

IBM

@server

iSeries

Upgrade the partitioned server

Version 5 Release 3





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Note

Before using this information and the product it supports, be sure to read the information in "Notices," on page 13.

Fourth Edition (August 2005)

This edition applies to version 5, release 3, modification 0 of IBM Operating System/400 (product number 5722-SS1) and to all subsequent releases and modifications until otherwise indicated in new editions. This version does not run on all reduced instruction set computer (RISC) models nor does it run on CISC models.

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Upgrade the server

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

1. Plan the upgrade.
2. Upgrade to OS/400^(R) Version 5 Release 3.
You must install the latest resave and cumulative fix (PTF) package of OS/400^(R) V5R3 before you upgrade to a new server. If you are upgrading a partitioned server, you must install this resave and cumulative fix (PTF) package of OS/400 V5R3 on all partitions of the source server. For more information, see Info APAR II13365 on the iSeries^(TM) and AS/400^(R) Technical Support  Web site.

To upgrade to a new server, follow these steps:

1. **Prepare to upgrade the server.**
Choose the procedure that is appropriate for your environment:
 - For nonpartitioned servers, see Prepare to upgrade the server.
 - For partitioned servers, see Prepare to upgrade the partitioned server.
2. **Complete the server upgrade.**
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 (about 93 KB)
- Upgrade the partitioned server (about 97 KB)

To view or print other topics related to Upgrades, see [Print this topic](#).

Prepare to upgrade the partitioned server

This topic describes how to prepare for the server upgrade. Before you begin these tasks, be sure you have completed the necessary upgrade planning. 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 V5R3 upgrades is SF98167. Review this document for the most current information about conditions that can affect your upgrade.
2. Review the Memo to Users.
This document provides information about software and hardware changes that can 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^(TM), 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 upgrade.

Prepare the source server

Ensure that you have installed the latest resave and cumulative fix (PTF) package of OS/400^(R) V5R3 on all partitions of the source server.

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

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 about 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 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 the disk configuration status from each partition of the server. Be sure to record the serial number of the load-source disk unit for each partition.
3. Print the parity set configuration and status of the server 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 the hardware resource information 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:
 - Local controllers and devices (QAUTOCFG) = ___
 - Type of restart (QIPLTYPE) = ___
 - Automatically adjust memory pools and activity levels (QPFRADJ) = ___
 Then change the values of these settings on each partition of the server to the following:
 - Local controllers and devices (QAUTOCFG) = Do not automatically configure local controllers and devices (0)
 - Type of restart (QIPLTYPE) = Attended, console in debug mode (2)
 - Automatically adjust memory pools and activity levels (QPFRADJ) = Periodically after restart (2)
 For information about working with system values, see OS/400 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 upgrade.

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 required 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.

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^(R) 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.

Complete the server 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^(R) 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.
- For partitioned servers, see Prepare to upgrade the partitioned server.

To complete the server upgrade, perform these tasks:

1. **Perform the server 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.
- For partitioned servers, see Prepare the partitioned server for production.

Perform the server 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^(R)
- Performs any contracted relocation or rearrangement services before 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 Applications Services  Web site.

Now that the server upgrade is complete, your next step is to prepare the server for production.

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 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 topic.
 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 after an upgrade 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"> 1. Verify that all of the secondary partitions are powered down. 2. Make sure that the server is set to IPL type B and Normal operating mode before the turning off and subsequent IPL of the server. To find out how to set these values, see Change your system IPL from the system control panel. 3. Once the server is set to IPL type B and Normal operating mode, follow these steps: <ol style="list-style-type: none"> a. Type PWRDWN SYS on the command line and press F4 (prompt). b. 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 turning off 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"> 1. Make sure that each secondary partition is set to IPL type B and Normal operating mode 2. Power down and perform on IPL on the partitions. <p>For instructions on setting the IPL mode, turning off, 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 turn off 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.

Note: For more information about setting the console mode in V5R3, see the Operations Console topic.
 - c. Use the information recorded in step 6 under **Document all partitions of the source server** of Prepare to upgrade the partitioned server to identify the IOPs that were on Bus 2 before 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 890, you may have received additional software as a part of a package feature. For information about package features, see the iSeries^(TM) Hardware  Web site.
 19. If you upgraded to a Model 810, 825, 870, or 890 (excluding Model 890 with feature processor cards 0197, 0198, 2487, or 2488), you may need to update the usage limit for OS/400^(R) for each partition. For information about updating the usage limit, see Processor pricing on certain V5R3 models in the Memo to Users. For information about processor pricing, see Info APAR II13365 on the iSeries and AS/400^(R) 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.

System reference code (SRC) A900 2000 recovery

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

Note: For information about alternative ways to change the console mode in V5R3, see the Operations Console topic.

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.

Fix hardware resource names after an upgrade

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^(R) 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 about the Using Change Label Locations display and press Enter.
4. Compare the label information about 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 10) and repeat the steps.

Attention: Do not exchange cards for problem analysis purposes. Card and device serial numbers are tied to the server configuration.

Appendix. Notices

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