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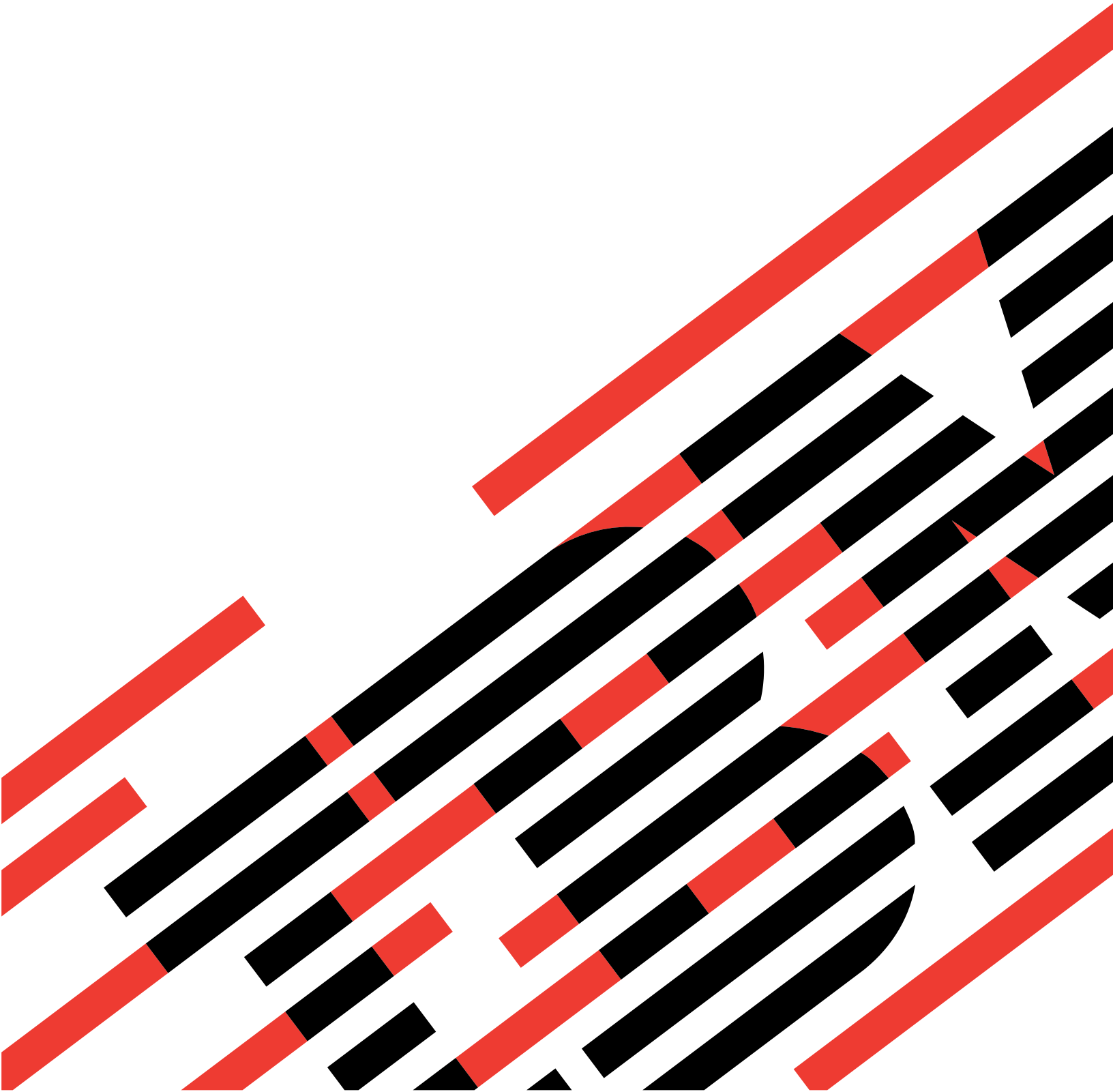
Manage logical partitions



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Manage logical partitions

When you create one or more logical partitions on the iSeries server, you are creating partitions that are independent of each other. Each logical partition has its own independent configuration of processor, memory, input/output (I/O) devices, Licensed Internal Code, Operating System (OS/400), and optional software applications.

You can use iSeries Navigator to manage your logical partitions. Most tasks you perform are independent to the other logical partitions on the system. You should approach each logical partition as independent systems.

If you need additional information on logical partitions, read Logical partition concepts. Refer to Backup and recovery for information on backing up your system. Basic system operations is another source that provides additional information about starting and managing your system.

- **"Manage logical partitions by using iSeries Navigator, DST, and SST"**
  Understand how to manage logical partitions with iSeries Navigator along with DST and SST. Determine the authority needed to perform logical partition tasks.
- **"Manage security for logical partitions" on page 10**
  Understand who has authority to perform logical partition tasks and how to restrict access to the system.
- **"Print system configuration for logical partitions" on page 10**
  Use DST or SST to print copies of your system hardware configuration.
- **"Dynamic movement of logical partition resources" on page 11**
  Understand how to move processors, memory, and interactive performance between partitions without requiring a partition or system restart.
- **"Schedule logical partition resource moves" on page 17**
  Understand how to schedule moves of memory, processors, interactive performance, and I/O processors.
- **"Install new hardware for logical partitions" on page 22**
  Understand the rules on installing hardware to a system with logical partitions.
- **"Install a new software release in the primary partition" on page 22**
  Understand the memory requirement for a primary partition.
- **"Expansion unit conversions in a partitioned environment" on page 23**
  Understand how to converge expansion units on partitioned 8xx or 270 iSeries servers.
- **"HVLPTask performance behavior for partitions using the shared processing pool" on page 23**
  Understand how the CPU time reported by HVLPTask does not affect the performance of a partition.
- **Install a fix on a system with logical partitions**
  Understand the basic steps to installing a fix (or Program Temporary Fix, PTF) using Management Central.
- **Plan for your Operations Console migration**
  Use the planning information to help you migrate from one Operations Console choice to another.
- **"Restart and power down a system with logical partitions" on page 24**
  Understand how to safely restart and power down a system with logical partitions.

Manage logical partitions by using iSeries Navigator, DST, and SST

On a system without logical partitions, you can use the control panel to perform many tasks. However, for systems with logical partitions, secondary partitions do not have physical control panels. To control your secondary partitions you can use the remote control panel graphical user interface (GUI).

For more information on how to use the remote control panel for logical partitions, refer to Control panel functions.

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Security considerations

Users wishing to access logical partition information in iSeries Navigator, Dedicated Service Tools (DST), and System Service Tools (SST) will require either “Logical partition authority” on page 6 or “Logical partition authority” on page 6 authority to the logical partition function. In addition, users wishing to utilize the Operations Console remote panel for secondary partitions from their PC will require “Logical partition authority” on page 6 authorization.

Care should be taken in administering the appropriate service tool authority for partition control. See Service tools user IDs for more information about administering service tool security.

iSeries Navigator

iSeries Navigator is a graphical user interface used to configure, monitor, and manage the iSeries server. iSeries Navigator comes packaged with iSeries Access for Windows and does not require a iSeries Access license to use.

iSeries Navigator contains a graphical wizard you can use to help you create logical partitions, easily configure and manage logical partitions; dynamically move processors, memory, interactive performance, and some I/O processors; and shared processors with the new shared processor pool. In addition, you will also be able to enable or disable virtual OptiConnect, virtual ethernet, and HSL OptiConnect; or change the status of the system bus to dedicated or shared mode without requiring a system restart. With each logical partition function, iSeries Navigator provides you with detailed help text that corresponds with each task. Refer to iSeries Navigator for more information.

iSeries Navigator versus DST/SST Functions

There are some logical partitions functions that still require you to use DST or SST through a character-based interface display. For example, some logical partition recovery actions and printing system configurations tasks are accessible through DST and SST functions only. However, since SST is easier to access than DST, we recommend that you use SST whenever possible to access these tasks.

To start SST or DST on a character-based interface display, go to “Start SST and DST for logical partitions” on page 5.

This table describes the capabilities that are available to logical partitions using iSeries Navigator or DST and SST.

Function	iSeries Navigator	DST and SST
Accept a disk unit as load source for a logical partition		X
Change a bus ownership type	X	X
Change a default electronic customer support resource	X	X
Change a partition name	X	X
Change communication options	X	X
Change I/O configuration of primary and secondary partitions	X	X
Change operating mode for a logical partition	X	X
Change the alternate restart device	X	X
Change the guest partition host information	X	X

Function	iSeries Navigator	DST and SST
Change the partition type	X	X
Change the restart source command line parameters of a guest partition	X	X
Change the restart (or IPL) source for a logical partition	X	X
Clear nonreporting resources on logical partitions	X	X
Clear partition configuration data for logical partitions	X	X
Clear partition configuration from nonconfigured disk units		X
Create a new OS/400 logical partition	X	X
Create a guest partition	X	X
Copy partition configuration data between IPL sources		X
Delete a logical partition	X	X
Delete all logical partition configuration data	X	
Display available hardware resources	X	X
Display system resources	X	X
Display the communication options of a logical partition	X	X
Display the console for a partition	X	X
Display the logical partition OS/400 release level	X	X
Display the operating system type for a partition	X	X
Display the partition ID	X	X
Display the PCI information	X	X
Display the remote control panel for a logical partition	X	X
Display the system reference code history for a primary partition.	X	
Display the system reference code history for secondary partitions	X	X
Dynamic movement of interactive performance	X	X
Dynamic movement of I/O processors	X	X
Dynamic movement of memory	X	X
Dynamic movement of processors	X	X
Enable High-Speed link (HSL) OptiConnect	X	X
Enable virtual Ethernet communication	X	X
Enable virtual OptiConnect communication	X	X

Function	iSeries Navigator	DST and SST
Find a logical address for a resource	X	X
Move a dedicated processor	X	X
Move a dedicated processor to the shared processor pool	X	X
Move an I/O processor	X	X
Move interactive performance, memory or shared processing power	X	X
Move an IOA assigned to an IOP to a guest partition	X	X
Move an IOA to a guest partition	X	X
Move an IOA assigned to an OS/400 partition	X	X
Perform main storage dumps on servers with logical partitions	X	X
Prevent a secondary logical partition from restarting during a system restart	X	X
Print system configuration for logical partitions		X
Recover logical partition configuration data	X	X
Reset a disk unit I/O processor with logical partitions		X
Restart a secondary logical partition during a system restart		X
Restart a system with logical partitions	X	X
Restore all logical partition configuration data	X	
Save all logical partition configuration data	X	
Schedule a dedicated processor move	X	
Schedule an interactive performance move	X	
Schedule an I/O processor move	X	
Schedule a memory move	X	
Schedule a shared processor move	X	
Update configuration data	X	X
Use remote service with logical partitions	X	X
View the status of a logical partition	X	X

Start iSeries Navigator

iSeries Navigator is included as part of iSeries Access for Windows. To make sure your PC meets iSeries Navigator requirements, refer to hardware and software requirements. For more information on installing iSeries Navigator to your PC, refer to iSeries Navigator.

Along with iSeries Navigator, you may want to install Operations Console of iSeries Access. Operations console allows you to use a directly cabled, LAN-attached or remote PC to access and control an iSeries console and the remote control panel for logical partitions.

You can start iSeries Navigator by double-clicking the iSeries Navigator icon on your Windows desktop. When you are asked if you want to create an iSeries connection, click **Yes** and follow the instructions in the Connection wizard. You must have operation or administration authority to use iSeries Navigator.

Start SST and DST for logical partitions

Starting SST on the primary partition or a secondary partition

You must configure Service Tools user IDs before starting SST or DST. For more information on how to configure user ID, refer to “Logical partition authority” on page 6

You can start System Service Tools (SST) by typing the start system service tools (STRSST) command and pressing Enter at an OS/400 command line. You can start SST on any primary or secondary partition workstation.

Starting DST on the primary partition

When you start Dedicated Service Tools (DST), make sure that the primary partition console is at a sign on display to prevent jobs from ending abnormally. As an alternative, you can perform the following steps on the logical partition. You only need to perform these steps once since the system maintains changes across initial program loads (IPLs):

1. In iSeries Navigator, expand **My Connection**.
2. Select the physical system with which you want to work.
3. Expand **Configuration and Service** and select **System Values**.
4. Select **Devices** and the **Recovery** tab.
5. Select **End the job and send message to QHST log** (ENDJOBNOLIST) and deselect the box or to select **End the job and send message to QHST log** (ENDJOB) select the box.

To complete a **Time Out Interval** (QDSCJOBITV) follow these steps:

1. In iSeries Navigator, expand **My Connection**.
2. Select the physical system with which you want to work.
3. Expand **Configuration and Service** and select **System Values**.
4. Select **Jobs** and the **Interactive Jobs** tab.
5. Select **Disconnect Jobs** and set the system value to 5 minutes.

For more information on how to use system values in iSeries Navigator, refer to OS/400 system values.

To start DST on the primary partition use the control panel to put the system in manual mode and select option 21. The system will prompt you for a user ID and password. For more information on obtaining an ID and password, refer to Configure service tools user IDs.

Starting DST on a secondary partition from DST on the primary partition

Follow these steps to start DST on a secondary partition:

1. Start DST on the primary partition.
2. Select option 11 (Work with system partitions).
3. Select option 2 (Work with partition status).
4. Use your cursor to select the secondary partition for which you want DST.
5. Select option 10 (Mode manual) if the secondary partition is not already in manual mode.
6. Press F23 for more options.
7. Select option 21 (Force Dedicated Service Tools). The secondary partition console will experience a device I/O error and end abnormally. This is normal.
8. The DST display will appear on the workstation that is acting as console for the secondary partition. Sign on to DST.
9. Before you leave DST, set the secondary partition back to “Change the operating mode for a logical partition” on page 28 if you want the next IPL too be unattended.

Forcing DST from SST

You can force DST to start from SST if the logical partition is not in secure mode. On the primary partition, you can force DST for itself or any of the secondary partitions. On a secondary partition you can force DST to start on itself.

When you force DST from the system control panel of the Work with Partition Status display, you cancel the current job on the partition console.

Attention: If you perform an IPL on the logical partition before you exit DST, the next OS/400 IPL will be abnormal. To avoid an abnormal OS/400 IPL, exit DST before you perform the IPL. Then sign on to that logical partition and “Restart a system with logical partitions” on page 26.

These steps affect how the system stops active jobs when you start DST, including the system partition’s service function. You may need to wait five minutes before starting service functions in DST that were active in SST when you entered option 21.

To force DST from SST follow these steps:

1. Use the STRSST command to start SST.
2. Select option 5 (Work with system partitions).
3. Select option 2 (Work with partition status).
4. Use the cursor to select the logical partition on which you want DST.
5. If the partition is not in manual mode, select option 10 (Mode manual).
6. Select option 21 (Force DST). If you are forcing DST from the logical partition workstation where you want DST, the workstation will experience a device I/O error and end abnormally. This is normal.
7. Sign on to DST.
8. Before you exit DST, set the logical partition back to normal mode if you want the next IPL to be unattended.

Logical partition authority

The authorities that you grant to service tool users determines what logical partition information they can access and what tasks they can perform. Care should be exercised in assigning service tool user profile privileges to manage partition security.

Two service tool functional privileges relate to logical partitions. These privileges support basic operations or advanced administration.

To grant a user logical partition **operations** authority perform the following steps:

1. Start DST as QSECOFR or with any other user ID with Service tool security privilege.
2. Select option 5 (Work with DST environment).
3. Select option 3 (Service tools user profiles).
4. Select option 1 (Create) to create a new user profile or option 7 (Change attributes) to adjust an existing user.
5. Ensure that the **System partitions-operations** privilege is granted.

To grant a user logical partition **administration** authority (which enables all operation task as well), perform the following steps:

1. Start DST as QSECOFR or with any other user ID with Service tool security privilege.
2. Select option 5 (Work with DST environment).
3. Select option 3 (Service tools user profiles).
4. Select option 1 (Create) to create a new user profile or option 7 (Change attributes) to adjust an existing user.
5. Ensure that the **System partitions-administration** privilege is granted.

The following table describes which authority is required to complete a logical partition task:

Function	Administration authority	Operation authority
Accept a disk unit as load source for a logical partition	X	
Change a bus ownership type	X	
Change a default electronic customer support resource	X	X
Change a partition name	X	X
Change communication options with resources in use (forced)	X	
Change communication options with resources not in use	X	X
Change I/O configuration of primary and secondary partitions	X	X
Change operating mode for a logical partition	X	X
Change the alternate restart device for a logical partition	X	X
Change the guest partition host information	X	X
Change the partition type	X	
Change the restart source command line parameters of a guest partition	X	X
Change the load source for a logical partition	X	X
Clear nonreporting resources on logical partitions	X	
Clear partition configuration from nonconfigured disk units	X	
Copy partition configuration data between load sources	X	

Function	Administration authority	Operation authority
Create a new logical partition	X	
Create a guest partition	X	
Delete a logical partition	X	
Delete all logical partition configuration data	X	X
Display available hardware resources	X	X
Display the communication options of a logical partition	X	X
Display the console for a partition	X	X
Display the logical partition OS/400 release level	X	X
Display the operating system type for a partition	X	X
Display the partition ID	X	X
Display the PCI information	X	X
Display the remote control panel for a logical partition	X	X
Display the system reference code history for logical partitions	X	X
Display system resources	X	X
Dynamic movement of interactive performance	X	X
Dynamic movement of I/O processors	X	X
Dynamic movement of memory	X	X
Dynamic movement of processors	X	X
Enable the virtual ethernet communication for a logical partition	X	X
Find a logical address for a resource	X	X
Move a dedicated processor	X	X
Move a dedicated processor to the shared processor pool	X	X
Move an I/O processor with resources in use (forced)	X	
Move an I/O processor with resources not in use	X	X
Move interactive performance, memory or shared processing power	X	X
Move an I/O adapter assigned to an I/O processor to a guest partition	X	X
Move an I/O adapter to a guest partition	X	X
Move an I/O adapter assigned to an OS/400 partition	X	X
Perform main storage dumps on servers with logical partitions	X	X

Function	Administration authority	Operation authority
Prevent a secondary logical partition from restarting during a system restart	X	X
Print system configuration for logical partitions	X	X
Recover logical partition configuration data	X	
Reset a disk unit I/O processor with logical partitions	X	X
Restart a secondary logical partition during a system restart		X
Restart a system with logical partitions	X	X
Restore all logical partition configuration data	X	X
Save all logical partition configuration data	X	X
Schedule a dedicated processor move	X	X
Schedule an interactive performance move	X	X
Schedule an I/O processor move	X	X
Schedule a memory move	X	X
Schedule a shared processor move	X	X
Update partition configuration data on all logical partitions	X	
Use remote service with logical partitions	X	X
View the status of a logical partition	X	X

To use an **Operations Console remote panel** across the LAN, a PC needs a device profile in the primary partition with the **Partition remote panel XXXXXXXX nnn** attribute where XXXXXXXX is the target partition name and nnn is the numeric partition identifier. To grant a user the ability to user the remote panel, perform the following steps:

1. Start DST as QSECOFR or with any other user ID with Service tool security privilege.
2. Select option 5 (Work with DST environment).
3. Select option 5 (Service tools device profiles).
4. Select option 1 (Create) to create a new device profile or option 7 (Change attributes) to adjust an existing device.
5. Ensure that the **Partition remote panel** attribute for the appropriate partition is granted.

This device profile enables panel functions from the remote console graphical user interface on the PC. All users will require a valid service tool user profile. For most functions, no special privilege is required to use the panel. However, to change the panel key position (Manual, Normal, Auto, or Secure), the user will require a service tool user profile in the primary partition with the **Partition remote panel key XXXXXXXX nnn where XXXXXXXX** is the target partition name and nnn is the numeric partition identifier. To grant a user the ability to change the key, perform the following steps:

1. Start DST as QSECOFR or with any other user ID with Service tool security privilege.

2. Select option 5 (Work with DST environment).
3. Select option 3 (Service tools user profiles).
4. Select option 1 (Create) to create a new user profile or option 7 (Change attributes) to adjust an existing user.
5. Ensure that the **Partition remote panel key** privilege for the appropriate partition is granted.

For additional information on service tool user IDs, refer to Service tools user IDs.

Manage security for logical partitions

Most security related tasks you perform on a partitioned system are the same as on a system without logical partitions. However, when you create logical partitions, you work with more than one independent system. Therefore you will have to perform the same tasks on each logical partition instead of just once on a system without logical partitions.

Here are some basic rules to remember when dealing with security on logical partitions:

- You must first configure the service tools server in order to access the iSeries Navigator logical partition functions. For more information on the service tools server, refer to Configure the service tools server .
- Users performing logical partition operation or administration authority will require a Service Tool user profile in the primary partition. Refer to “Logical partition authority” on page 6 for more information.
- You add users to the system one logical partition at a time. You need to add your users to each logical partition you want them to access.
- Partitions cannot see or use memory and disk units of another logical partition.
- Partitions can only see their own hardware resources.
- The iSeries Navigator logical partition function can see all system hardware resources in the Configure Partitions window by selecting All hardware when used from the primary partition. When used from secondary partitions, only the resources assigned to the partition are viewable. In either partition, users require logical partition operation or administration authority to view information.
- The system control panel controls the primary partition. The remote control panel controls all partitions on the server. When any partition is set to secure, no actions can be performed from either the system panel, the remote control panel, or the Work with Partitions Status display from SST. To force DST from the system control panel or the remote control panel, you must change the mode to Manual.
  - You can use the remote control panel to power on and power off the partition.
  - You can use the remote control panel to set the secondary partition mode from secure to any other value.

  Once a secondary partition’s mode is no longer secure, you can use the remote control panel to change the partition status.

For more information on security on your iSeries server, refer to iSeries Security-Reference and Basic system security and planning for additional information on security.

Print system configuration for logical partitions

It is strongly recommended that you print the system configuration for all of your I/O resources that are allocated to all of the logical partitions, once your set up is complete. Logical partition configuration information is not saved during the save process, and therefore a printout will be required to allocate appropriate resources should you have to recover your system in a disaster recovery scenario.

You will also need to print the system configuration report for all logical partitions should you need to perform an MES (Miscellaneous Equipment Specification) also known as hardware upgrade to your

system with logical partitions. This information will assist your IBM Business Partner or IBM Marketing Representative to understand how your system I/O resources are assigned to the logical partitions.

Attention: Printing a rack configuration listing through Hardware Service Manager within SST will only provide you with a configuration listing of the resources that are allocated to that specific partition. This report will not provide you with details for the entire system. For this reason, you should use the steps outlined below using the primary partition.

Follow these steps to print the system configuration:

1. From the primary partition start “Start SST and DST for logical partitions” on page 5.
2. From SST select option 5 (Work with system partitions); from DST select option 11 (Work with system partitions) and press Enter.
3. Select option 1 (Display partition information).
4. Select option 5 (Display system I/O resources).
5. At the Level of detail to display field, type *ALL to set the level of detail to ALL.
6. Press F6 to print the system I/O configuration.
7. Select option 1 and press Enter to print to a spooled file.
8. Press F12 to return to the Display Partition Information display.
9. Select option 2 (Display partition processing configuration).
10. Press F6 to print the processing configuration.
11. Press F12 to return to Display Partition Information display.
12. Select option 7 (Display communications options).
13. Press F6 to print communication configuration.
14. Select option 1 and press Enter to print to a spooled file.
15. Return to an OS/400 command line and print these three spooled files.

Dynamic movement of logical partition resources

Dynamic movement of resources provides users the ability to move processors, memory, and interactive performance between partitions without requiring a partition or system restart. To take full advantage of this enhancement your primary and secondary partitions must be running V5R1 or V5R2.

To move specific logical partition resources, refer to the following articles for more information:

- “Dynamic movement of processing power”
- “Dynamic movement of memory” on page 14
- “Dynamic movement of interactive performance” on page 15

Dynamic movement of processing power

The ability to move processor power dynamically becomes important when you need to adjust to changing workloads. Processors have minimum and maximum values associated with them. These values enable you to establish a range within which you can dynamically move the resource without needing to restart the logical partition. Minimum values dictate what is required to restart the partition. A minimum value of zero is valid. A partition with zero processors or processing units is not functional.

For both shared and dedicated processors you can specify a minimum value equal to the minimum amount of processing power needed to support the logical partition. The maximum value must be less than the amount of processing power available on the system. If you change either the minimum or maximum value, it will require you to restart the entire partition. If the minimum value is not met for all logical partitions, only the primary will restart.

To move a dedicated processor from one logical partition to another using Management Central, follow these steps:

1. In iSeries Navigator, expand **Management Central**.
2. Expand **Systems with Partitions**.
3. Select the physical system that has the logical partition with which you want to work.
4. Right-click the logical partition and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
5. Select the partition from which you would like to move dedicated processors.
6. Right-click **Dedicated Processors** and select **Move**.
7. Specify the number of dedicated processors to move in **Amount to move**. This value must be less than the number of processors the logical partition currently has. The **Amount after move** values for both the source and receiving partitions must fall within the minimum/maximum ranges specified for dedicated processors. Also, any logical partition that is using dedicated processors, must have at least 1 dedicated processor.
8. Select the partition to receive the dedicated processors in **Move to — Logical partition**
9. Click **OK** to move the dedicated processors you specified.

To move a dedicated processor from one logical partition to another partition using My Connections, follow these steps:

1. In iSeries Navigator, expand **My Connections** or your active environment.
2. Select the primary partition of the system.
3. Expand **Configuration and Service** and select **Logical Partitions**.
4. Right-click the **Logical Partition** and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
5. Select the partition from which you would like to move dedicated processors.
6. Right-click **Dedicated Processors** and select **Move**.
7. Specify the number of dedicated processors to move in **Amount to move**. This value must be less than the number of processors the logical partition currently has. The **Amount after move** values for both the source and receiving partitions must fall within the minimum/maximum ranges specified for dedicated processors. Also, any logical partition that is using dedicated processors, must have at least 1 dedicated processor.
8. Select the partition to receive the dedicated processors in **Move to — Logical partition**
9. Click **OK** to move the dedicated processors you specified.

To move a dedicated processor from one logical partition to another partition using the service tools window, follow these steps:

1. In iSeries Navigator, select **My Connections** or your active environment.
2. Select **Open iSeries Navigator service tools window** in the Taskpad window. If the Taskpad window is not displayed, select **View** and select **Taskpad**.
3. Enter the **IP address** of the service tool network interface to which you want to connect. Click **OK**.
4. You will be prompted for your **Service Tools User ID and user password**.
5. Expand the system name select **Logical Partitions**.
6. Right-click the logical partition and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
7. Select the partition from which you would like to move dedicated processors.
8. Right-click **Dedicated Processors** and select **Move**.
9. Specify the number of dedicated processors to move in **Amount to move**. This value must be less than the number of processors the logical partition currently has. The **Amount after move** values for

both the source and receiving partitions must fall within the minimum/maximum ranges specified for dedicated processors. Also, any logical partition that is using dedicated processors, must have at least 1 dedicated processor.

10. Select the partition to receive the dedicated processors in **Move to — Logical partition**
11. Click **OK** to move the dedicated processors you specified.

To move shared processing power from one logical partition to another using Management Central, follow these steps:

1. In iSeries Navigator, expand **Management Central**.
2. Expand **Systems with Partitions**.
3. Select the physical system that has the logical partition with which you want to work.
4. Right-click the logical partition and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
5. Select the partition from which you would like to move shared processing power.
6. Right-click **Shared pool processors** and select **Move**.
7. Select the units with which you want to work in **Display units in — Processor pool**. If you need more information on this field, click **Help**.
8. Specify the amount of shared processing power to move in **Amount to move**. This value must be less than the current amount of shared processing power available to the logical partition. The **Amount after move** values for the source must fall within the minimum/maximum ranges specified for shared processing power for both partitions.
9. Select the partition to receive the dedicated processors in **Move to — Logical partition**.
10. Click **OK** to move the shared processing power you specified.

To move shared processing power from one logical partition to another using My Connections, follow these steps:

1. In iSeries Navigator, expand **My Connections** or your active environment.
2. Select the primary partition of the system.
3. Expand **Configuration and Service** and select **Logical Partitions**.
4. Right-click the **Logical Partition** and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
5. Select the partition from which you would like to move shared processing power.
6. Right-click **Shared pool processors** and select **Move**.
7. Select the units with which you want to work in **Display units in — Processor pool**. If you need more information on this field, click **Help**.
8. Specify the amount of shared processing power to move in **Amount to move**. This value must be less than the current amount of shared processing power available to the logical partition. The **Amount after move** values for the source must fall within the minimum/maximum ranges specified for shared processing power for both partitions.
9. Select the partition to receive the dedicated processors in **Move to — Logical partition**.
10. Click **OK** to move the shared processing power you specified.

To move shared processing power from one logical partition to another using the service tools window, follow these steps:

1. In iSeries Navigator, select **My Connections** or your active environment.
2. Select **Open iSeries Navigator service tools window** in the Taskpad window. If the Taskpad window is not displayed, select **View** and select **Taskpad**.
3. Enter the **IP address** of the service tool network interface to which you want to connect. Click **OK**.
4. You will be prompted for your **Service Tools User ID and password**.

5. Expand the system name select **Logical Partitions**.
6. Right-click the logical partition and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
7. Select the partition from which you would like to move shared processing power.
8. Right-click **Shared pool processors** and select **Move**.
9. Select the units with which you want to work in **Display units in — Processor pool**. If you need more information on this field, click **Help**.
10. Specify the amount of shared processing power to move in **Amount to move**. This value must be less than the current amount of shared processing power available to the logical partition. The **Amount after move** values for the source must fall within the minimum/maximum ranges specified for shared processing power for both partitions.
11. Select the partition to receive the dedicated processors in **Move to — Logical partition**.
12. Click **OK** to move the shared processing power you specified.

Dynamic movement of memory

Memory in each logical partition operates within its assigned minimum and maximum values. You can dynamically move memory between logical partitions without needing to restart the affected partitions as long as your request for memory movement is within the range of the minimum and maximum values specified during partition creation.

When you request to dynamically move memory between partitions, you should note that this memory is removed and added to the base memory pool of each of the partitions (*BASE pool). Private memory pools or shared memory pools are not affected. If the move request exceeds the amount of memory available in the base pool, the system will only free up excess memory pages after keeping the minimum amount of memory required in the base pool. This value is determined by the base storage minimum size (QBASPOOL) system value. To prevent any data loss during memory movement, the system first writes any data from memory pages to the disks before making the memory pages available to another partition. Depending on the amount of memory you have requested to move, this may take some time.

Each partition will report its runtime minimum memory size. This value is an estimate of how much memory in the partition is locked into that partition and cannot be moved dynamically. Reducing the number of processes or threads within a partition or changing the *BASE pool will affect the runtime minimum.

The full amount of memory that you assign to a logical partition may not be available for the partition's use. Static memory overhead required to support the assigned maximum memory will affect the reserved or hidden memory amount. This static memory overhead will also influence the minimum memory size of a partition.

The minimum memory size assigned to a partition can be changed with only a restart of the partition. However, changes to the maximum memory size require a "Restart and power down a system with logical partitions" on page 24 and may require a larger minimum memory value.

To move memory from one logical partition to another using Management Central, follow these steps:

1. In iSeries Navigator, expand **Management Central**.
2. Expand **Systems with Partitions**.
3. Select the physical system that has the logical partition with which you want to work.
4. Right-click the logical partition and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
5. Select the partition from which you would like to move memory.
6. Right-click **Memory** and select **Move**.

7. Specify the amount of memory to move in **Memory to move**. This value must be less than the current amount of memory available to the logical partition. The **Memory after Move** values for both the source and receiving partitions must fall within the minimum/maximum ranges specified for memory.
8. Select the partition to receive the memory in **To logical partition**.
9. Click **OK** to move the memory you specified.

To move memory from one logical partition to another using My Connections, follow these steps:

1. In iSeries Navigator, expand **My Connections** or your active environment.
2. Select the primary partition of the system.
3. Expand **Configuration and Service** and select **Logical Partitions**.
4. Right-click the **Logical Partition** and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
5. Select the partition from which you would like to move memory.
6. Right-click **Memory** and select **Move**.
7. Specify the amount of memory to move in **Memory to move**. This value must be less than the current amount of memory available to the logical partition. The **Memory after Move** values for both the source and receiving partitions must fall within the minimum/maximum ranges specified for memory.
8. Select the partition to receive the memory in **To logical partition**.
9. Click **OK** to move the memory you specified.

To move memory from one logical partition to another using the service tools window, follow these steps:

1. In iSeries Navigator, select **My Connections** or your active environment.
2. Select **Open iSeries Navigator service tools window** in the Taskpad window. If the Taskpad window is not displayed, select **View** and select **Taskpad**.
3. Enter the **IP address** of the service tool network interface to which you want to connect. Click **OK**.
4. You will be prompted for your **Service Tools User ID and password**.
5. Expand the system name select **Logical Partitions**.
6. Right-click the logical partition and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
7. Select the partition from which you would like to move memory.
8. Right-click **Memory** and select **Move**.
9. Specify the amount of memory to move in **Memory to move**. This value must be less than the current amount of memory available to the logical partition. The **Memory after Move** values for both the source and receiving partitions must fall within the minimum/maximum ranges specified for memory.
10. Select the partition to receive the memory in **To logical partition**.
11. Click **OK** to move the memory you specified.

Dynamic movement of interactive performance

You can set up interactive performance so that you can change the values between logical partitions without needing to restart the entire system. The minimum and maximum specify the range of values you can enter without needing to restart the partition. When you change the limits for the logical partition's interactive performance, you must "Restart and power down a system with logical partitions" on page 24 the partition.

You can specify an interactive performance minimum value equal to the minimum amount of interactive performance needed to support the logical partition. The maximum value must be less than the amount of interactive performance available on the system.

Your system has a certain amount of interactive performance based on the type of system and the number of processors. Interactive performance refers to how much the user must interact with (respond to prompts from) the computer. You can contrast interactive with batch (no user intervention required).

Given the amount of interactive performance on your system (CPW), you need to determine what percentage will be available for each logical partition. The combined total of each logical partition's interactive performance must not exceed 100%.

To move interactive performance from one logical partition to another using Management Central, follow these steps:

1. In iSeries Navigator, expand **Management Central**.
2. Expand **Systems with Partitions**.
3. Select the physical system that has the logical partition with which you want to work.
4. Right-click the logical partition and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
5. Select the partition from which you would like to move interactive performance.
6. Right-click **Interactive Performance** and select **Move**.
7. Specify the amount of interactive performance to move in **Amount to Move**. This value must be less than the current amount of interactive performance available to the logical partition. The **After Move** values for both the source and receiving partitions must fall within the minimum/maximum ranges specified for interactive performance for both of the partitions.
8. Select the partition to receive the interactive performance in **Move to — Logical Partition**.
9. Click **OK** to move the amount of interactive performance you specified.

To move interactive performance from one logical partition to another partition using My Connections, follow these steps:

1. In iSeries Navigator, expand **My Connections** or your active environment.
2. Select the primary partition of the system.
3. Expand **Configuration and Service** and select **Logical Partitions**.
4. Right-click the **Logical Partition** and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
5. Select the partition from which you would like to move interactive performance.
6. Right-click **Interactive Performance** and select **Move**.
7. Specify the amount of interactive performance to move in **Amount to Move**. This value must be less than the current amount of interactive performance available to the logical partition. The **After Move** values for both the source and receiving partitions must fall within the minimum/maximum ranges specified for interactive performance for both of the partitions.
8. Select the partition to receive the interactive performance in **Move to — Logical Partition**.
9. Click **OK** to move the amount of interactive performance you specified.

To move interactive performance from one logical partition to another partition using the service tools window, follow these steps:

1. In iSeries Navigator, select **My Connections** or your active environment.
2. Select **Open iSeries Navigator service tools window** in the Taskpad window. If the Taskpad window is not displayed, select **View** and select **Taskpad**.
3. Enter the **IP address** of the service tool network interface to which you want to connect. Click **OK**.
4. You will be prompted for your **Service Tools User ID and password**.
5. Expand the system name select **Logical Partitions**.
6. Right-click the logical partition and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.

7. Select the partition from which you would like to move interactive performance.
8. Right-click **Interactive Performance** and select **Move**.
9. Specify the amount of interactive performance to move in **Amount to Move**. This value must be less than the current amount of interactive performance available to the logical partition. The **After Move** values for both the source and receiving partitions must fall within the minimum/maximum ranges specified for interactive performance for both of the partitions.
10. Select the partition to receive the interactive performance in **Move to — Logical Partition**.
11. Click **OK** to move the amount of interactive performance you specified.

Schedule logical partition resource moves

You can schedule the movement of memory, processors, interactive performance, and I/O processors. You have the option of choosing to perform a task immediately or choosing a later time. Using the logical partition scheduling functions, gives you the flexibility to accommodate changing workloads and demands on resources.

You need to meet Dedicated Service Tools (DST) and OS/400 security requirements before scheduled LPAR moves will work successfully.

The primary partition for the system where the resource move will occur must have the DST password level set to use password support. To change the DST password level, follow these steps:

1. From DST, select option 5 (Work with DST environment).
2. Select option 6 (Service tools security data).
3. Select option 6 (Password level).
4. Press Enter to confirm the password level change.

The DST user ID password must be changed AFTER the DST password level is set to apply the new encryption level to the DST user ID. This ID is the uppercase equivalent of the same OS/400 user profile. For example, OS/400user/password= 'BOB'/'mypass' needs DST user='BOB'/'MYPASS'. The DST user profile needs the following authority:

1. System Partitions - Operations
   or
2. System Partitions - Administration

OS/400 user profile needs the following special authorities:

1. *ALLOBJ - All object authority
2. *SERVICE - Service

An OS/400 user profile must exist on the central system and the system where the resource move will occur. By default, Management Central requires the user profile used to sign on to the central system to have the same password on each endpoint system. For more information, see the iSeries Navigator help for the ″Require password on endpoint systems″ field on the Security tab in Management Central properties.

LPAR resource moves are scheduled and run with the OS/400 user profile used to access the central system.

The service tools server must be enabled on the target server. To enable the service tools server, follow these steps:

1. From an OS/400 command line, type ADDSRVTBLE (Add Service Table Entry) and press Enter. The Service Table Entry display appears.
2. Enter the following information:

- Service: 'as-sts'
- PORT: 3000
- PROTOCOL: 'tcp'
- TEXT: 'Service Tools Server'
  This field is optional, but you are strongly recommended to enter a description of the table entry.
- Press **F10** (Additional Parameters).
- ALIAS: 'AS-STS'
  The Alias **must** be capitalized because some table searches are case sensitive.

3. Press Enter to add the table entry.
4. Press F3 to Exit the Add Service Table Entry display.
5. Enter ENDTCP (End TCP).
6. Enter STRTCP (Start TCP)
7. Once active, the service tool server starts when TCP/IP starts until the service table entry is removed.

Attention: This server was disabled when shipped for security reasons. You should not enable this service on a machine which still has default DST User IDs and passwords (QSECOFR, QSRV, 11111111, or 22222222). These DST profiles are well known and can create a possible security vulnerability since this network service uses DST security for authentication.

Scheduling support uses the QYHCHCOP API.

For more information on scheduling a specific logical partition resource move, refer to the following articles:

- "Schedule a dedicated processor move" on page 19
- "Schedule a shared processor move" on page 20
- "Schedule an interactive performance move" on page 21
- Schedule an I/O processor move
- "Schedule a memory move"

Schedule a memory move

When you create a partition, you must add a whole number of megabytes of memory to the partition. The primary partition needs a minimum of 256 MB of memory while secondary partitions need a minimum of 128 MB. Workload demands may require you to add more MBs to a partition at certain times. You can use the schedule memory move function to adjust memory requirements for partitions.

To schedule a memory move using Management Central, follow these steps:

1. In iSeries Navigator, expand **Management Central**.
2. Expand **Systems with Partitions**.
3. Select the physical system that has the logical partition with which you want to work.
4. Right-click the logical partition and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
5. Right-click **Memory** and select **Move**.
6. Specify the amount of memory you want to move in **Memory to move**.
7. Click **Schedule** to specify when you want the move to occur.
8. Click **Help** if you need more information on this field.
9. Click **OK**.

To schedule a memory move using My Connections, follow these steps:

1. In iSeries Navigator, expand **My Connections** or your active environment.
2. Select the primary partition of the system.
3. Expand **Configuration and Service** and select **Logical Partitions**.
4. Right-click the **Logical Partition** and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
5. Right-click **Memory** and select **Move**.
6. Specify the amount of memory you want to move in **Memory to move**.
7. Click **Schedule** to specify when you want the move to occur.
8. Click **Help** if you need more information on this field.
9. Click **OK**.

To schedule a memory move using the service tools window, follow these steps:

1. In iSeries Navigator, select **My Connections** or your active environment.
2. Select **Open iSeries Navigator service tools window** in the Taskpad window. If the Taskpad window is not displayed, select **View** and select **Taskpad**.
3. Enter the **IP address** of the service tool network interface to which you want to connect. Click **OK**.
4. You will be prompted for your **Service Tools User ID and password**.
5. Expand the system name select **Logical Partitions**.
6. Right-click the logical partition and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
7. Right-click **Memory** and select **Move**.
8. Specify the amount of memory you want to move in **Memory to move**.
9. Click **Schedule** to specify when you want the move to occur.
10. Click **Help** if you need more information on this field.
11. Click **OK**.

Schedule a dedicated processor move

Dedicated processors are whole processors that are dedicated to a single partition. The dedicated processor handles the processing for a specific logical partition. To adjust to changing workloads, you can schedule movement of dedicated processors.

To schedule a dedicated processor move using Management Central, follow these steps:

1. In iSeries Navigator, expand **Management Central**.
2. Expand **Systems with Partitions**.
3. Select the physical system that has the logical partition with which you want to work.
4. Right-click the logical partition and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
5. Right-click the dedicated processors you want to move and select **Move**.
6. Specify the number of dedicated processors to move in **Processors to move**.
7. Click **Schedule** to specify when you want the move to occur.
8. Click **Help** if you need more information on this field.
9. Click **OK**.

To schedule a dedicated processor move using My Connections, follow these steps:

1. In iSeries Navigator, expand **My Connections** or your active environment.
2. Select the primary partition of the system.

3. Expand **Configuration and Service** and select **Logical Partitions**.
4. Right-click the **Logical Partition** and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
5. Right-click the dedicated processors you want to move and select **Move**.
6. Specify the dedicated processor to move in **Processors to move**.
7. Click **Schedule** to specify when you want the move to occur.
8. Click **Help** if you need more information on this field.
9. Click **OK**.

To schedule a dedicated processor move using the service tools window, follow these steps:

1. In iSeries Navigator, select **My Connections** or your active environment.
2. Select **Open iSeries Navigator service tools window** in the Taskpad window. If the Taskpad window is not displayed, select **View** and select **Taskpad**.
3. Enter the **IP address** of the service tool network interface to which you want to connect. Click **OK**.
4. You will be prompted for your **Service Tools User ID and password**.
5. Expand the system name select **Logical Partitions**.
6. Right-click the logical partition and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
7. Right-click the dedicated processors you want to move and select **Move**.
8. Specify the dedicated processor to move in **Processors to move**.
9. Click **Schedule** to specify when you want the move to occur.
10. Click **Help** if you need more information on this field.
11. Click **OK**.

Schedule a shared processor move

The shared processing pool allows you to assign partial processors to a logical partition. The physical processors are held in the shared processing pool and are shared among the logical partitions. To accomodate changing workloads, you can schedule the movement shared processing units.

To schedule a shared processor move using Management Central, follow these steps:

1. In iSeries Navigator, expand **Management Central**.
2. Expand **Systems with Partitions**.
3. Select the physical system that has the logical partition with which you want to work.
4. Right-click the logical partition and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
5. Right-click the shared pool processors you want to move and select **Move**.
6. Specify the number of units in the shared processor pool to move in **Amount to move**.
7. Click **Schedule** to specify when you want the move to occur.
8. Click **Help** if you need more information on this field.
9. Click **OK**.

To schedule a shared processor move using My Connections, follow these steps:

1. In iSeries Navigator, expand **My Connections** or your active environment.
2. Select the primary partition of the system.
3. Expand **Configuration and Service** and select **Logical Partitions**.
4. Right-click the **Logical Partition** and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
5. Right-click the shared pool processors you want to move and select **Move**.

6. Specify the number of units in the shared processor pool to move in **Amount to move**.
7. Click **Schedule** to specify when you want the move to occur.
8. Click **Help** if you need more information on this field.
9. Click **OK**.

To schedule a shared processor move using the service tools window, follow these steps:

1. In iSeries Navigator, select **My Connections** or your active environment.
2. Select **Open iSeries Navigator service tools window** in the Taskpad window. If the Taskpad window is not displayed, select **View** and select **Taskpad**.
3. Enter the **IP address** of the service tool network interface to which you want to connect. Click **OK**.
4. You will be prompted for your **Service Tools User ID and password**.
5. Expand the system name select **Logical Partitions**.
6. Right-click the logical partition and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
7. Right-click the shared pool processors you want to move and select **Move**.
8. Specify the number of units in the shared processor pool to move in **Amount to move**.
9. Click **Schedule** to specify when you want the move to occur.
10. Click **Help** if you need more information on this field.
11. Click **OK**.

Schedule an interactive performance move

You can specify an interactive performance minimum value equal to the minimum amount of interactive performance needed to support the logical partition. The maximum value must be less than the amount of interactive performance available on the system. You can use the schedule interactive performance move function to adjust the interactive requirements for partitions.

To schedule an interactive performance move using Management Central, follow these steps:

1. In iSeries Navigator, expand **Management Central**.
2. Expand **Systems with Partitions**.
3. Select the physical system that has the logical partition with which you want to work.
4. Right-click the logical partition and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
5. Select the partition from which you would like to move interactive performance.
6. Right-click the interactive performance you want to move and select **Move**.
7. Click **Schedule** to specify when you want the move to occur.
8. Click **Help** if you need more information on this field.
9. Click **OK**.

To schedule an interactive performance move using My Connections, follow these steps:

1. In iSeries Navigator, expand **My Connections** or your active environment.
2. Select the primary partition of the system.
3. Expand **Configuration and Service** and select **Logical Partitions**.
4. Right-click the **Logical Partition** and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
5. Select the partition from which you would like to move interactive performance.
6. Right-click the interactive performance you want to move and select **Move**.
7. Click **Schedule** to specify when you want the move to occur.
8. Click **Help** if you need more information on this field.

9. Click **OK**.

To schedule an interactive performance move using the service tools window, follow these steps:

1. In iSeries Navigator, select **My Connections** or your active environment.
2. Select **Open iSeries Navigator service tools window** in the Taskpad window. If the Taskpad window is not displayed, select **View** and select **Taskpad**.
3. Enter the **IP address** of the service tool network interface to which you want to connect. Click **OK**.
4. You will be prompted for your **Service Tools User ID and password**.
5. Expand the system name select **Logical Partitions**.
6. Right-click the logical partition and select **Configure Partitions**. You are now working in the Configure Logical Partitions window.
7. Select the partition from which you would like to move interactive performance.
8. Right-click the interactive performance you want to move and select **Move**.
9. Click **Schedule** to specify when you want the move to occur.
10. Click **Help** if you need more information on this field.
11. Click **OK**.

Install new hardware for logical partitions

When you install new hardware in a partitioned environment, you should be aware of the following things:

- Verify that your logical partition configuration is current. You may need to clear nonreporting resources from your LPAR configuration.
- Empty positions on a shared bus may not be owned by a partition. They should be assigned to the desired partition before installing new adapters in them.
- A new device is owned by the logical partition which owns the I/O processor (IOP) to which the device is attached.
- A new IOP or IOA is owned by the partition which owns the dedicated bus.
- A new IOP or IOA is owned by the partition which owns the empty position on a shared bus.
- The primary partition owns a new system bus.
- New processors and memory are available (unassigned) to be assigned to any partition.
- When adding or removing new disk units to your system you may need to clear partition configuration data on the device.
- New interactive CPW is assigned across partitions by the percentage specified in the create wizard. After an upgrade, ensure partitions are not assigned more interactive CPW than they can use.

The IBM recommended approach to installing an IOP or IOA is to perform the following steps:

1. Use the clear non-reporting logical partition resources option to remove resources that are no longer available, that are listed twice, or that are no longer on the server.
2. Assign empty positions to the desired partition.
3. Install the new hardware using the Customer Installable Features information.

Install a new software release in the primary partition

The minimum memory required by the primary partition may change if you install a new OS/400 software release. A logical partition configuration error may occur if the minimum memory value is insufficient. Use iSeries Navigator to change the minimum and maximum memory value for each partition.

For more information on installing OS/400, refer to Install the OS/400 release and related software.

Expansion unit conversions in a partitioned environment

Detailed planning is necessary prior to beginning the expansion unit conversion of a partitioned server. It is highly recommended that all of the logical partition configuration actions be performed by an LPAR trained services person.

Refer to Convert expansion units for a partitioned server for detailed instructions on the following feature conversions:

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

HVLPTask performance behavior for partitions using the shared processing pool

Performance tools, such as WRKSYSACT, that report CPU utilization on a per-task basis for partitions using the shared processing pool show CPU time being consumed by a task called HVLPTASK.

HVLPTASK does not consume real CPU time. It does not affect the performance of a partition or a job within this partition. CPU time shown to be consumed by HVLPTASK is done only for accounting purposes.

The CPU time reported for HVLPTASK is a function of the processing capacity assigned to the partition.

The CPU time charged to HVLPTASK scales with the amount of work being done by real jobs thus making the system CPU percent utilization behave appropriately - going from 0 to 100 in direct proportion to the amount of customer work going on.

Examples

Partition A has a capacity of 0.9 processor units, partition B has a capacity of 0.1 processor units and partition C has a capacity of 1.5 processor units. Partition A is defined to use one virtual processor, partition B is defined to use one virtual processor and partition C is defined to use two virtual processors.

Partition A:

When the partition is idle, HVLPTASK is consuming 0% of the CPU time. As the CPU time consumed by real jobs in the partition goes from 0 to 0.9 processor units (that is the maximum cpu resource allowed), reported system cpu utilization for the partition will go from 0% to 100% . Reported cpu utilization for HVLPTASK will go from 0% to 10% and reported cpu utilization by real jobs will go from 0 to 90%.

Partition B:

When the partition is idle, HVLPTASK is consuming 0% of the CPU time. As the CPU time consumed by real jobs in the partition goes from 0 to 0.1 processor units (that is the maximum cpu resource allowed), reported system cpu utilization for the partition will go from 0% to 100% . Reported cpu utilization for HVLPTASK will go from 0% to 90% and reported cpu utilization by real jobs will go from 0 to 10%.

Partition C:

When the partition is idle, HVLPTASK is consuming 0% of the CPU time. As the CPU time consumed by real jobs in the partition go from 0 to 1.5 processor units (that is the maximum cpu resource allowed), reported system cpu utilization for the partition will go from 0% to 100% . Reported cpu utilization for HVLPTASK will go from 0% to 25% and reported cpu utilization by real jobs will go from 0 to 75%.

The above examples show that the CPU time consumed by HVLPTASK is a function of both the configured capacity and the number of virtual processors in the partition.

Exceptions

1. WRKACTJOB shows the CPU utilization of jobs only and consequently does not show any CPU time being consumed by HVLPTASK.
2. PM/400 excludes HVLPTASK from its list of top 20 reported jobs.

Explanation

When useful system CPU time is reported to OS/400 and applications in a shared processor partition, it is scaled so that CPU utilization calculations are not aware that the calculations are being done in a partition that is sharing the physical CPUs with other partitions. The scaling of CPU time is only done for system CPU time, not for individual task CPU time. This would lead to an anomaly between the total useful CPU time reported as being consumed by tasks and the useful CPU time reported as being consumed by the system. To resolve the anomaly, the excess CPU time that occurs due to the scaling of the overall system CPU time is charged to HVLPTASK.

The rationale for not scaling the task CPU time is that there are existing metrics that depend upon the actual CPU time that the task has consumed and scaling the task CPU time would make the metrics ill defined. An example of such a metric is the total CPU time a job takes to complete. If task CPU time were also scaled, the total CPU time consumed by a job would be a function of the configured capacity (the processor units) assigned to the partition.

Restart and power down a system with logical partitions

At times you will need to perform an initial program load (IPL) or power down the entire system or a single partition.

It is important to remember that when you perform an IPL on the primary partition you are also performing an IPL on all the secondary partitions. For more information on starting your secondary partitions with a system IPL, see “Restart a secondary logical partition during a system restart” on page 29 and “Prevent a secondary logical partition from restarting during a system restart” on page 29.

If you power down the primary partition, you will also power down any secondary partitions that are running. Unless you power down the secondary partitions before the primary partition, any secondary partitions that are still running may have an abnormal IPL.

Refer to Basic system operations for more information on abnormal IPLs.

Some of the IPL tasks you can perform are as follows:

- Change a logical partition “Change logical partition power schedule” on page 25
- Change the“Change the time on a primary partition” on page 25 on a primary partition.
- “Power down a system with logical partitions” on page 25 down the system.
- “Restart a system with logical partitions” on page 26 the system.
- Change “Change the operating mode for a logical partition” on page 28 for a logical partition.
- Change the “Change the IPL source for a logical partition” on page 28 for a logical partition.
- “Restart a secondary logical partition during a system restart” on page 29 a secondary logical partition during a system restart.
- “Prevent a secondary logical partition from restarting during a system restart” on page 29 a secondary logical partition from restarting during a system restart.

Change logical partition power schedule

You can schedule when a secondary partition will power on and power off by changing the IPL Date and Time (QIPLDATTIM) system value. You can change the QIPLDATTIM system value in Management Central in iSeries Navigator.

At a command line on a secondary partition workstation, use the GO POWER or CHGPWRSCD command to change a secondary partition power schedule.

When you schedule a secondary partition to power on, ensure that it is only during a time when the primary partition is already on. You have to power on the primary partition before you can power on any secondary partitions.

See Basic system operations for more information about power schedules.

Change the time on a primary partition

The following information applies only to **primary partitions**.

When changing the time on the primary partition, verify that all secondary partitions are powered on. This will ensure that the configuration data for each secondary load source is updated appropriately.

If a secondary partition is powered down when the time is changed on the primary partition, a system reference code of A6005090 800140A may occur.

To resolve the error, IPL the server in manual mode to accept the load source data. For more information on accepting the load source data, refer to Accept a disk unit as a load source for logical partitions.

Power down a system with logical partitions

Power down a secondary partition

The proper way to power down a secondary partition is by using the OS/400 power down system (PWRDWNSYS) command.

From a command line at a workstation on that secondary partition type PWRDWNSYS OPTION (*CNTRLD) DELAY (600) and press Enter.

If you power down a secondary partition, you will not affect any other logical partitions. This command is the preferred way to power down a secondary partition.

Power down the primary partition

Before you power down the primary partition, power down all of the secondary partitions. Then, use the PWRDWNSYS command to power down the primary partition.

Beginning in V5R2, you can setup confirmation support on the PWRDWNSYS command. This confirmation display will ask you if you want to power down the primary partition while secondary partitions are active. To change the primary PWRDWNSYS command default from a command line, type ADDENVVAR and press Enter. The environment variable is QIBM_PWRDWNSYS_CONFIRM.

From a command line at a workstation on the primary partition type PWRDWNSYS OPTION (*CNTRLD) DELAY (600) and press Enter.

If you do not power down the secondary partitions before the primary partition, all of the active secondary partitions will power down abnormally.

The partition manager will allow secondary partitions to attempt to write changed data from memory to disk units. However, the operating system may not reach normal job termination. The next IPL for the affected secondary partition will be treated as an abnormal IPL and may take much longer to complete.

Delayed power off

Use delayed power off (the power button on the remote control panel) only when you must power down a logical partition, and the PWRDWNSYS command does not work.

When you use the delayed power off option, the partition waits a predetermined amount of time to power down. This allows the partition time to end jobs and write data to disks. If the partition is unable to shut down within the predetermined amount of time, it will end abnormally and the next restart may take a long time.

Immediate power off

Use immediate power off (function 8 on the remote control panel) only when a logical partition cannot power down using PWRDWNSYS or delayed power off.

When you use the immediate power off option from the remote control panel, the system powers down without any preset delay. This may cause an abnormal IPL of the logical partition and possibly cause loss of data.

To perform a delayed power power off or an immediate power off, you should be working with the remote control panel. The **power button** will start a delayed power off and **function 8** will start an immediate power off of a system. You need a Service Tools user ID with operations or administration authority to the System Partitions function in Dedicated Service Tools (DST) to display the remote control panel.

Refer to Control panel functions for information on how to use the remote control panel and Restart the system (IPL) for instructions on how to restart your server.

Restart a system with logical partitions

To restart the whole system (perform a power down and an initial program load (IPL)) the secondary partitions must power down with the primary partition. If you are going to restart the primary partition, first “Power down a system with logical partitions” on page 25 all of the secondary partitions.

You can restart a secondary partition without affecting the other secondary partitions. If the secondary partition is powered on, you can restart it using PWRDWNSYS OPTION *CNTRLD DELAY (600) RESTART (*YES). You can use this command from a command line at one of its workstations or use the Run Command in iSeries Navigator.

Secondary Partition State	Unattended IPL	Attended IPL
Running with OS/400 active	1. Use the remote control panel for the logical partition to select normal mode and to set the appropriate “Change the IPL source for a logical partition” on page 28. 2. Right-click the logical partition with which you want to work and select **Run Command**. 3. Type PWRDWNSYS OPTION (*CNTRLD) DELAY (600) RESTART (*YES) and Click **OK**.	1. Use the remote control panel for the logical partition to select manual mode and to set the appropriate “Change the IPL source for a logical partition” on page 28. 2. Right-click the logical partition with which you want to work and select **Run Command**. 3. Type PWRDWNSYS OPTION (*CNTRLD) DELAY (600) RESTART (*YES) and Click **OK**.
Running with OS/400 not active	1. Use the remote control panel for the logical partition to select normal mode and to set the appropriate “Change the IPL source for a logical partition” on page 28. 2. Use the remote control panel and click the power button. (Delayed power off). 3. Wait for the partition to power off. 4. Use the remote control panel and click the power button again.	1. Use the remote control panel for the logical partition to select manual mode and to set the appropriate “Change the IPL source for a logical partition” on page 28 2. Use the remote control panel and click the power button. (Delayed power off). 3. Wait for the partition to power off. 4. Use the remote control panel and click the power button again.

Secondary Partition State	Unattended IPL	Attended IPL
Not running	1. Use the remote control panel for the logical partition to select normal mode and to set the appropriate “Change the IPL source for a logical partition” 2. Use the remote control panel and click the power on button.	1. Use the remote control panel for the logical partition to select manual mode and to set the appropriate “Change the IPL source for a logical partition” 2. Use the remote control panel and click the power on button.

For more information on starting your secondary partitions with a system IPL, see “Restart a secondary logical partition during a system restart” on page 29.

See Basic system operations for more information on performing attended or unattended IPLs. Operations Console provides additional information on the remote control panel.

Change the operating mode for a logical partition

The operating mode for logical partitions works just like operating mode on a system without logical partitions. For more information on how operating mode works and why you may need to change it, refer to Operating Mode of an IPL.

To change the operating mode for a partition, you should be working with the remote control panel. You need a Service Tools user ID with operations or administration authority to the System Partitions function in Dedicated Service Tools (DST).

Refer to Change operating modes and IPL types for instructions on how to change the operating mode for a partition.

Change the IPL source for a logical partition

You can choose a separate initial program load (IPL) source (type) for each logical partition. Each IPL source (A, B, C, or D) on a system with logical partitions works just like it would on a system without logical partitions.

For information on how each IPL source works and why you may need to change it, refer to IPL Type for more information.

Attention: Only a hardware service representative should use IPL source C. Only use IPL source C under the direction of your service representative. Severe data loss can occur with improper use of this function.

To change the IPL source for a partition, you should be working with the remote control panel. You need a Service Tools user ID with operations or administration authority to the System Partitions function in Dedicated Service Tools (DST) to work with the remote control panel.

Refer to Control panel functions for information on how to use the remote control panel and Change operating modes and IPL types for instructions on how to change the IPL source for a partition.

Restart a secondary logical partition during a system restart

When you select this option, you can set a secondary logical partition to start automatically when you perform a system (primary partition) restart or initial program load (IPL).

You can perform this procedure from iSeries Navigator. You need a Service Tools user ID with administration authority to the System Partitions function in Dedicated Service Tools (DST).

To restart a secondary logical partition during a system restart using Management Central, follow these steps:

1. In iSeries Navigator, expand **Management Central**.
2. Expand **Systems with Partitions**.
3. Select the physical system that has the logical partition with which you want to work.
4. Right-click the logical partition and select **Properties**.
5. Select the **Options** page.
6. Select the **Automatically restart when primary partition is restarted** box to automatically restart the secondary partition during a system restart. Click **Help** if you need more information on this field.
7. Click **OK**.

To restart a secondary logical partition during a system restart using My Connections, follow these steps:

1. In iSeries Navigator, expand **My Connections** or your active environment.
2. Select the primary partition of the system.
3. Expand **Configuration and Service** and select **Logical Partitions**.
4. Right-click the logical partition and select **Properties**.
5. Select the **Options** page.
6. Select the **Automatically restart when primary partition is restarted** box to automatically restart the secondary partition during a system restart. Click **Help** if you need more information on this field.
7. Click **OK**.

To restart a secondary logical partition during a system restart using the service tools window, follow these steps:

1. In iSeries Navigator, select **My Connections** or your active environment.
2. Select **Open iSeries Navigator service tools window** in the Taskpad window. If the Taskpad window is not displayed, select **View** and select **Taskpad**.
3. Enter the **IP address** of the service tool network interface to which you want to connect. Click **OK**.
4. You will be prompted for your **Service Tools User ID and password**.
5. Expand the system name select **Logical Partitions**.
6. Right-click the logical partition and select **Properties**.
7. Select the **Options** page.
8. Select the **Automatically restart when primary partition is restarted** box to automatically restart the secondary partition during a system restart. Click **Help** if you need more information on this field.
9. Click **OK**.

Prevent a secondary logical partition from restarting during a system restart

When you select this option the logical partition will not start when you perform a system (primary partition) restart or initial program load (IPL).

You can perform this procedure from iSeries Navigator. You need a Service Tools user profile with administration authority to the System Partitions function in Dedicated Service Tools (DST). To prevent a secondary logical partition from restarting during a system restart, follow these steps:

To prevent a secondary logical partition from restarting during a system restart using Management Central, follow these steps:

1. In iSeries Navigator, expand **Management Central**.
2. Expand **Systems with Partitions**.
3. Select the physical system that has the logical partition with which you want to work.
4. Right-click the logical partition and select **Properties**.
5. Select the **Options** page.
6. Deselect the **Automatically restart when primary partition is restarted** box to hold the logical partition from restarting during the system restart. Click **Help** if you need more information on this field.
7. Click **OK**.

To prevent a secondary logical partition from restarting during a system restart using My Connections, follow these steps:

1. In iSeries Navigator, expand **My Connections** or your active environment.
2. Select the primary partition of the system.
3. Expand **Configuration and Service** and select **Logical Partitions**.
4. Right-click the logical partition and select **Properties**.
5. Select the **Options** page.
6. Deselect the **Automatically restart when primary partition is restarted** box to hold the logical partition from restarting during the system restart. Click **Help** if you need more information on this field.
7. Click **OK**.

To prevent a secondary logical partition from restarting during a system restart using the service tools window, follow these steps:

1. In iSeries Navigator, select **My Connections** or your active environment.
2. Select **Open iSeries Navigator service tools window** in the Taskpad window. If the Taskpad window is not displayed, select **View** and select **Taskpad**.
3. Enter the **IP address** of the service tool network interface to which you want to connect. Click **OK**.
4. You will be prompted for your **Service Tools User ID and password**.
5. Expand the system name select **Logical Partitions**.
6. Right-click the logical partition and select **Properties**.
7. Select the **Options** page.
8. Deselect the **Automatically restart when primary partition is restarted** box to hold the logical partition from restarting during the system restart. Click **Help** if you need more information on this field.
9. Click **OK**.

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