IBM Netfinity

**Update to the
ServeRAID-3H and ServeRAID-3L
Ultra2 SCSI Adapters
Installation and User's Guide**

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Contents

Introduction

This publication contains updates to the *IBM Netfinity ServeRAID-3H and ServeRAID-3L Ultra2 SCSI Adapters Installation and User's Guide*, part number 01L2054. Since the release of the ServeRAID adapter, IBM has continued to improve and enhance the technical capabilities of the adapter. These improvements and enhancements are addressed in this publication.

This publication contains the following information:

- Separate installation instructions for installing the ServeRAID device drivers for Windows NT 3.5, Windows 4.0, and the OS/2 operating systems.

- A clarification in the procedure for installing an HBA diskette file using Pkgadd

- Instructions for configuring two ServeRAID adapters in a failover environment

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Installing programs for Windows NT

ServeRAID now provides separate device drivers and background-server components for Windows NT 3.5 and 4.0. The following instructions replace the instructions on pages 66 - 69 in your ServeRAID manual.

In this section, you will find two sets of instructions for Windows NT: one for Windows NT 3.5 and one for Windows NT 4.0.

Each of those two sections is broken down into two parts: one that contains instructions for installing the device drivers during the initial installation of Windows NT and one that contains instructions for installing the device drivers if Windows NT already is installed on your computer.

Installing the files for Windows NT 3.5

This section provides instructions for installing the device drivers and the background-server component for Windows NT 3.5.

Installing the files while installing Windows NT 3.5

To install the ServeRAID device driver while installing Windows NT 3.5:

1. Insert the Windows NT startup (boot) diskette into the diskette drive or insert the startable Windows NT CD into the CD-ROM drive; then, restart the server.

2. When the message

   ```
   Setup is inspecting your computer's hardware
   configuration...
   ```

   appears, press the **F6** key.

3. After loading some files, Windows NT displays a window where you can manually specify an adapter. When this window appears, press **S** to specify additional devices.

4. When prompted in the next window, select **Other** from the list.

5. When prompted to insert the `Manufacturer-supplied-hardware support disk`, insert the *IBM ServeRAID Device Driver Diskette* into the diskette drive; then, press **Enter**.

6. Select **IBM ServeRAID Adapter (NT 3.51)**; then, press **Enter**. A message similar to the following will appear: `Setup is loading files (IBM ServeRAID Adapter (NT 3.51))....`

7. When prompted, press **Enter** to continue.

8. Use the instructions provided in the Windows NT manual to complete the normal installation process.

9. After you complete the installation, be sure to apply the latest Service Pack.

10. Continue with "Installing the background-server component for Windows NT 3.5" on page 3.

Installing the files after installing Windows NT 3.5

To install the ServeRAID device driver after Installing Windows NT 3.5:

1. Insert the *IBM ServeRAID Device Driver Diskette* into the diskette drive.

2. Double click **Windows NT Setup**. from the main folder in Program Manager.

3. Select **Configuration** from the menu; then, select **Add/Remove SCSI Adapter**.

4. Select **IBM ServeRAID Adapter**; then, click **Remove**.

5. Click **OK**.

6. Click **OK**.

7. Click **Add**.

8. Click **OK**.

9. Select **Other, driver provided by manufacturer**.

10. In the **Copy manufacturer's files from** field, type:

    a:\nt3_5

11. Click **OK**.

12. Continue with "Installing the background-server component for Windows NT 3.5."

Installing the background-server component for Windows NT 3.5

This section provides instructions for installing the background-server components for Windows NT 3.5X.

1. Insert the *IBM ServeRAID Device Driver Diskette* into the diskette drive; then, type the following to copy the IPSADM.EXE file to your hard disk:

   copy a:\nt3_5\ipsadm.exe c:\winnt\system32\ipsadm.exe

2. Press **Enter**.

3. Type the following to copy the IPSADM.ICO icon file to your hard disk:

   copy a:\nt3_5\ipsadm.ico c:\winnt\system32\ipsadm.ico

4. Press **Enter**.

5. Select a group or create a new group to store the program. For example, open the Administrative Tools Group or create a new program group named IPSADM Admin-Monitor.

6. Click on **File**, click on **New**, click on **Personal Item**, and then click on **OK**.

7. Type the following information in the data fields:

   Description: IPSRAID Admin-Monitor

   Command Line: C:\WINNT\SYSTEM32\IPSADM.EXE

   Working Dir: C:\WINNT\SYSTEM32

8. Click on **Change Icon**; then, click on **OK** in the information window.

9. Do one of the following:

   - In the Change Icon window, type:

     c:\winnt\system32\ipsadm.ico

         or,

   - Click on **Browse** and select C:\WINNT\SYSTEM32\IPSADM.ICO.

10. Click on **OK** for the icon.

11. Click on **OK** for the Personal Item.

12. Double-click on the new icon to access the Administration and Monitoring Program.

Installing the files for Windows NT 4.0

This section provides the instructions for installing the device drivers and the backgroud-server component for Windows NT 4.0.

Installing the device drivers while installing Windows NT 4.0

To install the ServeRAID device driver while installing Windows NT 4.0:

1. Insert the Windows NT startup (boot) diskette into the diskette drive or insert the startable Windows NT CD into the CD-ROM drive; then, restart the server.

2. When the message

   ```
   Setup is inspecting your computer's hardware
   configuration...
   ```

   appears, press the **F6** key.

3. After loading some files, Windows NT displays a screen that allows you to manually specify an adapter. When this screen appears, press **S** to specify additional devices.

4. When prompted in the next window, select **Other** from the list.

5. When prompted to insert the `Manufacturer-supplied-hardware support disk`, insert the *IBM ServeRAID Device Driver Diskette* into the diskette drive; then, press **Enter**.

6. Select **IBM ServeRAID Adapter (NT 4.0)**; then, press **Enter**. A message similar to the following will appear: `Setup is loading files (IBM ServeRAID Adapter (NT 4.0))...`

7. When prompted, press **Enter** to continue.

8. Use the instructions provided in the Windows NT manual to complete the normal installation process.

9. After you complete the installation, be sure to apply the latest Service Pack.

10. Continue with "Installing the background-server component for Windows NT 4.0" on page 5.

Installing the device driver after installing Windows NT 4.0

To install the ServeRAID device driver after Installing Windows NT 4.0:

1. Insert the *IBM ServeRAID Device Driver Diskette* into the diskette drive.

2. From the **Start Menu**, select **Settings**; then, select **Control Panel**.

3. Select **SCSI Adapter**; then, click on the **Drivers** tab.

4. Click on **Add**; then, click on **Have Disk**.

5. In the **Copy manufacturer's files from** field, type:

   `a:\nt4_0`

6. Click on **OK**; then in the next dialog box, click on **OK** again.

7. After the device driver installs, restart the system.

8. Continue with "Installing the background-server component for Windows NT 4.0" on page 5.

Installing the background-server component for Windows NT 4.0

This section provides instructions for installing the background-server components for Windows NT 4.0.

1. Insert the *IBM ServeRAID Device Driver Diskette* into the diskette drive; then, type the following to copy the IPSADM.EXE file to your hard disk:

   ```
   copy a:\nt4_0\ipsadm.exe c:\winnt\system32\ipsadm.exe
   ```

2. Press **Enter**.

3. Type the following to copy the IPSADM.ICO icon file to your hard disk:

   ```
   copy a:\nt4_0\ipsadm.ico c:\winnt\system32\ipsadm.ico
   ```

4. Press **Enter.**

5. Complete the following steps to create a new program shortcut:

   a. Using the right mouse button, click on the **Desktop**.
   b. Click on **New**; then, click on **Shortcut**.
   c. In the Create Shortcut window type:

      ```
      c:\winnt\system32\ipsadm.exe
      ```

   d. Click on **Next**.
   e. In the Select a Title for the Program window, type:

      ```
      IPSRAID Admin-Monitor Server
      ```

   f. Click on **Finish**.

6. Using the right mouse button, click on the **icon**.

7. Click on **Properties**, click on **Shortcut**, and then click on **Change Icon**.

8. In the Information window, click on **OK**.

9. In the Change Icon window, type:

   ```
   c:\winnt\system32\ipsadm.ico
   ```

10. Click on **OK** for the icon; then, click on **OK** for the program properties.

11. Double-click on the new icon to access the Administration and Monitoring Program.

Installing device drivers while installing OS/2

There have been some modifications to the *Installing the ServeRAID Device Drivers While Installing OS/2* procedure. These instructions replace the instructions on page 74 - 76 in your ServeRAID manual.

You can use the following instructions to install the ServeRAID device driver and Administration and Monitoring Program files while installing OS/2 Warp Server.

Note: If you install these files on a logical drive that has its write policy set to the write-back mode, wait at least 10 seconds after being prompted to press **Ctrl**+**Alt**+**Del** before you actually press the keys. Waiting 10 seconds or longer gives the ServeRAID adapter or controller the time needed to flush all dirty-cache pages out to the hard disk.

To install the ServeRAID files while installing OS/2:

1. Make a copy of the *OS/2 Warp Diskette 1* and label it *Copy of OS/2 Diskette 1*.

2. Copy the IPSRAID.ADD file from the OS2 directory on the *IBM ServeRAID Device Driver Diskette* to the *Copy of OS/2 Diskette 1*.

   If there is not enough space, delete files not needed in your installation (such as proprietary CD-ROM or SCSI device drivers). Make sure you remove all entries referring to any device drivers you delete from the CONFIG.SYS file.

   > **Important**
   >
   > If you have more than one ServeRAID or SCSI adapter in your system, make sure that the BASEDEV statement for the adapter controlling the startup (boot) device appears before the BASEDEV statements for other ServeRAID or SCSI adapters in the CONFIG.SYS file.

3. Edit the CONFIG.SYS file on the *Copy of OS/2 Diskette 1* to add the following lines.

   ```
   BASEDEV=IPSRAID.ADD
   SET COPYFROMFLOPPY=1
   ```

4. Install OS/2, but when you are prompted to insert diskette 1, use the updated *Copy of OS/2 Diskette 1*.

5. After you complete the OS/2 installation, insert the *IBM ServeRAID Device Driver Diskette*.

6. From an OS/2 window, type:

   ```
   a:
   ```

   Note: The *a* represents the drive letter assignment for the diskette drive that contains the ServeRAID diskette.

7. Press **Enter**. Then, type:

   ```
   ddinstal
   ```

8. Press **Enter**.

   The OS/2 Device Driver Installation window opens. In the **Source** field type A: (a: is the letter of the diskette drive where the *IBM ServeRAID Device Driver Diskette* is located. In the **Destination** field type the full path where you want the device driver files to be copied.

9. Click on **Install**.

   - The program copies the following ServeRAID device driver and program files to the OS/2 subdirectory on your hard disk: IPSRAID.ADD, IPSADM.EXE, and IPSRADM.EXE.

   - The program copies the ServeRAID IPSRADM.HLP Help file to the \OS2\HELP directory.

10. Edit the CONFIG.SYS file and verify that there is only one copy of the line BASEDEV=IPSRAID.ADD.

    Notes:

    a. If you have more than one ServeRAID or SCSI adapter in your system, make sure that the BASEDEV statement for the adapter controlling the startup (boot) device appears before the BASEDEV statements for other ServeRAID or SCSI adapters in the CONFIG.SYS file.

    b. After you install any service packs, check the path for the IPSRAID.ADD device driver and verify that the correct device driver is installed.

11. Restart the server.

Installing an HBA diskette file using Pkgadd

Use this procedure in place of the procedure on page 88 of the *IBM Netfinity ServeRAID-3H and ServeRAID-3L Adapters Installation and User's Guide*. There is a change in the spacing for the information that you type in step 2.

1. Insert the *IBM ServeRAID Device Drivers for SCO Operating Systems Diskette* into the diskette drive:

2. Type:

   ```
   pkgadd -d /dev/dsk/f0t
   ```

3. Press **Enter**.

4. When the message `Insert diskette into Floppy Drive 1` appears, press **Enter**.

5. When the message `Installation of the IBM ServeRAID SCSI IHV HBA (ips) was successful` appears, type:

   ```
   q
   ```

6. Press **Enter**; then after the device driver installs, restart the system.

Configuring two ServeRAID 3 adapters in a failover environment

You can now configure two ServeRAID 3 Adapters in a failover environment.

The latest version of the ServeRAID 3 device driver includes *fault tolerant* technology. With fault tolerance, two adapters can be paired and connected to the same enclosure in order to provide access to the disk, even after an adapter fails.

Hardware requirements

In order to perform fault tolerance with ServeRAID 3, you must use one of the following enclosures:

- IBM PC Server Enterprise Expansion Enclosure (3518), using IBM SCSI-2 Fast/Wide Enhanced Repeater Adapter
- IBM Netfinity Rack Drawer Enclosure (3519), using IBM SCSI-2 Fast/ Wide Enhanced Repeater Adapter
- IBM Netfinity EXP10 Rack Storage Enclosure, using Netfinity EXP10 3m External Auto-Sensing Cable
- IBM Netfinity EXP15 Rack Enclosure

Installation guidelines, considerations, and restrictions

In order to perform fault tolerance with ServeRAID 3, the following guidelines and restrictions must be adhered to.

- A fault-tolerant pair cannot be part of a Microsoft Cluster Server shared cluster.
- You cannot use the on-board ServeRAID controller to create a fault-tolerant pair. You must use two ServeRAID 3 adapters.
- All logical drives must have unique shared logical drive IDs.
- Only the active adapter in a fault-tolerant pair will appear in the NT Administration and Monitoring utility.
- If both adapters have logical drives configured, they will not be configured as a fault-tolerant pair.
- During the configuration process for a fault-tolerant pair, you must restart the servers.
- A backup adapter cannot be added using the Hot-Add utility, which is included in the PCI Hot-Plug for Windows NT 4.0 program.
- The adapter must be configured as write-through.
- When using multiple fault-tolerant pairs in a system, each set of adapters must have a unique set of names.
- An on-board ServeRAID controller cannot be disabled, even if it is not used.
- To configure a fault-tolerant pair:
  - Both ServeRAID adapters in the pair must have nonconflicting SCSI IDs.
  - Both ServeRAID adapters in the pair must have their host names and partner names configured correctly.

– Both ServeRAID adapters must be identical -- two ServeRAID 3 adapters. You cannot use different ServeRAID adapters in the same pair.

– All logical drives must have a shared Merge ID defined.

Configuring the adapters in a failover environment

Notes:

1. For complete information on using the ServeRAID Configuration Program, refer to the *IBM ServeRAID-3H and ServeRAID-3L Ultra2 SCSI Adapters Installation and User's Guide*.

2. Do not connect the cable between the ServeRAID adapters and the expansion enclosure at this time.

To configure the adapters, do the following:

1. Insert the *IBM ServeRAID Configuration CD* (or the configuration CD that came with your server) into the CD-ROM drive; then turn on the server.

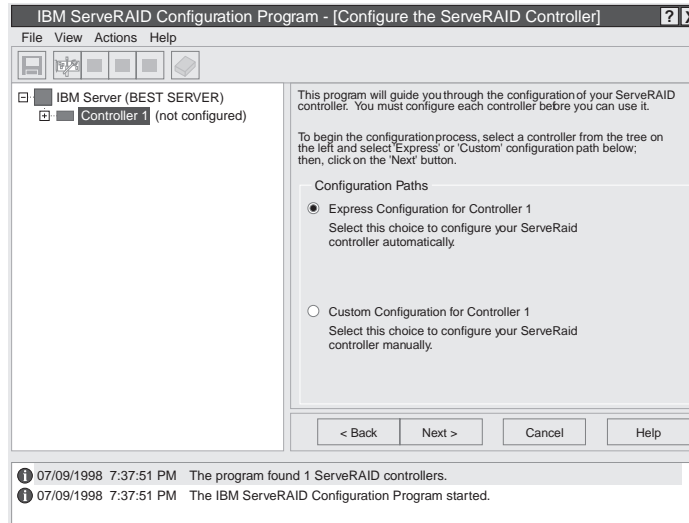   A screen similar to the following appears.

```
┌─────────────────────────────────────────────────────────────────────────┐
│ IBM ServeRAID Configuration Program - [Configure the ServeRAID Controller]  [?][X] │
│ File  View  Actions  Help                                                  │
│ [💾][▨][■][■][■][◇]                                                         │
│ ┌───────────────────────────┐ ┌─────────────────────────────────────────┐ │
│ │ ⊟ ■ IBM Server (BEST SERVER)│ │ This program will guide you through the  │ │
│ │   ⊞ ■ Controller 1          │ │ configuration of your ServeRAID          │ │
│ │       (not configured)      │ │ controller.  You must configure each     │ │
│ │                             │ │ controller before you can use it.        │ │
│ │                             │ │                                          │ │
│ │                             │ │ To begin the configuration process,      │ │
│ │                             │ │ select a controller from the tree on     │ │
│ │                             │ │ the left and select 'Express' or 'Custom'│ │
│ │                             │ │ configuration path below;                │ │
│ │                             │ │ then, click on the 'Next' button.        │ │
│ │                             │ │ ┌─ Configuration Paths ────────────────┐ │ │
│ │                             │ │ │ ◉ Express Configuration for Controller 1│ │
│ │                             │ │ │   Select this choice to configure your │ │
│ │                             │ │ │   ServeRaid controller automatically.  │ │
│ │                             │ │ │                                        │ │
│ │                             │ │ │ ○ Custom Configuration for Controller 1 │ │
│ │                             │ │ │   Select this choice to configure your │ │
│ │                             │ │ │   ServeRaid controller manually.       │ │
│ │                             │ │ └────────────────────────────────────┘ │ │
│ │                             │ │ [< Back] [Next >]  [Cancel]  [Help]      │ │
│ └───────────────────────────┘ └─────────────────────────────────────────┘ │
│ ① 07/09/1998  7:37:51 PM   The program found 1 ServeRAID controllers.      │
│ ① 07/09/1998  7:37:51 PM   The IBM ServeRAID Configuration Program started. │
└─────────────────────────────────────────────────────────────────────────┘
```

Figure 1. Configuration Mode Screen

2. Click on the **Custom Configuration** radio button.

3. Click on the **Next** button.

> **Important**
>
> The ServeRAID 3 adapter should be initialized only one time, when the adapter is first installed. Initializing the adapter removes all configuration information from NVRAM. This information includes the SCSI IDs, the cluster and the cluster partner name, and the array information. This point is especially important if the Windows NT system startup drive is attached to the IBM ServeRAID adapter. If the initialization occurs after the startup drive array has been created, the array information will be removed and the server will not be able to startup into Windows NT.

4. Using the right mouse button, click on the first ServeRAID adapter in the main tree that you are configuring; a pop-up list appears.

5. Click on **Initialize the Controller Configuration**

6. When the initialization is complete, a message appears at the bottom of the screen saying that the initialization was successful.

7. Using the right mouse button, click on the second ServeRAID adapter in the main tree that you are configuring and a pop-up list appears.

8. Click on **Initialize the Controller Configuration**

9. When complete, a message appears at the bottom of the screen saying that the initialization was successful.

Configuring the adapters for failover

To configure the adapters for failover, do the following:

1. Using the right mouse button, click on the first ServeRAID adapter in the main tree that you are configuring and the pop-up list appears.

2. Click on **Configure for Clustering**.

3. A window appears. Fill in the following information:

   Note: The name of the Host ID and the Cluster Partner ID are case sensitive.

   - Host ID - Enter a name for the Host ID for the first controller, for example, Name_1.
   - Cluster Partner ID - Enter a name for the Cluster Partner ID for the first controller, for example, Name_2.
   - Initiator Identifiers (Channels) - The system presets these to an unused value, for example, 7.

   Note: Be sure to record the Host IDs and Cluster Partner IDs in a safe place for future reference. You will need this information to recover the configuration if the ServeRAID 3 adapter should fail.

4. Record the Host ID and Cluster Partner ID.

5. Click **OK**

6. Using the right mouse button, click on the second ServeRAID adapter in the main tree that you are configuring and the pop-up list appears.

7. Click on **Configure for Clustering**.

8. A window appears. Fill in the following information:

   Note: The name of the Host ID and the Cluster Partner ID are case sensitive.

   - Host ID - Enter the name for the Host ID for the second controller. This is the same name as the Cluster Partner ID you set up for the first controller, in this case, Name_2.
   - Cluster Partner ID - Enter the name for the Cluster Partner ID for the second controller. This is the same name as the Host ID you set up for the first controller, in this case, Name_1.
   - Initiator Identifiers (Channels) - This must be different from the Initiator IDs used when you set up the first ServeRAID adapter in step 3. The system presets these to an unused value, for example, 6, which you can use.

   Note: Be sure to record the Host IDs and Cluster Partner IDs in a safe place for future reference. You will need this information to recover the configuration if the ServeRAID 3 adapter should fail.

9. Record the Host ID and Cluster Partner ID.

10. Click **OK**

11. Exit the Configuration Program by either clicking on the box with the "X" in the upper right corner, or by clicking on **File**, and then **Exit**.

12. Shutdown the server.

Connecting the expansion enclosures

After you configure the adapters, you must connect the expansion enclosures to the ServeRAID adapters.

Important

When connecting the cables, keep the following in mind:

- You must connect the same channel connectors on both ServeRAID adapters to the expansion enclosure. For example, if you connect the cable from Channel 1 on the first ServeRAID adapter to the expansion enclosure, then you must connect the cable from Channel 1 on the second ServeRAID adapter to the expansion enclosure.

- No heart beat cable is needed for failover.

Once the cables are connected, restart the server with the Configuration CD still in the CD-ROM drive.

Configuring a logical drive

Note: You can create only one logical drive per array in a failover environment.

To configure a logical drive, do the following:

1. Click on the ServeRAID controller that you want to configure in the Main Tree.

2. Click on the **Custom Configuration** radio button.

3. Click on the **Next** button.

   Note: You must have two or more drives for RAID level 1 and three or more drives for RAID level 5 within the same array.

4. Do one of the following:

   - Using the right mouse button, click on the drive or SCSI Channel icons in the Main Tree to select the drives that you want to add to your arrays, delete from your arrays, or define as hot-spare drives; then, select a choice from the pop-up list.

          or

   - Drag the drive or SCSI Channel icon from the Main Tree and drop it on the Array or Hot-Spare Drive icon in the Main Panel on the right. If you change your mind, you can drag the icons back to the Main Tree to remove them from the configuration.

5. After you select the data drives for your arrays and define your hot-spare drives, click on the **Next** button.

   If you change your mind, you can:

   - Remove a specific drive from a newly defined array or delete an entire newly defined array. To do this:

     a. Click on the **Back** button.

     b. Using the right mouse button, click on the specific drive or Array icon in the Main Panel on the right.

     c. Select **Remove from New Array** or **Delete New Array**.

- Remove a specific hot-spare drive or all newly defined hot-spare drives. To do this:

    a. Click on the **Back** button.

    b. Using the right mouse button, click on the Hot-Spare Drive icon in the Main Panel on the right.

    c. Select **Remove New Hot-Spare Drive** or **Remove All New Hot-Spare Drives**.

6. Select a RAID level for the logical drive from the RAID pull-down menu in the Main Panel. (Refer to the ServeRAID documentation for descriptions of the supported levels.)

7. Move the sliding bar in the Main Panel from right to left to allot data and parity space for the logical drive.

    Notes:

    a. You can define only one logical drive per array in a failover environment.

    b. Some operating systems have size limitations for logical drives. Before you save the configuration, you might want to verify that the size of the logical drive is appropriate for Windows NT. See the documentation that came with Windows NT for more detailed information.

    c. Typically, the first logical drive defined on the first ServeRAID adapter or controller found by system BIOS during startup will be your startup (boot) drive.

8. Click on the **Next** button.

9. Review the information that appears on the Configuration Summary screen.

    Note: To change the configuration, click on **Modify**.

10. Click on **Apply** to accept and save the configuration.

Setting merge IDs

After creating the logical drives, you must assign a Merge ID to the shared drives. To set the Merge IDs, do the following:

1. Using the right mouse button, click on the ServeRAID controller in the main tree that contains the logical drives and a pop-up list appears.

2. Click on **Configure for Clustering**.

    The clustering information window appears.

3. Click on the **Shared** check box for the logical drives that will be shared between the two ServeRAID adapters.

4. Set the Merge ID. You can change the Merge Group value by typing in a value, or you can use the default provided.

5. Click on **Ok**

6. Exit the Configuration Program either by clicking on the box with the "X" in the upper right corner, or by clicking on **File**, and then **Exit**.

7. Shut down the server.

8. Restart the server to make the new configuration become active.

Installing Windows NT

If you have not already done so, install the Windows NT operating system now using the driver provided and the documentation provided with Windows NT.

IBM ServeRAID fault-tolerant applet

Note: When you start the applet, if your system does not have hot-plug PCI capability, or you are on a system with hot-plug PCI capability but do not have the corresponding software to use it, a message similar to the following will appear:

> **WARNING:** Could NOT open registry key
> "\Software\IBM\Slots\PCI." Therefore, cannot
> enumerate Friendly Slot Numbers.

> When this message occurs, click **Ok** and continue. This message does not apply to your configuration.

You also must install the IBM ServeRAID Fault Tolerant Control Panel Applet. You can use the applet to:

* View the current status of the ServeRAID adapters in the failover environment

* Force the primary adapter to fail, which then transfers functionality to the secondary adapter

To obtain the applet, go to the IBM web page at:

http://www.pc.ibm.com/support

Once you obtain the applet, you must install it. Run the .exe file and follow the instructions on the screen to install the applet.

Once you have installed the applet, you start it by doing the following:

1. Click **Start Programs**, click on **Settings**; then, click on **Control Panel**.

2. Click **IBM Netfinity ServeRAID Failover Applet** and the program starts.

Using the applet screen

To use the applet screen, do one of the following:

* To view the current status, you do not have to do anything. The information is on the opening screen.

* To force a failover, click **Apply** on the failover or switchover selection. If the failover completes successfully, a message appears saying that the Failover Completed Successfully.

To exit the applet, click on the either the **X** in the upper right corner of the applet screen, on **Ok**, or on **Cancel**.

Information about the Administration and Monitoring Utility

When using the Windows NT version of the ServeRAID 3 Administration and Monitoring Utility, you will see only the active adapter in the failover pair on the screen.

Definition of a failure

The device driver attempts to failover to the secondary adapter whenever it is unable to send a command to the primary adapter and the primary adapter does not respond to a reset command. Loose cables or defective hard disk drives will not cause a failover to occur.

Replacing a non-hot-plug adapter in a failover pair

If the failed adapter is not in a hot-plug PCI slot, do the following to replace it:

1. Shutdown the server.

2. Replace the failed adapter.

3. Follow the steps to reconfigure a second adapter.

   - To initialized the adapter, do steps 7 to 9 on page 11.

   - To configure the adapter for clustering, do steps 6 to 12 on page 12.

If the failed adapter is in a hot-plug slot, refer to the documentation that comes with the server for instructions for replacing it.

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