



iSeries  
Integrated xSeries Server  
Memory

*Version 5*







iSeries

Integrated xSeries Server  
Memory

*Version 5*

**Note**

Before using this information and the product it supports, be sure to read the information in "Notices," on page 43.

**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.

© Copyright International Business Machines Corporation 2000, 2005. All rights reserved.

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

---

## Contents

<b>289x or 04xx server memory card . . . . .</b>	<b>1</b>
Before you begin . . . . .	1
Locate the Integrated xSeries Server . . . . .	2
Install memory on the IXS with the system powered on . . . . .	2
Complete the installation . . . . .	5
Install memory on the IXS with the system powered off . . . . .	5
Complete the installation . . . . .	7
Install memory on the IXS in the expansion unit . . . . .	9
Install memory on the IXS with the system and expansion unit powered on . . . . .	9
Install memory on the IXS with the system and expansion unit powered off . . . . .	12
Replace memory on the IXS with the system powered on . . . . .	16
Complete the installation . . . . .	19
Replace memory on the IXS with the system powered off . . . . .	19
Complete the installation . . . . .	20
Replace memory in the IXS in the expansion unit. . . . .	22
Replace memory on the IXS with the system and expansion unit powered on . . . . .	22
Replace memory on the IXS with the system and expansion unit powered off . . . . .	25
<b>Power off the system unit . . . . .</b>	<b>29</b>

<b>Remove the covers . . . . .</b>	<b>31</b>
Remove the system unit back cover . . . . .	31
Remove the system unit side cover . . . . .	31
Remove the 5075 and 5095 expansion unit covers. . . . .	33
Remove the 5078 and 5088 expansion unit cover . . . . .	34
<b>Card positions . . . . .</b>	<b>35</b>
270, 800, and 810 system unit . . . . .	35
5075 expansion unit . . . . .	35
5078 or 0578 expansion unit . . . . .	36
5088 or 0588 expansion unit . . . . .	37
5095 or 0595 expansion unit . . . . .	38
<b>Install covers . . . . .</b>	<b>41</b>
<b>Appendix. Notices . . . . .</b>	<b>43</b>
Trademarks . . . . .	44
Terms and conditions for downloading and printing publications . . . . .	45
Code disclaimer information. . . . .	45
Electronic Emission Notices . . . . .	46
Federal Communications Commission (FCC) statement . . . . .	46
Electronic Emission Notices . . . . .	48
Federal Communications Commission (FCC) statement . . . . .	48



---

## 289x or 04xx server memory card

This topic contains information on adding or replacing the following memory cards:

- Feature 2895, 2896, or 2897 server memory to your 2890, 2891, or 2899 Integrated xSeries® Server (IXS)
- Feature 0446 and 0447 server memory to your 2892 or 4810 Integrated xSeries Server (IXS)

In these instructions, 289x refers to feature codes 2890, 2891, 2892, 2899, or 4810.

Replacing and installing these features are customer tasks. However, these tasks should be performed by an experienced user who understands industry terminology and who has system experience. When you use these instructions, you will perform some or all of the following tasks:

- Power off the system unit.
- Remove the system unit covers.
- Install your new hardware.
- Install covers.
- Perform an initial program load (IPL) of your operating system.
- Verify your new hardware configuration.

You may need to allow additional time to complete your jobs and back up your system.

You can choose to perform these tasks yourself or contact IBM(R) or an authorized service provider to make arrangements for them to perform the tasks for a fee. Should you encounter difficulties when performing a task, contact your authorized dealer or service provider.

Some of the figures in these instructions may not look exactly like the system unit that you have. However, the steps to perform the task are the same.

---

### Before you begin

Before you begin a replacement or installation task, follow these steps:

- \_\_\_ 1. **For an installation and if possible, for a replacement, ensure that you have a current backup of your system (including operating system, licensed programs, and data).** If you have backed up the operating system and licensed programs since the last time you applied PTFs, that backup is acceptable.
- \_\_\_ 2. Ensure that you take a few minutes to become familiar with these instructions.
- \_\_\_ 3. Ensure that you have access to a medium flat-bladed screwdriver.
- \_\_\_ 4. If there are incorrect, missing, or visibly damaged parts, contact one of the following:
  - Your authorized service provider
  - In the United States: IBM® Rochester Manufacturing Automated Information Line (R-MAIL) at 1-800-300-8751
  - In countries outside of the United States: Use the following Web site to locate your service and support numbers:  
<http://www.ibm.com/planetwide>
- \_\_\_ 5. If you are installing new hardware in logical partitions, you need to plan and understand the requirements to be successful. Go to Logical partitions in the *Information Center*. Then return to these instructions.
- \_\_\_ 6. If you encounter difficulties during the procedure, contact your authorized service provider or your authorized dealer.

- \_\_\_ 7. Determine if there are any existing PTF prerequisites before you install your new feature. Go to the following Web site:  
[http://www-912.ibm.com/s\\_dir/slkbase.NSF/slkbase](http://www-912.ibm.com/s_dir/slkbase.NSF/slkbase)
- Select **All Documents**.
  - Select **General Information**.
  - Select **Offerings**.
  - Select **Feature Prerequisites**.
  - Select **Customer Installation Features Prerequisites**.
  - Locate your feature number and OS/400® release, and check the prerequisites.

To install or replace a memory card in your Integrated xSeries Server, perform these tasks:

- Perform prerequisite tasks as described in “Before you begin” on page 1.
- “Locate the Integrated xSeries Server.”

---

## Locate the Integrated xSeries Server

- \_\_\_ 1. Are you installing or replacing a memory card on the Integrated xSeries Server (IXS) in the 270, 800, or 810 system?
- \_\_\_ **Yes:** Continue with the next step.
- \_\_\_ **No:** Select the instructions for the task you want to perform:
- “Install memory on the IXS in the expansion unit” on page 9
  - “Replace memory in the IXS in the expansion unit” on page 22
- \_\_\_ 2. Remove the iSeries™ back cover. For information on how to remove the back cover, see “Remove the system unit back cover” on page 31.
- \_\_\_ 3. Remove the right side cover (from back view). For information on how to remove the side cover, see “Remove the system unit side cover” on page 31.
- \_\_\_ 4. Look at your IXS card. The IXS is located in slot C04. For information on location of card slots, see “Card positions” on page 35. Is your IXS card secured by a latch or a screw?
- \_\_\_ **Latch:** Continue with the next step.
- \_\_\_ **Screw:** Select the instructions for the task you want to perform:
- “Install memory on the IXS with the system powered off” on page 5
  - “Replace memory on the IXS with the system powered off” on page 19
- \_\_\_ 5. Are you installing or replacing a memory card on the IXS with the system powered on?
- **Yes:** Select the instructions for the task you want to perform:
    - “Install memory on the IXS with the system powered on”
    - “Replace memory on the IXS with the system powered on” on page 16
  - **No:** Select the instructions for the task you want to perform:
    - “Install memory on the IXS with the system powered off” on page 5
    - “Replace memory on the IXS with the system powered off” on page 19

---


## Install memory on the IXS with the system powered on

- \_\_\_ 1. Vary off the IXS:
- Go to the *Work with Configuration Status* display by entering: **WRKCFGSTS** at any command line. Press F4.
  - At the *Work with Configuration Status* display, enter **\*NWS** at the *Type* field and press Enter two times.
  - At the *Work with Configuration Status* display, select the **Vary off** option in the *Opt* column next to the IXS and press Enter.



- \_\_ d. Press F12 to return to the Main Menu.
- \_\_ 2. Verify current IXS memory.
  - \_\_ a. At a command line, type **strsst** and press Enter.
  - \_\_ b. Type **your service tools user ID and your service tools password** on the *System Service Tools (SST) Sign On* display and press Enter.
  - \_\_ c. Select **Start a service tool** and press Enter.
  - \_\_ d. Select **Hardware service manager** and press Enter.
  - \_\_ e. Select **Logical hardware resources (buses, IOPs, controllers,...)** and press Enter.
  - \_\_ f. Select **System Bus Resources** and press Enter.
  - \_\_ g. Use the cursor to select the 289x server card with which you are working.
  - \_\_ h. Select **Associated packaging resource(s)** in the *Opt* field in front of that 289x server card and press Enter.
  - \_\_ i. At the *Packaging Resources Associated with a Logical Resource* display, use the cursor to select **Communications IOP**.
  - \_\_ j. Select the **Associated logical resource(s)** option in the *Opt* field and press Enter.
  - \_\_ k. At the *Logical Resources Associated with a Packaging Resource* display, use the cursor to select **Communications IOA**.
  - \_\_ l. Select the **Display detail** option in the *Opt* field and press Enter.
  - \_\_ m. Look at *Memory installed on IOA (MB)* and verify that the current amount of memory that is installed on the 289x is correct.
  - \_\_ n. Press F12 twice to go back to the *Package Resources Associated with a Logical Resource* display.
  - \_\_ o. Use the cursor to select **Communications IOP**.
  - \_\_ p. Select the **Concurrent Maintenance** option and press Enter.

**Note:** If the message, The specified option is not allowed for the selected resource appears, your system unit is not capable of adding memory to the IXS concurrently. Go to "Install memory on the IXS with the system powered off" on page 5.

- \_\_ q. Use the cursor to select **Communications IOP**.
- \_\_ r. Select the **Toggle LED blink off/on** option and press Enter.  
The LED at the card slot you chose should flash.
- \_\_ s. Select the **Toggle LED blink off/on** option again, and press Enter.  
The LED at the card slot you chose should stop flashing and remain solid.
- \_\_ t. With the cursor still at the **Communications IOP** line, press **F9** (Power off domain).
- \_\_ u. At the *Hardware Resource Concurrent Maintenance* display, press Enter. Wait for the power off to complete. The following message should appear:  
Power off complete. Check power indicator (LED) to confirm.  
When the LED is in the off position it is safe to proceed. While you do the next steps, keep your console at the *Hardware Resources Concurrent Maintenance* display.
- \_\_ 3. **If possible, use a wrist strap to prevent electrostatic discharge from damaging your hardware.**  
If you do not have a wrist strap, touch a metal surface of the system or expansion unit before installing or replacing hardware.  
If you received the 2209 Disposable Wrist Strap, follow these steps:
  - \_\_ a. Attach the disposable wrist strap.  View video.
  - \_\_ b. When you unroll the strap, remove the liner from the copper foil at the end.
  - \_\_ c. Attach the adhesive part of the copper foil to an **exposed, unpainted** metal surface on the frame of the unit.

**Note:** Follow the same precautions you would use without the wrist strap. The 2209 Disposable Wrist Strap is for static control. It will not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

- \_\_\_ 4. The IXS is located in slot C04. For information on the location of card slots, see “Card positions” on page 35.
- \_\_\_ 5. Remove all cables that are connected to the IXS.
- \_\_\_ 6. Adapter cards are fragile. **Use the static strap when handling.** Handle only by the edges, and keep fingers off printed circuit area.

Remove the Integrated xSeries Server by turning the latch up and pulling the latch out toward you. Squeeze the metal lever while removing the IXS from the system unit.

- \_\_\_ 7. Lay the IXS on a static protective surface.
- \_\_\_ 8. Find the package that contains a 289x memory card. Carefully remove the memory card from the static-protective package.

On feature codes 2890, 2891, and 2899, there are locations for one IOP memory card **A** and four server memory cards. On feature codes 2892 and 4810, there are locations for four server memory cards.

**Note:** For feature codes 2892 and 4810, the server memory cards must be populated in identical pairs.

- \_\_\_ 9. Install the 289x server memory card on the IXS by doing the following:
  - \_\_\_ a. Align the memory card with the next available connector on the IXS card.
  - \_\_\_ b. Snap the card in place by moving it downward in the connector. The memory card has a distinct click as it snaps into the connector.

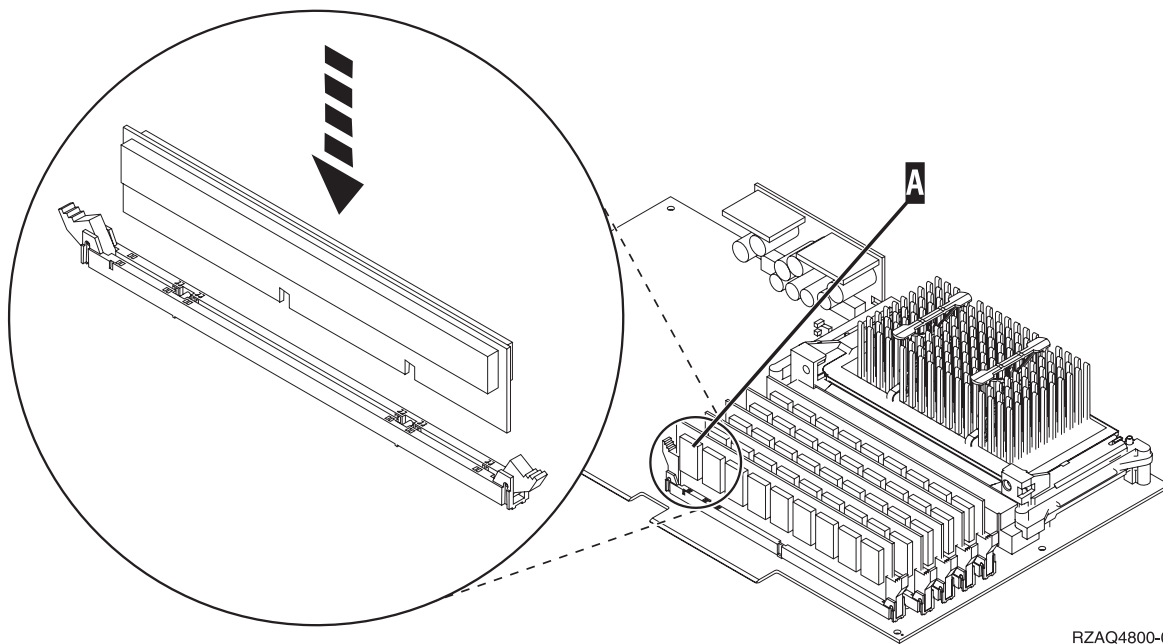


Figure 1. Location of memory on IXS

- \_\_\_ c. Repeat this step if you have another 289x memory card to install.
- \_\_\_ 10. Install the IXS card into the system unit. Align the card with the card holders inside the system unit until it is fully connected. Swing the latches in and down to secure the card.
- \_\_\_ 11. Re-attach the cables that you removed from the card.
- \_\_\_ 12. Install covers and plug-in devices. For more information on installing covers, see “Install covers” on page 41.

- \_\_ 13. Power on the IXS:
  - \_\_ a. The cursor on your console should be where the Communications IOA was.
  - \_\_ b. Press **F10** (Power on domain) and then press Enter to confirm power on.
 

**Note:** If the *Work with Controlling Resource* display appears, select the **Assign to** option for each resource on the display. Then press Enter and wait for the power on to complete.
  - \_\_ c. At the *Hardware Resource Concurrent Maintenance* display, press **F8** to verify that the power status is on for all resources.
  - \_\_ d. Use the cursor to select the **Communications IOP**.
  - \_\_ e. Select the **Associated logical resource(s)** option and press Enter.
  - \_\_ f. Use the cursor to select the **Communications IOA**.
  - \_\_ g. Select the **Display detail** option and press Enter.
  - \_\_ h. Verify that the correct amount of memory is installed.
- \_\_ 14. IXS memory test:
  - \_\_ a. Press **F12** once.
  - \_\_ b. Enter the **Verify** option next to the 289x IOA. Press Enter.
  - \_\_ c. Press Enter at the *Verification Test* display.
  - \_\_ d. Select the **Hardware memory test** option. Press Enter.
 

**Note:** This memory test will take about 2 minutes per 1GB of memory that is tested.
  - \_\_ e. Press Enter at the *Number of Test Runs* display.
  - \_\_ f. If the test fails, make sure that you have installed the memory properly. If the test continues to fail, contact your authorized dealer or service provider.
- \_\_ 15. Continue with "Complete the installation."


## Complete the installation

- \_\_ 1. When the memory test is complete, the *Verification Test Results* display indicates the following: This test is successful. Press Enter.
- \_\_ 2. Press Enter at the *Verification Test* display.
- \_\_ 3. Press F3 three times and then press Enter to return to the Main Menu.
- \_\_ 4. Vary on the IXS:
  - \_\_ a. Go to the *Work with Configuration Status* display by entering WRKCFGSTS at a command line. Press F4.
  - \_\_ b. At the *Work with Configuration Status* display enter **\*NWS** at the *Type* field and press Enter two times.
  - \_\_ c. At the *Work with Configuration Status* display enter the **Vary on** option in the *Opt* column next to the **IXS** and press Enter.
  - \_\_ d. Press **F3** to exit.
- \_\_ 5. Your feature upgrade is complete.
- \_\_ 6. For information on how to make your card operational, go to the iSeries Information Center.
- \_\_ 7. **You have completed installing memory on your Integrated xSeries Server.**

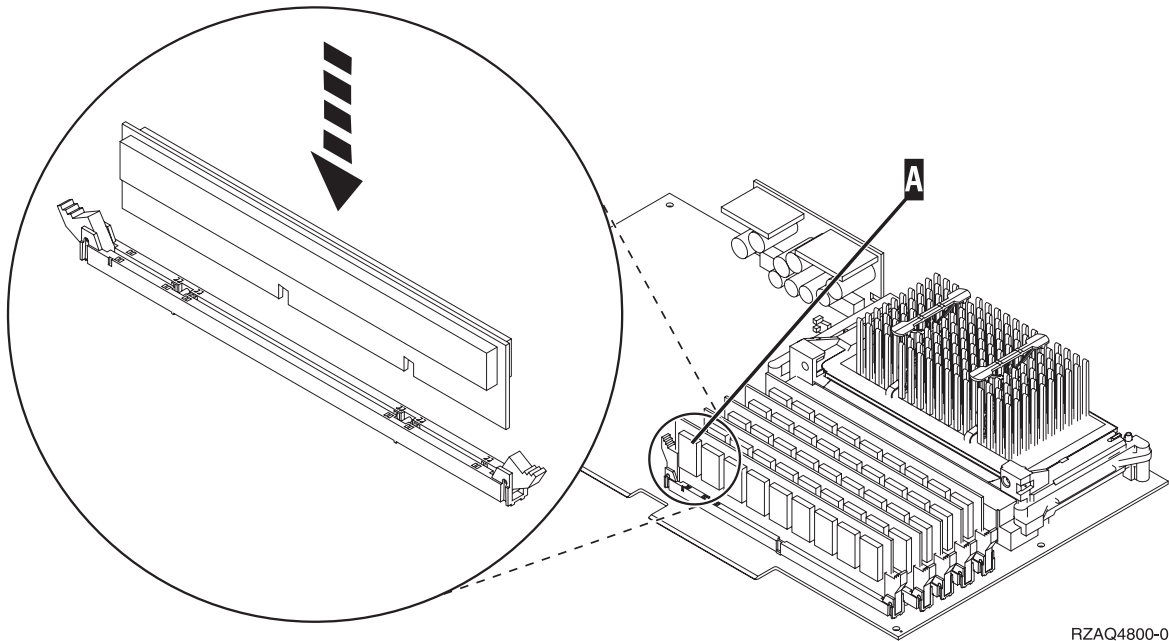
---

## Install memory on the IXS with the system powered off

- \_\_ 1. Verify the current memory on your IXS by doing these steps:
  - \_\_ a. At a command line, type **strsst** and press Enter.

- \_\_\_ b. Type **your service tools user ID and your service tools password** on the *System Service Tools (SST) Sign On* display and press Enter.
  - \_\_\_ c. Select **Start a service tool** and press Enter.
  - \_\_\_ d. Select **Hardware service manager** and press Enter.
  - \_\_\_ e. Select **Logical hardware resources (buses, IOPs, controllers,...)** and press Enter.
  - \_\_\_ f. Select **System bus resources** and press Enter.
  - \_\_\_ g. Use the cursor to select the 289x Communications IOP you are working on.
  - \_\_\_ h. Select the **Associated packaging resource(s)** option in the *Opt* field in front of that 289x IOP card and press Enter.
  - \_\_\_ i. At the *Packaging Resources Associated with a Logical Resource* display, use the cursor to select **Communications IOP**.
  - \_\_\_ j. Select the **Associated logical resource(s)** option in the *Opt* field and press Enter.
  - \_\_\_ k. At the *Logical Resources Associated with a Packaging Resource* display, use the cursor to select **Communications IOA**.
  - \_\_\_ l. Select the **Display detail** option in the *Opt* field and press Enter.
  - \_\_\_ m. Look at *Memory installed on IOA (MB)* and verify that the current amount of memory that is installed on the 289x is correct.
  - \_\_\_ n. Press F3 three times and press Enter to return to the Main Menu.
- \_\_\_ 2. "Power off the system unit" on page 29.
- \_\_\_ 3. **If possible, use a wrist strap to prevent electrostatic discharge from damaging your hardware.** If you do not have a wrist strap, touch a metal surface of the system or expansion unit before installing or replacing hardware.
- If you received the 2209 Disposable Wrist Strap, follow these steps:
- \_\_\_ a. Attach the disposable wrist strap.  View video.
  - \_\_\_ b. When you unroll the strap, remove the liner from the copper foil at the end.
  - \_\_\_ c. Attach the adhesive part of the copper foil to an **exposed, unpainted** metal surface on the frame of the unit.
- Note:** Follow the same precautions you would use without the wrist strap. The 2209 Disposable Wrist Strap is for static control. It will not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
- \_\_\_ 4. The IXS is located in slot C04. For information on the location of card slots, see "Card positions" on page 35.
- \_\_\_ 5. Remove all cables that are attached to the card.
- \_\_\_ 6. Adapter cards are fragile. **Use the static strap when handling.** Handle only by the edges, and keep fingers off printed circuit area.
- Remove the Integrated xSeries Server by turning the latch up and pulling the latch out toward you. Squeeze the metal lever while removing the IXS from the system unit. On some cards it will be necessary to remove the screw that holds the adapter card in place.
- \_\_\_ 7. Lay the IXS on a static protective surface.
- \_\_\_ 8. Find the package that contains a 289x server memory card. Carefully remove the memory card from the static-protective package.
- On feature codes 2890, 2891, and 2899, there are locations for one IOP memory card **A** and four server memory cards. On feature codes 2892 and 4810, there are locations for four server memory cards.
- Note:** For feature codes 2892 and 4810, the server memory cards must be populated in identical pairs.
- \_\_\_ 9. Install the 289x server memory card on the IXS by doing the following:

- \_\_ a. Align the memory card with the next available connector on the IXS card.
- \_\_ b. Snap the card in place by moving it downward in the connector. The memory card has a distinct click as it snaps into the connector.



RZAQ4800-0

Figure 2. Location of memory on IXS

- \_\_ c. Repeat this step if you have another 289x memory card to install.
- \_\_ 10. Install the IXS card into the system unit. Align the card with the card holders inside the system unit until it is fully connected. Swing the latches in and down to secure the card.
- \_\_ 11. Re-attach the cables that you removed from the IXS.
- \_\_ 12. Continue with “Complete the installation.”

## Complete the installation

- \_\_ 1. Install covers and plug in the system unit and devices. For more information, see “Install covers” on page 41.
- \_\_ 2. Look at the Function/Data display on the system unit control panel. Does **01 B N V=S** appear in the Function/Data display?
  - \_\_ **Yes:** Continue with the next step.
  - \_\_ **No:** Do the following:
    - \_\_ a. Open the control panel door.
    - \_\_ b. Press the Increment/Decrement push button until **02** appears in the Function/Data display.
    - \_\_ c. Press the Enter push button on the control panel.
    - \_\_ d. Press the Increment/Decrement push button until **B** appears in the Function/Data display.
    - \_\_ e. Press the Enter push button on the control panel.
    - \_\_ f. Press the Increment/Decrement push button until **N** appears in the Function/Data display.
    - \_\_ g. Press the Enter push button on the control panel.

- \_\_\_ h. Press the Increment/Decrement push button until **S** appears in the Function/Data display.
- \_\_\_ i. Press the Enter push button on the control panel.
- \_\_\_ j. Press the Increment/Decrement push button until **01** appears in the Function/Data display.
- \_\_\_ k. Press the Enter push button on the control panel.  
  - 01 B N S** should appear in the Function/Data display.
- \_\_\_ l. Go to step 3.
- \_\_\_ 3. Power on the workstation or PC that is your console.
- \_\_\_ 4. Press the power-on button for the system unit. The power-on light will appear.

**Note:** There is an approximately 10-second delay before the system unit powers on.

- \_\_\_ 5. Sign on the system unit. Ensure that you have service tools authority.
- \_\_\_ 6. Do the following to verify your adapter card configuration:
  - \_\_\_ a. On the command line, type **strsst**. Press the Enter key.
  - \_\_\_ b. Type **your service tools user ID and your service tools password** on the *System Service Tools (SST) Sign On* display and press Enter.
  - \_\_\_ c. Select the **Start a service tool** option and press the Enter key.
  - \_\_\_ d. Select the **Hardware service manager** option and press the Enter key.
  - \_\_\_ e. Select the **Packaging hardware resources (system, frames, cards...)** option and press the Enter key.
  - \_\_\_ f. Type a **9** in front of the *System Unit* and press the Enter key.  
 If the 289x card is not listed, ensure that the card is properly installed.
  - \_\_\_ g. On the *Packaging Hardware Resources* menu, type an **8** in the *Opt* column next to Communications IOP 289x. This will be card Type-Model, for example, 2890-001. Press the Enter key.
  - \_\_\_ h. When the *Logical Resources Associated with a Packaging Resource* menu appears, type a **5** in the *Opt* column next to the *Communications IOA*. Press the Enter key.
  - \_\_\_ i. When the *Communications Hardware Resource Detail* menu appears, look at the line "Memory installed on IOA (MB)." The number should reflect the amount of memory you just installed on your 289x Integrated xSeries Server. If it does not, ensure that the memory cards are properly installed.
  - \_\_\_ j. IXS memory test:
    - \_\_\_ 1) Press **F12** once.
    - \_\_\_ 2) Enter the **Verify** option next to the 289x IOA. Press Enter.
    - \_\_\_ 3) Press Enter at the *Verification Test* display.
    - \_\_\_ 4) Select the **Hardware memory test** option. Press Enter.  
      - Note:** This memory test will take about 2 minutes per 1GB of memory to be tested.
    - \_\_\_ 5) Press Enter at the *Number of Test Runs* display.

**Note:** If the test fails, make sure that you have installed the memory properly. If the test continues to fail, contact your authorized dealer or service provider.

- \_\_\_ 7. When the memory test is complete, the *Verification Test Results* display indicates the following: This test is successful. Press Enter.
- \_\_\_ 8. Press Enter at the *Verification Test* display.
- \_\_\_ 9. Press F3 three times and then press Enter to return to the Main Menu.
- \_\_\_ 10. Vary on the IXS:

- \_\_\_ a. Go to the *Work with Configuration Status* display by entering WRKCFGSTS at a command line. Press F4.
  - \_\_\_ b. At the *Work with Configuration Status* display enter \*NWS at the *Type* field and press Enter two times.
  - \_\_\_ c. At the *Work with Configuration Status* display enter the **Vary on** option in the *Opt* column next to the IXS and press Enter.
  - \_\_\_ d. Press F3 to exit.
- \_\_\_ 11. Your feature upgrade is complete.
  - \_\_\_ 12. For information on how to make your card operational, go to the iSeries Information Center.
  - \_\_\_ 13. You have completed installing memory on your Integrated xSeries Server.

---


## Install memory on the IXS in the expansion unit

Your system and expansion unit can either be powered off or powered on when you install memory cards on the IXS. Select the preferred procedure from the following:

- “Install memory on the IXS with the system and expansion unit powered on”
- “Install memory on the IXS with the system and expansion unit powered off” on page 12

## Install memory on the IXS with the system and expansion unit powered on

- \_\_\_ 1. Remove the covers from the expansion unit. For more information on removing the covers, see “Remove the covers” on page 31.
- \_\_\_ 2. Locate the IXS. For information on location of card slots, see “Card positions” on page 35.
- \_\_\_ 3. Vary off the IXS:
  - \_\_\_ a. Go to the *Work with Configuration Status* display by entering: **WRKCFGSTS** at a command line. Press F4.
  - \_\_\_ b. At the *Work with Configuration Status* display enter \*NWS at the *Type* field and press Enter two times.
  - \_\_\_ c. At the *Work with Configuration Status* display enter the **Vary off** option in the *Opt* column next to the IXS and press Enter.
  - \_\_\_ d. Press F12 to exit.
- \_\_\_ 4. Verify current IXS memory.
  - \_\_\_ a. At a command line, type **strsst** and press Enter.
  - \_\_\_ b. Type **your service tools user ID and your service tools password** on the *System Service Tools (SST) Sign On* display and press Enter.
  - \_\_\_ c. Select the **Start a service tool** option and press Enter.
  - \_\_\_ d. Select the **Hardware service manager** and press Enter.
  - \_\_\_ e. Select the **Packaging hardware resources (systems, frames, cards,...)** option. Press Enter.
  - \_\_\_ f. Select the **Hardware contained within package** option in the *Opt* field in front of the System Expansion Unit containing the 289x you are adding memory to. Press Enter.
  - \_\_\_ g. Use the cursor to select the 289x communications IOP card you are working with.
  - \_\_\_ h. Select the **Associated logical resource(s)** option in the *Opt* field in front of that 289x IOP card and press Enter.
  - \_\_\_ i. At the *Logical Resources Associated with a Packaging Resource* display, use the cursor to select Communications IOA.
  - \_\_\_ j. Select the **Display detail** option in the *Opt* field and press Enter.
  - \_\_\_ k. Look at *Memory installed on IOA (MB)* and verify that the current amount of memory that is installed on the 289x is correct.

- \_\_\_ l. Press F12 twice to go back to the *Packaging Hardware Resources* display.
- \_\_\_ 5. Verify location of the IXS:
  - \_\_\_ a. Use the cursor to select the **289x Communications IOP**.
  - \_\_\_ b. Select the **Concurrent Maintenance** option and press Enter.
  - \_\_\_ c. Use the cursor to select **Communications IOP**.
  - \_\_\_ d. Select the **Toggle LED blink off/on** option and press Enter.  
The LED at the card slot you chose should blink.
  - \_\_\_ e. Select the **Toggle LED blink off/on** option again, and press Enter.  
The LED at the card slot you chose should stop blinking and remain on.
- \_\_\_ 6. With the cursor still at the Communications IOP line, press **F9** (Power off domain).
- \_\_\_ 7. At the confirmation display press Enter. Wait for the power off to complete. The following message should appear:  
Power off complete. Check power indicator (LED) to confirm.  
When the LED at the card slot you chose is off, it is safe to proceed. While you do the next steps, keep your console at the *Hardware Resources Concurrent Maintenance* display.
- \_\_\_ 8. **If possible, use a wrist strap to prevent electrostatic discharge from damaging your hardware.** If you do not have a wrist strap, touch a metal surface of the system or expansion unit before installing or replacing hardware.  
If you received the 2209 Disposable Wrist Strap, follow these steps:
  - \_\_\_ a. Attach the disposable wrist strap.  View video.
  - \_\_\_ b. When you unroll the strap, remove the liner from the copper foil at the end.
  - \_\_\_ c. Attach the adhesive part of the copper foil to an **exposed, unpainted** metal surface on the frame of the unit.

**Note:** Follow the same precautions you would use without the wrist strap. The 2209 Disposable Wrist Strap is for static control. It will not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
- \_\_\_ 9. Remove all cables that are attached to the Integrated xSeries Server (IXS).
- \_\_\_ 10. Remove the IXS by turning the latch up and pulling the latch out toward you. Squeeze the latch on the left end of the IXS while pulling the card toward you.
- \_\_\_ 11. Lay the IXS on a static protective surface.
- \_\_\_ 12. Find the package that contains a 289x memory card. Carefully remove the memory card from the static-protective package.  
On feature codes 2890, 2891, and 2899, there are locations for one IOP memory card **A** and four server memory cards. On feature codes 2892 and 4810, there are locations for four server memory cards.  
  
**Note:** For feature codes 2892 and 4810, the server memory cards must be populated in identical pairs.
- \_\_\_ 13. Install the 289x server memory card on the IXS by doing the following:
  - \_\_\_ a. Align the memory card with the next available connector on the IXS card.
  - \_\_\_ b. Snap the card in place by moving it downward in the connector. The memory card has a distinct click as it snaps into the connector.



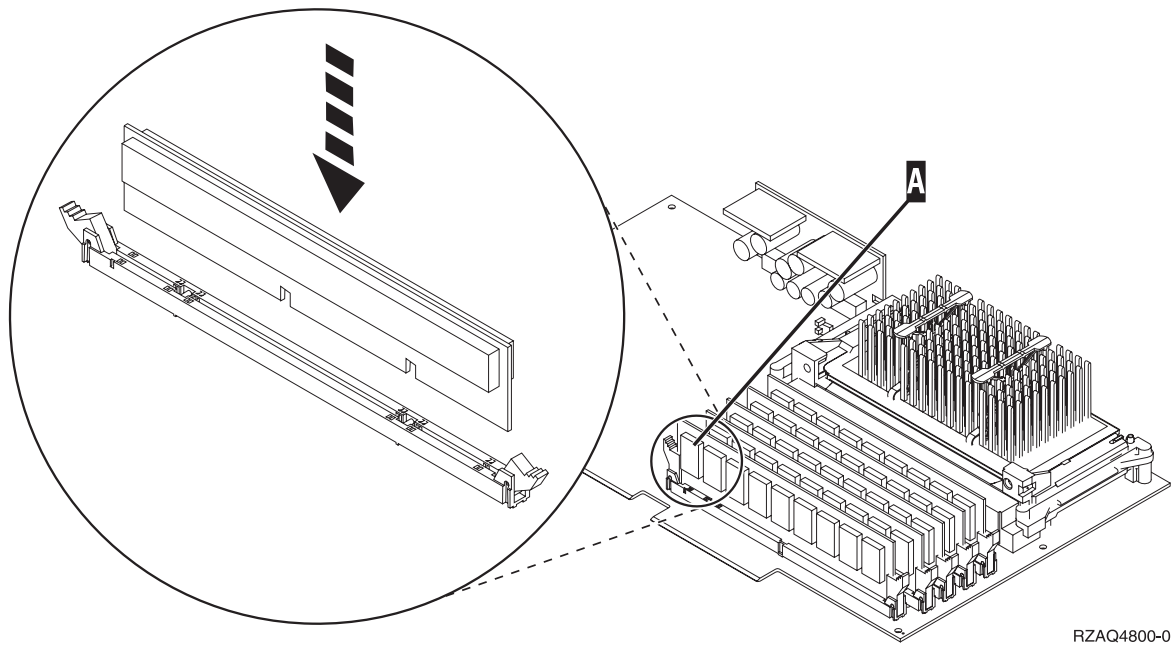


Figure 3. Location of memory on IXS

- \_\_ c. Repeat this step if you have another 289x memory card to install.
- \_\_ 14. Install the IXS card into the expansion unit.
- \_\_ 15. Re-attach the cables you removed from the IXS card.
- \_\_ 16. Install covers. For more information, see “Install covers” on page 41.
- \_\_ 17. Power on the IXS.
  - \_\_ a. The cursor on your console should be where the Communications IOA was.
  - \_\_ b. Press **F10** (Power on domain) and enter to confirm power on.

**Note:** If the *Work with Controlling Resource* display appears, select the **Assign to** option for each resource on the display. Then press Enter and wait for the power on to complete.

- \_\_ c. At the *Hardware Resource Concurrent Maintenance* display, press **F8** to verify that the power status is on for all resources.
- \_\_ d. Use the cursor to select the **Communications IOP**.
- \_\_ e. Enter the **Associated logical resource(s)** option and press Enter.
- \_\_ f. Use the cursor to select the **Communications IOA**.
- \_\_ g. Enter the **Display detail** option and press Enter.
- \_\_ h. Verify that the correct amount of memory is installed.
- \_\_ i. IXS memory test:
  - \_\_ 1) Press **F12** once.
  - \_\_ 2) Enter the **Verify** option next to the 289x IOA. Press Enter.
  - \_\_ 3) Press Enter at the *Verification Test* display.
  - \_\_ 4) Select the **Hardware memory test** option. Press Enter.

**Note:** This memory test will take about 2 minutes per 1GB of memory to be tested.

- \_\_ 5) Press Enter at the *Number of Test Runs* display.

**Note:** If the test fails, make sure that you have installed the memory properly. If the test continues to fail, contact your authorized dealer or service provider.

- \_\_ 18. Continue with “Complete the Installation.”

### Complete the Installation


- \_\_ 1. When the memory test is complete, the *Verification Test Results* display indicates the following: This test is successful. Press Enter.
- \_\_ 2. Press Enter at the *Verification Test* display.
- \_\_ 3. Press F3 three times and then press Enter to return to the Main Menu.
- \_\_ 4. Vary on the IXS:
  - \_\_ a. Go to the *Work with Configuration Status* display, by entering WRKCFGSTS at a command line. Press F4.
  - \_\_ b. At the *Work with Configuration Status* display enter \*NWS at the *Type* field and press Enter two times.
  - \_\_ c. At the *Work with Configuration Status* display enter the **Vary on** option in the *Opt* column next to the **IXS** and press Enter.
  - \_\_ d. Press F3 to exit.
- \_\_ 5. Your feature upgrade is complete.
- \_\_ 6. For information on how to make your card operational, go to the iSeries Information Center.
- \_\_ 7. You have completed installing memory on your Integrated xSeries Server.

### Install memory on the IXS with the system and expansion unit powered off

- \_\_ 1. Verify the current memory on your IXS by doing these steps:
  - \_\_ a. At a command line, type **strsst** and press Enter.
  - \_\_ b. Type **your service tools user ID and your service tools password** on the *System Service Tools (SST) Sign On* display and press Enter.
  - \_\_ c. Select the **Start a service tool** option and press Enter.
  - \_\_ d. Select the **Hardware service manager** and press Enter.
  - \_\_ e. Select the **Packaging hardware resources (systems, frames, cards,...)** option. Press Enter.
  - \_\_ f. Select the **Hardware contained within package** option in the *Opt* field in front of the System Expansion Unit containing the 289x you are adding memory to. Press Enter.
  - \_\_ g. Use the cursor to select the 289x communications IOP card you are working with.
  - \_\_ h. Select the **Associated logical resource(s)** option in the *Opt* field in front of that 289x IOP card and press Enter.
  - \_\_ i. At the *Logical Resources Associated with a Packaging Resource* display, use the cursor to select Communications IOA.
  - \_\_ j. Select the **Display detail** option in the *Opt* field and press Enter.
  - \_\_ k. Look at *Memory installed on IOA (MB)* and verify that the current amount of memory that is installed on the 289x is correct.
  - \_\_ l. Press F3 three times then press Enter to exit.
- \_\_ 2. Power off your system unit. For more information on powering off your system, see “Power off the system unit” on page 29.
- \_\_ 3. Remove the covers from the expansion unit. For more information on removing the covers, see “Remove the covers” on page 31.
- \_\_ 4. Locate the IXS. For information on location of card slots, see “Card positions” on page 35.

- \_\_\_ 5. **If possible, use a wrist strap to prevent electrostatic discharge from damaging your hardware.** If you do not have a wrist strap, touch a metal surface of the system or expansion unit before installing or replacing hardware.

If you received the 2209 Disposable Wrist Strap, follow these steps:

- \_\_\_ a. Attach the disposable wrist strap.  View video.
- \_\_\_ b. When you unroll the strap, remove the liner from the copper foil at the end.
- \_\_\_ c. Attach the adhesive part of the copper foil to an **exposed, unpainted** metal surface on the frame of the unit.

**Note:** Follow the same precautions you would use without the wrist strap. The 2209 Disposable Wrist Strap is for static control. It will not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

- \_\_\_ 6. Remove the cables from the IXS card receiving memory.
- \_\_\_ 7. Adapter cards are fragile. **Use the static strap when handling.** Handle only by the edges, and keep fingers off printed circuit area.

Remove the Integrated xSeries Server by turning the latch up and pulling the latch out toward you. Squeeze the metal lever while removing the IXS from the system unit.

- \_\_\_ 8. Lay the IXS on a static protective surface.
- \_\_\_ 9. Find the package that contains a 289x memory card. Carefully remove the memory card from the static-protective package.

On feature codes 2890, 2891, and 2899, there are locations for one IOP memory card **A** and four server memory cards. On feature codes 2892 and 4810, there are locations for four server memory cards.

**Note:** For feature codes 2892 and 4810, the server memory cards must be populated in identical pairs.

- \_\_\_ 10. Install the 289x server memory card on the IXS by doing the following:
  - \_\_\_ a. Align the memory card with the next available connector on the IXS card.
  - \_\_\_ b. Snap the card in place by moving it downward in the connector. The memory card has a distinct click as it snaps into the connector.

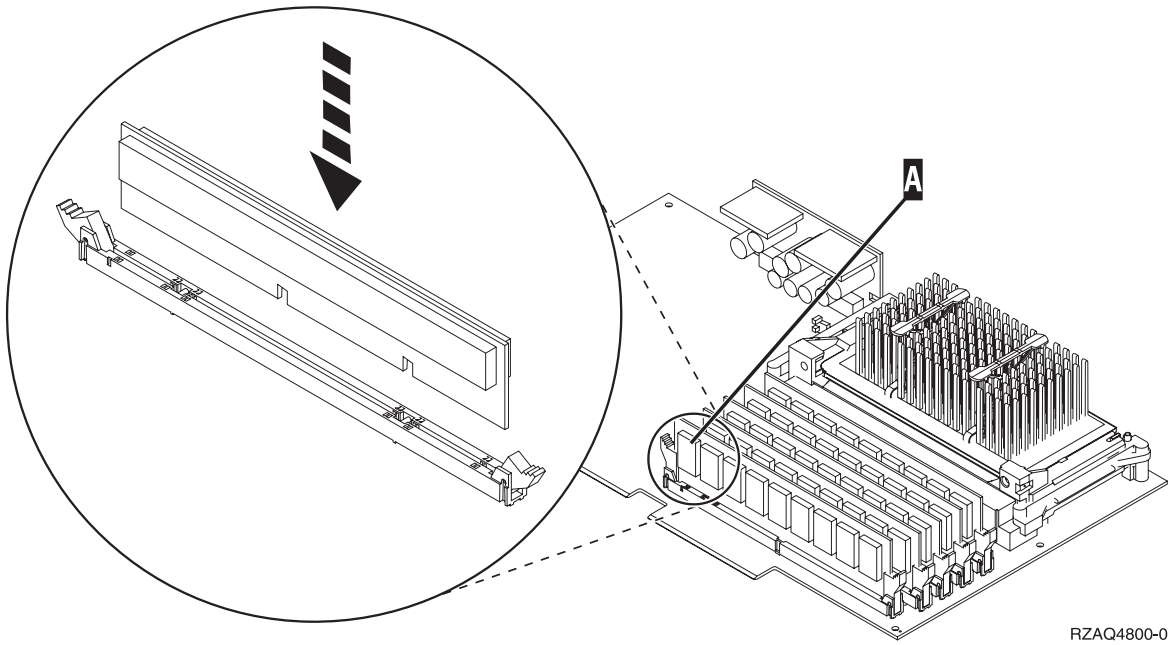


Figure 4. Location of memory on IXS

- \_\_\_ c. Repeat this step if you have another 289x memory card to install.
- \_\_\_ 11. Install the IXS card into the system unit.
- \_\_\_ 12. Re-attach the cables that you removed from the IXS.
- \_\_\_ 13. Continue with “Complete the installation.”

### Complete the installation

- \_\_\_ 1. Install covers and plug in the system unit and devices. For more information, see “Install covers” on page 41.
  - \_\_\_ 2. Look at the Function/Data display on the system unit control panel. Does **01 B N V=S** appear in the Function/Data display?
    - \_\_\_ **Yes:** Continue with the next step.
    - \_\_\_ **No:** Do the following:
      - \_\_\_ a. Press the Increment/Decrement push button until **02** appears in the Function/Data display.
      - \_\_\_ b. Press the Enter push button on the control panel.
      - \_\_\_ c. Press the Increment/Decrement push button until **B** appears in the Function/Data display.
      - \_\_\_ d. Press the Enter push button on the control panel.
      - \_\_\_ e. Press the Increment/Decrement push button until **N** appears in the Function/Data display.
      - \_\_\_ f. Press the Enter push button on the control panel.
      - \_\_\_ g. Press the Increment/Decrement push button until **S** appears in the Function/Data display.
      - \_\_\_ h. Press the Enter push button on the control panel.
      - \_\_\_ i. Press the Increment/Decrement push button until **01** appears in the Function/Data display.
      - \_\_\_ j. Press the Enter push button on the control panel.
- 01 B N S** should appear in the Function/Data display.

- \_\_\_ k. Go to step 3.
- \_\_\_ 3. Power on the workstation or PC that is your console.
- \_\_\_ 4. Press the power-on button for the system unit. The power-on light will appear.

**Note:** There is an approximately 10-second delay before the system unit powers on. The system takes approximately 5 to 20 minutes to power on and complete an IPL.

- \_\_\_ 5. Sign on the system unit. Ensure that you have service tools authority.
- \_\_\_ 6. Do the following to verify your adapter card configuration:
  - \_\_\_ a. On a command line, type **strsst**. Press the Enter key.
  - \_\_\_ b. Type **your service tools user ID and your service tools password** on the *System Service Tools (SST) Sign On* display and press Enter.
  - \_\_\_ c. Select the **Start a service tool** option and press the Enter key.
  - \_\_\_ d. Select the **Hardware service manager** option and press the Enter key.
  - \_\_\_ e. Select the **Packaging hardware resources (system, frames, cards...)** option and press the Enter key.
  - \_\_\_ f. Type a **9** in front of the *System Unit* or *System Expansion Unit* and press the Enter key. If the adapter card is not listed, ensure that the card is properly installed.
  - \_\_\_ g. On the *Packaging Hardware Resources* menu, type an **8** in the *Opt* column next to *Communications IOP 289x*. This will be card Type-Model, for example 2890-001. Press the Enter key.
  - \_\_\_ h. When the *Logical Resources Associated with a Packaging Resource* menu appears, type a **5** in the *Opt* column next to the *Communications IOA*. Press the Enter key.
  - \_\_\_ i. When the *Communications Hardware Resource Detail* menu appears, look at the line "Memory installed on IOA (MB)." The number should reflect the amount of memory you just installed on your 289x Integrated xSeries Server. If it does not, ensure that the memory cards are properly installed.
  - \_\_\_ j. IXS memory test:
    - \_\_\_ 1) Press **F12** once.
    - \_\_\_ 2) Enter the **Verify** option next to the 289x IOA. Press Enter.
    - \_\_\_ 3) Press Enter at the *Verification Test* display.
    - \_\_\_ 4) Select the **Hardware memory test** option. Press Enter.

**Note:** This memory test will take about 2 minutes per 1GB of memory to be tested.

- \_\_\_ 5) Press Enter at the *Number of Test Runs* display.
- Note:** If the test fails, make sure that you have installed the memory properly. If the test continues to fail, contact your authorized dealer or service provider.
- \_\_\_ 7. When the memory test is complete, the *Verification Test Results* display indicates the following: This test is successful. Press Enter.
- \_\_\_ 8. Press Enter at the *Verification Test* display.
- \_\_\_ 9. Press F3 three times and then press Enter to return to the Main Menu.
- \_\_\_ 10. Vary on the IXS:
  - \_\_\_ a. Go to the *Work with Configuration Status* display by entering WRKCFGSTS at a command line. Press F4.
  - \_\_\_ b. At the *Work with Configuration Status* display, enter **\*NWS** at the *Type* field and press Enter two times.
  - \_\_\_ c. At the *Work with Configuration Status* display, enter the **Vary on** option in the *Opt* column next to the **IXS** and press Enter.
  - \_\_\_ d. Press **F3** to exit.

- \_\_ 11. Your feature upgrade is complete.
- \_\_ 12. For information on how to make your card operational, go to the iSeries Information Center.
- \_\_ 13. You have completed installing memory on your Integrated xSeries Server.

---

## Replace memory on the IXS with the system powered on

- \_\_ 1. Vary off the IXS:
  - \_\_ a. Go to the *Work with Configuration Status* display by entering: **WRKCFGSTS** at any command line. Press F4.
  - \_\_ b. At the *Work with Configuration Status* display, enter **\*NWS** at the *Type* field and press Enter two times.
  - \_\_ c. At the *Work with Configuration Status* display, select the **Vary off** option in the *Opt* column next to the IXS and press Enter.
  - \_\_ d. Press F12 to return to the Main Menu.
- \_\_ 2. Follow these steps to power off the IXS slot:
  - \_\_ a. At a command line, type **strsst** and press Enter.
  - \_\_ b. Type **your service tools user ID and your service tools password** on the *System Service Tools (SST) Sign On* display and press Enter.
  - \_\_ c. Select **Start a service tool** and press Enter.
  - \_\_ d. Select **Hardware service manager** and press Enter.
  - \_\_ e. Select **Logical hardware resources (buses, IOPs, controllers,...)** and press Enter.
  - \_\_ f. Select **System Bus Resources** and press Enter.
  - \_\_ g. Use the cursor to select the 289x server card with which you are working.
  - \_\_ h. Select **Associated packaging resource(s)** in the *Opt* field in front of that 289x server card and press Enter.
  - \_\_ i. At the *Packaging Resources Associated with a Logical Resource* display, use the cursor to select **Communications IOP**.
  - \_\_ j. Select the **Concurrent Maintenance** option and press Enter.

**Note:** If the message, The specified option is not allowed for the selected resource appears, your system unit is not capable of replacing memory to the IXS concurrently. Go to "Replace memory on the IXS with the system powered off" on page 19.
  - \_\_ k. Use the cursor to select **Communications IOP**.
  - \_\_ l. Select the **Toggle LED blink off/on** option and press Enter.

The LED at the card slot you chose should flash.
  - \_\_ m. Select the **Toggle LED blink off/on** option again, and press Enter.


The LED at the card slot you chose should stop flashing and remain solid.
  - \_\_ n. With the cursor still at the **Communications IOP** line, press **F9** (Power off domain).
  - \_\_ o. At the *Hardware Resource Concurrent Maintenance* display, press Enter. Wait for the power off to complete. The following message should appear:

Power off complete. Check power indicator (LED) to confirm.

When the LED is in the off position it is safe to proceed. While you do the next steps, keep your console at the *Hardware Resources Concurrent Maintenance* display.
- \_\_ 3. **If possible, use a wrist strap to prevent electrostatic discharge from damaging your hardware.**

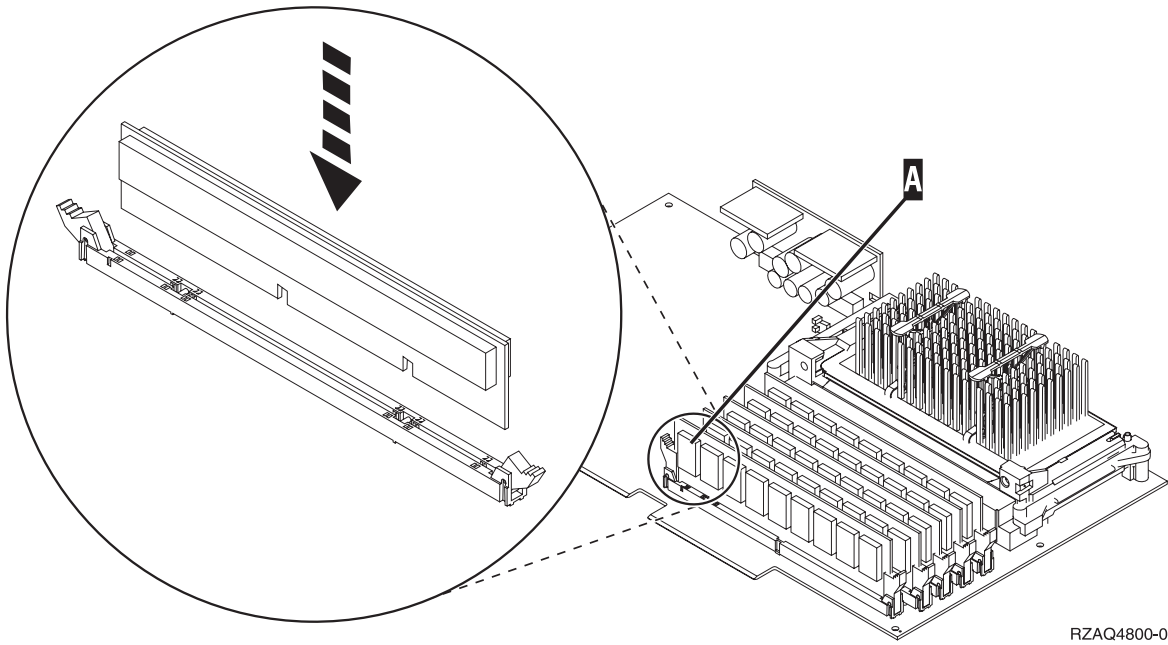
If you do not have a wrist strap, touch a metal surface of the system or expansion unit before installing or replacing hardware.

If you received the 2209 Disposable Wrist Strap, follow these steps:

- \_\_\_ a. Attach the disposable wrist strap.  View video.
- \_\_\_ b. When you unroll the strap, remove the liner from the copper foil at the end.
- \_\_\_ c. Attach the adhesive part of the copper foil to an **exposed, unpainted** metal surface on the frame of the unit.

**Note:** Follow the same precautions you would use without the wrist strap. The 2209 Disposable Wrist Strap is for static control. It will not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

- \_\_\_ 4. The IXS is located in slot C04. For information on the location of card slots, see “Card positions” on page 35.
- \_\_\_ 5. Remove all cables that are connected to the IXS.
- \_\_\_ 6. Remove the Integrated xSeries Server by turning the latch up and pulling the latch out toward you. Squeeze the metal lever while removing the IXS from the system unit.  
**Attention:** Adapter and memory cards are fragile:
  - Handle only by the edges.
  - Keep fingers off printed circuit area.
  - Use static strap when handling.
  - Leave in protective packaging until ready to install.
- \_\_\_ 7. Lay the IXS on a static protective surface.
- \_\_\_ 8. Locate the memory card to be replaced.
- \_\_\_ 9. Remove the memory card by doing the following:
  - \_\_\_ a. Push outward on the latches that are located at each end of the card.
  - \_\_\_ b. Remove the card from the card socket.
- \_\_\_ 10. Find the package that contains the new 289x memory card. Carefully remove the memory card from the static-protective package.
- \_\_\_ 11. Install the 289x server memory card on the IXS by doing the following:
  - \_\_\_ a. Align the memory card with the connector on the IXS card.
  - \_\_\_ b. Snap the card in place by moving it downward in the connector. The memory card has a distinct click as it snaps into the connector.



RZAQ4800-0

Figure 5. Location of memory on IXS

- \_\_\_ 12. When you finish replacing the memory card, install the IXS card into the system unit. Align the card with the card holders inside the system unit until it is fully connected. Swing the latches in and down to secure the card.
- \_\_\_ 13. Reconnect the cables that you removed from the card.
- \_\_\_ 14. Install covers and plug-in devices. For more information on installing covers, see “Install covers” on page 41.
- \_\_\_ 15. Power on the IXS:
  - \_\_\_ a. The cursor on your console should be where the Communications IOA was.
  - \_\_\_ b. Press **F10** (Power on domain) and then press Enter to confirm power on.

**Note:** If the *Work with Controlling Resource* display appears, select the **Assign to** option for each resource on the display. Then press Enter and wait for the power on to complete.

- \_\_\_ c. At the *Hardware Resource Concurrent Maintenance* display, press **F8** to verify that the power status is on for all resources.
- \_\_\_ d. Use the cursor to select the **Communications IOP**.
- \_\_\_ e. Select the **Associated logical resource(s)** option and press Enter.
- \_\_\_ f. Use the cursor to select the **Communications IOA**.
- \_\_\_ g. Select the **Display detail** option and press Enter.
- \_\_\_ h. Verify that the correct amount of memory is installed.
- \_\_\_ 16. IXS memory test:
  - \_\_\_ a. Press **F12** once.
  - \_\_\_ b. Enter the **Verify** option next to the 289x IOA. Press Enter.
  - \_\_\_ c. Press Enter at the *Verification Test* display.
  - \_\_\_ d. Select the **Hardware memory test** option. Press Enter.

**Note:** This memory test will take about 2 minutes per 1GB of memory that is tested.

- \_\_\_ e. Press Enter at the *Number of Test Runs* display.




- \_\_ f. If the test fails, make sure that you have installed the memory properly. If the test continues to fail, contact your authorized dealer or service provider.
- \_\_ 17. Continue with “Complete the installation.”

## Complete the installation

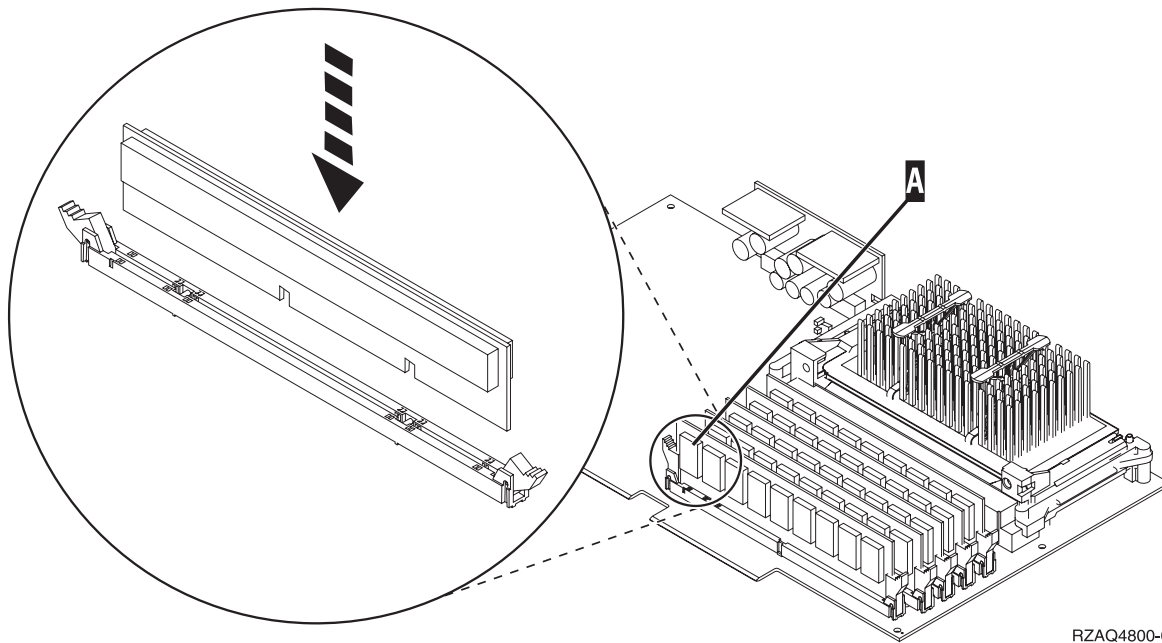
- \_\_ 1. When the memory test is complete, the *Verification Test Results* display indicates the following: This test is successful. Press Enter.
- \_\_ 2. Press Enter at the *Verification Test* display.
- \_\_ 3. Press F3 three times and then press Enter to return to the Main Menu.
- \_\_ 4. Vary on the IXS:
  - \_\_ a. Go to the *Work with Configuration Status* display by entering WRKCFGSTS at an command line. Press F4.
  - \_\_ b. At the *Work with Configuration Status* display enter \*NWS at the *Type* field and press Enter two times.
  - \_\_ c. At the *Work with Configuration Status* display enter the **Vary on** option in the *Opt* column next to the **IXS** and press Enter.
  - \_\_ d. Press F3 to exit.
- \_\_ 5. The replacement procedure is complete.

---

## Replace memory on the IXS with the system powered off

- \_\_ 1. Power off your iSeries system unit. For more information on powering off your system, see “Power off the system unit” on page 29.
- \_\_ 2. **If possible, use a wrist strap to prevent electrostatic discharge from damaging your hardware.** If you do not have a wrist strap, touch a metal surface of the system or expansion unit before installing or replacing hardware.  
If you received the 2209 Disposable Wrist Strap, follow these steps:
  - \_\_ a. Attach the disposable wrist strap.  View video.
  - \_\_ b. When you unroll the strap, remove the liner from the copper foil at the end.
  - \_\_ c. Attach the adhesive part of the copper foil to an **exposed, unpainted** metal surface on the frame of the unit.
- Note:** Follow the same precautions you would use without the wrist strap. The 2209 Disposable Wrist Strap is for static control. It will not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
- \_\_ 3. The IXS is located in slot C04. For information on the location of card slots, see “Card positions” on page 35.
- \_\_ 4. Remove all cables that are connected to the card.
- \_\_ 5. Remove the Integrated xSeries Server by turning the latch up and pulling the latch out toward you. Squeeze the metal lever while removing the IXS from the system unit. On some cards it will be necessary to remove the screw that holds the adapter card in place.  
**Attention:** Adapter and memory cards are fragile:
  - Handle only by the edges.
  - Keep fingers off printed circuit area.
  - Use static strap when handling.
  - Leave in protective packaging until ready to install.
- \_\_ 6. Lay the IXS on a static protective surface.
- \_\_ 7. Locate the memory card to be replaced.
- \_\_ 8. Remove the memory card by doing the following:

- \_\_\_ a. Push outward on the latches that are located at each end of the card.
- \_\_\_ b. Remove the card from the card socket.
- \_\_\_ 9. Find the package that contains the new 289x memory card. Carefully remove the memory card from the static-protective package.
- \_\_\_ 10. Install the 289x server memory card on the IXS by doing the following:
  - \_\_\_ a. Align the memory card with the connector on the IXS card.
  - \_\_\_ b. Snap the card in place by moving it downward in the connector. The memory card has a distinct click as it snaps into the connector.



RZAQ4800-0

Figure 6. Location of memory on IXS

- \_\_\_ 11. When you finish replacing the memory card, install the IXS card into the system unit. Align the card with the card holders inside the system unit until it is fully connected. Swing the latches in and down to secure the card.
- \_\_\_ 12. Reconnect the cables that you removed from the IXS.
- \_\_\_ 13. Continue with “Complete the installation.”

## Complete the installation

- \_\_\_ 1. Install covers and plug in the system unit and devices. For more information, see “Install covers” on page 41.
- \_\_\_ 2. Look at the Function/Data display on the system unit control panel. Does **01 B N V=S** appear in the Function/Data display?
  - \_\_\_ **Yes:** Continue with the next step.
  - \_\_\_ **No:** Do the following:
    - \_\_\_ a. Open the control panel door.
    - \_\_\_ b. Press the Increment/Decrement push button until **02** appears in the Function/Data display.
    - \_\_\_ c. Press the Enter push button on the control panel.
    - \_\_\_ d. Press the Increment/Decrement push button until **B** appears in the Function/Data display.

- \_\_\_ e. Press the Enter push button on the control panel.
- \_\_\_ f. Press the Increment/Decrement push button until **N** appears in the Function/Data display.
- \_\_\_ g. Press the Enter push button on the control panel.
- \_\_\_ h. Press the Increment/Decrement push button until **S** appears in the Function/Data display.
- \_\_\_ i. Press the Enter push button on the control panel.
- \_\_\_ j. Press the Increment/Decrement push button until **01** appears in the Function/Data display.
- \_\_\_ k. Press the Enter push button on the control panel.  
**01 B N S** should appear in the Function/Data display.
- \_\_\_ l. Go to step 3.
- \_\_\_ 3. Power on the workstation or PC that is your console.
- \_\_\_ 4. Press the power-on button for the system unit. The power-on light will appear.

**Note:** There is an approximately 10-second delay before the system unit powers on.

- \_\_\_ 5. Sign on the system unit. Ensure that you have service tools authority.
- \_\_\_ 6. Do the following to verify your adapter card configuration:
  - \_\_\_ a. On the command line, type **strsst**. Press the Enter key.
  - \_\_\_ b. Type **your service tools user ID and your service tools password** on the *System Service Tools (SST) Sign On* display and press Enter.
  - \_\_\_ c. Select the **Start a service tool** option and press the Enter key.
  - \_\_\_ d. Select the **Hardware service manager** option and press the Enter key.
  - \_\_\_ e. Select the **Packaging hardware resources (system, frames, cards...)** option and press the Enter key.
  - \_\_\_ f. Type a **9** in front of the *System Unit* and press the Enter key.  
 If the 289x card is not listed, ensure that the card is properly installed.
  - \_\_\_ g. On the *Packaging Hardware Resources* menu, type an **8** in the *Opt* column next to *Communications IOP 289x*. This will be card Type-Model, for example, 2890-001. Press the Enter key.
  - \_\_\_ h. When the *Logical Resources Associated with a Packaging Resource* menu appears, type a **5** in the *Opt* column next to the *Communications IOA*. Press the Enter key.
  - \_\_\_ i. When the *Communications Hardware Resource Detail* menu appears, look at the line "Memory installed on IOA (MB)." The number should reflect the amount of memory you just installed on your 289x Integrated xSeries Server. If it does not, ensure that the memory cards are properly installed.
  - \_\_\_ j. IXS memory test:
    - \_\_\_ 1) Press **F12** once.
    - \_\_\_ 2) Enter the **Verify** option next to the 289x IOA. Press Enter.
    - \_\_\_ 3) Press Enter at the *Verification Test* display.
    - \_\_\_ 4) Select the **Hardware memory test** option. Press Enter.  
**Note:** This memory test will take about 2 minutes per 1GB of memory to be tested.
    - \_\_\_ 5) Press Enter at the *Number of Test Runs* display.

- \_\_\_ 7. When the memory test is complete, the *Verification Test Results* display indicates the following: This test is successful. Press Enter.

- \_\_\_ 8. Press Enter at the *Verification Test* display.
- \_\_\_ 9. Press F3 three times and then press Enter to return to the Main Menu.
- \_\_\_ 10. Vary on the IXS:
  - \_\_\_ a. Go to the *Work with Configuration Status* display by entering WRKCFGSTS at a command line. Press F4.
  - \_\_\_ b. At the *Work with Configuration Status* display enter \*NWS at the *Type* field and press Enter two times.
  - \_\_\_ c. At the *Work with Configuration Status* display enter the **Vary on** option in the *Opt* column next to the **IXS** and press Enter.
  - \_\_\_ d. Press F3 to exit.
- \_\_\_ 11. The replacement procedure is complete.

---

## Replace memory in the IXS in the expansion unit

Your system and expansion unit can either be powered off or powered on when you replace a memory card in the IXS. Select the preferred procedure from the following:

- “Replace memory on the IXS with the system and expansion unit powered on”
- “Replace memory on the IXS with the system and expansion unit powered off” on page 25

## Replace memory on the IXS with the system and expansion unit powered on

To replace memory on the IXS with the system and expansion unit powered on, follow these steps:

- \_\_\_ 1. Remove the covers from the expansion unit. For more information on removing the covers, see “Remove the covers” on page 31.
- \_\_\_ 2. Locate the IXS. For information on location of card slots, see “Card positions” on page 35.
- \_\_\_ 3. Vary off the IXS:
  - \_\_\_ a. Go to the *Work with Configuration Status* display by entering: **WRKCFGSTS** at a command line. Press F4.
  - \_\_\_ b. At the *Work with Configuration Status* display enter \*NWS at the *Type* field and press Enter two times.
  - \_\_\_ c. At the *Work with Configuration Status* display enter the **Vary off** option in the *Opt* column next to the **IXS** and press Enter.
  - \_\_\_ d. Press F12 to exit.
- \_\_\_ 4. Verify location of the IXS:
  - \_\_\_ a. At a command line, type **strsst** and press Enter.
  - \_\_\_ b. Type **your service tools user ID and your service tools password** on the *System Service Tools (SST) Sign On* display and press Enter.
  - \_\_\_ c. Select **Start a service tool** and press Enter.
  - \_\_\_ d. Select **Hardware service manager** and press Enter.
  - \_\_\_ e. Select **Logical hardware resources (buses, IOPs, controllers,...)** and press Enter.
  - \_\_\_ f. Select **System Bus Resources** and press Enter.
  - \_\_\_ g. Use the cursor to select the 289x server card with which you are working.
  - \_\_\_ h. Select **Associated packaging resource(s)** in the *Opt* field in front of that 289x server card and press Enter.
  - \_\_\_ i. Use the cursor to select the **289x Communications IOP**.
  - \_\_\_ j. Select the **Concurrent Maintenance** option and press Enter.
  - \_\_\_ k. Use the cursor to select **Communications IOP**.
  - \_\_\_ l. Select the **Toggle LED blink off/on** option and press Enter.

The LED at the card slot you chose should blink.

- \_\_\_ m. Select the **Toggle LED blink off/on** option again, and press Enter.

The LED at the card slot you chose should stop blinking and remain on.


- \_\_\_ 5. With the cursor still at the Communications IOP line, press **F9** (Power off domain).
- \_\_\_ 6. At the confirmation display press Enter. Wait for the power off to complete. The following message should appear:

Power off complete. Check power indicator (LED) to confirm.

When the LED at the card slot you chose is off, it is safe to proceed. While you do the next steps, keep your console at the *Hardware Resources Concurrent Maintenance* display.

- \_\_\_ 7. **If possible, use a wrist strap to prevent electrostatic discharge from damaging your hardware.** If you do not have a wrist strap, touch a metal surface of the system or expansion unit before installing or replacing hardware.

If you received the 2209 Disposable Wrist Strap, follow these steps:

- \_\_\_ a. Attach the disposable wrist strap.  View video.
- \_\_\_ b. When you unroll the strap, remove the liner from the copper foil at the end.
- \_\_\_ c. Attach the adhesive part of the copper foil to an **exposed, unpainted** metal surface on the frame of the unit.

**Note:** Follow the same precautions you would use without the wrist strap. The 2209 Disposable Wrist Strap is for static control. It will not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

- \_\_\_ 8. Remove all cables that are attached to the Integrated xSeries Server (IXS).
- \_\_\_ 9. Remove the IXS by turning the latch up and pulling the latch out toward you. Squeeze the latch on the left end of the IXS while pulling the card toward you.

**Attention:** Adapter and memory cards are fragile:

- Handle only by the edges.
- Keep fingers off printed circuit area.
- Use static strap when handling.
- Leave in protective packaging until ready to install.

- \_\_\_ 10. Lay the IXS on a static protective surface.
- \_\_\_ 11. Locate the memory card to be replaced.
- \_\_\_ 12. Remove the memory card by doing the following:
  - \_\_\_ a. Push outward on the latches that are located at each end of the card.
  - \_\_\_ b. Remove the card from the card socket.
- \_\_\_ 13. Find the package that contains a 289x memory card. Carefully remove the memory card from the static-protective package.
- \_\_\_ 14. Install the 289x server memory card on the IXS by doing the following:
  - \_\_\_ a. Align the memory card with the next available connector on the IXS card.
  - \_\_\_ b. Snap the card in place by moving it downward in the connector. The memory card has a distinct click as it snaps into the connector.

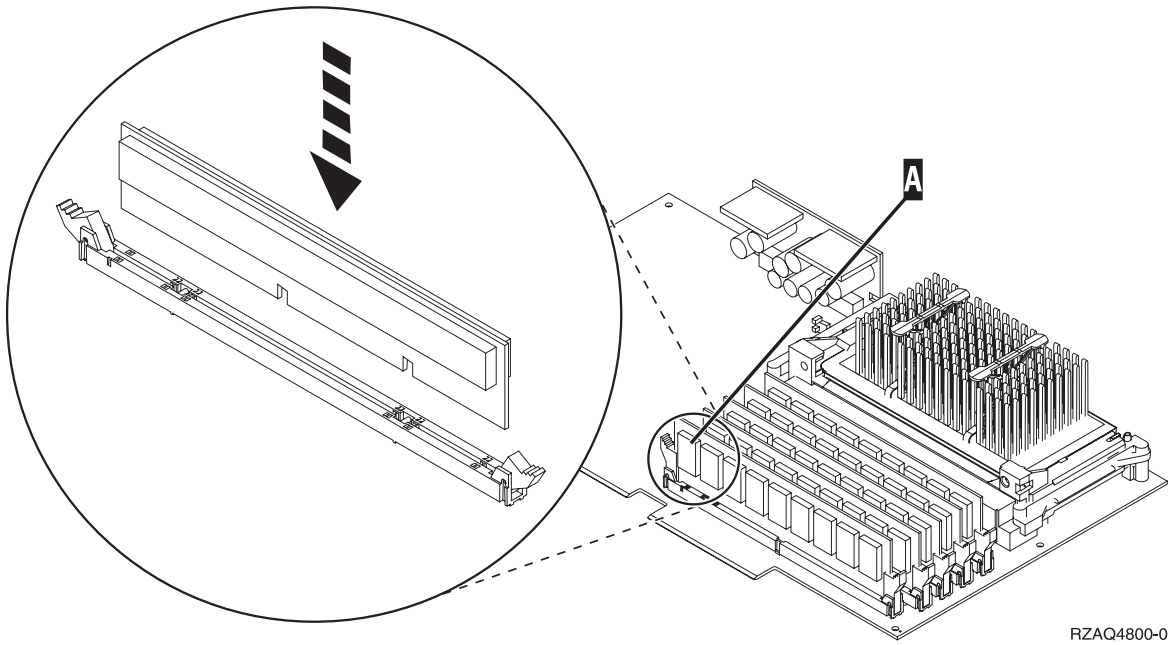


Figure 7. Location of memory on IXS

- \_\_\_ 15. Install the IXS card into the expansion unit. Align the card with the card holders inside the system unit until it is fully connected. Swing the latches in and down to secure the card.
- \_\_\_ 16. Reconnect the cables you removed from the IXS card.
- \_\_\_ 17. Install covers. For more information, see “Install covers” on page 41.
- \_\_\_ 18. Power on the IXS.
  - \_\_\_ a. The cursor on your console should be where the Communications IOA was.
  - \_\_\_ b. Press **F10** (Power on domain) and enter to confirm power on.

**Note:** If the *Work with Controlling Resource* display appears, select the **Assign to** option for each resource on the display. Then press Enter and wait for the power on to complete.

- \_\_\_ c. At the *Hardware Resource Concurrent Maintenance* display, press **F8** to verify that the power status is on for all resources.
- \_\_\_ d. Use the cursor to select the **Communications IOP**.
- \_\_\_ e. Enter the **Associated logical resource(s)** option and press Enter.
- \_\_\_ f. Use the cursor to select the **Communications IOA**.
- \_\_\_ g. Enter the **Display detail** option and press Enter.
- \_\_\_ h. Verify that the correct amount of memory is installed.
- \_\_\_ i. IXS memory test:
  - \_\_\_ 1) Press **F12** once.
  - \_\_\_ 2) Enter the **Verify** option next to the 289x IOA. Press Enter.
  - \_\_\_ 3) Press Enter at the *Verification Test* display.
  - \_\_\_ 4) Select the **Hardware memory test** option. Press Enter.

**Note:** This memory test will take about 2 minutes per 1GB of memory to be tested.

- \_\_\_ 5) Press Enter at the *Number of Test Runs* display.

**Note:** If the test fails, make sure that you have installed the memory properly. If the test continues to fail, contact your authorized dealer or service provider.

- \_\_ 19. Continue with "Complete the Installation."


### Complete the Installation

- \_\_ 1. When the memory test is complete, the *Verification Test Results* display indicates the following: This test is successful. Press Enter.
- \_\_ 2. Press Enter at the *Verification Test* display.
- \_\_ 3. Press F3 three times and then press Enter to return to the Main Menu.
- \_\_ 4. Vary on the IXS:
  - \_\_ a. Go to the *Work with Configuration Status* display, by entering WRKCFGSTS at a command line. Press F4.
  - \_\_ b. At the *Work with Configuration Status* display enter \*NWS at the *Type* field and press Enter two times.
  - \_\_ c. At the *Work with Configuration Status* display enter the **Vary on** option in the *Opt* column next to the **IXS** and press Enter.
  - \_\_ d. Press F3 to exit.
- \_\_ 5. The replacement procedure is complete.

### Replace memory on the IXS with the system and expansion unit powered off

- \_\_ 1. Power off your system unit. For more information on powering off your system, see "Power off the system unit" on page 29.
- \_\_ 2. Remove the covers from the expansion unit. For more information on removing the covers, see "Remove the covers" on page 31.
- \_\_ 3. Locate the IXS. For information on location of card slots, see "Card positions" on page 35.
- \_\_ 4. **If possible, use a wrist strap to prevent electrostatic discharge from damaging your hardware.** If you do not have a wrist strap, touch a metal surface of the system or expansion unit before installing or replacing hardware.

If you received the 2209 Disposable Wrist Strap, follow these steps:

- \_\_ a. Attach the disposable wrist strap.  View video.
- \_\_ b. When you unroll the strap, remove the liner from the copper foil at the end.
- \_\_ c. Attach the adhesive part of the copper foil to an **exposed, unpainted** metal surface on the frame of the unit.

**Note:** Follow the same precautions you would use without the wrist strap. The 2209 Disposable Wrist Strap is for static control. It will not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

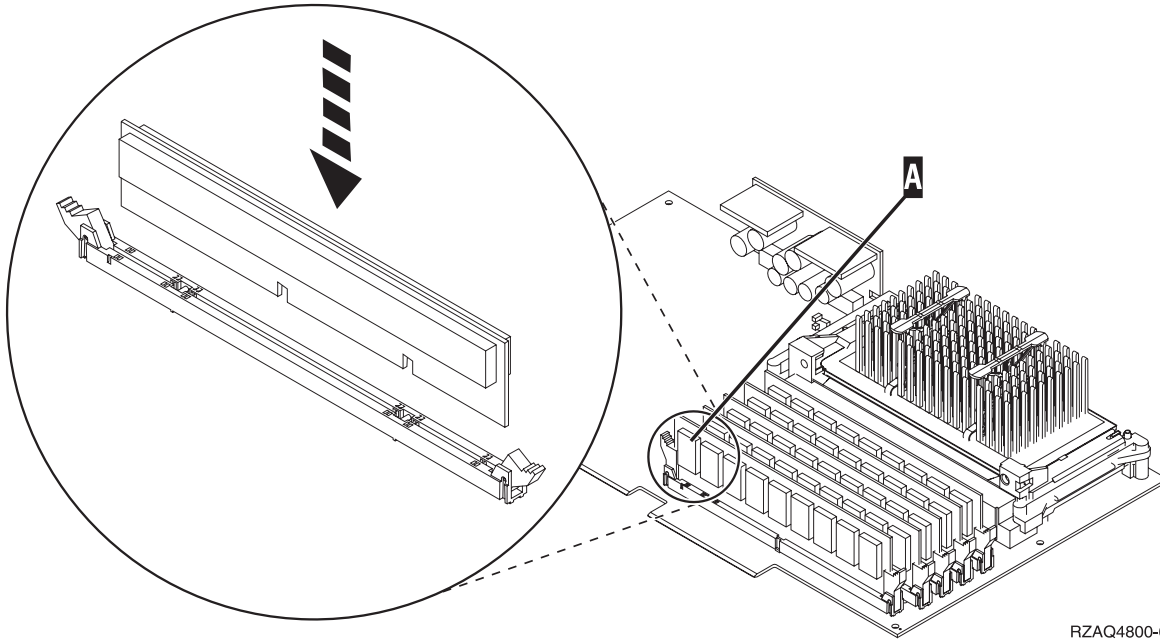
- \_\_ 5. Remove all cables that are connected to the IXS card.
- \_\_ 6. Remove the Integrated xSeries Server by turning the latch up and pulling the latch out toward you. Squeeze the metal lever while removing the IXS from the system unit.

**Attention:** Adapter and memory cards are fragile:

- Handle only by the edges.
- Keep fingers off printed circuit area.
- Use static strap when handling.
- Leave in protective packaging until ready to install.

- \_\_ 7. Lay the IXS on a static protective surface.
- \_\_ 8. Locate the memory card to be replaced.
- \_\_ 9. Remove the memory card by doing the following:
  - \_\_ a. Push outward on the latches that are located at each end of the card.

- \_\_\_ b. Remove the card from the card socket.
- \_\_\_ 10. Find the package that contains a 289x server memory card. Carefully remove the memory card from the static-protective package.
- \_\_\_ 11. Install the 289x server memory card on the IXS by doing the following:
  - \_\_\_ a. Align the memory card with the connector on the IXS card.
  - \_\_\_ b. Snap the card in place by moving it downward in the connector. The memory card has a distinct click as it snaps into the connector.



RZAQ4800-0

Figure 8. Location of memory on IXS

- \_\_\_ 12. When you finish replacing the memory card, install the IXS card into the system unit. Align the card with the card holders inside the system unit until it is fully connected. Swing the latches in and down to secure the card.
- \_\_\_ 13. Reconnect the cables that you removed from the IXS.
- \_\_\_ 14. Continue with “Complete the installation.”

### Complete the installation

- \_\_\_ 1. Install covers and plug in the system unit and devices. For more information, see “Install covers” on page 41.
- \_\_\_ 2. Look at the Function/Data display on the system unit control panel. Does **01 B N V=S** appear in the Function/Data display?
  - \_\_\_ **Yes:** Continue with the next step.
  - \_\_\_ **No:** Do the following:
    - \_\_\_ a. Press the Increment/Decrement push button until **02** appears in the Function/Data display.
    - \_\_\_ b. Press the Enter push button on the control panel.
    - \_\_\_ c. Press the Increment/Decrement push button until **B** appears in the Function/Data display.
    - \_\_\_ d. Press the Enter push button on the control panel.
    - \_\_\_ e. Press the Increment/Decrement push button until **N** appears in the Function/Data display.



- \_\_\_ f. Press the Enter push button on the control panel.
- \_\_\_ g. Press the Increment/Decrement push button until **S** appears in the Function/Data display.
- \_\_\_ h. Press the Enter push button on the control panel.
- \_\_\_ i. Press the Increment/Decrement push button until **01** appears in the Function/Data display.
- \_\_\_ j. Press the Enter push button on the control panel.  
**01 B N S** should appear in the Function/Data display.
- \_\_\_ k. Go to step 3.
- \_\_\_ 3. Power on the workstation or PC that is your console.
- \_\_\_ 4. Press the power-on button for the system unit. The power-on light will appear.

**Note:** There is an approximately 10-second delay before the system unit powers on. The system takes approximately 5 to 20 minutes to power on and complete an IPL.

- \_\_\_ 5. Sign on the system unit. Ensure that you have service tools authority.
- \_\_\_ 6. Do the following to verify your adapter card configuration:
  - \_\_\_ a. On a command line, type **strsst**. Press the Enter key.
  - \_\_\_ b. Type **your service tools user ID and your service tools password** on the *System Service Tools (SST) Sign On* display and press Enter.
  - \_\_\_ c. Select the **Start a service tool** option and press the Enter key.
  - \_\_\_ d. Select the **Hardware service manager** option and press the Enter key.
  - \_\_\_ e. Select the **Packaging hardware resources (system, frames, cards...)** option and press the Enter key.
  - \_\_\_ f. Type a **9** in front of the *System Unit* or *System Expansion Unit* and press the Enter key.  
If the adapter card is not listed, ensure that the card is properly installed.
  - \_\_\_ g. On the *Packaging Hardware Resources* menu, type an **8** in the *Opt* column next to *Communications IOP 289x*. This will be card Type-Model, for example 2890-001. Press the Enter key.
  - \_\_\_ h. When the *Logical Resources Associated with a Packaging Resource* menu appears, type a **5** in the *Opt* column next to the *Communications IOA*. Press the Enter key.
  - \_\_\_ i. When the *Communications Hardware Resource Detail* menu appears, look at the line "Memory installed on IOA (MB)." The number should reflect the amount of memory you just installed on your 289x Integrated xSeries Server. If it does not, ensure that the memory cards are properly installed.
  - \_\_\_ j. IXS memory test:
    - \_\_\_ 1) Press **F12** once.
    - \_\_\_ 2) Enter the **Verify** option next to the 289x IOA. Press Enter.
    - \_\_\_ 3) Press Enter at the *Verification Test* display.
    - \_\_\_ 4) Select the **Hardware memory test** option. Press Enter.

**Note:** This memory test will take about 2 minutes per 1GB of memory to be tested.

- \_\_\_ 5) Press Enter at the *Number of Test Runs* display.
- Note:** If the test fails, make sure that you have installed the memory properly. If the test continues to fail, contact your authorized dealer or service provider.
- \_\_\_ 7. When the memory test is complete, the *Verification Test Results* display indicates the following:  
This test is successful. Press Enter.
- \_\_\_ 8. Press Enter at the *Verification Test* display.
- \_\_\_ 9. Press F3 three times and then press Enter to return to the Main Menu.

- \_\_\_ 10. Vary on the IXS:
  - \_\_\_ a. Go to the *Work with Configuration Status* display by entering WRKCFGSTS at a command line. Press F4.
  - \_\_\_ b. At the *Work with Configuration Status* display, enter \*NWS at the *Type* field and press Enter two times.
  - \_\_\_ c. At the *Work with Configuration Status* display, enter the **Vary on** option in the *Opt* column next to the **IXS** and press Enter.
  - \_\_\_ d. Press F3 to exit.
- \_\_\_ 11. The replacement procedure is complete.

---

## Power off the system unit

- \_\_\_ 1. If an Integrated xSeries Adapter (IXA) is present on the system, shut it down using OS/400 options.
- \_\_\_ 2. Ensure that all jobs are complete.
- \_\_\_ 3. When all jobs are complete, type **pwrdownsys \*immed** on a command line and press Enter.

**Note:** Should you encounter difficulties during the installation, contact your authorized dealer or service provider.

- \_\_\_ 4. When the unit is completely powered down, disconnect all PCs from the system unit. Power off all devices, such as printers and displays, that are connected to the system unit.
- \_\_\_ 5. Unplug any power cords, such as printers and displays, from electrical outlets.
- \_\_\_ 6. Unplug the system-unit power cord and any attached expansion-unit power cords from the electrical outlet.



---

## Remove the covers

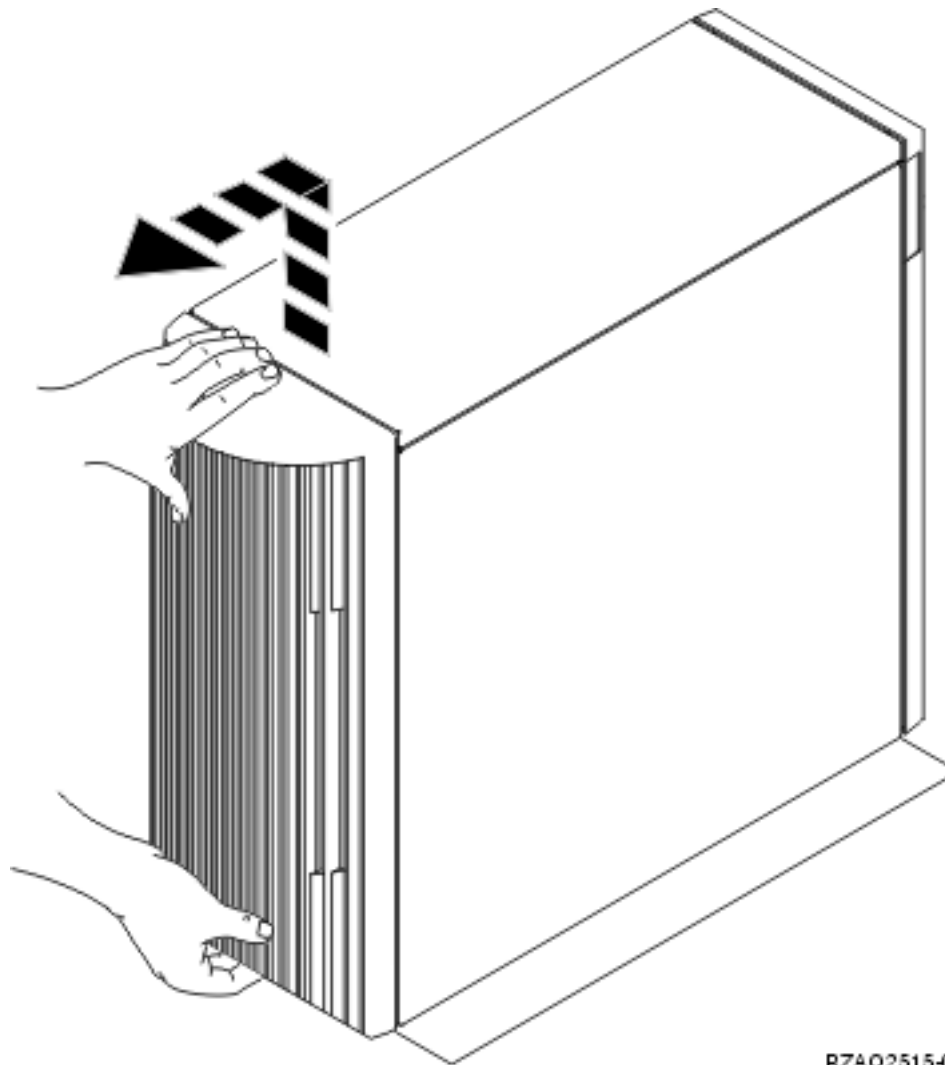
Select the system or expansion unit you are working on:

- “Remove the system unit back cover”
- “Remove the system unit side cover”
- “Remove the 5075 and 5095 expansion unit covers” on page 33
- “Remove the 5078 and 5088 expansion unit cover” on page 34

---

### Remove the system unit back cover

1. Remove the system unit back cover by placing your hand near the bottom of the cover and lifting up and out.



RZAQ2515-0

Figure 9. Remove system unit back cover

---

### Remove the system unit side cover

1. Is your unit in a rack?

**No:** Go to step 2 on page 32.

**Yes:** Go to step 3 on page 32.

- \_\_\_ 2. Remove the right side cover (view from back) by loosening the screws and sliding the cover from front to back until it stops. Pull the cover out.

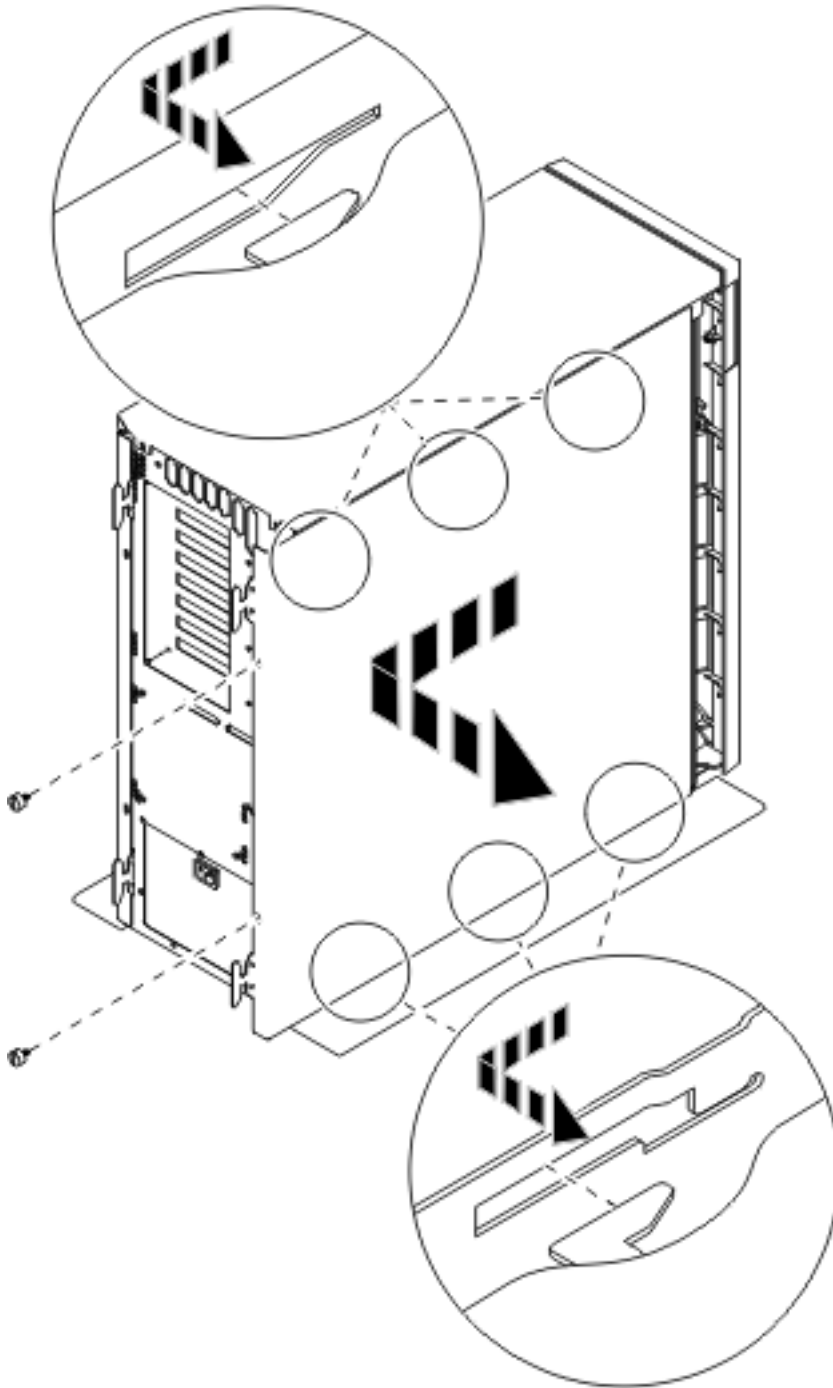
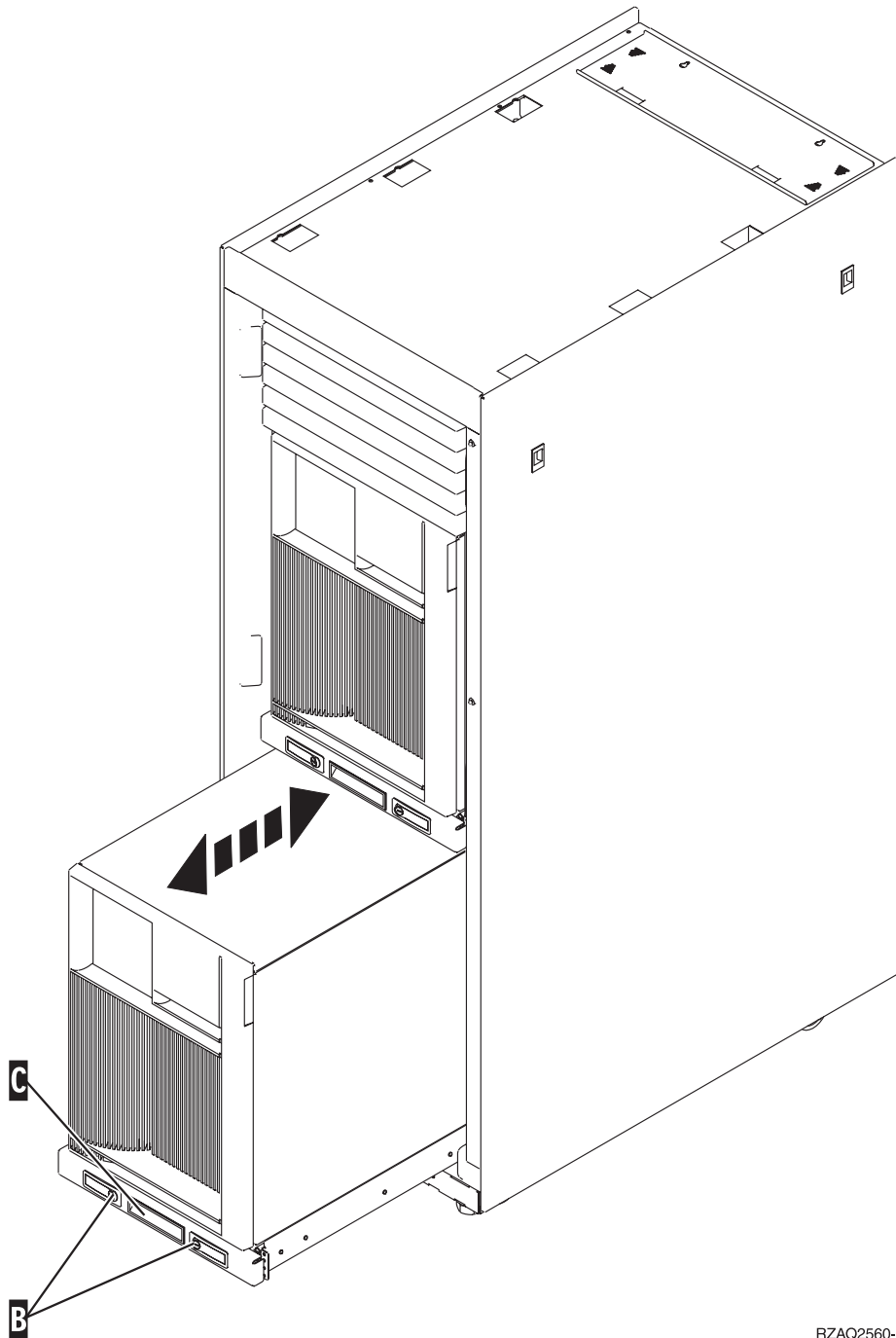


Figure 10. Remove system unit side cover

- \_\_\_ 3. Press the latches **B** and pull the server out using the handle **C**.



RZAQ2560-0

Refer to Figure 10 on page 32 to remove the side cover.

---

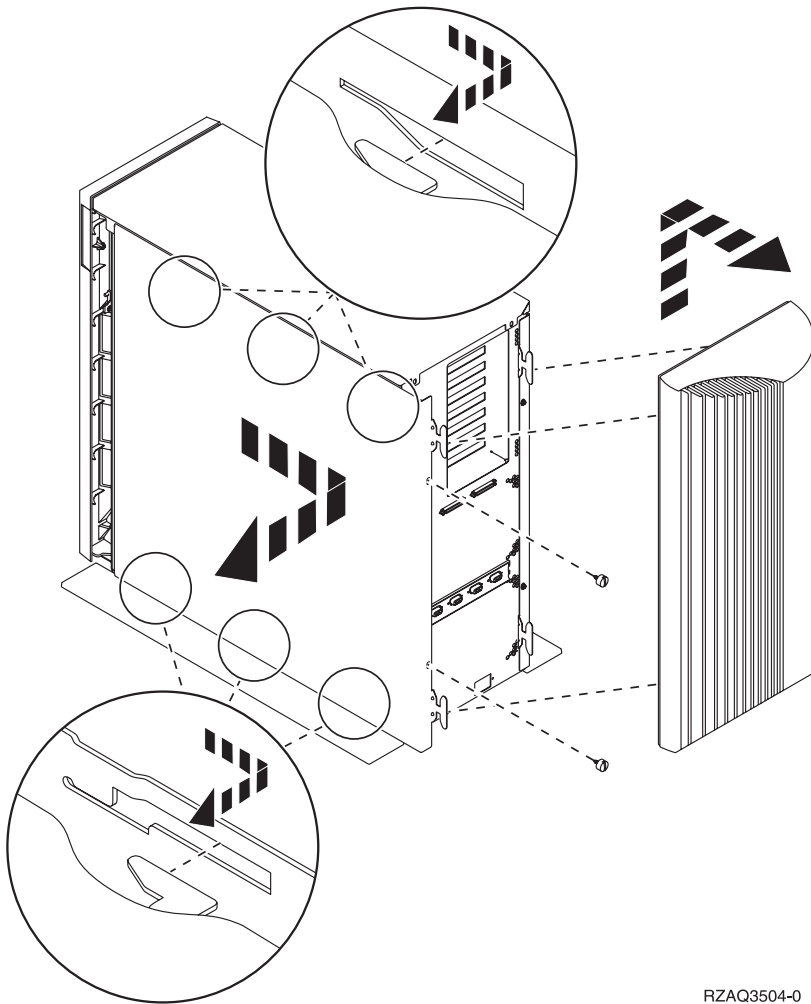
## Remove the 5075 and 5095 expansion unit covers

To remove the back cover and the side cover, follow these steps:

- \_\_\_ 1. Place your hand near the bottom of the back cover and lift up and out.
- \_\_\_ 2. **Attention:** If removing the side cover while the server is powered on, errors may occur due to electromagnetic interference.

Remove the left side cover (view from back) by loosening the thumbscrews and sliding the cover from front to back until it stops.

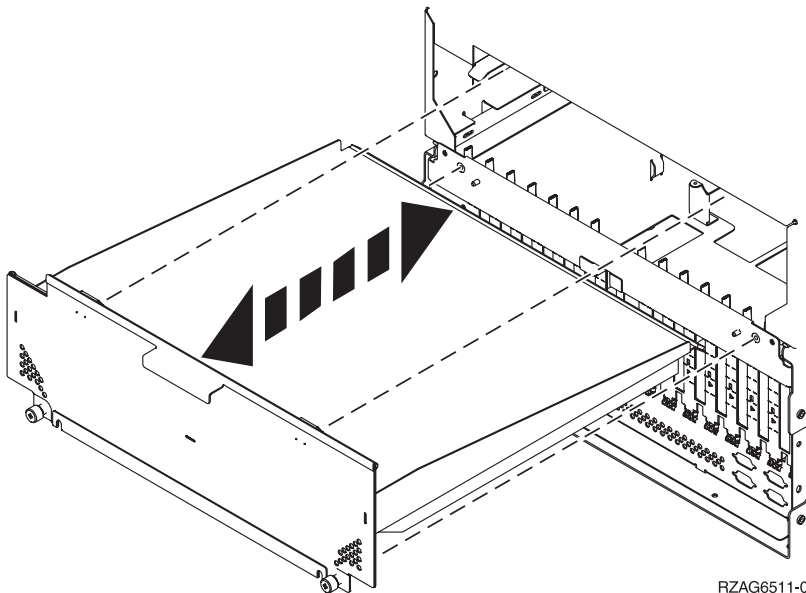
- \_\_\_ 3. Pull the cover out.



RZAQ3504-0

## Remove the 5078 and 5088 expansion unit cover

To access the IXS card location, open the back and remove the air flow shield.



RZAG6511-0



---

## Card positions

Select the system or expansion unit you are working on:

1. "270, 800, and 810 system unit"
2. "5075 expansion unit"
3. "5078 or 0578 expansion unit" on page 36
4. "5088 or 0588 expansion unit" on page 37
5. "5095 or 0595 expansion unit" on page 38

---

### 270, 800, and 810 system unit

Figure 11 shows the card positions (back view) on a 270, 800, and 810 system unit.

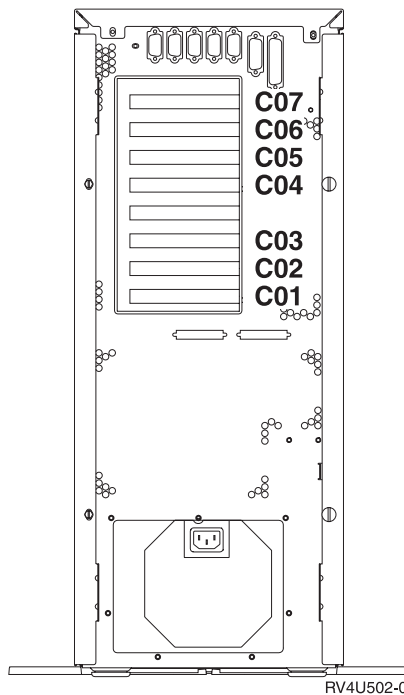
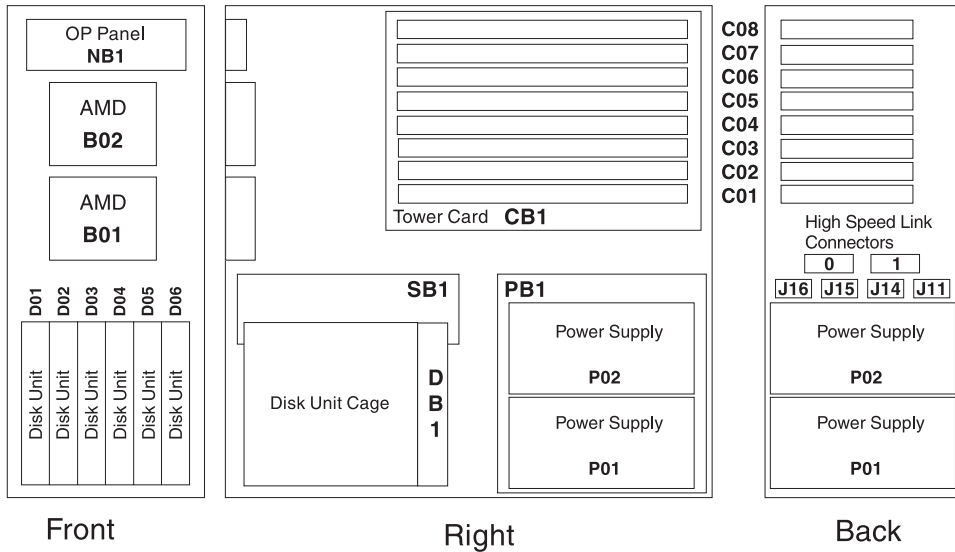


Figure 11. Card positions on the 270, 800, and 810 system unit

---

### 5075 expansion unit

Figure 12 on page 36 shows the card positions (side and back view) on a 5075 expansion unit.

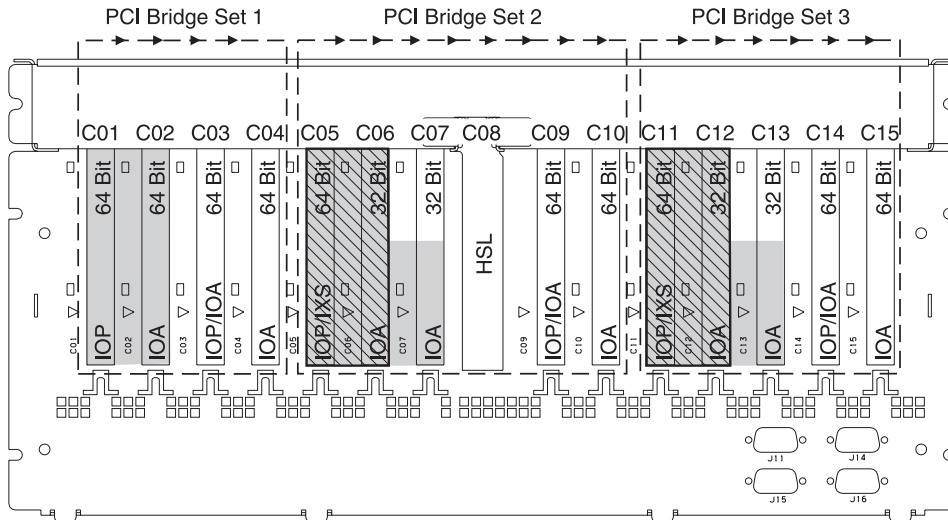


RZAQ2500-4

Figure 12. Card positions on the 5075 expansion unit

## 5078 or 0578 expansion unit

Figure 13 on page 37 shows the card positions on a 5078 or 0578 expansion unit.



■ = positions occupied if 2890, 2891, or 2899 IXS is installed

▨ = positions occupied if 2892 or 4810 IXS is installed

Note: Long or short feature cards can go in any position.

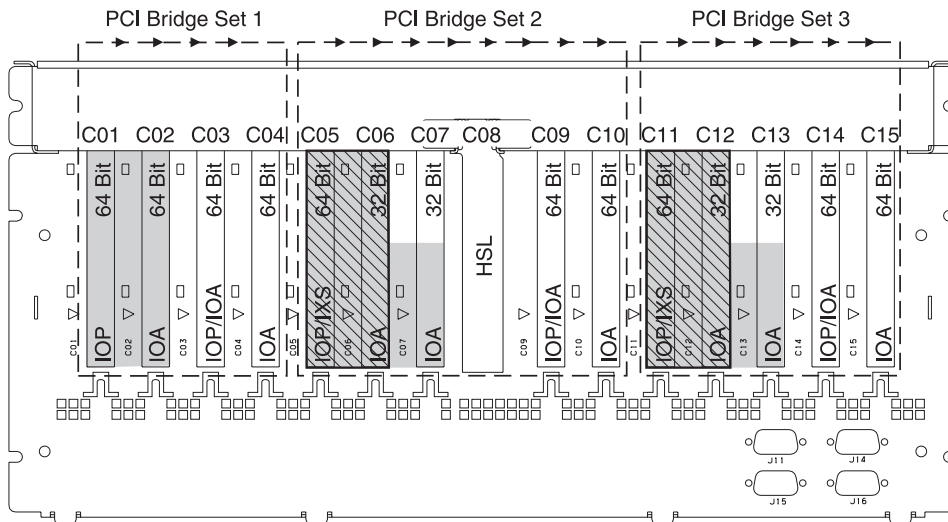
Position	Type
C01	IOA
C02	IOA
C03	IOP/IOA
C04	IOA
C05	IOP/IXS
C06	IOA
C07	IOA
C08	HSL
C09	IOP/IOA
C10	IOA
C11	IOP/IXS
C12	IOA
C13	IOA
C14	IOP/IOA
C15	IOA

RZAQ5507-9

Figure 13. Card positions on the 5078 expansion unit

## 5088 or 0588 expansion unit

Figure 14 on page 38 shows the card positions on a 5088 or 0588 expansion unit.



■ = positions occupied if 2890, 2891, or 2899 IXS is installed  
 ▨ = positions occupied if 2892 or 4810 IXS is installed  
 Note: Long or short feature cards can go in any position.

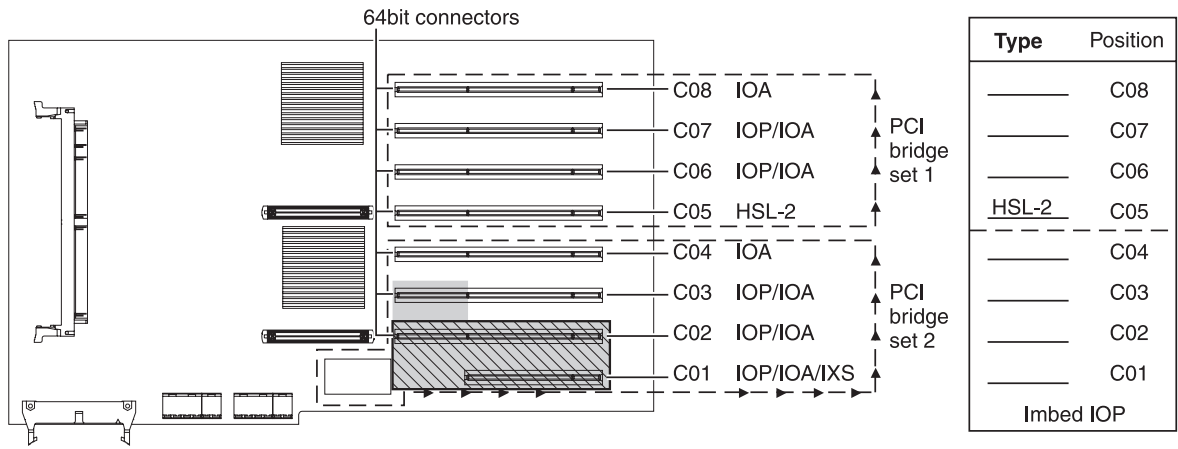
Position	Type
C01	IOP
C02	IOA
C03	IOP/IOA
C04	IOA
C05	IOP/IXS
C06	IOA
C07	IOA
C08	HSL
C09	IOP/IOA
C10	IOA
C11	IOP/IXS
C12	IOA
C13	IOA
C14	IOP/IOA
C15	IOA

RZAQ5507-9

Figure 14. Card positions on the 5088 expansion unit

## 5095 or 0595 expansion unit

Figure 15 on page 39 shows the card positions on a 5095 or 0595 expansion unit.



■ = Positions occupied if 2890, 2891, or 2899 IXS is installed

▨ = Positions occupied if 2892 or 4810 IXS is installed

RZAQ5513-3

Figure 15. Card positions on the 5095 expansion unit



---

## Install covers

1. Remove the wrist strap.
2. **Figure 16** shows how to install the system unit side cover by aligning the tabs on the top and bottom edge. Press forward to make sure that all tabs enter the slots. Slide the cover toward the front of the system unit until it stops and install the screws.

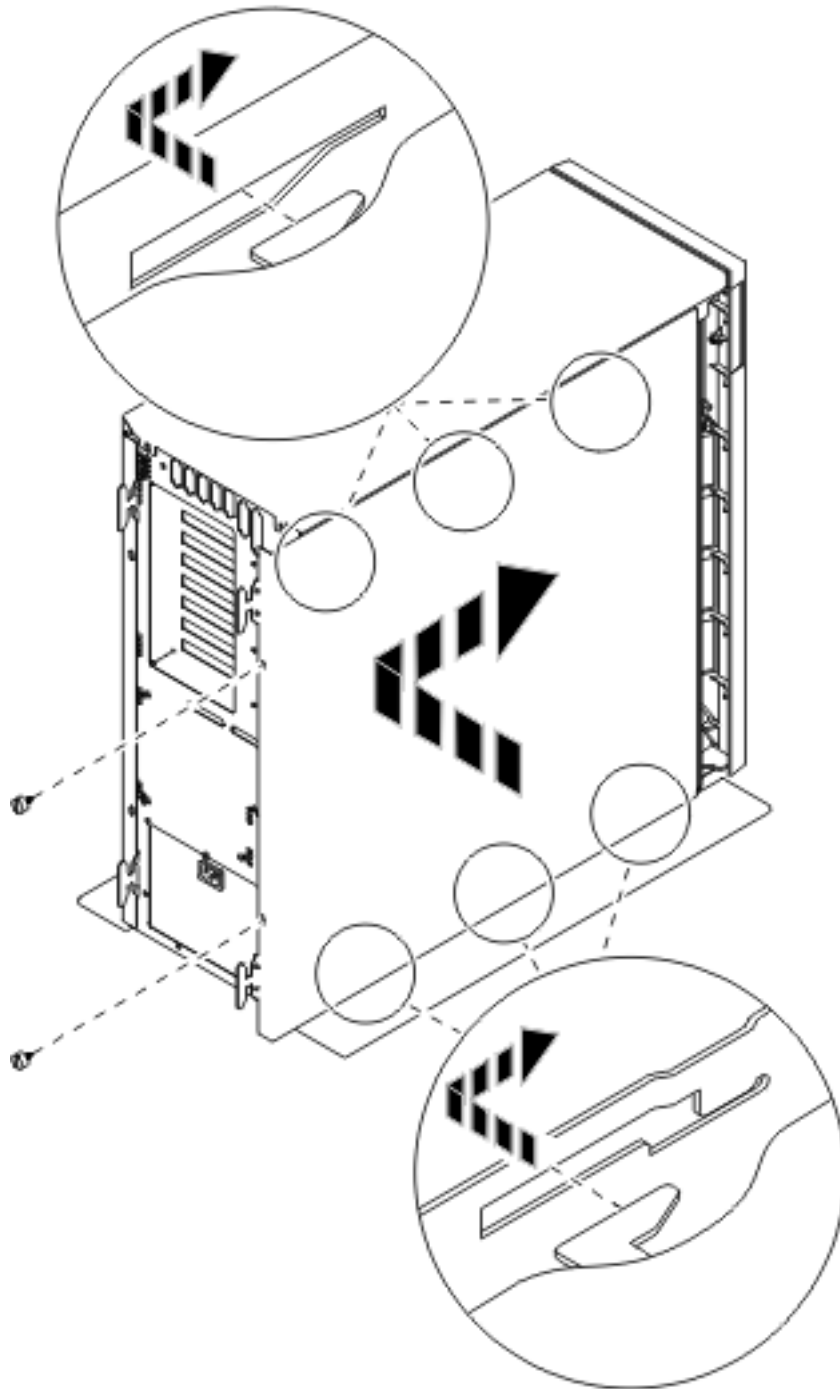


Figure 16. Install system unit side cover

\_\_\_ 3. Install the system unit back cover if you have one.

\_\_\_ 4. **DANGER**

**An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.  
(RSFTD201)**

Plug the following power cords into an electrical outlet.

- System unit
- System unit console

**Note:** Do **not** power on your system unit at this time.

\_\_\_ 5. Plug in and power on all attached devices, such as printers and displays.



---

## Appendix. Notices

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing  
IBM Corporation  
North Castle Drive  
Armonk, NY 10504-1785  
U.S.A.

**The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law:** INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

All statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

All IBM prices shown are IBM's suggested retail prices, are current and are subject to change without notice. Dealer prices may vary.

This information is for planning purposes only. The information herein is subject to change before the products described become available.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

If you are viewing this information softcopy, the photographs and color illustrations may not appear.

The drawings and specifications contained herein shall not be reproduced in whole or in part without the written permission of IBM.

IBM has prepared this publication for use by hardware service representatives in the maintenance or repair of the specific machines indicated. IBM makes no representations that it is suitable for any other purpose.

The drawings and specifications contained herein shall not be reproduced in whole or in part without the written permission of IBM.

IBM has prepared this publication for use by customer personnel for operating and planning for the specific machines indicated. IBM makes no representations that it is suitable for any other purpose.

---

## Trademarks

The following terms are trademarks of International Business Machines Corporation in the United States, other countries, or both:

Application System/400  
AS/400  
e (logo)  
IBM  
iSeries  
Operating System/400  
OS/400  
400

Lotus, Freelance, and WordPro are trademarks of International Business Machines Corporation and Lotus Development Corporation in the United States, other countries, or both.

C-bus is a trademark of Corollary, Inc. in the United States, other countries, or both.

ActionMedia, LANDesk, MMX, Pentium, and ProShare are trademarks or registered trademarks of Intel Corporation in the United States, other countries, or both.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

SET and the SET Logo are trademarks owned by SET Secure Electronic Transaction LLC.

Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Other company, product or service names may be trademarks or service marks of others.

---

## Terms and conditions for downloading and printing publications

Permissions for the use of the publications you have selected for download are granted subject to the following terms and conditions and your indication of acceptance thereof.

**Personal Use:** You may reproduce these Publications for your personal, noncommercial use provided that all proprietary notices are preserved. You may not distribute, display or make derivative works of these Publications, or any portion thereof, without the express consent of IBM.

**Commercial Use:** You may reproduce, distribute and display these Publications solely within your enterprise provided that all proprietary notices are preserved. You may not make derivative works of these Publications, or reproduce, distribute or display these Publications or any portion thereof outside your enterprise, without the express consent of IBM.

Except as expressly granted in this permission, no other permissions, licenses or rights are granted, either express or implied, to the Publications or any information, data, software or other intellectual property contained therein.

IBM reserves the right to withdraw the permissions granted herein whenever, in its discretion, the use of the Publications is detrimental to its interest or, as determined by IBM, the above instructions are not being properly followed.

You may not download, export or re-export this information except in full compliance with all applicable laws and regulations, including all United States export laws and regulations. IBM MAKES NO GUARANTEE ABOUT THE CONTENT OF THESE PUBLICATIONS. THE PUBLICATIONS ARE PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE

All material copyrighted by IBM Corporation.

By downloading or printing a publication from this site, you have indicated your agreement with these terms and conditions.

---

## Code disclaimer information

This document contains programming examples.

IBM grants you a nonexclusive copyright license to use all programming code examples from which you can generate similar function tailored to your own specific needs.

All sample code is provided by IBM for illustrative purposes only. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs.

All programs contained herein are provided to you "AS IS" without any warranties of any kind. The implied warranties of non-infringement, merchantability and fitness for a particular purpose are expressly disclaimed.

---

## Electronic Emission Notices

### Federal Communications Commission (FCC) statement

**Note:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party:

International Business Machines Corporation  
New Orchard Road  
Armonk, NY 10504

Telephone: 1-919-543-2193

### Industry Canada Compliance Statement

This Class A digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

### Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

### European Community Compliance Statement

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

### Australia and New Zealand Class A statement

**Attention:** This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

### VCCI Statement - Japan

この装置は、クラス A 情報技術装置です。この装置を家庭環境で使用する  
と電波妨害を引き起こすことがあります。この場合には使用者が適切な対策  
を講ずるよう要求されることがあります。 VCCI-A

The following is a summary of the VCCI Japanese statement in the box above.

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

#### Electromagnetic Interference (EMI) Statement - People's Republic of China

Per GB 9254-1998, the user manual for a Class A product must carry the following warning message (English translation from the Chinese standard) about use in a residential environment in Chinese (*Simplified Chinese*):

声 明  
此为 A 级产品,在生活环境  
中,该产品可能会造成无线电干  
扰。在这种情况下,可能需要用  
户对其干扰采取切实可行的措  
施。

Declaration: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may need to perform practical action.

#### Electromagnetic Interference (EMI) Statement - Taiwan

警告使用者：  
這是甲類的資訊產品，在  
居住的環境中使用時，可  
能會造成射頻干擾，在這  
種情況下，使用者會被要  
求採取某些適當的對策。

The following is a summary of the EMI Taiwan statement above.

Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user will be required to take adequate measures.

#### Radio Protection for Germany

Dieses Gerät ist berechtigt in Übereinstimmung mit Dem deutschen EMVG vom 9.Nov.92 das EG-Konformitätszeichen zu führen.

Der Aussteller der Konformitätserklärung ist die IBM Germany.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse A. Für diese von Geräten gilt folgende Bestimmung nach dem EMVG:

Geräte dürfen an Orten, für die sie nicht ausreichend entstört sind, nur mit besonderer Genehmigung des Bundesministers für Post und Telekommunikation oder des Bundesamtes für Post und Telekommunikation betrieben werden. Die Genehmigung wird erteilt, wenn keine elektromagnetischen Störungen zu erwarten sind.

(Auszug aus dem EMVG vom 9.Nov.92, Para.3, Abs.4)

#### Hinweis

Dieses Genehmigungsverfahren ist von der Deutschen Bundespost noch nicht veröffentlicht worden.

---

## **Electronic Emission Notices**

The following Statement applies to this IBM product. The statement for other IBM products intended for use with this product will appear in their accompanying manuals.

### **Federal Communications Commission (FCC) statement**

**Note:** This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an IBM authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM authorized dealers. IBM is not responsible for any radio or television interference caused by using other than recommended cables or connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interferences, and (2) this device must accept any interferences received, including interference that may cause undesired operation.

Responsible Party:

International Business Machines Corporation  
New Orchard Road  
Armonk, NY 10504

Telephone: 1-919-543-2193

### **Industry Canada Compliance Statement**

This Class B digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

### **Avis de conformité à la réglementation d'Industrie Canada**

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

### **European Community Compliance Statement**

This product is in conformity with the protection requirements of EC Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class B Information Technology Equipment according to CISPR 22 / European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication devices.

Properly shielded and grounded cables and connectors (IBM part number 75G5958 or its equivalent) must be used in order to reduce the potential for causing interference to radio and TV communications and to other electrical or electronic equipment. Such cables and connectors are available from IBM authorized dealers. IBM cannot accept responsibility for an interference caused by using other than recommended cables and connectors.









Printed in USA