



@server

iSeries

Upgrades

Version 5 Release 2





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iSeries

Upgrades


Version 5 Release 2


Contents

Upgrades	1
What's new for V5R2	1
What's new in iSeries servers	2
What's new in upgrade information	2
Print this topic	3
Upgrade concepts	7
Upgrade terminology	8
Upgrade process	9
Partitioned server upgrades	11
Upgrade paths	12
Plan the upgrade	12
Perform all upgrade tasks	13
Add or replace a hardware feature	13
Prepare to change the hardware feature	14
Print disk configuration status	15
Print parity set configuration and status	15
Display, verify, and print hardware resource information	16
Prepare to change the hardware feature for a partitioned server	16
Perform the hardware feature change	17
Perform resource management	18
Fix hardware resource names	18
Perform resource management for a partitioned server	19
Activate all standby processors	20
Upgrade to OS/400 Version 5 Release 2	20
Convert expansion units for a partitioned server	21
Plan to convert the expansion unit	21
Before you begin	22
SPD cabling	22
Prepare to convert the expansion unit	23
Resequence SPCN addressing	23
Document and prepare the server	23
Assign all unassigned I/O resources	24
Remove failed or nonreporting resources	25
Clear nonreporting logical partitioning resources	25
Clear nonreporting logical partitioning resources - V5R1 and V5R2	25
Clear nonreporting logical partitioning resources - V4R5	25
Change the system value settings	26
Perform the expansion unit conversion	26
Perform resource management	27
Resolve LPAR configuration error	27
Reassign buses and IOPs	27
Clean up the server	28
Rename resources for each partition	29
Upgrade the server model	30
Prepare to upgrade the server model	31
Prepare to upgrade the partitioned server model	33
Complete the server model upgrade	36
Perform the server model upgrade	36
Prepare the server for production	37
System reference code (SRC) A900 2000 recovery	39
Prepare the partitioned server for production	39
Scenarios: Upgrades	41
Upgrade scenario: Model 270 to Model 810	42

Upgrade scenario: Model 720 or 730 to Model 825	42
Upgrade scenario: Model 820 to Model 825	43
Upgrade scenario: Model 740 to Model 870 or 890	43
Upgrade scenario: Partitioned Model 740 to Model 870 or 890	44
Upgrade scenario: Model 840 to Model 870 or 890	45
Upgrade scenario: Partitioned Model 830 or 840 to Model 870 or 890	45
Troubleshoot the upgrade	46
Related information for upgrades	47
Saving PDF files	49

Upgrades

Use this information to upgrade from one IBM  iSeries server, hardware feature, or OS/400 release to another iSeries server, hardware feature or OS/400 release. In an upgrade, the target server retains the same serial number as the source server. If you are moving to a new iSeries server with a different serial number, use the Migration topic. If you are upgrading your server capacity by activating standby processors, see the Capacity Upgrade on Demand topic.

iSeries Planning and Migration Services can help you in planning and upgrading to the latest iSeries server models. This service includes a planning session to discuss all known customer requirements. The outcome of this planning session is a final hardware and software configuration and an installation plan. The services specialist can also perform on-site services such as upgrading the server to the new release of OS/400, converting SPD-attached I/O devices to PCI-attached I/O devices, migrating disk storage, upgrading partitioned servers, and consolidating servers. For more information, select **Migration** on the Integrated Technology Services  Web site.

For more information on upgrades, select any of these topics:

“Upgrade concepts” on page 7

Review both the process for upgrading your server and some considerations for upgrading a partitioned server. Find information on which servers you can upgrade to the new iSeries servers. Learn the terminology that is used in this topic.

“Plan the upgrade” on page 12

Find out how planning can help you minimize your down time and make your upgrade as easy as possible.

Perform the upgrade

Find instructions for preparing for and performing all aspects of an upgrade including adding or replacing a hardware feature, converting expansion units in a partitioned environment, upgrading the OS/400 release, and upgrading your server. This topic includes instructions for both nonpartitioned and partitioned servers. You can see all of the information or use an interactive interview to create a customized list of tasks for your upgrade.

“Scenarios: Upgrades” on page 41

Review some upgrade examples and see the process for performing these types of upgrades.

“Troubleshoot the upgrade” on page 46

Find information on some of the problems that you may run into when upgrading your server.

See the “What’s new for V5R2” topic for the new and changed information for upgrades. See “Print this topic” on page 3 if you want to print the PDF for this entire topic as well as other information that may help you with your upgrade. If you want to print a PDF of tasks specific to your upgrade, see Customize your upgrade tasks.

What’s new for V5R2

Here are the changes for this release:

What's new in iSeries servers


IBM introduces the iSeries Models 810, 825, 870, and 890. The 825, 870, and 890 models incorporate the IBM POWER4 microprocessor. In addition, Capacity Upgrade on Demand, which allows you to immediately activate extra processing power for new workloads or spikes in demand, is now standard on select iSeries models.

For additional information on the new iSeries servers, see the following:

- iSeries Hardware Web site 
- iSeries Planning 
- iSeries Handbook 

Package features

If you are upgrading to a Model 810, 825, 870, or a new Model 890, you may get a package feature, which consists of function, software, and hardware and may also include education and services. These options are grouped together into a selection of priced offerings. For more information on package


features, see the iSeries Hardware  Web site.

Capacity Upgrade on Demand

Capacity Upgrade on Demand lets you activate additional processors on your iSeries server as your changing business needs demand more resources. You can activate processors on either a trial or permanent basis. For more information, see the Capacity Upgrade on Demand topic.

System product division (SPD) to Peripheral Component Interface (PCI) transition

The POWER4 microprocessor in the new iSeries servers does not support any SPD-based features. This includes SPD IOP/IOA, SPD I/O expansion units, SPD-attached PCI I/O expansion unit (5065 or 5066) and migration towers. The iSeries plan for I/O attachment is to use the high-speed link (HSL) and PCI. All expansion units and rack-attached I/O devices must be connected by an HSL. You must either replace or convert these devices prior to or during a server upgrade to Models 810, 825, 870, or 890. To learn more

about the SPD-to-HSL I/O transition, see the hardware section of the iSeries Upgrade Planning  Web site.

To simplify the SPD-to-HSL I/O transition, you can now convert SPD-attached feature 5065 I/O expansion units to HSL-attached feature 5074 I/O expansion units and SPD-attached feature 5066 I/O expansion units to HSL-attached feature 5079 I/O expansion units.

What's new in upgrade information

This information, formerly located in the *iSeries 940x RISC-to-RISC Road Map*, SA41-5155, is now available in the Information Center. In the Upgrades topic, you can find information to do the following:

“Plan the upgrade” on page 12

There is now a comprehensive planning topic in the Information Center. This new topic combines planning information from a variety of sources including Information Center topics, Redbooks, and Web sites. You can now use the Information Center as a central location for the information you need to plan your upgrade.

“Add or replace a hardware feature” on page 13

The source server may require hardware feature changes or configuration changes to satisfy

capacity and compatibility requirements of the new software and hardware. You can now find information for changing these hardware features in the Information Center.

“Activate all standby processors” on page 20

If you are upgrading from a server that is enabled for Capacity Upgrade on Demand and you have standby processors that have not been activated, you must activate all of these processors before upgrading your software or server. You can find the procedure for activating all standby processors in Information Center.

“Upgrade to OS/400 Version 5 Release 2” on page 20

You must install the latest resave and cumulative fix (PTF) package of OS/400 Version 5 Release 2 on all partitions of the source server before you upgrade to any of the new iSeries server models. For information on the resave and cumulative fix (PTF) package, see Info APAR II13365 on the iSeries and AS/400 Technical Support Web site. You can learn what’s new for V5R2 software installation information and find information for installing the OS/400 release in the Information Center.


“Convert expansion units for a partitioned server” on page 21

You must either replace or convert your SPD-attached expansion units before upgrading to any of the new iSeries servers. You can convert some SPD-attached expansion units to PCI-attached expansion units. If these expansion units are connected to a partitioned server, you must perform specific resource management tasks as a part of this conversion. You can find information for performing the expansion unit conversion in the Information Center.

“Upgrade the server model” on page 30

All of the hardware upgrade information is available in the Information Center, with links to related information to help you perform your upgrade. In addition, you can now use an interactive interview to customize your upgrade tasks.

For additional information related to upgrades, refer to the following:

- Preventive service planning (PSP) information
The PSP document for V5R2 upgrades is SF98166. Information within this PSP describes high-impact and pervasive problems. Review this information before you upgrade your server model.
- Memo to Users 
This document provides information about software and hardware changes that could potentially affect your system operations.


Print this topic



To view or download the PDF version of this entire topic, select Upgrades (about 327 KB or 50 pages). To create a list of tasks specific to your upgrade, go to the Customize your upgrade tasks online interview. After you have completed the interview, you will be able to print customized PDF versions of your upgrade information.



Important additional resources

The Upgrades topic references information found in other topics in the Information Center. Use the online version of the Upgrades topic to link to these other topics directly. However, if you use the printed or PDF version of the Upgrades topic, you should also print the following resources to use in conjunction with the Upgrades PDF.

Note: To print a topic, use the print function of your browser. You might have the option to right-click in this frame to print or to open the frame into a new window and then print.

Prepare to change the hardware feature:	
Title	Details
Install fixes	Install the most current fixes on your server before changing a hardware feature.
Install fixes on systems with logical partitions	Install the most current fixes on your partitioned server before changing a hardware feature.
STRASPBAL (Start ASP Balance) command	Use the Disk migrate while active option of the Start ASP Balance command to move data from disk units that are no longer supported.
GO SAVE command	Back up your server so that you can restore the server if you experience errors when changing the hardware feature.
Print the system configuration list	Document the current server configuration before you change a hardware feature.
Print the system configuration for logical partitions	Document the current partitioned server configuration before you change a hardware feature.
Perform the hardware feature change:	
Install iSeries features	Find information on installing the hardware feature.
Perform resource management:	
Backup and Recovery  (about 570 pages)	Use this information to do the following: <ul style="list-style-type: none"> • Perform disk unit management (use Chapter 19. "Procedures for configuring disks and disk protection"). • Remove unused disk units from the configuration (use Chapter 20. "Working with Auxiliary Storage Pools").
Configure a cluster	Use this information to configure clusters if the hardware feature change affected clusters.
Configure independent disk pools	Use this information to configure independent disk pools if the hardware feature change affected independent disk pools.
Activate all standby processors:	
Capacity Upgrade on Demand (CUoD)	Find information on the capability to dynamically activate one or more central processors of select server models.
Activate standby processors permanently	Use this information to activate all standby processors before upgrading your server model.
Upgrade to OS/400 Version 5 Release 2:	
Cumulative PTF packages	Find information on cumulative fix (PTF) packages.
Info APAR II13365 on the iSeries and AS/400 Technical Support Web site	Find information on the latest resave and cumulative fix (PTF) package of OS/400 V5R2.
Install fixes	Install the most current fixes on your server before upgrading your OS/400.
Install fixes on systems with logical partitions	Install the most current fixes on your partitioned server before upgrading your OS/400.
Install the new release of OS/400 and related software	Use this information to install OS/400 V5R2 as a part of the upgrade.
Manage job logs	Access the job logs and to help you identify and fix any problems that might occur with the newly installed software.
Messages	Find information on checking server messages.

Plan to convert the expansion unit:	
GO SAVE command	Back up your server so that you can restore the server if you experience errors when converting an expansion unit.
Document and prepare the server:	
Print the system configuration for logical partitions	Document the current partitioned server configuration before you convert the expansion unit.
Power down the secondary partitions	Find information on powering down the partitioned server before converting the expansion unit.
Perform dynamic movement of resources	Use this information to move the buses that are being converted and the buses that are being recabled into the primary partition.
Resolve LPAR configuration error:	
Access dedicated service tools (DST)	Find information on accessing the service tools that you need to perform the expansion unit conversion procedures.
Reassign buses and IOPs:	
Perform dynamic movement of resources	Find information on assigning resources to a partition.
Rename resources for each partition:	
Compare and update system values	Find information on working with system values.
Prepare to upgrade the server model:	
Install fixes	Install the most current software fixes before upgrading your server.
Backup and Recovery  (about 570 pages)	Remove unused disk units from the configuration (use Chapter 20. "Working with Auxiliary Storage Pools").
Connecting to iSeries: Consoles	Find information to help you choose and set up a console.
Gather performance data	Use this information to gather performance data so that you can compare system performance before and after the upgrade.
GO SAVE command	Back up your server so that you can restore the server if you experience errors when upgrading to the new model.
Print the system configuration list	Document the current server configuration before you upgrade the server.
IPL type	Record the IPL type before you upgrade the server.
IPL mode	Record the IPL mode before you upgrade the server.
Compare and update system values	Find information on working with system values.
Prepare to upgrade the partitioned server model:	
Install fixes on systems with logical partitions	Install the most current software fixes before upgrading your server.
Perform dynamic movement of resources	Find information on assigning resources to a partition.
Dynamic movement of processing power	Use this information to adjust the source server configuration to reflect the target server's processing resources.
Dynamic movement of memory	Use this information to adjust the minimum memory values per partition on the source server.
Backup and Recovery  (about 570 pages)	Remove unused disk units from the configuration (use Chapter 20. "Working with Auxiliary Storage Pools").

Connecting to iSeries: Consoles	Find information to help you choose and set up a console.
Gather performance data	Use this information to gather performance data so that you can compare system performance before and after the upgrade.
GO SAVE command	Back up your server so that you can restore the server if you experience errors when upgrading to the new model.
Print the system configuration for logical partitions	Document the current partitioned server configuration before you upgrade the server.
IPL type	Record the IPL type before you upgrade the server.
IPL mode	Record the IPL mode before you upgrade the server.
Compare and update system values	Find information on working with system values.
Prepare the server for production:	
Change your system IPL from the system control panel	Use this information to change the IPL type and operating mode before returning the server to production.
Backup and Recovery  (about 570 pages)	Use this information to: <ul style="list-style-type: none"> • Start device parity on any nonconfigured disk units (use Chapter 21. "Working with Device Parity Protection") • Perform disk unit management to configure and protect disk units (use Chapter 19. "Procedures for configuring disks and disk protection").
GO SAVE command	Back up the upgraded server.
Print the system configuration list	Document the new server configuration when the upgrade is complete.
Install any additional software	Use this information to install additional software on the upgraded server.
Tune server performance.	Find information on enabling your server to make the best use of the system resources, and enabling workloads to run as efficiently as possible.
Prepare the partitioned server for production:	
Change your system IPL from the system control panel	Use this information to change the IPL type and operating mode before returning the server to production.
Restart and power down a system with logical partitions	Use this information to perform a normal IPL on the partitioned server.
Backup and Recovery  (about 570 pages)	Use this information to: <ul style="list-style-type: none"> • Start device parity on any nonconfigured disk units (use Chapter 21. "Working with Device Parity Protection") • Perform disk unit management prior to configure and protect disk units (use Chapter 19. "Procedures for configuring disks and disk protection").
GO SAVE command	Back up the upgraded server.
Print the system configuration for logical partitions	Document the new partitioned server configuration when the upgrade is complete.
Install any additional software	Use this information to install additional software on the upgraded server.
Tune server performance.	Find information on allowing your server to make the best use of the system resources, and to run workloads as efficiently as possible.

Other information

You can also view or print any of the following PDFs that are closely related to this topic:

Memo to Users (about 50 pages)

This document provides information about software and hardware changes that could potentially affect your system operations.

Migration (about 126 KB)

You can use this information if you want to migrate your data to a different server with a different serial number. This information assumes that you are moving data from one server to another. If you are installing a new version of OS/400 on the same server, it is not necessary to perform an explicit data migration. You can just install the new version of OS/400.

Install the OS/400 release and related software (about 82 pages)

You can use this information if you are upgrading your server with a new OS/400 release.

Logical partitions

If you are upgrading from or to a partitioned server, you can use this topic to choose from a number of PDFs that contain information about logical partitions.

Backup and Recovery (about 570 pages)

You can use this information to back up your server before performing upgrade tasks. This allows you to recover a working configuration should you experience problems during any part of the upgrade.


For additional information closely related to upgrades, see the “Related information for upgrades” on page 47 topic.

Saving PDF files

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

1. Right-click the PDF in your browser (right-click the link above).
2. Click **Save Target As...**
3. Navigate to the directory in which you would like to save the PDF.
4. Click **Save**.

Downloading Adobe Acrobat Reader

If you need Adobe Acrobat Reader to view or print these PDFs, you can download a copy from the Adobe Web site (www.adobe.com/products/acrobat/readstep.html) .

Upgrade concepts

An **upgrade** is the process of changing from one iSeries server, hardware feature, or software version to another iSeries server, hardware feature, or software version while retaining the serial number of the source server. For more information on upgrades, select any of these topics:

“Upgrade terminology” on page 8

Use this information to understand upgrade terms.

“Upgrade process” on page 9

Use this information to learn the flow and timing for upgrading a nonpartitioned server.

“Partitioned server upgrades” on page 11

Find information unique to upgrading a partitioned server.

“Upgrade paths” on page 12

Learn which upgrade paths are available for your current server.

Capacity Upgrade on Demand

Learn how you can activate additional processors to upgrade your server without upgrading to a new server model.

Upgrade terminology

Review this information to become familiar with the terminology used to describe upgrades. If you are moving your data or software from your current iSeries server to a server with a different serial number, see Migration terminology.

Capacity Upgrade on Demand (CUoD)

The capability to activate additional processors on select iSeries server models. These iSeries server models are shipped with a number of processors that are active in your iSeries server when it is shipped. These models also include processors that are not available for use until you activate them. These processors can be either temporarily or permanently activated.

hardware upgrade

An upgrade that refers to any of the following:

- A hardware change to a later level of the server hardware that maintains the server serial number
- The addition of hardware to the server
- An enhanced hardware function

licensed program (LP) upgrade

A specific type of software upgrade for an existing server that refers to either of the following:

- A change to a more recent release of the LP
- An enhancement in the LP function

MES (miscellaneous equipment specification)

Any server hardware change (addition, improvement, removal, or any combination of these). The server's serial number does not change. Specific types include the following:

- Customer-installable feature (CIF) MES
- Install-by-IBM^(R) (IBI) MES

model upgrade

A specific type of hardware MES that causes a change to the hardware model. A model upgrade could involve adding, removing, or changing features. The server's serial number does not change.

operating system upgrade

A specific type of software upgrade for an existing server that refers to either of the following:

- A change to a more recent release of the operating system
- An enhancement in operating system function

Processors on Demand (POD)

Standby processors on a server that can be activated for permanent or temporary use

software upgrade

Any software change to an existing server, which can include any of the following:

- A software change to a more recent release
- A software addition
- An enhancement in software function

system product division (SPD)

A bus architecture that allows I/O to communicate to the processor. SPD-I/O refers to devices that use the SPD bus architecture to communicate with the rest of the server.

source server

The existing system that is being upgraded with new hardware or a new level of software.

target server

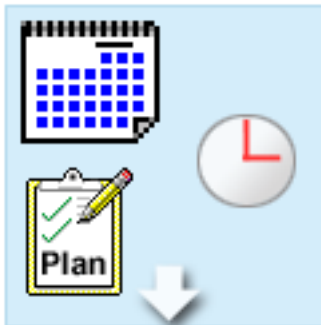
In upgrades, the planned hardware configuration and software level that exists when the upgrade is completed.

upgrade

Any hardware or software change to a later release, or any hardware addition or software addition. Contrast upgrade with migration, where data is moved from one iSeries server to another iSeries server.

Upgrade process

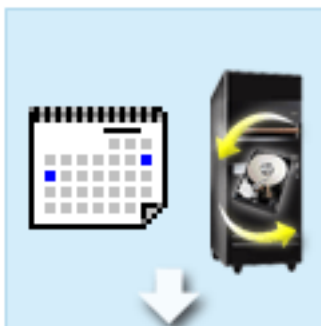
The upgrade process includes planning, ordering, preparing for, and performing the upgrade. Your upgrade process is unique, and although you will perform each of these major tasks, how you perform them, in what order you perform them, and what they involve depends on your current environment and the environment that you want to achieve. Each of these major tasks is described here in more detail.



Plan your upgrade

The first task in every upgrade process is planning for your upgrade and ordering what you need. Planning is very important, and the time you invest in planning will make your upgrade as easy as it can be. Completing this task may require up to six weeks, depending on the complexity of your environment.

For more information, see the “Plan the upgrade” on page 12 topic.



Replace hardware features

You may need to replace or eliminate hardware features that will not work in your target environment. You may need to replace or eliminate hardware features before you install OS/400 V5R2, before you upgrade to the new model, or both. For example, your SPD-attached hardware will not work on Models 810, 825, 870, or 890. This hardware must be replaced and new hardware features added as necessary before you upgrade the server. Replacing hardware features can usually be accomplished in a weekend.

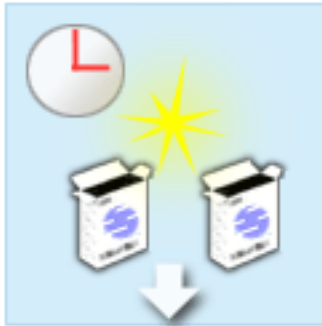
For more information, see the “Add or replace a hardware feature” on page 13 topic.



Activate all standby processors

If you are upgrading from a server that is enabled for Capacity Upgrade on Demand (CUoD) and you have standby processors that have not been activated, you must activate all of these processors before upgrading your software or server. Activating standby processors can be accomplished in minutes provided that you have the required POD activation code.

For more information, see the “Activate all standby processors” on page 20 topic.



Install the new version of OS/400

Another task in the upgrade process is installing the new version of OS/400. You must install the latest resave and cumulative fix (PTF) package of OS/400 V5R2 on your server if you are upgrading to a Model 810, 825, 870, or 890. Installing OS/400 on a server that is not preloaded requires at least one hour. For information on the latest resave and cumulative fix (PTF) package, see Info APAR I113365 on the iSeries and AS/400 Technical Support Web site.

For more information, see the “Upgrade to OS/400 Version 5 Release 2” on page 20 topic.



Convert expansion units

Some expansion units that will not work with the Model 810, 825, 870, or 890 can be converted to work with the new models. However, if you are upgrading a partitioned server, detailed planning before performing the expansion unit conversion is essential. Although this expansion unit conversion can usually be accomplished in a weekend, converting more than one expansion unit can increase the complexity of the conversion and therefore the time needed to complete this task.

For more information, see the “Convert expansion units for a partitioned server” on page 21 topic.



Complete the server model upgrade

The final task in the upgrade process is to upgrade the server. The actual upgrade is performed by a service representative, but preparing for the upgrade and returning the server to production are your responsibility. Upgrading from one server to another server requires up to three days.

For more information, see the “Upgrade the server model” on page 30 topic.

Your unique upgrade may include some or all of the stages of a complete upgrade process. To accurately determine which upgrade activities you need to perform, be sure to use the information in the “Plan the upgrade” on page 12 topic. Once your planning is complete, you can use the interview in the Upgrades topic to build an upgrade task list customized to your unique environment. The interview is only available in the online version of the Information Center.

Partitioned server upgrades

Upgrading a partitioned server is more complex than upgrading a server without partitions. When upgrading a partitioned server, be aware of the following.

Upgrading multiple partitions takes longer

When you upgrade a partitioned server, you actually perform one upgrade for each partition. This upgrade process includes planning, preparing for, and performing the upgrade. Planning is most involved and may require up to six weeks, depending on the complexity of your environment. Installing the OS/400 release on a server that is not preloaded requires at least one hour. Upgrading from one server to another server requires up to three days for each partition. In addition, it is recommended that you stabilize the server after upgrading each partition, which means your total upgrade may take several weeks to complete.

Upgrading your server may change server resources

When you convert an expansion unit, two things happen. First, new buses with new bus numbers are created. You need to assign the new bus numbers to the proper partition before powering on the partition. Second, some new resource names are created. You need to reassign or rename the new resource names as appropriate. For information on converting from one expansion unit to another in a partitioned environment, see the “Convert expansion units for a partitioned server” on page 21 topic.

Upgrading your server may require additional resource management

If the target server has *fewer* processors than the source server, you must ensure that the target server can satisfy the minimum processor values per partition. You can redefine the partitions either before or after performing the upgrade. Either adjust the configuration on the source server to reflect the target server’s processing resources or correct the configuration on the target server before starting the secondary partitions.



For example, if you are upgrading from a 4-way server to a 2-way server, you must define your partitions so they will work on the new 2-way server. You can do this before the upgrade, by defining the partitions so that only 2 of the 4 processors are used, or after the upgrade by defining the partitions to use only 2 instead of 4 processors.

If the target server has *more* processors than the current server, the configuration on the target server will indicate additional resources that must then be manually assigned to the appropriate partitions.

Similarly, you must ensure that that target server can satisfy the minimum memory values per partition. The current memory values can be adjusted on the target server.


Running Linux in a guest partition has unique requirements

If your solution includes Linux, be sure to use the Linux topic to help you identify the requirements for configuring Linux in an iSeries logical partition. If you are upgrading to a system with a POWER4 processor and are running Linux in an iSeries logical partition, you must ensure that the version of Linux

you are running supports the new hardware. See the  **server** Linux for IBM iSeries  Web site for a list of Linux distributions that support the new hardware. If your current Linux distribution does not support the new hardware, you must upgrade your Linux distribution before upgrading to the new hardware.

Service representative responsibilities

In a server upgrade, the service representative upgrades all of the hardware on the partitioned server. However, the service representative does not reassign resources or upgrade software on individual

partitions. IBM offers these and other services for a fee. For more information on these services, select **Migration** on the Integrated Technology Services  Web site.

For additional information on logical partitions, see the Logical partitions topic.


Upgrade paths

You can upgrade to the 8xx models by using any of the following paths:

- iSeries Model 270 to iSeries Model 8xx
- AS/400 Models 7xx to iSeries Model 8xx
- iSeries Model 8xx to iSeries Model 8xx

If you cannot upgrade your server to an 8xx model, you can migrate the data from your server to a new model. For information on migrating your data to a new server, see Migration.

You can upgrade the capacity of select server models without upgrading to a new server model simply by activating one or more standby processors on that server. In fact, before you can upgrade your server, all of the processors on that server must be activated. For more information, see the Capacity Upgrade on Demand topic.

For more information on valid upgrade paths, contact your marketing representative or business partner, or click the **Upgrade** link on the IBM FACT  Web site.

Plan the upgrade

Every upgrade is unique. You may be simply upgrading from one server to another. Or, you may be upgrading your OS/400 release. If you have hardware features that will not work on the target server, you must plan to replace or convert those features either before or during the upgrade. For example, if you have SPD-attached I/O devices on your server, you must plan to either replace or convert the I/O as a part of the upgrade to an 8xx model. There are additional “Partitioned server upgrades” on page 11. It is important to consider that the time you spend planning for your upgrade will help minimize your downtime and make performing the upgrade easier.

To plan your upgrade, you can use an interactive interview to create a custom planning checklist. To complete the interview, you need to know specific information about your order, such as model, release, features, and any additional solutions you have ordered. When you have completed the interview, you will see a checklist of planning tasks specific to your upgrade. Perform the planning tasks in the checklist and then return to this topic.

You can also review a number of “Scenarios: Upgrades” on page 41 that describes a current environment and a target environment, and then explains how to upgrade from that current environment to the target environment.

When you have completed the tasks in your custom planning checklist, your next step is to perform the upgrade.

Note: IBM offers its customers the option of running both the source and target servers side by side for a period of time. You can use that time to move your data, expansion units, and partitions to the target server. This option is available for purchase as RPQ 847156 and RPQ 845158. For information regarding the terms and conditions of this request for price quotation (RPQ), contact your marketing representative.

If you choose, iSeries Planning and Migration Services can help you in planning and upgrading to the latest iSeries models. This service includes a planning session to discuss customer requirements. For

more information, select **Migration** on the Integrated Technology Services  Web site.

Perform all upgrade tasks

This topic contains **all** of the tasks for upgrading both a nonpartitioned and a partitioned server. To get a list of tasks **specific** to your upgrade, you can use the interactive interview to customize your upgrade tasks.

1. **“Add or replace a hardware feature”**
Use this topic to change one or more hardware features if necessary before upgrading either your OS/400 or your server.
2. **“Add or replace a hardware feature”**
Use this topic to change one or more hardware features if necessary before upgrading either your OS/400 or your partitioned server.
3. **“Activate all standby processors” on page 20**
Use this topic to activate all standby processors before upgrading your software or your server.
4. **“Upgrade to OS/400 Version 5 Release 2” on page 20**
If you are upgrading to a Model 810, 825, 870, or 890, you must install the latest resave and cumulative fix (PTF) package of OS/400 V5R2 on your server before you upgrade to the new model. If you are upgrading from a partitioned source server, you must install the latest resave and cumulative fix (PTF) package of OS/400 V5R2 on all partitions of the source server. For information on the resave and cumulative fix (PTF) package, see Info APAR I113365 on the iSeries and AS/400 Technical Support Web site. Use this topic to upgrade your operating system to OS/400 Version 5 Release 2.
5. **“Convert expansion units for a partitioned server” on page 21**
Use this topic to convert your SPD-attached expansion units to PCI-attached expansion units.
6. **“Upgrade the server model” on page 30**
Use this topic to upgrade from one server to another.
7. **“Upgrade the server model” on page 30**
Use this topic to upgrade from one partitioned server to another.

In this topic you will also see the tasks for upgrading both a nonpartitioned server and a partitioned server.


To view or download the PDF version of this topic, select Upgrades (about 338 KB). To view or print other topics related to Upgrades, see “Print this topic” on page 3.

Add or replace a hardware feature

You may need to change one or more hardware features to satisfy capacity and compatibility requirements before upgrading to V5R2 and to the new server. For example, you may have SPD-attached hardware that must either be replaced or converted to PCI-attached hardware before you can upgrade to a new model. You may need to add more memory, or you may have to replace a tape drive that is not compatible with your target server. The unique requirements of the hardware feature will indicate when you change the hardware feature. Some examples are:

- If you have hardware features that will not work with OS/400 V5R2, you will need to replace these hardware features before upgrading the OS/400 release to V5R2.
- If you are adding a hardware feature that will work only with OS/400 V5R2, you will need to upgrade to V5R2 before adding the hardware features.
- If you have hardware features that will not work with the new server model, you will need to replace these hardware features either before, or when you upgrade to the new server.

You may have to change more than one hardware feature. If you plan to upgrade both the OS/400 and the server model, ensure that all your hardware features are compatible with both OS/400 V5R2 and the new server model. You should identify these hardware feature changes when you plan for your upgrade. For

information on hardware features that you may need to replace, see the iSeries Upgrade Planning  Web site.

Before you begin these tasks, be sure you have completed the necessary “Plan the upgrade” on page 12. Then, to change a hardware feature, perform the following tasks:

1. **Prepare to change the hardware feature.**

Choose the procedure that is appropriate for your environment:

- For nonpartitioned servers, see “Prepare to change the hardware feature”.
- For partitioned servers, see “Prepare to change the hardware feature for a partitioned server” on page 16.

2. **“Perform the hardware feature change” on page 17.**

Perform the tasks in this topic to change the hardware feature.

3. **Perform resource management.**

Choose the procedure that is appropriate for your environment:

- For nonpartitioned servers, see “Perform resource management” on page 18.
- For partitioned servers, see “Perform resource management for a partitioned server” on page 19.




To view or download the PDF version of this topic, select one of the following:

- Add or replace a hardware feature (about 75 KB)
- Add or replace a hardware feature for a partitioned server (about 75 KB)

To view or print other topics related to Upgrades, see “Print this topic” on page 3.

Prepare to change the hardware feature

This topic describes how to prepare for adding or replacing a hardware feature. Before you begin this procedure, be sure you have completed these prerequisite tasks:

- Obtain and review the preventive service planning (PSP) information.
The PSP document for V5R2 upgrades is SF98166. Review this document for the most current information on conditions that could affect your upgrade.
- Review the Memo to Users  .
This document provides information about software and hardware changes that could potentially affect your system operations.
- View the Migration Web site  .
This Web site includes information about the current migration and upgrade paths, a link to relevant Redbooks, and information about converting from SPD to PCI-attached I/O.
- Review the *Performance Capabilities Reference* available on the Performance Management  Web site.
This reference provides information about server performance that is useful for customers who plan to upgrade their servers and software.
- “Plan the upgrade” on page 12.

Then to prepare for adding or replacing the hardware feature, perform the following tasks:

Prepare the server

1. Install fixes (program temporary fixes or PTFs).
Use the information in this topic to put the fixes on the server before adding or replacing the hardware feature.
2. If you are replacing disk units, you can use the Disk migration while active option of the STRASPBAL (Start ASP Balance) command to reduce the down time associated with removing a disk unit. This option allows you to move data from specified disk units while your server is running.
For information, see the STRASPBAL (Start ASP Balance) command.

3. Save the entire server using GO SAVE option 21.
This is vital for recovery should you experience errors when changing the hardware feature.

Document the server

To ensure that the server is fully documented before you add or replace a hardware feature, perform these tasks:

1. If you are changing the disk configuration, follow these steps:
 - a. "Print disk configuration status" of the server.
 - b. "Print parity set configuration and status" of the server.
2. If you are changing a workstation, communications, or LAN, "Display, verify, and print hardware resource information" on page 16.
Use this information to record the hardware resource information so that you can perform the necessary resource management after the hardware feature change is complete.
3. Print the system configuration list.
This printout provides details of your current server configuration.

Now that you have finished preparing for the hardware feature change, your next step is to "Perform the hardware feature change" on page 17.

Print disk configuration status

To print the disk configuration status of your server, you need security officer authority. Complete the following steps to print the disk configuration status:

1. Enter STRSST on a command line to start system service tools (SST). Sign on to SST.

Note: To use system service tools, you need a valid service tools user ID.
2. Select option 3 (Work with Disk Units) and press **Enter**. The Work with Disk Units display appears.
3. Select option 1 (Display Disk Configuration) and press **Enter**. The Display Disk Configuration display appears.
4. Select option 1 (Display Disk Configuration Status) and press **Enter**.
5. At the Display Disk Configuration Status display, print the disk configuration by pressing the Print Screen key on your keyboard.
6. Page down and repeat until you have printed the entire disk configuration. Ensure that all the disk configuration information is printed.
7. Record the serial number of the load-source disk unit (unit number 1) for each partition on the server.

Note: If the server is partitioned, repeat steps 1 through 7 for each partition. Be sure to mark each printout for the partition it represents.

Print parity set configuration and status

To print the parity set configuration and status of the server, complete the following steps:

1. Enter STRSST on a command line to start system service tools (SST). Sign on to SST.
Note: To use system service tools, you need a valid service tools user ID.
2. Select option 3 (Work with Disk Units) and press **Enter**. The Work with Disk Units display appears.
3. Select option 1 (Display Disk Configuration) and press **Enter**. The Display Disk Configuration display appears.
4. Select option 1 (Display Disk Configuration Status) and press **Enter**.
5. At the Display Disk Configuration Status display, select option 5 (Display Device Parity Status) and press **Enter**. The Display Device Parity Status display appears.
6. Print the parity set configuration by pressing the Print Screen key on your keyboard.

7. Page down and repeat until you have printed the entire parity set configuration.

Note: If the server is partitioned, repeat these steps from each partition. Be sure to mark each printout for the partition it represents.

Display, verify, and print hardware resource information

To display, verify, and print the hardware resource information, complete the following steps:

1. At the OS/400 command line, enter the Work with Hardware Products (WRKHDWPRD) command.
2. Select option 4 (Display Description Label Locations) and press **Enter** to display the label information associated with the hardware resources.
3. On the Display Description Label Locations display, verify that the label information about the hardware resources is accurate.
4. Delete the configuration descriptions (also called configuration objects) that are not associated with any physical hardware at this time.
5. Press F17 (Print) to print the description label locations. This information must be given to the service representative.
6. At the OS/400 command line, enter the following commands:




```
DSPHDWRSC TYPE(*LWS) OUTPUT(*PRINT)
DSPHDWRSC TYPE(*STG) OUTPUT(*PRINT)
DSPHDWRSC TYPE(*CMN) OUTPUT(*PRINT)
DSPHDWRSC TYPE(*PRC) OUTPUT(*PRINT)
```

This creates a report of your hardware and configuration objects.

Note: If the server is partitioned, repeat these steps from each partition. Be sure to mark the printout for the partition it represents.

Prepare to change the hardware feature for a partitioned server

This topic describes how to prepare for adding or replacing a hardware feature. Before you begin this procedure, be sure you have completed these prerequisite tasks:

- Obtain and review the preventive service planning (PSP) information.
The PSP document for V5R2 upgrades is SF98166. Review this document for the most current information on conditions that could affect your upgrade.
- Review the Memo to Users .
This document provides information about software and hardware changes that could potentially affect your system operations.
- View the Migration Web site .
This Web site includes information about the current migration and upgrade paths, a link to relevant Redbooks, and information about converting from SPD to PCI-attached I/O.
- Review the *Performance Capabilities Reference* available on the Performance Management  Web site.
This reference provides information about server performance that is useful for customers who plan to upgrade their servers and software.
- “Plan the upgrade” on page 12.

Then to prepare for adding or replacing a hardware feature, perform the following tasks:

Prepare the server

1. Install fixes (program temporary fixes or PTFs) on all partitions of the server.
Use the information in this topic to put the fixes on the server before adding or replacing the hardware feature.

2. If you are replacing disk units, you can use the Disk migration while active option of the STRASPBAL (Start ASP Balance) command to reduce the down time associated with removing a disk unit. This option allows you to move data from specified disk units while your server is running. For information, see the STRASPBAL (Start ASP Balance) command.
3. Save each partition of the server using GO SAVE option 21 on a tape drive that is compatible with the tape drive on the target server.
This is vital for recovery should you experience errors when upgrading the server.

To determine if your tape drives are compatible, see the Storage Solutions Web site  .

Document the server

To ensure that the server is fully documented before you add or replace a hardware feature, perform these tasks:

1. If you are changing the disk configuration, follow these steps:
 - a. “Print disk configuration status” on page 15 from each partition of the server. Be sure to record the serial number of the load-source disk unit for each partition.
 - b. “Print parity set configuration and status” on page 15 from each partition of the server. Be sure to mark each printout for the partition it represents.
You can use this information to analyze and plan for disk unit configuration and protection. It can also be used to correct any problems that occur during the upgrade.
2. If you are changing a workstation, communications, or LAN, “Display, verify, and print hardware resource information” on page 16 for each partition.
Use this information to record the hardware resource information so that you can perform the necessary resource management after the hardware feature change is complete.
3. Print the system configuration for logical partitions.
This gives you specific partition information such as system resources, processors, main memory, and any unique system values associated with partitions.

Now that you have finished preparing for the hardware feature change, your next step is to “Perform the hardware feature change”.

Perform the hardware feature change

This topic describes how to complete the hardware feature change.

Before you begin

Before you begin these tasks, be sure you have performed the necessary “Plan the upgrade” on page 12 and performed the preparation procedure that is appropriate for your environment:

- For nonpartitioned servers, see “Prepare to change the hardware feature” on page 14.
- For partitioned servers, see “Prepare to change the hardware feature for a partitioned server” on page 16.

Install the hardware feature

For any single upgrade order, some of the hardware features may be installed by the service representative and others may be your responsibility to install. Discuss this in advance with the IBM service representative so that you know which, if any, responsibilities are yours, and which are the responsibility of the service representative. If you are responsible for installing this hardware feature, follow the instructions that come with the feature or use the procedure for this feature in Install iSeries features.

Next step

When the hardware feature installation is complete, the next step is to perform the resource management procedure that is appropriate for your environment:

- For nonpartitioned servers, see “Perform resource management”.
- For partitioned servers, see “Perform resource management for a partitioned server” on page 19.

Perform resource management

After you change a hardware feature, you may need to perform the following tasks:

- If you have changed the disk configuration, perform disk unit management to first protect and then configure the disks on your server.
To do this, you can use the Work with Disk Units option from the Dedicated Service Tools display. To learn how, see Chapter 19. “Procedures for Configuring Disks and Disk Protection” of the Backup and

Recovery Guide .

Note: Once you have completed your disk configuration, you can remove any unused disk units from the configuration using dedicated service tools (DST). For information, see “How to Remove a Disk unit from an Auxiliary Storage Pool” in Chapter 20. “Working with Auxiliary Storage Pools” of the Backup

and Recovery Guide .

Disk units that you remove from the configuration should also be physically removed to prevent them from being added back into the configuration during an IPL.

- Update workstations, communications, removable media, LAN, WAN, or Integrated xSeries Server (IXS) hardware resource names as necessary.
For information on changing hardware resource names, see “Fix hardware resource names”.
- If you have changed your console type, perform the IPL and resource management tasks in “Prepare the server for production” on page 37.
- If you have made changes to enable clusters or independent disk pools, use the information in Configure a cluster and Configure independent disk pools.

Congratulations! You have changed your hardware feature. You can now return to the customized upgrade task list or to the “Perform all upgrade tasks” on page 13.

Fix hardware resource names

Following an upgrade or migration, you may have hardware resources that are in different locations than they were on your source server. To fix these hardware resource names, follow these steps:

1. At the OS/400 command line, enter WRKHDWPRD.
2. On the Work with Hardware Products display, select option 5 (Change description label locations) and press **Enter**.
3. Read the information on the Using Change Label Locations display and press **Enter**.
4. Compare the label information on the display with the source server’s label locations. Label information matches if the Label column on the display matches that of the source server. Label information does not match if any one of the following is true:
 - The display has label information, but the source server did not have label information in that location.
 - The source server label information does not match the information found in the *Label* column on the display.
 - *NONE appears in the Label column on the display, and there is label information for the source server.

Note: When *NONE appears in the Label column for a controller or device that was added or upgraded, select option 2 (Change). Then select the correct label description from the list provided. If you experience any problems, call your service provider.

- *INCORRECT or *INVALID appears in the Label column.


This means that the type and model number of the hardware resource information does not match

the type and model of the configuration description that is currently associated with that resource. The server cannot vary on the configuration description.

- *INCORRECT — where the physical location is also '**'.
This identifies a controller or device description that no longer has a valid resource on the server.
5. If there are any locations where the server label information is not the same as the (physical) label, on the Change Description Label Locations display, type 2 in the Opt column for each location that requires a label change. Press **Enter**. The Change Description Label display appears.
Note: You may make more than one selection at a time, but if More... appears on the bottom of the display, do not press **Enter**. Instead, page forward to select the remaining labels.
 6. A list of possible label names is shown. To select the label name (on the display) that matches the label that was on the source server, type 1 in the Opt column for each location that you want to change and press **Enter**.
Note: If you cannot find the label (on the display) that matches the label on the source server, contact your service representative.
 7. If you chose to change more than one label, the Change Description Label display appears for the next label. A message at the bottom of the display indicates whether the previous change was successful.
 8. For all the labels that need a change, repeat the previous three steps.
 9. After you change the last label, the Change Description Label Locations display appears with the updated information. A message at the bottom of the display indicates whether the last change was successful. If More... appears on the bottom of the display, scroll forward to view more information.
 10. Press the F17 key on the Change Description Label display to request a printout of the new information for your records.
Note: The printout will be in the default output queue for your workstation. You can print it later when you vary on your printer devices and start printer writers.
 11. Verify that the labels on the printout match the labels in the Label column on your source server. If you find any errors, go back to step 5 (See 19) and repeat the steps.
Attention: Do not exchange cards for problem analysis purposes. Card and device serial numbers are tied to the server configuration.

Perform resource management for a partitioned server

After you change a hardware feature, you may need to perform the following tasks:

- Assign resources to partitions as necessary.
For information on assigning resources to a partition, see Perform dynamic movement of resources.
- If you have changed the disk configuration, perform disk unit management to first protect and then configure the disks on your server.
To do this, you can use the Work with Disk Units option from the Dedicated Service Tools display. To learn how, see Chapter 19. "Procedures for Configuring Disks and Disk Protection" of the Backup and Recovery Guide .

Note: Once you have completed your disk configuration, you can remove any unused disk units from the configuration using dedicated service tools (DST). For information, see "How to Remove a Disk unit from an Auxiliary Storage Pool" in Chapter 20. "Working with Auxiliary Storage Pools" of the Backup

and Recovery Guide .

Disk units that you remove from the configuration should also be physically removed to prevent them from being added back into the configuration during an IPL.

- Update workstations, communications, removable media, LAN, WAN, or Integrated xSeries Server (IXS) hardware resource names as necessary.
For information on changing hardware resource names, see the "Fix hardware resource names" on page 18 topic.

- If you have changed your console type, perform the IPL and resource management tasks in “Prepare the partitioned server for production” on page 39.
- If you have made changes to enable clusters or independent disk pools, use the information in Configure a cluster and Configure independent disk pools.

Congratulations! You have changed your hardware feature. You can now return to the customized upgrade task list or to the “Perform all upgrade tasks” on page 13.

Activate all standby processors

Capacity Upgrade on Demand (CUoD) offers you the capability to dynamically activate one or more central processors of select server models. If you are upgrading from a server that is enabled for Capacity Upgrade on Demand and you have standby processors that have not been activated, you must activate all of these processors before upgrading your software or server.

Note: If you are performing certain processor upgrades with the Model 890, you may not need to activate all processors before upgrading. For more information, see the iSeries Hardware Web site.

To activate all standby processors, follow the procedure in the Activate standby processors permanently topic in Information Center.

To view or download the PDF version of this topic, select Activate all standby processors (about 41 KB) To view or print other topics related to Upgrades, see “Print this topic” on page 3.

Congratulations! You have activated your processors. You can now return to the customized upgrade task list or to the list of “Perform all upgrade tasks” on page 13.

Upgrade to OS/400 Version 5 Release 2

If you are upgrading to a Model 810, 825, 870, or 890, you must install the latest resave and cumulative fix (PTF) package of OS/400 V5R2 on your server before you upgrade to the new model. If you are upgrading from a partitioned source server, you must install the latest resave and cumulative fix (PTF) package of OS/400 V5R2 on all partitions of the source server. For more information on the resave and cumulative fix (PTF) package, see Info APAR II13365 on the iSeries and AS/400 Technical Support Web site. For information on installing cumulative fix (PTF) packages, see the Install fixes or Install fixes on systems with logical partitions topic. You may also need to install related licensed programs on your source server.

To complete the software upgrade, perform the following tasks:

1. Install the new release of OS/400 and related software.
Use the information in this topic to install the iSeries OS/400 release, part of the OS/400 release, or licensed programs.
2. To verify that all your applications are running properly, use the server with the new software release until you feel comfortable with the new production environment. For example, many customers use the server for 2 weeks or longer.
3. Check job logs and server messages.
Use this information to help you identify and fix any problems that might occur with the newly installed software.

To view or download the PDF version of this topic, select Upgrade to OS/400 Version 5 Release 2 (about 44 KB). To view or print other topics related to Upgrades, see “Print this topic” on page 3.

Congratulations! You have upgraded your software. You can now return to the customized upgrade task list or to the list of “Perform all upgrade tasks” on page 13.

Convert expansion units for a partitioned server

When performing any of the following expansion unit conversions in a partitioned environment, it is essential that detailed planning is performed prior to beginning the expansion unit conversion.

Recommendations:

- It is highly recommended that all of the logical partition (LPAR) configuration actions be performed by an LPAR-trained services person.
- If the expansion units are converted as a part of a server upgrade, it is recommended that the expansion unit conversions be performed and the server environment stabilized before performing a server upgrade.

This topic contains information for converting the following expansion units:

- Feature conversion 5065 to 5074
- Feature conversion 5066 to 5079
- Feature conversion 5075 to 5074

To convert these expansion units, perform the following tasks:

1. “Plan to convert the expansion unit”.
2. “Prepare to convert the expansion unit” on page 23.
3. “Perform the expansion unit conversion” on page 26.
4. “Perform resource management” on page 27.

Attention: There are potentially billable activities for existing features associated with converting multiple expansion units. Only the contents of an expansion unit being converted may be moved to the new expansion unit by IBM service representatives. Any other relocation or movement of features or server components is a billable service, which requires a contract for services with IBM. For example, an expansion unit conversion may present a good opportunity to consolidate the content of one or more expansion units into the converted expansion unit.

Movement of features from other expansion units or from any part of the server other than the expansion unit being converted is billable, as is removing other expansion units from the server, rearranging the server within its physical environment, or any other activity not necessary to convert the expansion unit and its content.

LPAR Planning and Implementation services will provide a planning session to discuss customer requirements and provide a final hardware and software configuration and implementation plan. The LPAR services specialist can also install and configure the new LPAR configuration. For more information concerning Integrated Technology Services (ITS) LPAR Planning and Implementation services, contact

your IBM marketing representative, business partner, or see Technical Support Services .

To view or download the PDF version of this topic, select Convert expansion units for a partitioned server (about 105 KB). To view or print other topics related to Upgrades, see “Print this topic” on page 3.

Plan to convert the expansion unit

An expansion unit conversion causes the following changes to the server resources:

- The converted expansion units report in to the system with new bus numbers. The new bus numbers are assigned to the primary partition by default and need to be assigned to the proper partition before the partition can be powered on.

Note: A 5065 expansion unit contains only one bus. After the conversion, the 5074 expansion unit has two buses reporting in to the system. A 5066 expansion unit contains two buses. After the


conversion, four buses report in to the system. The combined function I/O processors in the 5065 or 5066 expansion units are replaced with new combined function I/O processors and these are positioned as planned with the LPAR Validation Tool (LVT). Significant I/O rearrangement may occur with this conversion.

- Nonconverted 5065 and older SPD-based expansion units may have bus numbering changes if the converted expansion unit is removed. Read the “SPD cabling” information to determine if any SPD-based expansion units remaining in the configuration after the conversion obtain a new bus number.
- Some new resource names may be created. The new resource names need to be reassigned or renamed as appropriate.

Before you begin

Before you start the expansion unit conversion or resource name planning, you need to have the following required items:

- **Valid output from the Logical Partition Validation Tool (LVT).**

Use the LVT tool  with your IBM marketing representative or business partner during the order process. Print the LVT output before beginning the expansion unit conversion procedures.

- **A current backup of the data on all partitions of the server.**

Use the GO SAVE option 21 procedure to back up all partitions of the server. This is vital for recovery should you experience errors during the expansion unit conversion.

The expansion unit conversion procedures help determine the partition to which the new bus numbers should be assigned and how to handle resource names. These procedures assume a familiarity with the iSeries server and a high level of experience with logical partitions.

SPD cabling

During a model upgrade or an expansion unit conversion of a partitioned system (moving a partition from one server to another or changing an expansion unit from a 5065 to a 5074), an SPD bus may be removed. This has serious consequences to the LPAR configuration. SPD buses are cabled in pairs and are numbered by the system on each IPL. This numbering is done by determining to which port they are connected to from the bus adapter. When there are two buses connected to a bus adapter, the numbering of the buses is determined as follows. A cable runs from the top port of the bus adapter to the top port of the SPD bus; this is the first bus number. A cable then runs from the bottom port of the SPD bus to the top port of the second SPD bus; this is the next bus number. Finally, a cable runs back to the system to complete the loop.

Due to the way these buses are cabled, they always have the same bus number on each IPL. However, if the first bus is removed, the second bus takes the bus number of the first bus. If both of these buses are in the same partition, required LPAR configuration actions are minimal. If the hardware in these buses is spread between different partitions or if there is a required resource, for instance load source or console, LPAR configuration actions must be taken before the partitions are powered on. The following step should be performed any time an SPD bus is removed from a partitioned system:

1. Determine if the bus to be removed will result in another bus being renumbered.
 - a. Use the following table to determine if the bus that will be removed is cabled to the top or bottom port of the bus expansion adapter.
 - b. If the bus being removed is cabled to the **bottom** port of the bus expansion adapter, then no buses are being recabled due to the conversion of this tower.
 - c. If the bus being removed is cabled to the **top** port of the bus expansion adapter, then determine if there is also a bus attached to the bottom port (it will be one number higher than the bus being removed). If there is a bus attached to the bottom port of the bus expansion adapter, then there will be a bus recabled during this tower conversion.

iSeries server model	Bus numbers	
	Top port	Bottom port
720/620	Odd	Even
730/740/SX0	Even	Odd
820/830/840*	Odd	Even

* Only applies to buses 5 through 22.

Example: If bus 10 is to be removed on an iSeries Model 730 server, then bus 10 is cabled to the top port ("even" buses on an iSeries Model 730 server are attached to the top port) so the system must be checked to determine whether a bus 11 is present.

Prepare to convert the expansion unit

This topic describes how to prepare for the expansion unit conversion. Before you begin these tasks, be sure you have completed the necessary "Plan to convert the expansion unit" on page 21. Then to prepare for the expansion unit conversion, perform the following tasks:

1. "Resequence SPCN addressing"
2. "Document and prepare the server".

Now that you have finished preparing for the expansion unit conversion, your next step is to "Perform the expansion unit conversion" on page 26.

Resequence SPCN addressing

Before generating any printouts, resequence the system power control network (SPCN) addressing. This ensures that when the IBM service representative performs the SPCN address resequencing after the expansion unit conversion, minimal sequencing changes occur. To resequence the SPCN addressing, complete the following steps:

1. At an OS/400 command line, enter STRSST to start system service tools (SST) on the primary partition and sign on to SST.
Note: To use system service tools, you need a valid service tools user ID.
2. From the SST main menu, select option 5 (Work with system partitions), and press **Enter**. The Work with System Partitions display appears.
3. Select option 2 (Work with partition status). The Work with Partition Status display appears.
4. Type 10 next to the Primary Partition (0) and press **Enter** to put the partition in manual mode.
5. From the Work with Partition Status display, type 33 next to the primary partition (0) and press **Enter** to resequence the SPCN addressing. Correct completion of the operation results in the status message Reorder SPCN addressing was successful.

Document and prepare the server

Ensure that the currently installed server and logical partitions are fully documented before the service representative arrives to perform the expansion unit conversion. Make sure that these documents represent the most recent configuration of the server and that no hardware changes have been made since printing the documentation. If changes are made before the service representative arrives, print the server and LPAR partition documentation again.

Complete steps 1 through 5 for the primary partition first; then repeat steps 1 through 3 and 5 for each secondary partition. Step 4 should be completed for the primary partition only.

1. "Print disk configuration status" on page 15 from each partition of the server.
2. "Print parity set configuration and status" on page 15 from each partition of the server. Be sure to mark each printout for the partition it represents.
3. "Display, verify, and print hardware resource information" on page 16 for each partition of the server.

4. On the **primary partition**, “Assign all unassigned I/O resources” to active partitions.
5. “Remove failed or nonreporting resources” on page 25 using the Hardware Service Manager (HSM) on the partition.
6. Repeat steps 1, 2, 3, and 5 above for each secondary partition that is configured.
7. “Clear nonreporting logical partitioning resources” on page 25 on the primary partition.
8. Print the system configuration for logical partitions.
9. Use the printouts from step 8 to determine if there are load-source resources in a bus that will be changing bus numbers, for instance when a bus is converted or recabled. For each partition with a load source drive in a converted or recabled bus, count **one** drive if the partition has RAID or unprotected drives. Count **two** drives if the partition has mirrored drives. Record the total number of load source drives. Also record the serial number of the load source disk (unit 1) for each converted or recabled bus. You will need this information when you reconfigure bus or IOP ownership.
Example: P3 has a load source redundant array of independent disks (RAID) of 1. P4 has a load source mirrored of 2. The value of P3 added to the value of P4 equals 3. Record 3 as the total number of load source drives.
10. Use the printouts from step 8 to determine the frame IDs and bus numbers associated with all hardware that is changing. This information must be given to the service representative and is required for the expansion unit conversion.
11. For each secondary partition, record the IPL System Action and then set the IPL System Action to HOLD as follows:
 - a. From the primary partition, enter STRSST to start system service tools (SST) and sign on to SST.
Note: To use system service tools, you need a valid service tools user ID.
 - b. From the SST main menu, select option 5 (Work with system partitions), and press **Enter**. The Work with System Partitions display appears.
 - c. Use the Work with System Partitions display to select each secondary partition. For each secondary partition, record the IPL System Action and then set the IPL System Action to HOLD.
12. “Change the system value settings” on page 26 on both the primary partition and each secondary partition.
13. Use the appropriate procedure for your environment to power down the secondary partitions.
14. The bus numbers change if buses are recabled. If you are running OS/400 V5R2 on all partitions, use the partition configuration displays to move the buses that are being converted and the buses that are being recabled into the primary partition. For more information on moving buses, see the Perform dynamic movement of resources topic.
15. Use the appropriate procedure for your environment to power down the primary partition.
16. Prepare the following documents for the service representative:
 - LPAR Validation Tool output.
Note: This document should not change as a result of the conversion.
 - Disk configuration printouts for each partition.
Note: These documents should not change as a result of the conversion.
 - Parity set configuration printout for each partition.
Note: These documents should not change as a result of the conversion.
 - Description label locations printout for each partition.
Note: These documents should not change as a result of the conversion.
 - System configuration list printouts (from HSM) for each partition.
 - Partition information printouts from the primary partition.

Assign all unassigned I/O resources

Any hardware resources that were intended to be unassigned should be assigned to a partition in this step. These resources can then be unassigned as desired after the expansion unit conversion. To assign unassigned I/O resources, complete the following steps on the **primary partition**:

1. Enter STRSST on a command line to start system service tools (SST) on the partition. Sign on to SST.

Note: To use system service tools, you need a valid service tools user ID.

2. Select option 5 (Work with System Partitions) and press **Enter**. The Work with System Partitions display appears.
3. Select option 3 (Work with Partition Configuration) and press **Enter**. The Work with Partition Configuration display appears.
4. Select option 3 (Add I/O resource) and press **Enter** to add any unassigned resources to an active partition. It is recommended that you add these unassigned resources to the primary partition. **Wait for the resources to become active before continuing to the next step.**

Note: For information about how to assign resources to partitions, see the Perform dynamic movement of resources topic. Buses with the ownership type of shared are always available and thus appear on this display. No action is needed for these shared buses.

Remove failed or nonreporting resources

Any hardware resources that were intended to be unassigned should be assigned to a partition in this step. These resources can then be unassigned as desired after the expansion unit conversion. To assign unassigned I/O resources, complete the following steps on the **primary partition**:

Attention: Any hardware problems must be resolved before continuing. I/O resources that are nonreporting because they are switched between partitions and currently are not owned by the partition you are working in should not be removed by you at this time. Careful planning is required when switched I/O is involved.

1. Enter STRSST on a command line to start system service tools (SST) on the partition. Sign on to SST.
Note: To use system service tools, you need a valid service tools user ID.
2. Select option 1 (Start a Service Tool).
3. Select option 7 (Hardware Service Manager (HSM)).
4. Select option 4 (Failed and nonreporting hardware resources), and press **Enter**. Identify and record all resources that are switched between partitions. You may need to reassign or rename these resources following the expansion unit conversion.
5. Type option 4 (remove) to remove any failed or nonreporting resources. If you receive a message saying No failed or nonreporting logical hardware resources found, skip to step 6.
6. Confirm removal of failed or nonreporting resources.
7. Press F6 (Print) to print the system configuration list.

Clear nonreporting logical partitioning resources

Clear nonreporting logical partitioning resources on the primary partition using the steps below for the applicable release.

Clear nonreporting logical partitioning resources - V5R1 and V5R2:

1. Enter STRSST on a command line to start system service tools (SST) on the partition. Sign on to SST.

Note: To use system service tools, you need a valid service tools user ID.

2. From SST select option 5 (Work with System Partitions) and press **Enter**. The Work with System Partitions display appears.
3. From the primary partition's console select option 4 (Recover configuration data).
4. Select option 4 (Clear nonreporting logical partitioning resources).
5. To confirm the deletion of nonreporting resources, press F10 (Clear nonreporting resources).

Clear nonreporting logical partitioning resources - V4R5:

1. Start dedicated service tools (DST) on the primary partition with all secondary partitions active. Sign on to DST.

Note: To use dedicated service tools, you need a valid service tools user ID. A manual IPL is not required to start DST. The following steps can be performed by accessing DST by using function 21 from the system control panel.

2. From DST select option 11 (Work with System Partitions) and press **Enter**. The Work with System Partitions display appears.
3. From the primary partition's console select option 4 (Recover configuration data).
4. Select option 4 (Clear nonreporting logical partitioning resources).
5. To confirm the deletion of nonreporting resources, press F10 (Clear nonreporting resources).
6. Select option 2 (Update).
7. Exit DST.

Change the system value settings

Change the system value settings on both the primary partition and each secondary partition by completing the following steps:

1. From a command line, type the Work with System Values (WRKSYSVAL) command for the system values QAUTOCFG, QIPLTYPE, and QPFRADJ to work with the settings.
2. Record the value for each system value setting. These values need to be restored later.
 - _____ QAUTOCFG
 - _____ QIPLTYPE
 - _____ QPFRADJ
3. Change the settings to the following values:
 - QAUTOCFG = 0
 - QIPLTYPE = 2
 - QPFRADJ = 2

For information about how to work with system values, see the OS/400 system values topic.

Perform the expansion unit conversion

The IBM service representative performs the expansion unit conversion. After the expansion unit conversion is complete, the server should be powered on at dedicated service tools (DST). You should receive the following documents back from the service representative, including the original printouts from the beginning of this procedure that have been updated by the IBM service representative and two new documents:

- LPAR Validation Tool output.
Note: This output should not have changed as a result of the conversion.
- Disk configuration printouts for each partition.
- Parity set configuration printout for each partition.
- Description label locations printout for each partition.
- System configuration list printouts (from hardware service manager) for each partition.
- Partition information printouts from the primary partition.
- List of hardware resources that were replaced or moved during the conversion (Resource Conversions form A880 or equivalent list), provided by the IBM service representative.
- Cable migration worksheet (form A805), provided by the IBM service representative.

Use this information to assign the new bus numbers to the proper partition and to reassign or rename resources, as appropriate. Now that you have the new expansion unit, your next step is to “Perform resource management”.

Perform resource management

Use the information from your preparation and from the service representative to resolve the LPAR configuration error if it appears and to reassign or rename resources, as appropriate. To complete this resource management, perform these tasks:

1. “Resolve LPAR configuration error”.
2. “Reassign buses and IOPs”.
3. “Clean up the server” on page 28.
4. “Rename resources for each partition” on page 29.

Resolve LPAR configuration error

Perform the following steps if a logical partition configuration error was detected when powering on the system after the expansion unit conversion.

Attention: Partition configuration errors may exist at this point in the conversion process.

All converted buses will be owned with shared status by the primary partition. All recabled buses should also be owned by the primary partition. If it was determined in step 9 of the “Document and prepare the server” on page 23 topic that secondary partition load-source disk units would be in converted or recabled expansion units, the LPAR configuration errors should occur. If this is not the case, skip to the “Reassign buses and IOPs” section of this document.

Verify that the configuration error detail identifies a disk unit that is the load source for a secondary partition that owned the converted expansion unit.

1. Access dedicated service tools (DST) and sign on.
2. From the DST main menu, select option 11 (Work with system partitions) and press Enter.
3. Select option 4 (Recovery configuration data) and press Enter.
4. Select option 3 (Clear non-configured disk unit configuration data) and press Enter. This display should show the number of load-source disk units determined in step 9 of the “Document and prepare the server” on page 23 topic. If the load-source disk units are not all reporting in, clear the ones that do report, wait a few minutes, and then re-enter this display. If the number of disk units expected does not show up after 10 minutes, you may have hardware or software problems. Call IBM software support for assistance.
5. Type option 1 (Select unit to clear) next to the displayed disk unit or units and press Enter.
6. Press Enter again to confirm.
7. Return to the DST main menu.

Reassign buses and IOPs

The following steps reassign the new buses and IOPs to the desired partition or partitions, which in turn correct the partition configuration errors.

Note: For information on assigning resources to a partition, see Perform dynamic movement of resources.

1. Identify the new bus numbers for the converted or recabled expansion units. Use dedicated service tools (DST) and the Hardware Service Manager (HSM) to view the partitions’ current resources and determine the new or reassigned bus numbers.
 - a. Access DST and sign on.
 - b. From the DST main menu, select option 7 (Start a Service Tool), and press Enter.
 - c. Select option 4 (Hardware Service Manager (HSM)), and press Enter.
 - d. Select option 1 (Packaging Hardware Resources), and press Enter.

- e. Find the frame ID (from the front of the converted or recabled expansion unit) and enter option 8 (Associated logical resources) beside it and press Enter.
 - f. For converted expansion units, two buses are identified on the resulting display. For recabled expansion units, there will be one bus identified on the resulting display. Enter option 5 (Display detail) beside each one and press Enter to identify and record the bus numbers for these expansion units.
 - g. Exit the HSM and return to the main DST menu.
 - h. From DST, select option 11 (Work with System Partitions), and press Enter. The Work with System Partitions display appears.
 - i. Select option 1 (Display Partition Information), and press Enter. The Display Partition Information display appears.
 - j. Select option 5 (Display System I/O Resources) to view the current partition resources. This view shows old buses and IOPs as well as the new and changed buses and IOPs. Compare the IOA serial numbers on the bus identified in step 1e above to the original printout to ensure that they match.
2. Correct the bus ownership for the new buses. The old buses are still assigned to the same partitions. **Do not take any action on the old I/O resources at this time.** From the Work with Partitions display, type option 3 (Work with partition configuration), and press Enter.
 - If the new buses are to be owned by a secondary partition, type option 4 (Remove I/O resources) and remove them and all of the I/O on them from the primary partition.
 - If the buses are to be owned by the primary partition, type option 5 (Change bus ownership type) next to the primary partition to correct the bus ownership of the new buses.
 3. Assign the new buses and IOPs to the correct partition using the output from the LPAR Validation Tool (LVT) and the System I/O resources printouts. Add the bus and I/O resources to the desired partition or partitions on the Work with Partition Configuration display using option 3 (Add I/O resources).
 4. If a partition's load source, console, alternate IPL or Electronic Customer Support resources are installed in a expansion unit that was converted or recabled, reselect those resources for each partition affected by the expansion unit conversion. Use the Work with Partition Configuration display (options 6, 7, 8, and 9) as needed to assign the critical partition resources.
 5. Power on the secondary partitions in B manual mode.
 6. **Stop. Do not proceed until all secondary partitions power on successfully.** If a secondary partition does not power on successfully, a previous step may not have been performed properly. Verify that all hardware is assigned to the correct partition or partitions. If hardware has not been assigned to the correct partition or partitions, repeat steps 1 through 5. If a secondary partition still does not power on successfully, contact IBM software support for assistance.
 7. At this time all hardware should be operational and assigned to the desired partitions. Verify all system hardware reports in correctly at this time.

Clean up the server

After the new bus numbers have been reassigned to the proper partitions and all partitions power on successfully in manual mode, remove the old I/O resources from the logical partition I/O resources.

1. Clear nonreporting logical partitioning resources by completing the following steps:
 - a. Access dedicated service tools (DST) on the primary partition, with all secondary partitions active. Sign on to DST.
 - b. From the DST main menu, select option 11 (Work with system partitions), and press **Enter**.
 - c. From the primary partition's console, select option 4 (Recover configuration data).
 - d. Select option 4 (Clear nonreporting logical partitioning resources), and press **Enter**.
 - e. To confirm the deletion of nonreporting resources, press F10 (Clear nonreporting resources).
2. **Stop.** At this point the old bus numbers and IOPs should not be seen in the LPAR Configuration I/O Resource displays. If old bus numbers are still displayed, then repeat the previous step after verifying the following:

- All OS/400 partitions are powered on and at DST or higher.
This means that all partitions must be powered on and the IPL has stopped at a dedicated service tools (DST) or at the OS/400 sign-on display.
- No partitions are displaying any system reference codes (SRCs) (a partition reporting a Failure/Attention SRC causes the clear nonreporting logical partitioning resources to fail).

If old bus numbers or IOPs cannot be removed by following the procedure in step 1, contact IBM software support for assistance.

3. Change the secondary partitions from HOLD to the original state, changed in step 11 of the “Document and prepare the server” on page 23 procedure. **Do not restart the server at this time.**
4. On the primary partition and each secondary partition, remove nonreporting hardware entries using the Hardware Service Manager (HSM). Identify and record hardware resources that are switched among partitions. If you have hardware resources on the converted expansion unit that are switched among partitions, you may need to reassign or rename these resources on each partition that uses these resources.
 - a. From the DST main menu, select option 7 (Start a Service Tool), and press **Enter**.
 - b. Select option 4 (Hardware Service Manager (HSM)) and press **Enter**.
 - c. Select option 4 (Failed and nonreporting hardware resources) and press **Enter**.
 - d. Use option 4 (Remove) to remove any failed or nonreporting resources. If you receive a message saying, No failed or nonreporting logical hardware resources found, skip to step 4f.
Attention: Any hardware problems must be resolved before continuing. I/O resources that are nonreporting because they are switched between partitions and currently are not owned by the partition you are working in should not be removed at this time. Careful planning is required when switched I/O is involved.
 - e. Confirm removal of failed or nonreporting resources.
 - f. If printing capabilities are available to you in DST, press F6 (Print) to print the system configuration list.

Rename resources for each partition

Use the following instructions to set partition resource names to previous values. For each partition, perform the following steps:

1. Access dedicated service tools (DST) and sign on.
2. From the DST main menu, select option 7 (Start a Service Tool), and press **Enter**.
3. Select option 4 (Hardware Service Manager (HSM)) and press **Enter**.
4. From the main Hardware Service Manager (HSM) display in DST, select option 2 (Logical hardware resource), and press **Enter**.
5. Select option 1 (System Bus Resources) and press **Enter**.
6. For each new bus on this partition, perform the following steps on the Logical Hardware Resource on System Bus display:
 - a. Fill in the following fields:
 - **System bus(es) to work with** _____ (Enter the new bus number assigned to the partition.)
 - **In the Subset by** _____ (Enter the default value *ALL for the field.)
 - b. Press **Enter**. Only the resources for the selected bus are now displayed.
 - c. Type option 9 (Resources associated with IOP) next to an IOP.
 - d. Determine the resource names to be changed from the CUll document **Resource conversions** (form A880) and the system configuration list printouts (from HSM) for each partition.
 - e. Change the resource names by typing option 2 (Change detail) for each resource that requires renaming.
 - f. Repeat step 6c through 6e for each IOP on the selected bus.

- g. Repeat all of step 6 for each new bus assigned to this partition.
7. Repeat step 6a through 6g above for each partition on the server.
8. Return the system value settings to their original values (as recorded on the “Change the system value settings” on page 26 topic) on both the primary partition and each secondary partition by completing the following steps:
 - a. Ensure all partitions are in manual mode.
 - b. Exit DST on the primary partition and on each secondary partition.
 - c. Select option 1 (IPL) for the primary partition and each secondary partition.
 - d. At the IPL options display, set the Define or Change System at IPL field to Yes.
 - e. On the Define or change system display, select option 3 (System Value Commands) and press **Enter**.
 - f. On the System Value Commands display, select option 2 (Change System Value) and press **Enter**.
 - g. On the Change System Value display, enter the following values:
 - System Value ___QIPLTYPE_____
 - New Value ___'0'_____
 - h. Press F3 twice to continue the IPL.
 - i. Once the IPL has completed, enter the Work With System Values (WRKSYSVAL) command on a command line for the system values QAUTOCFG and QPFRADJ to work with the settings.
 - j. Restore the original setting for each of the following system values:
 - QAUTOCFG
 - QPFRADJ

Note: For information about how to work with system values, see Compare and update system values.

Congratulations! You have successfully converted your expansion unit.

Upgrade the server model

This topic describes how to upgrade to a new server model. Before you begin these tasks, be sure you have completed the following tasks:

1. “Plan the upgrade” on page 12.
2. “Upgrade to OS/400 Version 5 Release 2” on page 20.
You must install the latest resave and cumulative fix (PTF) package of OS/400 V5R2 before you upgrade to a new server model. If you are upgrading a partitioned server, you must install this resave and cumulative fix (PTF) package of OS/400 V5R2 on all partitions of the source server. For more information, see Info APAR II13365 on the iSeries and AS/400 Technical Support Web site.

Then to upgrade to a new server model, follow these steps:

1. **Prepare to upgrade the server model.**
Choose the procedure that is appropriate for your environment:
 - For nonpartitioned servers, see “Prepare to upgrade the server model” on page 31.
 - For partitioned servers, see “Prepare to upgrade the partitioned server model” on page 33.
2. **“Complete the server model upgrade” on page 36.**
Perform the necessary resource management tasks and prepare the target server for production.

To view or download the PDF version of this topic, select one of the following:




- Upgrade the server model (about 93 KB)
- Upgrade the partitioned server model (about 97 KB)

To view or print other topics related to Upgrades, see “Print this topic” on page 3.

Prepare to upgrade the server model

This topic describes how to prepare for the server upgrade. Before you begin these tasks, be sure you have completed the necessary “Plan the upgrade” on page 12. Then to prepare for the server upgrade, perform the following tasks:

Prepare for the upgrade

1. Obtain and review the preventive service planning (PSP) information.
The PSP document for V5R2 upgrades is SF98166. Review this document for the most current information on conditions that could affect your upgrade.
2. Review the Memo to Users .
This document provides information about software and hardware changes that could potentially affect your system operations.
3. View the Migration Web site .
This Web site includes information about the current migration and upgrade paths, a link to relevant Redbooks, and information about converting from SPD to PCI-attached I/O.
4. Review the *Performance Capabilities Reference* available on the Performance Management  Web site.
This reference provides information about server performance that is useful for customers who plan to upgrade their servers and software.
5. When your order arrives, contact the service representative and schedule the server model upgrade.


Prepare the source server

Ensure that you have installed latest resave and cumulative fix (PTF) package of OS/400 V5R2 on the source server.

For more information, see Info APAR II13365 on the iSeries and AS/400 Technical Support Web site. For information on installing OS/400, see “Upgrade to OS/400 Version 5 Release 2” on page 20.

1. Install fixes (program temporary fixes or PTFs).
Use the information in this topic to put fixes on the source server before upgrading to the target server.
2. Verify that all applications are running.
3. Perform device configuration cleanup as follows:
 - a. Use the Work with Line Descriptions command (WRKLIND) to view and delete unused lines and line descriptions.
 - b. Use the Work with Device Descriptions command (WRKDEV) to delete unused device descriptions.

Note: You can use these commands to view and verify that all of the descriptions listed are in use. If you are sure one is not in use, delete it. If you are not sure, you should leave it.

4. “Remove failed or nonreporting resources” on page 25 that are no longer associated with existing hardware.
5. Logically remove any configured disk units that will be removed during the upgrade, such as disk units in SPD-based expansion units that will be removed (not converted) during the server upgrade. For information, see “How to Remove a Disk Unit from an Auxiliary Storage Pool” in Chapter 20. “Working with Auxiliary Storage Pools” of the Backup and Recovery Guide .

Note: Disk units that are not physically removed may be inadvertently added back into the configuration during an IPL.

6. Ensure that your console is set up and ready.

7. Use the Retrieve Configuration Source (RTVCFGSRC) command to build a source file member for the specified existing line, controller, and device descriptions. You will need this configuration source if any configuration objects must be manually changed or re-created.
8. Gather performance data.
You can use the performance data you collect from the source server as a base with which to compare the target server's performance after the upgrade is complete.
9. Save the entire server using GO SAVE option 21 on a tape drive that is compatible with the tape drive on the target server.
This is vital for recovery should you experience errors when upgrading the server.

To determine if your tape drives are compatible, see the Storage Solutions Web site  .

Document the source server

To ensure that the source server is fully documented before the upgrade, perform these tasks:

1. Use one of the following to document the source server:
 - If your country or region supports the Work with Order Information Files (WRKORDINF) command and if the installed server is capable of using Electronic Customer Support, do the following:
 - a. On the command line, enter WRKORDINF.
 - b. On the next display, type option 1 (Send to IBM) next to QMA n where n is the serial number of the server and press **Enter**.
 - If you cannot use the Work with Order Information Files (WRKORDINF) command, do the following:
 - a. On the command line, enter DSPSFWRSC *PRINT.
 - b. Print the spooled file.
2. "Print disk configuration status" on page 15 of the server.
3. "Print parity set configuration and status" on page 15.
You can use this information to analyze and plan for disk unit configuration and protection. It can also be used to correct any problems that occur during the upgrade.
4. "Display, verify, and print hardware resource information" on page 16.
Use the information in this topic to record the hardware resource information so that you can perform the necessary resource management after the upgrade is complete.
5. Print the system configuration list.
This printout provides details of your current server configuration.
6. Print the status of all fixes (program temporary fixes or PTFs) on the source server by entering the following command:

```
DSPPTF LICPGM(*ALL) OUTPUT(*PRINT)
```


You can use this information to verify that you have the most current fixes on the source server.
7. Record the IPL type and mode of the source server so you can return the server to this mode after the upgrade is complete.
 - IPL type = _____
 - IPL mode = _____

Prepare for the service representative

1. Record the user IDs and passwords for the service representative to use.
2. Gather the following printouts for the service representative:
 - System configuration list printouts
 - Disk configuration status printouts
 - Parity set configuration and status printout
 - Device descriptions printout

- Controller descriptions printout
 - PTF level printout
 - Description label locations printout
3. Record the setting for each of the following system values:
- QAUTOCFG = ____
 - QIPLTYPE = ____
 - QPFRADJ = ____

Then change the values of these settings to the following:

- QAUTOCFG = 0
- QIPLTYPE = 2
- QPFRADJ = 2

For information on working with system values, see *Compare and update system values*.




4. Turn the server over to the service representative.
This includes giving the service representative the printouts, the user IDs, and passwords that you have prepared.

Now that you have finished preparing for the server upgrade, the next step is for the service representative to “Complete the server model upgrade” on page 36.

Prepare to upgrade the partitioned server model

This topic describes how to prepare for the server upgrade. Before you begin these tasks, be sure you have completed the necessary “Plan the upgrade” on page 12. Then to prepare for the server upgrade, perform the following tasks:

Prepare for the upgrade

1. Obtain and review the preventive service planning (PSP) information.
The PSP document for V5R2 upgrades is SF98166. Review this document for the most current information on conditions that could affect your upgrade.
2. Review the Memo to Users .
This document provides information about software and hardware changes that could potentially affect your system operations.
3. View the Migration Web site .
This Web site includes information about the current migration and upgrade paths, a link to relevant Redbooks, and information about converting from SPD to PCI-attached I/O.
4. Review the *Performance Capabilities Reference* available on the Performance Management  Web site.
This reference provides information about server performance that is useful for customers who plan to upgrade their servers and software.
5. When your order arrives, contact the service representative and schedule the server model upgrade.

Prepare the source server


Ensure that you have installed the latest resave and cumulative fix (PTF) package of OS/400 V5R2 on all partitions of the source server.

For information on the resave and cumulative fix (PTF) package, see Info APAR II13365 on the iSeries and AS/400 Technical Support Web site. For information on installing OS/400, see “Upgrade to OS/400 Version 5 Release 2” on page 20.

1. Install fixes (program temporary fixes or PTFs) on all partitions of the source server.
Use the information in this topic to put fixes on all partitions of the source server before upgrading to the target server.
2. Verify that all applications are running.
3. Perform device configuration cleanup as follows:
 - Use the Work with Line Descriptions command (WRKLIND) to view and delete unused lines and line descriptions for all partitions.
 - Use the Work with Device Descriptions command (WRKDEV D) to delete unused device descriptions for all partitions.

Note: You can use these commands to view and verify that all of the descriptions listed are in use. If you are sure one is not in use, delete it. If you are not sure, you should leave it.

4. Assign all unassigned I/O resources to active partitions.
For information on assigning resources to a partition, see Perform dynamic movement of resources.
5. If the target server has fewer processors than the source server, you can adjust the configuration on the source server to reflect the target server's processing resources. For information, see Dynamic movement of processing power.
6. If necessary, you can adjust the minimum memory values per partition. For information, see Dynamic movement of memory.
7. For each partition, "Remove failed or nonreporting resources" on page 25 that are no longer associated with existing hardware.
8. Logically remove any configured disk units that will be removed during the upgrade, such as disk units in SPD-based expansion units that will be removed (not converted) during the server upgrade. For information, see "How to Remove a Disk Unit from an Auxiliary Storage Pool" in Chapter 20.

"Working with Auxiliary Storage Pools" of the Backup and Recovery Guide .

Note: Disk units that are not physically removed may be inadvertently added back into the configuration during an IPL.

9. Ensure that your console is set up and ready.
10. Use the Retrieve Configuration Source (RTVCFG SRC) command for each partition to build a source file member for the specified existing line, controller, and device descriptions. You will need this configuration source if any configuration objects must be manually changed or re-created.
11. Gather performance data.
You can use the performance data you collect from the source server as a base with which to compare the target server's performance after the upgrade is complete.
12. Save each partition of the server using GO SAVE option 21 on a tape drive that is compatible with the tape drive on the target server.
This is vital for recovery should you experience errors when upgrading the server.

To determine if your tape drives are compatible, see the Storage Solutions Web site .

Document all partitions of the source server

To ensure that the source server is fully documented before the upgrade, perform these tasks:

1. Use one of the following to document each partition of the source server:
 - If your country or region supports the Work with Order Information Files (WRKORDINF) command and if the installed server is capable of using Electronic Customer Support, do the following:
 - a. On the command line, enter WRKORDINF.
 - b. On the next display, type option 1 (Send to IBM) next to QMA $nnnnn$ where $nnnnn$ is the serial number of the server and press **Enter**.
 - If you cannot use the Work with Order Information Files (WRKORDINF) command, do the following:
 - a. On the command line, enter DSPSFWRSC *PRINT.

- b. Print the spooled file.
2. "Print disk configuration status" on page 15 from each partition of the server. Be sure to record the serial number of the load-source disk unit for each partition.
3. "Print parity set configuration and status" on page 15 from each partition of the server. Be sure to mark each printout for the partition it represents.
You can use this information to analyze and plan for disk unit configuration and protection. It can also be used to correct any problems that occur during the upgrade.
4. "Display, verify, and print hardware resource information" on page 16 for each partition.
Use the information in this topic to record the hardware resource information so that you can perform the necessary resource management after the upgrade is complete.
5. From the primary partition, Print the system configuration for logical partitions.
This gives you specific partition information such as system resources, processors, main memory, and any unique system values associated with partitions.
6. Using the system configuration printout, record the partition owner and serial number of each IOP on Bus 2.
These IOPs may not be on Bus 2 after the upgrade is complete. If not, you can use this information to reassign the IOPs to the correct partitions.
7. Print the status of all fixes (program temporary fixes or PTFs) for each partition of the source server by entering the following command:

```
DSPPTF LICPGM(*ALL) OUTPUT(*PRINT)
```

You can use this information to verify that you have the most current fixes on the source server.
8. Record the IPL type and mode of the source server so you can return the server to this mode after the upgrade is complete.
 - IPL type = _____
 - IPL mode = _____

Prepare for the service representative

1. Record the user IDs and passwords for the service representative to use.
2. Gather the following printouts for the service representative:
 - System configuration list printouts
 - Disk configuration status printouts
 - Parity set configuration and status printout
 - Device descriptions printout
 - Controller descriptions printout
 - PTF level printout
 - Description label locations printout
 - Partition information printouts
 - LPAR Validation Tool output
3. For each secondary partition, record the IPL System Action and then set the IPL System Action to HOLD as follows:
 - a. From the primary partition, enter STRSST to start system service tools (SST) and sign on to SST.
Note: To use system service tools, you need a valid service tools user ID.
 - b. From the SST main menu, select option 5 (Work with system partitions), and press **Enter**. The Work with System Partitions display appears.
 - c. Use the Work with System Partitions display to select each secondary partition. For each secondary partition, record the IPL System Action and then set the IPL System Action to HOLD.
4. On each partition of the server, record the setting for each of the following system values:
 - QAUTOCFG = ____

- QIPLTYPE = ____
- QPFRADJ = ____

Then change the values of these settings on each partition of the server to the following:

- QAUTOCFG = 0
- QIPLTYPE = 2
- QPFRADJ = 2

For information on working with system values, see Compare and update system values.

5. Turn the server over to the service representative to perform the server upgrade.
This includes giving the service representative the printouts, the user IDs, and passwords that you have prepared.

Now that you have finished preparing for the server upgrade, the next step is to “Complete the server model upgrade”.

Complete the server model upgrade

This topic describes which tasks of the server upgrade the service representative performs, which tasks you perform with the service representative, and which tasks you need to perform. IBM offers fee-based services in which the service representative can perform additional upgrade tasks.

Before you begin these tasks, be sure you have performed the necessary preparation using the procedure that is appropriate for your environment:

- For nonpartitioned servers, see “Prepare to upgrade the server model” on page 31.
- For partitioned servers, see “Prepare to upgrade the partitioned server model” on page 33.

To complete the server upgrade, perform these tasks:


1. “Perform the server model upgrade”
2. **Prepare the server for production.**
Choose the procedure that is appropriate for your environment:
 - For nonpartitioned servers, see “Prepare the server for production” on page 37.
 - For partitioned servers, see “Prepare the partitioned server for production” on page 39.

Perform the server model upgrade

The service representative performs the following tasks to upgrade the server:

- Verifies that your preparation is complete
- Performs the server upgrade
- Verifies that all server components are functional
- Prepares any parts that need to be returned to IBM
- Performs any contracted relocation or rearrangement services prior to returning the server to you
- Provides you with the following information, which you will need to return the server to production:
 - LPAR Validation Tool output
Note: This is only used for a partitioned server.
 - Disk configuration printouts
 - Parity set configuration printout
 - Description label locations printout
 - System configuration list printouts (from HSM)
 - Partition information printouts from the primary partition
Note: This is only used for a partitioned server.

- List of hardware resources that were replaced or moved during the conversion (Resource Conversions form A880 or equivalent list), provided by the IBM service representative
- Cable migration worksheet (form A805) for each partition (provided by the service representative)
- Performs normal cleanup tasks

IBM offers a fee-based service for additional upgrade tasks. For more information, select **Migration** on the Integrated Technology Services  Web site.

Now that the server upgrade is complete, your next step is to “Prepare the server for production”.

Prepare the server for production



To finish the resource management and prepare your new server for production, perform the following steps:


1. Continue the initial program load (IPL) by selecting option 1 (Perform an IPL) from the IPL or Install the System display.

Notes:

 - a. You might see the Add All Disk Units to the System ASP display. You can add the disk units later in this procedure.
 - b. You might see the system reference code (SRC) A900 2000 on the control panel display of the system unit. Or you might receive message CPF0975 Console did not vary on on the console display. This SRC and message appear if the QIPLTYPE is set to 2 or if there is no device description for the console display. This SRC and message are normal during the upgrade procedure. The SRC will disappear when you perform a normal IPL later in the upgrade procedure.
If no workstation on your server is operational when you receive SRC A900 2000, go to “System reference code (SRC) A900 2000 recovery” on page 39.
2. Sign on to the server as the security officer using the QSECOFR user profile.
3. At the IPL Options display, enter the correct date and time. Verify that the following values are set as indicated:


```
Start print writers = N
Start to system to restricted state = Y
Define or change system at IPL = Y
```
4. At the Define or Change the System at IPL display, select option 3 (System value commands).
5. At the System Value Commands display, select option 3 (Work with system values).
6. Use the Work System Value Commands display to restore the system values to the settings you recorded in step 3 of the Prepare for the service representative procedure in the “Prepare to upgrade the server model” on page 31.
7. After the IPL completes, use the Work with Configuration Status (WRKCFGSTS) command with parameters *LIN *ALL to ensure all communications lines are varied off.
8. Use the Work with Configuration Status (WRKCFGSTS) command with parameter *DEV to display a list of devices. Note that the console is assigned to the QCTL controller. Vary off all devices except the display station that you are using for the console.
9. Use the Work with Configuration Status (WRKCFGSTS) command with parameters *CTL *ALL to vary off all controllers.
10. Find the label location information for the source server. Your service representative should have returned this to you.
On this worksheet, the service representative indicates controllers and devices that are in different locations than they were on your source server. You must use this information to “Fix hardware resource names” on page 18 to be able to access the devices on your server.

11. Set the server to IPL type B and Normal operating mode.
To find out how to set these values, see Change your system IPL from the system control panel.
12. Once the server is set to IPL type B and Normal operating mode, follow these steps to stop and start the server:
 - a. Type PWRDWNSYS on the command line and press **F4** (Prompt).
 - b. Make sure that you select these options for the PWRDWNSYS command:
 - **How to end:** *CNTRLD
 - **Delay time, if *CNTRLD:** 3600 (use the default value, in seconds, or the value that you consider appropriate given your software and system settings)
 - **Restart after power down:** *YES
 - **IPL Source:** *PANEL
13. If SRC A900 2000 appears on the control panel when the IPL completes and you are using Operations Console, follow these steps:
 - a. Perform an IPL in Manual operating mode on the server to arrive at the dedicated service tools (DST) menu.
To find out how to set the server to manual mode, see Change your system IPL from the system control panel.
 - b. Then, from the DST main menu, follow these steps to set the console mode system value to Operations Console:
 - 1) Select option 5 (Work with DST environment) and Press **Enter**.
 - 2) Select option 2, (System devices) and Press **Enter**.
 - 3) Select **Console mode** and Press **Enter**.
 - 4) Depending on your Operations Console configuration, select either **Operations Console (LAN)** or **Operations Console (Direct)** and Press **Enter**.
 - 5) Exit DST.
 - c. Continue the IPL to sign on.
This normal IPL should clear SRC A900 2000.
14. If you want to start device parity on any nonconfigured disk units, do it now. To learn how, see "Starting Device Parity Protection" in Chapter 21. "Working with Device Parity Protection" of the Backup and Recovery Guide  .
15. Perform disk unit management to configure and protect the disks on your server. To do this, you can use the Work with Disk Units option from the Dedicated Service Tools display. To learn how, see Chapter 19. "Procedures for Configuring Disks and Disk Protection" of the Backup and Recovery Guide  .
16. Save the entire server using GO SAVE option 21.
17. Generate reports of the hardware and configuration objects by issuing the following commands:


```
DSPHDWRSC TYPE(*LWS) OUTPUT(*PRINT)
DSPHDWRSC TYPE(*STG) OUTPUT(*PRINT)
DSPHDWRSC TYPE(*CMN) OUTPUT(*PRINT)
DSPHDWRSC TYPE(*PRC) OUTPUT(*PRINT)
DSPPTF LICPGM(*ALL) OUTPUT(*PRINT)
```
18. Print a new system configuration list.
19. Install any additional software that was part of the original solution plan.
If you upgraded to a Model 810, 825, 870, or a new Model 890, you may have received additional software as a part of a package feature. For information on package features, see the iSeries Hardware  Web site.
20. If you upgraded to a Model 810, 825, 870, or a new Model 890 (excluding Model 890 with feature processor cards 0197, 0198, 2487, or 2488), you may need to update the usage limit for OS/400.

For information on updating the usage limit, see Processor pricing on certain V5R2 models in the Memo to Users. For information on processor pricing, see Info APAR II13365 on the iSeries and AS/400 Technical Support Web site.

21. Resume normal operations and verify that all applications run properly.
22. Tune server performance.

Congratulations! You have upgraded your server.

System reference code (SRC) A900 2000 recovery

If no workstation on your server is operational, follow these steps:

1. Use the control panel to change your server IPL to manual mode.
2. Use the power pushbutton on the control panel to force power down on your server.
3. Perform an IPL on your server.
4. Sign on as QSECOFR.
5. On the IPL or Install the System display, select option 1 (Perform an IPL).
6. On the IPL Options display, specify Y for the Define or change the system at IPL prompt.
7. On the Define or Change the System at IPL display, select option 3 (System value commands).
8. On the System Value Commands display, select option 3 (Work with System Values).
9. On the Work with System Values display, type QIPLTYPE in the Position to field.
10. In the Option column for the QIPLTYPE system value, type 2 (Change).
11. On the Change System Value display for the QIPLTYPE system value, type 2 (Attended IPL, console in debug mode).
12. Press **Enter**. You see the Work with System Values display.
13. Press F3 twice to return to the Define or Change Your System display.
14. Press F3 (Exit and continue IPL) to continue your IPL.

Prepare the partitioned server for production

To finish the resource management and prepare your new server for production, perform the following steps:

1. Continue the initial program load (IPL) by selecting option 1 (Perform an IPL) from the IPL or Install the System display.



Notes:

- a. You might see the Add All Disk Units to the System ASP display. You can add the disk units later in this procedure.
 - b. You might see the system reference code (SRC) A900 2000 on the control panel display of the system unit. Or you might receive message CPF0975 Console did not vary on on the console display. This SRC and message appear if the QIPLTYPE is set to 2 or if there is no device description for the console display. This SRC and message are normal during the upgrade procedure. The SRC will disappear when you perform a normal IPL later in the upgrade procedure.
If no workstation on your server is operational when you receive SRC A900 2000, go to "System reference code (SRC) A900 2000 recovery".
2. Sign on to the server as the security officer using the QSECOFR user profile.
 3. At the IPL Options display, enter the correct date and time. Verify that the following values are set as indicated:
Start print writers = N
Start to system to restricted state = Y
Define or change system at IPL = Y
 4. At the Define or Change the System at IPL display, select option 3 (System value commands).


5. At the System Value Commands display, select option 3 (Work with system values).
6. Use the Work System Value Commands display to restore the system values to the settings you recorded in step 4 of the Prepare for the service representative procedure in the “Prepare to upgrade the partitioned server model” on page 33.
7. After the IPL completes, use the Work with Configuration Status (WRKCFGSTS) command with parameters *LIN *ALL to ensure all communications lines are varied off.
8. Use the Work with Configuration Status (WRKCFGSTS) command with parameter *DEV to display a list of devices. Note that the console is assigned to the QCTL controller. Vary off all devices except the display station that you are using for the console.
9. Use the Work with Configuration Status (WRKCFGSTS) command with parameters *CTL *ALL to vary off all controllers.
10. Find the label location information for the source server. Your service representative should have returned this to you. On this worksheet, the service representative indicates controllers and devices that are in different locations than they were on your source server. You must use this information to “Fix hardware resource names” on page 18 to be able to access the devices on your server.
11. Perform a normal IPL as follows:

Primary partition on a partitioned server	Secondary partition on a partitioned server
<p>Follow these steps:</p> <ol style="list-style-type: none"> a. Verify that all of the secondary partitions are powered down. b. Make sure that the server is set to IPL type B and Normal operating mode before performing the power down and subsequent IPL of the server. To find out how to set these values, see Change your system IPL from the system control panel. c. Once the server is set to IPL type B and Normal operating mode, follow these steps: <ol style="list-style-type: none"> 1) Type PWRDWN SYS on the command line and press F4 (prompt). 2) Make sure that you select these options for the PWRDWN SYS command: <ul style="list-style-type: none"> • How to end: *CNTRLD • Delay time: if *CNTRLD, 3600 (use the default value, in seconds, or the value that you consider appropriate given your software and system settings) • Restart after power down: *YES • IPL Source: *PANEL <p>For information about powering down and restarting a partitioned server, see Restart and power down a system with logical partitions.</p>	<p>After successfully performing a normal IPL of the primary partition, follow these steps:</p> <ol style="list-style-type: none"> a. Make sure that each secondary partition is set to IPL type B and Normal operating mode b. Power down and perform on IPL on the partitions. <p>For instructions on setting the IPL mode, powering down, and performing an IPL on secondary partitions, see Restart and power down a system with logical partitions.</p>

12. If SRC A900 2000 appears on the control panel when the IPL completes and you are using Operations Console, follow these steps:
 - a. Perform an IPL in Manual operating mode on the server to arrive at the dedicated service tools (DST) menu. To find out how to set the server to manual mode, see Restart and power down a system with logical partitions.
 - b. Then, from the DST main menu, follow these steps to set the console mode system value to Operations Console:
 - 1) Select option 5 (Work with DST environment) and press **Enter**.

- 2) Select option 2 (System devices) and press **Enter**.
 - 3) Select **Console mode** and press **Enter**.
 - 4) Depending on your Operations Console configuration, select either **Operations Console (LAN)** or **Operations Console (Direct)** and press **Enter**.
- c. Use the information recorded in step 7 under **Document all partitions of the source server** of "Prepare to upgrade the partitioned server model" on page 33 to identify the IOPs that were on Bus 2 prior to the upgrade. Follow these steps to assign the IOPs to the correct partition:
- 1) From the DST main menu, select option 11 (Work with System Partitions) and press **Enter**.
 - 2) From the Work with Partitions display, type option 3 (Work with partition configuration) and press **Enter**.
 - 3) Use option 3 (Add I/O resources) on the Work with Partition Configuration display to assign the IOPs to the correct partition.
 - 4) Exit DST.
- d. Continue the IPL to sign on. This normal IPL should clear SRC A900 2000.
13. If you want to start device parity on any nonconfigured disk units, do it now. To learn how, see "Starting Device Parity Protection" in Chapter 21. "Working with Device Parity Protection" of the Backup and Recovery Guide  .
 14. Perform disk unit management to configure and protect the disks on your server. To do this, you can use the Work with Disk Units option from the Dedicated Service Tools display. To learn how, see Chapter 19. "Procedures for Configuring Disks and Disk Protection" of the Backup and Recovery Guide  .
 15. Save each partition of the server by using GO SAVE option 21.
 16. Generate reports of the hardware and configuration objects (for each partition) by issuing the following commands:


```
DSPHDWRSC TYPE(*LWS) OUTPUT(*PRINT)
DSPHDWRSC TYPE(*STG) OUTPUT(*PRINT)
DSPHDWRSC TYPE(*CMN) OUTPUT(*PRINT)
DSPHDWRSC TYPE(*PRC) OUTPUT(*PRINT)
DSPPTF LICPGM(*ALL) OUTPUT(*PRINT)
```
 17. Print the new system configuration for logical partitions.
 18. Install any additional software that was part of the original solution plan.

If you upgraded to a Model 810, 825, 870, or a new Model 890, you may have received additional software as a part of a package feature. For information on package features, see the iSeries Hardware  Web site.
 19. If you upgraded to a Model 810, 825, 870, or a new Model 890 (excluding Model 890 with feature processor cards 0197, 0198, 2487, or 2488), you may need to update the usage limit for OS/400 for each partition.

For information on updating the usage limit, see Processor pricing on certain V5R2 models in the Memo to Users. For information on processor pricing, see Info APAR II13365 on the iSeries and AS/400 Technical Support Web site.
 20. Resume normal operations and verify that all applications run properly.
 21. Tune server performance.

Congratulations! You have upgraded your hardware.

Scenarios: Upgrades

Review the following scenarios to become familiar with the technical and configuration details involved with each of these upgrades:

- **“Upgrade scenario: Model 270 to Model 810”**
In this scenario, you have a Model 270 server and you want to upgrade to a Model 810 server.
- **“Upgrade scenario: Model 720 or 730 to Model 825”**
In this scenario, you have a Model 720 or 730 server and you want to upgrade to a Model 825 server.
- **“Upgrade scenario: Model 820 to Model 825” on page 43**
In this scenario, you have a Model 820 server with a Migration Tower and you want to upgrade to a Model 825 server.
- **“Upgrade scenario: Model 740 to Model 870 or 890” on page 43**
In this scenario, you have a Model 740 server with SPD-attached hardware, you are running V4R5, and you want to upgrade to a Model 870 or 890 server.
- **“Upgrade scenario: Partitioned Model 740 to Model 870 or 890” on page 44**
In this scenario, you have a Model 740 server and an expansion unit that contains a mixture of disk units that can and cannot be converted. You want to upgrade to a Model 870 or 890 server.
- **“Upgrade scenario: Model 840 to Model 870 or 890” on page 45**
In this scenario, you have a Model 840 server with a migration tower with SPD-attached hardware, you are running V4R5, and you want to upgrade to a Model 870 or 890 server.
- **“Upgrade scenario: Partitioned Model 830 or 840 to Model 870 or 890” on page 45**
In this scenario, you have a Model 830 or 840 server with partitions that are running V4R5 or V5R1. You have a mixture of SPD-attached and PCI-attached hardware and a large quantity of SPD-attached I/O. You want to upgrade to a Model 870 or 890 server.

Upgrade scenario: Model 270 to Model 810

In this scenario, you have a Model 270 server and you want to upgrade to a Model 810 server.

What to do:

1. Plan for the upgrade.
Before you upgrade your server, you should plan for the following:
 - SPD-attached hardware replacement
 - Physical requirements
 - Software upgrade
 - Console strategy
2. Upgrade to OS/400 Version 5 Release 2.
You must install the latest resave and cumulative fix (PTF) package of OS/400 V5R2 before you upgrade to a new server model. For more information, see Info APAR II13365 on the iSeries and AS/400 Technical Support Web site.
3. Upgrade your Model 270 server to a Model 810 server.

Upgrade scenario: Model 720 or 730 to Model 825


In this scenario, you have a Model 720 or 730 server and you want to upgrade to a Model 825 server.

What to do:

1. Plan for the upgrade.
Before you upgrade your server, you should plan for the following:
 - SPD-attached hardware replacement
 - Physical requirements
 - Software upgrade
 - Console strategy

2. Upgrade to OS/400 Version 5 Release 2.
You must install the latest resave and cumulative fix (PTF) package of OS/400 V5R2 before you upgrade to a new server model. For more information, see Info APAR II13365 on the iSeries and AS/400 Technical Support Web site.
3. In order to maintain your resident data and applications through the server upgrade, you must either convert individual disk units or the expansion units that contain those disk units so that all configured disk units are attached to the target server.

Note: You may not be able to convert all of the disk units on your Model 720 or 730 server. You will need to analyze your configuration to determine what you cannot convert and then perform the appropriate procedures to remove those disk units both from the configuration and from the server. Disk units that are not physically removed from the server may be inadvertently added back into the configuration during an IPL.

For information about replacing your SPD-attached hardware, see the hardware topic of the iSeries Upgrade Planning  Web site.

Upgrade scenario: Model 820 to Model 825

In this scenario, you have a Model 820 server with a Migration Tower and you want to upgrade to a Model 825 server.

What to do:

1. Plan for the upgrade.
Before you upgrade your server, you should plan for the following:
 - SPD-attached hardware replacement
 - Physical requirements
 - Software upgrade
 - Console strategy
2. Upgrade to OS/400 Version 5 Release 2.
You must install the latest resave and cumulative fix (PTF) package of OS/400 V5R2 before you upgrade to a new server model. For more information, see Info APAR II13365 on the iSeries and AS/400 Technical Support Web site.
3. Convert your 5065 or 5066 expansion units to 5074 and 5079 expansion units.
4. Upgrade your Model 820 server to a Model 825 server.

Upgrade scenario: Model 740 to Model 870 or 890

In this scenario, you have a Model 740 server and an expansion unit. They contain a mixture of disk units, some that can be converted and some that cannot be converted. You want to upgrade to a Model 870 or 890 server.

You need to analyze your configuration to determine what disk units you cannot convert and then perform the appropriate procedures to remove those disk units both from the configuration and from the server. Disk units that are not physically removed from the server may be inadvertently added back into the configuration during an IPL.

For this scenario, consider the following:

- When you plan your upgrade, be sure to consider data protection. For example, if you are removing some but not all disk units, you may not be able to preserve your redundant array of independent disks (RAID) sets.
- You may also need to add an expansion unit to increase storage capacity so that you can move data from disk units that cannot be converted.

- You can use the Disk migration while active option of the STRASPBAL (Start ASP Balance) command to reduce the down time associated with removing a disk unit. This option allows you to move data from specified disk units while your server is running. For information, see the STRASPBAL (Start ASP Balance) command.
- You must have a nonconfigured disk unit that can either be converted or transferred to the target server. The IBM service representative can then transfer your load-source data to this disk unit.
- IBM services are available to help you plan for and remove disk units that cannot be converted. The IBM service representative moves the load-source disk unit and the load-source data. Any other services may be billable.

What to do:

You can choose one of these options to remove disk units that cannot be converted:

- Move data from disk units that cannot be converted. Once you have moved the data, remove these disk units from the configuration. The risk with this option is that your data is unprotected while you are removing disk units that cannot be converted.
- Remove disk units from the disk pool (also known as the auxiliary storage pool (ASP)) and then add the disk units that can be converted back into the configuration. The risks with this option are the time it takes and the need for enough storage capacity to remove all disk units.
- Move data from disk units that cannot be converted. Then remove all disk units from the configuration, convert the disk units that can be converted, and add them into the configuration during the upgrade to the Model 870 or 890 server.
- Perform a save and restore operation where you save your entire server, remove the disk units that cannot be converted, and then restore your server.

Note: It is recommended that you have two copies of the backup media.

Upgrade scenario: Partitioned Model 740 to Model 870 or 890

In this scenario, you have a Model 740 server with SPD-attached hardware, you are running V4R5, and you want to upgrade to a Model 870 or 890 server.

What to do:

1. Plan for the upgrade.
Before you upgrade your server, plan for the following:
 - SPD-attached hardware replacement
 - Physical requirements
 - Software upgrade
 - Console strategy
2. Upgrade to OS/400 Version 5 Release 2.
You must install the latest resave and cumulative fix (PTF) package of OS/400 V5R2 on all partitions of your source server before you upgrade to a new server model. For information on the resave and cumulative fix (PTF) package, see Info APAR II13365 on the iSeries and AS/400 Technical Support Web site. For information on installing fixes on a partitioned server, see the Install fixes on systems with logical partitions topic.
3. In order to maintain your resident data and applications through the server upgrade, you must either convert individual disk units or the expansion units that contain those disk units so that all configured disk units are attached to the target server. You must also have a nonconfigured disk unit that can either be converted or transferred to the target server. The service representative can then transfer your load source data to this disk unit.

Note: You may not be able to convert all of the disk units on your Model 740 server. You will need to analyze your configuration to determine what you cannot convert and then perform the appropriate procedures to remove those disk units both from the configuration and from the server. Disk units that are not physically removed from the server may be inadvertently added back into the configuration

during an IPL.

For information about replacing SPD-attached hardware, see the hardware section of the iSeries

Upgrade Planning  Web site.


4. Replace all other expansion units.
5. Upgrade your Model 740 server to a Model 870 or 890 server.

Note: IBM offers its customers the option of running both the source and target servers side by side for a period of time. You can use that time to move your data, expansion units, and partitions to the target server. This option is available for purchase as RPQ 847156 and RPQ 845158. For information regarding the terms and conditions of this request for price quotation (RPQ), contact your marketing representative.

Upgrade scenario: Model 840 to Model 870 or 890

In this scenario, you have a Model 840 server with a migration tower with SPD-attached hardware, you are running V4R5, and you want to upgrade to a Model 870 or 890 server.

What to do:


1. Plan for the upgrade.
Before you upgrade your server, plan for the following:
 - SPD-attached hardware replacement
 - Physical requirements
 - Software upgrade
 - Console strategy
 - I/O feature (IOP, IOA, and disk unit) placement
During an upgrade, the IBM service representative places any displaced I/O features according to your I/O feature placement plan.
2. Upgrade to OS/400 Version 5 Release 2.
You must install the latest resave and cumulative fix (PTF) package of OS/400 V5R2 before you upgrade to a new server model. For more information, see Info APAR II13365 on the iSeries and AS/400 Technical Support Web site.
3. Convert your SPD-attached hardware to PCI-attached hardware.
Note: You may not be able to convert all of the disk units on your Model 840 server. You will need to analyze your configuration to determine what you cannot convert and then perform the appropriate procedures to remove those disk units both from the configuration and from the server. Disk units that are not physically removed from the server may be inadvertently added back into the configuration during an IPL.
For information about replacing SPD-attached hardware, see the hardware section of the iSeries
Upgrade Planning  Web site.
4. Upgrade your Model 840 server to a Model 870 or 890 server.

Upgrade scenario: Partitioned Model 830 or 840 to Model 870 or 890

In this scenario, you have a Model 830 or 840 server with partitions that are running V4R5 or V5R1. You have a mixture of SPD-attached and PCI-attached hardware. You want to upgrade to a Model 870 or 890 server.

What to do:

1. Plan for the upgrade.
Before you upgrade your server, plan for the following:
 - SPD-attached hardware replacement
 - Physical requirements
 - Software upgrade

- Console strategy
 - I/O feature (IOP, IOA, and disk unit) placement
During an upgrade, the IBM service representative places any displaced I/O features according to your I/O feature placement plan.
2. Upgrade to OS/400 Version 5 Release 2.
You must install the latest resave and cumulative fix (PTF) package of OS/400 V5R2 on all partitions of your source server before you upgrade to a new server model. For information on the resave and cumulative fix (PTF) package, see Info APAR II13365 on the iSeries and AS/400 Technical Support Web site. For information on installing fixes on a partitioned server, see the Install fixes on systems with logical partitions topic.
 3. Convert your 5065 and 5075 expansion units to 5074 expansion units and convert your 5066 expansion units to and 5079 expansion units.
Note: You may not be able to convert all of the disk units on your Model 830 or 840 server. You will need to analyze your configuration to determine what you cannot convert and then perform the appropriate procedures to remove those disk units both from the configuration and from the server. Disk units that are not physically removed from the server may be inadvertently added back into the configuration during an IPL.
For information about replacing SPD-attached hardware, see the hardware section of the iSeries Upgrade Planning  Web site.
 4. Replace all other expansion units.
 5. Upgrade your Model 830 or 840 server to a Model 870 or 890 server.

Note: IBM offers its customers the option of running both the source and target servers side by side for a period of time. You can use that time to move your data, expansion units, and partitions to the target server. This option is available for purchase as RPQ 847156 and RPQ 845158. For information regarding the terms and conditions of this request for price quotation (RPQ), contact your marketing representative.

Troubleshoot the upgrade

This topic contains information related to some upgrade-specific problems that may occur. In almost every case, the time you spend planning for the upgrade and performing the upgrade according to instructions can prevent these problems from occurring.

- SPD-attached disk units are unavailable after upgrading to a new server.
Models 810, 825, 870, and 890 do not support SPD-attached hardware. To get the data from these SPD-attached disk units, you can choose one of these options:
 - Go back to your source server configuration, remove the disk units that cannot be converted from the configuration, and then repeat the upgrade to the new server.
Note: Disk units that you remove from the configuration should also be physically removed to prevent them from being added back into the configuration during an IPL.
 - Restore the data from your backup media to the target server.
- The IPL takes longer than you expect.
Check the system reference code (SRC) on the control panel display. For information on the SRC, use the IPL system reference code finder topic.
If the SRC indicates that SPCN code is being loaded, the IPL may take up to 45 minutes. Do not try to stop it. If you suspect a problem, contact your service provider.
- Bus numbers change.
An expansion unit conversion causes changes to the server resources. For information, see the “Plan to convert the expansion unit” on page 21 topic.
- The console does not come up when you perform a normal IPL.
Call your service provider.

For more information, see the preventive service planning (PSP) document. The PSP document for V5R2 upgrades is SF98166. This document describes high-impact and pervasive problems.

Related information for upgrades

Listed below are the iSeries manuals and IBM Redbooks^(TM) (in PDF format), Web sites, and Information Center topics that relate to the Upgrades topic. You can view or print any of the PDFs.

Upgrades and migration

- **Migration**

Use this information if you are moving data from one iSeries server that is running OS/400 V4R5, V5R1, or V5R2 to another iSeries server running V5R2. If you are installing a new version of OS/400 on the same server, it is not necessary to perform an explicit data migration. You can use the Software installation information.

- **Preventive service planning (PSP) information**

The PSP document for V5R2 upgrades and data migrations is SF98166. Information within this PSP describes corrections that apply to upgrades. Review this information before you upgrade your server.

- **iSeries Server Migration** 

This book discusses the various topics that are involved in migrating to PCI technology. It also looks at other significant functions like High Speed Link (HSL) and concurrent maintenance capability. This book includes upgrade scenarios to assist with your planning. It explains such upgrade functions as load source migration and migrating to LPAR functions. And it describes the tower options that preserve an investment in hardware or that migrate to new technology.

- **iSeries Migration** 

This Web site includes information about the current migration and upgrade paths, a link to the Migration Redbook, and information about converting from SPD to PCI-attached I/O.

- **iSeries FACT** 

This Web site contains the Find and Compare Tools (FACT) that deal with iSeries models and upgrade paths.

- **iSeries Hardware**

This Web site contains information on the new server models. 

Planning

- **iSeries Planning** 

This Web site provides links to a variety of planning tools and information.

- **iSeries Upgrade Planning** 

This Web site provides information on iSeries products or features that may not be supported in future releases of the OS/400 operating system or on future iSeries models, Product Previews, and Statements of Directions.

Software Installation

- **Memo to Users**  (about 50 pages)

This document provides information about software and hardware changes that could potentially affect your system operations.

In addition to the Memo to Users in the Information Center, you can access the Memo to Users from the

IBM  iSeries Support  Web site (www.ibm.com/eserver/series/support).



Follow these links (in order):

1. SEARCH Technical Databases
2. Preventive Service Planning - PSP
3. All Preventive Service Planning Documents by Release
4. R520
5. SF98076: iSeries Read This First & Memorandum to Users



The *Memo to Users* is also available to customers who use electronic customer support. You can order this document for V5R2M0 by using the Send PTF Order (SNDPTFORD) command and specifying program temporary fix (PTF) number SF98076.

- Info APAR II13365 on the iSeries and AS/400 Technical Support Web site
This Info APAR contains information on the latest resave and cumulative fix (PTF) package of OS/400 V5R2. This level of OS/400 is required for the new server models.




To view the Info APAR, follow these links (in order):

1. SEARCH Technical Databases
 2. Authorized Problem Analysis Reports APARs
 3. V5R2 Info APARs
 4. II13365
- **Install the OS/400 release and related software**  (about 82 pages)
Use this information if you are upgrading your server with a new OS/400 release.
 - **Software Installation** 
Use this information if you are upgrading your server with a new OS/400 release.

Performance management

- **Performance**
This information guides you through the tasks and tools associated with performance management.
- **iSeries Performance Capabilities Reference** 
This reference provides highly technical information about server performance useful for performance benchmarking, capacity planning, and planning for server performance.
- **IBM Workload Estimator for iSeries** 
The Workload Estimator tool is a Web-based tool that provides users with a recommended model, processor, interactive feature, memory, and disk storage necessary for a mixed set of workloads.

Redbooks

- **iSeries Pocket Handbook**  (about 100 pages)
This pocket handbook serves as a quick reference for IBM Specialists, Sales Representatives, and Business Partners who are already familiar with the offerings of the iSeries server and OS/400. This document is ideal for providing customers and prospects with a quick view of the capacities and power of the iSeries product line as well as V5R2 and V5R1 software.
- **iSeries Handbook** 
This book provides hardware concepts and technical specifications for iSeries models and features.
- **iSeries and AS/400e System Builder** 
This book provides detailed information and configuration rules for iSeries models and features.

Services

- **Integrated Technology Services** 

This Web site contains information on the services IBM has available for helping you upgrade your server. These services can help you in planning for and upgrading to the new iSeries server. This service includes a planning session that concludes with a final hardware and software configuration and installation plan. The services specialist can also perform on-site services to upgrade the server to the latest release of OS/400, convert your SPD-attached I/O to PCI-attached I/O, perform disk unit migration, server consolidation and more.

Logical partitions

- **Logical partitions**

Logical partitions allow you to distribute resources within a single iSeries server to make it function as if it were two or more independent servers. This information steps you through the logical partition process, from creation to management.

- **Logical partitioning** 

This Web site contains an introduction to logical partitioning as well as information on planning, services, and education.


- **LPAR Validation tool** 

The LPAR Validation tool is a Web-based tool that assists users in planning for a partitioned environment.

Saving PDF files

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

1. Right-click the PDF in your browser (right-click the link above).
2. Click **Save Target As...**
3. Navigate to the directory in which you would like to save the PDF.
4. Click **Save**.

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