



IBM Netfinity

**SP Switch**

**Supplemental Installation and User's Guide**





IBM Netfinity

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**Note**

Before using this information and the product it supports, be sure to read the general information under Appendix C, "Product notices" on page 31.

**Second Edition (September 1999)**

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## About this book

**Important:** When installing the IBM Netfinity SP Switch, ensure that the Netfinity 7000 M10 servers with an RS485 link and the IBM Netfinity SP Switch are connected to the same common earth ground.

This book contains supplemental instructions for installing and setting up an IBM® Netfinity® SP Switch that is to be used in an IBM Netfinity Server Cluster Solution.

This book is intended for the following audience:

- Network administrator—the individual responsible for configuring, managing, maintaining, and troubleshooting a network or LAN.
- Hardware administrator—the individual responsible for configuring, maintaining, and supporting an IBM Netfinity server.

This document is a supplement to *IBM Netfinity SP Switch Installation and User's Guide*, that was shipped with the IBM Netfinity SP Switch. Refer to this supplement for updates to sections in the *IBM Netfinity SP Switch Installation and User's Guide*.

For additional service and device driver updates, go to the IBM support Web site at:

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

1. Under Select a Brand, click **Server**.
2. Under Select your family, click **Clustering**.
3. Under Technical Information, click **Downloadable files**.

Locate the IBM Netfinity SP Switch topic and download the files needed.





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## Installing the hardware

The following section contains an inventory list and detailed rack installation instructions for an IBM Netfinity SP Switch.

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### Inventory list

<p><b>Note:</b> The wrap plug that is packaged with your IBM Netfinity SP Switch should be stored in a safe place should diagnostic testing be required.</p>
--

The following items are packaged in the IBM Netfinity SP Switch box:

- \_\_\_ 1. One IBM Netfinity SP Switch
- \_\_\_ 2. Two power cords
- \_\_\_ 3. One wrap plug
- \_\_\_ 4. Two IBM 9306 Model 900 PC Server Rack Enclosure rails (one rail marked *L* for the left side and one rail marked *R* for the right side of the IBM Netfinity SP Switch).
- \_\_\_ 5. One or more packages of screws, some of which are optional replacement screws
- \_\_\_ 6. *IBM Netfinity SP Switch Installation and User's Guide* (this book)
- \_\_\_ 7. One cable-management tray

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### Tool requirements

The following tools are required for the installation of the IBM Netfinity SP Switch:

- Flat-blade screwdriver
- Philips-head screwdriver
- Cage-nut insertion tool

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## Installing the IBM Netfinity SP Switch into an IBM 9306 Model 900 PC Server Rack Enclosure

- Statement 6



**CAUTION:**

The Power Control button on the front of the server does not turn off the electrical current supplied to the server. The server also might have more than one power cord. To remove all electrical current from the server, ensure that all power cords are disconnected from the power source.

- Statement 9



**CAUTION:**

Never remove the cover on a power supply or any part (service processor and AC box) that has the following label attached.



Hazardous voltage, current, and energy levels are present inside the power supplies, service processor, and AC box. There are no serviceable parts inside the power supplies, service processor, or AC box. If you suspect a problem with one of these parts, contact an IBM service technician.

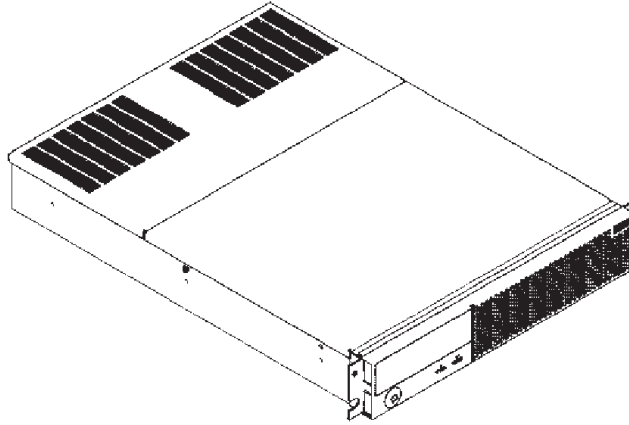
- Statement 12



>50 kg (110 lbs)

**CAUTION:**

Do not place any object weighing more than 50 kg (110 lbs) on top of the rack model of the server.



The IBM Netfinity SP Switch consists of the following major hardware components:

- One 8-port switch card (an optional 8-port switch card is available separately)
- Eight interposer cards, one for each port on the switch card
- Two power supplies
- Two power-converter cards
- Two fan assemblies, each containing two fans
- One service processor card
- One display panel with a 2-row by 16-character display panel, power indicator, fault indicator, on/off switch, and two display (cursor) control buttons
- One cable-management tray
- Two RS485 jack assemblies

The following steps describe installing an IBM Netfinity SP Switch into an IBM 9306 Model 900 PC Server Rack Enclosure.

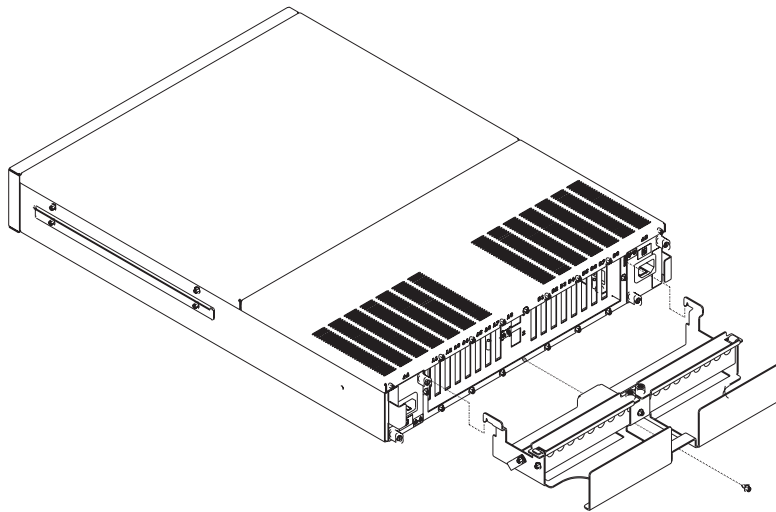
**Important:** You must install cage nuts (provided in your IBM Netfinity SP Switch package) in the appropriate holes in your IBM 9306 Model 900 PC Server Rack Enclosure. These cage nuts are required to receive the screws for the IBM Netfinity SP Switch. Use the Cage Nut Insertion Tool (provided in your IBM 9306 Model 900 PC Server Rack Enclosure package) to correctly install the cage nuts.

Refer to *IBM 9306 Model 900 Netfinity Rack Planning and Installation Guide* for detailed hardware installation instructions.

**Caution:**

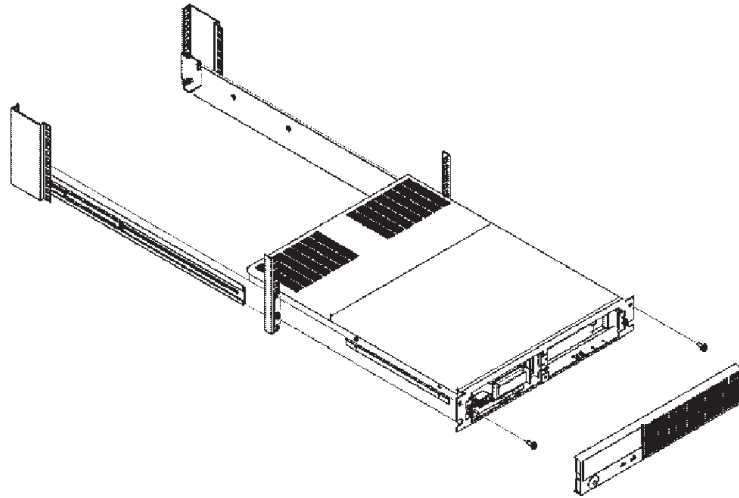
1. Before installing your IBM Netfinity SP Switch, review the documentation that comes with your rack enclosure for safety or cabling considerations. Ensure that your planned installation is within the guidelines of the rack for heat generation, electrical requirements, air flow, and mechanical loading. Verify that the rack can meet the operating parameters, as detailed in Appendix B, "Specifications" on page 29.
2. The IBM Netfinity SP Switch must be connected to a properly wired and grounded power source.
3. Two people might be needed to install the IBM Netfinity SP Switch into the IBM 9306 Model 900 PC Server Rack Enclosure.
4. Leave at least 1U clearance above and below the IBM Netfinity SP Switch after it is installed in the rack for ease of cable installation in the cable-management tray.

1. Review the safety information provided with your IBM server.

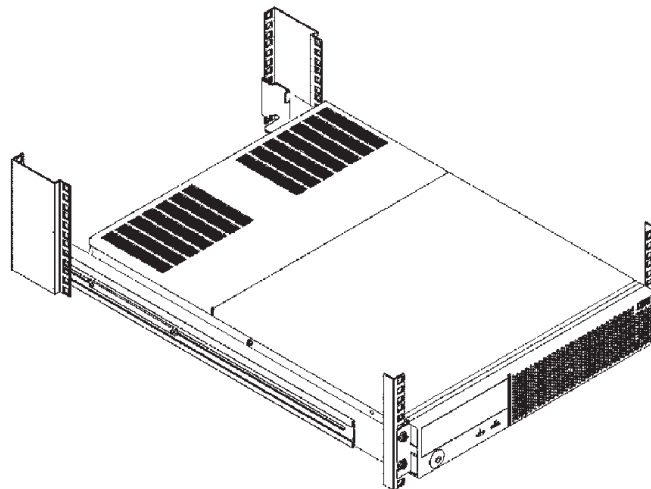


2. From the rear of the IBM Netfinity SP Switch, loosen the center-bottom screw with a flat-blade screwdriver.
3. Slide the two cable-management tray hooks (one on each side of the cable-management tray) into the two slots located on the IBM Netfinity SP Switch (located between the two power supplies) and slip the cable-management tray center slot over the screw loosened in step 2. Tighten the center-bottom screw.
4. Select an available 2U slot on your IBM 9306 Model 900 PC Server Rack Enclosure (referred to as the rack).
5. Using the Cage Nut Insertion Tool, install four cage nuts in the rear slots selected (two for the left rail and two for the right rail) and four cage nuts in the front slots selected (two for the left rail and two for the right rail) to hold the screws for the IBM Netfinity SP Switch rails and proceed to the next step to prepare the left rail (marked *L*) to be installed in the rack.
6. Loosen the two adjustment screws in the center of the rail to allow the rail to be extended to fit the rack.
7. From the front of the rack, align the bottom-front hole of the rail with the front hole of the slot; then insert and hand tighten the screw provided.

8. From the rear of the rack, adjust the rail to the correct depth of your rack, and align the two rear holes of the rail with the two rear holes on the slot of the rack.
9. Insert two screws (provided with your rails) into the aligned holes and tighten them with a flat-blade screwdriver.
10. Tighten the two rail-adjustment screws to lock the adjusted rail that allows the IBM Netfinity SP Switch to slide along the rails.



11. Repeat steps 6 on page 4 through 10 to install the right rail (marked *R*) into the rack.
12. From the front of the rack, slide the IBM Netfinity SP Switch along the previously installed rails (insert the rear of the switch into the rails first).
13. From the front of the rack, align the left and right sides of the IBM Netfinity SP Switch mounting screw holes with the left and right screw holes in the slot (the screw holes are located above the front rail screws). Insert and hand-tighten the screws.



14. Tighten all screws.

**Note:** An APC Smart-UPS or similar uninterruptible power supply is necessary to provide backup electrical power. Refer to *APC Smart-UPS Uninterruptible Power Supply Model 1400/3000* for detailed power connection instructions.

15. From the rear of the IBM Netfinity SP Switch, connect a power cord to the right power supply and a power cord to the left power supply. Power on the IBM Netfinity SP Switch.

Refer to section “IBM Netfinity SP Switch display panel messages” on page 24 for a complete description of the front panel buttons.

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## Installing an IBM Netfinity SP Host adapter

- Statement 6



**CAUTION:**

**The Power Control button on the front of the server does not turn off the electrical current supplied to the server. The server also might have more than one power cord. To remove all electrical current from the server, ensure that all power cords are disconnected from the power source.**

**Notes:**

1. Refer to the *IBM Netfinity 7000 M10 Server Library* legal and safety information for safety concerns while installing this adapter.
2. If you have configured your server for one IBM Netfinity SP Host adapter and you are upgrading your server with a second IBM Netfinity SP Host adapter, install the second IBM Netfinity SP Host adapter in a PCI slot with a higher PCI bus address. Refer to the I/O components section of your *IBM 7000 M10 Server Library* for detailed hardware information.
3. If you have installed two IBM Netfinity SP Host adapters in your server, and you want to disable one of the adapters, remove the IBM Netfinity SP Host adapter from the Windows NT properties. To remove the adapter properties:
  - a. Click **Start** → **Settings** → **Control Panel**.
  - b. Double-click **Network**.
  - c. Click **Adapters**.
  - d. Click **IBM Netfinity SP Host adapter**.
  - e. Click **Remove**.Physically remove the IBM Netfinity SP Host adapter from your server.
4. Label the IBM Netfinity SP Switch cables for future reference.
5. The wrap plug that is packaged with your IBM Netfinity SP Switch should be stored in a safe place should diagnostic testing be required.

1. Review the safety information provided with your IBM server.

2. Install an IBM Netfinity SP Host adapter into an available PCI slot in each IBM Netfinity 7000 M10. If you purchased an additional IBM Netfinity SP Host adapter, install it into another available PCI slot in your server.

Refer to the option installation section of the *IBM Netfinity 7000 M10 Server Library* and to the *IBM Netfinity SP Host adapter Installation and User's Guide* for detailed installation instructions.





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## Planning your IBM Netfinity SP Switch configuration

The following sections describe the types of IBM Netfinity SP Switch configurations that are supported.

**Note:** If you want to run the IBM Netfinity SP Switch Administrator software or start the IBM Netfinity SP Switch fabric from a server (node) that uses an IBM Netfinity SP Host adapter as the only network adapter, you must install the Microsoft Loopback Adapter option. Send a PING command to the default Microsoft Loopback Adapter address to check if it has been installed on your server (node):

```
PING 127.0.0.1
```

If the PING command times out, install the Microsoft Loopback Adapter option. The following describes the installation steps for the Microsoft Loopback Adapter option:

1. Click **Start** → **Settings** → **Control Panel**
2. Double-click **Network**
3. Click **Adapters** → **Add**
4. Click **MS Loopback Adapter** and then click **OK**. The MS Loopback Adapter Card Setup window opens.
5. Click **OK** to accept the default Frame Type address. If the device drivers for the Microsoft Loopback Adapter option were not installed during the Microsoft Windows NT 4.0 installation, insert your *Microsoft Windows NT 4.0* CD into your CD-ROM drive now.
6. Click **Close**. The Microsoft Loopback Adapter device drivers Bind to TCP/IP. Specify the Binding order as:
  - IBM Netfinity SP Host adapter device drivers
  - Microsoft Loopback Adapter device driversThe Microsoft TCP/IP Properties window opens.
7. Click **Specify an IP address**. Type a unique TCP/IP IP address in the IP Address field.
8. Type your site subnet mask address in the Subnet Mask field.
9. Click **OK**.
10. Click **Yes** when prompted to shut down and restart your server.
11. When your server (node) is operational, Send a **PING** command to the default Microsoft Loopback Adapter option address:

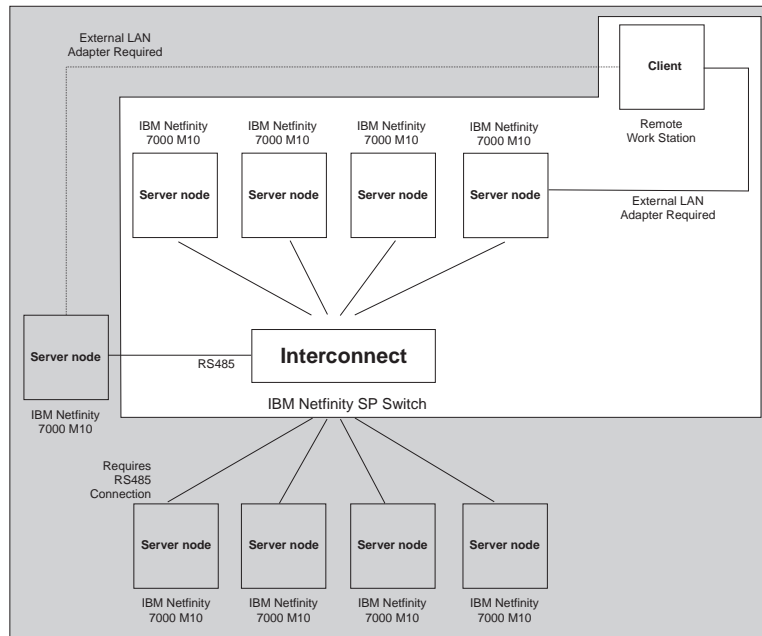
```
PING 127.0.0.1
```

If the command times out, contact IBM for service (see Appendix A, "Getting help, service, and information" on page 27 for instructions on contacting IBM for service).

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### Compact installation

If you want to install the minimum amount of software to manage your IBM Netfinity SP Switch from a remote workstation, use the following configuration:



Install the IBM SP Switch Administrator software only. The IBM Netfinity SP Switch can be managed from a remote location:

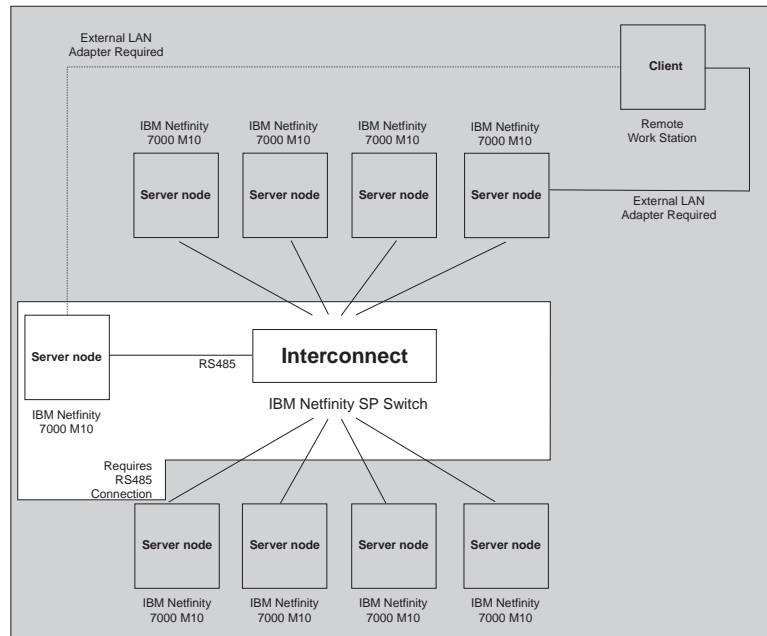
- On a workstation without an IBM Netfinity SP Host adapter installed
- On a workstation that is not connected to an IBM Netfinity SP Switch fabric

An external network adapter is required for a Compact installation, with TCP/IP configured and network access allowed from your workstation to the primary node in the IBM Netfinity SP Switch fabric.

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## Custom installation

The custom IBM Netfinity SP Switch installation consists of all of the supported software management configurations, but is designed to provide the user with the ability to install just the IBM Netfinity SP Switch configuration software and the IBM SP Services option, or the device drivers, and the IBM SP Services option. The custom installation option is designed for the advanced user.



The IBM Netfinity SP Switch configuration software allows the user to:

- Change the device name displayed on the display panel of the IBM Netfinity SP Switch
- Power-on or power-off the IBM Netfinity SP Switch

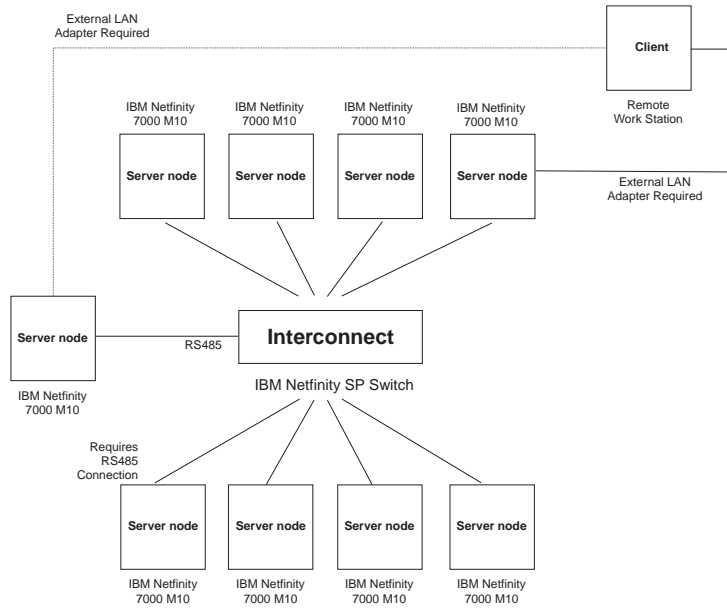
through the RS485 service processor communication interface.

The device drivers and services options allow the user to install and manage IBM Netfinity SP Host adapters on a switch fabric. The services option installed alone allows the user to communicate with the switch fabric through the RS485 link.

Refer to section “Using the IBM Netfinity SP Switch Configuration Utility” on page 13 for detailed instructions on the setup and operation of the IBM Netfinity SP Switch Configuration Utility.

## Typical installation

The typical IBM Netfinity SP Switch software installation includes all of the options on the custom installation selection. All hardware and software management options and the user documentation are installed.



The switch fabric can be managed locally and each node has at least one IBM Netfinity SP Host adapter installed and connected to an IBM Netfinity SP Switch. An external network adapter is not required for the switch fabric management.

---

## Configuring the IBM Netfinity SP Switch software

The following notes have been updated for the IBM Netfinity SP Switch software configuration.

### Important:

1. To run the IBM Netfinity SP Switch Administrator software from a remote location, the remote computer and the primary node must have an external LAN adapter and the remote computer must be connected to the primary node.
2. You must configure and start the IBM Netfinity SP Switch fabric before running any additional software applications that access the IBM Netfinity SP Switch interconnect network.
3. Configuring a node as a primary node will not degrade the performance on that server while software applications are running.
4. Use the Windows NT event viewer to check for problems logged in the event viewer pertaining to the switch fabric.
5. Once the switch fabric has been configured, if you change your switch topology, you must shut down and restart each node attached to your IBM Netfinity SP Host adapters, and you must turn the power off (then turn the power on) the IBM Netfinity SP Switch to reset the switch.
6. If your switch fabric has been configured, and you recable one or more nodes to another switch fabric, follow these instructions:
  - If the recabled node is not used in another switch fabric, from the Windows NT Services option, stop *IBM TB3 Switch Manager Service*, recable the node.
  - If the recabled node is used in another switch fabric, the node is assigned to the new switch fabric when the node is recabled, the new switch fabric started, and the new node restarted.

---

## Using the IBM Netfinity SP Switch Configuration Utility

### Important:

1. The IBM Netfinity Advanced Systems Management PCI adapter must be installed in your node and its accompanying device drivers installed and operational before using the IBM Netfinity SP Switch Configuration Utility. The latest device drivers are on the IBM WEB site at:

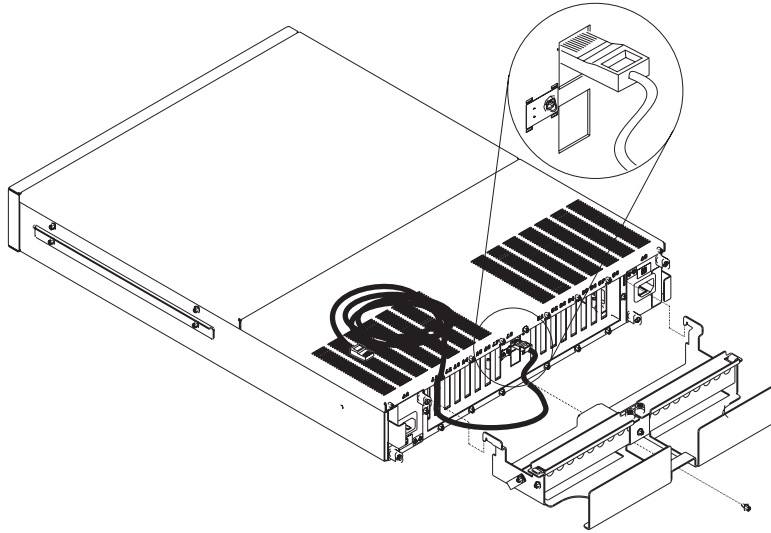
<http://www.ibm.com/pc/support>

- a. Under Select a Brand, click **Server**.
- b. Under Select your family click **IBM Netfinity 7000 M10**.
- c. Under Technical information click **Downloadable files**.
- d. Download the correct device drivers.

For more information on your IBM Netfinity Advanced Systems Management PCI adapter, see the *Advanced System Management* section of your server library.

2. Take the switch fabric offline before you power-off the IBM Netfinity SP Switch through the configuration utility.
3. The IBM Netfinity SP Switch Configuration Utility is supported on a Netfinity 7000 M10 only.

This section describes the IBM Netfinity SP Switch Configuration Utility. To use the configuration utility, the IBM Netfinity Advanced System Management PCI adapter must be installed in your server with an IBM Netfinity Advanced System Management Interconnect Cable option. Using a standard, customer supplied, 10BaseT Ethernet cable, connect one end of the cable to the RS485 port on the rear of the IBM Netfinity SP Switch, and the other end to the Advanced System Management Interconnect Cable option on your server.



Refer to the *IBM Netfinity Advanced System Management PCI Adapter Installation Instructions* book for information on installing and using the advanced system management adapter.

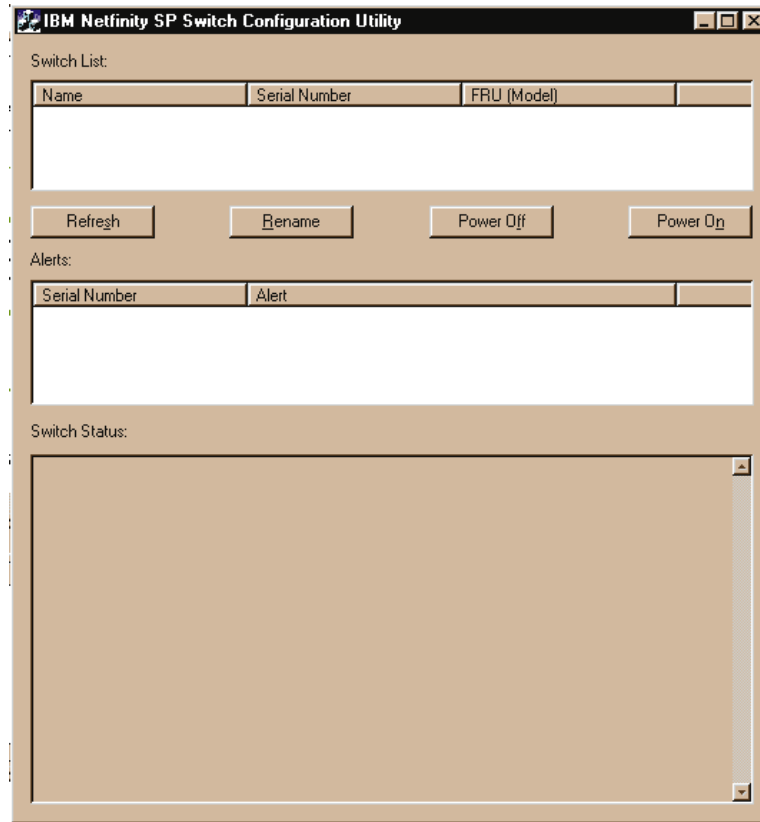
Refer to the *IBM Netfinity Advanced System Management Interconnect Cable Option* book for information on installing and using the interconnect cable option.

The configuration utility allows communication from a server to an IBM Netfinity SP Switch through the RS485 port and the service processor. The configuration utility:

- Displays the status of the IBM Netfinity SP Switch
- Turns power on or turns power off to the IBM Netfinity SP Switch
- Changes the name displayed on the IBM Netfinity SP Switch
- Displays any alerts generated by the IBM Netfinity SP Switch
- Displays all IBM Netfinity SP Switch units attached to the RS485 bus.

To start the IBM Netfinity SP Switch Configuration Utility:

1. Click **Start** → **Programs**.
2. Click the program folder where the IBM Netfinity SP Switch Administrator was installed.
3. Double-click **Switch Configuration Utility**. The Switch Configuration Utility window opens.



4. Choose the task you wish to perform on the IBM Netfinity SP Switch from the buttons provided. The status messages are displayed in the Switch Status window. Any alerts encountered are displayed in the Alerts window. Press the Refresh button for up-to-date status on the selected switch.

The IBM Netfinity SP Switch can be located at any point within the Advanced System Management (ASM) interconnect network (refer to the *IBM Netfinity Advanced System Management Interconnect Cable Option* book for information and examples of a normal interconnect network). Alerts that are generated by the IBM Netfinity SP Switch are broadcast on the ASM interconnect network, which allows the ASM processor or the PCI adapter on the ASM interconnect network with the necessary communications resources to forward any alerts to a remote system management workstation.

The following example shows a network gateway, which forwards the system management data generated by the IBM Netfinity SP Switch along the ASM interconnect network to a remote system management workstation. Four devices are connected to the ASM interconnect network in the following manner:

- One IBM Netfinity 7000 M10 with an external modem is connected to an IBM Netfinity Advanced System Management PCI adapter.
- The IBM Netfinity 7000 M10 is connected to the IBM Netfinity SP Switch via an IBM Netfinity SP Host adapter and cable.
- Another Netfinity 7000 M10 is connected to the first Netfinity 7000 M10 through the IBM Netfinity Advanced System Management Interconnect Cable Option.

- The second Netfinity 7000 M10 is connected to a third Netfinity 7000 M10 through an Advanced System Management PCI Adapter option and an IBM Netfinity Advanced System Management Interconnect Cable Option.
- The third Netfinity 7000 M10 is connected to a fourth Netfinity 7000 M10 through an Advanced System Management PCI Adapter option and an IBM Netfinity Advanced System Management Interconnect Cable Option.
- The fourth Netfinity 7000 M10 is then connected to the IBM Netfinity SP Switch via an IBM Netfinity SP Host adapter and cable.

The fourth Netfinity 7000 M10 with the Advanced System Management PCI adapter acts as a network gateway, forwarding system management data generated by the IBM Netfinity SP Switch and other systems in the ASM interconnect network bus to a system management administration system connected to the external network. The Netfinity 7000 M10 is configured to use a modem to forward the system management data to the system management administration system as well as providing redundancy in case of an external network failure. The local network management of the IBM Netfinity SP Switch is possible if the IBM Netfinity SP Switch Administrator software is installed and configured using the Custom or Typical software installation setup type on the Netfinity 7000 M10 systems.

Using the alert functions under the Netfinity Manager software, the Netfinity 7000 M10 can communicate alerts to and from each server in the ring. The Netfinity 7000 M10 can also be configured to send alerts or pages through the external network or modem concerning all of the servers or the IBM Netfinity SP Switch.

Refer to *IBM Netfinity Manager User's Guide* for information on installing and configuring the Netfinity Manager software for generating alerts through the RS485 port.

---

## Starting the IBM Netfinity SP Switch Administrator software



**Note:** If no nodes are displayed in the IBM Netfinity SP Switch Administrator window, from the IBM Netfinity SP Switch Administrator menu bar:

1. Click **View**.
2. Click **Options**. Add the IP address or TCP/IP host name of an active node within the subnet that you expected to see in the IBM Netfinity SP Switch Administrator window. See step 3 on page 17 for instructions on using the Options component.
3. **Options:** This command opens the Options window so that you can add or remove network IP addresses or host names. These IP addresses or host names are resolved to a subnet and expand the search capability for the IBM Netfinity SP Switch Administrator in relation to other switch fabrics and unassigned nodes. The Default language selection on the Options window selects the language conforming to the code page loaded by the Windows NT operating system. The current supported languages are:

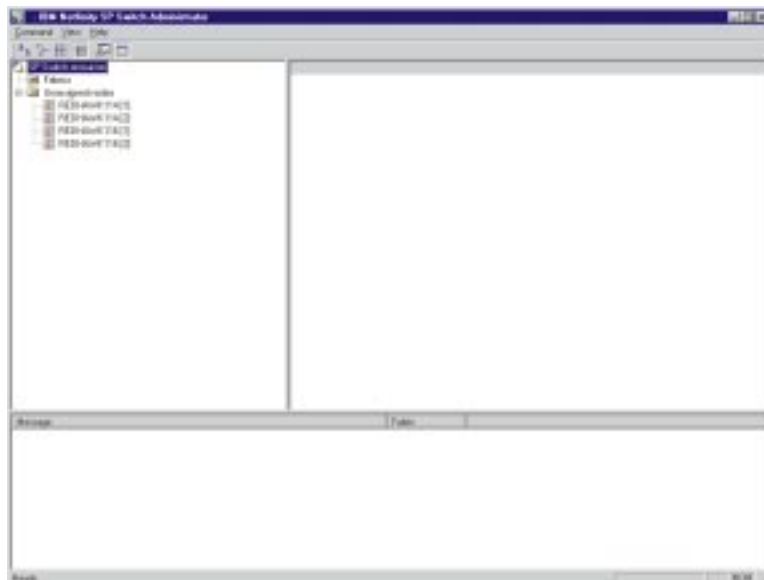
- English
- French
- German
- Italian
- Spanish
- Japanese

Click **OK** to save your selections or click **Cancel** to close this window and keep the default selections.

To start the IBM Netfinity SP Switch Administrator software:

1. Click **Start** → **Programs**.
2. Click the program folder where the IBM Netfinity SP Switch Administrator was installed.
3. Double-click **IBM Netfinity SP Switch Administrator**.

The IBM Netfinity SP Switch Administrator window opens.



The IBM Netfinity SP Switch Administrator window is composed of three major components or internal windows:

- **Fabric view** - The fabric view window graphically displays all IBM Netfinity SP Switch fabrics, fabric components and unassigned nodes. This window is in the upper left corner of the IBM Netfinity SP Switch Administrator window. Component properties and actions are called from this view. Placing the cursor over a switch fabric, or one of the switch fabric components, will display the component status in a text pop-up window. Right-clicking a fabric icon or other component icon brings-up menu command options.
- **Node view** - The Node view window displays nodes within the selected IBM Netfinity SP Switch fabric. This window is in the upper right portion of the IBM Netfinity SP Switch Administrator window. The node information displayed shows:
  - Node name and IBM Netfinity SP Host adapter occurrence
  - Node number (a unique node identifier set by the IBM Netfinity SP Switch Administrator software that starts at zero and progresses to N-1 where N is the number of nodes in the switch fabric)
  - Type of node
  - IBM Netfinity SP Switch IP address
  - External network IP address (if an external network adapter is installed)
  - Node PCI slot number where the IBM Netfinity SP Host adapter is installed
  - Port number where the IBM Netfinity SP Host adapter is attached to the IBM Netfinity SP Switch
- **Message window** - The Message window contains the detailed communication output from the IBM Netfinity SP Switch fabrics. This window is in the bottom portion of the IBM Netfinity SP Switch Administrator window. The following messages are displayed after a command has completed:
  - **Attempt to bring primary node offline is not allowed.**

The **offline** command cannot be directed at the primary node. There is no action taken.
  - **Node number d is already online.** (Where d is the node number).

Node d is the target of an **online** command, but the node is already online. There is no action taken.
  - **Node number d is already offline.** (Where d is the node number).

Node d is the target of an **offline** command, but the node is already offline. There is no action taken.
  - **Cannot bring node offline.**

Check the error logs on the primary node. Resolve the problem, then retry the command.
  - **Cannot bring the switch fabric online.**

The following situations may solve the problem:

    - Start the switch fabric with a different primary node
    - Verify that the node is cabled to the IBM Netfinity SP Switch and that the switch is turned on

- Incorrect jack label A or B-d (Where d is the correct jack label position). Specify the correct jack label
- The **start** command was issued for the switch fabric, but the wrong jack label was specified for the primary node. Specify the correct jack label
- Power off then power on the IBM Netfinity SP Switch.

The following messages are displayed from the service processor through the RS485 port:

- **IBM Netfinity SP Switch x has a failure in power supply A** (where x is the serial number of the IBM Netfinity SP Switch)  
Power supply A in the IBM Netfinity SP Switch has failed. Replace the power supply.
- **IBM Netfinity SP Switch x has a failure in power supply B** (where x is the serial number of the IBM Netfinity SP Switch)  
Power supply B in the IBM Netfinity SP Switch has failed. Replace the power supply.
- **IBM Netfinity SP Switch x has a failure in fan A** (where x is the serial number of the IBM Netfinity SP Switch)  
Fan Assembly A in the IBM Netfinity SP Switch has failed. Replace the fan assembly.
- **IBM Netfinity SP Switch x has a failure in fan B** (where x is the serial number of the IBM Netfinity SP Switch)  
Fan Assembly B in the IBM Netfinity SP Switch has failed. Replace the fan assembly.
- **IBM Netfinity SP Switch x has exceeded maximum recommended temperature** (where x is the serial number of the IBM Netfinity SP Switch)  
Check for air-flow blockages on your IBM Netfinity SP Switch. If no air-flow blockage exists, call IBM for service.
- **IBM Netfinity SP Switch x has exceeded maximum recommended temperature on board A** (where x is the serial number of the IBM Netfinity SP Switch)  
The A-side temperature of the switch card has exceeded levels required for safe operation of the IBM Netfinity SP Switch. Check for air-flow blockages on your IBM Netfinity SP Switch. If no air-flow blockage exists, call IBM for service.
- **IBM Netfinity SP Switch x has exceeded maximum recommended temperature on board B** (where x is the serial number of the IBM Netfinity SP Switch)  
The B-side temperature of the switch card has exceeded levels required for safe operation of the IBM Netfinity SP Switch. Check for air-flow blockages on your IBM Netfinity SP Switch. If no air-flow blockage exists, call IBM for service.
- **IBM Netfinity SP Switch x is no longer responding** (where x is the serial number of the IBM Netfinity SP Switch)  
The IBM Netfinity SP Switch is not responding to communication requests. Ensure that the IBM Netfinity SP Switch is powered on. If power is present

at the switch, power the switch off and then on again. If this does not work, call IBM for service.

- **IBM Netfinity SP Switch x has been found** (where x is the serial number of the IBM Netfinity SP Switch)

The IBM Netfinity SP Switch is powered on and operational.

The following messages are generated by a node running the IBM Netfinity SP Switch Administrator software:

- **Resigning switch primaryship.** x (where x is the node name)

The node is unable to continue functioning as the primary node. If the switch fabric was restarted and a different node selected as the primary node, the current primary node would no longer function as the primary node. No action is required from the user unless a new primary node fails to take control of the switch fabric.

- **Possible protocol problem on node. No data traffic on switch.**

There is a problem with the device driver or the start fabric command has failed. Restart the node to reattach it to the switch fabric. If this fails, call IBM for service.

- **Primary backup node not responding. Current primary backup node number x** (where x is the node number).

The primary node has lost contact with the backup node, so a new backup node is chosen by the IBM Netfinity SP Switch Administrator software. No action is required from the user. Determine the problem with node x and restart the node.

- **Switch to Switch links not initialized during Estart.**

For a 12 node configuration, one of the links between switch card A or switch card B is not functioning. For a 14 node configuration, the link between switch card A and switch card B is not functioning. Ensure that the IBM Netfinity SP Host adapters are cabled correctly to the IBM Netfinity SP Switch, and the IBM Netfinity SP Switch cables are functioning correctly. Verify that all physical cable connections correspond to the wiring instructions on the Fabric Properties window

- **Could not communicate over the switch. Switch service DBupdate broadcast failed.**

A temporary error occurred. Retry the operation. If the problem persists, restart the node and move the primary to another node in the cluster. If this does not fix the problem, call IBM for service.

- **Switch adapter hardware/microcode error.**

A temporary error has occurred. Run diagnostics on the IBM Netfinity SP Host adapter. If the IBM Netfinity SP Host adapter fails diagnostic testing, call IBM for service.

- **Switch adapter error threshold exceeded.**

Ensure that the IBM Netfinity SP Host adapter cables are tightly connected. If this does not solve the problem, replace the cable displayed in the error message.

- **Switch service failed to generate routes..**

Restart the IBM Netfinity SP Switch and the node receiving the failure. If the problem persists, call IBM for service.

– **Could not communicate with switch adapter.**

Check for loose IBM Netfinity SP Host adapter cables. Ensure that the failing node is online, and the switch fabric is started. Verify that all physical cable connections correspond to the wiring instructions on the Fabric Properties window

– **Switch port cannot be disabled** frame-number slot-number  
switch-chip-id port-mask.

The IBM Netfinity SP Switch has failed or the IBM Netfinity SP Host adapter attached to the listed switch port has failed. Run diagnostics on the IBM Netfinity SP Host adapter that appears to have failed. If the IBM Netfinity SP Host adapter fails the diagnostic tests, call IBM for service.

– **Switch cable mis-wired.**

A cabling error has been detected in the switch fabric. Ensure that each IBM Netfinity SP Host adapter is cabled correctly. Verify that all physical cable connections correspond to the wiring instructions on the Fabric Properties window

– **Switch board hardware error.** frame-number slot-number

Switch card A or switch card B has failed. Call IBM for service.

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## Troubleshooting the IBM Netfinity SP Switch

The following tables list some problems that might occur. The first column contains a description of the problem. The second column contains a brief explanation of the problem. The last column provides a course of action to resolve the problem. These tables cover the System Diagnostics and IBM Netfinity SP Switch Administrator software for the IBM Netfinity SP Switch.

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### Diagnostic Problems

Problem	Explanation	Action
Switch Adapter Configuration/Setup Error - error code 425-027-XXX.	The device driver cannot be opened.	Install the device driver; then shut down and restart the server (node).
Switch Adapter test has failed - error code 425-25X-XXX.	The server cannot connect to or recognize the IBM Netfinity SP Switch because the device driver or the diagnostic software has failed.	1. Reinstall the device driver. 2. Reinstall the diagnostic software.
Switch Adapter test has failed - error code 425-26X-XXX.	An IBM Netfinity SP Host adapter has failed.	Replace the IBM Netfinity SP Host adapter.

## Event Problems

Problem	Explanation	Action
<p>The server (node) cannot communicate with another node, but the node is listed as part of the cluster in the IBM Netfinity SP Switch Administrator software.</p>	<p>This node is disconnected from the IBM Netfinity SP Switch, or there is a problem with the IBM Netfinity SP Switch Administrator software, or there is something wrong with the IBM Netfinity SP Host adapter.</p>	<ol style="list-style-type: none"> <li>1. Verify the physical cable connections between the node and the IBM Netfinity SP Switch.</li> <li>2. Verify that the node is online in the IBM Netfinity SP Switch Administrator software.</li> <li>3. Under the Windows NT Services panel, determine that the IBM Netfinity SP Switch Administrator software is running.</li> <li>4. Turn off the IBM Netfinity SP Switch (to recycle the IBM Netfinity SP Switch messages).</li> <li>5. Restart the node.</li> <li>6. After a five-minute wait, if the node has not rejoined the cluster, contact IBM for service (see Appendix A, "Getting help, service, and information" on page 27 for instructions on contacting IBM for service).</li> </ol>
<p>No primary or backup node is listed in the IBM Netfinity SP Switch Administrator software.</p>	<p>The primary and backup nodes are disconnected from the IBM Netfinity SP Switch fabric, or there is a failure in the IBM Netfinity SP Switch Administrator software on both the primary and backup nodes.</p>	<ol style="list-style-type: none"> <li>1. Verify the physical cable connections between the primary and backup nodes and the IBM Netfinity SP Switch.</li> <li>2. Verify that the primary and backup nodes are running. If they are not running, restart them.</li> <li>3. Restart the primary and backup nodes.</li> <li>4. Re-create the switch fabric on your original primary node. If a problem occurs creating the switch fabric using your original primary and backup nodes, create the switch fabric on a secondary node.</li> <li>5. After the switch fabric has been created, if the previously defined primary and backup nodes do not join the switch fabric, contact IBM for service (see Appendix A, "Getting help, service, and information" on page 27 for instructions on contacting IBM for service).</li> </ol>
<p>IBM Netfinity SP Switch configuration error: error code xxx-yyy from every server (node) in the cluster when a node is brought online.</p>	<p>All nodes in the IBM Netfinity SP Switch fabric are in an offline state because the primary and backup nodes failed.</p>	<ol style="list-style-type: none"> <li>1. Shut down all servers (nodes).</li> <li>2. Turn off the IBM Netfinity SP Switch (to recycle the IBM Netfinity SP Switch messages).</li> <li>3. When the system shutdown is completed on all servers (nodes), turn on the IBM Netfinity SP Switch and restart all servers (nodes). This will clear all status codes in the IBM Netfinity SP Switch and allow the IBM Netfinity SP Switch to restart normally.</li> </ol>

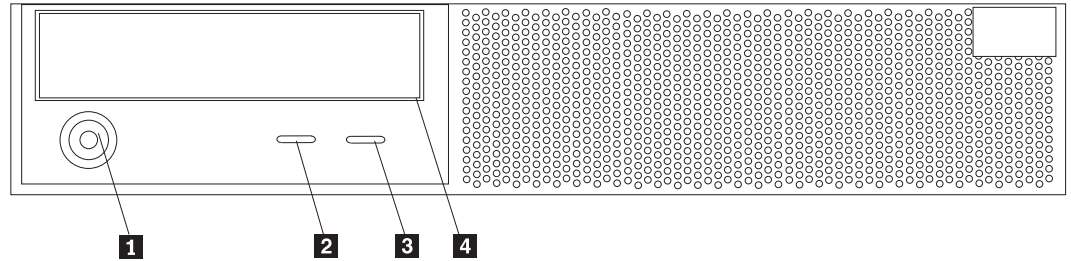
Problem	Explanation	Action
Can not start a switch fabric.	<ul style="list-style-type: none"> <li>• The IBM Netfinity SP Switch is powered off</li> <li>• The primary node switch port is disabled</li> <li>• The Primary's Switch Board or Primary's Jack Label entry fields in the Start Fabric window is incorrect</li> <li>• Not all device drivers and services are running</li> <li>• An eight IBM Netfinity SP Host adapter configuration is connected to switch card B instead of switch card A</li> </ul>	<ul style="list-style-type: none"> <li>• Verify that the IBM Netfinity SP Switch is powered on</li> <li>• Choose a different node as a primary node</li> <li>• Ensure that you are using the correct Primary's Switch Board and Primary's Jack Label values</li> <li>• Verify that all device drivers and switch services are started and running on all nodes in your switch fabric</li> <li>• Verify that all physical cable connections correspond to the wiring instructions on the Fabric Properties window</li> <li>• Power off then power on the IBM Netfinity SP Switch to enable the primary node switch port</li> </ul>
After starting the switch fabric, a node remains in the Unassigned Nodes list.	<ul style="list-style-type: none"> <li>• The node is not connected to the IBM Netfinity SP Switch</li> <li>• All of the necessary device drivers and services are not started</li> <li>• There is a problem with the IBM Netfinity SP Host adapter or IBM Netfinity SP Switch cable</li> <li>• An eight IBM Netfinity SP Host adapter configuration is connected to switch card B instead of switch card A</li> </ul>	<ul style="list-style-type: none"> <li>• Restart the node</li> <li>• Verify that all device drivers and switch services are started and running on all nodes in your switch fabric</li> <li>• Verify that all physical cable connections correspond to the wiring instructions on the Fabric Properties window</li> <li>• Run diagnostics on the IBM Netfinity SP Host adapter. If the IBM Netfinity SP Switch cable fails diagnostic testing, replace the IBM Netfinity SP Switch cable.</li> <li>• Recable the node to a different IBM Netfinity SP Switch port</li> </ul>
Node <b>Online</b> command fails.	<ul style="list-style-type: none"> <li>• The node is not connected to the IBM Netfinity SP Switch</li> <li>• All of the necessary device drivers and services are not started</li> <li>• Bad cable connection</li> <li>• Node is powered off</li> </ul>	<ul style="list-style-type: none"> <li>• Restart the node</li> <li>• Verify that all device drivers and switch services are started and running on all nodes in your switch fabric</li> <li>• Verify that all physical cable connections correspond to the wiring instructions on the Fabric Properties window</li> <li>• Verify that the node is powered on and Windows NT 4.0 EE is running properly</li> </ul>

Problem	Explanation	Action
All of the nodes attached to switch card B are not part of the switch fabric.	<ul style="list-style-type: none"> <li>• The IBM Netfinity SP Switch cable between switch card A and switch card B is missing or bad</li> <li>• An eight IBM Netfinity SP Host adapter configuration is connected to switch card A and no nodes are cabled to switch card B</li> </ul>	<ul style="list-style-type: none"> <li>• Verify that all physical cable connections correspond to the wiring instructions on the Fabric Properties window</li> <li>• Verify that the IBM Netfinity SP Host adapter cables are functioning properly</li> <li>• Power off and then power on the IBM Netfinity SP Switch</li> </ul>
Two IBM Netfinity SP Host adapters are installed in a node but only one is displayed in the IBM Netfinity SP Switch Administrator software.	Only one IBM Netfinity SP Host adapter has been installed.	<ul style="list-style-type: none"> <li>• Ensure that you select Dual Adapter Configuration on the IBM SP Adapter Selection window during the IBM Netfinity SP Switch Administrator software installation or install the second adapter manually</li> <li>• Verify that all physical cable connections correspond to the wiring instructions on the Fabric Properties window</li> <li>• Run diagnostics on the IBM Netfinity SP Host adapter. If the IBM Netfinity SP Switch cable fails diagnostic testing, replace the IBM Netfinity SP Switch cable.</li> </ul>
Cannot PING all of the nodes in a switch fabric.	If you have recabled any of the nodes in the switch fabric, this is normal.	Restart all of the nodes in the switch fabric and restart the switch fabric.
The IBM Netfinity SP Switch Administrator displays each switch card on a different IBM Netfinity SP Switch.	The switch card names were specified incorrectly in the Primary's Switch Board field on the Start Fabric window during the IBM Netfinity SP Switch Administrator software configuration steps.	The switch card name must include two components separated by a / character. The first naming component represents the IBM Netfinity SP Switch name and should be identical for both switch cards. The second naming component is the switch card identifier and must be A or B.
Cannot delete a switch fabric.	You cannot delete a switch fabric. As long as a node is a member of a switch fabric, the switch fabric will be displayed.	Make all of the nodes attached to the switch fabric, members of another switch fabric. The old switch fabric name will not be displayed in the IBM Netfinity SP Switch Administrator.

## IBM Netfinity SP Switch display panel messages

The messages and menus on the display panel and power to the IBM Netfinity SP Switch can be controlled by pressing the following control buttons.





- 1 Power Control Button:** Press this button to manually turn the IBM Netfinity SP Switch on or off.
- 2 Scroll Button:** Press this button to select an action to perform on a system monitoring message; then press the Enter button to perform the action. You can choose from the following actions:
  - **Keep** to retain the message on the display panel and enable the system error light to continue to flash
  - **Remind** to retain the message on the display panel and enable the system error light to flash slowly
  - **Clear** to clear the message from the display panel and enable the system error light to stop flashing
- 3 Enter Button:** Press this button to perform an action on system monitoring messages that appear on the display panel.
- 4 Display Panel:** The LED lights and displayed messages give status information for your IBM Netfinity SP Switch.

The display panel contains LED lights that indicate hardware conditions.

- **System Error Light:** This amber light is lit when a system error occurs. Information about the condition is displayed on the display panel. There are four error conditions for the error light:
  - **Off:** The System Error Light is not lit when no messages are present or pending from the service processor.
  - **Slow Blink:** The service processor has generated an error message and it is in the remind mode.
  - **Rapid Blink:** The service processor has generated an error message and it is displayed on the display panel.
  - **Solid Amber:** The service processor is not functioning. contact IBM for service (see Appendix A, “Getting help, service, and information” on page 27 for instructions on contacting IBM for service).
- **System Power Light:** When this light is lit, system power is present in the IBM Netfinity SP Switch and power is present in the switch cards. When this light flashes, AC power is present at the power supplies. When the system power light is not lit, AC power is not present at the power supplies.



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## Appendix A. Getting help, service, and information

If you need help, service, technical assistance, or just want more information about IBM products, you will find a wide variety of sources available from IBM to assist you.

For example, IBM maintains pages on the World Wide Web where you can get information about IBM products and services, find the latest technical information, and download device drivers and updates. Some of these pages are:

<a href="http://www.ibm.com">http://www.ibm.com</a>	Main IBM home page
<a href="http://www.ibm.com/pc">http://www.ibm.com/pc</a>	IBM Personal Computing
<a href="http://www.ibm.com/pc/support">http://www.ibm.com/pc/support</a>	IBM Personal Computing Support
<a href="http://www.ibm.com/pc/us/ibmpc">http://www.ibm.com/pc/us/ibmpc</a>	IBM Commercial Desktop PCs (U.S.)
<a href="http://www.ibm.com/pc/us/intellistation">http://www.ibm.com/pc/us/intellistation</a>	IBM IntelliStation Workstations (U.S.)
<a href="http://www.ibm.com/pc/us/accessories">http://www.ibm.com/pc/us/accessories</a>	Options by IBM (U.S.)
<a href="http://www.ibm.com/pc/us/netfinity">http://www.ibm.com/pc/us/netfinity</a>	IBM Netfinity Servers (U.S.)
<a href="http://www.ibm.com/pc/us/server/sguide">http://www.ibm.com/pc/us/server/sguide</a>	IBM ServerGuide (U.S.)
<a href="http://www.ibm.com/pc/us/netfinity/system_management">http://www.ibm.com/pc/us/netfinity/system_management</a>	IBM Systems Management (U.S.)
<a href="http://www.ibm.com/software/os/warp-server">http://www.ibm.com/software/os/warp-server</a>	IBM OS/2 Warp Server
<a href="http://www.ibm.com/pc/techconnect">http://www.ibm.com/pc/techconnect</a>	IBM TechConnect

You can select a country-specific Web site from these pages.

You might also want to visit the Web pages of other companies for information about other operating systems, software, and accessories. The following are some other Web sites you might find helpful:

<http://www.lotus.com>

<http://www.tivoli.com>

<http://www.microsoft.com>

<http://www.novell.com>

<http://www.sco.com>

<http://www.adaptec.com>

<http://www.apcc.com>

<http://www.norton.com>

Help is also available from bulletin boards and online services, as well as by fax and telephone. This section provides information about these sources.

Services available and telephone numbers listed are subject to change without notice.

## Appendix B. Specifications

The following table contains the specifications for the IBM Netfinity SP Switch.

<p><b>Size (Rack Model)</b></p> <ul style="list-style-type: none"> <li>• Depth: 622 mm (24.5 in.)</li> <li>• Height: 89 mm (3.5 in.)</li> <li>• Width: 440 mm (17.3 in.)</li> </ul> <p><b>Weight</b></p> <ul style="list-style-type: none"> <li>• Unpacked configuration: 11.4 kg (25 lb.)</li> </ul> <p><b>Clearance</b></p> <ul style="list-style-type: none"> <li>• Minimum top clearance: 4 mm (0.16 in.)</li> </ul> <p><b>Electrical Input</b></p> <ul style="list-style-type: none"> <li>• Sine-wave input (50 to 60 Hz) is required</li> <li>• Input voltage <ul style="list-style-type: none"> <li>– Low range <ul style="list-style-type: none"> <li>- Minimum: 90 V ac</li> <li>- Maximum: 137 V ac</li> </ul> </li> <li>– High range <ul style="list-style-type: none"> <li>- Minimum: 180 V ac</li> <li>- Maximum: 265 V ac</li> </ul> </li> <li>– Input kilovolt-amperes (KVA) approximately <ul style="list-style-type: none"> <li>- Minimum configuration as shipped: 0.042 KVA</li> <li>- Maximum configuration: 0.065 KVA</li> </ul> </li> </ul> </li> </ul>	<p><b>Environment</b></p> <ul style="list-style-type: none"> <li>• Air temperature <ul style="list-style-type: none"> <li>– System on: 10° to 35° C (50° to 95° F) Altitude: 0 to 914 m (3000 ft.)</li> <li>– System on: 10° to 32° C (50° to 89.6° F) Altitude: 914 m (3000 ft.) to 2133 m (7000 ft.)</li> <li>– System off: 10° to 43° C (50° to 110° F) Maximum altitude: 2133 m (7000 ft.)</li> </ul> </li> <li>• Humidity <ul style="list-style-type: none"> <li>– System on: 8% to 80%; maximum wetbulb 23° C (73.4° F)</li> <li>– System off: 8% to 80%; maximum wetbulb 27° C (80.6° F)</li> </ul> </li> <li>• Altitude: 0 to 2133 m (0 to 7000 ft.)</li> </ul> <p><b>Electrostatic Discharge</b></p> <ul style="list-style-type: none"> <li>• Tested to 12 KV</li> </ul> <p><b>Immunity</b></p> <ul style="list-style-type: none"> <li>• Verified to comply with EN 50082-1</li> </ul>	<p><b>Acoustical Noise Emissions Values</b></p> <ul style="list-style-type: none"> <li>• Average sound pressure level at bystander position (1 meter): <ul style="list-style-type: none"> <li>– 39 dB</li> </ul> </li> <li>• Declared (upper limit) sound power levels: <ul style="list-style-type: none"> <li>– 5.3 bels</li> </ul> </li> </ul> <p>These levels are measured in controlled acoustical environments according to ISO 7779, and are reported in accordance with ISO 9296. Sound pressure levels in your location might exceed the average 1-meter values stated because of room reflections and other nearby noise. The declared sound power levels indicate an upper limit, below which a large portion of machines operate.</p> <p><b>Heat Output</b></p> <ul style="list-style-type: none"> <li>• Approximate heat output in British thermal units (Btu) per hour: <ul style="list-style-type: none"> <li>– Minimum configuration: 143 Btu</li> <li>– Maximum configuration: 221 Btu</li> </ul> </li> </ul> <p><b>Safety Standards</b></p> <ul style="list-style-type: none"> <li>• UL 1950</li> <li>• CSA C22.2 No. 950-M93</li> <li>• EN 60950 and countries deviations</li> <li>• IEC 950</li> <li>• NOM-019</li> </ul>
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## Appendix C. Product notices

This appendix contains general-information notices, and trademarks.

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