

Power Systems

Setting up the virtualization environment



Note

Before using this information and the product it supports, read the information in [“Notices” on page 39.](#)

This edition applies to IBM® AIX® Version 7.2, to IBM AIX Version 7.1, to IBM AIX Version 6.1, to IBM i 7.4 (product number 5770-SS1), to IBM Virtual I/O Server Version 3.1.2 and to all subsequent releases and modifications until otherwise indicated in new editions. This version does not run on all reduced instruction set computer (RISC) models nor does it run on CISC models.

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Setting up the virtualization environment

A template is a collection of configuration preferences that can be reused and quickly applied to multiple targets. You can use templates to set up your virtualization environment. Templates simplify the deployment process because templates contain many of the settings that you previously configured by using the Hardware Management Console (HMC) command-line interface or the HMC graphical user interface (GUI) version 8.1.0, or earlier.

The templates functions are supported only when a server is managed by the HMC, or when a server is co-managed by the HMC and PowerVM® NovaLink, with the HMC in the master mode.

The PowerVM NovaLink architecture enables management of highly scalable cloud deployment by using the PowerVM technology and OpenStack solutions. The architecture provides a direct OpenStack connection to a PowerVM server. The NovaLink partition runs the Linux® operating system and the partition runs on a server that is virtualized by PowerVM. The server is managed by PowerVC or other OpenStack solutions.

There are two types of templates: system template and partition template. You can use system templates to define system configuration settings that include general system properties and virtual environment settings. You can use partition templates to specify logical partition settings that include general partition properties, processor and memory configuration, virtual networks and virtual storage configuration, logical Host Ethernet Adapters and logical single root I/O virtualization (SR-IOV) port settings. Templates do not contain target-specific information. Therefore, you can use templates to configure any system or partition in your environment.

Templates are further classified into quick-start templates or user-defined templates.

Quick-start templates are contained in the `template` folder that is accessible by using the template library. You cannot edit the quick-start templates, however you can copy and change them to suit your requirements.

User-defined templates are the templates that you create. User-defined templates contain configuration details that are specific to your environment. You can create a user-defined template by using any of the following methods:

- Copy an existing template and modify the new template according to the requirements of your environment.
- Capture the configuration details of a currently running system or partition and save the details into a new template.

What's new in Setting up the virtualization environment

Read about new or changed information in Setting up the virtualization environment since the previous update of this topic collection.

November 2020

- The following topics were updated with information about the partition keystore feature and enhancements to the HMC graphical user interface:
 - [“Changing a system template” on page 5](#)
 - [“Changing a partition template” on page 24](#)
 - [“Creating a logical partition by using a template” on page 33](#)
 - [“Creating logical partitions by using Create partition option” on page 36](#)

May 2020

- The following topics were updated with information about enhancements to single root I/O virtualization (SR-IOV) logical ports:
 - [“Changing a partition template” on page 24](#)
 - [“Creating a logical partition by using a template” on page 33](#)

October 2019

- The following topics were updated with information about enhancements to single root I/O virtualization (SR-IOV) logical ports:
 - [“Changing a partition template” on page 24](#)
 - [“Creating a logical partition by using a template” on page 33](#)
- The following topics were updated with information about persistent memory support:
 - [“Changing a partition template” on page 24](#)
 - [“Creating a logical partition by using a template” on page 33](#)

May 2019

- The following topics were updated with information about enhancements to the HMC graphical user interface:
 - [“Importing a system template” on page 21](#)
 - [“Importing a partition template” on page 31](#)
 - [“Creating a logical partition by using a template” on page 33](#)
 - [“Creating logical partitions by using Create partition option” on page 36](#)
- The following topics were updated with information about RDMA over Converged Ethernet (RoCE) support:
 - [“Changing a system template” on page 5](#)
 - [“Deploying a system by using a system template” on page 16](#)
 - [“Changing a partition template” on page 24](#)
 - [“Creating a logical partition by using a template” on page 33](#)

August 2018

- The following topics were updated for the secure boot feature:
 - [“Changing a system template” on page 5](#)
 - [“Changing Virtual I/O Server settings” on page 10](#)
 - [“Changing a partition template” on page 24](#)
 - [“Creating a logical partition by using a template” on page 33](#)
- The following topics were updated for changes to the template capture and deploy operations:
 - [“Capturing a system configuration” on page 4](#)
 - [“Deploying a system by using a system template” on page 16](#)
 - [“Capturing a partition configuration” on page 23](#)
 - [“Creating a logical partition by using a template” on page 33](#)
- The following topic was updated for support of USB devices for VIOS installation:
 - [“Deploying a system by using a system template” on page 16](#)


Accessing the template library

All templates reside in the template library, which is accessible from the Hardware Management Console (HMC).

About this task

To view and select the templates that are available in the template library, complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.
3. Select the **System** tab to view the existing system templates, or the **Partition** tab to view the existing partition templates.
4. Select a template from the list of templates that are displayed.

Results

You can view, modify, deploy, copy, import, export, or delete user-defined templates that are available in the template library. You cannot edit the quick-start templates, however you can edit a copy of the quick-start template.

System templates

System templates contain configuration information about resources such as system properties, shared processor pools, reserved storage pool, shared memory pool, physical I/O adapters, Host Ethernet Adapters, single root I/O virtualization (SR-IOV) adapters, Virtual I/O Server, virtual networks, virtual storage, and initial program load (IPL).

The single root I/O virtualization (SR-IOV) specification defines extensions to the PCI Express (PCIe) specification. SR-IOV allows virtualization of the physical ports of an adapter so that the ports can be shared by multiple partitions that are running simultaneously. For example, a single physical Ethernet port appears as several separate physical devices. To share the ports of an SR-IOV capable adapter, the adapter must first be enabled for the SR-IOV shared mode. After an adapter is enabled for SR-IOV shared mode, SR-IOV logical ports can be assigned to logical partitions.

Many of the system settings that you previously configured by using the Hardware Management Console (HMC) command-line interface or the HMC graphical user interface (GUI) version 8.1.0, or earlier can now be completed by using the **Deploy System from Template** wizard. For example, you can configure the Virtual I/O Servers, virtual network bridges, and virtual storage settings when you use the wizard to deploy a system by using a system template.

The template library includes quick-start system templates, which contain configuration settings based on common usage scenarios. Quick-start system templates are available for your immediate use.

You can also create user-defined system templates that contain configuration settings that are specific to your environment. You can create a user-defined template by copying any template that is available in the template library and then changing it to suit your requirements. You can also capture the configuration of an existing system and save the details in a template. You can deploy that template to other systems that require the same configuration.

System templates are primarily used to deploy settings to new systems. To deploy new systems, complete the following tasks:

1. [“Viewing system template configuration information” on page 4](#)
2. [“Prerequisites for deploying a system by using a system template” on page 16](#)
3. [“Capturing a system configuration” on page 4](#) (optional)

4. [“Deploying a system by using a system template” on page 16](#)

You can also complete the following tasks by using system templates:

- [“Changing a system template” on page 5](#)
- [“Copying a system template” on page 20](#)
- [“Importing a system template” on page 21](#)
- [“Exporting a system template” on page 21](#)
- [“Deleting a system template” on page 22](#)


Viewing system template configuration information

Before you deploy a system template on a system, you must review the configuration details of the template to determine whether you want to use a quick-start template or create a user-defined template. Until you create one or more user-defined templates, quick-start templates are the only templates that are available in the template library.

About this task

To view the configuration information by using the Hardware Management Console (HMC), complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.
3. In the Templates and O/S Images window, click the **System** tab.
4. Select the system template that you want to view and click **Actions > View**.

You can view the details of **Physical I/O, Host Ethernet Adapter, SR-IOV, Virtual I/O Servers, Virtual Networks, Virtual Storage, Shared Processor Pool, Shared Memory Pool and Reserved Storage,** and **Advanced System Settings** by clicking the relevant tabs that are displayed. Alternately, you can view the template details from the **Deploy System Template** wizard.

5. Click **Close**.


Capturing a system configuration

Capturing a system gathers the current configuration of the system that is in the running state and includes information about the Virtual I/O Server (VIOS), virtual network, virtual storage, and system settings. You can capture these details of a running system and save the information as a user-defined system template by using the Hardware Management Console (HMC). This function is useful if you want to deploy multiple systems with the same configuration. If you want to use a quick-start template, you need not complete this task.

About this task

To capture the configuration of a running system by using the HMC, complete the following steps:

Procedure

1. In the navigation pane, click the **Resources** icon .
- a) Click **All Systems**. The All Systems page is displayed.
- b) In the work pane, select the system and click **Actions > View System Properties**. The Properties page is displayed. You can choose only one system at a time.

- c) Expand **System Actions > Templates > Capture Configuration as Template > with Physical I/O**, for capturing the configuration with physical I/O information. The option to capture physical I/O information is available only when the system is in the running state. Alternatively, for capturing the configuration without physical I/O information, expand **System Actions > Templates > Capture Configuration as Template > without Physical I/O**. Information about the system configuration such as Virtual I/O Servers, Virtual Networks, and Virtual Storage is displayed in the **Template Details** page. All non-target specific data is contained in the appropriate fields of the system template.
 2. In the **Capture as System Template** page, specify the name for the template file in the **Template Name** field.
 3. Enter a description for the template in the **Template Description** field and click **OK** to save the captured template, or click **Cancel** if you want to cancel the operation.
- In the **Capture as System Template** page, you can also view the progress of the capture operation. A message indicates the successful completion of the capture operation. Appropriate warning or error messages are displayed when applicable and errors result in a failure of the capture operation.

Results

The template is available in the template library. You can deploy a system by using this template, or you can modify any aspect of the template before using the template to deploy a system.

Related tasks

Deploying a system by using a system template

You can deploy systems by using system templates that are available in the template library of the Hardware Management Console (HMC). The **Deploy System from Template** wizard guides you to provide specific information about the target system that is required to complete the deployment on the selected system.

Changing a system template

You can change the details that are specified in a captured, or user-defined system template and save the changes in a new system template. You can also overwrite the template by saving the changes in the same template. You can use this template to deploy other systems by using the Hardware Management Console (HMC).


Changing a system template

You can change the details that are specified in a captured, or user-defined system template and save the changes in a new system template. You can also overwrite the template by saving the changes in the same template. You can use this template to deploy other systems by using the Hardware Management Console (HMC).

About this task

To change the system template by using an HMC, complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.
3. Click the **System** tab and select the system template that you want to change.
4. Click **Action > Edit**.

The **Template Detail** page is displayed.

5. To change the Physical I/O settings, click the **Physical I/O** tab. You can enable or disable that uses the captured I/O information. Click the **Use Captured I/O Information** check box to use the captured physical I/O information.

When you enable or disable the **Use Captured I/O Information** check box, the check box is displayed in the read-only mode in the **Hardware Virtualized I/O** tab for the system configuration, and in the **Hardware Virtualized I/O** tab of the **Add VIOS** wizard.

6. To change the Host Ethernet Adapter (HEA) or single root I/O virtualization (SR-IOV) settings, click the **Hardware Virtualized I/O** tab.
 - a) In the **Host Ethernet Adapter** tab, you can change the **HEA Port Group Settings** and the **HEA Physical Port Settings**. You can add an HEA by clicking the **Add** tab, and to remove an HEA, select the HEA and click the **Remove** tab.

The HEA tab contains general adapter-level settings that are applied to all discovered physical HEA ports and HEA port groups during deployment of the system.
 - b) In the **SR-IOV** tab, the table of SR-IOV adapters displays the properties of the hardware virtualized I/O adapters that are available.

If the captured system template contains information about RDMA over Converged Ethernet (RoCE) logical ports, that information about the RoCE logical ports is listed in the table of SR-IOV adapters. If you are not using any captured I/O information, you must specify the adapter settings during deployment of the system. You can view the physical Ethernet port settings for the selected adapters. Select a physical location code from the **Physical Port** area to view the physical Ethernet port settings. You can view the **Speed, Flow Control**, and the **MTU Size** of the Ethernet adapter. You can also change the values of the **Label** and **Sub-label** fields.
7. To change the Virtual I/O Server (VIOS) settings, click the **Virtual I/O Servers** tab. Select the VIOS that you want to rename. You can specify the name in the **VIOS Name** field. To add a VIOS, complete the following steps:
 - a) Click the **Add VIOS** tab.
 - b) In the **General** tab, you can specify the name for the VIOS in the **VIOS Name** field.
 - c) Select a value for the **Boot Mode** field.
 - d) To enable synchronization of the current profile, select the **Save Configuration Change to profile** check box.

When this option is selected, the partition profile is always synchronized with the last activated partition profile.
 - e) In the **Advanced Settings** area of the **General** tab, you can select or clear the **Automatic Start With Managed System, Mover Service Partition, Enable Connection Monitoring, Enable Redundant Error Path Reporting, Enable Time Reference, Enable VTSM, and Allow Performance Information Collection** fields. You can select a value for the **Secure Boot** field if you are using HMC Version 9.1.920, or later, and when the firmware is at level FW920, or later. If the HMC is at a Version 9.2.950, or later, and when the firmware is at level FW950, or later, you can specify a value of either 0 kilobytes (KB) or a value within the range of values supported by the system for the **Keystore Size** field.
 - f) In the **Processor** tab, if you select **Shared** for the processor mode, you can set the processor weight as capped or uncapped. When you set the processor weight as uncapped, you must specify a value for the processor weight in the **Weight** field.
 - g) In the **Virtual Processors** area, you can specify values for the **Maximum, Allocated, and Minimum** fields.
 - h) In the **Advanced Settings** area, you can select a value for the **Processor Compatibility Mode**.
 - i) In the **Processor** tab, if you select **Dedicated** as the processor mode, you can specify values for the **Maximum, Allocated, and Minimum** fields in the **Processors** area.
 - j) In the **Advanced Settings** area, you can select a value for the **Processor Compatibility Mode** and the **Idle Processor Sharing** fields.
 - k) In the **Memory** tab, if you select **Shared** for the memory mode, you can set the value for the memory in either MB or GB.
 - l) In the **Memory Allocation** area, you can specify values for the **Maximum, Allocated, and Minimum** fields.

- m) In the **Memory** tab, if you select **Dedicated** for the memory mode, you can set the value for the memory in either MB or GB.
- n) In the **Memory Allocation** area, you can specify values for the **Maximum, Allocated,** and **Minimum** fields.
- The **Advanced Settings** area is displayed only when you use dedicated memory. You can enable **Enable Memory Expansion**, and the **Huge Page Memory**.
- If you enable **Enable Memory Expansion**, you can specify a value in the range 1.0 - 10.0 for the Active Memory Expansion (AME) factor.
 - If you enable **Huge Page Memory**, you can specify values for **Minimum, Allocated,** and **Maximum** fields.
- o) In the **Physical I/O Adapters** tab, if you select the **Use Captured I/O Information** check box, you can view the details of the physical I/O adapters that were captured.
- p) Click the **Hardware Virtualized I/O** tab and then click the **SR-IOV** tab. If you select the **Use Captured I/O Information** check box, you can view the details of the captured physical Ethernet port. If the captured system template contains information about RDMA over Converged Ethernet (RoCE) logical ports, that information about the RoCE logical ports is also listed. If you do not use the captured I/O information, you can select the logical port and the Shared Ethernet Adapter (SEA) backing device that you want to assign to the VIOS. Also, details about the RoCE logical ports are displayed if they are available in the system, but you cannot use RoCE logical ports as SEA backing devices.
- q) If you do not select a SEA backing device and click the **Advanced Settings** tab, you can select available values for the **OS MAC Address Restrictions, VLAN ID Restrictions, Port VLAN ID,** and the **802.1Q Priority** fields.
- r) To remove a logical port, select the logical port to be removed and click **Remove Selected**.
- s) Click the **HEA** tab. You can select the logical port and the Shared Ethernet Adapter (SEA) backing device that you want to assign to the VIOS.
- t) To add an HEA, click the **Add** tab. In the **HEA Port Group Settings** area, you can select a value for the multi-core Scaling (MCS) Value field. In the **HEA Physical Port Settings** area, you can set the speed, select full duplex or half duplex mode, enable or disable flow control, and specify the maximum receiving packet size.
- u) To remove an HEA, select the HEA to be removed and click **Remove Selected**.
- v) To delete a VIOS, select the VIOS, then right-click to select **Remove VIOS**.
8. To change the virtual network settings, click the **Virtual Networks** tab. You can change the details of a specific virtual network, virtual switch, or network bridge by selecting the table row of the virtual network, virtual switch, or network bridge, then right-click on the selected entry. You can also delete a network, switch, or network bridge. To add a virtual network, complete the following steps:
- a) Click **Add Virtual Network**.
 - b) Click the **Network Name** tab.
 - c) In the **Virtual Network Settings** area, enter a value for the virtual network in the **Virtual Network Name** field.
 - d) Select a value for the **Virtual Network Type**.
If you selected **Internal Network** for the **Virtual Network Type** field, enter a value in the **Virtual Network ID** field. Optionally, if you selected **Bridged Network**, you must select a value for the **IEEE 802.1q Tagging**.
 - e) Select the **Add new virtual network to all Virtual I/O Servers** check box to assign the virtual network to all the Virtual I/O Servers that are specified in the template.
 - f) In the **Virtual Switch Settings** area, click **Use an existing virtual switch** to use existing virtual switches, or click **Create a new virtual switch**.
If you clicked **Create a new virtual switch**, enter a value for the name of the virtual switch in the **Virtual Switch Name** field.

- g) Click **Next**.
 - h) If the template had any existing virtual network bridges, you can click **Select existing Virtual Network Bridge**. Optionally, you can also click **Create a New Virtual Network Bridge**.
 - i) In the **Virtual Network Bridge Settings** area, enter a value for the **Virtual Network Bridge PVID (PowerVM)** field.
 - j) Select a value for the **Failover** field. If you choose to use failover for VIOS, you must also select a value for the **Secondary VIOS** and the **Load Sharing** fields.
 - k) Select a value for the **Primary VIOS** field.
 - l) In the **Optional Settings** area, select values for the **Jumbo Frame**, **Large Send**, and **QoS** fields.
 - m) Click **Next** to view and edit values in the **Load Sharing** tab only if you are using an existing virtual network bridge.
Clicking **Next** will allow you Otherwise, clicking **Next** will display the **Summary** tab.
 - n) In the **Load Sharing** tab, click **Use an existing Load Sharing Group** to use an existing load sharing group, or click **Create a new Load Sharing Group**.
 - o) If you select **Create a new Load Sharing Group**, enter a value for the **New Load Group PVID** field.
 - p) Click **Next**.
 - q) In the **summary** tab, a summary of the configuration that was selected for the virtual network is displayed. You can review the configuration details and click **Finish** to add the virtual network to the VIOS specified in the template.
9. To change the virtual storage settings, click the **Virtual Storage** tab. You can change the details of the **Shared Storage Pool Clusters**. You can assign each VIOS that is listed in the template to an actual shared storage pool cluster that is managed by the HMC. You can specify a **Media Repository** for each VIOS.
 10. To change the shared processor pool settings, click the **Shared Processor Pool** tab. You can add shared processor pools, rename the pools (except the Default Pool), and adjust the processing units that are assigned to each pool. You can also delete a shared processor pool.
 11. To change the Shared Memory Pool and Reserved Storage Pool settings, click the **Shared Memory Pool and Reserved Storage Pool** tab. You can change details of a Shared Memory Pool such as the size and maximum pool size. You can also specify whether Active Memory Deduplication must be enabled. You can also change the settings of the Reserved Storage Device Pool. You can select a single VIOS, or specify redundancy settings by selecting **Redundant VIOS**.
 12. To change the advanced system settings, click the **Advanced System Settings** tab. You can change details of the **Power On/Off Configuration**, and the **Memory and performance Configuration** fields. Click **Save and Exit** to save the changes in the same template, or select **Save As** to save the changes in a new template. Click **Cancel** to exit without making any changes.

Changing physical I/O settings

You can change the system I/O settings of a system by changing a quick-start or captured system template by using the Hardware Management Console (HMC). This changed template is used to deploy the system.

About this task

To change the physical I/O settings of a template, complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.

3. Click the **System** tab and select the system template that you want to change.
4. Click **Action > Edit**.
The **Template Detail** page is displayed.
5. To change the Physical I/O settings, click the **Physical I/O** tab. You can enable or disable using captured I/O information. Click the **Use Captured I/O Information** check box to use the captured physical I/O information.
6. Click **Save and Exit** to overwrite the changes that are made in the template, or click **Save As** to save the changes in a new template.


Changing Hardware Virtualized I/O settings

You can change the Hardware Virtualized I/O settings that are specified in a system template and either overwrite the template or save the changes in a new template by using the Hardware Management Console (HMC). You can change the Host Ethernet Adapter (HEA) and single root I/O virtualization (SR-IOV) settings.

About this task

To change HEA and SR-IOV settings of a template, complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.
3. Click the **System** tab and select the system template that you want to change.
4. Click **Action > Edit**.
The **Template Detail** page is displayed.
5. Click the **Hardware Virtualized I/O** tab.
6. In the **Host Ethernet Adapter** tab, you can modify the **HEA Port Group Settings** and the **HEA Physical Port Settings**.
 - a) In the **HEA Port Group Settings** area, you can select a value for the **Multi-Core Scaling (MCS) Value**. You can complete this task for each port group that is listed.
 - b) In the **HEA Physical Port Settings** area, for each of the ports that are listed, you can set the speed, specify full duplex or half duplex mode, enable or disable flow control, and specify the maximum receiving packet size.
 - c) To add an HEA, click the **Add** tab.
 - d) In the **HEA Port Group Settings** area, you can select a value for the **Multi-Core Scaling (MCS) Value**.
 - e) In the **HEA Physical Port Settings** area, you can set the speed, specify full duplex or half duplex mode, enable or disable flow control, and specify the maximum receiving packet size.
 - f) To remove an HEA, select the HEA to be removed and click the **Remove** tab.
7. In the **SR-IOV** tab, you must specify the SR-IOV physical Ethernet ports settings when you deploy the template.
8. Click **Save and Exit** to overwrite the changes that are made in the template, or click **Save As** to save the changes in a new template.

Results

The HEA tab contains general adapter-level settings that are applied to all discovered physical HEA ports and HEA port groups during deployment. For example, if you set the Port Group MCS Value to 2, the value for Maximum Logical Ports changes. During deployment, each port group that is located on any Host Ethernet Adapter on the target system has a Port Group MCS Value of 2 and makes the appropriate

number of logical ports available. Similarly, the four physical port settings apply to each physical port on all the HEAs discovered during deployment.

Changing Virtual I/O Server settings

You can change the Virtual I/O Server (VIOS) settings that are specified in a system template by using the Hardware Management Console (HMC). You can add or remove VIOS, change the properties of the VIOS, or change the resources that are assigned to the VIOS.

About this task

To change the VIOS settings of a template, complete the following steps:

Procedure



1. In the navigation pane, click the **HMC Management** icon.
2. Click **Templates and OS Images**.
3. Click the **System** tab and select the system template that you want to change.
4. Click **Action > Edit**.
The **Template Detail** page is displayed.
5. To change the Virtual I/O Server (VIOS) settings, click the **Virtual I/O Servers** tab. Select the VIOS that you want to rename. You can specify the name in the **VIOS Name** field. To add a VIOS, complete the following steps:
 - a) Click the **Add VIOS** tab.
 - b) In the **General** tab, you can specify the name for the VIOS in the **VIOS Name** field.
 - c) Select a value for the **Boot Mode** field.
 - d) To enable synchronization of the current profile, select the **Save Configuration Change to profile** check box.
When this option is selected, the partition profile is always synchronized with the last activated partition profile.
 - e) In the **Advanced Settings** area of the **General** tab, you can select or clear the **Automatic Start With Managed System**, **Mover Service Partition**, **Enable Connection Monitoring**, **Enable Redundant Error Path Reporting**, **Enable Time Reference**, **Enable VTPM**, and **Allow Performance Information Collection** fields. You can select a value for the **Secure Boot** field if you are using HMC Version 9.1.920, or later, and when the firmware is at level FW920, or later. If the HMC is at a Version 9.2.950, or later, and when the firmware is at level FW950, or later, you can specify a value of either 0 kilobytes (KB) or a value within the range of values supported by the system for the **Keystore Size** field.
 - f) In the **Processor** tab, if you select **Shared** for the processor mode, you can set the processor weight as capped or uncapped. When you set the processor weight as uncapped, you must specify a value for the processor weight in the **Weight** field.
 - g) In the **Virtual Processors** area, you can specify values for the **Maximum**, **Allocated**, and **Minimum** fields.
 - h) In the **Advanced Settings** area, you can select a value for the **Processor Compatibility Mode**.
 - i) In the **Processor** tab, if you select **Dedicated** as the processor mode, you can specify values for the **Maximum**, **Allocated**, and **Minimum** fields in the **Processors** area.
 - j) In the **Advanced Settings** area, you can select a value for the **Processor Compatibility Mode** and the **Idle Processor Sharing** fields.
 - k) In the **Memory** tab, if you select **Shared** for the memory mode, you can set the value for the memory in either MB or GB.

- l) In the **Memory Allocation** area, you can specify values for the **Maximum**, **Allocated**, and **Minimum** fields.
 - m) In the **Memory** tab, if you select **Dedicated** for the memory mode, you can set the value for the memory in either MB or GB.
 - n) In the **Memory Allocation** area, you can specify values for the **Maximum**, **Allocated**, and **Minimum** fields.
The **Advanced Settings** area is displayed only when you use dedicated memory. You can enable **Enable Memory Expansion**, and the **Huge Page Memory**.
 - If you enable **Enable Memory Expansion**, you can specify a value in the range 1.0 - 10.0 for the Active Memory Expansion (AME) factor.
 - If you enable **Huge Page Memory**, you can specify values for **Minimum**, **Allocated**, and **Maximum** fields.
 - o) In the **Physical I/O Adapters** tab, if you select the **Use Captured I/O Information** check box, you can view the details of the physical I/O adapters that were captured.
 - p) Click the **Hardware Virtualized I/O** tab and then click the **SR-IOV** tab. If you select the **Use Captured I/O Information** check box, you can view the details of the captured physical Ethernet port. If the captured system template contains information about RDMA over Converged Ethernet (RoCE) logical ports, that information about the RoCE logical ports is also listed. If you do not use the captured I/O information, you can select the logical port and the Shared Ethernet Adapter (SEA) backing device that you want to assign to the VIOS. Also, details about the RoCE logical ports are displayed if they are available in the system, but you cannot use RoCE logical ports as SEA backing devices.
 - q) If you do not select a SEA backing device and click the **Advanced Settings** tab, you can select available values for the **OS MAC Address Restrictions**, **VLAN ID Restrictions**, **Port VLAN ID**, and the **802.1Q Priority** fields.
 - r) To remove a logical port, select the logical port to be removed and click **Remove Selected**.
 - s) Click the **HEA** tab. You can select the logical port and the Shared Ethernet Adapter (SEA) backing device that you want to assign to the VIOS.
 - t) To add an HEA, click the **Add** tab. In the **HEA Port Group Settings** area, you can select a value for the multi-core Scaling (MCS) Value field. In the **HEA Physical Port Settings** area, you can set the speed, select full duplex or half duplex mode, enable or disable flow control, and specify the maximum receiving packet size.
 - u) To remove an HEA, select the HEA to be removed and click **Remove Selected**.
 - v) To delete a VIOS, select the VIOS, then right-click to select **Remove VIOS**.
6. Click **Save and Exit** to overwrite the changes that are made in the template, or click **Save As** to save the changes in a new template.


Changing virtual network settings

You can change the virtual network settings that are specified in a system template and overwrite the template or save the changes in a new template by using the Hardware Management Console (HMC). You can change the virtual switches or the properties of the network bridge. You can also add or remove virtual networks.

About this task

To change the virtual network settings of a template, complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .

2. Click **Templates and OS Images**.
3. Click the **System** tab and select the system template that you want to change.
4. Click **Action > Edit**.
The **Template Detail** page is displayed.
5. Click the **Virtual Networks** tab.
6. In the **Virtual Networks** area, right-click the virtual network that you want to change.
You can change virtual network name, and the **Load Balance Group**. You can also delete the virtual network.
7. In the **Virtual Switches** area, right-click the virtual network that you want to change.
You can change virtual switch name and specify whether the switching mode is Virtual Ethernet Bridging (VEB) or Virtual Ethernet Port Aggregator (VEPA).
8. In the **Virtual Bridges** area, right-click the network bridge that you want to change.
You can change the network bridge name, specify whether failover and load balancing is enabled, and specify the VIOS that are associated with the network bridge.
9. In the **Advanced Settings** area, you can specify the Quality of Service (QoS) Priority, and enable **Jumbo Frame** and **Large Send**.
10. Click **OK**.
11. To add a virtual network, complete the following steps:
 - a) Click **Add Virtual Network**.
 - b) Click the **Network Name** tab.
 - c) In the **Virtual Network Settings** area, enter a value for the virtual network in the **Virtual Network Name** field.
 - d) Select a value for the **Virtual Network Type**.
If you selected **Internal Network** for the **Virtual Network Type** field, enter a value in the **Virtual Network ID** field. Optionally, if you selected **Bridged Network**, you must select a value for the **IEEE 802.1q Tagging**.
 - e) Select the **Add new virtual network to all Virtual I/O Servers** check box to assign the virtual network to all the Virtual I/O Servers that are specified in the template.
 - f) In the **Virtual Switch Settings** area, click **Use an existing virtual switch** to use existing virtual switches, or click **Create a new virtual switch**.
If you clicked **Create a new virtual switch**, enter a value for the name of the virtual switch in the **Virtual Switch Name** field.
 - g) Click **Next**.
 - h) If the template had any existing virtual network bridges, you can click **Select existing Virtual Network Bridge**. Optionally, you can also click **Create a New Virtual Network Bridge**.
 - i) In the **Virtual Network Bridge Settings** area, enter a value for the **Virtual Network Bridge PVID (PowerVM)** field.
 - j) Select a value for the **Failover** field. If you choose to use failover for VIOS, you must also select a value for the **Secondary VIOS** and the **Load Sharing** fields.
 - k) Select a value for the **Primary VIOS** field.
l) In the **Optional Settings** area, select values for the **Jumbo Frame**, **Large Send**, and **QoS** fields.
 - m) Click **Next** to view and edit values in the **Load Sharing** tab only if you are using an existing virtual network bridge.
Clicking **Next** will allow you Otherwise, clicking **Next** will display the **Summary** tab.
 - n) In the **Load Sharing** tab, click **Use an existing Load Sharing Group** to use an existing load sharing group, or click **Create a new Load Sharing Group**.
 - o) If you select **Create a new Load Sharing Group**, enter a value for the **New Load Group PVID** field.

- p) Click **Next**.
 - q) In the **summary** tab, a summary of the configuration that was selected for the virtual network is displayed. You can review the configuration details and click **Finish** to add the virtual network to the VIOS specified in the template.
12. Click **Save and Exit** to overwrite the changes that are made in the template, or click **Save As** to save the changes in a new template.


Changing virtual storage settings

You can change the virtual storage settings that are specified in a system template and either overwrite the template or save the changes in a new template by using the Hardware Management Console (HMC). You can change the Virtual I/O Server (VIOS) that belong to a shared storage pool, or you can add or remove media repositories.

About this task

To change the virtual storage settings of a template, complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.
3. Click the **System** tab and select the system template that you want to change.
4. Click **Action > Edit**.
The **Template Detail** page is displayed.
5. Click the **Virtual Storage** tab.
6. In the **Virtual Shared Storage Pool Clusters** area, select the shared storage pool cluster that must be assigned to the VIOS. Alternatively, you can select **Choose at Deploy**. Complete this task for all the Virtual I/O Servers that are listed.
7. In the **Media Repositories** area, you can configure the media repository for each of the VIOS listed in the **Virtual Shared Storage Pool Clusters** area. In the **Media Repository Size** field, specify the size in percentage values. The unit of measurement can be GB or MB.
8. Click **Save and Exit** to overwrite the changes that are made in the template, or click **Save As** to save the changes in a new template.


Changing shared processor pool settings

You can change the shared processor settings that are specified in a system template and either overwrite the template or save the changes in a new template by using the Hardware Management Console (HMC). This template can be used to deploy a system with the changed shared processor pool settings. You can configure a maximum of 63 shared processor pools.

About this task

To change the shared processor pool settings of a template, complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.
3. Click the **System** tab and select the system template that you want to change.
4. Click **Action > Edit**.

- The **Template Detail** page is displayed.
- Click the **Shared Processor Pool** tab.
 - In the **Pool Name** field, you can specify a name for the pool. You can specify the reserved and maximum processing units that must be assigned to each processor pool in the **Reserved Processing Units** and **Maximum Processing Units** fields.
This adds another row to the table.
- Note:** You cannot rename the default pool.
- Click **Add Another** tab to add another shared processor pool and specify the name of the pool you want to add. This adds another row to the table.
 - To remove a shared processor pool, select the pool that you want to remove and click **Remove**.
 - Click **Save and Exit** to overwrite the changes that are made in the template, or click **Save As** to save the changes in a new template.


Changing Shared Memory Pool and Reserved Storage Device Pool settings

You can change the Shared Memory Pool and Reserved Storage Device Pool settings that are specified in a system template and either overwrite the template or save the changes in a new template by using the Hardware Management Console (HMC). This template can be used to deploy a system with the changed shared memory pool and reserved storage settings.

About this task

To change the Shared Memory Pool and Reserved Storage Device Pool settings of a template, complete the following steps:

Procedure

- In the navigation pane, click the **HMC Management** icon .
- Click **Templates and OS Images**.
- Click the **System** tab and select the system template that you want to change.
- Click **Action > Edit**.
The **Template Detail** page is displayed.
- Click the **Shared Memory Pool and Reserved Storage** tab.
- In the **Shared Memory Pool** area, you can specify a value for the pool size in the **Pool Size** field in GB or MB.
- In the **Maximum Pool Size** field, you can specify a value for the maximum pool size in GB or MB.
- From the **Active memory Deduplication** list, you can enable or disable Active memory Deduplication.
- In the **Reserved Storage Pool** area, you can specify the names of the Virtual I/O Server (VIOS) to be used as the **First Paging VIOS** and the **Second Paging VIOS**.
- Click **Save and Exit** to overwrite the changes that are made in the template, or click **Save As** to save the changes in a new template.

Changing advanced system settings

You can change the advanced system settings that are specified in a captured or user-defined system template and overwrite the template, or save the changes in a new template by using the Hardware Management Console (HMC). You can change the system performance, and Power On or Power Off policies for the systems. This reduces the time that is taken to deploy multiple systems.

Changing system performance settings


Your can change your system performance settings for the system to efficiently use its resources. Effective performance management can help you quickly respond to changes in your system and save on

expenses by postponing upgrades and service fees. You can also improve performance by setting appropriate values for the Logical Memory Block (LMB), Huge Page Count, and also by specifying the Power On and Power Off configuration.

About this task

To change the system performance settings, complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.
3. Click the **System** tab and select the system template that you want to change.
4. Click **Action > Edit**.
The **Template Detail** page is displayed.
5. Click the **Advanced System Settings** tab.
 - a) In the **Memory and Performance Configuration** area, you can specify the **Logical Memory Block (LMB)** size.
 - b) In the **Huge Page Count** field, specify a value.
6. Click **Save and Exit** to overwrite the changes made in the template, or click **Save As** to save the changes in a new template.


Changing power policy settings

You can change the power policy settings that are specified in a system template and overwrite the template or save the changes in a new template by using the Hardware Management Console (HMC). You can use this template to deploy a system with the changed power policy settings.

About this task

To change the system power policy settings, complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.
3. Click the **System** tab and select the system template that you want to change.
4. Click **Action > Edit**.
The **Template Detail** page is displayed.
5. Click the **Advanced System Settings** tab.
 - a) In the **Power On/Off Configuration** area, select a value from the **Server Firmware Start Policy** list.
 - b) From the **System Power Off Policy** list, select a value.
 - c) From the **Power On Speed** list, select a value.
 - d) You can enable or disable **Auto Power Restart**.
6. Click **Save and Exit** to overwrite the changes that are made in the template, or click **Save As** to save the changes in a new template.

Prerequisites for deploying a system by using a system template

Review the prerequisites before you deploy a system by using templates.

The **Deploy System from Template** wizard guides you through the deployment operation by using a system template. The wizard includes the following tasks:

- Selecting a system template when you start the deployment from a system, or selecting a system when you start the deployment from a template library.
- Configuring the system settings, assigning I/O adapters, and creating Virtual I/O Servers.
- Installing the Virtual I/O Server (VIOS) software.
- Configuring the network and storage I/O settings.

A system can be in one of the following states before you deploy a system template. Before you deploy a system template, review the following information to understand the impact of continuing with the deployment of the system when the system is in one of the following states:

- The system is in the manufacturing default configuration. You can start the system deployment on the system.
- The system is not in the manufacturing default configuration, and there are no partitions. If you attempt to deploy a system template on an already configured system, the HMC displays a warning message. If you click **OK**, the deployment continues and any previous partition configuration is removed. The system is configured with the partitions that are specified in the system template.
- The system is not in the manufacturing default configuration and has partitions. If you attempt to deploy a system template, the HMC displays a warning message. If you start the system deployment, existing logical partition configuration data is removed.

You must back up your data to perform a system recovery, when needed.

Related information

[Backing up and recovering data](#)

Deploying a system by using a system template

You can deploy systems by using system templates that are available in the template library of the Hardware Management Console (HMC). The **Deploy System from Template** wizard guides you to provide specific information about the target system that is required to complete the deployment on the selected system.

Before you begin

Before you deploy a system, consider the following prerequisites:

- The HMC is at Version 8.1.0, Service Pack 1, or later.
- The hypervisor is in the operating or standby state.
- The managed system is in the operating or standby state.
- The managed system does not have any logical partition that is associated to it.

Note: If logical partitions are already configured on the managed system, a warning message is displayed. If you continue with the deployment, the HMC completes the following actions:

- All system level configurations will be initialized or set to default values.
 - All the logical partitions that are in the running state will be shutdown and removed automatically.
 - All the Virtual I/O Servers that are in the running state will be shutdown and removed automatically.
- If you install the VIOS from a Network Installation Management (NIM) server, you must have the NIM server information that is required by the HMC.

About this task

When you deploy a system from a template, the HMC checks whether the configuration specified in the chosen template suits the required system capabilities.

To deploy a system by using the system template, complete the following steps:

Note: During the deployment, you can view all of the configuration settings specified in the template by clicking the **Template Details** tab.

Procedure



1. In the navigation pane, click the **Resources** icon .
 - a) Click **All Systems**. The All Systems page is displayed.
 - b) In the work pane, select the system and click **Actions > View System Properties**. The Properties page is displayed. You can choose only one system at a time.
 - c) Expand **System Actions > Templates > Deploy System from Template**. When you deploy a template on the system, a system data check operation is performed on the system that you selected. To check the status of a system, select a server from the list of servers and click **Reset**.
2. If the check operation displays warning or error messages, you can select another template from the template library. If the chosen template is compatible with the target system and no warning or error messages are displayed, or when the displayed warning message is acceptable, click **Next** to continue with the deployment. If the target system has logical partitions, you will be prompted with a message that indicates that the logical partition and the current system settings will be deleted which cannot be recovered and whether you want to continue with the deployment. Click **Yes** to continue with the deployment, or **No** to exit the wizard.

Alternatively, you can also select a system and click **Templates > Template Library**. Go to step 5.
3. If you choose to deploy the template from the template library, click the **System** tab and select a template from the list of templates. Click **Reset**. If the check operation displays warning or error messages, you can select another template from the template library. If the chosen template is compatible with the target system and no warning or error messages are displayed, or when the displayed warning message is acceptable, click **Next** to continue with the deployment. If the target system has any logical partitions, you will be prompted with a message that indicates that the logical partitions will be deleted and whether you want to continue with the deployment. Click **Yes** to continue with the deployment, or **No** to exit the wizard.
4. In the **SR-IOV Adapter Settings** page, you can select the single root I/O virtualization (SR-IOV) capable adapter.

You can assign a logical port from an SR-IOV adapter that is in shared mode to a Virtual I/O Server (VIOS). By default, the adapters are in the dedicated mode.

 - a) Click **Shared** to change the mode to the shared mode.
 - b) Click **Configure**.
 - c) In the **SR-IOV Adapter Settings** area, you can view or change the settings of each physical port on the SR-IOV adapter.
 - d) Click **Next**.
5. If the chosen template is compatible with the target system, the **VIOS Configuration Summary** page is displayed. You can optionally change the VIOS name. Click **Next**.
6. In the **Physical I/O** page, complete the following steps:
 - a) In the **Physical I/O Adapters** area, you can choose one or more Virtual I/O Servers to which you want to assign physical I/O adapters. You can view the adapters that are available in other drawers of the system by selecting the drawer in the **View adapters in** field. You can choose not to assign any physical I/O adapters to the VIOS by selecting the **Unassigned** option.

Note:

- The HMC communicates with the target system and provides a list of physical I/O adapters that can be assigned to a VIOS. You can assign each adapter to a single VIOS, you need not assign all of the adapters.
 - If you are using a captured system template from HMC V9.1.910, or earlier, and if the template contains captured physical I/O adapter information, the physical I/O adapter information captured from the system during the capture operation is not used by the HMC. The HMC checks for the available physical I/O adapters on the destination servers that can be assigned to the Virtual I/O Servers. The available physical I/O adapters are listed in the **Physical I/O** page, and you can choose a physical I/O adapter for assignment to the Virtual I/O Servers from this list. This behavior is also applicable when you do not want to use the captured I/O information (not selecting the **Use Captured I/O Information** check box in the **Physical I/O** page).
 - If the template that you use for deployment does not contain any VIOS, the wizard displays only the **System Configuration Progress**, and the **Configuration Summary** pages. The **Configuration Summary** page displays read-only information about the settings as defined in the template. You can review these settings, and click **Next** to view the **System Configuration Progress** page to start the deployment process.
 - If PowerVM is already configured on the system (the factory default configuration with all resources assigned to the logical partition, a message is displayed that indicates that a partition is already present in the system. You must reset the system manually before restarting the system deployment.
 - Slots that contain cable cards are non-partitionable and cannot be assigned to the VIOS. Therefore, the Physical I/O adapter configuration page does not display slots that contain cable cards although the cable cards are associated with the system.
- b) In the **Hardware Virtualized I/O** area, you can assign logical ports to a physical port of an SR-IOV capable adapter. Details about the adapters that are available such as the adapter type are displayed. RDMA over Converged Ethernet (RoCE) logical ports are displayed if RoCE logical ports are available.
- If you use captured I/O information, this page displays the list of adapters assigned for the configuration.
 - If you are not using captured I/O information, you can select a value for the **Physical Port, Label, Sub-label** field and you can specify a value for the **Capacity** field. You can complete this step for each of the Virtual I/O Servers that are listed.
- c) Click **OK**.
- The sum of the percentage capacity values for all the configured logical ports on a physical port must be less than or equal to 100%. To minimize the configuration effort when you add more logical ports, you can reserve some capacity for additional logical ports.
7. In the **System Configuration Progress** page, when you click **Start**, the system configuration starts and you can view the progress of the system configuration and a message that indicates successful configuration is displayed upon completion.
8. When the system update completes and when the VIOS partition is created, you can click the **Next** tab to install the VIOS image.
- Note:** This step might take some time, especially when you have to restart the system.
9. In the **VIOS Installation Configuration** page, you can select the **Installation Method**. You can also change the configuration values of the VIOS partitions that are listed. By clicking **Advanced Settings**, you can change the adapter speed, adapter duplex, VLAN tag priority, and the VLAN tag identifier default settings. Click **Next**.
- Note:** You can install the VIOS from a NIM server, a management console image, a manual console session, or from an image on a USB device. The fields that require data vary depending on the installation method that you choose. The following options are available depending on the installation method:
- When you install the VIOS from a NIM server, you must specify the server IP address. The HMC must be able to connect to the NIM server.

- When you install the VIOS from an image repository, you must specify the HMC IP address and the VIOS image name.
- When you install the VIOS from a management console, you must specify the boot mode.
- When you install the VIOS from a USB device, ensure that the USB device has the VIOS image that you want to install. You must specify the HMC IP address, and select the VIOS image from the list of VIOS images. All VIOS images that are save in the USB device are listed.

After you select the installation method, you must also specify an install adapter, the port number, and the VIOS IP address, subnet mask, and default gateway. Additionally, you can view the MAC address of the system when you select the NIM server installation option. You can optionally change the adapter speed, adapter duplex, VLAN tag priority, and the default settings of the VLAN tag identifier by clicking **Advanced Settings**. You can complete this step for each of the listed Virtual I/O Servers.

10. In the **VIOS Installation Progress** page, when you click **Start**, the VIOS software is installed on the system. To view the progress of the VIOS installation, click **Monitor vterm**. A message that indicates successful configuration is displayed when the installation is complete.
11. After the VIOS image is installed and after the RMC connection is established for all the Virtual I/O Servers, you can review the license agreement and click **Accept all VIOS Licenses** to accept the VIOS license agreement.
12. In the **VIOS Network Bridge Configuration** page, you can change the values of the listed network bridges. Click **Next**.

Note: A network bridge represents the Shared Ethernet Adapter (SEA) and trunk adapter that services a set of externally visible virtual networks. For redundant networks, the network bridge represents the matched set of Shared Ethernet Adapters and trunk adapters on both of the Virtual I/O Servers.

In the **NetBridge** area of the **Network Configuration** page, you can view a table that contains the available network adapters and ports that are assigned to the installed Virtual I/O Servers. Each VIOS that is installed and is associated with a Network Bridge in the template, has a separate table. You can select at least one port to create the Shared Ethernet Adapter for that VIOS, or select more than one physical port per VIOS, or choose to create a Link Aggregation Device from the ports that are selected on a VIOS. A link aggregation device also known as an EtherChannel device, is a network port-aggregation technology that allows several Ethernet adapters to be aggregated. The adapters that are aggregated then act as a single Ethernet device. Link aggregation provide more throughput over a single IP address than a single Ethernet adapter. When you are using a captured template for the system deployment, the ports and **Create Link Aggregation Device** might already be selected.

13. In the **VIOS Virtual Storage Configuration** page, you can associate a VIOS to a shared storage pool. You can configure the Reserved Storage Device Pool, and the media repository volume group. Click **Next**.

Note: You can assign a VIOS to a shared storage pool cluster or assign it later. A shared storage pool cluster provides distributed storage access to the VIOS partitions in the cluster. You can also configure a Reserved Storage Device Pool. A Reserved Storage Device Pool has reserved storage devices that are also called paging space devices and is similar to a Shared Memory Pool of memory size 0 bytes.

When you configure a reserved storage pool, the **Deploy System from Template** wizard page displays the available Reserved Storage Devices. You can select an available device from the list of devices to create the Reserved Storage Device Pool. You must select which VIOS should be the first and second paging VIOS. A paging VIOS is a VIOS partition that is assigned to the Shared Memory Pool and provides access to the paging space devices for the logical partitions that are assigned to the Shared Memory Pool.

In the Media Repository Volume Groups area, an editable field that contains the Media Repository name and a table that contains the available storage devices to assign to the Volume Groups is displayed. You can also configure a Media Repository.

14. In the **I/O Progress page** page, when you click **Start**, the configuration process starts and you can view the I/O configuration. You can click **Next**, after you see a message that indicates successful installation.

15. In the **Summary** page, you can view a summary of the changes. Click **Finish**.

Your system is now fully deployed based on the configuration settings that were specified in the template.

Note: If the configuration is unsuccessful, you must exit the **Deploy System from Template** wizard and restart the system deployment. You can exit the wizard by clicking **Finish**.

- You cannot deploy an incomplete template.
- If the deploy operation fails immediately after a machine data reset, all the current configuration of the target system is destroyed and you cannot restore the system to the previous state.
- If the deploy operation fails, the deploy system template wizard creates a VIOS and a message is displayed that indicates that the deployment competed with errors. The VIOS that was created cannot be rolled back. You must clean up the deployment manually or use the **Manage PowerVM** functionality available in the HMC to assign the network or storage to the VIOS that was created.

Recovering from a system deployment failure

If a system deployment by using the system template fails, use the Hardware Management Console (HMC) to reset the system to a nonpartitioned configuration. The factory reset mode (or manufacturing default configuration) is equivalent to the initial single partition configuration of the managed system as received from your service provider. After you reset the system, run the **Deploy System Template** wizard again.

If the system deployment by using the system template fails, the system is not restored or backed up to its previous state. You must manually configure the system by using the HMC command-line interface, or start a new deployment. If the deployment of a system fails, exit the Deploy System Template wizard. Reset the system to a nonpartitioned configuration and restart the deployment process. To reset the system, type the **rstprofdata** command from the HMC command line. Specify a value of 4 for the *restore type* parameter. Then, restart the Deploy System Template wizard. The **rstprofdata** command removes only the data disk, but the boot disk is retained.

When the system deployment fails during the I/O adapter configuration, network configuration, or virtual storage configuration, you can exit the wizard and complete the configuration by using the **Manage PowerVM** functionality available in the HMC.

Related information

[Resetting the managed system to a nonpartitioned configuration](#)

[rstprofdata](#)

Copying a system template

You can copy a quick-start or captured system template into a new system template along with the configuration details that are specified in the template by using the Hardware Management Console (HMC).

About this task

To copy a system template, complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.

3. Click the **System** tab and then select the system template that you want to copy and click **Action > Copy**.
4. In the **Copy System Template** page, specify the name for the template in the **Template name** field. If a template with the same name exists, the copy fails and an error message is displayed.
5. Click **OK**.

Importing a system template

You can import a system template into the template library by using the Hardware Management Console (HMC).


About this task

Before importing a system template, consider the following restrictions:

- If the system template schema is different from the schema that is supported by the HMC, for example, if a tag that is not a part of the template OpenDocument Spreadsheets (ODS) file element is used, the system template cannot be imported. However, if you are using HMC V9.1.930, or later, you can select another system template and import that system template.
- If the system template file size exceeds 10 MB, the system template cannot be imported and the operation fails. However, if you are using HMC V9.1.930, or later, you can select another system template and import that system template.

To import a system template, complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.
3. Click the **System** tab and click **Import**.

The following restrictions apply when you import a system template:

4. In the **Import System Template** page, click **Browse** to navigate to the required template file.

After you select the file, the selected file name is displayed in the **Template name** field. You can optionally change the name of the file. If a template with the same name exists, the import operation fails and an error message is displayed. If you are using HMC V9.1.930, or later, you can change the name of the file or select another system template and import that system template.

5. Click **OK**.


Exporting a system template

You can export a system template from the template library by using the Hardware Management Console (HMC).

About this task

To export a system template, complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.
3. Click the **System** tab. Select the template and click **Action > Export**.

- A browser-generated window opens where you can choose to save the exported file.
4. Click the **Save file** tab and specify the file name to which the exported file must be saved.
 5. Click **OK**.


Deleting a system template

You can delete a system template from the template library by using the Hardware Management Console (HMC).

About this task

To delete a system template, complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.
3. Click the **System** tab. Select the template and click **Action > Delete**.
4. In the **Delete Template** page, click **Yes** to delete the selected template, or click **No** to close the **Delete Template** page.

Partition templates

Partition templates contain details about partition resources, such as physical adapters, virtual networks, and storage configuration. You can create client partitions from the quick-start templates that are available in the template library or from your own user-defined templates. You can use the **Deploy Partition template** wizard to create AIX, IBM i, or Linux logical partitions.

In previous releases, partitions were associated with profiles, which stored the configuration information for that partition. It was only possible to turn on a partition after you activated the partition by choosing a profile.

With the Hardware Management Console (HMC) Version 8.1.0, Service Pack 1, or later, when you create a partition by using a template, a default profile for that partition is created automatically. The profile is based on the configuration that is specified in the template that was used to create the partition. After you create a partition by using a template, the template does not retain any association with the partition that you created. You need not use a template to create a new partition, however, by using templates you can simplify the partition creation process. Templates offer more flexibility than profiles because you can choose from the following options when you create a partition by using a template:

- **Create partition** - Creates a partition based on the template you chose, but does not turn on the partition.
- **Create and activate partition** - Creates a partition based on the template you chose and commits the resources that are associated with that template to the partition. Unlike the **Create partition** option, this option turns on the partition.

The quick-start partition templates included in the template library contain configurations based on common scenarios. However, you can also create user-defined templates that contain configuration settings that are specific to your environment.

Partition templates are primarily useful for creating new partitions. The process of deploying a partition by using a template includes the following tasks:

1. [“Prerequisites for creating a logical partition by using a template” on page 23](#)
2. [“Viewing partition template details” on page 23](#) (optional)
3. [“Capturing a partition configuration” on page 23](#) (optional)
4. [“Creating a logical partition by using a template” on page 33](#)

You can also complete the following tasks by using partition templates:

- [“Changing a partition template” on page 24](#)
- [“Copying a partition template” on page 31](#)
- [“Importing a partition template” on page 31](#)

Prerequisites for creating a logical partition by using a template

Review the prerequisites before you create a logical partition by using a template.

You can create an AIX, IBM i, or Linux logical partition by using any of the partition templates from the template library. The **Create Partition from Template** wizard guides you through the procedure of creating a logical partition.

The system must be in the running state before you create a logical partition from a template on that system. You cannot create a partition from a template when the system is in the powered-off state.

You can choose only one template or system at a time. The system that you chose to deploy to, or the template name that you chose from the template library is displayed on the screen.


Viewing partition template details

Before you create a logical partition by using a template, review the details in that template. By reviewing the configuration details, you can determine whether that template suits the requirements of your environment. If you are already certain which template you want to use to create a logical partition, this task is optional.

About this task

To view the details of a partition template by using the Hardware Management Console (HMC), complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.
3. Click the **Partition** tab and select the partition template that you want to view.
4. Click **Action > View**.

You can view the details such as the processor, memory, physical I/O adapter and the general properties of the partition. You can view the **Virtualization Capabilities** area of the general properties tab to verify whether the partition supports the simplified remote restart feature. You can also view the **Virtual Networks, Virtual NICs, Virtual Storage, and Hardware Virtualized I/O** details of the partition by clicking the relevant tabs that are displayed. Alternately, you can view the template details from the **Create Partition from Template** wizard.

Capturing a partition configuration

You can capture the configuration details from a running partition or from a partition that is not activated and save the configuration as a custom template. You can use this function to create multiple partitions with the same configuration. If you want to use a quick-start template, you need not complete this task.

About this task

To capture the current configuration of a running logical partition by using the Hardware Management Console (HMC), complete the following steps:

Procedure



1. In the navigation pane, click the **Resources** icon .
 - a) Click **All Systems**. The All Systems page is displayed.
 - b) In the work pane, select the system on which the partition is located and click **Actions > View System Partitions**. All the partitions that are available on the system are displayed.
 - c) Select the partition for which you want to capture the configuration information and click **Actions > Templates > Capture Partition as a Template**. Details about the partition configuration such as processors, memory, physical I/O adapters, and virtualized I/O adapters are displayed in the Template Details page. If the configuration is captured for a partition that supports the simplified remote restart capability, the captured template displays the feature as enabled in the **Virtualization Capabilities** area of the general properties tab. All data that is not specific to a target is captured in the appropriate fields of the partition template.
2. In the **Capture as Partition Template** page, specify the name for the template file in the **Template Name** field.
3. Enter a description for the template in the **Template Description** field and click **OK** to save the captured template, or click **Cancel** if you want to cancel the operation.

In the **Capture as Partition Template** page, you can also view the progress of the capture operation. A message indicates the successful completion of the capture operation. Appropriate warning or error messages are displayed when applicable and errors result in a failure of the capture operation.

Results

If you chose to save the template, your custom template is now available in the template library. You can create a partition by using this template. For instructions, see [“Creating a logical partition by using a template”](#) on page 33. You can also change the configuration details of the template. For instructions, see [“Changing a partition template”](#) on page 24.

Changing a partition template

You can change the details that are specified in a user-defined or captured partition template and save the changes in a new partition template. You can also overwrite the template by saving the changes in the same template. You can use the template to create a logical partition by using the Hardware Management Console (HMC).

About this task

To change the partition template by using the HMC, complete the following steps:

Procedure



1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.
3. Click the **Partition** tab and select the partition template that you want to change.
4. Click **Action > Edit**.
5. To change the partition properties of the template, click the **Properties** tab.

In the **Overview** area of the **General** tab, you can change the general properties such as the partition name and the type of partition. Also, you can view the virtual serial number that is captured in the template. You can enable or disable Simplified Remote Restart, in the **Virtualization Capabilities** area of the **General** tab. You can choose one of the following three options for the value of the **Simplified Remote Restart** field:

- When you select the value **Enabled**, the HMC validates whether the server supports the simplified remote restart capability. If the server supports the feature, the partition is created successfully during partition creation by using the **Create Partition from Template** wizard. When the server does not support the feature, creation of the partition fails and an error message is displayed.
- When you select the value **Enable if Possible**, the HMC validates whether the server supports the simplified remote restart capability. If the server supports the feature, the partition is created successfully during partition creation by using the **Create Partition from Template** wizard. Otherwise, the **Create Partition from Template** wizard completes successfully without the simplified remote restart capability.
- When you select the value **Disabled**, the partition is created during partition creation by using the **Create Partition from Template** wizard without the simplified remote restart capability.

In the **Advanced settings** area, you can configure, enable and disable advanced AIX, Linux, or IBM i features. You can also disable the Live Partition Mobility feature for an AIX, Linux, or IBM i partition. The **Advanced** settings that are displayed depend on the type of partition you selected. You can select a value for the **Secure Boot** field if you are using HMC V9.1.920, or later and when the firmware is at level FW920, or later. Additionally, if the HMC is at a Version 9.2.950, or later, and when the firmware is at level FW950, or later, you can specify a value of either 0 kilobytes (KB) or a value that is supported by the managed system for the **Keystore Size** field. Click **Save As** to save the changes in a new name template. Otherwise, click **Save and Exit** to overwrite the changes in the template.

- To change the shared processor settings of the template, click the **Processor** tab and select Shared for the **Processor Mode** field.
 - From the **Shared Processor Pool** field, select the shared processor pool for the partition.
 - Select **Capped** or **Uncapped** as the processor weight. For capped processor weight, specify a value for the weight in the **Weight** field.
 - In the **Virtual Processors** area, you can specify values for the **Maximum, Allocated,** and **Minimum** fields.
 - In the **Processing Units** area, you can specify values for the **Maximum, Allocated,** and **Minimum** fields.
 - Click **Save As** to save the changes in a new name template. Otherwise, click **Save and Exit** to overwrite the changes in the template.
- To change the dedicated processor settings of the template, click the **Processor** tab and select Dedicated for the **Processor Mode** field.

If you select **Dedicated** as the processor mode, the options for specifying the virtual processors, and processing units, and selecting capped or uncapped processor weight are not available.

 - In the **Processors** area, you can specify values for the **Maximum, Allocated,** and **Minimum** fields.
 - Click the **Advanced Settings** tab to change the **Processor Compatibility Mode** or enable or disable the **Dedicated Donor Mode**.
 - Click **Save As** to save the changes in a new name template. Otherwise, click **Save and Exit** to overwrite the changes in the template.
- To change the shared memory settings of the template, click the **Memory** tab and select Shared for the **Memory Mode** field.
 - You can select MB or GB as the memory unit.
 - In the **Memory Allocation** area, you can specify values for the **Maximum, Allocated,** and **Minimum** fields.
 - Click the **Advanced Settings** tab to change the advanced memory settings for the logical partition. From the **Assigned I/O Entitled memory** list, select **Auto** or **Manual**. If the operating system environment is IBM i, you can use **Huge Page Memory**. If the operating system environment is AIX, you can also choose to use active memory expansion by selecting **Enable Active memory Expansion**.

- d) Click **Save As** to save the changes in a new name template. Otherwise, click **Save and Exit** to overwrite the changes in the template.
9. To change the dedicated memory settings of the template, click the **Memory** tab and select **Dedicated** for the **Memory Mode** field.
- You can select MB or GB as the memory unit.
 - In the **Memory Allocation** area, you can specify values for the **Maximum, Allocated,** and **Minimum** fields.
 - Click the **Advanced Settings** tab to change the advanced memory settings for the logical partition. If the operating system environment is IBM i, you can choose use **Huge Page Memory**. If the operating system environment is AIX, you can also choose to use active memory expansion by selecting **Enable Active memory Expansion**.
If the processor mode is dedicated, then you can set the memory only to the dedicated mode.
 - Click **Save As** to save the changes in a new name template. Otherwise, click **Save and Exit** to overwrite the changes in the template.
10. To change the physical I/O settings of the template, click the **Physical I/O Adapters** tab.
When you use a template with captured I/O information, the **Physical I/O Adapters** tab displays a table of the captured I/O adapter information and the descriptions of those adapters as captured from the original system. These descriptions might not display the actual adapter type to which the location codes are mapped on the target system. You cannot change the I/O adapter settings when the captured I/O information matches that of the target system. If you do not want to use the captured information, clear the **Use Captured I/O Information** check box. You can assign I/O adapters that are displayed to the partition.
11. To change the configuration of the persistent memory volume in the template, click the **Persistent Memory** tab.
Persistent memory is supported only when you are using HMC V9.1.940, or later and when the firmware is at level FW940, or later.
- In the **Persistent Memory** area, you can view all the virtual persistent memory volumes that are configured for the logical partition.
If you are using the captured I/O information, you can view the name of persistent memory volume, affinity, and the size of the persistent memory volume that are captured from the original system. If you are not using the captured I/O information, you can complete the following tasks:
 - To add persistent memory volumes, click **Add** in the **Persistent Memory** page.
 - To remove persistent memory volumes, select the persistent memory volumes in the **Persistent Memory** page and click **Action > Remove**.
 - You can select the **Affinity** check box in the **Partition Properties** page when you want the operating system to get information about the memory allocation across multiple dual in-line memory modules (DIMMs). This information might be useful for applications that run on the logical partition.
12. To change the virtual network settings of the template, click the **Virtual Networks** tab in the **Details** area.
- In the **Partition Virtual Networks** area, you can choose either **Choose Virtual Networks during Deployment** or **Specify Virtual Networks in this Partition Template**.
 - If you choose **Specify Virtual Networks in this Partition Template**, you must specify the virtual local area network (VLAN) Name and VLAN ID. To add a virtual network, click the **Add Network** tab. A row is appended to the bottom of the table with the appropriate fields. To remove a network, select a network to be deleted from the table and click **Remove Selected**.
 - Click **Save As** to save the changes in a new name template. Otherwise, click **Save and Exit** to overwrite the changes in the template.
13. To change the virtual Network Interface Controller (vNIC) settings of the template, click the **Virtual NICs** tab in the **Details** area.

- a) You can edit, add, or remove vNICs only when you clear the **Use Captured I/O Information** check box. To add vNICs to the template, click **Add Virtual NIC**. You can specify values for the **Port VLAN ID**, **VLAN ID restrictions**, **MAC Address**, **OS MAC Address restrictions**, **Backing Device Capacity (%)**, and **Backing Device Failover Priority** fields. The default value for the **Backing Device Failover Priority** field is Use Default. To modify the default values for the backing device or to add and remove backing devices to the vNIC, select the virtual NIC and click **Action > Modify Backing Device**. You can enable or disable Virtual NIC Auto Priority Failover. To add more backing devices to the vNIC, click **Add Backing Device**. To remove a backing device, select the backing device and click **Remove**. To change the settings of a vNIC, select the vNIC that you want to change and click **Actions > Modify**. To remove a vNIC, select a vNIC to be deleted from the table and click **Actions > Remove**.
- If the **Use Captured I/O Information** check box is selected, you can view the vNICs listed in the table but you cannot edit the vNICs. To view the details of a vNIC, select the vNIC and click **Actions > View**.
- b) Click **Save As** to save the changes in a new name template. Otherwise, click **Save and Exit** to overwrite the changes in the template.
14. To change the virtual storage settings of the template, click the **Virtual Storage** tab in the **Details** area.
- a) In the **Virtual SCSI** tab, you can configure the virtual SCSI adapters that are required for a partition activation. If you are using a captured template, the table displays all the shared storage pool volumes that are captured in the template.
- b) In the **Shared Storage Pool Volume** area, click the **Add SSP Volume** tab to add shared storage pool volumes, or click **Remove Selected** to remove the selected shared storage volume.
You must specify a shared storage pool volume in the template to add any shared storage pool volumes when you are creating the partition by using the template.
- c) You can choose to specify the shared storage pool cluster when you are creating the partition by selecting the value **Choose at deploy** from the Shared Storage Pool Cluster Name list, or you can specify the shared storage pool and the tier.
- d) You can also enable or disable thin provisioning for the shared storage volume pools.
- e) In the **Physical Volumes** area, you can enable **Configure Physical Volumes**.
- a) Click **Save As** to save the changes in a new name template. Otherwise, click **Save and Exit** to overwrite the changes in the template.
15. To change the virtual Fibre Channel settings of the template, click the **Virtual Fibre Channel** tab.
- a) You can choose **Configure Virtual Fibre Channel storage during deployment**, **Configure Virtual Fibre Channel storage with captured information**, or **Do not configure Virtual Fibre Channel storage**.
If you are using a captured template, the captured Fibre Channel Port information is also displayed.
- b) Click **Save As** to save the changes in a new name template. Otherwise, click **Save and Exit** to overwrite the changes in the template.
16. To change the virtual optical device settings of the template, click the **Virtual Optical Device** tab. You can choose to configure the virtual optical device adapter that is required for the partition activation. The table displays all the Virtual Optical Devices that are captured in the template.
- a) Click **Add Virtual Optical Device** to add an optical device.
- b) To delete a device, click the **Remove** tab that is displayed in the row of the optical device that you want to delete.
- c) Click **Save As** to save the changes in a new name template. Otherwise, click **Save and Exit** to overwrite the changes in the template.
17. In the **Details** area, click the **Hardware Virtualized I/O** tab.
- a) Click the **HEA** tab. You can change the operating system-level VLAN ID and MAC address restrictions for each logical Host Ethernet adapter (LHEA) that is listed in the table. If you select

the **Use Captured I/O Information** check box, you cannot add or remove any logical ports or change the values of the **Advanced Settings** tab.

You cannot add or remove any LHEA.

b) Click the **SR-IOV** tab. The **Use Captured I/O Information** check box is selected by default.

- If you are using captured I/O information, you cannot add or remove any logical ports or change the values in the **Advanced Settings** tab. If the captured partition template contains information about RDMA over Converged Ethernet (RoCE) logical ports, that information about the RoCE logical ports is also listed. In the **SR-IOV Logical Ports** area, you can view but cannot change the settings of the SR-IOV backup devices that can be migrated to another server.
- If you are not using the captured I/O information by clearing the **Use Captured I/O Information** check box, you can complete the following tasks:
 - Change properties that are specific to Ethernet logical ports.
 - Specify the capacity of the logical port as a percentage of the capability of the physical port. The capacity level determines the amount of resources that are assigned to the logical port from the physical port.
 - Click the **Add** tab to add a RoCE logical port to the template.
 - Configure an SR-IOV logical port such that you can migrate the logical port to another server by selecting the SR-IOV backup device from the **Backup Device Type** list in the **Modify Advanced Settings** page.

Notes:

- You can migrate only SR-IOV logical ports but you cannot migrate RoCE logical ports.
- When the HMC is at Version 9.1.940.x, and when the firmware is at level FW940, the Migratable option for the Hybrid Network Virtualization capability is available as a Technology Preview only and is not intended for production deployments. However, when the HMC is at Version 9.1.941.0, or later, and when the firmware is at level FW940.10, or later, the Migratable option for the Hybrid Network Virtualization capability is supported.

c) To edit the settings of the logical port, select the port and click the **Advanced Settings** tab. You can select values for the **OS MAC Address Restrictions** and **VLAN ID Restrictions** fields.

- If you selected **Allow Specified** as the value for the **OS MAC Address Restrictions** field, you must specify the MAC addresses in the **Specify allowed MAC Address(es)** field. To add more MAC addresses, click the plus sign (+) and to remove MAC addresses, click the minus sign (–).
- If you selected **Allow Specified** as the value for the **VLAN ID Restrictions** field, you must specify the VLAN ID or range of VLAN IDs in the **Specify VLAN ID(s) or range** field.
- If you specify the value for the VLAN ID as 0, the **802.1Q Priority** priority field is disabled. However, if you specify any value in the range 2 - 4094, you can set the priority value. Priority is used to prioritize the frames in a VLAN network.
- The **Promiscuous** option is disabled unless the logical port is used as the physical device for bridging virtual Ethernet adapters on client partitions. When the logical port is in promiscuous mode, the **VLAN ID Restrictions** and the **OS MAC Address Restrictions** fields are disabled. Click **Close**.

d) To add a logical port, click the **Yes** tab.

e) To remove a logical port, click the **Remove Selected** tab.

f) Click **Save As** to save the changes in a new name template. Otherwise, click **Save and Exit** to overwrite the changes in the template.


Changing a partition template to disable Live Partition Mobility

You can disable the Live Partition Mobility feature of a logical partition by changing a user-defined or captured partition template and save the changes in a new partition template by using the Hardware Management Console (HMC).

About this task

The HMC provides the **Disable Migration** option to disable the Live Partition Mobility feature at a logical partition level. This option can be used by customers to address application licensing requirements of Independent Software Vendors (ISV). To disable the Live Partition Mobility feature for a logical partition by using the HMC, complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.
3. Click the **Partition** tab and select the partition template that you want to change.
4. Click **Action > Edit**.
5. To change the partition properties of the template, click the **Properties > Advanced settings** tab.
6. Select the **Disable Migration** check box.
7. Click **Save and Exit** to save the changes in the same template, or select **Save As** to save the changes in a new template.

Some Independent Software Vendors might require you to purchase a license for all systems where their application can be migrated. Rather than disabling the Live Partition Mobility feature at a system level, IBM provides this logical partition level mechanism that can be audited, to disable migration to address ISV licensing requirements while preserving the ability to leverage migration for applications running on other logical partitions on the system.

Note: IBM software does not stipulate such licensing requirements.

The **Disable Migration** option is supported on all firmware versions, and when the system is managed by an HMC that is at version 8.4.0, or later. Also, you can run the **chsyscfg** command with a value 1 for the *migration_disabled* attribute, from the HMC command line. To disable the Live Partition Mobility feature of a logical partition during partition creation, run the **mksyscfg** command with a value 1 for the *migration_disabled* attribute, from the HMC command line. The **Disable Migration** option is also supported by the Representational State Transfer (REST) application programming interfaces (APIs).

Note: PowerVM NovaLink supports the **Disable Migration** option when the system is co-managed by an HMC. However PowerVM NovaLink does not provide an option to disable Live Partition Mobility feature.

Viewing system event logs for the Live Partition Mobility disable operation

Any changes that are made to the **Disable Migration** option provided by the Hardware Management Console (HMC) is logged as a system event, and can be checked for auditing purposes. A system event is also logged when the remote restart or simplified remote restart capability is set. The system event logs are read only and cannot be modified.

A system event is logged when the following actions occur:

- The remote restart, simplified remote restart, or Live Partition Mobility attributes are set during creation of a logical partition.
- The remote restart, simplified remote restart, or Live Partition Mobility attributes are changed.
- When you restore profile data. For more information about restoring profile data, see [Restoring profile data](#).

You can view the system events by running the **lssvcevents** command from the HMC command-line interface. You can also view the system events by using the graphical user interface (GUI). For more information about using the GUI, see [Console Events Logs](#). By running the **chhmc** command from the HMC command-line interface, these system events can also be sent to a remote server that is on the same network as the HMC.

The following system events can be logged:

<i>Table 1. Event ID and the corresponding message string</i>	
Event ID	Event message String
2420	User name {0}: Disabled partition migration for partition {1} with ID {2} on managed system {3} with MTMS{4}
2421	User name {0}: Enabled partition migration for partition {1} with ID {2} on managed system {3} with MTMS{4}
2422	User name {0}: Disabled Simplified Remote Restart for partition {1} with ID {2} on managed system {3} with MTMS{4}
2423	User name {0}: Enabled Simplified Remote Restart for partition {1} with ID {2} on managed system {3} with MTMS{4}
2424	User name {0}: Disabled Remote Restart for partition {1} with ID {2} on managed system {3} with MTMS{4}
2425	User name {0}: Enabled Remote Restart for partition {1} with ID {2} on managed system {3} with MTMS{4}

The following are examples of System Events:

- Command to check which logical partitions managed by an HMC have the Live Partition Mobility feature disabled or enabled:

```
lssvcevents -t console | grep vclient
```

The following examples show a sample output of the **lssvcevents** command:

```
time=10/30/2015 10:11:32,text=HSCE2521 UserName hscroot: Enabled partition migration for
partition
vclient10 with Id 10 on Managed system ct05 with MTMS 8205-E6D*1234567.
```

```
time=10/30/2015 10:01:35,text=HSCE2520 UserName hscroot: Disabled partition migration for
partition
vclient9 with Id 9 on Managed system ct05 with MTMS 8205-E6D*1234567.
```

- Command to check which logical partitions managed by an HMC have the Live Partition Mobility feature disabled:

```
lssvcevents -t console | grep HSCE2520
```

The following example shows a sample output of the **lssvcevents** command:

```
time=10/30/2015 10:01:35,text=HSCE2520 UserName hscroot: Disabled partition migration for
partition
vclient9 with Id 9 on Managed system ct05 with MTMS 8205-E6D*1234567.
```

- Command to check which logical partitions managed by an HMC have the Live Partition Mobility feature disabled or enabled for a particular system (1234567):

```
lssvcevents -t console | grep "partition migration for partition" | grep 1234567
```

The following examples show a sample output of the **lssvcevents** command:

```
time=10/30/2015 10:11:32,text=HSCE2521 UserName hscroot: Enabled partition migration for
partition
vclient10 with Id 10 on Managed system ct05 with MTMS 8205-E6D*1234567.
```

```
time=10/30/2015 10:01:35,text=HSCE2520 UserName hscroot: Disabled partition migration for
partition
vclient9 with Id 9 on Managed system ct05 with MTMS 8205-E6D*1234567.
```

- Command to check whether a specific logical partition (vclient9) in a specific system (1234567) managed by an HMC has the Live Partition Mobility feature disabled or enabled:

```
lssvcevents -t console | grep "partition migration for partition vclient9" | grep 1234567
```

The following example shows a sample output of the **lssvcevents** command:

```
time=10/30/2015 10:01:35,text=HSCE2520 UserName hscroot: Disabled partition migration for
partition
vclient9 with Id 9 on Managed system ct05 with MTMS 8205-E6D*1234567
```


Copying a partition template

You can copy a quick-start or captured partition template into a new partition template along with the configuration details that are specified in the template by using the Hardware Management Console (HMC).

About this task

To copy a partition template, complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.
3. Click the **Partition** tab and select the partition template that you want to copy and click **Action > Copy**.
4. In the **Copy Partition Template** page, specify the name for the template in the **Template name** field. If a template with that name exists, the copy fails and an error message is displayed.
5. Click **OK**.

Importing a partition template

You can import a partition template into the template library by using the Hardware Management Console (HMC).


About this task

Before importing a partition template, consider the following restrictions:

- If the partition template schema is different from the schema that is supported by the HMC, for example, if a tag that is not a part of the template OpenDocument Spreadsheets (ODS) file element is used, the partition template cannot be imported. However, if you are using HMC V9.1.930, or later, you can select another partition template and import that partition template.
- If the partition template file size exceeds 10 MB, the partition template cannot be imported and the operation fails. However, if you are using HMC V9.1.930, or later, you can select another partition template and import that partition template.

To import a partition template, complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.
3. Click the **Partition** tab and click **Import**.
4. In the **Import Partition Template** page, click **Browse** to navigate to the template file.

After you select the file, the selected file name is displayed in the **Template name** field. You can optionally change the name of the file. If a template with that name exists, the import fails and an error message is displayed. If you are using HMC V9.1.930, or later, you can change the name of the file or select another partition template and import that partition template.

5. Click **OK**.


Exporting a partition template

You can export a partition template from the template library by using the Hardware Management Console (HMC).

About this task

To export a partition template, complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.
3. Click the **Partition** tab. Select the template and click **Action > Export**.

A browser-generated window opens where you can choose to save the exported file.

4. Click **Save file** tab and specify the name of the file.
5. Click **OK**.


Deleting a partition template

You can delete a partition template from the template library by using the Hardware Management Console (HMC).

About this task

To delete a partition template, complete the following steps:

Procedure

1. In the navigation pane, click the **HMC Management** icon .
2. Click **Templates and OS Images**.
3. Click the **Partition** tab. Select the template and click **Action > Delete**.
4. In the **Delete Template** page, click **Yes** to delete the selected template. Otherwise click **No** to close the **Delete Template** page.

Creating a logical partition by using a template

You can create a partition by using partition templates that are available in the template library of the Hardware Management Console (HMC). The **Create a Partition from Template** wizard guides you through the deployment process and configuration steps.

About this task

The HMC checks whether the template that you selected matches the system capabilities when you click **Next**. If the template does not match the system capabilities, an error message is displayed. You can choose another template that matches the capabilities, or edit the template and use the changed template for creating the logical partition.

To create a partition by using the partition template, complete the following steps:

Procedure



1. In the navigation pane, click the **Resources** icon .
 - a) Click **All Systems**. The All Systems page is displayed.
 - b) In the work pane, select the system and click **Actions** > **View System Properties**. The Properties page is displayed.
 - c) Expand **System Actions** > **Templates** > **Create Partition from Template**. Alternatively, you can create a partition by accessing the template library.
2. Click **Next**.

If the selected template is compatible with the target system, the **Partition Configuration Summary** page is displayed. For servers that do not support IBM i partitions with native I/O capability, you must enable IBM i restricted I/O mode by selecting the **Restricted I/O Partition** check box. If you continue with the partition creation without selecting the **Restricted I/O Partition** check box, a warning message is displayed. You must run the wizard again and select the **Restricted I/O Partition** checkbox to continue with the partition creation.
3. In the **Partition Configuration Summary** page, you can change the default partition name. For AIX or Linux partitions, you can also select the **Shared Processor Pool** option if the partition template specifies that the partition uses shared processors. For IBM i logical partitions, the **IBM i Tagged I/O** tab is displayed (for more information on **IBM i Tagged I/O** tab, see step 8). Additionally, if the managed system supports virtual serial number (VSN) and the managed system is not in a Power® Enterprise pool 2.0, you can also specify the **Virtual Serial Number** for the logical partition. You can choose any one of the following options:
 - No VSN
 - Auto-assign
 - Select from the pool

Click **Template Details** to view the details of the template. If you are using HMC V9.1.920, or later, and when the firmware is at level FW920, or later, the secure boot feature is supported. To select a value for the **Secure Boot** field, click the **General** tab, and click **Advanced**. Select a value and click **Next**. Additionally, if you are using HMC V9.2.950, or later, and when the firmware is at level FW950, or later, you can specify a value of either 0 kilobytes (KB) or a value that is supported by the managed system for the **Keystore Size** field. To select a value for the **Keystore Size** field, click the **General** tab, and click **Advanced**.

Notes:

- If the system key for encrypting the partition keystore data is not a user-defined key, then you cannot create an logical partition with both the partition keystore and simplified remote restart capabilities enabled.

- If the template contains details about the virtualization capabilities like Live Partition Mobility, you can view the details by clicking **Template Details**.
4. In the **Persistent Memory** page, complete the following steps:

If you are using a captured partition template, the **Persistent Memory** area shows all the persistent memory volumes that are captured from an original system. You can edit the name for the persistent memory volume and associate the persistent memory volumes to the logical partition. If you are not using the captured I/O information, you can add a persistent memory volume to the logical partition by using the using the **edit partition template** task. During the deploy operation, you can change the name and size of the persistent memory volume and associate it with the logical partition.
 5. In the **Physical I/O** page, complete the following steps:
 - a) In the **Physical I/O Adapters** area, you can select the physical I/O adapters for the logical partition. To view the adapters that are available in other drawers of the system, select the drawer from the **View adapters in** list.
 - If you are using V9.1.910, or earlier, and if you are using a captured partition template and if the template contains captured I/O information, the physical I/O adapter information that is captured from the partition during the capture operation is not used by the HMC. The HMC checks for the available physical I/O adapters on the destination server that can be assigned to the logical partition. These available physical I/O adapters are listed in the **Physical I/O** page, and you can choose a physical I/O adapter for assignment to the logical partition from this list. This scenario is also applicable when you do not want to use the captured I/O information (not selecting the **Use Captured I/O Information** checkbox in the **Physical I/O** page).
 - If you are using HMC V9.1.930, or later, and if you are using a captured partition template, the physical I/O adapters on the destination server that match the details of the physical I/O adapters in the captured template are selected automatically. If there are no physical I/O adapters that match the details of the captured template, the HMC checks for the available physical I/O adapters on the destination server that can be assigned to the logical partition. The available physical I/O adapters are listed in the **Physical I/O** page, and you can choose a physical I/O adapter for assignment to the logical partition from this list.
 - b) In the **SR-IOV Logical Ports** area, you can complete the following tasks:
 - If you are using the captured I/O information and the captured partition template contains information about RDMA over Converged Ethernet (RoCE) logical ports, information about the RoCE logical ports is listed. You can select the target port from the list of target physical ports when there are multiple target physical ports that match the location code and support the logical port protocol of the source logical port (Ethernet or RoCE).

Notes:

- If you are using HMC V9.1.920, or earlier, the deployment operation fails when the server does not contain the exact match of the required SR-IOV Logical Ports.
- If you are using HMC V9.1.930, or later, you can continue with the deployment operation although the server does not have an exact match of the required SR-IOV logical ports, but has alternative SR-IOV physical ports to create logical ports. Also, you can continue with the deployment operation if the server does not have an exact match of the required SR-IOV Logical Ports for the backing devices, but has alternative SR-IOV physical ports to create logical ports that can be configured as backing devices.
- You can view but cannot change the settings of the SR-IOV logical ports that can be migrated to another server.
- If you are not using the captured I/O information from the template, you can complete the following tasks:
 - Assign the SR-IOV logical ports that are displayed to the logical partition. You can also specify the advanced properties for the logical port.
 - Select the target port, and change the capacity of the logical port. Only the physical ports that support the logical port protocol (Ethernet or RoCE) are listed.

- Configure an SR-IOV logical port such that you can migrate the logical port to another server.

Notes:

- You can migrate only SR-IOV logical ports but cannot migrate RoCE logical ports.
 - When the HMC is at Version 9.1.940.x, and when the firmware is at level FW940, the Migratable option for the Hybrid Network Virtualization capability is available as a technology preview only and is not intended for production deployments. However, when the HMC is at Version 9.1.941.0, or later, and when the firmware is at level FW940.10, or later, the Migratable option for the Hybrid Network Virtualization capability is supported.
- c) In the **Configure Backup Device Type** area, you can configure the **Backup Device Type** as a Virtual NIC adapter or a Virtual Ethernet Adapter.
6. If you specified the networks in the template before creating the partition, the **Network Configuration** page displays a summary of the virtual networks to which the partition connects. The page displays a list of available networks if you did not specify the networks before you created the partition. In both cases, you can specify the virtual Ethernet adapter ID. Click **Next**.
 7. In the **Virtual NIC Configuration** page, the table displays all the virtual Network Interface Controllers (vNICs) that are in the template. When the template uses captured I/O information, you can change the value of the **Hosting Partition** field and select a physical port that matches the hosting partition. When the template does not use captured I/O information, you can change the value of the **Capacity (%)**, **Physical Port**, **Hosting Partition**, and **Failover Priority** fields for each backing device. The number of physical ports must be equal to or greater than the number of backing devices of the vNICs that are specified in the template because each backing device of a vNIC must be created on a different physical port. You can also specify values for the **MAC Address** field which depends on the template settings. Click **Next**.
 8. In the **Storage Configuration** page, complete the following steps:

Note: You can configure storage resources such as virtual Small Computer Serial Interface (SCSI), virtual Fibre Channel, and virtual Optical devices. When you are using virtual adapters, you can connect logical partitions with each other without using physical hardware. Operating systems can display, configure, and use virtual adapters similar to how it can display, configure, and use physical adapters. Depending on the operating environment used by the logical partition, you can create virtual Ethernet adapters, virtual Fibre Channel adapters, virtual Optical devices, and virtual SCSI adapters. You can use virtual SCSI (vSCSI) to simplify the backup and maintenance operations on your managed system. When you back up the data on the system logical partition, you also back up the data on each client logical partition. You can configure the managed system with N_Port ID Virtualization (NPIV), such that multiple logical partitions can access independent physical storage through the same physical Fibre Channel adapter. NPIV is a standard technology for Fibre Channel networks. NPIV enables you to connect multiple logical partitions to one physical port of a physical Fibre Channel adapter.

- a) Click **Virtual SCSI**.
- b) In the **Physical Volume** area, you can assign physical volumes. Click **Edit Connections** to edit the Virtual I/O Server (VIOS) connections for the physical volumes. Click **Show assigned physical volumes** to view more physical volumes in the table.
- c) In the **Shared Storage Pool Volumes** area, you can view the device details for a shared storage pool volume. Click the device name to open the **Configure SSP Volume** window. In the **Configure SSP Volume** window, select the shared storage pool cluster and the tier that you want to assign the device to.

You can also enable or disable thin provisioning for the device. In a thin-provisioned device, the used storage space might be greater than the actual used storage space. If the blocks of storage space in a thin-provisioned device are unused, the device is not entirely backed up by physical storage space. By using thin-provisioning, you can exceed the storage capacity of the storage pool.
- d) Click **Virtual Fibre Channel**. The **Virtual Fibre Channel** content area displays a table with the available Virtual Fibre Channel ports to which the partition can connect. You can select the Virtual Fibre Channel port from the displayed list of ports.

- If you are using HMC V9.1.920, or earlier, and if you are using a captured partition template, the deployment operation fails when the server does not contain the exact match for the required Fibre Channel adapters.
 - If you are using HMC V9.1.930, or later, and if you are using a captured partition template, the Virtual Fibre Channel adapters on the destination server that match the details of the Virtual Fibre Channel adapters in the captured template are selected automatically. When there are no Virtual Fibre Channel adapters that match the details of the captured template, the HMC checks for the available Virtual Fibre Channel adapters on the destination server that can be assigned to the logical partition. The available Virtual Fibre Channel adapters are listed in the **Virtual Fibre Channel** page, and you can choose a Virtual Fibre Channel adapter for assignment to the logical partition from this list.
- e) Click **Virtual Optical Devices**.
- The **Virtual Optical Devices** content area displays the devices that are specified in the template. You can optionally change the VIOS on which the device is created.
- f) Click **Next**.
9. For IBM i logical partitions, the **IBM i Tagged I/O** page is displayed. Select values for the **Load Source**, **Alternate Restart Device**, **Console**, **Alternate Console**, and **Operations Console** fields.
10. In the **Summary page** page, you can view a summary of the changes. Select one of the following options:
- **Activate partition** - Creates the partition with the resources you selected in this wizard and activates the partition.
 - **Create partition and Apply Configuration** - Creates the partition with resources that you selected in this wizard.
- If you chose this option in step 9, the logical partition is created with the resources that you selected. This step might take some time. You can view the progress of the operation. After the operation completes, select **Click to Install** if you want to install the operating system on the logical partition by using the **Network Boot** wizard.
11. Click **Finish**.

Note: If you are using HMC V9.1.920, or earlier, the deployment operation fails and a partition is not created when the system does not match all the configuration along with the I/O adapter configuration that is provided by the selected template. If the virtual network or virtual storage mapping fails, the partition is created and a message is displayed that indicates that the partition was created with errors. The created partition cannot be rolled back. You must manually delete the partition or go to the **Manage PowerVM** functions available in the HMC to assign the network or storage to the created partition.


Creating logical partitions by using Create partition option

You can create an AIX, Linux, or IBM i logical partition by using the **Create Partition** option.

About this task

To create an AIX, Linux, or IBM i logical partition by using the **Create Partition** option, complete the following steps:

Procedure

1. In the navigation pane, click the **Resources** icon .
2. Click **All Systems**. The All Systems page is displayed.
3. In the work pane, select the system and click **Actions** > **View System Partitions**. The **Partitions** page is displayed.

4. Click **Actions > Partitions**.

5. Click **Create Partition**.

By default the logical partition is created in the shared mode with 0.1 processing units for the **Maximum**, **Allocated**, and **Minimum** fields and one virtual processor for the **Maximum**, **Allocated**, and **Minimum** fields. When the server does not support shared processor pools, the logical partition is created in the dedicated mode with one processor for the **Maximum**, **Allocated**, and **Minimum** fields. The default value for the **Maximum** field is 4 GB, and 1 GB for the **Allocated**, and **Minimum** fields, for both the shared and dedicated modes. Before you activate the logical partition, you must assign storage and network resources to the logical partition. Optionally, you can change the default values that were assigned by using the Manage Partition functions.

Alternatively, you can select the **Assign All System Resources** checkbox to assign all the resources to the partition. The logical partition creation succeeds only when all the other active logical partitions and Virtual I/O Servers are shut down.

6. To create a single logical partition, complete the following steps:

a) Select the **Single Partitions** tab. Click the **Basic Configuration** tab to specify the **Partition Name**, the **Partition ID**, and the **Partition Type**. Specify the maximum number of virtual adapters for the logical partition in the **Maximum Virtual Adapters** field. Additionally, if the managed system supports virtual serial number and the managed system is not in a Power Enterprise pool 2.0, you can also specify the **Virtual Serial Number** for the logical partition. You can choose any one of the following options:

- No VSN
- Auto-assign
- Select from the pool

Choose the **Select from the pool** option, to open the **Virtual Serial Number Selection** window. The window lists the virtual serial number groups and the available virtual serial number that can be assigned to the partition. Select a virtual serial number from the list.

Note: When the Power Firmware Level is at FW950 and when the managed system has logical partitions that are assigned with virtual serial numbers, the managed system cannot be added to a Power Enterprise pool 2.0. Alternatively, if the managed system exists in a Power Enterprise pool 2.0, the managed system cannot assign a virtual serial number to the logical partition.

b) Click the **Processor Configuration** tab to specify whether the logical partition uses processors that are dedicated to the logical partition, or processors that are shared with other logical partitions.

- When you choose to create a logical partition with dedicated processors, you can specify values for the **Minimum**, **Allocated**, and **Maximum** fields.
- When you choose to create a logical partition with shared processors, you can specify values for the **Minimum**, **Allocated**, and **Maximum** fields in the **Virtual Processors** area, and the **Minimum**, **Allocated**, and **Maximum** fields in the **Processing Units** area.
- You can set the processor weight as **Capped** or **Uncapped**. When you set the processor weight as **Uncapped**, you must specify a value for the processor weight in the **Weight** field.

c) Click the **Memory Configuration** tab to specify the values for the **Minimum**, **Allocated**, and **Maximum** fields.

7. To create multiple logical partitions, complete the following steps:

a) Select the **Multiple Partitions** tab.

b) To create a new logical partition with minimum resources that are assigned to the logical partition, click the **+** tab. The **Create Partition(s)** page lists the logical partitions with details about the logical partitions such as the **Partition Name**, **No. Of Instances**, **Partition ID**, **Partition Type**, **Maximum Virtual Adapters**, **Desired Memory (MB)**, **Processor Type**, and **Desired Processor**. Additionally, if the managed system supports virtual serial number and the managed system is not in a Power Enterprise pool 2.0, you can also specify the **Virtual Serial Number** for the logical partition. You can choose any one of the following options:

- No VSN
- Auto-assign

Note: When the Power Firmware Level is at FW950 and when the managed system has logical partitions that are assigned with virtual serial numbers, the managed system cannot be added to a Power Enterprise pool 2.0. Alternatively, if the managed system already exists in a Power Enterprise pool 2.0, the managed system cannot assign a virtual serial number to the logical partition.

- c) To specify the processor and memory resources for a logical partition, select the logical partition from the **Partition Name** column.
 - d) Click the **Processor Configuration** tab to specify whether the logical partition uses processors that are dedicated to the logical partition, or processors that are shared with other logical partitions.
 - When you choose to create a logical partition with dedicated processors, you can specify values for the **Minimum, Allocated, and Maximum** fields.
 - When you choose to create a logical partition with shared processors, you can specify values for the **Minimum, Allocated, and Maximum** fields in the **Virtual Processors** area, and the **Minimum, Allocated, and Maximum** fields in the **Processing Units** area.
 - You can set the processor weight as **Capped** or **Uncapped**. When you set the processor weight as **Uncapped**, you must specify a value for the processor weight in the **Weight** field.
 - e) Click the **Memory Configuration** tab. You can specify the minimum, allocated, and maximum amounts of memory resources that you want for the logical partition by specifying these values in the **Minimum, Allocated, and Maximum** fields.
 - f) Specify the maximum number of virtual adapters for the logical partition in the **Maximum Virtual Adapters** field.
 - g) Specify the number of instances for the logical partition in the **No. Of Instances** field. The maximum value that you can specify for this field is 20.
 - h) To delete a logical partition, select the logical partition from the **Partition Name** column and click the - tab.
8. Click **OK**.

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Accessibility features for IBM Power Systems servers

Accessibility features assist users who have a disability, such as restricted mobility or limited vision, to use information technology content successfully.

Overview

The IBM Power Systems servers include the following major accessibility features:

- Keyboard-only operation
- Operations that use a screen reader

The IBM Power Systems servers use the latest W3C Standard, WAI-ARIA 1.0 (www.w3.org/TR/wai-aria/), to ensure compliance with US Section 508 (www.access-board.gov/guidelines-and-standards/communications-and-it/about-the-section-508-standards/section-508-standards) and [Web Content](#)

[Accessibility Guidelines \(WCAG\) 2.0 \(www.w3.org/TR/WCAG20/\)](http://www.w3.org/TR/WCAG20/). To take advantage of accessibility features, use the latest release of your screen reader and the latest web browser that is supported by the IBM Power Systems servers.

The IBM Power Systems servers online product documentation in IBM Knowledge Center is enabled for accessibility. The accessibility features of IBM Knowledge Center are described in the [Accessibility section of the IBM Knowledge Center help \(www.ibm.com/support/knowledgecenter/doc/kc_help.html#accessibility\)](http://www.ibm.com/support/knowledgecenter/doc/kc_help.html#accessibility).

Keyboard navigation

This product uses standard navigation keys.

Interface information

The IBM Power Systems servers user interfaces do not have content that flashes 2 - 55 times per second.

The IBM Power Systems servers web user interface relies on cascading style sheets to render content properly and to provide a usable experience. The application provides an equivalent way for low-vision users to use system display settings, including high-contrast mode. You can control font size by using the device or web browser settings.

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Programming interface information

Setting up the virtualization environment documents intended Programming Interfaces that allow the customer to write programs to obtain the services of IBM AIX Version 7.2, IBM AIX Version 7.1, IBM AIX Version 6.1, IBM i 7.4, and IBM Virtual I/O Server Version 3.1.2.

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