restart Linux, refer to the following information:

- [Using the Hardware Management Console to shut down Linux logical partitions](#)
Find out how to shut down Linux logical partitions using the HMC.
- [Using the Hardware Management Console to restart Linux logical partitions](#)
Find out how you can restart Linux logical partitions.

Parent topic: [Using Linux installed on a logical partition](#)

Using the Hardware Management Console to shut down Linux logical partitions

Find out how to shut down Linux logical partitions using the HMC.

There are two ways to shut down Linux logical partitions. You can perform a delayed shutdown or an immediate shutdown of a logical partition or the operating system only.

Parent topic: [Restarting and shutting down Linux in a logical partition](#)

Delayed shutdown of a logical partition

When you use the delayed shutdown option, the logical partition waits a predetermined amount of time to shut

down. This allows the logical partition time to end jobs and write data to disks. To perform a delayed shutdown of a Linux logical partition, complete the following:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which the logical partition resides.
4. Open Partitions.
5. Right-click the logical partition that you want to shut down and select Shut Down Partition.
6. Select Delayed and click OK.

Immediate shutdown of a logical partition

When you use the immediate shutdown option, the system shuts down without any preset delay. To perform an immediate shutdown of a Linux logical partition, complete the following:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which the logical partition resides.
4. Open Partitions.
5. Right-click the logical partition that you want to shut down and select Shut Down Partition.
6. Select Immediate and click OK.

Delayed shutdown of the operating system

When you use the delayed shutdown option, the Hardware Management Console (HMC) issues the Linux **shutdown -h +1** command to shut down the logical partition normally. To perform a delayed shutdown of the operating system, complete the following:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which the logical partition resides.
4. Open Partitions.
5. Right-click the logical partition that you want to shut down and select Shut Down Operating System.
6. Select Delayed and click OK.

Immediate shutdown of the operating system

When you use the immediate shutdown option, the Hardware Management Console (HMC) issues the Linux **shutdown -h now** command to shut down the logical partition as quickly as possible, bypassing messages to other users. To perform an immediate shutdown of the operating system, complete the following:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which the logical partition resides.
4. Open Partitions.
5. Right-click the logical partition that you want to shut down and select Shut Down Operating System.
6. Select Immediate and click OK.

Using the Hardware Management Console to restart Linux logical partitions

Find out how you can restart Linux logical partitions.

You can use the Hardware Management Console (HMC) to restart a Linux logical partition. Restarting a logical partition shuts the partition down and then starts it again. You can restart a logical partition or the operating system only in the following ways.

Parent topic: [Restarting and shutting down Linux in a logical partition](#)

Immediate restart of a logical partition

When you use the immediate restart option, the logical partition is restarted as quickly as possible, without notifying the logical partition. To perform an immediate restart of a Linux logical partition, complete the following:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which the logical partition resides.
4. Open Partitions.
5. Right-click the logical partition that you wish to shut down and select Restart Partition.
6. Select Immediate and click OK.

Restart of a logical partition with main storage or system memory dump

When you use this option, the HMC initiates a main storage or system memory dump on the logical partition and restarts the logical partition after the dump. To restart a Linux logical partition with a main storage or system memory dump, complete the following:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which the logical partition resides.
4. Open Partitions.
5. Right-click the logical partition that you wish to shut down and select Restart Partition.
6. Select Dump and click OK

Normal restart of the operating system

When you use the normal restart option, the HMC issues the Linux **shutdown -r +1** command to shut down and restart the logical partition normally. To perform a normal restart of the operating system, complete the following:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which the logical partition resides.
4. Open Partitions.
5. Right-click the logical partition that you wish to shut down and select Restart Operating System.
6. Click OK.

Immediate restart of the operating system

When you use the immediate restart option, the Hardware Management Console (HMC) issues the Linux **shutdown -r now** command to shut down and restart the logical partition as quickly as possible, bypassing messages to other users. To perform an immediate restart of the operating system, complete the following:

1. In the navigation area, open Server and Partition.
2. Select Server Management.
3. In the contents area, open the server on which the logical partition resides.
4. Open Partitions.
5. Right-click the logical partition that you wish to shut down and select Restart Operating System.
6. Select Immediate and click OK.

Troubleshooting Linux logical partitions

Use this information to learn how to resolve Linux logical partition errors.

Troubleshooting

If you have problems with a partitioned system, determine if the problem is specific to logical partitions or if it is a system problem. To determine whether the problem is a general system problem, refer to [Troubleshooting](#). If your problem is specific to logical partitions, reference codes might resolve the error. However, specific recovery actions and tasks might require the assistance of service support.

Linux on IBM Web site at <http://www14.software.ibm.com/webapp/set2/sas/f/lopdiags/info/LinuxAlerts.html>
This link provides the latest information, fixes, and procedures that might help you avoid problems during the installation of Linux on systems.

Reference codes for logical partitions

Find a detailed description of reference codes that relate to logical partitions.

Virtual I/O Server

Find a detailed description of concepts related to Virtual I/O Server.

Parent topic: [Partitioning for Linux with an HMC](#)

Related information for Linux logical partitions

Use this information to find related material for Linux logical partitions, including Web sites, , and information center topics.

Redbooks

- [AIX and Linux Interoperability, SG24 6622 00](#) (4.3 MB)

ESCALA Power5 Hardware Information topics

- [Installing Linux](#)
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Parent topic: [Partitioning for Linux with an HMC](#)

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