

ESCALA

# System Plans



REFERENCE  
86 A1 86FA 01



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## System Plans

### Hardware

May 2009

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REFERENCE  
86 A1 86FA 01

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## System plans

A *system plan* is a specification of the hardware and the logical partitions contained in one or more systems. You can use system plans in a number of ways that are useful to system management.

For example, you can use a system plan to create a record of hardware and logical partition configuration data for a system, to create a set of system specifications for ordering a system, or to deploy logical partitions to a system. A system plan is stored in a *system-plan file*, which has a file suffix of *.sysplan*. A system-plan file can contain more than one system plan, although multiple plans in a single file are not common. After you create a system plan, you also can view, delete, and export the system plan.

System plans have a number of valuable uses. For example, you can use system plans to accomplish the following goals:

- You can create a system plan as a means of capturing up-to-date system documentation. The system plan provides a record of the hardware and logical partition configuration of the managed system at a given time.
- You can use a system plan that you create for system documentation as part of your disaster recovery planning. On the Hardware Management Console (HMC), you can export the system-plan file to an offsite location or to removable media for offsite storage so that you have the system documentation that you need available if you must recover a managed system. On the Integrated Virtualization Manager (IVM), you can export the system-plan file to the local file system, which you then can copy to an offsite location or to removable media for offsite storage.

**Note:** Although the system plan contains a large amount of system configuration information, it does not contain all the configuration information for a system. Consequently, the system plan is not intended to provide complete system documentation.

- You can use system plans as audit records to track system hardware resources for accounting and accountability purposes by exporting the information in them to a spreadsheet.
- You can use system plans to help you plan new workloads that require additional system and hardware resources. You can use a system plan, along with appropriate capacity planning information, to make decisions about whether your current system can handle a new workload.
- You can create a system plan based on one managed system and deploy the system plan on another system to more quickly and easily create logical partitions on that system.
- You can use the System Planning Tool (SPT) to design a managed system based on workload data from your current systems, based on new workloads that you want the managed system to support, based on sample systems that are provided with the utility, or based on your own custom specifications. You can then use the system plan to order a system based on the specifications that the system plan contains. Also, you can use the HMC or the IVM to deploy the system plan to configure an existing system when the target system meets the requirements for deployment.

You can create a system plan by using one of the following methods:

- IBM® System Planning Tool (SPT) – you can create a system plan to capture the configuration of a system or systems that you want to order. A system-plan file created in the SPT can contain more than one system plan, although multiple plans in a single file are not common.
- Hardware Management Console (HMC) – you can create a system plan that documents the configuration of a system that is managed by the HMC.
- Integrated Virtualization Manager (IVM) – you can create a system plan that documents the configuration of a system that is managed by the IVM.

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## System Planning Tool

The System Planning Tool (SPT) helps you design a managed system that can support a specified set of workloads.

You can design a managed system based on workload data from your current systems, based on new workloads that you want the managed system to support, based on sample systems that are provided with the utility, or based on your own custom specifications. The *SPT* helps you design a system to fit your needs, whether you want to design a logically partitioned system or want to design an unpartitioned system. SPT incorporates the function from Workload Estimator to help you create an overall system plan. The SPT opens the Workload Estimator to help you gather and integrate workload data, and provides advanced users with the option of creating a system plan without the help of additional tools.

**Note:** The SPT currently does not help you plan for high availability on logical partitions or Redundant Array of Independent Disks (RAID) solutions.

There are a number of options available to help you get started with using the SPT:

- You can use the sample system plans that the SPT provides as a starting point for planning your system.
- You can create a system plan based on existing performance data.
- You can create a system plan based on new or anticipated workloads.
- You can create a system plan by using either the Hardware Management Console (HMC) or the Integrated Virtualization Manager (IVM). You can then use the SPT to convert the system plan to SPT format, and modify the system plan for use in system ordering or system deployment.
- With SPT version 3.0, and later, you can copy logical partitions from a system in one system plan to either another system in the same system plan or to a different system in another system plan. For example, you can build up system plans that contain your own sample logical partitions, and then copy one or more of these sample logical partitions into a new system plan that you are creating. You also can copy a logical partition within the same system plan. For example, you can define the attributes of a partition within a system plan and then make 7 copies of that partition within the same plan.
- You can export a system plan as a .cfr file and import it into the marketing configurator (eConfig) tool to use for ordering a system. When you import the .cfr file into the eConfig tool, the tool populates your order with the information from the .cfr file. However, the .cfr file does not contain all the information that the eConfig tool requires. You will need to enter all required information before you can submit your order.

If you make any changes to the hardware assignments or placement in the system, the SPT validates the changes to ensure that the resulting system fulfills the minimum hardware requirements and hardware placement requirements for the logical partitions.

When you are done making changes to the system, you can save your work as a system plan. You can import this file into your Hardware Management Console (HMC) or the management partition for the Integrated Virtualization Manager (IVM). You then can deploy the system plan to a managed system that the HMC or the IVM manages. When you deploy the system plan, the HMC or the IVM creates the logical partitions from the system plan on the managed system that is the target of the deployment.

To download the SPT, see the IBM System Planning Tool Web site.

## Related concepts

“System plans on the HMC” on page 10

You can use system plans with the Hardware Management Console (HMC) to perform a number of high-level system management tasks.

“System plans on the Integrated Virtualization Manager” on page 57

You can use system plans with the Integrated Virtualization Manager (IVM) to perform a number of high-level system management tasks. For example, you can create a system plan based on an existing system and deploy that system plan onto a different system.

## System plan conversion

Starting with the System Planning Tool (SPT) version 2.07.304, you can convert a system-plan file that you created by using the Hardware Management Console (HMC) or the Integrated Virtualization Manager (IVM) into the format that the SPT uses.

Converting a system plan so that you can work with it in the SPT has several benefits:

- It enables you to reconfigure your existing system and validate the changes in SPT before deploying them on your server. For example, you can try adding or moving some parts, or changing the layout of the partitions.
- It helps you plan for an upgrade to a new system. For example, you can move from a 9117-570 POWER5™ processor-based server to a 9117-MMA POWER6™ processor-based server.
- It enables you to move workloads from one system to another. You can even move a partition configuration from one system to another and ensure that the configuration will work with the existing hardware.
- It enables you to validate that the configuration on the system is what you want it to be.

To convert a system plan that you created by using the HMC into the SPT format successfully, ensure that you optimize the data that you collect when you create the plan. See, *Optimizing data when creating a system plan on the HMC*. You also need to gather some information to prepare for the conversion and to understand the limitations of the conversion process.

After you complete the conversion process, you can edit the system plan for redeployment of newly added partitions or additional provisioning items for Virtual I/O Server partitions.

**Note:** Although you can add partitions or provisioning items, you cannot use SPT to change existing items and redeploy the system plan to the original managed system.

For example, assume that you converted an IVM or HMC system plan that contains two client logical partitions. You can use the SPT to add another logical partition and specify virtual Ethernet adapters and virtual Small Computer System Interface (SCSI) adapters for the new partition. You then can use either the IVM or the HMC (whichever was the original source of the system plan) to redeploy the modified system plan to configure the new logical partition.

However, if you make changes to a number of existing items in the system plan, the system plan cannot pass validation or the changed item cannot be deployed. For example, you cannot use a system plan to make changes to the attributes for a partition and then deploy that system plan to make those changes to the already deployed partition. See *System plan validation on the HMC* or *System plan validation on the IVM* to learn more about the validation considerations that can affect deployment of the system plan.

## Preparing for system plan conversion

Before you convert the system plan to the format that the System Planning Tool (SPT) uses for system plans, you need to collect some information to use during the conversion process.

Your original system-plan file remains intact after the conversion. You will not lose any of your data. When you convert your system plan, the SPT gives the converted plan a new name and saves it as a new system plan.

Before you convert a system plan to the format that the SPT uses for system plans, you need to collect some information to use during the conversion process. Some of this information can help with potential conversion limitations. You need to gather the following information:

- **System attributes.** You need to provide the processor, server, and edition features for the system you want to convert. The SPT Conversion Wizard narrows the options to those that are valid for the system you are converting, but you must select the correct values from the list of valid options.
- **Additional system units.** If your processor feature has multiple system units that support different processor features, select the correct processor feature for each system unit from a list of valid options.
- **Backplane.** If the system in the plan you are converting supports more than one type of backplane, select which backplane your system uses from a list of valid options.
- **Logical partitions.** When you convert your system-plan file to SPT format, select which logical partitions you want to include in the converted plan. This enables you to pick just the logical partitions that you want to work with in the SPT. For example, if you are considering moving a particular workload to a new system, you can select just those logical partitions that are used to run that workload and include them in the plan that is converted to SPT format.

After you know which logical partitions you want to include, select which profile to associate with each logical partition in the converted plan. The SPT can only associate one profile with a logical partition. For this reason, you might need to convert your original system plan more than once to work with different views of the data. For example, if you have logical partitions that use one profile during the day and a different profile at night, select the logical partitions and profiles that are used at the same time to ensure that your converted system plan has an accurate view of how your system is used.

You also might need to select the operating system of the logical partition, if that information is not available in your original system plan.

- **Expansion units.** You must match the top and bottom enclosures of any double-high expansion units that are attached to your system. To do this, have available the serial numbers of the top and bottom enclosures when you use the wizard.
- **Adapters.** You must identify which adapters are in which physical locations on your system. The SPT identifies as many adapters as possible, based on the vital product data that the system plan contains. For those adapters that the SPT is unable to identify, the SPT can provide a few possibilities for you to choose from. However, if those possibilities are not correct, or if the SPT cannot identify any possibilities, you might have to provide the FRU, CCIN, part number, or feature number of the correct adapter. If you do not know the number, you can find it by looking at the physical system or by using the following operating system commands to query to obtain the correct number:

*Table 1. Operating system commands for identifying adapters*

Operating environment	Command	When to use the command
IBM i	DSPHDWRSC	This command is useful if you have a number of adapters to look up because the command writes the results for multiple adapters to a single output file.
	STRSST	This command accesses the Hardware Resource Manager, which enables you to look up information about individual adapters. Use this command if you only have a few numbers to look up.

Table 1. Operating system commands for identifying adapters (continued)

Operating environment	Command	When to use the command
AIX® and Linux®	lsslot	Use this command if you are trying to obtain information about an adapter in a hot-plug slot. This command enables you to view all of the adapters and integrated hardware for the hot-plug slot so you can determine the adapter for which you need the number.
	lscfg	Use this command if you are trying to obtain information about an adapter that is not in a hot-plug slot, or if you have already used the lsslot command to obtain adapter information for a hot-plug slot.

You can find additional details about how to use these commands in the online help for the SPT Conversion Wizard.

After you finish preparing for the conversion process, you need to export the system plan that you want to convert from the management tool that you used to create it. When you have the exported system plan from the Hardware Management Console (HMC) or from the Integrated Virtualization Manager (IVM), you are ready to convert the system plan into SPT format.

### Related concepts

“Limitations of system plan conversion”

You can convert a system plan that you created on the Hardware Management Console (HMC) or by using the Integrated Virtualization Manager (IVM) for use in the System Planning Tool (SPT). However, there are some limitations in the data that the SPT can convert.

### Related tasks

“Converting a system plan to System Planning Tool format” on page 7

You can use the System Planning Tool (SPT) Conversion Wizard to convert a system plan, which you created on an Hardware Management Console (HMC) or by using the Integrated Virtualization Manager (IVM), to the format that the SPT uses for system plans.

## Limitations of system plan conversion

You can convert a system plan that you created on the Hardware Management Console (HMC) or by using the Integrated Virtualization Manager (IVM) for use in the System Planning Tool (SPT). However, there are some limitations in the data that the SPT can convert.

By setting up your system to optimize the hardware information that you capture in a system plan that you create by using the Hardware Management Console (HMC), you ensure that your system plan provides you with the most valuable information possible. It also ensures that you have the most usable configuration information possible when you convert the system plan for use in the SPT version 3.0, or later.

There are some limitations in the data that the SPT can convert at this time. The system plans that you create by using the HMC or the Integrated Virtualization Manager (IVM) contain information about the hardware parts that are on your system. To convert one of these plans, the SPT maps the information about the parts back to the features that represent those parts.

In some cases, the HMC or the IVM plans do not contain enough information to enable the SPT to do the necessary mapping conclusively. For hardware parts with inconclusive mapping information, the SPT does one of the following to resolve the inconclusive mapping:

- When possible, the SPT Conversion Wizard prompts you for additional information about the parts during the conversion process. For example, in the case of PCI cards, the wizard prompts you to provide a part identifier for the card or to select the card from a list.

- The wizard identifies the part based on what it knows from the HMC or the IVM system plan, even if the information is not conclusive.
- The wizard disregards the part if the level of information in the plan is insufficient to do any kind of identification.

The following table shows some specific examples of parts or configurations that are more difficult to convert and what SPT does when it encounters them.

*Table 2. Conversion examples*

Part or configuration	SPT action during conversion
Logical partitions with more than one partition profile	SPT can only convert one profile per logical partition. SPT prompts you to select the profile you want to use for that partition during the conversion process.
Cards that are referred to by more than one partition profile	SPT assigns the card to the first profile it encounters that references the card and discards all other references to the card.
CD, DVD, or optical storage	SPT does not convert these devices.
Disk drives in a Redundant Array of Independent Disks (RAID) array	SPT does not convert any information about these drives.
Virtual I/O Server (VIOS) configuration information	SPT does not convert any VIOS configuration information, such as the following items: <ul style="list-style-type: none"> <li>• Shared Ethernet adapters</li> <li>• EtherChannel adapters</li> <li>• Storage pools</li> <li>• Storage area network (SAN) volumes</li> <li>• Backing devices</li> </ul>

The following table describes the type of hardware information that you can expect to see in a system plan that you convert to SPT format. The type of information that you can expect is based on the management tool that you use to create the plan and the types of logical partitions in the system plan.

*Table 3. Hardware information captured in a system plan based on management tool and logical partition operating environment*

Management tool	IBM i		All other operating environments	
	POWER6 processor	POWER5 processor	POWER6 processor	POWER5 processor
HMCs before Version 7	Not applicable.	Many cards. No disk drives.	Not applicable.	Very few cards. No disk drives.
HMCs before Version 7 Release 3.3 (when you optimize data collection for the system plan)	Most cards. No disk drives.	Most cards. No disk drives.	Most cards. No disk drives.	Most cards. No disk drives.
HMC Version 7 Release 3.3, and later (when you optimize data collection for the system plan)	Most cards. All disk drives.	Most cards. Some disk drives.	Most cards. Some disk drives.	Most cards. No disk drives.
IVM before Version 1.5.2	Not applicable.	Not applicable.	Few, if any, cards. No disk drives.	Few, if any cards. No disk drives.

Table 3. Hardware information captured in a system plan based on management tool and logical partition operating environment (continued)

Management tool	IBM i		All other operating environments	
	POWER6 processor	POWER5 processor	POWER6 processor	POWER5 processor
IVM Version 1.5.2, and later	Not applicable.	Not applicable.	Many cards. Serial-attached SCSI (SAS) disk drives only.	Many cards. No disk drives.

### Related concepts

“Preparing for system plan conversion” on page 3

Before you convert the system plan to the format that the System Planning Tool (SPT) uses for system plans, you need to collect some information to use during the conversion process.

“Optimizing data when creating a system plan on the HMC” on page 16

The quantity and quality of hardware information that the HMC can capture in a new system plan varies based on your version of the HMC and the operating environment of the logical partition for which you are capturing information.

“Troubleshooting system plan conversion” on page 9

When you convert a system plan into the format that the System Planning Tool (SPT) uses, you might encounter some problems that you need to resolve or better understand.

### Related tasks

“Converting a system plan to System Planning Tool format”

You can use the System Planning Tool (SPT) Conversion Wizard to convert a system plan, which you created on an Hardware Management Console (HMC) or by using the Integrated Virtualization Manager (IVM), to the format that the SPT uses for system plans.

## Converting a system plan to System Planning Tool format

You can use the System Planning Tool (SPT) Conversion Wizard to convert a system plan, which you created on an Hardware Management Console (HMC) or by using the Integrated Virtualization Manager (IVM), to the format that the SPT uses for system plans.

After you export a system plan from the HMC or from the IVM, you are ready to convert that system plan into the format that the System Planning Tool uses.

Before you use the SPT Conversion Wizard, be sure that you have the information you collected as described in Preparing for system plan conversion. Some of the information that you collect can help you minimize potential conversion limitations.

There are two parts to the conversion process. First, you convert the system-plan file to the SPT format by using the wizard. Second, you complete the conversion by handling any messages or warnings that you receive in the SPT.

### Using the SPT Conversion Wizard to convert a system plan

After you gather the necessary information, complete these steps to convert the system plan:

1. Open the System Planning Tool.
2. On the Getting Started page, click **Open an existing system plan**. The Open System Plan window appears.
3. In the **File name** field, enter the name of the system plan you want to open in the SPT, or click **Browse** to select the system-plan file from the local file system.
4. Click **OK**. The Work with Planned Systems page appears with a message to indicate that you must convert the file to SPT format before you can use the SPT to edit it.

5. Click **Convert** to convert the system-plan file to SPT format. The Overview page of the Conversion Wizard appears.
6. Click **Next** to continue with the wizard. The System Attributes page opens.

**Note:** From the System Attributes page, and many others in the wizard, you can save your selections by clicking **Save as Draft**. The wizard saves the selections that you have made, but does not create a system-plan file because the conversion process is not complete. If you exit the wizard before converting the system plan and restart the wizard at a later time, your previous selections are displayed on the appropriate pages as you progress through the wizard.

7. As necessary, specify the **Processor feature**, **Server feature**, and **Edition feature** of your system, and click **Next**. If your processor feature supports multiple system units, the Additional system units page appears.
8. If your processor feature has multiple system units that support different processor features, select the **Processor Feature** that you want to associate with each system unit, and click **Next**. If your system in your plan supports different backplanes, the Backplane page appears.
9. If your system supports multiple backplanes, select the appropriate backplane for your system and click **Next**. The Partitions page appears.
10. Select the logical partitions that you want to include in the converted system plan and, if necessary, select the profile name and operating system for each selected logical partitions. By default, all logical partitions are selected to be included in the converted system plan. If a logical partition has more than one profile associated with it, you must select the profile that you want to include with this logical partition in the converted system plan. A logical partition can have only one profile associated with it in the SPT. If the SPT is unable to determine the operating system for the logical partition, select the operating system as well.
11. Click **Next**. If you have double-high expansion units, the Expansion Units page appears.
12. If the system has double-high expansion units, match the bottom part of each expansion unit with the corresponding top part of each unit, and click **Next**. You can use the serial numbers of the units to do this. If the wizard is unable to identify some adapters in the system plan, the Adapters page appears.
13. Select the location of the adapter that you want to identify, and click **Identify** to select from a list of identification choices for the adapter in the selected location. You also can select **Group similar** for the list of adapters. This option groups those adapters that have the same set of possible feature code choices into a single group so that you can select all members of the group for identification. The Identify Adapters page appears.
14. Select the adapter from a list of possible choices or click **Advanced lookup** to look up the adapter by FRU, CCIN, part number, or feature number. If you need help finding the FRU, CCIN, part number, or feature number, click **Help** to get instructions on how to find that information by using operating system commands.
15. When you have identified the adapter in selected location, click **OK** to return to the Adapters page and identify additional adapters, as necessary.

**Note:** The wizard deletes from the system plan any adapters that you do not identify.

16. Click **Next**. The Summary page appears.
17. Verify that the information on the summary page is accurate and click **Finish**. If you need to change any of the information, click **Back** to return to the relevant pages in the wizard and make corrections. The Work with Planned Systems page appears.

At this point, you have finished with the SPT Conversion Wizard. The SPT renames your original system-plan file by adding `-converted` to the end of the original file name. The next step is to handle any messages that the SPT provides about conversion results.

**Important:** Do not exit the converted system-plan file until you handle messages. If you close the system-plan file now, you can no longer view the messages from the conversion.

## Handling conversion messages

When you finish using the Conversion Wizard, you must do additional configuration before your plan is valid in the System Planning Tool (SPT). To see the messages from the conversion and understand what the SPT did when it converted the file, click the link for the system plan name at the top of the Work with Planned Systems page. When you click this link, the System Plan Messages page shows what the SPT did with the hardware parts that it was not able to identify in your original system-plan file. For more information about the type of hardware you can expect to be in the converted system plan, see Limitations of system plan conversion.

**Important:** After you save and exit your converted system plan-file, these messages are lost, so do not exit the converted file until you address these messages.

Messages with an *exclamation point icon* indicate that the SPT was not able to identify a part or was not able to interpret what to do with a part from your original system plan. You need to add the specified part manually into the converted plan.

Messages with an *informational icon* indicate that the SPT placed or configured a part based on the data it had available to it. You need to review these instances to be sure the information is correct.

### Related concepts

“Preparing for system plan conversion” on page 3

Before you convert the system plan to the format that the System Planning Tool (SPT) uses for system plans, you need to collect some information to use during the conversion process.

“Limitations of system plan conversion” on page 5

You can convert a system plan that you created on the Hardware Management Console (HMC) or by using the Integrated Virtualization Manager (IVM) for use in the System Planning Tool (SPT). However, there are some limitations in the data that the SPT can convert.

## Troubleshooting system plan conversion

When you convert a system plan into the format that the System Planning Tool (SPT) uses, you might encounter some problems that you need to resolve or better understand.

**Problem:** My Hardware Management Console (HMC) system plan is not as detailed as I expected it to be.

**Solution:** The following factors influence the quantity of data that you can capture when you create your system plan:

- Type and level of management tool. You can capture the most data by using an HMC at version 7.3.3, or later. Earlier versions of the HMC and the Integrated Virtualization Manager (IVM) provide less detailed information.
- Operating environment. You can capture more data for logical partitions that run IBM i than for those that run AIX or Linux.

Ensure that you optimize the data that you collect in the system plan when you create the plan on the HMC.

**Problem:** I do not see some of my hardware in the converted plan

**Solution:** At this time, the SPT Conversion Wizard might not be able to identify all of the hardware that is in your system plan. It identifies some components based on the information it has and ignores others if it does not have enough data to make an identification. When you get to the end of the wizard, you can view information about which hardware the wizard could not identify. For more information about handling any conversion messages, see Converting a system plan.

## Related concepts

“Optimizing data when creating a system plan on the HMC” on page 16

The quantity and quality of hardware information that the HMC can capture in a new system plan varies based on your version of the HMC and the operating environment of the logical partition for which you are capturing information.

“Limitations of system plan conversion” on page 5

You can convert a system plan that you created on the Hardware Management Console (HMC) or by using the Integrated Virtualization Manager (IVM) for use in the System Planning Tool (SPT). However, there are some limitations in the data that the SPT can convert.

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## System plans on the HMC

You can use system plans with the Hardware Management Console (HMC) to perform a number of high-level system management tasks.

You can use system plans with the HMC to accomplish the following goals:

- You can deploy a system plan that you create based on one system that an HMC manages to other systems that the HMC manages with identical hardware as that in the system plan. Note that any internal drive bays and external SCSI cables also must be cabled in an identical manner on the target system. In this way, you can rapidly configure and use other, similar systems in your business.
- You can export a system plan from one HMC to another HMC and use it to deploy the system plan to other systems that the target HMC manages with identical hardware, and identical cabling, as that in the system plan. In this case and the previous case, you can use the system plan to create logical partitions on new managed systems that do not already have logical partitions created on them.
- You can convert a system plan that you created by using the HMC for use in the System Planning Tool (SPT). However, the SPT Conversion Wizard can convert a limited amount of hardware information from the original system plan. How much the wizard can convert depends on the operating environment of the logical partition and the version of the HMC that you used to create the system plan.

You must use the SPT to manually specify any missing or incomplete information. After you convert the system plan, you can use the SPT to edit the system plan for redeployment of newly added partitions or additional provisioning items for Virtual I/O Server partitions. For example, assume that you converted an HMC system plan that contains two client logical partitions. You can use the SPT to add another logical partition and to specify Ethernet adapters, Small Computer System Interface (SCSI) disks, and virtual Ethernet adapters for the new partition. You then can use the HMC to redeploy the modified system plan to configure the new logical partition.

However, if you make changes to a number of existing items in the system plan, the system plan cannot pass validation or the changed item cannot be deployed. For example, you cannot use a system plan to make changes to the attributes for a partition and then deploy that system plan to make those changes to the already deployed partition.

To create logical partitions from a system plan, you must first complete the following tasks:

1. Create the system plan.
2. Import the system plan (when necessary).
3. If you are deploying a system plan that you created in the SPT, verify that cards and disk drives on the target system are in the same locations specified for the cards and disk drives that are in the system plan. Also, verify that any cabling instructions for disk-drive bays have been followed. You can obtain these instructions by means of the Report function in the SPT.
4. If you are deploying a system plan that you created by using the HMC, verify that the hardware and cabling on the target system is identical to that on the source system.
5. Deploy the system plan.

After you create a system plan, you also can view, delete, and export the system plan. The following table provides a complete overview of system plan tasks.

Table 4. Overview of the tasks for system plans

Task	Overview
Create a system plan	<p>You can create system plans by using any of the following methods:</p> <ul style="list-style-type: none"> <li>• System Planning Tool (SPT)           <p><i>SPT</i> helps you design a system to fit your needs, whether you want to design a logically partitioned system or want to design an unpartitioned system. <i>SPT</i> incorporates the function from Workload Estimator to help you create an overall system plan. The <i>SPT</i> opens the Workload Estimator to help you gather and integrate workload data, and provides advanced users with the option of creating a system plan without the help of additional tools.</p> </li> <li>• Hardware Management Console (HMC) Web user interface           <p>You can use the HMC to create a system plan based on the configuration of one managed system and can use the HMC to deploy that plan to another managed system. Based on the logical partition configuration in the system plan, the HMC creates logical partitions on the managed system to which it deploys the system plan. Depending on the contents of the system plan, the HMC can install operating environments on the logical partitions in the plan and, if the plan contains Virtual I/O Server provisioning information for a partition, such as storage assignments, the HMC can make these resource assignments for the partition.</p> </li> <li>• HMC command-line interface           <p>You also can use the <b>mksysplan</b> command to create a system plan. After the system plan is created, you can also use the command-line interface to deploy that plan to a managed system. Based on the logical partition configuration in the system plan, the HMC creates logical partitions on the managed system to which it deploys the system plan.</p> </li> </ul>
Import the system plan	<p>Before you can use a system plan to create logical partitions, the system-plan file must exist on the HMC that manages the managed system to which you want to deploy the system plan. If the system-plan file does not already exist on the HMC, you must import the file into the HMC. You can use the HMC Web user interface to import the file into the HMC from one of the following sources:</p> <ul style="list-style-type: none"> <li>• Upload the system-plan file from the remote console (the computer from which you remotely access the HMC)</li> <li>• Copy the system-plan file to media (optical disc or USB drive), insert the media into the HMC, and import the file from the media.</li> <li>• Download the system-plan file from a remote FTP site.</li> </ul> <p><b>Note:</b> You can also use the HMC command-line interface to import a system plan.</p> <p>After you import the system-plan file into an HMC, you can deploy the system plan within that file to other systems that the HMC manages.</p>

Table 4. Overview of the tasks for system plans (continued)

Task	Overview
Deploy the system plan	<p>You can choose to deploy a system plan in stages, with some logical partitions being created in one stage, and other logical partitions being created in later stages. You cannot, however, deploy a system plan to a managed system if the managed system has logical partitions that are not also in the system plan. Also, if you want to deploy a system plan in stages, you need to create a new system plan if you change the resource allocations on the logical partitions on the managed system between stages to avoid validation problems in later stages.</p> <p>When you deploy a system plan by using the HMC Web user interface, the HMC validates the system plan. The managed system on which you deploy a system plan must have hardware, including any internal drive bay cabling and external SCSI cabling, that is identical to the hardware in the system plan. The HMC deploys a system plan to a managed system only if the system plan level is supported by the HMC, the format of the system plan is valid, and the hardware and each existing logical partition on the managed system passes validation.</p> <p>If the system plan contains installation information about the Virtual I/O Server, you can use the Deploy System Plan Wizard to install the Virtual I/O Server and assign virtual networking and storage resources for the client logical partitions. Beginning with HMC Version 3.3.0, and later, you also can use the wizard to install the AIX or Linux operating environments on client logical partitions if the necessary installation information is in the system plan.</p>
Export the system plan	<p>You can use the HMC Web user interface to export a system-plan file from the HMC to one of the following locations:</p> <ul style="list-style-type: none"> <li>• Save the system-plan file to the remote console (the computer from which you remotely access the HMC).</li> <li>• Export the system-plan file to media that is mounted to the HMC (such as optical discs or USB drives).</li> <li>• Export the system-plan file to a remote FTP site.</li> </ul> <p><b>Note:</b> You can also use the HMC command-line interface to export a system plan.</p>
View the system plan	<p>You can look at the contents of a system-plan file in the HMC by using the System Plan Viewer that is integrated with the HMC. The System Plan Viewer uses a navigation tree and tables to display the information in the system-plan file. It includes features such as dynamic table-column sorting and displaying EADS boundary lines. You can open a system plan in the System Plan Viewer, either by using the View System Plan task or by clicking the name of a system plan. When you start the System Plan Viewer, you must enter your HMC user ID and password before you can view the system plan.</p> <p><b>Note:</b> Some messages, such as cabling instructions for internal drive bays, are viewable only when you use the System Plan Viewer in the SPT.</p>
Print the system plan	<p>You can use the System Plan Viewer to print a system plan that you have open in the Viewer. You can print all of the system plan or a portion of the system plan, depending on the current view of the system plan. To print the current view of the system plan, click <b>Print</b> in the Actions pane of the System Plan Viewer.</p>
Delete the system plan	<p>You can delete unnecessary system plans from your HMC.</p>

To learn more about how to maximize the amount of information that you can obtain in a system plan that you create by using the HMC, see [System plan validation on the HMC](#).

To learn more about how the system plan validation process on the HMC affects system plan deployment, see [System plan validation on the HMC](#).

To learn more about how to maximize the amount of information that you can obtain in a system plan that you create by using the HMC, see [Optimizing data when creating a system plan on the HMC](#).

## Related concepts

“System Planning Tool” on page 2

The System Planning Tool (SPT) helps you design a managed system that can support a specified set of workloads.

“System plan validation for the HMC” on page 36

You deploy a system plan to a system that is managed by a Hardware Management Console (HMC) managed system by using the System Plan Deployment Wizard. The wizard validates the information in the system plan against the configuration of the managed system before beginning the deployment process.

“Installing operating environments from a system plan by using the HMC” on page 39

You can use the Hardware Management Console (HMC) version 7 to install an operating environment on a logical partition when you deploy a system plan.

“Optimizing data when creating a system plan on the HMC” on page 16

The quantity and quality of hardware information that the HMC can capture in a new system plan varies based on your version of the HMC and the operating environment of the logical partition for which you are capturing information.

## Related tasks

“Creating a system plan by using the HMC”

You can use the Hardware Management Console (HMC) to create a new system plan, based on an existing system configuration, and then deploy that system plan to other managed systems.

“Deleting a system plan from an HMC” on page 56

Removing a system plan from the Hardware Management Console (HMC) does not undo any partition or hardware configuration changes that occurred if the specified system plan was deployed on a managed system.

“Deploying a system plan by using the HMC” on page 27

You can use the Hardware Management Console (HMC) to deploy all or part of a system plan to a managed system.

“Exporting a system plan from an HMC” on page 53

You can export a system-plan file from a Hardware Management Console (HMC) to various types of media, to a remote FTP site, or to the computer from which you remotely access the HMC.

“Importing a system plan into an HMC” on page 25

You can import a system-plan file into a Hardware Management Console (HMC) from various types of media, a remote FTP site, or the computer from which you remotely access the HMC. You can then deploy the imported system plan to a system that the HMC manages.

“Viewing a system plan on an HMC” on page 55

You can use the System Plan Viewer on the Hardware Management Console (HMC) to view a system plan.

## Creating a system plan by using the HMC

You can use the Hardware Management Console (HMC) to create a new system plan, based on an existing system configuration, and then deploy that system plan to other managed systems.

When you create a system plan on the HMC, you can deploy the resulting system plan to create identical logical partition configurations on managed systems with identical hardware. The system plan contains specifications for the logical partitions and partition profiles of the managed system that you used as the basis of creating the system plan.

If you use HMC V7R3.3.0 or later to create the system plan, the system plan can also include operating environment information for a logical partition. You still can deploy the system plan to systems that are managed by an earlier version of the HMC. Earlier versions of the HMC Deploy System Plan Wizard can deploy the logical partitions in the system plan and ignore any operating environment installation information in the system plan.

**Note:** Although the system plan that you create by using HMC V7R3.3.0 or later can contain some information about AIX or Linux operating environments on logical partitions in the system plan, it does not contain the information needed to install those operating environments as part of deploying the system plan. If you want a system plan to have the necessary information for installing an AIX or Linux operating environment, you need to use the System Planning Tool (SPT). You can use the SPT either to create a system plan or to convert a system plan that you create with the HMC to the format that the SPT uses and then change the system plan in the SPT. You also must use the SPT if you want to include specific automatic installation files with the system plan, or to customize any automatic installation files for the system plan.

The new system plan also can contain hardware information that the HMC is able to obtain from the selected managed system. However, the amount of hardware information that the HMC can capture for the new system plan varies based on the method that the HMC uses to gather the hardware information.

There are two methods that the HMC potentially can use: inventory gathering and hardware discovery. For example, when using inventory gathering, the HMC can detect virtual device configuration information for the Virtual I/O Server. Additionally, the HMC can use one or both of these methods to detect disk and tape information for IBM i logical partitions.

Ensure that you meet the requirements for using either or both of the inventory gathering and hardware discovery methods before you create your system plan. See System plan creation requirements for more information.

### Creating a system plan

To create a system plan by using the Hardware Management Console, complete the following steps:

1. In the navigation area, select **System Plans**. The System Plans page opens.
2. In the Tasks area, select **Create System Plan**. The Create System Plan window opens.
3. Select the managed system that you want to use as the basis for the new system plan.
4. Enter a name and description for the new system plan.
5. Optional: For Hardware Management Console V7R3.3.2, or later, select whether you want to retrieve inactive and unallocated hardware resources. This option appears only if the managed system is capable of hardware discovery, and the option is selected by default.

**Note:** If you do not select the **Retrieve inactive and unallocated hardware resources** option, the HMC does not perform a new hardware discovery, but instead uses the data in the inventory cache on the system. The HMC still performs inventory gathering and retrieves hardware information for any active logical partitions on the managed server. The resulting new system plan contains hardware information from the inventory-gathering process, as well as hardware information from the hardware inventory cache on the system.

6. Optional: Select whether you want to view the system plan immediately after the HMC creates it.
7. Click **Create**.

Now that you have a new system plan, you can export the system plan, import it onto another managed system, and deploy the system plan to that managed system.

**Note:** As an alternative to the HMC Web user interface, you can use the `mksysplan` command on the HMC to create a system plan based on the configuration of an existing managed system.

## Related concepts

“System plans on the HMC” on page 10

You can use system plans with the Hardware Management Console (HMC) to perform a number of high-level system management tasks.

“Optimizing data when creating a system plan on the HMC” on page 16

The quantity and quality of hardware information that the HMC can capture in a new system plan varies based on your version of the HMC and the operating environment of the logical partition for which you are capturing information.

## Related tasks

“Deleting a system plan from an HMC” on page 56

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“Viewing a system plan on an HMC” on page 55

You can use the System Plan Viewer on the Hardware Management Console (HMC) to view a system plan.

## Related information

 [Managing HMC users and tasks](#)

## Requirements for creating a system plan on the HMC

To use the Hardware Management Console (HMC) to create a system plan successfully, you need to ensure that your system meets a number of prerequisite conditions.

To optimize the quantity and quality of the data that you can capture when you create a system plan, use HMC V7 R3.3.0, or later. HMC V7.3.3, and later versions, provide the best level of functions for creating system plans, especially for system plans that include operating environment installations. By upgrading to the latest version, you ensure that you will encounter fewer problems during system plan creation.

A system plan that you create by using HMC V7.3.3, or later, contains hardware information that the HMC is able to obtain from the selected managed system. However, the amount of hardware information that the HMC can capture for the new system plan varies based on the method that the HMC uses to gather the hardware information.

The HMC can potentially use two methods: inventory gathering and hardware discovery. For example, when using inventory gathering, the HMC can detect virtual device configuration information for the Virtual I/O Server. Additionally, the HMC can use one or both of these methods to detect disk and tape information for IBM i logical partitions.

To create a system plan successfully, you need to ensure that your system meets the following requirements:

- Requirements for inventory gathering on the HMC
- Requirements for hardware discovery on the HMC

If you meet all requirements and system plan creation is failing with a specific type of problem or you are not capturing the type of information that you are expecting to capture, see Troubleshooting system plan creation for the HMC to determine the possible nature of the problem and potential actions that you can take to resolve it.

**Related concepts**

“Troubleshooting system plan creation for the HMC” on page 22

Use this information to help resolve problems that you might encounter when creating a system plan with the Hardware Management Console (HMC) Version 7.3.3, and later.

**Optimizing data when creating a system plan on the HMC**

The quantity and quality of hardware information that the HMC can capture in a new system plan varies based on your version of the HMC and the operating environment of the logical partition for which you are capturing information.

The data that you bring into the System Planning Tool (SPT) is only as good as the data that you capture when you create your system plan.

The following factors affect the quantity of hardware information in a system plan that you create:

- Type and level of management tool. You can capture the most data when using an HMC at Version 7 Release 3.2, or later, because these versions of the HMC have two methods that it can use to gather hardware information. Earlier versions of the HMC and the Integrated Virtualization Manager do not have the same capabilities and provide less detailed information.

**Note:** To capture information for SCSI disk drives on POWER6 processor-based servers for logical partitions that do not run IBM i, you must use HMC at Version 7 Release 3.3, or later.

- Operating environment. You can capture more data for logical partitions that run IBM i than for logical partitions that run AIX or Linux.

Depending on the code level of your HMC, the HMC can use different methods to capture data about the hardware on your system, as the following table describes.

*Table 5. Hardware information captured in a system plan based on available collection methods*

Method	HMC availability	Information captured
Inventory gathering	HMC Version 7 Release 3.0, and later	Hardware assigned to active logical partitions
Hardware discovery	HMC Version 7 Release 3.2, and later	Hardware assigned to inactive logical partitions or hardware that is not assigned to a logical partition
Enhanced hardware discovery	HMC Version 7 Release 3.3, and later	Hardware assigned to inactive logical partitions or hardware that is not assigned to a logical partition  Also includes SCSI disk drives on POWER6 processor-based servers for logical partitions that do not run IBM i . You must convert the system plan into SPT to see this information.

## Related concepts

“Limitations of system plan conversion” on page 5

You can convert a system plan that you created on the Hardware Management Console (HMC) or by using the Integrated Virtualization Manager (IVM) for use in the System Planning Tool (SPT). However, there are some limitations in the data that the SPT can convert.

“Troubleshooting system plan conversion” on page 9

When you convert a system plan into the format that the System Planning Tool (SPT) uses, you might encounter some problems that you need to resolve or better understand.

“System plans on the HMC” on page 10

You can use system plans with the Hardware Management Console (HMC) to perform a number of high-level system management tasks.

## Related tasks

“Creating a system plan by using the HMC” on page 13

You can use the Hardware Management Console (HMC) to create a new system plan, based on an existing system configuration, and then deploy that system plan to other managed systems.

“Creating a system plan by using the HMC” on page 13

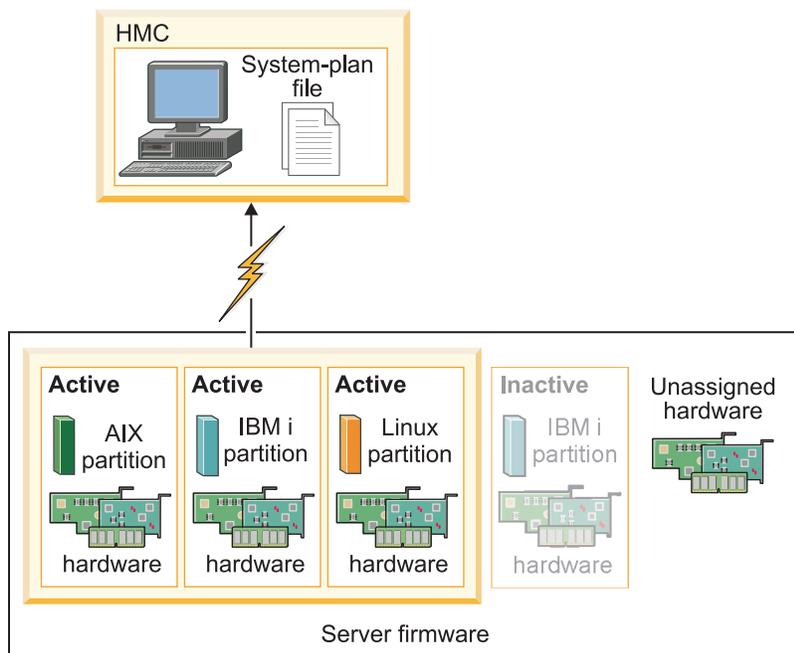
You can use the Hardware Management Console (HMC) to create a new system plan, based on an existing system configuration, and then deploy that system plan to other managed systems.

## Inventory gathering process on the HMC:

The HMC always performs inventory gathering to capture detailed information for hardware that is assigned to an active logical partition.

The inventory gathering process can capture information for PCI cards and disk-drive configuration information for an active logical partition and record this information in your system plan. The inventory gathering process improves the quality of data that is available when you convert the system plan into the format that the System Planning Tool (SPT) uses. However, the process also extends the time it takes to create a system plan by several minutes.

The following figure shows how inventory gathering works.



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In this figure, the information about the active AIX, IBM i, and Linux and partitions is collected and placed in a system-plan file on the HMC. The process does not collect information about the hardware assigned to the inactive IBM i partition and the hardware that is not assigned to a partition.

*Requirements for inventory gathering on the HMC:*

By meeting the requirements for using the inventory gathering process, you can enhance the quality and quantity of data that you collect in the system plans that you create on the Hardware Management Console (HMC).

To maximize the amount and type of hardware information that the inventory gathering process is able to collect from the managed system, ensure that you complete the following tasks before you create a system plan:

- Ensure that data in the inventory cache on the managed system is maximized and current. See Tips for maximizing data in a system plan on the HMC for more information.
- Ensure that the managed system is in the standby state or that the managed system is powered on.

**Note:** You cannot create a system plan if the managed system is in either the power-off state or the recovery state.

- Ensure that all the logical partitions are activated on the managed system from which you plan to base the new system plan.
- Ensure that the IBM Installation Toolkit for Linux is loaded if you are creating a system plan that will have information about a Linux system or logical partition running in the Linux environment. This toolkit is required so that systems and logical partitions that run in the Linux operating environment can perform inventory gathering. The IBM Installation Toolkit for Linux is available at the IBM Service and productivity tools Web site (<http://www14.software.ibm.com/webapp/set2/sas/f/lopdiags/installtools/home.html>).

**Note:** If you installed Linux on the logical partition as part of deploying a system plan on a system with HMC Version 7R3.3.0, or later, the Deploy System Plan Wizard installed the necessary Toolkit packages as part of the Linux installation.

- Ensure that you have a Resource Monitoring and Control (RMC) connection between the HMC and each logical partition. An RMC connection is required for the inventory-gathering process. The use of RMC ensures that the inventory gathering process can capture more detailed hardware information. Without RMC, for example, the inventory gathering process is not able to detect the types of disk drives installed on a managed system.

An RMC connection also is required to collect data for Virtual I/O Server device mappings.

**Note:** IBM i logical partitions use Management Central to respond to RMC requests from the HMC. It is possible for a logical partition to have more than one HMC to manage it. In this situation, if you want to use RMC to create a new system plan, you must ensure that you create the system plan from the primary HMC that manages the logical partition because secondary HMCs cannot use RMC.

To ensure that the HMC can use RMC, complete the following steps:

1. In the HMC navigation area, select **HMC Management**.
2. In the contents area, select **Change Network Settings**. The Customize Network Settings window appears.
3. Click **LAN Adapters**, select the appropriate adapter from the list, and click **Details**.
4. On the Basic Settings page of the LAN Adapters Details window, ensure that **Partition communication** is selected.
5. On the Firewall Settings page, in the Available Applications list, select all instances of RMC, and click **Allow Incoming**, if necessary.
6. Click **OK** to close the LAN Adapter Details window.
7. Click **OK** to close the Customize Network Settings window.

8. Restart the HMC if you made any changes to these configuration settings.

For some operating systems, you might need to perform additional steps to ensure that RMC is configured and running correctly. To learn more about configuring and using RMC, see Understanding RMC and resource managers in the Reliable Scalable Cluster Technology (RSCT) documentation ([http://publib.boulder.ibm.com/infocenter/clresctr/vxrx/index.jsp?topic=/com.ibm.cluster.rsct\\_6100\\_00.admin.doc/bl503\\_undrmc.html](http://publib.boulder.ibm.com/infocenter/clresctr/vxrx/index.jsp?topic=/com.ibm.cluster.rsct_6100_00.admin.doc/bl503_undrmc.html)).

### Hardware discovery process on the HMC:

Starting with the Hardware Management Console (HMC) Version 7 Release 3.2, and later, the HMC can use the hardware discovery process to capture additional information in a system plan about the hardware on a managed system.

Some systems are capable of providing greater details about their hardware inventory through the process of hardware discovery, which enables you to create a system plan with more extensive hardware information. By using the hardware discovery process, the HMC version 7.3.2, and later, can capture information about hardware that does not have a logical partition assignment, as well as hardware with assignments to inactive logical partitions.

**Note:** If you create a system plan with the intention of converting the system plan for use in the System Planning Tool (SPT), you need to use the latest version of the HMC to create the system plan. For example, to obtain disk-drive configuration information that the SPT can convert successfully in a system plan, you must use HMC version 7.3.3, or later, to have the hardware discovery process capture detailed disk-drive configuration information.

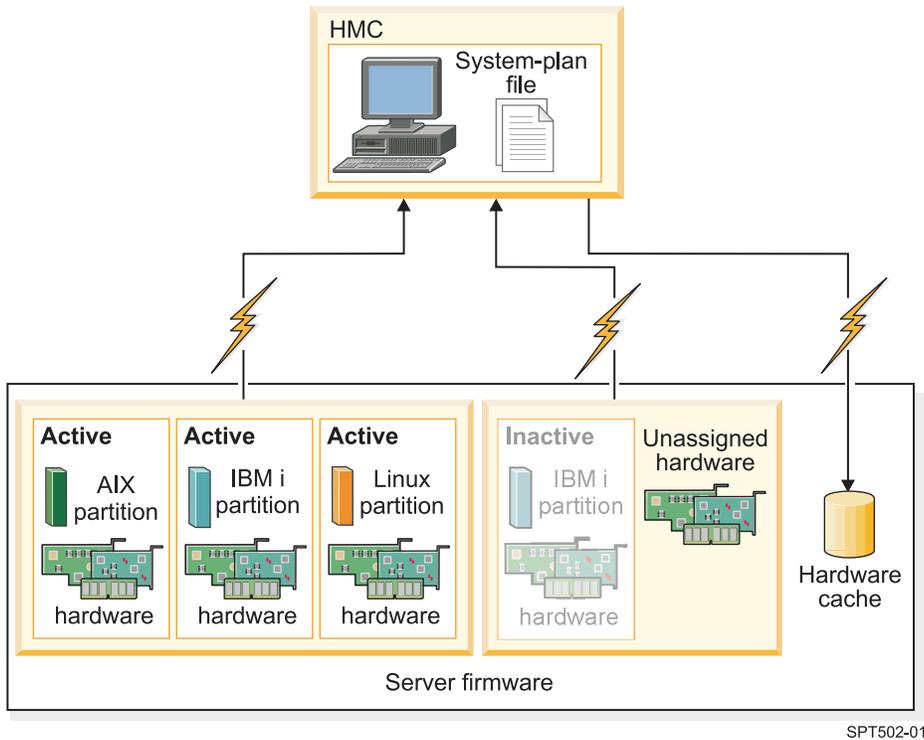
Additionally, the hardware discovery process writes hardware inventory information to a cache on the system. The hardware inventory cache ensures that a certain amount of hardware information is available on the system when you create a system plan. The HMC can use the data in this cache when you create a system plan to obtain more detailed hardware information for any logical partitions that are active at that time.

On a system that can use hardware discovery, the hardware discovery process runs whenever the system is powered on in *hardware discovery* mode. When you enable this option, the system powers on in a special mode that performs the hardware discovery process and records hardware inventory information to a cache on the system. This collected information is then available for use when you display data for I/O devices or when creating a system plan.

You also can run the hardware discovery process when you create a system plan. If the managed system is capable of hardware discovery, the Create System Plan page provides an option for running hardware discovery. This option, called **Retrieve inactive and unallocated hardware resources**, enables you to capture hardware configuration information for the managed system, regardless of the state of the hardware. When using this option, the HMC uses both the data it collects from the updated inventory cache and the data it collects from the inventory gathering process as sources of information to create the system plan.

It is recommended that you use the **Retrieve inactive and unallocated hardware resources** whenever you add or change the hardware while the new or changed hardware is unallocated to a partition. Or, if the new or changed hardware is allocated to a partition, use this option to create the system plan when the partition is inactive. Doing so ensures that the inventory cache has the most current data possible.

The following figure shows how the hardware discovery process works when you select this option.

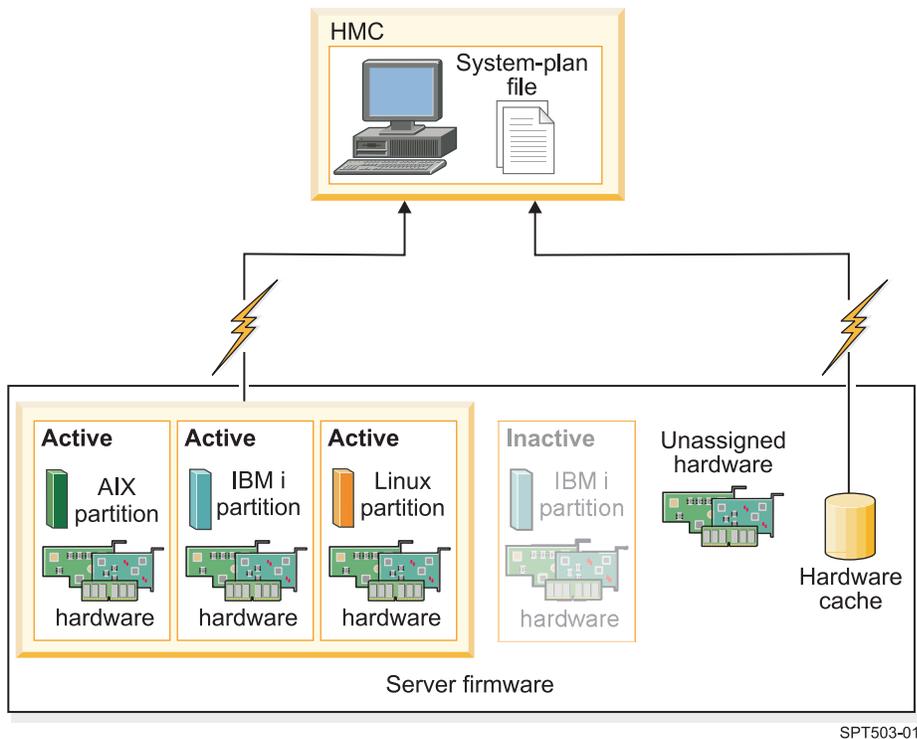


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In the figure, the HMC uses the inventory gathering process to collect information about the active partitions and the hardware assigned to them. The HMC uses hardware discovery to collect information about the hardware assigned to the inactive IBM i partition and about the unassigned hardware on the system. The HMC writes all of the data collected by both processes to the system plan. The data collected through hardware discovery is also written to the inventory cache on the system. The HMC uses both sources of information to create the system-plan file.

When you create a system plan and do not select the **Retrieve inactive and unallocated hardware resources** option, the HMC does not perform a new hardware discovery, but instead uses the data in the inventory cache on the system. The HMC still performs inventory gathering and retrieves hardware information for any active logical partitions on the managed server. The resulting new system plan contains the hardware information that the HMC obtained from the inventory gathering process, as well as hardware information that the HMC obtained from the hardware inventory cache on the system.

The following figure illustrates how the hardware discovery process works when you do not select this option.



In the figure, the HMC uses the inventory gathering process only to collect information about the inactive partition and the hardware assigned to it. The HMC completes the system plan by using hardware information from the inventory cache for the active logical partitions on the managed server.

*Requirements for hardware discovery on the HMC:*

By meeting the requirements for using the hardware discovery process, you can enhance the quality and quantity of data that you collect in the system plans that you create on the Hardware Management Console (HMC).

To use the hardware discovery capability when you create a system plan, ensure that you complete the following tasks:

- Ensure that a minimum of .5 processor is available.
- Ensure that a minimum of 256 MB of free memory is available.

**Note:** If you do not have the minimum processor or memory available, you can meet these requirements either by shutting down one or more logical partitions or by adjusting dynamic processor and memory settings for one or more logical partitions.

- Ensure that all logical partitions on the managed system for which you want to use the hardware discovery process are inactive to maximize the information that the hardware discovery process can capture. If a logical partition is active, the hardware discovery process cannot capture new information from the logical partition and instead retrieves information about the hardware assigned to the inactive logical partition from the hardware inventory cache on the managed system.

**Note:** Hardware discovery does not require the use of Resource Monitoring and Control (RMC).

- Ensure that the **Power off the system after all the logical partitions are powered off** attribute for the managed system is not selected. The hardware discovery process starts partitions and powers off partitions to gather information. If the hardware discovery process powers off the only running partition on the system, the managed system powers off and system plan creation fails. To verify the setting for this system attribute, complete these steps:

1. In the HMC navigation area, select **Systems Management** → **Servers**.
2. In the Tasks area, click **Properties**. The Properties window for the selected managed system opens.
3. On the **General** tab, verify that the **Power off the system after all the logical partitions are powered off** attribute is not selected, and click **OK**.

### Tips for maximizing data in a system plan on the HMC:

By setting up your system to optimize the hardware information that you capture in a system plan that you create by using the HMC, you ensure that your system plan provides you with the most valuable information possible.

It also ensures that you have the most usable configuration information possible when you convert the system plan for use in the System Planning Tool (SPT) version 2.07.304, or later.

To be sure that you get the most detailed and most complete data in your system plans, follow these recommended guidelines:

1. After you place all the hardware in the system and verify that any internal drive bay cabling and external SCSI cabling is correct, maximize the amount of data in the inventory cache and keep the inventory cache current on the managed system. You can do this in one of two ways:
  - Power on your system with the Hardware Discovery option selected. Do this when you initially power on the system and whenever you add, remove, or move hardware on your system when making such a change requires that you power down the system to do so.
  - When you add, remove, or move hardware and such a change does not require that you power off the system to do so, update the cache by creating a system plan with the **Retrieve inactive and unallocated hardware resources** option selected. Create the system plan when the affected logical partitions are inactive.
2. Take advantage of all the data for your logical partitions. To optimize the amount of data collected for your logical partitions, follow these steps:
  - a. Make sure the data in the inventory cache is maximized and is current on the managed system, as described in the first recommendation.
  - b. Now you can activate the logical partitions that you want to include in the system plan and complete the Create a system plan task *without* using the **Retrieve inactive and unallocated hardware resources** option. This ensures that the resulting system plan contains the most detailed and current information possible for all the hardware and logical partitions on the system. Perform this task any time that you create and activate new logical partitions.

### Troubleshooting system plan creation for the HMC

Use this information to help resolve problems that you might encounter when creating a system plan with the Hardware Management Console (HMC) Version 7.3.3, and later.

Use HMC V7 R3.3.0, or later versions, to create system plans, as these versions provide the best level of functions for capturing the highest quality and quantity of data from the managed system.

The system plan creation process writes any messages, including error messages to the `/var/hsc/log/mksysplan.log`. Use the information provided in these tables to determine the type of problem you have and potential solutions for resolving the problem.

The following table contains information about resolving various errors that you might encounter when you create a system plan.

Table 6. Problems and solutions for system plan creation

Problem description	Corrective actions
<p>System plan creation fails with an error that the HMC V 7.3.3.0 failed to obtain the license information for the Virtual I/O Server (VIOS).</p> <p>This error can occur when you are creating a system plan for a system that has a recently installed VIOS and the HMC has not yet established a Resource Monitoring and Control (RMC) connection with the VIOS. This RMC connection is necessary so that the HMC can capture information for the VIOS and its client logical partitions in the system plan.</p>	<p>Use the following command to determine if there is a working RMC connection:</p> <pre>/opt/hsc/bin/lspartition -dlpar -c MTM_MS</pre> <p><i>MTM_MS</i> is machine type, model, and serial number (for example: 9117-MMA_107B730). If the command results show a value of 1 in the <b>Active</b> field for the specific VIOS partition, the RMC connection is working, and you can redeploy the system plan. The HMC can finish the deployment successfully.</p> <p>If the command results do not indicate that you have a working RMC connection for the VIOS, verify that the system meets the prerequisites for using RMC to further troubleshoot this problem.</p>
<p>Creating a system plan on a POWER6 processor-based server with HMC 7.3.3 fails with an inventory gathering error.</p> <p>You are creating a system plan on a POWER6 processor-based server that has a dual controller card or other unrecognized device on the managed system, and you are using the hardware discovery process to gather information for the new system plan.</p> <p>The hardware discovery process uses firmware code to gather hardware information on the POWER6 processor-based server for unassigned system hardware and hardware that is assigned to an inactive partition to be collected and be included in a system plan. Because the hardware discovery process cannot recognize one or more devices, the HMC fails to create the system plan and the error log indicates an inventory gathering error.</p> <p>The error log might also list location codes that are not valid as they reference planned units and not the actual unit names on the managed system. This problem can occur with dual adapter configurations or if the hardware discovery process finds that a device type other than disk, tape, optical (CD/DVD), or SES is attached to a SCSI, SAS, or SATA controller.</p> <p>PCI adapters that are configured to support dual adapter configurations will be listed as:</p> <ul style="list-style-type: none"> <li>• 572B PCI-X266 Ext Dual-x4 3Gb SAS RAID Adapter</li> <li>• 571A PCI-XDDR Dual Channel Ultra320 SCSI Adapter</li> </ul>	<p>You must create the system plan without using the hardware discovery option. The system plan still obtains a large amount of information by using the inventory gathering process.</p> <p>If you are using the Create a system plan task from the HMC user interface, make sure that the Retrieve inactive and unallocated hardware resources option is not selected.</p> <p>If you are using the <code>mksysplan</code> command, use one of the following parameters to turn off various data gathering functions for system plan creation, depending on your situation. Note that the <b>--noprobe</b> parameter turns off both the hardware discovery process and the inventory gathering process:</p> <ul style="list-style-type: none"> <li>• Turn off hardware discovery only. Use <b>--nohwdisc</b> parameter.</li> <li>• Turn off inventory gathering only. Use <b>--noinvscout</b> parameter.</li> <li>• Turn off information gathering for VIOS only. Use <b>--novios</b> parameter.</li> <li>• Turn off both processes. Use <b>--noprobe</b> parameter.</li> </ul>

Table 6. Problems and solutions for system plan creation (continued)

Problem description	Corrective actions
<p>My system plan creation on HMC 7.3.1, 7.3.2, or 7.3.3 fails with errors that the hardware discovery process was unable to complete because the managed system is not in the Operating or Standby state.</p> <p>This is an example of the type of error messages that occur for this type of deployment failure:</p> <pre>Starting inactive partition thickv1 in Hardware Discovery mode. This part usually takes 3 minutes to complete ... Could not complete Hardware Discovery for inactive partition thickv1 because of HSCL0625 Cannot activate partition when the managed system state is not in the Operating or Standby state...</pre> <p>This type of failure occurs during system plan creation on a POWER6 processor-based server because the attribute of <b>Power off the system after all the logical partitions are powered off</b> is selected on the General tab of the Managed Systems Properties page. When the hardware discovery process is used to gather information from inactive partitions for the new system plan, the process starts an inactive partition to gather information and powers off the partition when the process is completed. As soon as that partition is ended as part of the hardware discovery process, the managed system will immediately start to power off as required by the selection of this attribute. Consequently, creating the system plan fails because you cannot create a system plan when the managed system is not in either the operating or standby state.</p>	<p>To successfully use the hardware discovery process to create a system plan, ensure that the <b>Power off the system after all the logical partitions are powered off</b> attribute for the managed system is not selected. The hardware discovery process starts partitions and powers off partitions to gather information. If the hardware discovery process powers off the only running partition on the system, the managed system powers off and system plan is not created.</p> <p>To verify this system attribute, complete these steps:</p> <ol style="list-style-type: none"> <li>1. In the HMC navigation area, select <b>Systems Management</b> → <b>Servers</b>.</li> <li>2. In the Tasks area, select <b>Properties</b>. The Properties window for the selected managed system appears.</li> <li>3. On the General tab, verify that the <b>Power off the system after all the logical partitions are powered off</b> attribute is not selected, and click <b>OK</b>.</li> </ol>
<p>System plan creation fails or hangs when the HMC performs the inventory gathering process on an IBM i partition.</p> <p>On medium to large configurations, a known problem is that the Inventory Scout command line interface (CLI), which the mksysplan command uses, can take several hours to complete.</p>	<p>You must create the system plan without using the inventory gathering process. The system plan still obtains a large amount of information by using the hardware discovery process. When using the mksysplan command, use the <b>--noinvscout</b> parameter to turn off the inventory gathering process. However, running the command this way might result in an incomplete inventory of the system, which affects the quality of the data in the resulting system plan. This problem is fixed in HMC V7 R3.4.0.</p>
<p>After I created my system plan, a logical partition that I did not create, with the name IOR Collection LP exists on my system. How did this partition get on my system and can I delete it?</p> <p>During the hardware discovery process, a new virtual logical partition named IOR Collection LP is created temporarily. This partition is typically deleted by the hardware discovery process right before the mksysplan command is completed. If the mksysplan command or Create system plan task in the HMC completed, and the IOR Collection LP continues to exist after waiting several minutes, report the problem to the HMC technical support.</p>	<p>Contact IBM support, and additionally perform the following steps to delete the IOR Collection LP partition:</p> <ol style="list-style-type: none"> <li>1. Write down the partition ID from the partition view of the system on the HMC.</li> <li>2. Open a terminal connection to the HMC, either on the HMC console or remotely.</li> <li>3. Use this command: <code>rmsyscfg -r lpar -m &lt;managed system name&gt; --id &lt;partition id&gt;</code></li> <li>4. For more information, use <code>rmsyscfg --help</code> for help on this command.</li> </ol>

## Related concepts

“Requirements for creating a system plan on the HMC” on page 15

To use the Hardware Management Console (HMC) to create a system plan successfully, you need to ensure that your system meets a number of prerequisite conditions.

## Importing a system plan into an HMC

You can import a system-plan file into a Hardware Management Console (HMC) from various types of media, a remote FTP site, or the computer from which you remotely access the HMC. You can then deploy the imported system plan to a system that the HMC manages.

You can import a system-plan file into the HMC from any of the following locations:

- From the computer on which you remotely access the HMC.
- From various media that is mounted on the HMC, such as optical discs or USB drives.
- From a remote site by using FTP. To use this option, you must fulfill the following requirements:
  - The HMC must have a network connection to the remote site.
  - An FTP server must be active on the remote site.
  - Port 21 must be open on the remote site.

**Note:** You cannot import a system plan that has an identical name to any system plan that is available on the HMC.

To import a system-plan file, you must be a super administrator. For more information about user roles, see *Managing HMC users and tasks*.

To import a system-plan file into the HMC, complete the following steps:

1. In the navigation area of the HMC, select **System Plans**.
2. In the tasks area, select **Import System Plan**. The Import System Plan window opens.
3. Select the source of the system-plan file that you want to import. Use the following table to complete the appropriate steps for importing the system plan from the selected source location of the file.

Source of the system plan to import	Complete the following steps:
This computer	<ol style="list-style-type: none"><li>1. Select <b>Import from this computer to the HMC</b>.</li><li>2. Click <b>Import</b> to display the Upload File window.</li><li>3. Click <b>Browse</b>.</li><li>4. Select the system-plan file that you want to import and click <b>Open</b>.</li><li>5. Click <b>OK</b> to upload the file.</li></ol>

Source of the system plan to import	Complete the following steps:
<b>Media</b>	<ol style="list-style-type: none"> <li>1. Select <b>Import from media</b>.</li> <li>2. In the <b>System plan file name</b> field, enter the name of the system-plan file. <b>Note:</b> The name of the system-plan file must end with the .sysplan file name suffix and can use alphanumeric characters only.</li> <li>3. In the <b>Sub-directory on media</b> field, enter the path in which the system-plan file is located on the media. <b>Note:</b> Specify the subdirectory location only, rather than the fully qualified path and file name.</li> <li>4. Click <b>Import</b> to display the Select Media Device window.</li> <li>5. Select the media that contains the system-plan file that you want to import.</li> <li>6. Click <b>OK</b>.</li> </ol>
<b>Remote FTP site</b>	<ol style="list-style-type: none"> <li>1. Select <b>Import from a remote FTP site</b>.</li> <li>2. In the <b>System plan file name</b> field, enter the name of the system-plan file. <b>Note:</b> The name of the system-plan file must end with the .sysplan file name suffix and can use alphanumeric characters only.</li> <li>3. In the <b>Remote site hostname</b> field, enter the host name or IP address of the remote FTP site.</li> <li>4. In the <b>User ID</b> field, enter the user ID to use to access the remote FTP site.</li> <li>5. In the <b>Password</b> field, enter the password to use to access the remote FTP site.</li> <li>6. In the <b>Remote directory</b> field, enter the path in which the system-plan file is located on the remote FTP site. If you do not enter a path, the HMC uses the default path specified on the remote FTP site.</li> </ol>

4. Click **Import**. If the HMC returns an error, return to the **Import System Plan** window and verify that the information you entered is correct. If necessary, click **Cancel**, return to step 2, and redo the procedure, ensuring that the information you specify at each step is correct.

**Note:** As an alternative to the HMC Web user interface, you can use the `cpysysplan` command from the HMC command line interface to import a system plan.

When you complete the process of importing the system-plan file, you can deploy the system plan in the system-plan file to a system that the HMC manages. If you imported the system-plan file from media, you can unmount the media by using the `umount` command from the HMC command line interface.

## Related concepts

“System plans on the HMC” on page 10

You can use system plans with the Hardware Management Console (HMC) to perform a number of high-level system management tasks.

## Related tasks

“Creating a system plan by using the HMC” on page 13

You can use the Hardware Management Console (HMC) to create a new system plan, based on an existing system configuration, and then deploy that system plan to other managed systems.

“Deleting a system plan from an HMC” on page 56

Removing a system plan from the Hardware Management Console (HMC) does not undo any partition or hardware configuration changes that occurred if the specified system plan was deployed on a managed system.

“Deploying a system plan by using the HMC”

You can use the Hardware Management Console (HMC) to deploy all or part of a system plan to a managed system.

“Exporting a system plan from an HMC” on page 53

You can export a system-plan file from a Hardware Management Console (HMC) to various types of media, to a remote FTP site, or to the computer from which you remotely access the HMC.

“Viewing a system plan on an HMC” on page 55

You can use the System Plan Viewer on the Hardware Management Console (HMC) to view a system plan.

## Related information

 [Managing HMC users and tasks](#)

## Deploying a system plan by using the HMC

You can use the Hardware Management Console (HMC) to deploy all or part of a system plan to a managed system.

When you deploy a system plan, the HMC creates logical partitions on the managed system according to the specifications in the system plan. Depending on the contents of the system plan, you can also install operating environments on the logical partitions in the plan, including the Virtual I/O Server (VIOS), AIX or Linux.

**Note:** The HMC cannot install the IBM i operating environment on a logical partition.

If the plan contains VIOS provisioning information for a logical partition, such as storage assignments and virtual networking for the client logical partitions of the VIOS, the HMC can make these resource assignments for the client logical partitions.

You do not have to deploy a system plan in its entirety, but can instead partially deploy a system plan on the target system by selecting which logical partitions in the plan to deploy. You can run the Deploy System Plan Wizard again at another time to deploy the remainder of the logical partitions in the system plan. However, if you select a VIOS partition to be deployed, the wizard deploys all the VIOS provisioning items that are planned for that partition even if the client logical partition that uses the provisioned item is not selected for deployment.

If the system plan contains installation information for the VIOS, you can use the Deploy System Plan Wizard to install the VIOS and to set up virtual networking and storage resources for the client logical partitions of the VIOS.

Before you deploy a system plan, complete the following tasks:

- Ensure that the system-plan file exists on the HMC. If the system-plan file does not exist on the HMC, you must import the system-plan file into the HMC. For instructions, see *Importing a system plan into an HMC*.
- Ensure that you meet all the appropriate requirements for deploying the system plan. See *System plan deployment requirements* for more information.

## Deploying a system plan

To use the HMC to deploy a system plan on a managed system, complete the following steps:

1. In the navigation area of the HMC, select **System Plans**.
2. In the contents area, select the system plan that you want to deploy.
3. Select **Tasks** → **Deploy system plan**. The Deploy System Plan Wizard starts.
4. On the Welcome page, complete the following steps:
  - a. Select the system-plan file that contains the system plan that you want to deploy.
  - b. Choose the managed system to which you want to deploy the system plan and click **Next**. If the system plan does not match the managed system to which you want to deploy the plan, the wizard displays a window that informs you of this. Click **OK** to continue or **Cancel** to select a different system plan.

**Note:** If the system-plan file contains multiple system plans, the wizard provides a step so that you can select a specific system plan from the file. This step does not occur unless there is more than one system plan in the specified file.

5. On the Validation page, complete the following steps:
  - a. Wait for the wizard to validate the managed system and its hardware against the system plan. The validation process can take several minutes.
  - b. If the validation process completes successfully, click **Next**.
  - c. If the validation process fails, correct the problems that the error messages describe, click **Cancel** to exit the wizard, and restart this procedure from the beginning. To help you correct any validation problems, you might want to create a system plan that is based on the current configuration of the managed system. Such a system plan allows you to compare the system plan that you want to deploy with the current configuration of the managed system. You can do this by using the Create System Plan task in the HMC, or you can run the following command from the HMC command line:

```
mksysplan -m name_of_managed_system -f name_of_new_system_plan.sysplan
```

This action creates a new system plan that you can view and compare to the old system plan to help diagnose any problems.

6. Optional: On the Partition Deployment page, if you do not want to create all of the logical partitions, partition profiles, virtual adapter types, or virtual adapters in the system plan, clear the boxes in the **Deploy** column beside the logical partitions, partition profiles, virtual adapter types, or virtual adapters that you do not want to create. Virtual serial adapters are required in virtual slots 0 and 1 for each logical partition. You cannot create the logical partition unless you create these virtual serial adapters.
7. Optional: On the Operating Environment Install page, if there is operating environment installation information specified in the system plan, complete the following steps:
  - a. Select the operating environments that you want to deploy to the managed system for each logical partition. For HMC V7R3.2.0 or V7R3.1.0, you can deploy only the Virtual I/O Server operating environment. For HMC V7R3.3.0, or later, versions, you also can select to deploy the AIX or Linux operating environments if the system plan contains installation information for them.
  - b. Enter the location of the Virtual I/O Server installation image.
  - c. Enter or change late-binding installation settings for the specified Virtual I/O Server, AIX, or Linux operating environment. Late-binding installation settings are settings that are specific to the

installation instance and must be supplied during the installation step to ensure that the settings are accurate for the installation instance. For example, you can enter the IP address of the target logical partition on which you are installing the operating environment.

**Note:** If you need to use automatic installation files to deploy an operating environment, you cannot add them during the HMC deployment process. You must use the System Planning Tool (SPT) to create any necessary automatic installation files separately and attach them to the system plan prior to deploying the system plan.

- d. Save any changes that you make to late-binding installation settings. You can save them to the current system-plan file or to a new system-plan file.
8. On the Summary page, review the system deployment step order and click **Finish**. The HMC uses the system plan to create the specified logical partitions and to install any specified operating environments. This process can take several minutes.

After you finish the deployment of the system plan, install operating environments and software on the logical partitions, if they did not install as part of system plan deployment.

### **Related concepts**

“System plans on the HMC” on page 10

You can use system plans with the Hardware Management Console (HMC) to perform a number of high-level system management tasks.

“System plan validation for the HMC” on page 36

You deploy a system plan to a system that is managed by a Hardware Management Console (HMC) managed system by using the System Plan Deployment Wizard. The wizard validates the information in the system plan against the configuration of the managed system before beginning the deployment process.

“Installing operating environments from a system plan by using the HMC” on page 39

You can use the Hardware Management Console (HMC) version 7 to install an operating environment on a logical partition when you deploy a system plan.

### **Related tasks**

“Creating a system plan by using the HMC” on page 13

You can use the Hardware Management Console (HMC) to create a new system plan, based on an existing system configuration, and then deploy that system plan to other managed systems.

“Deleting a system plan from an HMC” on page 56

Removing a system plan from the Hardware Management Console (HMC) does not undo any partition or hardware configuration changes that occurred if the specified system plan was deployed on a managed system.

“Exporting a system plan from an HMC” on page 53

You can export a system-plan file from a Hardware Management Console (HMC) to various types of media, to a remote FTP site, or to the computer from which you remotely access the HMC.

“Importing a system plan into an HMC” on page 25

You can import a system-plan file into a Hardware Management Console (HMC) from various types of media, a remote FTP site, or the computer from which you remotely access the HMC. You can then deploy the imported system plan to a system that the HMC manages.

“Viewing a system plan on an HMC” on page 55

You can use the System Plan Viewer on the Hardware Management Console (HMC) to view a system plan.

### **Related information**

 [Managing HMC users and tasks](#)

## **Requirements for deploying a system plan on the HMC**

To use the Hardware Management Console (HMC) to deploy a system plan successfully, you need to ensure that your system meets a number of prerequisite conditions.

For an optimal deployment experience, use HMC V7 R3.3.0, or later. HMC V7.3.3, and later, provide the best level of functions for creating and deploying system plans, especially for system plans that include operating environment installations. By upgrading to this version, you ensure that you will encounter fewer problems during system plan creation and deployment.

To deploy or to create a system plan successfully, you need to ensure that your system meets the requirements in the following tables:

*Table 7. Hardware validation prerequisites for system plan deployment*

Prerequisite	Description
System setup	Delete the logical partition that was provided with your server, and delete any other logical partition that is not in the system plan. For instructions, see <i>Deleting a logical partition</i> . The name of the logical partition that was provided with the server is the serial number of the managed system, and the name of the partition profile is <code>default_profile</code> .
Requirements for the physical hardware	Verify that the physical hardware and expansion units are connected and are reporting to the server. Each server comes with one logical partition and one partition profile. All of the physical hardware resources on the system are assigned automatically to this logical partition so that you can power on the server and verify that the physical hardware is connected and reporting to the server.
Requirements for physical disk I/O adapter	<p>Locate the physical disk I/O adapters that belong to each logical partition and verify that the disk drives that are attached to these physical I/O adapters support your desired configuration for each logical partition. The Deploy System Plan Wizard validates only that the physical disk I/O adapters match the system plan. It does not validate that the disk drives are configured for the physical disk I/O adapters. If you are deploying a system plan that you created in the System Planning Tool (SPT), verify that all hardware is in the correct location, and that internal drive bays and external SCSI cables are cabled according to SPT instructions. If you are deploying a system plan that you created by using the HMC, verify that the hardware and cabling on the target system is identical to that on the source system.</p> <p>If the system plan includes a storage area network (SAN) or fibre channel adapters, ensure that the adapters are cabled and that the SAN is configured.</p>

*Table 8. Operating environment installation prerequisites for system plan deployment*

Verification step	Description
Verify your operating environment installation and network settings	The System Plan Deployment Wizard provides the ability to install an operating environment as part of deploying a system plan. To install the operating environment, you must specify certain network settings. These allow the necessary traffic to perform the installation of the operating environment during system plan deployment. If the information that you supply is not accurate, the installation will fail due to network boot or other network problems. Complete the verification steps to ensure that your network information is correctly specified and prevent potential installation problems.

Table 8. Operating environment installation prerequisites for system plan deployment (continued)

Verification step	Description
<p>Verify the following items:</p> <ul style="list-style-type: none"> <li>• That the IP configuration for the partition that is the target of the operating environment installation is correct and working properly</li> <li>• That a firewall is not blocking the network connections required to perform the installation</li> <li>• That a network router is not creating a problem with the necessary network communications</li> </ul>	<p>If there are problems with the IP configuration for the target partition, the System Plan Deployment Wizard cannot boot the partition over the planned installation port to the HMC and the operating environment installation will fail. This type of failure often results in network boot errors. You must verify that the following items are correctly specified and working: the IP address, the subnet mask, and gateway. Additionally you need to verify that the port configured in system plan to do the operating environment installation is configured and cabled properly, if necessary. If you are installing the operating environment over a virtual port and connection, ensure that this port and its connection properties are configured correctly.</p> <p>You can use the System Management Services (SMS) functions provided by the HMC to ping the IP address to verify that it is working correctly. The SMS ping test can check the IP addresses for the partition, gateway, the HMC, and the subnet mask that the system plan specifies for the port that the target partition owns.</p> <p>The system plan contains information to identify the Ethernet port, Host Ethernet Adapter (HEA), or Virtual Local Area Network (vlan) to be used to install an operating environment on a logical partition. The ping test can be set up to use the configured installation port. This port can fail a ping test if it is not plugged into the network that the HMC can reach. If the ping test fails when using the specified port and IP information to be used for deploying the operating environment, then the HMC cannot deploy the plan successfully, you must use the Deploy System Plan Wizard and you must deselect the installation of that operating environment.</p> <p>If the ping fails, you might need to make corrections to the IP configuration information for the target partition. Or you might need to check with your network administrator to resolve possible firewall or router configuration problems in your network that might be causing the problem.</p> <p>If the ping is successful and you are still unable to install the operating environment during system plan deployment, verify that you meet all other prerequisite conditions.</p>

Table 8. Operating environment installation prerequisites for system plan deployment (continued)

Verification step	Description
<p>For Virtual I/O Server (VIOS) logical partitions previously deployed, ensure that they are active, and that there is a Resource Monitoring and Control (RMC) connection between the HMC and each VIOS logical partition.</p>	<p>An RMC connection is necessary to ensure that the HMC can verify the operating environment status for a logical partition. To install an operating environment as part of deploying a system plan, the Deploy System Plan wizard must be able to determine if the affected logical partition already has an operating environment installed. The wizard can obtain this information from the logical partition properties on the HMC when a logical partition has been started at least once with an active RMC connection. This ensures that the operating environment status for the logical partition is known to the HMC and ensures that the wizard can determine whether it is appropriate to install the operating environment on the logical partition as specified in the system plan.</p> <p>If the RMC connection is working and an operating environment is installed on the logical partition, you can view the version of the operating environment on the Properties page for the partition. If the Properties page shows a value of Unknown, the partition is not reporting any information about the operating environment to the HMC. The lack of reported information might be because the logical partition is inactive, the partition does not have an installed operating environment, or does not have RMC connection to HMC.</p> <p>Also, an RMC connection is required to configure the VIOS and to collect data for VIOS device mappings.</p> <p><b>Note:</b> IBM i logical partitions use Management Central to respond to RMC requests from the HMC. It is possible for a logical partition to have more than one HMC to manage it. In this situation, if you want to use RMC to create a new system plan, you must ensure that you create the system plan from the primary HMC that manages the logical partition because secondary HMCs cannot use RMC. An RMC connection is required to install an operating environment, such as the VIOS because the Deploy System Plan Wizard must be able to determine whether an operating environment is already installed on the target partition.</p> <p>To verify that the HMC can use RMC, complete the following steps:</p> <ol style="list-style-type: none"> <li>1. In the HMC navigation pane, select <b>HMC Management --&gt; Change Network Settings</b> to display the Customize Network Settings window.</li> <li>2. Click LAN Adapters, select the appropriate adapter from the list, and click <b>Details</b>.</li> <li>3. On the Basic Settings page of the LAN Adapters Details window, ensure that <b>Partition communication</b> is selected.</li> <li>4. On the Firewall Settings page, in the Available Applications list, select all instances of RMC and click <b>Allow Incoming</b>, if necessary.</li> <li>5. Click <b>OK</b> to close the LAN Adapter Details window.</li> <li>6. Click <b>OK</b> to close the Customize Network Settings window.</li> <li>7. Restart the HMC if you made any changes to these configuration settings.</li> </ol> <p>For some operating systems, you might need to perform additional steps to ensure that RMC is configured and running properly. To learn more about configuring and using RMC, see Understanding RMC and resource managers in the Reliable Scalable Cluster Technology (RSCT) documentation (<a href="http://publib.boulder.ibm.com/infocenter/clresctr/vrxr/index.jsp?topic=/com.ibm.cluster.rsct_6100_00.admin.doc/bl503_undrmc.html">http://publib.boulder.ibm.com/infocenter/clresctr/vrxr/index.jsp?topic=/com.ibm.cluster.rsct_6100_00.admin.doc/bl503_undrmc.html</a>).</p>
<p>Verify that no other tasks or operations are running on the managed system.</p>	<p>Ensure that you are not using this HMC or any other HMC that is attached to the managed system to perform any other operations on the managed system.</p>
<p>Verify that you have the appropriate authority to perform the deployment.</p>	<p>Ensure that you are a super administrator. For more information about user roles, see Managing HMC users and tasks.</p>

Verify that the system plan and managed system meet the following additional prerequisite conditions to ensure that you can install an operating environment during system plan deployment:

*Table 9. Additional operating environment installation prerequisites for system plan deployment*

Verification step	Description
Verify the partition status on the HMC.	If the status of a client logical partition on which you are installing AIX or Linux is Open Firmware, shut down the partition before you deploy the system plan. The Deploy System Plan Wizard must be able to shut down and activate the target partition to install the operating environment and the wizard cannot do this if the partition status is Open Firmware. This is not a concern when you are installing the Virtual I/O Server on a partition.
Verify that you do not have a terminal connection open to the partition.	Click <b>Console Window</b> → <b>Close Terminal Connection</b> from the HMC to make sure it is closed. Even if you do not have the window open, if the connection is not closed, you might have problems deploying the operating environment in a system plan.
Verify that the <b>Power off the system after all the logical partitions are powered off</b> attribute for the managed system is not selected.	If this attribute is selected, system plan deployment will fail because the deployment process starts partitions and then powers off partitions as part of installing operating environments. Consequently, the managed system will power off during deployment when the deployment process powers off the partitions.  To verify this system attribute, complete these steps: <ol style="list-style-type: none"> <li>1. In the HMC navigation area, select <b>Systems Management</b> → <b>Servers</b>.</li> <li>2. In the Tasks area, select <b>Properties</b>. The Properties window for the selected managed system opens.</li> <li>3. On the General tab, verify that the <b>Power off the system after all the logical partitions are powered off</b> attribute is not selected, and click <b>OK</b>.</li> </ol>
Verify that the target managed system for a system plan with Virtual I/O Server (VIOS) partitions is suitable for deployment of the system plan.	On HMCs prior to V7R3.3.0, the managed system must not have any VIOS entities configured on it for any VIOS partitions that exist on it. Specifically, the managed system cannot have any VIOS entities configured on it, including shared Ethernet adapters, EtherChannel adapters, or link aggregation devices, storage pools, and backing devices. If you try to deploy a system plan on a system that does not meet all of these requirements, the Deploy System Plan Wizard fails the validation step.  On HMC V7R3.3.0, partition validation is more flexible. Consequently, you can deploy a system plan with VIOS partitions even if the managed system has VIOS partitions with VIOS entities configured for them.
Verify that any previously deployed VIOS logical partitions have been activated at least once with a working RMC connection.	An RMC connection is necessary to ensure that the HMC can verify the operating environment status for a logical partition. To install an operating environment as part of deploying a system plan, the Deploy System Plan Wizard must be able to determine if the affected logical partition already has an operating environment installed. The wizard can obtain this information from the partition properties on the HMC when a logical partition has been started at least once with an active RMC connection. This ensures that the operating environment status for the logical partition is known to the HMC and ensures that the wizard can determine whether it is appropriate to install the operating environment on the logical partition as specified in the system plan.

Table 9. Additional operating environment installation prerequisites for system plan deployment (continued)

Verification step	Description
<p>Verify that any automatic installation files that are being used for the operating environment installation are correct and accurate.</p>	<p>Automatic installation files allow you to provide specialized installation settings. These include kickstart files for Red Hat Enterprise Linux, AutoYaST files for SUSE Linux Enterprise Server, and BOSinit.data files for the AIX operating environment. Verify that any automatic installation files that are being used for the operating environment installation are correct and accurate.</p> <p>For more information see the following resources:</p> <ul style="list-style-type: none"> <li>• kickstart files: (<a href="http://www.redhat.com/docs/manuals/enterprise/RHEL-4-Manual/sysadmin-guide/ch-kickstart2.html">http://www.redhat.com/docs/manuals/enterprise/RHEL-4-Manual/sysadmin-guide/ch-kickstart2.html</a>)</li> <li>• autoYaST files: (<a href="http://www.suse.com/~ug/autoyast_doc/index.html">http://www.suse.com/~ug/autoyast_doc/index.html</a>)</li> <li>• BOSinst.data files: (<a href="http://publib.boulder.ibm.com/infocenter/systems/index.jsp?topic=/com.ibm.aix.install/doc/insgdrf/bosinst_data_file_intro.htm">http://publib.boulder.ibm.com/infocenter/systems/index.jsp?topic=/com.ibm.aix.install/doc/insgdrf/bosinst_data_file_intro.htm</a>)</li> </ul>
<p>If you are installing Linux, verify that you have the correct distribution for your intended hardware and configuration.</p>	<p>Ensure that the correct version is supported for the following operating environments:</p> <p><b>AIX:</b> Version 5.3 or 6.1</p> <p><b>Red Hat Enterprise Linux:</b> Support is provided for the following versions:</p> <ul style="list-style-type: none"> <li>• <b>Red Hat Enterprise Linux EL-AS:</b> Version 4, 4 QUI, 4 QU2, 4 QU3, 4QU4, 4.5, or 4.6</li> <li>• <b>Red Hat Enterprise Linux EL-Server:</b> Version 5 or version 5.1</li> </ul> <p><b>SUSE Linux Enterprise Server:</b> Version 10, 10 SP1, 9, 9 SP1, 9 SP2, 9 SP3, or 9 SP4</p> <p><b>Virtual I/O Server:</b> Version 1.5 and 1.5.2</p> <p><b>Note:</b> You can only do a Linux installation as part of system plan deployment onto a IBM i if the partition is hosted by the VIOS.</p> <p>For more information see the IBM Prerequisite Web site (<a href="http://www-912.ibm.com/e_dir/eserverprereq.nsf">http://www-912.ibm.com/e_dir/eserverprereq.nsf</a>).</p>
<p>Ensure that you have DVD media if you are creating a local installation resource on the HMC for either the AIX or the VIOS operating environments.</p>	<p>If you are creating a local installation resource on the HMC for installing either the AIX or the VIOS operating environments during system plan deployment, you must use DVDs to create the installation resource.</p> <p>If you are using CDs, you might see the following type of error message:</p> <pre>b9rshmc2:/home/hscpe # OS_install -o define_resource -a type=AIX -a version=53L -a location=/extra/csminstall/erictest001 -a source=/dev/cdrom erictest001 mkdir /extra/csminstall/erictest001 [03/11/2008][01:30:03][9519]: Executing: /bin/mount /dev/cdrom /opt/osinstall/src_mnt [03/11/2008][01:30:04][9519]: STDERR (/bin/mount): mount: block device /dev/cdrom is write-protected, mounting read-only [03/11/2008][01:30:05][9519]: rc for /bin/mount = 0 [03/11/2008][01:30:05][9519]: ERROR: The file /opt/osinstall/src_mnt/RPMS/linux/aix-res-*.rpm cannot be found [03/11/2008][01:30:05][9519]: Executing: /bin/umount /opt/osinstall/src_mnt [03/11/2008][01:30:05][9519]: rc for /bin/umount = 0P [03/11/2008][01:30:05][9519]: ERROR: Failed to copy operating system images from /dev/cdrom to /extra/csminstall/erictest001 [03/11/2008][01:30:05][9519]: ERROR: Unable to create OS_Resource object</pre> <p>Obtain the appropriate installation DVDs to resolve the problem, or use a Network Installation Management (NIM) Server to create a repository copy of your installation media. You can then create a remote installation resource on the HMC for the operating environment which you can use to install the operating environment successfully during system plan deployment.</p>

Table 9. Additional operating environment installation prerequisites for system plan deployment (continued)

Verification step	Description
If you plan to deploy the VIOS, AIX, or Linux operating environment for a logical partition, ensure that the appropriate installation image is either on the HMC or available to the HMC through a connection to a Network Installation Management (NIM) server.	<p>To see the installation images on the HMC, either enter the <code>OS_install -l</code> command on the HMC command line or, for HMC V7R3.3.0, use the <b>Manage Install Resources</b> task in the HMC Web interface. If the VIOS, AIX, or Linux installation image that you need is not listed, complete the following steps to copy an installation image to the HMC:</p> <ol style="list-style-type: none"> <li>1. Obtain a copy of the VIOS, AIX, or Linux on DVD or CD, whichever is appropriate for the operating environment. You can use the original installation media or you can contact your marketing representative to obtain another copy. If you cannot obtain a copy of the VIOS, AIX, or Linux operating environment, you can deploy the remainder of the system plan and install the VIOS, AIX, or Linux operating environment at a later time.</li> <li>2. Copy the installation files that you need either to a NIM server or to the HMC itself. To copy the necessary installation files to the HMC, insert the DVD into the DVD drive on the HMC. If the installation files are on CDs, insert the initial CD into the CD drive on the HMC. <b>Note:</b> You can use the <code>OS_install</code> command to perform this task. From the HMC command line, use the <code>OS_install</code> command to copy the operating environment installation files. For example, you can enter the following command to copy the VIOS installation image from the DVD to the HMC: <code>OS_install -o define_resource -a type=VIOS -a version=x.x -a location=/extra/csminstall/vios -a source=/dev/cdrom VIOS</code> (where <i>x.x</i> can be any of the following values: 1.4.1.0, 1.5, or 1.5.2.)</li> <li>3. On the HMC, select <b>HMC Management</b> → <b>Manage Install Resources</b>, and click <b>Add</b>.</li> <li>4. In the <b>Add Install Resource</b> window, select <b>Create local install resource</b>, select the appropriate operating environment name and version, and click <b>OK</b> to copy the installation files from the installation media to the hard drive of the HMC.</li> </ol>

### Network Installation Management (NIM) server prerequisites

If you are using a Network Installation Management (NIM) server as the installation resource for installing an operating environment, ensure you meet the following prerequisites:

- The complete set of necessary operating environment installation files must exist on the NIM server within a uniquely named NIM resource group.

**Note:** You can define a remote resource for the AIX (Version 5.3 or 6.1) operating environment only.

- You can define multiple remote installation resources for a specific operating environment version and modification level, as long as each installation resource is within a different NIM resource group.
- You must know the fully qualified host name of the NIM server.
- You must know the resource group name that contains the necessary set of operating environment installation files.
- You must set up the HMC to be able to access the NIM server and to use the operating environment installation files during system plan deployment. The HMC must be able to run secure shell commands by means of a secure shell (ssh) connection to access the NIM server successfully. Consequently, you must ensure that the HMC can provide an appropriate cryptographic key to the NIM server by completing the following steps:

1. Open an HMC command prompt and run the following command to generate the RSA keys that the HMC needs for ssh connections and to place the keys in an accessible file in the HMC HOME directory:

```
ssh-keygen -t rsa -f /home/hscroot/ssh_keys
```

This command creates two files that contain the needed RSA keys: `ssh_keys` and `ssh_keys.pub`. The `ssh_keys` file contains the private key that the HMC needs for establishing an ssh connection, and

this file must remain in the /home/hscroot subdirectory. The ssh\_keys.pub file contains the public key that the NIM server must have to provide nonprompted ssh connection access for the HMC .

2. On the remote NIM server, append or copy the content of the /home/hscroot/ssh\_keys.pub file into the /.ssh/authorized\_keys file on the NIM server. For example, you can use the following command: `cat ssh_keys.pub >>/.ssh/authorized_keys`

**Note:** Note: you might need to set the permissions for the authorized\_keys file before you run this command. To set the permissions for the file, you can use the following command: `chmod 0600 / .ssh/authorized keys`

3. Test your configuration changes by running the following command on the HMC: `ssh root@nimserver.host.name ls`

When the command finishes processing, you will not see a password prompt, if your configuration is set up properly.

**Note:** Remote clients defined on the NIM server remain in place after installation of the operating environment on a logical partition for postinstallation management. The short host name of the system will identify this remote client.

If you meet all of the listed prerequisite conditions and system plan deployment is failing with a specific type of problem, see the troubleshooting topics to determine the possible nature of the problem and potential actions that you can take to resolve it.

If you meet all requirements and system plan deployment is failing with a specific type of problem, see Troubleshooting system plan creation for the HMC to determine the possible nature of the problem and potential actions that you can take to resolve it.

#### **Related concepts**

“Troubleshooting system plan deployment for HMC” on page 44

Use the following information to help resolve problems that you might encounter when deploying a system plan with the Hardware Management Console (HMC) Version 7.3.3, and later.

### **System plan validation for the HMC**

You deploy a system plan to a system that is managed by a Hardware Management Console (HMC) managed system by using the System Plan Deployment Wizard. The wizard validates the information in the system plan against the configuration of the managed system before beginning the deployment process.

The Deploy System Plan wizard validates the system plan prior to deployment to ensure that it can be deployed successfully. The wizard validates the system plan in two phases. The first phase of the validation process is hardware validation. During this phase, the wizard is validating that the processors, memory, and I/O adapters that are available on the managed system match or exceed those that the system plan specifies. The wizard also validates that the hardware placement on the managed system matches the hardware placement that the system plan specifies.

The second phase of the validation process is partition validation. During this phase, the wizard validates that the logical partitions on the managed system match those in the system plan. If the system plan contains provisioning information, the wizard also validates the provisioning items in the system plan to determine which items are deployable.

If any step in the partition validation process fails for the system plan, validation of the entire system plan fails.

## Related concepts

“System plans on the HMC” on page 10

You can use system plans with the Hardware Management Console (HMC) to perform a number of high-level system management tasks.

## Related tasks

“Deploying a system plan by using the HMC” on page 27

You can use the Hardware Management Console (HMC) to deploy all or part of a system plan to a managed system.

## Hardware validation on the HMC:

During the hardware validation process, the HMC compares the hardware information in the system plan against the hardware available on the managed system to ensure that the system plan can deploy successfully to the target managed system.

When validating the hardware on the managed system, the HMC compares the following information from the system plan with the hardware available on the managed system:

- Processor and memory amounts, including 5250 commercial processing workload (5250 CPW) where applicable
- Physical I/O adapter placement

The hardware described in the system plan passes validation if it matches the hardware specified by the managed system. The hardware on the managed system can contain resources in addition to those specified in the system plan and still pass validation, but the hardware on the managed system must at least match the hardware specified in the system plan.

For example, a system plan specifies a server with two processors, 8 GB of memory, and a specific placement of physical I/O adapters within the system unit. A server that contains two processors, 16 GB of memory, a matching placement of physical I/O adapters within the system unit, and an expansion unit with additional physical I/O adapters would allow the system to pass validation. A server that contains 4 GB of memory can cause the system to fail validation. A system plan can also fail validation if the system plan specifies one type of physical I/O adapter in a slot but the actual system unit has a different type of physical I/O adapter in that slot. However, if the system plan specifies an empty slot, validation allows any type of physical I/O adapter to be in that slot on the actual system.

The HMC does not validate the disk drives that are attached to physical I/O adapters against the disk drives specified in the system plan. You must ensure that the disk drives installed in the managed system support your desired logical partition configuration. The HMC also does not validate that internal drive bay cabling and external SCSI cabling match what is specified in a system plan that was created in the System Planning Tool (SPT). You must validate these items manually before you deploy the system plan to ensure that advanced deployment features, such as operating environment installation or Virtual I/O Server (VIOS) provisioning, do not fail. Embedded devices automatically pass hardware validation because they are embedded into the system and cannot be removed.

## Partition validation on the HMC:

During the partition validation process, the HMC compares the logical partition information in the system plan against any existing logical partitions on the managed system to ensure that the system plan can deploy successfully to the target managed system. The HMC also validates any Virtual I/O Server (VIOS) provisioning information in the system plan

Any existing logical partition found on the managed system must appear in the system plan and must match the system plan as it appears on the managed system. For example, hardware on the managed

system that is referenced by the actual partition must at least match the hardware referenced by that same partition in the system plan. When validating an existing logical partition, the HMC validates the following items for that logical partition:

1. Whether a logical partition in the system plan has the same partition ID and name as the existing logical partition specified in the machine default configuration.
2. Whether an existing logical partition has partition profiles that match each partition profile specified for the logical partition in the system plan.
3. Whether the partition profiles for any existing logical partitions contain the resources specified in the corresponding partition profiles in the system plan.
4. Whether the partition on the managed system has only those same virtual adapters and adapter types (and that they use the same adapter ports) as those specified for the partition in the system plan.

For example, if the server has an existing logical partition with a partition ID of 1, the HMC examines the logical partition in the system plan that has a partition ID of 1. If this logical partition exists and has a partition profile that is named SUPPORT, the HMC looks at the existing logical partition to see if it also has a partition profile that is named SUPPORT. If so, the HMC verifies that the resources specified in the SUPPORT partition profile in the system plan are contained in the SUPPORT partition profile in the existing logical partition.

When the HMC validates partition profiles, it compares the following resources in the partition profiles:

- Processor and memory amounts, including 5250 commercial processing workload (5250 CPW) where applicable
- Physical I/O slot assignments

The following examples illustrate how the HMC compares resources in the partition profiles during the validation process to determine whether the system plan is valid for a managed system:

- If the SUPPORT partition profile in the system plan specifies 2 GB of memory and the SUPPORT partition profile for the existing logical partition specifies 3 GB of memory, the amount of memory is valid.
- If the SUPPORT partition profile in the system plan specifies 4 GB of memory and the SUPPORT partition profile for the existing logical partition specifies 3 GB of memory, the amount of memory is not valid.
- If physical I/O slot P1 is assigned to the SUPPORT partition profile in the system plan but not to the SUPPORT partition profile for the existing logical partition, the physical slot assignment is not valid.
- If physical I/O slot P2 is not assigned to the SUPPORT partition profile in the system plan, it does not matter whether slot P2 is assigned to the SUPPORT partition profile for the existing logical partition.

### **Validation of Virtual I/O Server (VIOS) provisioning in a system plan**

When deploying a system plan that contains VIOS provisioning information, the system plan passes validation as long as the plan meets the following conditions:

- The VIOS partition or client logical partitions can exist on the system that is the target of the system plan. However, any client logical partitions and hardware configured on the target system must be identical to those same items in the system plan.
- The target system can have VIOS items, such as virtual disks or virtual Ethernet adapters, already configured. The items in the system plan and the items configured on the managed system need not match exactly. Based on certain criteria, the system plan validation process matches the VIOS items in the plan and the items on the target system. For example, you can deploy only VIOS entities from the system plan that are not already deployed to the managed system. The existing entities on the system must match those that are in the system plan for deployment of the system plan to succeed.

If an item does not match, the item in the plan is a candidate for deployment. However, if the item in the system plan uses any adapter or device that some other configured item on the system is already using, the plan item is marked as not deployable. On the Operating Environment Install page, the

wizard presents a list of items in the system plan that indicates whether each listed item is deployable. When you continue the deployment of the system plan, the wizard does not attempt to deploy any items that are marked as not deployable.

The following examples illustrate how the HMC compares VIOS items and other logical partition deployment items in the system plan during the validation process to determine whether these items can be deployed:

- The system plan contains a shared Ethernet adapter for a logical partition, and the target system has no shared Ethernet adapters configured. In this case, the shared Ethernet adapter in the system plan is deployed to the target system.
- The system plan contains two EtherChannel adapters, and an EtherChannel exists on the target system. The existing EtherChannel exactly matches one of the two that are in the system plan, including all physical adapters. In this case, this EtherChannel passes validation successfully, but is not deployed. The other EtherChannel in the system plan, which does not require any of the adapters that the existing EtherChannel or shared Ethernet adapter uses, is deployed.
- The system plan contains two storage pools, and a storage pool exists on the target system. The existing storage pool exactly matches one of the two in the system plan, including all location codes for all disks and specified disk sizes. In this case, this storage pool passes validation successfully, but is not deployed. The other storage pool in the system plan, which has no attribute conflicts with the existing storage pool, is deployed.
- The system plan contains an EtherChannel adapter, and a shared Ethernet adapter exists on the target system. The existing shared Ethernet adapter uses a physical adapter that is specified for use by the EtherChannel adapter in the system plan. In this case, the EtherChannel adapter in the system plan fails validation and cannot be deployed.
- The system plan contains an EtherChannel adapter that includes three Ethernet adapters, and that EtherChannel adapter exists on the managed system. The EtherChannel adapter on the managed system has a single Ethernet adapter. In this case, the EtherChannel adapter in the system plan fails validation and cannot be deployed, and the EtherChannel on the managed system is not affected.

In those cases where a VIOS entity cannot be deployed, you must manually change the configuration and attributes of VIOS entities on the managed system to match those in the system plan.

Additionally, for HMC V7R3.3.0 on POWER6 systems, I/O resources no longer need to be assigned to the management partition.

## Installing operating environments from a system plan by using the HMC

You can use the Hardware Management Console (HMC) version 7 to install an operating environment on a logical partition when you deploy a system plan.

For HMCs prior to HMC V7R3.3.0, you can deploy a system plan to install only the Virtual I/O Server operating environment. Beginning with HMC V7R3.3.0, you also can deploy a system plan to install AIX or Linux operating environments on logical partitions in a system plan.

**Note:** You can create a system plan with installation information for an AIX or Linux operating environment only in the System Planning Tool (SPT). If a system plan has installation information for an AIX or Linux operating environment, you still can deploy the system plan to systems that are managed by an earlier version of the HMC. Earlier versions of the HMC Deploy System Plan Wizard can deploy the logical partitions in the system plan and ignore any operating environment installation information in the system plan. The earlier versions of the HMC can deploy all other aspects of the system plan successfully, as long as the other items in the system plan are validated successfully.

System plans that contain AIX or Linux installation information can be deployed only to new logical partitions or to logical partitions that do not already have an operating environment installed on them. If the logical partition already has an operating environment installed, the HMC does not deploy the operating environment that the system plan specifies for that logical partition.

If you plan to deploy a system plan that includes the installation of an operating environment for a logical partition, ensure that the **Power off the system after all the logical partitions are powered off** attribute for the managed system is not selected. If this attribute is selected, system plan deployment will fail because the deployment process starts partitions and then powers off partitions as part of installing operating environments. Consequently, the managed system will power off during deployment when the deployment process powers off the partitions. To verify the setting for this system attribute, complete these steps:

1. In the HMC navigation area, select **Systems Management** → **Servers**.
2. In the Tasks area, click **Properties**. The Properties window for the selected managed system opens.
3. On the **General** tab, verify that the **Power off the system after all the logical partitions are powered off** attribute is not selected, and click **OK**.

### Supported operating environments

The wizard provides support for installing the following operating environments:

- AIX: Version 5.3 or 6.1
- Red Hat Enterprise Linux: Support is provided for any of the following versions:
  - Red Hat Enterprise Linux EL-AS: Version 4, 4 QUI, 4 QU2, 4 QU3, 4QU4, 4.5, or 4.6
  - Red Hat Enterprise Linux EL-Server: Version 5 or version 5.1
- SUSE Linux Enterprise Server: Version 10, 10 SP1, 9, 9 SP1, 9 SP2, 9 SP3, or 9 SP4
- Virtual I/O Server: Version 1.5 and 1.5.2

### Using customized automatic installation files for operating environment installation

When you deploy a system plan that contains operating environment installation information, you can use the Deploy System Plan Wizard to specify the resource location that the wizard needs for installing the operating system environment. You also can specify or change operating environment installation settings. However, you cannot use the wizard to create or edit any automatic installation files that might be specified for an operating environment installation.

If you want to use a customized automatic installation file with an operating environment in the system plan, you must create or obtain the necessary file and import the file into the System Planning Tool (SPT). You can then use the SPT to edit the file, if necessary, and to associate the customized file with the system plan for installation of the appropriate operating environment on a logical partition. These automatic installation files, which allow you to provide specialized installation settings, include kickstart files for Red Hat Enterprise Linux, AutoYaST files for SUSE Linux Enterprise Server, and BOSinit.data files for AIX. For example, you might want to create a customized automatic installation file with the necessary setting so that the operating environment is installed specific virtualized resource that is provided to a client partition by the Virtual I/O Server partition over a virtual SCSI connection.

### Required information for installing operating environments

During the Customize Operating Environment Install step of the Deploy System Plan Wizard, you provide required resource information for the operating environment installation and make any needed changes to installation settings. This step does not occur if the plan does not contain operating environment installation information. This step includes the following configuration options for installing an operating environment on the target logical partition:

- Operating Environment Install Image Resource. This configuration option allows you to specify an existing location for the operating environment installation files. You also can choose to create a new resource location for the installation files that you need to install an operating environment.
- Modify Install Settings. This configuration option allows you to provide or change late-binding installation settings for the target logical partition of the operating environment installation. In almost all cases, you need to update a number of late-binding installation settings before you can deploy an

operating environment on a logical partition. Late-binding installation settings are those settings that are specific to an individual installation instance, for example, the IP address and subnet mask for the target logical partition on which the operating environment is to be deployed. You also can view settings for any custom automatic installation files that are included with the system plan. However, you cannot change these settings. You can use custom installation files to customize the installation of an operating environment during the system plan deployment process only if the system plan already contains the necessary files. You can create these files and associate them with a system plan only in the System Planning Tool (SPT).

- **Save Modified Operating Environment Install Information.** This configuration option allows you to save any changes that you make to late-binding operating environment installation settings. You can save changes to the current system-plan file, or you can save them to a new system-plan file.

### **Related concepts**

“System plans on the HMC” on page 10

You can use system plans with the Hardware Management Console (HMC) to perform a number of high-level system management tasks.

### **Related tasks**

“Deploying a system plan by using the HMC” on page 27

You can use the Hardware Management Console (HMC) to deploy all or part of a system plan to a managed system.

### **Managing installation resources for the HMC:**

You can use the Manage install resources task on the Hardware Management Console (HMC) V7R3.3.0, or later, to create new installation resources for the HMC, or to remove existing installation resources from the HMC.

You can use HMC V7R3.3.0, or later, to deploy a system plan that contains information for installing one or more operating environments on one or more logical partitions. To install an operating environment as part of deploying a system plan, the HMC must be able to access and to use an installation resource for that operating environment.

An operating environment installation resource is the necessary set of installation files for a specific version of an operating environment at a specific release and modification level. The installation resource can be on the local hard-drive for the HMC or it can be on a Network Installation Management (NIM) server that the HMC can access.

*Requirements for creating local installation resources for the HMC:*

You must meet certain requirements to create an operating environment installation resource on the local hard-drive for the HMC. You can use the installation resource that you create to install the operating environment when you deploy a system plan that contains installation instructions for that operating environment.

When you define and create a local installation resource, you must meet the following requirements:

- You can define only one local installation resource for a specific operating environment version and modification level. For example, you can define a local installation resource for AIX 5.3 and another for AIX 6.1, but you cannot define two local installation resources for the same AIX version and modification level. For example, you cannot define two local installation resources for AIX 6.1. This restriction applies to all supported operating environments.

**Note:** You can define a local installation resource for the Virtual I/O Server, AIX, and Linux operating environments.

- The HMC must have enough free hard disk space for the necessary set of operating environment installation files. The HMC creates the installation resource in the same local hard-drive location that

the HMC uses for main storage dumps. Consequently, maintain a certain amount of free hard-drive space to avoid potential main storage dump problems because main storage dumps are necessary to help resolve some types of HMC errors. The typical main storage dump averages 4 - 8 GB, so consider maintaining at least 10 GB of free hard-drive space for these dumps when you define and create local installation resources for the HMC.

**Note:** The HMC must have a minimum of 3 GB of free hard disk space on the local hard drive in the /extra/csminstall directory. If the amount of available space is below this minimum, the **Add** button is unavailable and you cannot define and add a local installation resource for AIX.

- You must have the operating environment installation media available to copy to the HMC local hard-drive. The type of media that you need varies based on the type of operating environment that you want to be able to install. You can use CDs or DVDs as the installation image source for Red Hat Enterprise Linux and SUSE Linux Enterprise Server operating environments. However, you can use only DVDs as the installation image source for AIX and Virtual I/O Server operating environments.

*Creating a new local installation resource for the HMC:*

To deploy a system plan that installs an operating environment, you need to create an installation resource that contains the necessary installation images that the Hardware Management Console (HMC) can use to install that operating environment. You can do this by creating a local installation resource on the hard-drive of the HMC.

Ensure that you meet the requirements for creating a local installation resource for the HMC before you start.

To add a new installation resource location to the HMC, complete the following steps:

1. In the HMC navigation area, select **HMC Management**.
2. In the contents area, select **Manage Install Resources**. The Manage Install Resources window opens.
3. Click **Add**. The Add Install Resource window opens so that you can create a new installation resource for the HMC.
4. Select whether to **Create a local install resource** or to **Define a remote install resource**.
  - If you select **Create a local install resource**, you must specify the following information:
    - a. Operating environment name. You can select one of the following values for the operating environment:
      - AIX
      - RedHatEL-AS (Red Hat Enterprise Linux Application Server)
      - RedHatEL-Server (Red Hat Enterprise Linux Server)
      - SLES (SUSE Linux Enterprise Server)
      - VIOS (Virtual I/O Server)
    - b. Operating environment version. You can select one of the following values for the operating environment version:
      - AIX: Version 5.3 or 6.1
      - Red Hat Enterprise Linux. Select one of the following values:
        - RedHat EL-AS: Version 4, 4 QUI, 4 QU2, 4 QU3, 4QU4, 4.5, or 4.6
        - RedHat EL-Server: Version 5 or version 5.1
      - SLES (SUSE Linux Enterprise Server): Version 10, 10 SP1, 9, 9 SP1, 9 SP2, 9 SP3, or 9 SP4
      - VIOS (Virtual I/O Server): Version 1.5 or 1.5.2
  - If you select **Define a remote install resource**, you must specify the following information:
    - a. Operating environment name. You can select one of the following values for the operating environment:
      - AIX

- b. Operating environment version. You can select one of the following values for the operating environment version:
  - AIX: Version 5.3 or 6.1
- c. NIM master host name. Specify the fully qualified host name of the Network Installation Management (NIM) server that has the operating environment installation files that you want to define as an operating environment installation resource for the HMC.
- d. NIM resource group. Specify the NIM resource group to which the resource belongs. NIM resource groups are objects within a NIM database that represent collections of NIM resources

Each installation resource that you define and create for the HMC is available for selection in the Customize Operating Environment Install step of the Deploy System Plan Wizard. If the installation resource that you want to use for a selected logical partition is not available when you perform this step, you can click **New Install Resource** to open the Manage Install Resources window to define and create a new installation resource.

To remove an installation resource from the HMC, select the resource that you want to remove, and click **Remove**. Review the information on the Remove Install Resource window, and click **OK** to confirm that you want to remove the resource from the HMC.

**Note:** When you remove a local installation resource from the HMC, the HMC also deletes the installation files from the local hard-drive. When you remove a remote installation resource from the HMC, the files on the NIM server are not affected.

*Requirements for creating remote installation resources for the HMC:*

You must meet certain requirements to create an operating environment installation resource on a Network Installation Management (NIM) server that the HMC can access. You can use the installation resource that you create on the NIM server to install the operating environment when you deploy a system plan that contains installation instructions for that operating environment.

When you define a remote NIM server installation resource, you must meet the following requirements to ensure that the HMC can access and use the installation resource:

- The complete set of necessary operating environment installation files must exist on the NIM server within a uniquely named NIM resource group.

**Note:** You can define a remote resource for the AIX (Version 5.3 or 6.1) operating environment only.

- You can define multiple remote installation resources for a specific operating environment version and modification level, as long as each installation resource is within a different NIM resource group.
- You must know the fully qualified host name of the NIM server.
- You must know the resource group name that contains the necessary set of operating environment installation files.
- You must set up the HMC to be able to access the NIM server and use the operating environment installation files during system plan deployment. The HMC must be able to run secure shell commands by means of a secure shell (ssh) connection to access the NIM server successfully. Consequently, you must ensure that the HMC can provide an appropriate cryptographic key to the NIM server by completing the following steps:

1. Open an HMC command prompt and run the following command to generate the RSA keys that the HMC needs for ssh connections and to place the keys in an accessible file in the HMC HOME directory:

```
ssh-keygen -t rsa -f /home/hscroot/ssh_keys
```

This command creates two files that contain the needed RSA keys: `ssh_keys` and `ssh_keys.pub`. The `ssh_keys` file contains the private key that the HMC needs for establishing an ssh connection, and

this file needs to remain in the /home/hscroot subdirectory. The ssh\_keys.pub file contains the public key that the NIM server must have to complete the ssh connection, without prompting for authentication, with the HMC.

2. On the remote NIM server, append or copy the content of the /home/hscroot/ssh\_keys.pub file into the /.ssh/authorized\_keys file on the NIM server. For example, you can use the following command: `cat ssh_keys.pub >>/.ssh/authorized_keys`

**Note:** Remote clients defined on the NIM server remain in place after installation of the operating environment on a logical partition for postinstallation management. The short host name of the system will identify this remote client.

## Troubleshooting system plan deployment for HMC

Use the following information to help resolve problems that you might encounter when deploying a system plan with the Hardware Management Console (HMC) Version 7.3.3, and later.

For an optimal deployment experience, use HMC V7 R3.3.4, or later. HMC V7.3.4, and later versions, provide the best level of function for creating and deploying system plans, especially for system plans that include operating environment installations. By upgrading to this version, you ensure that you will encounter fewer problems during system plan creation and deployment.

The system plan deployment process writes any messages, including error messages to the /var/hsc/log/iqzdrac.trm file or to the /var/hsc/log/deploy\_validation.log if there are validation errors. Use the information provided in these tables to determine the type of system plan creation problem you have and potential solutions for resolving the problem.

Use the information provided in these tables to determine the type of deployment problem you have and potential solutions for resolving the problem.

### Troubleshooting hardware validation problems

The following table contains information about resolving various hardware validation errors that you might encounter when you deploy a system plan.

Table 10. System plan deployment - hardware validation problems and solutions

Problem description	Corrective actions
<p>My system plan deployment on HMC 7.3.3 fails with validation errors that the disk drives specified in the system plan are not found in the managed system.</p> <p>When deploying a system plan that specifies the installation of the Virtual I/O Server (VIOS) operating environment, the installation can sometimes take more than one hour. This is often a result of too few processing units (0.1) being assigned to the VIOS partition that is being installed. The operating environment installs successfully, but the deployment process cannot provision the disk drives in the plan successfully because the installation time exceeded the length of time that the HMC is able to retain the temporary location codes and names needed for provisioning the hardware. Consequently, the hardware validation that is part of the provisioning step fails and system plan deployment stops with hardware validation errors for disk drives, storage pools, and so forth.</p> <p>Here is an example:</p> <pre>Deployment failed on step: Storage Pool vios1 The following Disk(s) 9117_MMA-0-P1-C5-T1-L4-L0 , 9117_MMA-0-P1-C5-T1-L5-L0 , 9117_MMA-0-P1-C5-T1-L0-L0 , 9117_MMA-0-P1-C5-T1-L1-L0 , 9117_MMA-0-P1-C5-T1-L3-L0 , 9117_MMA-0-P1-C5-T1-L2-L0 , 9117_MMA-0-P3-D1 , 9117_MMA-0-P1-C4-T1-L3-L0 , 9117_MMA-0-P1-C4-T1-L0-L0 , 9117_MMA-0-P1-C4-T1-L1-L0 , 9117_MMA-0-P1-C4-T1-L4-L0 , 9117_MMA-0-P1-C4-T1-L2-L0 , specified in the system plan are not found in the managed system vios1 Operating Environment VIOS has been successfully installed on partition vios2</pre> <p>The 9117_MMA-0 references are location codes that are not valid because they reference planned units and not the actual unit names. This happens due to a previous deployment step in that same system plan taking more than an hour.</p>	<p>You can simply redeploy the system plan to the managed system. When you redeploy the plan, the deployment process detects what system plan steps are completed and will ignore the VIOS operating environment installation step. The validation process will be able to create new location codes and names for the hardware to be provisioned and can successfully provision the hardware as specified by the system plan.</p> <p><b>Note:</b> If there are multiple VIOS installations specified by the system plan, you might encounter this same problem when the deployment process installs each VIOS operating environment, if that installation takes longer than an hour to complete. Again, redeployment of the system plan will allow you to finish the provisioning as previously described.</p>

### Troubleshooting operating environment installation problems

The following table contains information about resolving error messages that you might encounter when you install an operating system by deploying a system plan.

Table 11. Operating environment installation errors and solutions for system plan deployment log messages

Log messages (description of problem)	Recovery steps
<p>I am getting an error log message about Lpar_netboot: timeout</p> <p>Example: Thu Mar 13 22:00:18 2008 STDOUT (/opt/hsc/bin/lpar_netboot): lpar_netboot: timeout Thu Mar 13 22:00:18 2008 rc for /opt/hsc/bin/lpar_netboot = 0 Thu Mar 13 22:00:18 2008 Monitoring vios install</p> <p>This message occurs when there is a mismatch between the screen that is currently displayed and the window that network boot expects to display within a certain time period.</p> <p>For example, when you boot a machine into System Management Services (SMS) and the Welcome to AIX window is not displayed within the expected time period, you will see this error.</p>	<p>The following steps might help you recover from this error condition:</p> <ol style="list-style-type: none"> <li>1. Obtain and analyze the following log file: /tmp/lpar_network boot.exec.*.log</li> <li>2. Check your network settings and ensure that your configuration meets all prerequisites for installing an operating environment.</li> <li>3. If you determine that all the connection information is correct, you can partially deploy the system plan and manually install Virtual I/O Server so that you can complete the deployment of the system plan.</li> </ol>
<p>I am getting one of the following error messages:</p> <p>Error: Object exists in repository!</p> <p>Error: Could not instantiate sysplan object</p> <p>Error: System plan is invalid</p> <p>These messages occur when you are deploying a system plan on a managed system where the original deployment of the VIOS environment in that system plan failed and appropriate cleanup of the failed installation did not occur.</p>	<p>Upgrade to HMC V7.3.3. This problem has been fixed for HMC V7.3.3.</p> <p>Ensure that you have met all prerequisites for installing an operating environment as part of deploying a system plan.</p> <p>For HMC V7.3.2 or HMC V7.3.1, complete the following steps to determine if there are operating environment objects on the managed system from a previous VIOS installation attempt:</p> <ol style="list-style-type: none"> <li>1. Open an HMC command prompt.</li> <li>2. Run the following command: <code>OS_install -l</code></li> <li>3. Review the information that the command returns. For example, you see the following objects: <i>vios client</i> <i>vios1_res os_resource</i> <i>osinstallcontrolhost</i> <i>ctrl_host</i></li> </ol> <p>You must remove the listed objects in italics before you can successfully deploy a system plan with VIOS installation information.</p> <ol style="list-style-type: none"> <li>4. To remove the objects that are causing the problem, run the following commands: <ul style="list-style-type: none"> <li>• <code>OS_install -o remove vios</code></li> <li>• <code>OS_install -o remove osinstallcontrolhost</code></li> </ul> </li> </ol> <p><b>Note:</b> The objects in the preceding commands are the only objects that you need to remove of those listed in the example. Do not delete the <code>os_resource</code> object; this is the VIOS image that you were using for the installation.</p>

Table 11. Operating environment installation errors and solutions for system plan deployment log messages (continued)

Log messages (description of problem)	Recovery steps
<p>I am getting the following error message: Error: There are no disks available on this system</p> <p>This error only occurs if the target drive for an operating environment installation is formatted as an IBM i disk. However, this error also might occur if you are deploying the operating environments on client partitions in a system plan when the VIOS provisioning items did not deploy successfully.</p>	<p>Verify that the disk drive that is the installation target of a VIOS, AIX, or Linux partition is not formatted for IBM i operating environment.</p> <p>Open your system plan in the SPT and reassign the disk controllers for the target partition, double-check the cabling of your disks to make sure the cabling matches the SPT recommended cabling.</p> <p>If the error is due to missing provisioning items, ensure that the appropriate VIOS storage pool and disk assignments are complete. You can do this by redeploying the system plan without selecting to install the VIOS or any client operating environments. The Deploy System Plan Wizard will install the provisioning items that remain in the plan. See Manually installing Virtual I/O Server for more details.</p>
<p>I am getting an error similar to the following one: [01/29/2008] [14:35:44] [26701]: Basic operating system support could not be installed.</p> <p>Probable cause of the failure is insufficient free disk space.</p> <p>This error indicates that there was insufficient space for the operating environment that you are installing. This type of error only applies to an AIX or Linux installation hosted by virtual resources.</p>	<p>Verify that you have allocated enough room in the partition to hold your target operating environment.</p>

The following table contains information about resolving various operating environment installation problems that you might encounter when you deploy a system plan that contains such information.

Table 12. Operating environment installation problems and solutions for system plan deployment

Problem description	Corrective actions
<p>My system plan contains operating environment installation information for a partition and it fails to deploy on HMC V7 3.2.</p> <p>No matter what I do, I get an error message that my system plan is invalid.</p>	<p>When you use the HMC to deploy a system plan that contains operating environment information, deployment can fail if you do not meet all deployment prerequisites. First, you must troubleshoot this type of error message to ensure that you meet these prerequisite conditions.</p>
<p>VIOS fails to deploy on HMC V7 3.2.</p> <p>My system plan contains VIOS information, but the operating environment installation fails.</p>	<p><b>Manually installing the VIOS</b></p> <p>First you must troubleshoot this problem to ensure that you meet all prerequisites for installing an operating environment as part of deploying a system plan.</p> <p>If you verify that you meet the prerequisites and are still having problems using the system plan to install the VIOS, you can work around the problem by Manually installing Virtual I/O Server.</p>

Table 12. Operating environment installation problems and solutions for system plan deployment (continued)

Problem description	Corrective actions
<p>My system plan deployment of an AIX or Linux operating environment either fails or appears to hang on an HMC 7.3.3 managed system.</p> <p>You are unable to successfully deploy a system plan that installs and provisions a VIOS and that also creates client logical partitions and installs AIX or Linux operating environments into the client partitions.</p> <p>Either the deployment fails with operating environment installation errors, or the deployment process appears to hang and is unable to complete deployment. In this type of situation, the system plan specifies the installation of a client operating environment that uses virtualized resources on the VIOS that are also provisioned by deployment of the system plan.</p>	<p>You must use the Deploy System Plan Wizard to deploy the system plan successfully, rather than using the <code>deploysysplan</code> command. The wizard allows you to control which steps to deploy in what order for a system plan. In this situation, you need to force the deployment of all provisioning prior to the installation of any client operating environments. To do this, on the Operating Environment Install Deployment page of the wizard, make sure that you clear all selections for operating environment installation steps in the Deploy column. By clearing the operating environment installation steps, the wizard will complete only the installation of the VIOS and any planned provisioning steps for the VIOS as it deploys the system plan.</p> <p>After the wizard successfully deploys the system plan, you can redeploy the system plan to install the specified client operating environments in the system plan. The deployment process will now be able to determine that all the planned VIOS installation and provisioning has been completed and can successfully install any AIX or Linux operating environments that depend on these provisioned resources.</p>
<p>I am deploying a system plan with HMC 7.3.3 that specifies the installation of an operating environment that uses an Ethernet adapter as the planned installation source. However, the Ethernet adapter does not appear in list of install settings for the Customize Operating Environment Install step of the Deploy System Plan Wizard.</p> <p>This is a display problem only and occurs when using the Deploy System Plan Wizard to deploy a system plan that has partitions with planned operating environment installations that use a logical host Ethernet adapter (HEA) port or a virtual Ethernet adapter as the installation resource. Information for the Ethernet adapter is supposed to display as part of the Operating Environment Install Settings on the Customize Operating Environment Install step of the wizard; however, the value for the Ethernet adapter appears blank when a logical HEA port or a virtual Ethernet adapter are planned to be used to deploy an operating environment from a system plan.</p>	<p>To ensure that this is a display problem only, go to the <b>View System Plan</b> task from the HMC user interface. Then use the System Plan Viewer to review the contents of the system plan. Verify that the planned installation resource is actually specified correctly in the system plan. You can then deploy the system plan.</p>

Table 12. Operating environment installation problems and solutions for system plan deployment (continued)

Problem description	Corrective actions
<p>My system plan deployment on HMC 7.3.1, 7.3.2, or 7.3.3 fails with errors that the hardware discovery process was unable to complete because the managed system is not in the operating or standby state.</p> <p>This is an example of the type of error messages that occur for this type of deployment failure:</p> <p>Starting inactive partition thickv1 in Hardware Discovery mode. This part usually takes 3 minutes to complete...</p> <p>Could not complete Hardware Discovery for inactive partition thickv1 because of HSCL0625 Cannot activate partition when the managed system state is not in the Operating or Standby state...</p> <p>This problem occurs on a POWER6 processor-based server because the attribute of <b>Power off the system after all the logical partitions are powered off</b> is selected on the General tab of the Managed Systems Properties page. When this attribute is selected, the HMC powers off the entire managed system whenever the last active logical partition powers off. You cannot deploy a system plan when the managed system is not in either the operating or standby state.</p> <p>This type of failure occurs during system plan deployment if there are any VIOS partitions on the managed system or if any operating environment are being installed as specified in the system plan (VIOS, AIX, or Linux). During deployment of such a system plan, the managed system will start the first VIOS partition or the first inactive client logical partition (AIX or Linux) where the system plan is attempting to install an operating environment. As soon as that partition is ended as part of the installation process, the managed system will immediately start to power off as required by the power off system attribute setting. Consequently, deploying that system plan fails because a system plan cannot be deployed on a powered-off system.</p>	<p>To successfully deploy a system plan that includes the installation of an operating environment for a logical partition, ensure that the <b>Power off the system after all the logical partitions are powered off</b> attribute for the managed system is not selected.</p> <p>If this attribute is selected, system plan deployment will fail because the deployment process starts partitions and then powers off partitions as part of installing operating environments. Consequently, the managed system will power off during deployment when the deployment process powers off the last active partition.</p> <p>To verify this system attribute, complete these steps:</p> <ol style="list-style-type: none"> <li>1. In the HMC navigation area, select <b>Systems Management</b> → <b>Servers</b>.</li> <li>2. In the Tasks area, select <b>Properties</b>. The Properties window for the selected managed system appears.</li> <li>3. On the General tab, verify that the <b>Power off the system after all the logical partitions are powered off</b> attribute is not selected, and click <b>OK</b>.</li> </ol> <p>After you have successfully deployed the system plan, you can reselect the attribute.</p>
<p>The Manage Install Resources function is unable to create a local installation resource from an AIX DVD. I do not get an error message, but nothing happens.</p> <p>When attempting to create a local installation resource from an AIX DVD, the image fails to copy to the HMC and the <b>Add</b> button is disabled. This generally occurs because there is not enough space available in the target directory on the HMC for the installation image that you are creating. When you use the Manage Install Resources task to create a local installation resource, the contents of the operating environment DVD is copied to the /extra/csminstall directory, and this directory has a size limitation of 2.6 GB.</p>	<p>Ensure that this directory has enough space before trying to create a local installation resource from an AIX DVD.</p> <p>Run the following command to determine the available space in the directory:</p> <pre>du -s /extra/csminstall</pre>

Table 12. Operating environment installation problems and solutions for system plan deployment (continued)

Problem description	Corrective actions
<p>When creating a local installation resource on the HMC from an AIX or VIOS CD, the creation of the resource fails and I receive an error about Linux RPMs, even though I am not installing Linux.</p> <p>If you are creating a local installation resource on the HMC for installing either AIX or the VIOS operating environment your installation media must be a DVD.</p> <p>If this is the case, you might see the following type of error messages:</p> <pre> b9rshmc2:/home/hscpe # OS_install -o define_resource -a type=AIX -a version=53L -a location=/extra/csminstall/ erictest001 -a source=/dev/cdrom erictest001 mkdir /extra/csminstall/erictest001 [03/11/2008] [01:30:03] [9519]: Executing: /bin/mount /dev/cdrom /opt/osinstall/src_mnt [03/11/2008] [01:30:04] [9519]: STDERR (/bin/mount): mount: block device /dev/cdrom is write-protected, mounting read-only [03/11/2008] [01:30:05] [9519]: rc for /bin/mount = 0 [03/11/2008] [01:30:05] [9519]: ERROR: The file /opt/osinstall/src_mnt/RPMS/linux/aix-res-*.rpm cannot be found [03/11/2008] [01:30:05] [9519]: Executing: /bin/umount /opt/osinstall/src_mnt [03/11/2008] [01:30:05] [9519]: rc for /bin/umount = 0P [03/11/2008] [01:30:05] [9519]: ERROR: Failed to copy operating system images from /dev/cdrom to /extra/csminstall/erictest001 [03/11/2008] [01:30:05] [9519]: ERROR: Unable to create OS_Resource object </pre>	<p>Your CD media is incompatible for creating a local installation resource. You need to use DVD media to create the local installation resource.</p> <p>Or, use a Network Installation Management (NIM) Server to create a repository copy of your installation media. You then can create a remote installation resource on the HMC for the operating environment which you can use to install the operating environment successfully during system plan deployment.</p>

### Troubleshooting provisioning errors for system plan deployment

The following table contains information about resolving various virtual resource provisioning errors that you might encounter when you deploy a system plan that contains such information.

Table 13. Provisioning problems and solutions for system plan deployment

Problem description	Corrective actions
<p>System plan deployment on HMC 7.3.3 fails with error messages that a storage pool or backing device failed deployment.</p> <p>Your system plan specifies the deployment of VIOS storage provisioning and also specifies the installation of an operating environment on a client partition that has a SCSI disk assigned to the client partition. VIOS storage provisioning fails during system plan deployment on HMC V7.330.0 when SCSI disks are owned by non-VIOS partitions. This problem occurs on a system that has a running VIOS partition, a client logical partition (AIX or Linux) with physical SCSI disk assigned to it, and the deployment process identifies a storage pool or a backing device to be deployed on the VIOS.</p> <p>This is an example of the type of error messages that occur for this type of deployment failure:</p> <pre>Deployment failed on step: Backing Device vios1 The following Disk(s) U7311.D20.109280B-P1-C03-T1-L5-L0 , U7311.D20.109280B-P1-C04-T1-L5-L0 , specified in the system plan are not found in the managed system vios1</pre> <p><b>Note:</b> The disks listed in the example messages belong to a client logical partition that also has operating environment installation information rather than belonging to partition vios1 in the system plan.</p>	<p>You must manually provision the storage entities and virtual target devices for the VIOS that are causing the deployment failure so that further deployment of the system plan can succeed.</p> <p>See the following topics for more information:</p> <ol style="list-style-type: none"> <li>1. Creating a virtual target device on the VIOS</li> <li>2. Creating logical volume storage pools on the VIOS</li> </ol> <p>This problem has been fixed in HMC V 7.3.4</p>
<p>My system plan deployment fails with an error that the HMC V 7.3.3.0 failed to obtain the license information for a VIOS partition.</p> <p>This error can occur when the HMC has completed the installation of the (VIOS during deployment, but is unable to establish a Resource Monitoring and Control (RMC) connection with the VIOS in a timely fashion. This RMC connection is necessary so that the HMC can complete system plan deployment of client logical partitions and provisioning items.</p>	<p>Use the following command to determine if there is a working RMC connection:</p> <pre>/opt/hsc/bin/lspartition -dlpar -c MTM_MS (where MTM_MS is machine type, model, and serial number, for example, 9117-MMA_107B730) If the command results show a value of 1 in the <b>Active</b> field for the specific VIOS partition, the RMC connection is working and you can redeploy the system plan. The HMC will be able to finish the deployment successfully.</pre> <p>If the command results do not indicate that you have a working RMC connection for the VIOS, verify that the system meets the prerequisites for using RMC to further troubleshoot this problem.</p>

Table 13. Provisioning problems and solutions for system plan deployment (continued)

Problem description	Corrective actions
<p>My system plan deployment on HMC 7.3.3 fails with validation errors that the disk drives specified in the system plan are not found in the managed system.</p> <p>When deploying a system plan that specifies the installation of the VIOS operating environment, the installation can sometimes take more than one hour. The operating environment is installed successfully, but the deployment process cannot provision the disk drives in the plan successfully because the installation time exceeded the length of time that the HMC is able to retain the temporary location codes and names needed for provisioning the hardware. Consequently, the hardware validation that is part of the provisioning step fails and system plan deployment stops with hardware validation errors for disk.</p> <p>Here is an example:</p> <pre>Deployment failed on step: Storage Pool vios1 The following Disk(s) 9117_MMA-0-P1-C5-T1-L4-L0 , 9117_MMA-0-P1-C5-T1-L5-L0 , 9117_MMA-0-P1-C5-T1-L0-L0 , 9117_MMA-0-P1-C5-T1-L1-L0 , 9117_MMA-0-P1-C5-T1-L3-L0 , 9117_MMA-0-P1-C5-T1-L2-L0 , 9117_MMA-0-P3-D1 , 9117_MMA-0-P1-C4-T1-L3-L0 , 9117_MMA-0-P1-C4-T1-L0-L0 , 9117_MMA-0-P1-C4-T1-L1-L0 , 9117_MMA-0-P1-C4-T1-L4-L0 , 9117_MMA-0-P1-C4-T1-L2-L0 , specified in the system plan are not found in the managed system vios1 Operating Environment VIOS has been successfully installed on partition vios2</pre> <p>The 9117_MMA-0 references are location codes that are not valid because they reference planned units and not the actual unit names. This happens due to a previous deployment step in which the same system plan took more than an hour.</p>	<p>You can simply redeploy the system plan to the managed system. When you redeploy the plan, the deployment process detects what system plan steps are completed and ignores the VIOS operating environment installation step. The validation process can create new location codes and names for the hardware to be provisioned and can successfully provision the hardware as specified by the system plan.</p> <p><b>Note:</b> If multiple VIOS installations are specified by the system plan, you might encounter this same problem when the deployment process installs each VIOS operating environment, if that installation takes longer than an hour to complete. Again, redeployment of the system plan will allow you to finish the provisioning as previously described .</p>

### Manually installing the Virtual I/O Server (VIOS)

1. Use the System Plan Deployment Wizard to selectively deploy pieces of the system plan that do not involve installation or provisioning the VIOS. To accomplish this, complete the following actions:
  - a. Start the wizard and complete all steps through the Partition Deployment page.
  - b. On the Operating Environment Install page, uncheck the deployment action that installs the VIOS operating environment and continue to complete the wizard. When you click **Finish**, the wizard deploys the partitions in the system plan. The wizard also deploys any virtual connections, such as Ethernet or SCSI connections, between the VIOS and the client partitions, without installing the VIOS.
2. Manually install the VIOS to the target partition. You must manually install the operating environment to the same drive that the system plan specifies as the target drive for the operating environment installation. . See Installing the Virtual I/O Server manually for more information.
3. Ensure that the partition on which you manually installed the operating environment is active, and that there is a Resource Monitoring and Control (RMC) connection between the HMC and that logical partition. This ensures that the operating environment status for the logical partition is known to the HMC and ensures that the wizard can determine that the operating environment on the logical partition is already installed. It also ensures that the wizard can deploy provisioning items from the system plan.
4. Restart the System Plan Deployment Wizard to deploy the remaining items in the system plan. The wizard will detect that the specific operating environment is already installed and will skip the step

for installing it. The wizard deploys the remaining items in the plan, such as other operating environments and the provisioning actions that virtualize resources for the client partitions.

### Related concepts

“Requirements for deploying a system plan on the HMC” on page 29

To use the Hardware Management Console (HMC) to deploy a system plan successfully, you need to ensure that your system meets a number of prerequisite conditions.

## Exporting a system plan from an HMC

You can export a system-plan file from a Hardware Management Console (HMC) to various types of media, to a remote FTP site, or to the computer from which you remotely access the HMC.

You can export a system-plan file from the HMC to any of the following locations:

- To the computer on which you remotely access the HMC.
- To media that is mounted on the HMC (such as optical discs or USB drives).
- To a remote site by using FTP. This allows you to import the system-plan file into a different HMC and deploy the system plan to a managed system with identical hardware. To use this option, you must fulfill the following requirements:
  - The HMC must have a network connection to the remote site.
  - An FTP server must be active on the remote site.
  - Port 21 must be open on the remote site.

To export a system-plan file, you must be a super administrator. For more information about user roles, see *Managing HMC users and tasks*.

To export a system-plan file that is stored on the HMC, complete the following steps:

1. In the navigation area of your HMC, select **System Plans**.
2. In the contents area, select the system-plan file that you want to export.
3. Click **Tasks** and select **Export System Plan**. The Export System Plan window opens.
4. Select the export destination for the system plan. Use the following table to complete the appropriate steps for exporting the system plan to the selected destination location of the file.

Export destination for the system plan	Complete the following steps:
<b>This computer</b>	<ol style="list-style-type: none"> <li>1. Select <b>Export to this computer from the HMC</b>.</li> <li>2. Click <b>Export</b> to display the Save File window.</li> <li>3. Click the file name link and use the save file function of your browser to save the file to a location on your local file system.</li> <li>4. Click <b>OK</b> to close the window after you have saved the file.</li> </ol>
<b>Media</b>	<ol style="list-style-type: none"> <li>1. Select <b>Export to media</b>.</li> <li>2. In the <b>Sub-directory on media</b> field, enter the path on the media to which to export the system-plan file. <b>Note:</b> Specify the subdirectory location only, rather than the fully qualified path and file name.</li> <li>3. Click <b>Export</b> to display the Select Media Device window.</li> <li>4. Select the media to which you want to export the system plan file.</li> <li>5. Click <b>OK</b>.</li> </ol>

Export destination for the system plan	Complete the following steps:
Remote FTP site	<ol style="list-style-type: none"> <li>1. Select <b>Export to a remote site</b>.</li> <li>2. Enter the host name or IP address of the remote FTP site into the <b>Remote site hostname</b> field.</li> <li>3. Enter the user ID to use to access the remote FTP site into the <b>User ID</b> field.</li> <li>4. Enter the password to use to access the remote FTP site into the <b>Password</b> field.</li> <li>5. Enter the path to which you want to export the system-plan file into the <b>Remote directory</b> field. If you do not enter a path, the HMC exports the system-plan file to the default path specified on the remote FTP site.</li> </ol>

5. Click **Export**. If the HMC returns an error, verify that the information you entered in this window is correct. If necessary, click **Cancel**, return to step 3, and redo the procedure, ensuring that the information you specify at each step is correct.

**Note:** As an alternative to the HMC Web user interface, you can use the `cpysysplan` command from the HMC command line interface to export a system plan.

If you exported the system-plan file to media, you can unmount the media by using the `umount` command from the HMC command-line interface. You can then import the system-plan file into a different HMC so that you can deploy the system plan to systems that the other HMC manages. For more information about importing the system-plan file into a different HMC, see [Importing a system plan](#).

## Related concepts

“System plans on the HMC” on page 10

You can use system plans with the Hardware Management Console (HMC) to perform a number of high-level system management tasks.

## Related tasks

“Creating a system plan by using the HMC” on page 13

You can use the Hardware Management Console (HMC) to create a new system plan, based on an existing system configuration, and then deploy that system plan to other managed systems.

“Deleting a system plan from an HMC” on page 56

Removing a system plan from the Hardware Management Console (HMC) does not undo any partition or hardware configuration changes that occurred if the specified system plan was deployed on a managed system.

“Deploying a system plan by using the HMC” on page 27

You can use the Hardware Management Console (HMC) to deploy all or part of a system plan to a managed system.

“Importing a system plan into an HMC” on page 25

You can import a system-plan file into a Hardware Management Console (HMC) from various types of media, a remote FTP site, or the computer from which you remotely access the HMC. You can then deploy the imported system plan to a system that the HMC manages.

“Viewing a system plan on an HMC”

You can use the System Plan Viewer on the Hardware Management Console (HMC) to view a system plan.

## Related information

 [Managing HMC users and tasks](#)

## Viewing a system plan on an HMC

You can use the System Plan Viewer on the Hardware Management Console (HMC) to view a system plan.

The System Plan Viewer uses a navigation tree and tables to display the information in a system-plan file. It includes features such as dynamic table-column sorting and the ability to display EADS boundary lines. The System Plan Viewer is included with the HMC so that it can be accessed from the HMC. However, you must reenter your user ID and password before you can view the system plan.

**Note:** Some messages, such as internal drive bay cabling instructions, are viewable only when using the System Plan Viewer in the SPT.

To view a system plan from the HMC, complete the following steps:

1. From the navigation area, select **System Plans**.
2. In the contents area, select the system plan that you want to view.
3. Click **Tasks** and select **View System Plan**. The System Plan Viewer opens in a separate browser window.

**Note:** You can also open the system plan in the System Plan Viewer by clicking on the name of the system plan.

4. Enter your HMC **Username** and **Password** to log in to the System Plan Viewer.

## Related concepts

“System plans on the HMC” on page 10

You can use system plans with the Hardware Management Console (HMC) to perform a number of high-level system management tasks.

## Related tasks

“Creating a system plan by using the HMC” on page 13

You can use the Hardware Management Console (HMC) to create a new system plan, based on an existing system configuration, and then deploy that system plan to other managed systems.

“Deleting a system plan from an HMC”

Removing a system plan from the Hardware Management Console (HMC) does not undo any partition or hardware configuration changes that occurred if the specified system plan was deployed on a managed system.

“Deploying a system plan by using the HMC” on page 27

You can use the Hardware Management Console (HMC) to deploy all or part of a system plan to a managed system.

“Exporting a system plan from an HMC” on page 53

You can export a system-plan file from a Hardware Management Console (HMC) to various types of media, to a remote FTP site, or to the computer from which you remotely access the HMC.

“Importing a system plan into an HMC” on page 25

You can import a system-plan file into a Hardware Management Console (HMC) from various types of media, a remote FTP site, or the computer from which you remotely access the HMC. You can then deploy the imported system plan to a system that the HMC manages.

## Related information

 [System Planning Tool](#)

## Deleting a system plan from an HMC

Removing a system plan from the Hardware Management Console (HMC) does not undo any partition or hardware configuration changes that occurred if the specified system plan was deployed on a managed system.

To remove a system plan from the HMC, complete the following steps:

1. From the navigation area, select **System Plans**.
2. In the contents area, select the system plan that you want to delete.
3. Click **Tasks** and select **Remove System Plan**. The Remove System Plans window opens.
4. Confirm that the system plan is the one that you want to remove and click **Remove System Plan** to delete the system plan.

## Related concepts

“System plans on the HMC” on page 10

You can use system plans with the Hardware Management Console (HMC) to perform a number of high-level system management tasks.

## Related tasks

“Creating a system plan by using the HMC” on page 13

You can use the Hardware Management Console (HMC) to create a new system plan, based on an existing system configuration, and then deploy that system plan to other managed systems.

“Deploying a system plan by using the HMC” on page 27

You can use the Hardware Management Console (HMC) to deploy all or part of a system plan to a managed system.

“Exporting a system plan from an HMC” on page 53

You can export a system-plan file from a Hardware Management Console (HMC) to various types of media, to a remote FTP site, or to the computer from which you remotely access the HMC.

“Importing a system plan into an HMC” on page 25

You can import a system-plan file into a Hardware Management Console (HMC) from various types of media, a remote FTP site, or the computer from which you remotely access the HMC. You can then deploy the imported system plan to a system that the HMC manages.

“Viewing a system plan on an HMC” on page 55

You can use the System Plan Viewer on the Hardware Management Console (HMC) to view a system plan.

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## System plans on the Integrated Virtualization Manager

You can use system plans with the Integrated Virtualization Manager (IVM) to perform a number of high-level system management tasks. For example, you can create a system plan based on an existing system and deploy that system plan onto a different system.

You can use system plans with the Integrated Virtualization Manager to accomplish the following goals:

- You can use the Integrated Virtualization Manager (IVM) to create a system plan based on the managed system, export that system plan, and import it into another. You then can deploy the system plan to the system that the other manages when that system has hardware that is identical to the hardware in the system plan. Note that any internal drive bays and external SCSI cables also must be cabled in an identical manner on the target system.
- You can convert a system plan that you created by using the IVM for use in the System Planning Tool (SPT). However, the SPT Conversion Wizard can convert only a limited amount of hardware information from the original system plan. For example, a converted system plan from IVM prior to version 1.5.2, contains information for only a few, if any, PCI cards and the system plan does not contain any information about disk drives. In contrast, a converted system plan from Integrated Virtualization Manager version 1.5.2, or later, contains information for most PCI cards and Serial Attached SCSI (SAS) disk drives. You must use the SPT to manually specify any missing or incomplete information.

After you complete the conversion process, you can edit the system plan for redeployment of newly added partitions or additional provisioning items for Virtual I/O Server partitions. For example, assume that you converted an v system plan that contains two client logical partitions. You can use the SPT to add another logical partition and to specify Ethernet adapters, Small Computer System Interface (SCSI) disks, and virtual Ethernet adapters for the new partition. You then can use the IVM to redeploy the modified system plan to configure the new logical partition. However, if you make changes to a number of existing items in the system plan, the system plan cannot pass validation or the changed item cannot be deployed. For example, you cannot use a system plan to make changes to the attributes for a partition and then deploy that system plan to make those changes to the already deployed partition.

To create logical partitions on an IVM managed system from a system plan, you must first complete the following tasks:

1. Create the system plan.
2. Import the system plan (when necessary).
3. If you are deploying a system plan that you created in the SPT, verify that cards and disk drives on the target system are in the same locations as the cards and disk drives that are specified in the system plan. Also, verify that any cabling instructions for disk-drive bays have been followed. You can obtain these instructions by means of the Report function in the SPT.

**Note:** If you are deploying a system plan that has operating installation information, you cannot use the IVM Web user interface to do so. Instead, you must use the IVM command line interface (CLI) to install operating environments as part of system plan deployment. See *Installing operating environments from a system plan with Integrated Virtualization Manager* for more information about how to deploy such as system plan.

4. If you are deploying a system plan that you created by using the IVM, verify that the hardware and cabling on the target system is identical to that on the source system.
5. Deploy the system plan.

After you create a system plan, you also can view, delete, and export the system plan. The following table provides a complete overview of system plan tasks.

Table 14. Overview of the tasks for system plans

Task	Overview
Create a system plan	<p>You can create system plans by using any of the following methods:</p> <ul style="list-style-type: none"> <li>• System Planning Tool (SPT)  <i>SPT</i> helps you design a system to fit your needs, whether you want to design a logically partitioned system or want to design an unpartitioned system. <i>SPT</i> incorporates the function from Workload Estimator to help you create an overall system plan. The <i>SPT</i> opens the Workload Estimator to help you gather and integrate workload data, and provides advanced users with the option of creating a system plan without the help of additional tools.</li> <li>• Integrated Virtualization Manager Web user interface (GUI)            You can use the IVM to create a system plan based on the configuration of the managed system. You can export the system plan to the local file system. You then can use the IVM on another managed system to import the system plan from the local file system and deploy that plan to its managed system. Based on the logical partition configuration in the system plan, the IVM creates logical partitions on the managed system to which it deploys the system plan.</li> <li>• IVM command-line interface            You also can use the <b>mksysplan</b> command to create a system plan. The IVM creates the system plan based on the configuration information of the existing managed system and stores this information in the system plan. After using the <b>mksysplan</b> command, you can also use the command-line interface to perform other tasks, such as deploy the system plan.</li> </ul>
Import the system plan	<p>Before you can use a system plan to create logical partitions, the system-plan file must exist on the IVM management partition. If the system-plan file does not already exist on the management partition, you must import the file into the management partition. You can import the file into the management partition by using the IVM Web interface. This allows you to upload the plan from your local file system.</p> <p>After you import the system-plan file into the management partition, you can deploy the system plan within that file to the managed system.</p>

Table 14. Overview of the tasks for system plans (continued)

Task	Overview
Deploy the system plan	<p>When you deploy a system plan, the IVM validates the system plan. The IVM deploys a system plan to a managed system only if the system plan level is supported by the IVM, the format of the system plan is valid, and the hardware and each existing logical partition on the managed system passes validation. Additionally, the managed system must be in the manufacturing default configuration, unless you are using IVM 1.5.2, or later, to deploy a system plan. For IVM 1.5.2, and later, if the managed system is not in the manufacturing default configuration, the managed system must have hardware that is identical to the hardware in the system plan. This includes any internal drive bay cabling and external SCSI cabling.</p> <p>When using IVM 1.5.2, or later, you can choose to deploy a system plan in stages, with some logical partitions being created in one stage, and other logical partitions being created in later stages. You cannot, however, deploy a system plan to a managed system if the managed system has logical partitions that are not also in the system plan. Also, if you want to deploy a system plan in stages, you need to create a new system plan if you change the resource allocations on the logical partitions on the managed system between stages to avoid validation problems in later stages.</p>
Export the system plan	You can export a system plan from the IVM to the local file system by using Web browser functions so that you can use the system plan for deployment on other systems.
View the system plan	<p>You can look at the contents of a system-plan file in the IVM by using the System Plan Viewer that is included with the IVM. The System Plan Viewer uses a navigation tree and tables to display the information in the system-plan file. It includes features such as dynamic table column sorting and displaying EADS boundary lines. When you start the System Plan Viewer, you must enter your IVM user ID and password before you can view the system plan.</p> <p><b>Note:</b> Some messages, such as cabling instructions for internal drive bays, are viewable only when you use the System Plan Viewer in the SPT.</p>
Print the system plan	You can use the System Plan Viewer to print a system plan that you have open in the Viewer. You can print all of the system plan or a portion of the system plan, depending on the current view of the system plan. To print the current view of the system plan, click <b>Print</b> in the Actions pane of the System Plan Viewer.
Delete the system plan	You can delete unnecessary system plans from the IVM.

### Related concepts

“System Planning Tool” on page 2

The System Planning Tool (SPT) helps you design a managed system that can support a specified set of workloads.

## Creating a system plan by using the Integrated Virtualization Manager

You can use the Integrated Virtualization Manager (IVM) to create a new system plan based on an existing system configuration.

When you use the Integrated Virtualization Manager Web user interface to create a system plan based on the existing managed system, the management partition reads the configuration information on the managed system and stores this information in the system plan.

To create a system plan based on an existing system configuration by using the IVM Web user interface, complete the following steps:

1. In the navigation area, select **Manage System Plans**. The Manage System Plans page opens.
2. Click **Create/Import system plan** in the toolbar at the top of the System Plans table. The Create/Import System Plan page opens.
3. Select the **Create** option.

4. Enter a System plan file name and plan description for the new system plan.
5. Click **OK**. The IVM generates a new system plan based on the current system configuration and the new system plan appears in the System Plans table.

Now that you have a new system plan, you can export the system plan, import it onto another IVM managed system, and deploy the system plan to that managed system.

**Note:** As an alternative to the IVM Web user interface, you can also use the `mksysplan` command to accomplish this task.

## Importing a system plan into the Integrated Virtualization Manager

You can import a system-plan file into the Integrated Virtualization Manager (IVM) management partition. You can then deploy the system plan to the system that the Integrated Virtualization Manager manages.

You must import a system-plan file into the IVM management partition before you can deploy the system plan to the managed system. To deploy the imported system plan successfully, the hardware on the managed system must match or exceed the hardware in the system plan. To import a system-plan file, you must be the prime administrator (`padmin`). For more information about user roles, refer to User roles.

To import a system-plan file into the IVM management partition, complete the following steps:

1. From the navigation area, select **Manage System Plans**. The Manage System Plans page opens.
2. Click **Create/Import system plan** in the toolbar at the top of the System Plans table. The Create/Import System Plan page opens.
3. Select the **Import** option.
4. Enter the fully qualified path and file name of the system-plan file into the **System plan file name** field. Or, click **Browse** to select the system-plan file from the local file system. The name of the system-plan file must end with the `.sysplan` file name suffix and can use alphanumeric characters only.
5. Click **OK**. If the IVM returns an error, return to step 4 and verify that the information you entered in this field is correct.

You now can use the imported system-plan file to deploy the system plan to the system that the IVM manages.

### Related tasks

“Exporting a system plan from the Integrated Virtualization Manager” on page 66

You can export a system-plan file from the Integrated Virtualization Manager (IVM) and download it to the computer that you use to access the IVM.

“Viewing a system plan on the Integrated Virtualization Manager” on page 67

You can view a system plan on the Integrated Virtualization Manager (IVM) by using the System Plan Viewer.

“Deploying a system plan by using the Integrated Virtualization Manager”

You can deploy a system plan by using the Integrated Virtualization Manager (IVM) to create logical partitions on the managed system according to the specifications in the system plan.

## Deploying a system plan by using the Integrated Virtualization Manager

You can deploy a system plan by using the Integrated Virtualization Manager (IVM) to create logical partitions on the managed system according to the specifications in the system plan.

### Requirements for deploying a system plan

When you deploy a system plan with Integrated Virtualization Manager version 1.5.2.0, or later, you can deploy a system plan to a system that is not new or that is not in the manufacturer default configuration. You can deploy a system plan to a system that already has a configured IVM management partition or that has configured client logical partitions.

Also, the target system can have Virtual I/O Server items, such as virtual disks or virtual Ethernet adapters, already configured. However, if the system plan that you intend to deploy contains information about any items that are already configured on the system, the configured items on the target system must exactly match those same items in the system plan. If they do not match exactly, then the system plan either cannot pass validation or the item in the system plan cannot be deployed.

I/O resources do not have to be assigned to the IVM management partition. Also, you can partially deploy a system plan on the target system by selecting which logical partitions in the plan to deploy. You then can run the Deploy System Plan Wizard again to deploy the remainder of the logical partitions in the system plan at another time.

In addition to meeting the above requirements, you must meet the following prerequisite conditions:

- The system-plan file exists on the IVM. If the system-plan file does not exist on the IVM, you must import the system-plan file into the IVM.
- The physical hardware is connected and is reporting to the server. If you are deploying a system plan that you created in the System Planning Tool (SPT), verify that all hardware is in the proper location, and that internal drive bays and external SCSI cables are cabled according to SPT instructions. If you are deploying a system plan that you created by using the IVM, verify that the hardware and cabling on the target system is identical to that on the source system.
- The physical hardware on the managed system must match exactly to any of the same hardware in the system plan.
- The Integrated Virtualization Manager is not performing any other operations on the managed system.
- You are the prime administrator (padmin). For more information about user roles, refer to User roles.

**Note:** If you want to deploy a system plan that has operating environment installation information, you cannot use the IVM to do so. Instead, you must use the IVM CLI to install operating environments as part of system plan deployment. See *Installing operating environments from a system plan with IVM* for more information about how to deploy such as system plan.

## Deploying a system plan

To deploy a system plan on a managed system by using the IVM Web user interface, complete the following steps:

1. In the navigation area of the IVM, select **Manage System Plans**. The Manage System Plans page opens.
2. In the System Plans table, select the system plan that you want to deploy.
3. Select **More Tasks** → **Deploy** from the toolbar at the top of the System Plans table to start the Deploy System Plan Wizard. The System Deployment: Deployment Overview page of the wizard opens.
4. If prompted, choose the managed system to which you want to deploy the system plan and click **Next**. The prompt only occurs if the system plan file contains more than one system. If the system plan does not match the hardware on the managed system to which you want to deploy the plan, the wizard displays a window that informs you of this. Click **OK** to continue or **Cancel** to select a different system plan.
5. Wait for the wizard to validate the managed system and its hardware against the system plan. The validation process can take several minutes.
6. If the validation process completes successfully, click **Next**. If the validation process does not complete successfully, correct the issues indicated by the error messages, click **Cancel** to exit the wizard, and restart this procedure from the beginning. To help you to correct validation issues, you might want to

create a system plan that is based on the current configuration of the managed system. Such a system plan can help you to compare the system plan that you want to deploy with the current configuration of the managed system. You can do this by using the Create System Plan task in the IVM, or you can run the following command on the system:

```
mksysplan -f name_of_new_system_plan.sysplan
```

7. Review the Deployable Plan Items page, select the logical partitions in the system plan that you want to deploy, and click **Next**. This page indicates the deployable status of the logical partitions that the system plan contains. If a logical partition has a status of partially deployed, the logical partition is selected for deployment automatically, and you cannot change the selection. If a logical partition is deselected for deployment, the wizard does not deploy any dependent entities for that partition, such as backing devices on the Virtual I/O Server.
8. Review the list of deployment plan items on the Deployment page, and click **Finish** to begin deploying the system plan. The IVM creates the specified logical partitions and deploys the specified entities as listed. The deployment process can take several minutes depending on the number of logical partitions and entities to be deployed.

After you finish the deployment of the system plan, complete the following tasks:

- Locate the physical disk I/O adapters that belong to each logical partition and verify that the disk drives that are attached to these physical I/O adapters will support your desired configuration for each logical partition.
- Install operating systems and software on the logical partitions.

#### **Related concepts**

*“System plan validation for the Integrated Virtualization Manager”*

You deploy a system plan to a system that is managed by an Integrated Virtualization Manager (IVM) by using the System Plan Deployment Wizard. The wizard validates the information in the system plan against the configuration of the managed system before beginning the deployment process.

#### **Related tasks**

*“Importing a system plan into the Integrated Virtualization Manager”* on page 60

You can import a system-plan file into the Integrated Virtualization Manager (IVM) management partition. You can then deploy the system plan to the system that the Integrated Virtualization Manager manages.

*“Exporting a system plan from the Integrated Virtualization Manager”* on page 66

You can export a system-plan file from the Integrated Virtualization Manager (IVM) and download it to the computer that you use to access the IVM.

*“Viewing a system plan on the Integrated Virtualization Manager”* on page 67

You can view a system plan on the Integrated Virtualization Manager (IVM) by using the System Plan Viewer.

## **System plan validation for the Integrated Virtualization Manager**

You deploy a system plan to a system that is managed by an Integrated Virtualization Manager (IVM) by using the System Plan Deployment Wizard. The wizard validates the information in the system plan against the configuration of the managed system before beginning the deployment process.

The validation process for a system plan consists of two validation phases: the hardware validation phase and the partition validation phase.

When validating the hardware on the managed system, the Integrated Virtualization Manager (IVM) compares the following information from the system plan with the hardware available on the managed system:

- Processor, memory, and storage are available on the managed system
- Physical I/O adapter placement

The hardware described in the system plan passes validation if it matches the hardware specified by the managed system. The hardware on the managed system can contain resources in addition to those specified in the system plan and still pass validation, but the hardware on the managed system must at least match the hardware specified in the system plan. The IVM does not validate that internal drive bay cabling and external SCSI cabling match what is specified in a system plan that was created in the System Planning Tool (SPT). You must validate these items manually before you deploy the system plan to ensure that advanced deployment features, such as Virtual I/O Server (VIOS) provisioning, do not fail.

The following example illustrates how the IVM compares hardware resources in the system plan during the validation process to determine whether the system plan is valid for a managed system:

- A system plan specifies a server with two processors, 8 GB of memory, and a specific placement of physical I/O adapters within the system unit. If a server contains two processors, 16 GB of memory, a matching placement of physical I/O adapters within the system unit, and an expansion unit with additional physical I/O adapter, then the system passes validation.
- However, a server that contains 4 GB of memory causes the system plan to fail validation.
- A system plan also fails validation if the system plan specifies one type of physical I/O adapter in a slot but the actual system unit has a different type of physical I/O adapter in that slot. However, if the system plan specifies an empty slot, validation allows any type of physical I/O adapter to be in that slot on the actual system.

The IVM also validates the disk drives that are attached to physical I/O adapters against the disk drives specified in the system plan.

If any step in the hardware validation process fails for the system plan, validation of the entire system plan fails.

**Note:** When using IVM version 1.5.2 or later to deploy a system plan, you can deploy a system plan to a system that is not new or that is not in the manufacturer default configuration.

When using IVM version 1.5.2 or later, the system plan and the target system must meet the following partition validation conditions:

- The IVM management partition or client logical partitions can exist on the system that is the target of the system plan. However, any client logical partitions and hardware configured on the target system must be identical to those same items in the system plan.
- The target system can have VIOS items, such as virtual disks or virtual Ethernet adapters, already configured. The items in the system plan and the items configured on the managed system need not match exactly. Based on certain criteria, the system plan validation process matches the VIOS items in the plan and the items on the target system. If an item does not match, the item in the plan is a candidate for deployment. However, if the item in the system plan uses any adapter or device that some other configured item on the system is already using, the plan item is marked as not deployable. At the end of the validation process, the wizard presents a list of items in the system plan that are deployable and a list of items that are not deployable. When you continue the deployment of the system plan, the wizard does not attempt to deploy any items that are marked as not deployable.

The following examples illustrate how the IVM compares VIOS items and other logical partition deployment items in the system plan during the validation process to determine whether these items can be deployed:

- The system plan contains a shared Ethernet adapter for a logical partition, and the target system has no shared Ethernet adapters configured. In this case, the shared Ethernet adapter in the system plan is deployed to the target system.
- The system plan contains two EtherChannel adapters, and an EtherChannel exists on the target system. The existing EtherChannel exactly matches one of the two that are in the system plan, including all physical adapters. In this case, this EtherChannel passes validation successfully, but is

not deployed. The other EtherChannel in the system plan, which does not require any of the adapters that the existing EtherChannel or shared Ethernet adapter uses, is deployed.

- The system plan contains two storage pools, and a storage pool exists on the target system. The existing storage pool exactly matches one of the two in the system plan, including all location codes for all disks and specified disk sizes. In this case, this storage pool passes validation successfully, but is not deployed. The other storage pool in the system plan, which has no attribute conflicts with the existing storage pool, is deployed.
- The system plan contains an EtherChannel adapter, and a shared Ethernet adapter exists on the target system. The existing shared Ethernet adapter uses a physical adapter that is specified for use by the EtherChannel adapter in the system plan. In this case, the EtherChannel adapter fails validation and is cannot be deployed.
- For POWER6 processor-based servers, I/O resources in the system plan do not need to be assigned to the IVM management partition.
- You can partially deploy a system plan on the target system by selecting which logical partitions in the plan to deploy. You can run the Deploy System Plan Wizard again at another time to deploy the remainder of the logical partitions in the system plan.

If any step in the partition validation process fails for the system plan, validation of the entire system plan fails.

#### **Related tasks**

“Viewing a system plan on the Integrated Virtualization Manager” on page 67

You can view a system plan on the Integrated Virtualization Manager (IVM) by using the System Plan Viewer.

“Deploying a system plan by using the Integrated Virtualization Manager” on page 60

You can deploy a system plan by using the Integrated Virtualization Manager (IVM) to create logical partitions on the managed system according to the specifications in the system plan.

## **Installing operating environments from a system plan by using Integrated Virtualization Manager**

You can use Integrated Virtualization Manager (IVM) version 2.1 CLI to install an AIX or Linux operating environment on a client logical partition when you deploy a system plan.

Starting with the IVM version 2.1, and later, you can use the IVM command line interface (CLI) to deploy a system plan that contains operating environment installation information for a client logical partition. By using the CLI, you can install AIX or Linux operating environments on client logical partitions in a system plan. To install an operating environment as part of deploying a system plan, you must have an installation resource available for the operating environment. This installation resource can be available either locally on the IVM system or remotely on a Network Installation Management (NIM) master.

**Note:** You can create a system plan with installation information for an AIX or Linux operating environment only in the System Planning Tool (SPT). If a system plan has installation information for an AIX or Linux operating environment, you still can deploy the system plan to systems that are managed by an earlier version of the IVM. Earlier versions of the IVM Deploy System Plan Wizard can deploy the client logical partitions in the system plan and ignore any operating environment installation information in the system plan. The earlier versions of the IVM can deploy all other items of the system plan successfully, as long as the other items in the system plan are appropriate for deployment on that version of IVM and they pass the validation step successfully.

You can deploy system plans that contain AIX or Linux installation information only to new client logical partitions or to client logical partitions that do not already have an operating environment installed on them.

You can use only DVDs as the installation image source for an operating environment.

## Supported operating environments

The CLI provides support for installing the following operating environments:

- AIX: Version 5.3 or 6.1
- Red Hat Enterprise Linux: Support is provided for the following versions:
  - Red Hat Enterprise Linux EL-AS: Version 4, 4 QUI, 4 QU2, 4 QU3, 4QU4, 4.5, or 4.6
  - Red Hat Enterprise Linux EL-Server: Version 5 or version 5.1
- SUSE Linux Enterprise Server: Version 10, 10 SP1, 9, 9 SP1, 9 SP2, 9 SP3, or 9 SP4

## Requirements for managing remote installation resources

When you define a remote NIM server installation resource, you must meet a number of prerequisite conditions to ensure that the IVM can access and use the installation resource:

- You can define a remote resource for the AIX (Version 5.3 or 6.1) operating environment only.

**Note:** You can define a remote installation resource for the AIX (Version 5.3 or 6.1) operating environment only.

- You can define multiple remote installation resources for a specific operating environment version and modification level, as long as each installation resource is within a different NIM resource group.
- You must know the fully qualified host name of the NIM server.
- You must know the resource group name that contains the necessary set of operating environment installation files.

To deploy a system plan to install one or more operating environments for one or more client logical partitions on an IVM managed system, complete the following steps:

1. Create a local or a remote installation resource for the operating environment installation files:

- To create a local installation resource, complete the following steps:
  - a. Insert the installation DVD into the CD-ROM drive on the managed system.
  - b. Ensure that the drive is assigned to the IVM management partition.
  - c. Use the `OS_install` command to create an operating environment installation resource, for example:

```
OS_install -o define_resource -a type=AIX -a version=6101  
-a location=/csminstall/AIX6101 -a source=/dev/cd0 AIX6101
```

**Note:** You must use the `/csminstall` file system for the location attribute.

- d. Use the Define System Plan Resource (`defsysplanres`) command to create the system plan resource.
- To create a remote installation resource, complete the following steps:
    - a. Set up ssh keys on the managed system by using the `mkauthkeys -g` command to generate the necessary public key for IVM to use for accessing the NIM master.
    - b. Put a copy of this public key in the `/.ssh/authorized_keys` file on the NIM master.
    - c. Set up the remote installation resource on the NIM server. The complete set of necessary operating environment installation files must exist on the NIM master within a uniquely named NIM resource group.
    - d. Use the `OS_install` command to create the remote installation resource on the managed system, for example:

```
OS_install -o define_remote_resource -a type=AIX -a server=ruby002.austin.xxx.com  
-a remote_identifier=group-6101 AIX6101R
```

**Note:** You can define a remote installation resource for the AIX (Version 5.3 or 6.1) operating environment only.

- e. Use the `defsysplanres` command to create the system plan resource.
- 2. Update the system plan with the late binding network information, such as client IP address and netmask, which is required to install the operating environment on a client logical partition.
  - a. Use the `update_install_setup` command to view the network information already saved in the system plan; for example, `update_install_setup -f test.sysplan -l`
  - b. Use the `update_install_setup` command to store the late binding network information for the client partition that you specified for the installation. For example, you can use the following command:

```
For example: update_install_setup -f test.sysplan -p client1
-C 9.3.126.77 -G 9.3.126.1 -sm 255.255.255.0 -s auto -d auto
-n <systemplan resource name>
```

- 3. Deploy the system plan by using the `deploysysplan` command with the `-clientinstall` flag.
- 4. Remove the local installation resource for an operating environment:
  - a. Use the `lssysplanres` command to view all system plan resources on the managed system; for example, `lssysplanres -r osinstall`
  - b. Use the `OS_install` command to remove the installation resource; for example, `OS_install -o remove resourceName`
  - c. Use the `rmsysplanres` command to remove the system plan resource; for example, `rmsysplanres -r osinstall -n <systemplan resource name>`

For more information about using IVM CLI commands to complete this task, see *Virtual I/O Server and Integrated Virtualization Manager* commands.

## Exporting a system plan from the Integrated Virtualization Manager

You can export a system-plan file from the Integrated Virtualization Manager (IVM) and download it to the computer that you use to access the IVM.

To export a system-plan file, you must be the prime administrator (`padmin`). For more information about user roles, refer to *User roles*.

To export a system-plan file that is stored on an IVM managed system, complete the following steps:

1. In the navigation area of your IVM, select **Manage System Plans**. The Manage System Plans page opens.
2. Select the system plan that you want to export from the System Plans table
3. Select **More Tasks** → **Export** from the toolbar at the top of the System Plans table. A File Download window for your browser opens.
4. Specify whether to open the system plan by using the browser or to save the system plan to disk and click **OK**. Because you access the system plan by using a browser interface, the browser downloads and exports the system plan. The browser settings control where the system plan downloaded to your local file system.

**Note:** Your browser might add an extension of `.zip` to the system plan file name. If this is the case, rename the file to remove the `.zip` extension to ensure that you can use the system plan file.

If the IVM returns an error, verify that the information you entered in this window is correct. If necessary, click **Cancel**, return to step 3, and redo the procedure, ensuring that the information you specify at each step is correct.

You can import the system-plan file into a different IVM so that you can deploy the system plan to other managed systems.

## Related tasks

“Importing a system plan into the Integrated Virtualization Manager” on page 60

You can import a system-plan file into the Integrated Virtualization Manager (IVM) management partition. You can then deploy the system plan to the system that the Integrated Virtualization Manager manages.

“Deploying a system plan by using the Integrated Virtualization Manager” on page 60

You can deploy a system plan by using the Integrated Virtualization Manager (IVM) to create logical partitions on the managed system according to the specifications in the system plan.

“Viewing a system plan on the Integrated Virtualization Manager”

You can view a system plan on the Integrated Virtualization Manager (IVM) by using the System Plan Viewer.

## Viewing a system plan on the Integrated Virtualization Manager

You can view a system plan on the Integrated Virtualization Manager (IVM) by using the System Plan Viewer.

The System Plan Viewer uses a navigation tree and tables to display the information in the system-plan file. It includes features such as dynamic table-column sorting and the ability to display EADS boundary lines. The System Plan Viewer is included with the Integrated Virtualization Manager so that it can be accessed from the IVM. However, it requires that you reenter your user ID and password before you can view the system plan.

**Note:** Some messages, such as internal drive bay cabling instructions, are viewable only when using the System Plan Viewer in the SPT.

To view a system plan from the IVM Web user interface, complete the following steps:

1. From the navigation area, select **Manage System Plans**. The Manage System Plans page opens.
2. Select the system plan that you want to view from the System Plans table.
3. Select **More Tasks** → **View** from the toolbar at the top of the System Plans table. The System Plan Viewer login window opens in a separate browser window.
4. Enter your IVM **Username** and **Password** to log in to the System Plan Viewer.

## Related concepts

“System plan validation for the Integrated Virtualization Manager” on page 62

You deploy a system plan to a system that is managed by an Integrated Virtualization Manager (IVM) by using the System Plan Deployment Wizard. The wizard validates the information in the system plan against the configuration of the managed system before beginning the deployment process.

## Related tasks

“Importing a system plan into the Integrated Virtualization Manager” on page 60

You can import a system-plan file into the Integrated Virtualization Manager (IVM) management partition. You can then deploy the system plan to the system that the Integrated Virtualization Manager manages.

“Deploying a system plan by using the Integrated Virtualization Manager” on page 60

You can deploy a system plan by using the Integrated Virtualization Manager (IVM) to create logical partitions on the managed system according to the specifications in the system plan.

“Exporting a system plan from the Integrated Virtualization Manager” on page 66

You can export a system-plan file from the Integrated Virtualization Manager (IVM) and download it to the computer that you use to access the IVM.

“Deleting a system plan from the Integrated Virtualization Manager”

Removing a system plan from the Integrated Virtualization Manager (IVM) management partition does not undo any partition or hardware configuration changes that occurred if the specified system plan was deployed on the managed system.

## Deleting a system plan from the Integrated Virtualization Manager

Removing a system plan from the Integrated Virtualization Manager (IVM) management partition does not undo any partition or hardware configuration changes that occurred if the specified system plan was deployed on the managed system.

To remove the system plan from the IVM management partition, complete the following steps:

1. From the navigation area, select **Manage System Plans**. The Manage System Plans page opens.
2. In the System Plans table, select the system plan that you want to delete.
3. Select **More Tasks** → **Remove** from the toolbar at the top of the System Plans table. The Remove System Plans page opens.
4. Confirm that the listed system plan is the one that you want to remove and click **OK** to delete the system plan.

## Related tasks

“Viewing a system plan on the Integrated Virtualization Manager” on page 67

You can view a system plan on the Integrated Virtualization Manager (IVM) by using the System Plan Viewer.

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