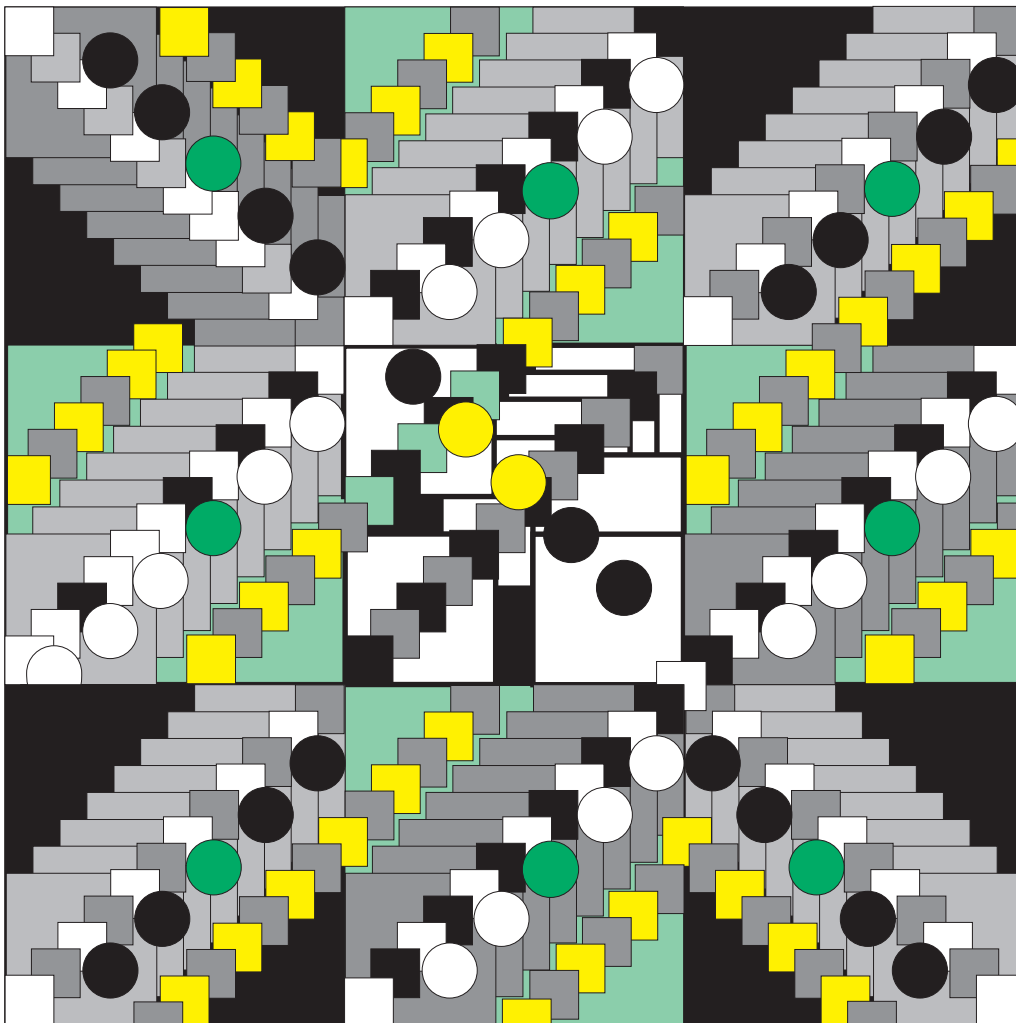2220 Nways BroadBand Switch
 Models 300, 500, and 501

IBM

Nways Switch Administration Station Setup and Service Guide (Based on 6282)

IBM

Nways Switch Administration Station Setup and Service Guide (Based on 6282)

┌─ **Note|** ───┐

  Before using this information and the product it supports, be sure to read the general information under "Notices" on page ix.

└──┘

First Edition (June 1998)

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6282 Notices and Safety

For 6282 notices and safety refer to the *IBM Personal Computer 300 Series, 700 Series, IntelliStation; Hardware Maintenance Manual* S83G-7789

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ix

Aim of this Manual

The service guide gives the service representative the information needed to:

- Install the Nways Switch administration stationand its attached modem.

- Analyze the problem or symptoms reported by the system user for the Nways Switch administration station and its attached modem.

- Restore normal operation to the Nways Switch administration station.

- Exchange all the FRUs of the Nways Switch administration station.

- Run diagnostics on the Nways Switch administration station.

Who Should Read this Manual

The person using this manual should be:

- Trained to service the Nways Switch administration station.

- Familiar with the configuration and operation of the Nways Switch administration station.

The intended audience for this manual is Product-Trained Customer Engineers (PT-CE). The Product-Support Customer Engineer (PST-CE) is also expected to refer to the manual when required to perform the same tasks as the PT CE.

How this Manual is Organized

This manual is organized as follows:

Safety information is at the beginning of this book.

Chapter 1	Gives procedures for installing and configuring the Nways Switch administration station and its modem.
Chapter 2	Gives page number references for starting various service and troubleshooting procedures.
Chapter 3	Gives how to run diagnostics on the Nways Switch administration station.
Chapter 4	Gives the MAPs to be used for problem determination on the Nways Switch administration station.
Chapter 5	Gives the MAPs to be used for Nways Switch administration station FRU replacement.
Appendix A	Gives the 2220 locations.
Appendix B	Gives the configuration reference for NAS based on 6282
Appendix C	Gives how to set the cache size value.
Appendix D	Gives the Hayes modem part number.
Appendix X	Gives:

- Bibliography
- Glossary
- Index.

Chapter 1. Installing and Configuring the NAS and its Modem

Unpacking the NAS and Its Display

1. ____ Unpack the system unit, display, and the keyboard

2. ____ Unpack the modem and verify that all items have been received.

3. ____ **Warning** Before connecting the NAS to the power plug, check the setting of the voltage selection switch **1** at the rear of your NAS (refer to Figure 1-1). If you set this switch to the wrong position, you might damage your NAS when you turn it ON. If you need to adjust the voltage setting, use a ballpoint pen to slide the switch to the correct position.

   - If the voltage range in your country is between 90 and 137 volts, check to see that "110" or "115" is visible.

   - If the voltage range in your country is between 180 and 265 volts, check to see that "220" or "230" is visible.
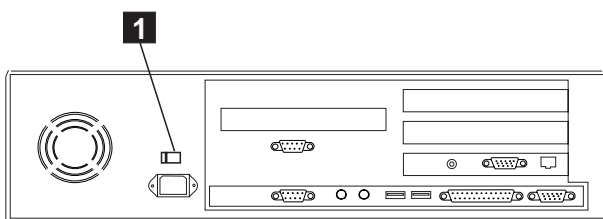
Figure 1-1. Power Switch

Are you going to install the NAS in the rack ?

- **No**, Go to "Installing the NAS on a Table."

- **Yes**, Go to "Installing the NAS in the Rack" on page 1-4.

Installing the NAS on a Table

1. ____ Obtain a table large enough to set the system unit, display, keyboard, and the modem.

2. ____ Put the system unit, the display, and the keyboard on the table and install the stand's display.

3. ____ Refer to: Figure 1-2 on page 1-3 to locate the cables and Figure 1-3 on page 1-3 to locate the NAS connectors, then install the following cables:

   a. Cable **8** from the display to connector **1** .

   b. Plug one T connector PN 80G0638 into the NAS connector **2**

   c. Route and plug cables **2** and **3** PN 25L9980 from the T connectors **5** located on connector **4** of the APC card and the NAS connector **2**

   d. Plug the mouse cable **9** to connector **3**

   e. Plug the keyboard cable **10** to connector **4**

   f. Plug the power cable **7** to connector **6** of the NAS

4. ____ Plug the power cords **7** into properly grounded electrical outlets.
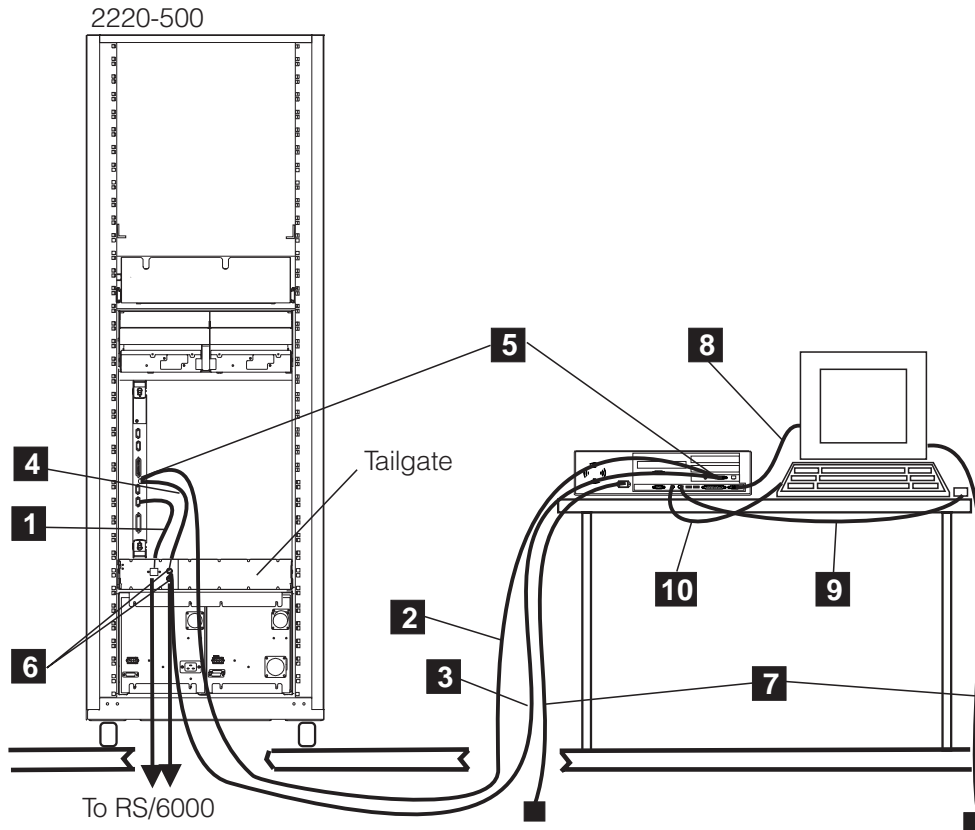
Figure   1-2. NAS, Cables Installation
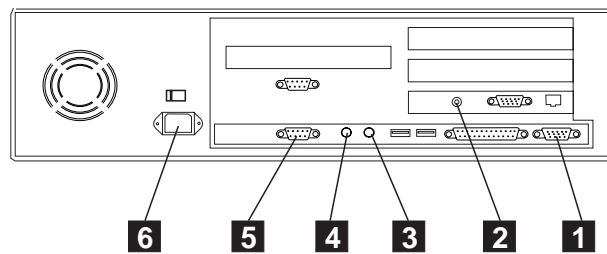
Figure   1-3. NAS Connectors

Installing the NAS in the Rack

1. ____ Unpack the keyboard and the mouse, open the service drawer **J** , and install the keyboard **K** in the drawer as shown in Figure 1-4 put the mouse **H** on the plate located in front of the keyboard.
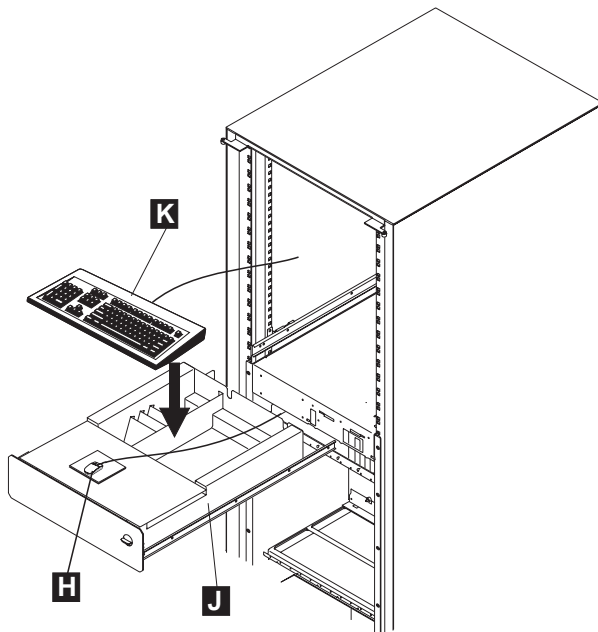
Figure 1-4. Keyboard Installation

2. ____ Refer to Figure 1-5 and install the NAS on the brackets and put the display on top of the NAS frame as shown on the drawing.
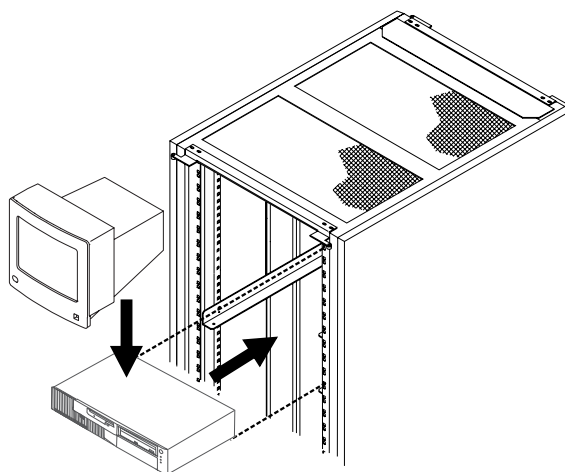
Figure 1-5. NAS and Display Installation

3. _____ Refer to: Figure 1-6 to route and locate the cables and refer to:
Figure 1-7 to locate the connectors at the rear side of the NAS. Plug the
cables as follows:

a. _____ Connect the display signal cable **L** to the NAS connector **1**

b. _____ Locate the keyboard cable **M** in the service drawer and plug it to the
connector **4**

c. _____ Plug the mouse cable **Q** to connector **3**

d. _____ Plug the power cords **N** into properly grounded electrical outlets.

4. _____ Secure cables using tie clamps **P** (PN 1159519).
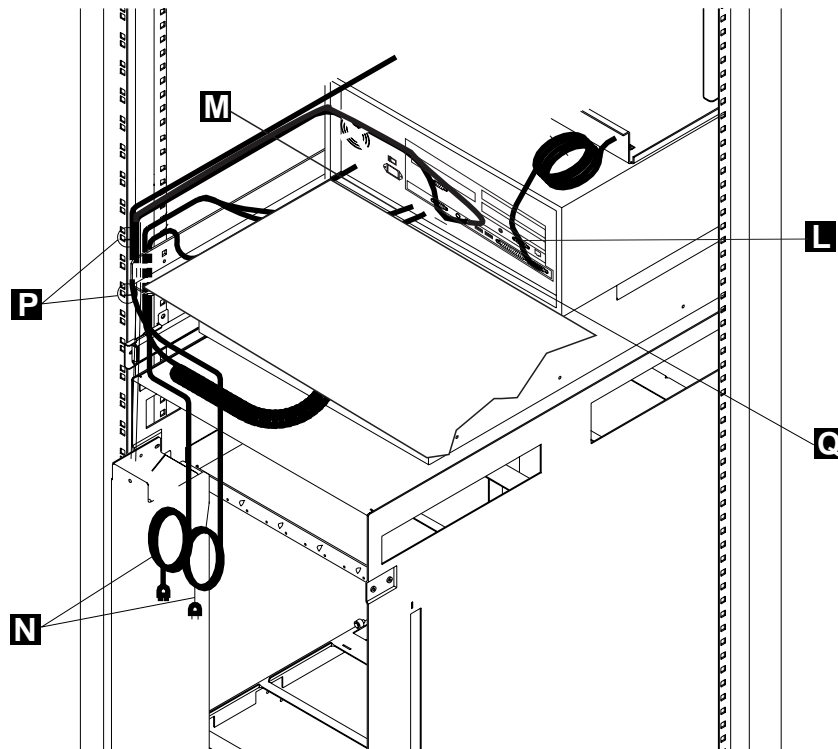
Figure 1-6. Display and Keyboard Cables Connection to the NAS
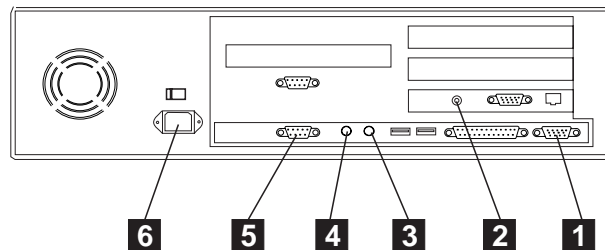
Figure 1-7. NAS Connectors

5. ____ Connect the cables to the APC and APC tailgate as follows:

a. ____ Cable **2** (PN 25L9980) plugged from the ethernet card of the NAS to connector 4 of the APC module.

b. ____ Cable **1** (PN 80G0635) is connected from connector 6 of the APC module to plug J1 of the APC tailgate.

c. ____ Cable **4** (PN 80G0637) is connected from plug J2 of the APC tailgate to connector 4 (via a T connector) of the APC module.

d. ____ Cable **5** (PN 25L9980) is connected from the ethernet card of the NAS to plug J3 of the APC tailgate.

Note: If from connectors **6** there is no link to the network management station, verify that terminators (PN 80G0639) are properly installed on the two BNC connectors
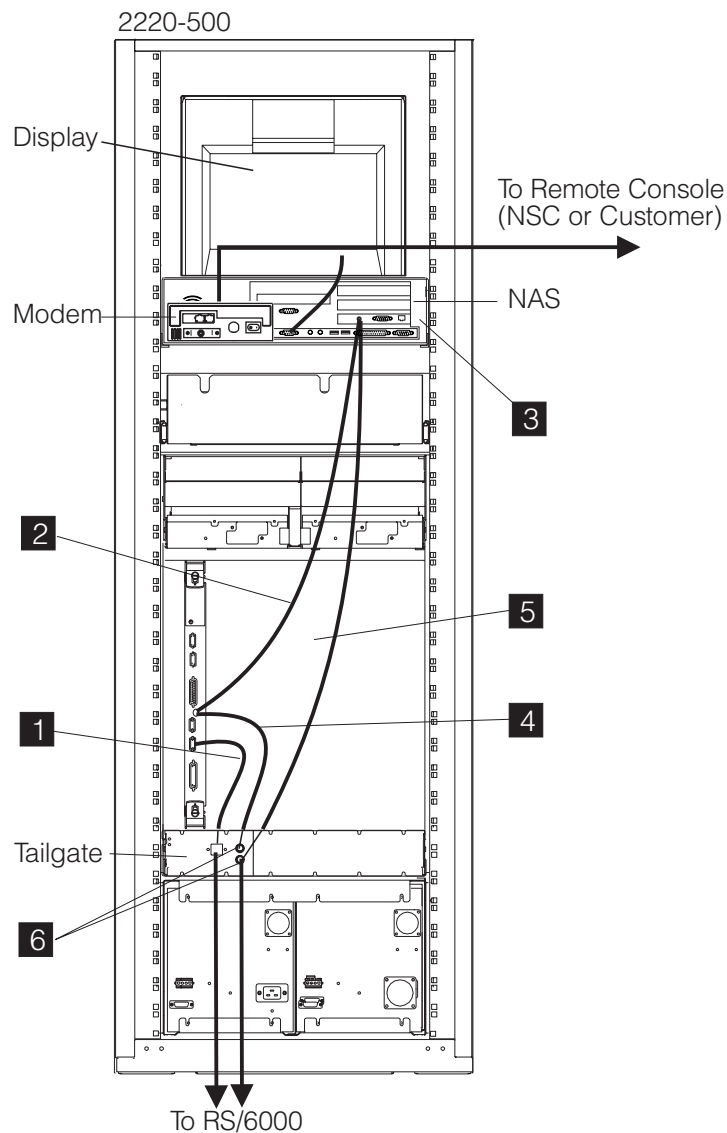
Figure   1-8. Connecting the NAS to APC Card

Go to, "Installing and Connecting the External Modem" on page 1-7

Installing and Connecting the External Modem

Which modem did you receive?
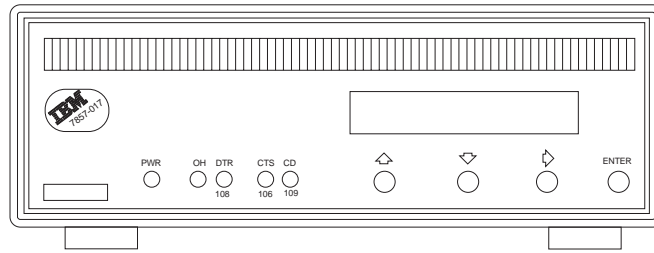
Figure 1-9. Modem Type A
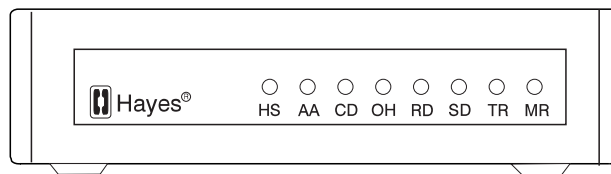
Figure 1-10. Modem Type B

Figure 1-11. Modem Type C

Depending on the modem received:

- **Type A**, go to "Installing and Connecting the 7857 Modem" on page 1-8.
- **Type B**, go to "Installing and Connecting the Hayes** Modem" on page 1-14.
- **Type C**, go to "Installing and Connecting the 7858 Modem" on page 1-16.

Installing and Connecting the 7857 Modem

> **Notes**
>
> 1. If you are not familiar with the 7857 modem, refer to the *IBM 7857 Guide to Operation*, GA13-1839.
>
> 2. Power and frequency requirements: 90 to 259 V ac, and 49.5 to 60.5 Hz (no adjustment).
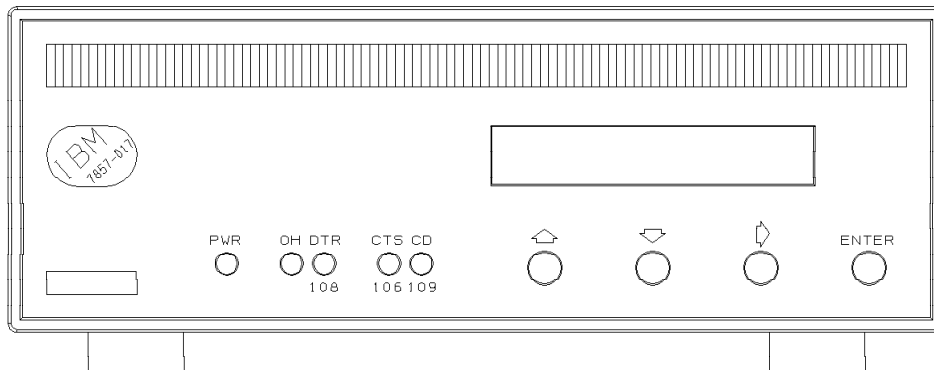
Figure   1-12. 7857 Front Panel

Besides the modem and this manual, the carton should contain:

- Telecommunication cables as needed for your country:
  - Black cable:
    - Switched line cable, with label **SW**, which fits into the PSTN socket in the modem rear panel.
  - Gray cables:
    - 2-wire leased line cable, with label **LL 2W**, which fits into the LL socket in the modem rear panel.
    - 4-wire leased line cable, with label **LL 4W**, which fits into the LL socket in the modem rear panel.

- DTE interface / 4-wire leased line wrap plugs.

- Telecommunication Products Safety Handbook.

If any of these items is missing or damaged, contact the place of purchase for instructions on how to exchange your modem or obtain the missing items. The user is recommended to use the telecommunication cables supplied with the modem (see "Telecommunication Cables Part Numbers" on page 1-9).

Telecommunication Cables Part Numbers

Table 1-1. Telecommunication cables	
Country	**PN**
Albania	89G2554
Argentina	89G2554
Australia	89G2564
Austria	89G2544
Belgium	89G2545
Bolivia	89G2554
Brazil	89G2554
Bulgaria	89G2554
Canada	89G2562
China	89G2554
Colombia	89G2554
Costarica	89G2554
Croatia	89G2554
Cyprus	89G2577
Czechland	89G2554
Denmark	89G2546
Egypt	89G2554
El Salvador	89G2554
Equador	89G2554
Finland	89G2547
France	89G2548
Germany	89G2549
Greece	89G2554
Guatemala	89G2554
Honduras	89G2554
Hong Kong	89G2565
Hungary	89G2554
Iceland	89G3145
Ireland	89G2554
Israel	89G3131
Italy	89G2551
Japan	89G2562
Korea	89G2554
Kuwait	89G2554
Luxemburg	89G3134
Macedonia	89G2554
Mexico	89G2554
Netherlands	89G2552
New Zealand	89G2577
Norway	89G2553
Pakistan	89G2554
Panama	89G2554

Table 1-1. Telecommunication cables	
Country	**PN**
Paraguay	89G2554
Peru	89G2554
Poland	89G2554
Portugal	89G2554
Rumania	89G2554
Russia	89G2554
Saudi Arabia	89G2554
Slovakia	89G2554
Slovenia	89G2554
South Africa	89G3135
Spain	89G2554
Sweden	89G2555
Switzerland	89G2556
Taiwan	89G2554
Thailand	89G2554
Turkey	89G2554
UK	89G2577
Ukraine	89G2554
Uruguay	89G2554
US	89G2562
Venezuela	89G2554

Installation procedure

Figure 1-13 shows the modem rear panel with the connectors where the DTE and line cables must be connected:
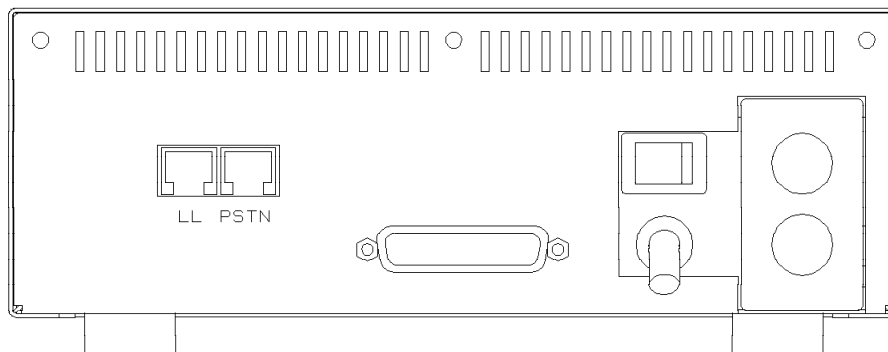
Figure   1-13. 7857 Rear Panel

1. ___ Be sure that the power switch located on the modem rear panel is **off**.

2. ___ If you are going to use a switched line telecommunication cable, plug it into the **PSTN** socket located on the modem rear panel, with the ferrite cylinder at the modem side. If this modem is **not** being installed in the United Kingdom, connect the other end of the cable to the telecommunication line.

3. ___ If you plan to use a leased line telecommunication cable, plug it into the **LL** jack located on the modem rear panel, with the ferrite cylinder at the modem side. If this modem is **not** being installed in the United Kingdom, connect the other end of the cable to the telecommunication line.

4. ___ Connect the modem power plug to a standard 3 pin *grounded* ac outlet. Then, if this modem is being installed in the United Kingdom, connect the telecommunication cables you have attached to the modem, to the telecommunication lines.

5. ___ You are now requested to observe the modem power on sequence. This is the normal power on sequence:

   * PWR light is turned on.

   * HW SELFTEST RUNNING message is displayed for about 15 seconds.

   * DSP SELFTEST RUNNING message is displayed for about 15 seconds.

   Set the modem power switch to **on**. If the PWR light is not **on**, or the message HW SELFTEST RUNNING is not appearing on the operator panel within 10 seconds, the modem is defective and should be replaced. This message remains on the display for about 15 seconds, then it is changed by the power on sequence.

   If the modem is set to the factory defaults, after about 30 seconds, the operator panel shows:

   ```
   IBM 7857 AT CMD aa█
   td_  rd_  dsr ec_█ 11_
   ```

   This operational message shows that the modem is set in AT command mode for switched line operation and will auto-answer an incoming call.

The next steps reset the modem options to the factory default configuration 0. Jump ahead to step 7 if the modem has never been used.

In the next steps, you are instructed to manipulate the front panel buttons of the modem. Unless the step suggests otherwise, do not press them in for longer than one second.

6. ___ Set the modem power switch to **off**, then hold the ↑ key pressed and set the power switch to **on**. When the message HW SELFTEST RUNNING is shown, release the ↑ key.

   After about 15 seconds the message is changed to DSP SELFTEST RUNNING and then after another 15 seconds to:

   ```
   IBM 7857 AT CMD aa█
   td_  rd_  dsr ec█ 11_
   ```

   If this sequence does not occur, the modem is defective. Replace it.

7. ___ The next steps can only be done if you have attached the modem to the public switched network. Go to step 11 if you do not want to test the modem's public switched network interface.

8. ___ On the modem operator panel:

   • Press the ↑ key until the "C108 (DTR)" message is displayed on the top row.
   • Press the → key until the "Forced On" message is displayed on the bottom row.
   • Press the ENTER key twice to select the option and to return to the modem operational mode message.

9. ___ Dial the modem phone number from another telephone. You should hear the ringing tones and then the 2100 Hz answer tone from the called modem in the handset of the dialing telephone. If you hear the answer tone, go to step 11 Otherwise, continue with step 10

10. ___ If you do not hear the modem answer tone, verify that the telephone line is operating properly. In most countries, you can do this by replacing the modem with a handset and then attempting a second time to dial the modem phone number from another telephone to verify that the handset rings properly.

    Connect again the modem to the public switched network and try dialing the modem phone number again. Observe the front panel OH light. This light turns **off** when the modem answers. If this attempt to call the modem fails, the modem is defective. Replace it.

11. ___ Set the modem power switch to **off**.

Note: The following steps assume that your DTE is already installed and operational.

12. ___ Connect the 25-pin V.24 cable from the DTE to the 25-pin connector on the modem rear panel. Fasten the connector retaining screws.

13. ___ Set the modem power switch to **on**. Wait until the modem operational message is displayed on the operator panel (about 30 seconds). If the modem is connected to an asynchronous DTE which can send AT commands to the modem, you can use the DTE to configure the modem to match your

communication system requirements. Otherwise, the modem can be configured through the operator panel.

14. ___ Now the modem is ready for operation; you can try it with your system. If you observe a basic system problem, such as the DTE not being able to send commands to the modem successfully, verify again that your individual modem configuration parameters are matching your system requirements. If you have a problem while using the modem, see *IBM 7857 Guide to Operation*, GA13-1839, chapter "Problem Determination".

If the 7857 modem operator panel does not show the following message (see Figure 1-14), the modem needs to be configured through the operator panel, go "Setting the 7857 Modem," otherwise go to "Connecting the 7857 Modem" on page 1-13 .

```
IBM 7857 AT CMD aa█
td_  rd_  dsr ec█ 11_
```
with:
PWR   LED ON
OH   LED OFF
DTR(108) LED ON
CTS(106) LED ON
CD(109)   LED OFF

Figure   1-14. 7857 Modem Operator Panel Display

Setting the 7857 Modem

1. ____ Press the ↓ key until the "CONFIGURATIONS" message is displayed on the top row.

2. ____ Press the → key until the "Select Factory" message is displayed on the bottom row.

3. ____ Press the ENTER key to select the option.

4. ____ Press the ↑ key until "0" is displayed.

5. ____ Press the ENTER key to load the predefined factory configuration 0. The modem is now in AT mode, auto answer, and asynchronous mode.

Saving the Configuration of the 7857 Modem

If you want to save the configuration just defined, in order to have it loaded again at the next modem reset, perform the following steps:

1. ____ Press the key until the "CONFIGURATIONS" message displayed the top row.

2. ____ Press the key until the "Store User Conf." message displayed the bottom row.

3. ____ Press the ENTER key select the option.

4. ____ Pressing the key, select the User Configuration Location where the current modem configuration must be saved (0 to 9).

5. ____ Press the ENTER key save the current modem configuration.

6. ____ The defined configuration now active and saved.

Now every time the modem is reset (power on), the last user configuration which was saved is loaded as the current modem configuration.

Connecting the 7857 Modem

1. ____ **Plug** the cable (PN 80G0597) to connector **1** of the NAS.

2. ____ On the modem's rear panel, **plug** the other cable lead into the 25-pin connector **2** .
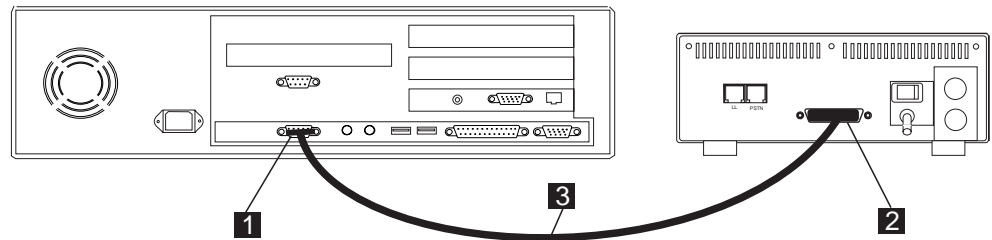
Figure   1-15. Connecting the NAS to the 7857 Modem

End of NAS and modem installation. Continue with the *2220 Nways BroadBand Switch Setup Guide***, SY33-2105 (P/N 59G0544)**

Installing and Connecting the Hayes** Modem

```
┌─── Notes ──────────────────────────────────────────────────────┐
│                                                                 │
│  1. If you are not familiar with the Hayes modem, refer to the  │
│     Hayes user's guide.                                         │
│                                                                 │
│  2. Power and frequency requirements:                           │
│                                                                 │
│       • Input voltage: 230V +/-10%, 50 Hz (ac)                  │
│                                                                 │
│       • Nominal output voltage: 9 V ac                          │
│                                                                 │
│       • Maximum output voltage: 12.1 V ac                       │
│                                                                 │
│       • Rated load current: 800 mA ac 50 Hz                     │
│                                                                 │
└─────────────────────────────────────────────────────────────────┘
```

1. Unpack and install the modem on the rear side of the NAS.
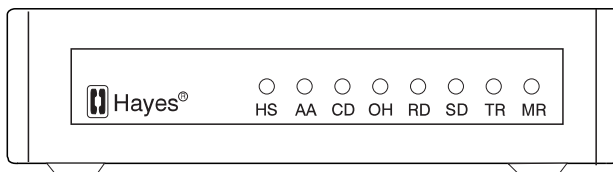
Figure 1-16. Front View
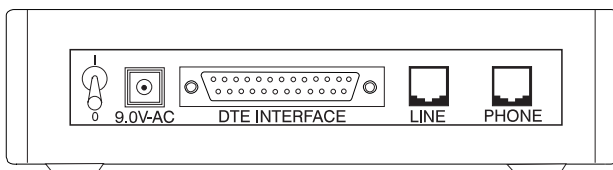
Figure 1-17. Rear View

2. Refer to Figure 1-18 on page 1-15 and connect the cables as follows:

   Note: Cables **1** and **2** are country dependent.

   a. ____ Plug the power cable **1** from connector '9.0V-AC' to a standard 3-pin grounded ac outlet.

   b. ____ Plug the interface cable **3** from the 'DTE INTERFACE' modem's connector to NAS's connector **4** .

   c. ____ Plug the switched network telecommunication cable **2** from the Line connector to the telecommunication line.

Figure 1-18. Connecting the Hayes

End of NAS and modem installation. Continue with the *2220 Nways BroadBand Switch Setup Guide***, SY33-2105 (P/N 59G0544)**

Installing and Connecting the 7858 Modem

> **Notes**
>
> 1. If you are not familiar with the 7858, refer to the *IBM 7858 Professional Modem Guide to Operation*, GA13-1981.
>
> 2. Power requirements:
>
>   - Low voltage range: 90 to 137 V ac.
>
>   - High voltage range: 180 to 265 V ac.
>
> 3. The document *Power Supply and Telecommunication Connections for IBM Modems* GA33-0054, contains useful information about the different telecommunication connectors and power supply plugs.
>
> 4. Read the *IBM Telecommunication Products Safety Handbook*, SD21-0030.

Figure   1-19. 7858 Front Side

Figure   1-20. 7858 Rear Panel

7858 Modem installation

This chapter describes how the modem can be easily installed and how to configure it in order to have it immediately operational.

Besides the modem and this manual, the carton should contain:

- The Power Attachment Cord.

- Two Telecommunication cables:

  - Black cable for the switched line, with label SW, which fits into the PSTN socket in the modem rear panel.

   – Gray cable for the leased line, with label LL, which fits into the LL socket in the modem rear panel.

- The IBM Telecommunication Products Safety Handbook.

If any of these items is missing or damaged, contact the place of purchase for instructions on how to exchange your modem or obtain the missing items.

Warning

In order to avoid damages to the unit, before starting the installation, verify the modem input AC Voltage setting against the power voltage source available at your wall socket.

If needed, the selector switch can easily be moved to the correct position, using a screwdriver or a pen:

- Switch set to 115 for low voltage range: 90 - 137 VAC.
- Switch set to 230 for high voltage range: 180 - 265 VAC.

---

1. ____**Be sure** that the **power switch** located on the modem rear panel is **off** (switch in position "O")

2. ____ Plug the switched line telecommunication cable shipped with the modem into the **PSTN** socket located on the modem rear panel. If this modem is **not** being installed in the United Kingdom, connect the other end of the cable to the telecommunication line.

3. ____ Connect the power attachment cord to the AC power socket located on the modem rear panel and the power plug to a standard 3 pin grounded ac outlet. Then, if this modem is being installed in the United Kingdom, connect the telecommunication cables you have attached to the modem, to the telecommunication lines.

4. ____ You are now requested to observe the modem power on sequence.

   This is the normal power on sequence:

   - PWR light is turned on.
   - SELFTEST RUNNING message is displayed for about 15 seconds.

   Set the modem power switch to **on** (switch in position "**I**").

   If the PWR light is not **on** and the voltage selector switch is correctly set and you are sure the power voltage is present at the wall socket, the modem is defective and should be replaced.

   If the message SELFTEST RUNNING is not appearing on the operator panel within 10 seconds, the modem is defective and should be replaced. This message remains on the display for about 15 seconds, then it is changed by the power on sequence.

   If the modem is set to the factory defaults, the operator panel shows :

```
AT CMD   ec▌ aa▌
td_  rd_  dsr_  ll_
```

Figure 1-21. 7858 Operator Panel Display

This operational message shows that the modem is set in AT command mode for switched line operation with error control enabled and will auto-answer an incoming call.

In the next steps, you are instructed to manipulate the front panel buttons of the modem. Unless the step suggests otherwise, do not press them in for longer than one second.

The next step reset the modem options to the factory default configuration 0. Jump ahead to step 6 if the modem has never been used.

5. ____ Set the modem power switch to off, then hold the ↑ key pressed and set the power switch to on. When the message SELFTEST RUNNING is shown, release the ↑ key.

After about 15 seconds the message is changed to:

```
AT CMD    ec▮ aa▮
td_  rd_  dsr_  ll_
```

Figure   1-22. 7858 Operator Panel Display

If this sequence does not occur, the modem is defective and should be replaced.

6. ____ The next steps are used to test the modem's interface, go to step 10 if you do not want to test the modem's public switched network interface.

7. ____ On the modem operator panel:

   a. Press the ↑ until the "DTR (C108)" message is displayed on the top row.
   b. Press the → key until the "Forced On" message is displayed on the bottom row.
   c. Press the ENTER key twice to select the option and to return to the modem operational mode message.

8. ____ Dial the modem phone number from another telephone. You should hear the ringing tones and then the 2100 Hz answer tone from the called modem in the handset of the dialing telephone. If you hear the answer tone, go to step 10. Otherwise, continue with step 9.

9. ___ If you do not hear the modem answer tone, verify that the telephone line is operating properly. In most countries, you can do this by replacing the modem with a handset and then attempting a second time to dial the modem phone number from another telephone to verify that the handset rings properly.

   Connect again the modem to the public switched network and try dialing the modem phone number again. Observe the front panel OH light. This light turns off when the modem answers. If this attempt to call the modem fails, the modem is defective and should be replaced.

10. ____ Set the modem power switch to off.

    Note: The following steps assume that your DTE is already installed and operational.

11. ____ Connect the 25-pin V.24 cable from the DTE to the 25-pin connector on the modem rear panel. Fasten the connector retaining screws.

12. ____ Set the modem power switch to on. Wait until the modem operational message is displayed on the operator panel (about 15 seconds).

13. ____ Now the modem is ready for operation. You can try it with your system. If you observe a basic system problem, such as the DTE not being able to send commands to the modem successfully, verify again that your individual modem configuration parameters are matching your system requirements. If you have a problem while using the modem, see "Problem Determination" chapter in the *IBM 7858 Professional Modem Guide to Operation*, GA13-1981.

Saving the Configuration of the 7858

If you want to save the configuration and in order to have it loaded again at the next modem reset, perform the following steps:

1. ____ Press the ↓ key until the "CONFIGURATIONS" message displayed the top row.

2. ____ Press the → key until the "Store User Conf." message displayed the bottom row.

3. ____ Press the ENTER key select the option.

4. ____ Pressing the ↑ key, select the User Configuration Location where the current modem configuration must be saved (0 to 9).

5. ____ Press the ENTER key save the current modem configuration.

6. ____ The defined configuration now active and saved.

Now every time the modem is reset (power on), the last user configuration which was saved is loaded as the current modem configuration.

Connecting the 7858

1. ____ **Plug** the cable (PN 782985) into slot 3 **1** of the NAS.

2. ____ On the modem's rear panel, **plug** the other cable lead into the 25-pin connector **2** .
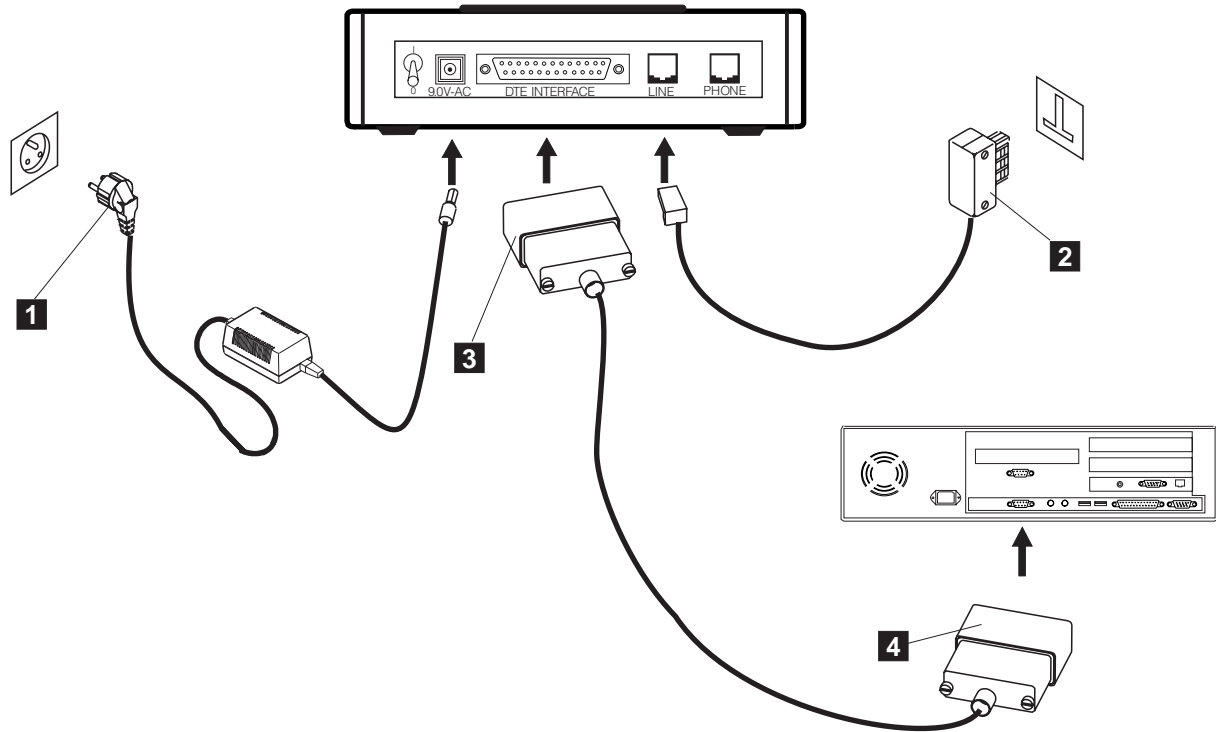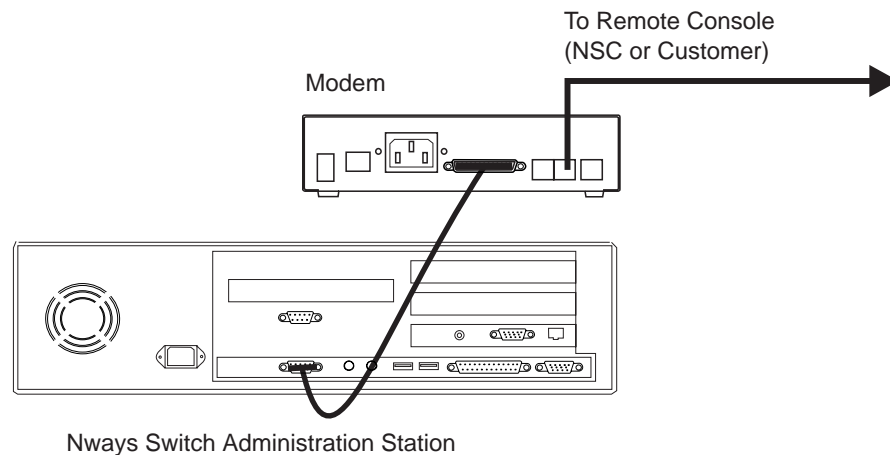
Figure   1-23. Connecting the NAS from COM1 to the 7858

End of NAS and modem installation. Continue with the *2220 Nways BroadBand Switch Setup Guide***, SY33-2105 (P/N 59G0544)**

Installing the NAS and its Modem

Chapter 2. START - Finding a Service Procedure

Select the first entry point that fits your situation.

If You Have	Description	Go to
GENERAL SYMPTOM	Nways Switch administration station symptom	"MAP 0400: Nways Switch Administration Station Symptom" on page 4-1.
MAINTENANCE ACTION	Nways Switch administration station FRU to exchange	Chapter 5, "Nways Switch Administration Station FRU and Display Exchange Procedures" on page 5-1.
	Run diagnostics on the Nways Switch administration station	"How to Run the Nways Switch Administration Station Diagnostics" on page 3-2.
	Test the Nways Switch administration station links	"How to Test the Different Links" on page 3-7
	Problem determination procedures	"Problem Determination Procedures" on page 2-2.
	Test the link between the Nways Switch administration station and the NSC	"How to Test the Link Between the NAS and the Network Support Center" on page 3-5.

Problem Determination Procedures

Service Action	Go to
Investigate a problem on the Nways Switch administration station.	"MAP 0400: Nways Switch Administration Station Symptom" on page 4-1.
Investigate a communication problem between the Nways Switch administration station and a remote console.	"MAP 0410: Communication Problem Between the NAS and a Remote Console" on page 4-8

Chapter 3. Nways Switch Administration Station Diagnostics

How to test the Nways Switch Administration Station and the Different Links

In the following table select the area that you intend to test then go to the appropriate procedure.

What you want to do	Action
Run the diagnostics on the Nways Switch administration station.	"How to Run the Nways Switch Administration Station Diagnostics" on page 3-2.
Test the link between the Nways Switch administration station. and the NSC	"How to Test the Link Between the NAS and the Network Support Center" on page 3-5.
Test the Nways Switch administration station. links	"How to Test the Different Links" on page 3-7.

How to Run the Nways Switch Administration Station Diagnostics

The following diagnostics are available on the Nways Switch administration station:

- Power-On Self Test (POST)
- Diagnostics diskette

Power-On Self Test (POST)

To start the POST:

1. Power-on the display and the Nways Switch administration station.

   The following icon

   appears at the upper-right corner of the display.

2. Press **F1** when the icon appears to cause the **Configuration Utility** menu to appear after the POST has completed.

3. A count of the computer memory appears at the upper-left corner of the display.

4. If an error is detected, an error code appears under the computer memory count. Refer to the *IBM Personal Computer 300 Series, 700 Series, IntelliStation; Hardware Maintenance Manual* S83G-7789.

5. The POST completes successfully when no errors are detected in the Nways Switch administration station.

6. The Nways Switch administration station attempts to load the operating system. If an operating system is not found, a graphic message (icon) is displayed requesting that you insert a diskette into drive A and press the **F1** key to resume operation.

Diagnostics Diskette

Use the **Diagnostics** diskette for testing the basic system hardware.

The diagnostics program is intended to test only the basic standard Nways Switch administration station and supported hardware. Other products, prototype cards, or modified options can give false errors and invalid Nways Switch administration stationresponses.

1. Power-off the Nways Switch administration station.

2. Insert the diagnostic diskette in drive A.

3. Power-on the Nways Switch administration station.

4. Do not press **F1** when the icon appears

5. Several Messages are displayed. Wait until the following window is displayed.

```
Diagnostic - Interactive Tests - Hardware Info - Utility - Quit - F1=Help




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Diagnostic tests that check the functionality of your PC.
Use the Cursor keys and ESC to move in menus. Press ENTER to select.
```

6. Select the **Diagnostics** option in the title bar and press **Enter**.

7. The following window is displayed:

```
Diagnostic - Interactive Tests - Hardware Info - Utility - Quit - F1=Help

Run Normal Test
Run Quick Test
CPU/Coprocessor
System Board
Video Adapter
Serial Ports
Parallel Ports
Fixed Disks
Diskette Drives
Other Devices
Memory Test - Full
Memory Test - Quick

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Use the Cursor keys and ESC to move in menus. Press ENTER to select.
```

8. For a quick checking of the Nways Switch administration station select the **Run Quick Test** option, then press **Enter**.If you want test a particular device select it on the list, then press **Enter**. If you want a more complete test select **Run Normal Test** , then press **Enter**.

9. During test execution several windows are displayed showing the part tested and the test status. Wait until the tests stop.

10. If the test is **not error free**, refer to the *IBM Personal Computer 300 Series, 700 Series, IntelliStation; Hardware Maintenance Manual* S83G-7789 to identify the problem. Then if you have to exchange an FRU, go to Chapter 5, "Nways Switch Administration Station FRU and Display Exchange Procedures" on page 5-1. Otherwise to leave the test continue with the following Steps.

11. Press **Esc** for exit from the test window.

12. Select **Quit** in the title bar, then press **Enter**.

13. The following window is displayed:

```
Exit Diags
Park HD
Reboot
```

14. Remove the **Diagnostic** diskette.

15. Select **Reboot**, then press **Enter**.

16. The system is booted. At the end of the boot, the Nways Switch Desktop window should be be displayed.

Nways Switch
Configuration

Nways Switch
How to use...

Nways Switch
Installation

Nways Switch
Services

How to Test the Link Between the NAS and the Network Support Center

Locally on the NAS

1. When the NAS and the modem are initialized, press simultaneously the **Ctrl/Esc** keys

2. Double click on **SLIP Dial-In.**
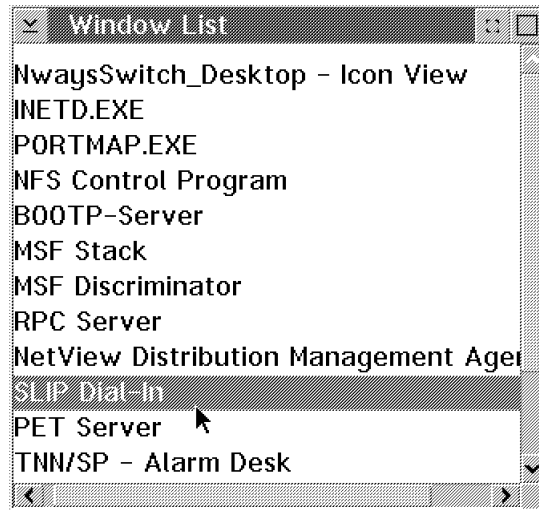
Figure   3-1. Nways Switch Window List

3. Verify that the SLIP driver is running as shown in Figure 3-2. If you do not have this message, an error message is displayed. See Figure 3-3 on page 3-6. As recommended, verify that the modem is properly configured and connected.
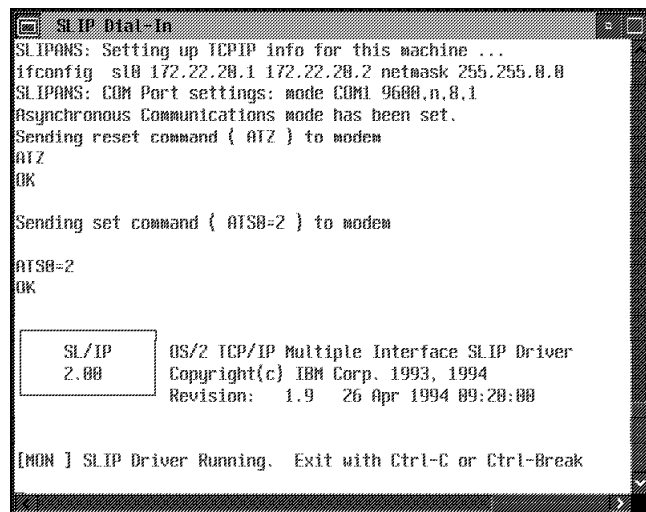
Figure   3-2. SLIP Driver Correct Status

```
SLIP Dial-In
SLIPANS: Setting up TCPIP info for this machine ...
ifconfig  sl0 172.22.20.1 172.22.20.2 netmask 255.255.0.0
SLIPANS: COM Port settings: mode COM1 9600,n,8,1
Asynchronous Communications mode has been set.
Sending reset command ( ATZ ) to modem
 WAITFOR: timed out
********** Can't send AT-command ATZ to modem **********
Please make sure that :
1) The modem is powered ON
2) The modem is connected to Serial port 1
3) The modem is connected to telephone line
4) The modem has AT-command set enabled
Press ENTER when done
```

Figure 3-3. SLIP Driver Error Status

4. Record the following information, then call the Network Support Center.

- The NAs SLIP IP address

- The Network Support Center SLIP IP address (remote SLIP address)

- The modem phone number

- The node name

- The user name

- The FTP password

Note: These two addresses are displayed in Figure 3-2 on page 3-5 or in Figure 3-3. In this example, the NAS SLIP IP address is 172.22.20.1 and the Network Support Center SLIP address is 172.22.20.2.

From the Network Support Center Console

The following procedure gives an exemple to the Network Support Center to validate the link to the 2220 installed.

1. Double click on **Slip Start**.

2. The follow the prompts to record the new customer information.

3. Select the option to call the modem.

4. Double click on **Nways Switch resource control**.

5. Enter the host name, user name, and password to access the 2220 installed.

6. Wait for the display of the whole configuration.

How to Test the Different Links

The purpose of this procedure is to establish and validate the link between the 2220 and the servers:

1. Network Management Station

2. Change Control Server

When the Nways Switch administration station is powered ON and booted:

1. Click on the **Nways Switch installation** icon.

Nways Switch Configuration   Nways Switch How to use...   Nways Switch Installation   Nways Switch Services
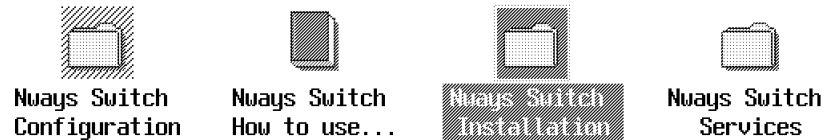
2. In the **Nways Switch installation** window, click on the **PM Ping** icon.
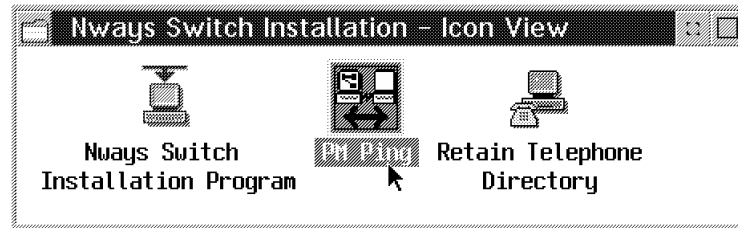
3. In the **PMPING** window, click on the **Actions** option on the menu bar, then on the **Start** option.
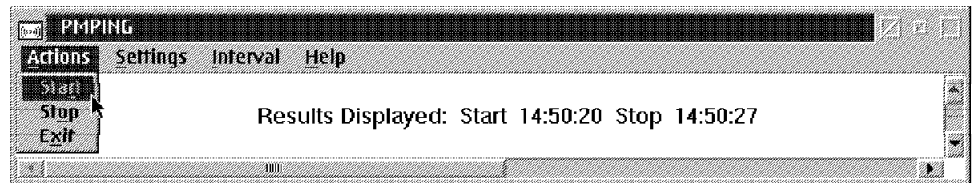
4. A new **PMPING** window is displayed, showing the links tested and the result of the test.

Note: The command is sent to the servers which have been defined in the configuration file and imported in the configuration data base.

The information displayed gives:

- The TCP/IP address

- The server name

- The response time.

Figure 3-4. Example of PM Ping Results

Chapter 4. Nways Switch Administration Station Problem Determination

MAP 0400: Nways Switch Administration Station Symptom

| 001 |

– Check that the Nways Switch administration station and its display are powered ON.
– If not, switch ON the power ON button on the Nways Switch administration station front panel and/or display.

Is the Nways Switch administration station powered ON?
Yes   No

| 002 |

Go to *IBM Personal Computer 300 Series, 700 Series, IntelliStation; Hardware Maintenance Manual* S83G-7789, to identify the problem. Then if you have to exchange an FRU, go to Chapter 5, "Nways Switch Administration Station FRU and Display Exchange Procedures" on page 5-1.

| 003 |

Is there something displayed on the screen?
Yes   No

| 004 |

Go to *IBM Personal Computer 300 Series, 700 Series, IntelliStation; Hardware Maintenance Manual* S83G-7789, to identify the problem. Then if you have to exchange an FRU, go to Chapter 5, "Nways Switch Administration Station FRU and Display Exchange Procedures" on page 5-1.

| 005 |

Continue the procedure according to the symptom listed in the following table.

MAP 0400 (continued)

Screen symptom	Go to:
xxxxxxxx (8 digits) Power-On Self-test (POST) error or Configuration or memory error message displayed.	*IBM Personal Computer 300 Series, 700 Series, IntelliStation; Hardware Maintenance ManualS83G-7789* to identify the problem, then if you have to exchange an FRU, go to Chapter 5, "Nways Switch Administration Station FRU and Display Exchange Procedures" on page 5-1.
SYSxx-xxxxx OS/2* message displayed on screen.	Call support for assistance.
The content of the screen appears normal but the size of the window displayed is smaller than usual.	Power OFF then power ON the display.
Screen appears normal but the track ball and/or the keyboard is locked.	Step 024 on page 4-6.
None of the previous screen symptoms.	Step 006 on page 4-2.

006

– The screen content depends on the last operation done.

Is the Nways Switch Resource Control window displayed?
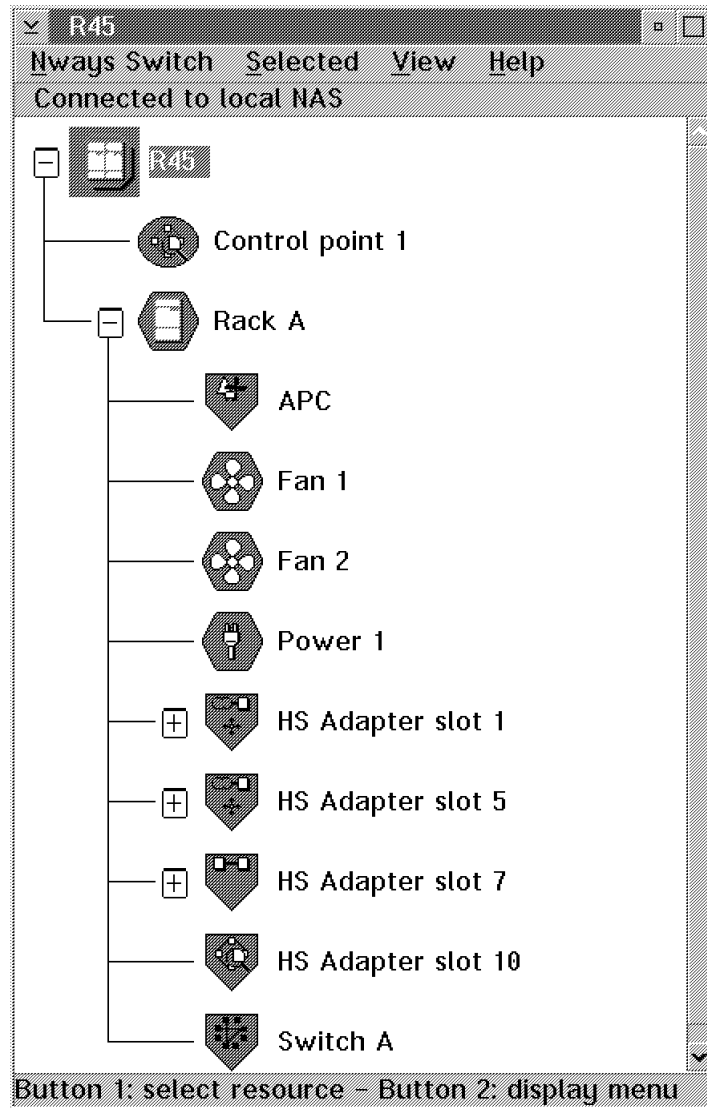
Figure 4-1. Nways Switch Resource Control Window

Yes No
 │
 └─┐
   ┌──────┐
   │ **007** │
   └──────┘

– From the window displayed using the icon/option get the **Nways Switch Resource Control** window with all the resource icon displayed (see Figure 4-1).

– When it is done continue with Step 008.

┌──────┐
│ **008** │
└──────┘

(Step **008** continues)

MAP 0400 (continued)

008 (continued)

Are all the resources displayed blue?
Yes   No

> **009**
>
> **Are all resources icon green?**
> **Yes   No**
>
> > **010**
> >
> > You have a problem on specific resource.
> >
> > – Call the Network Support Center to inform them and follow their instructions.
>
> **011**
>
> There is no evident problem in the Nways Switch administration station. Call the Network Support Center to inform them and follow their instructions.

012

– You have a connection problem between the Nways Switch administration station and the 2220.

– Check the cables between the Nways Switch administration station and the APC module.

Did you find a problem in the cable connection, or in the cable?
Yes   No

> **013**
>
> Go to Step 017 on page 4-5

014

Correct the problem, then wait until all the icon resources turn to green on the screen.

Are all resources icon blue?
Yes   No

> **015**
>
> Problem solved. Call the Network Support Center to inform them, follow their instructions, then go to "Ending the Exchange Procedure" on page 5-18.

016

Go to Step 017 on page 4-5.

017

There is a problem with the Nways Switch administration station and there is no evident symptom on the Nways Switch administration station.

– Inform your customer that for your investigation you will have to power OFF the Nways Switch administration station.

– On the Nways Switch administration station front panel turn the power OFF. Wait 5 seconds and turn it ON.

– Wait until the end of the self test and IML.

Is the IML complete with the Nways Switch desktop window displayed?

Nways Switch
Configuration

Nways Switch
How to use...

Nways Switch
Installation

Nways Switch
Services

Yes   No

> **018**
>
> Go to *IBM Personal Computer 300 Series, 700 Series, IntelliStation; Hardware Maintenance Manual* S83G-7789, to identify the problem. If you have to exchange an FRU, go to Chapter 5, "Nways Switch Administration Station FRU and Display Exchange Procedures" on page 5-1.

019

– From the window displayed using the icon/option get the **Nways Switch Resource Control** window with all the resource icon displayed (see Figure 4-1 on page 4-3).

Are all resources displayed blue?
Yes   No

> **020**
>
> **Are all resources icon green?**
> **Yes   No**
>
> > **021**
> >
> > You have a problem on specific resource.
> >
> > – Call the Network Support Center to inform them and follow their instructions.
> >
> > **022**
> >
> > The link problem between the Nways Switch administration station and the 2220 is solved. Call the Network Support Center to inform them and follow their instructions.

MAP 0400 (continued)

023

There is NO link between the Nways Switch administration station and the 2220.

Go to *IBM Personal Computer 300 Series, 700 Series, IntelliStation; Hardware Maintenance Manual* S83G-7789, to identify the problem. Then if you have to exchange an FRU, go to Chapter 5, "Nways Switch Administration Station FRU and Display Exchange Procedures" on page 5-1.

024

– Check that the keyboard cable is properly plugged into the keyboard and into the rear of the Nways Switch administration station.

Did you find the problem?
Yes No

> **025**
>
> Go to Step 027.

026

Problem solved. Call the Network Support Center to inform them, follow their instructions, then go to "Ending the Exchange Procedure" on page 5-18.

027

– Inform your customer that for your investigation you will have to power OFF the Nways Switch administration station

– On the Nways Switch administration station front panel turn the power OFF. Wait 5 seconds and turn it ON.

– Wait until the end of the self test and IML.

Is the IML complete with the Nways Switch desktop window displayed?

Nways Switch
Configuration

Nways Switch
How to use...

Nways Switch
Installation

Nways Switch
Services

Yes No

> **028**
>
> Restart problem determination. Go to Step 001 on page 4-1.

029

(Step **029** continues)

029 (continued)

Are the track ball and the keyboard operational?
Yes No

> **030**
>
> Go to *IBM Personal Computer 300 Series, 700 Series, IntelliStation;*
> *Hardware Maintenance Manual* S83G-7789, to identify the problem. If you
> have to exchange an FRU, go to Chapter 5, "Nways Switch Administration
> Station FRU and Display Exchange Procedures" on page 5-1.

031

Problem solved. Call the Network Support Center to inform them, follow their
instructions, then go to "Ending the Exchange Procedure" on page 5-18.

MAP 0410:
Communication Problem Between the NAS and a Remote Console

- You are here because there is a communication problem between the Nways Switch administration station, and a remote console via the public switched network.

- The remote operator MUST have verified localy that his NAS and his modem are working properly.
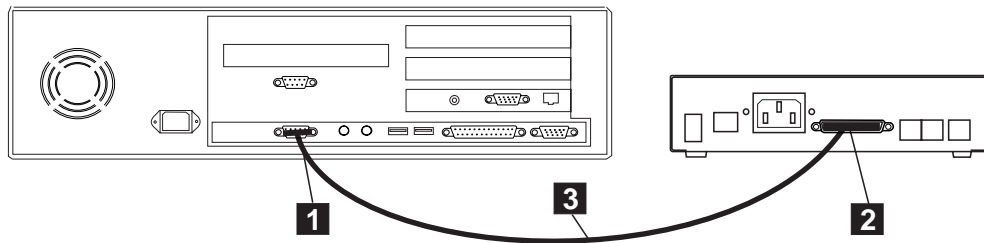
| 001 |

– Check that the modem attached to the Nways Switch administration station is powered ON.

– If not, switch ON the power ON button at the rear panel of the modem.

– Check that the power cable is properly plugged in the power outlet

Is the modem powered ON?
Yes   No

| 002 |

– Suspect a problem in the customer's ac source. Check the customer's ac outlet.

Is there a proper voltage in the ac outlet?
Yes   No

| 003 |

Ask the customer to have the installation serviced.

| 004 |

The modem is defective. Exchange it (refer to "Modem Exchange Procedure" on page 4-16).

| 005 |

Check the modem status according to its type.

IBM Modem Type	Status	Action
7855	The modem status is the following: ASYN8N A 9600 a With: ONH LED ON 　　DTR(108) LED ON 　　RFS(106) LED ON	• The status is correct. Go to Step 006 on page 4-9 • The status is not correct. Go to Step 020 on page 4-11
7857	The modem status is the following: IBM 7857 V25BIS aa▮ td_ rd_ dsr▮ ec_ 11_ With: OH LED OFF 　　DTR(108) LED ON 　　CTS(106) LED ON 　　CD(109) LED OFF	• The status is correct. Go to Step 006 on page 4-9 • The status is not correct. Go to Step 024 on page 4-12
Hayes	The modem status is the following: OH LED OFF HS LED ON TR LED ON MR LED ON	• The status is correct. Go to Step 006 on page 4-9 • The status is not correct. Go to Step 028 on page 4-12
7858	The modem status is the following: AT CMD ec▮ aa▮ td_ rd_ dsr_ ll_	• The status is correct. Go to Step 006 on page 4-9 • The status is not correct. Go to "7858 Modem installation" on page 1-16 for modem and installation checking.

006

– From a close telephone, call the modem. According to the modem answer select the appropriate action:

Modem Answer	Action
The modem is busy	Go to Step 007
The modem does not answer	Go to Step 012 on page 4-10
The modem answer	Go to Step 017 on page 4-11

007

(Step **007** continues)

MAP 0410 (continued)

007 (continued)

– Disconnect the modem's telecommunication cable from the public switched network plug.

Is the modem's telephone number still busy?
Yes   No

> **008**
>
> – Reconnect the modem to the public switched network.
>
> – Switch the modem power OFF, then power ON.
>
> – From a close telephone, call the modem.
>
> **Is the modem's telephone number still busy?**
> **Yes   No**
>
> > **009**
> >
> > The problem is solved. Ask the remote operator to re-start his call from the remote NAS.
>
> **010**
>
> The modem is defective. Exchange it (refer to "Modem Exchange Procedure" on page 4-16).

011

The probable cause of the problem is the telephone line.

012

– Switch the modem power OFF, then power ON.

– From a close telephone, call the modem.

Does the modem answer?
Yes   No

> **013**
>
> – Disconnect the modem's telecommunication cable from the public switched network plug.
>
> – Connect a telephone in place of the modem to the public switched network.
>
> – From a close telephone, call the modem.
> (Step **013** continues)

013 (continued)

Does the telephone installed in place of the modem ring?
Yes   No

```
          ┌─────┐
          │ 014 │
          └─────┘
```

Suspect a telephone line problem, or wrong phone number.

```
┌─────┐
│ 015 │
└─────┘
```

Your modem is probably defective. Refer to the modem documentation to test it.

```
┌─────┐
│ 016 │
└─────┘
```

The problem is solved. Ask the remote operator to re-start his call from the remote NAS.

```
┌─────┐
│ 017 │
└─────┘
```

– Check that the remote NAS calls the correct telephone number and has the correct TCP/IP address.

– Ask the remote NAS to retry the operation.

Is the connection successful?
Yes   No

```
          ┌─────┐
          │ 018 │
          └─────┘
```

Suspect a modem problem.

```
┌─────┐
│ 019 │
└─────┘
```

Problem solved.

```
┌─────┐
│ 020 │
└─────┘
```

– On the following table select the action according to your modem status.

Modem Status	Action
The message displayed on the modem screen is NOT correct	Refer to the problem determination chapter in the *7855 Modem Guide to Operation* GA33-0160.
ONH LED is OFF	Go to Step 021.
DTR(108) and/or RFS(106) is OFF	Go to Step 029 on page 4-13.

```
┌─────┐
│ 021 │
└─────┘
```

(Step **021** continues)

MAP 0410 (continued)

021 (continued)

Switch the modem power OFF, then power ON.

Is the ONH LED always OFF?
Yes   No

> **022**
>
> Restart problem determination. Go to Step 005 on page 4-8.

023

The modem is defective. Exchange it (refer to "Modem Exchange Procedure" on page 4-16).

024

On the following table select the action according to your modem status.

Modem Status	Action
The message displayed on the modem screen is NOT correct	Refer to the problem determination chapter in the *7857 Modem Guide to Operation* GA13-1839.
OH LED is ON	Go to Step 025.
DTR(108) and/or RFS(106) is OFF	Go to Step 029 on page 4-13.

025

Switch the modem power OFF, then power ON.

Is the OH LED always ON?
Yes   No

> **026**
>
> Restart problem determination. Go to Step 005 on page 4-8.

027

The modem is defective. Exchange it (refer to "Modem Exchange Procedure" on page 4-16).

028

On the following table select the action according to your modem status.

Modem Status	Action
MR LED OFF	The modem is defective. Exchange it (refer to "Modem Exchange Procedure" on page 4-16).
HS OFF	Suspect a modem configuration.
TR OFF	Go to Step 029 on page 4-13.

029

– Check that the cable between the Nways Switch administration station and the modem is properly connected.

Did you find the problem?
Yes   No

      030

      Go to Step 032.

031

Ask the remote operator to re-start his call from the remote NAS.

032

Inform the network operator that you need the complete Nways Switch administration station to run all diagnostics on the Nways Switch administration station.

– Power OFF, then after few seconds, power ON the Nways Switch administration station.

– The following icon

appears at the upper-right corner of the display. (Pressing **F1** at this time causes the **Configuration Utility** menu to appear after the POST has completed.)

– A count of the computer memory appears at the upper-left corner of the display.

– If an error is detected, an error code appears under the computer memory count.

– Successful completion of POST is attained when no errors are detected in the Nways Switch administration station.

– The Nways Switch administration station attempts to load the operating system. If an operating system is not found, a graphic message (icon) is displayed requesting that you insert a diskette into drive A and press the **F1** key to resume operation.

(Step **032** continues)

MAP 0410 (continued)

032 (continued)

Is the POST test error free?
Yes   No

> **033**
>
> – Refer to the *IBM Personal Computer 300 Series, 700 Series, IntelliStation; Hardware Maintenance Manual* S83G-7789 to identify the problem. Then if you have to exchange an FRU, go toChapter 5, "Nways Switch Administration Station FRU and Display Exchange Procedures" on page 5-1.

034

– Run the advanced diagnostic tests using the following procedure.

- Insert the **Diagnostic** diskette in the diskette drive.
- Switch ON the Nways Switch administration station and the display using their respective power ON/OFF switch located on the front panel.
- Do not press **F1** when the icon appears.
- Several Messages are displayed. Wait until the following window is displayed.

```
Diagnostic - Interactive Tests - Hardware Info - Utility - Quit - F1=Help




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Diagnostic tests that check the functionality of your PC.
Use the Cursor keys and ESC to move in menus. Press ENTER to select.
```

- Select the **Diagnostics** option in the title bar and press **Enter**.
- The following window is displayed:

```
Diagnostic - Interactive Tests - Hardware Info - Utility - Quit - F1=Help

Run Normal Test
Run Quick Test
CPU/Coprocessor
System Board
Video Adapter
Serial Ports
Parallel Ports
Fixed Disks
Diskette Drives
Other Devices
Memory Test - Full
Memory Test - Quick

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Use the Cursor keys and ESC to move in menus. Press ENTER to select.
```

- Select the **Run Quick Test** option, then press **Enter**.

- During test execution several windows are displayed showing the part tested and the test status. Wait until the tests stop.

Is the test error free?
Yes No

   035

   Refer to the *IBM Personal Computer 300 Series, 700 Series, IntelliStation; Hardware Maintenance Manual* S83G-7789 to identify the problem. Then if you have to exchange an FRU, go to Chapter 5, "Nways Switch Administration Station FRU and Display Exchange Procedures" on page 5-1.

036

Call the Network Support Center for assistance.

Modem Exchange Procedure

When you have to exchange a modem refer to the "Installing and Connecting the External Modem" on page 1-7 to install and configure the modem as specified then continue with the following steps.

1. Double click on the **Nways Switch Installation** icon.
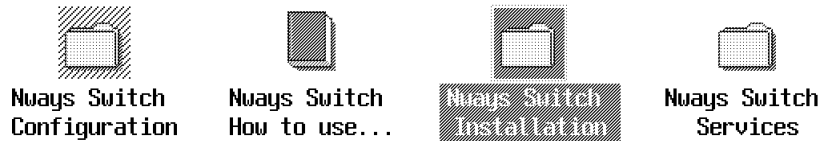
Figure 4-2. Nways Switch Desktop Window

2. Double click on the **Nways Switch Installation Program** icon.
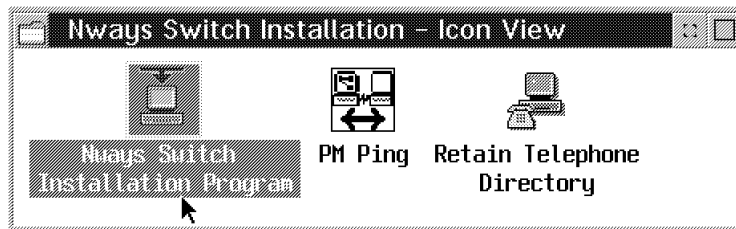
Figure 4-3. Nways Swith Installation Window

3. The **Installation Program Main Menu** window is displayed.


```
Nways Switch Installation Program

Enter your selection (1-9)

    1. Setting or updating the NAS configuration parameters
    2. Setting the NAS hard disk backup time
    3. Setting the hosts ping list
    4. Creating the installation parameter file
    5. Displaying the installation parameter file
    6. Setting time, date and time zone
    7. ENABLE Remote Support Facility - Current status is DISABLE
    8. Setting modem configuration

    9. Exit

===> 8
```

Figure 4-4. Installation Program Main Menu

4. Select option 8 and press Enter.

5. The following window is displayed.

```
┌─────────────────────────────────────────────────────────────────────────┐
│ ▤ Nways Switch Installation Program                                 ▣ □ │
├─────────────────────────────────────────────────────────────────────────┤
│Insure:                                                                  ▲ │
│ - your modem is power on, connected to COM1 and in Asynchronous AT mode │
│ - you have stopped SLIP Dail-in task                                    │
│Then, enter the number corresponding to your modem:                      │
├─────────────────────────────────────────────────────────────────────────┤
│ 1 IBM7855                                                               │
│ 2 IBM7857                                                               │
│ 3 NOK9632                                                               │
│ 4 HAYES288                                                              │
├─────────────────────────────────────────────────────────────────────────┤
│===>  _                                                                  │
│ ◄                                                                     ► │
└─────────────────────────────────────────────────────────────────────────┘
```
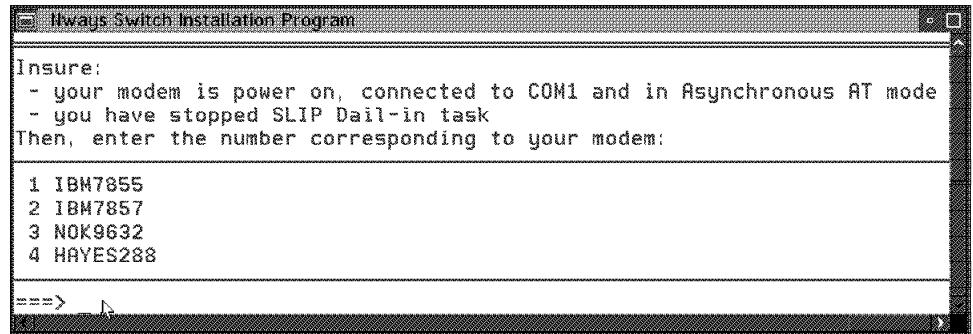
Figure 4-5. Modem Type Selection

6. Enter the number corresponding to your modem type and follow the prompts.

7. When finished, call the Network Support Center to inform them and follow their instructions, then go to "Leaving Procedure" on page 5-18.

Chapter 5. Nways Switch Administration Station FRU and Display Exchange Procedures

You are here to exchange a FRU on a Nways Switch administration station or exchange the display installed in the rack.

Selection	Action
Nways Switch administration stationFRU exchange	Go to "Nways Switch Administration Station FRU Exchange" on page 5-2
Display exchange	Go to "Display Exchange" on page 5-17

Nways Switch Administration Station FRU Exchange

Before any FRU exchange from the Nways Switch administration station you must remove the Nways Switch administration station from the rack following the above procedure.

Nways Switch Administration Station Removal from the Rack

1. Switch OFF the display and the Nways Switch administration station using their respective power ON/OFF switch located on the front panel.

2. At the rear of the Nways Switch administration station disconnect all the cables.
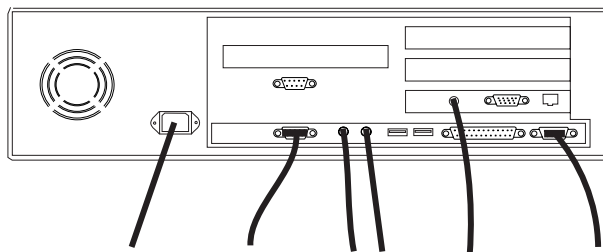
Attention

Be careful the weight of the Nways Switch administration station is about 16 kg.

---

3. If the Nways Switch administration station is installed into a rack, slide it out from the rack and install it on a table to continue the FRUs removal.

FRU Exchange

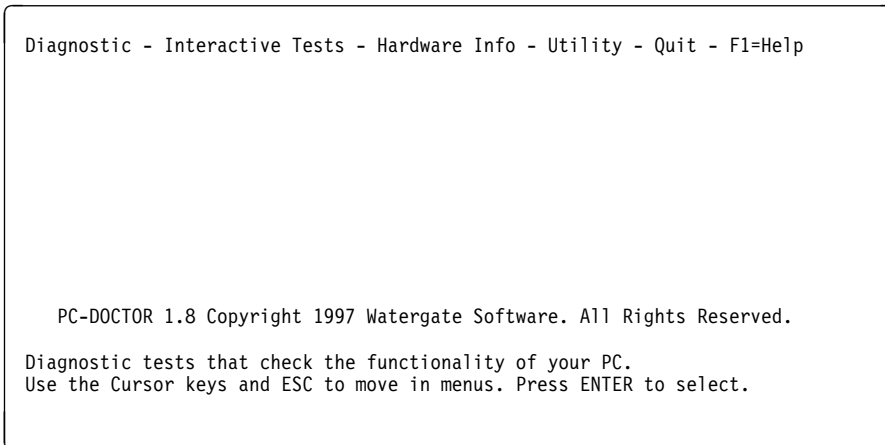4. Go to *IBM Personal Computer 300 Series, 700 Series, IntelliStation; Hardware Maintenance Manual* S83G-7789. According to the procedure described, change the FRU then return here and continue this procedure with the following step.
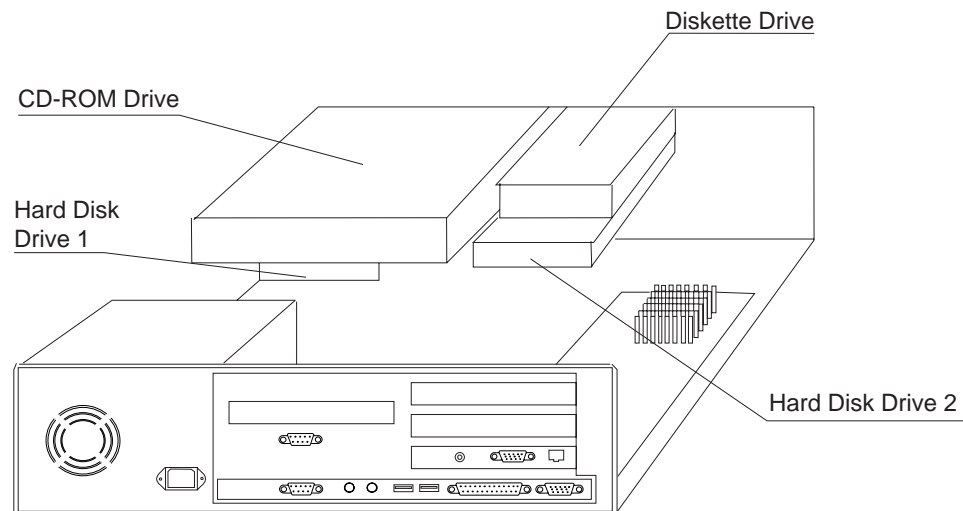
Figure   5-1. Disk Identification

Note for Disk Exchange

Disk 1 must be primary, disk 2 must be secondary. Check jumpering on the disk using the disk documentation.

 According to the procedure described, change the FRU then return here and continue this procedure with the following step.

5. Re-install all the covers of the Nways Switch administration station.

6. Slide the Nways Switch administration station into the rack if it was previously into the rack. Otherwise continue with the next Step.

7. At the rear of the Nways Switch administration station re-connect all the cables previously removed.

8. **Use the following table to find the MAP you need to follow, according to the FRU that you have exchanged.**

Nways Switch Administration Station FRU Exchanged	Action
Board or Battery	• Go to "MAP 0400: After Board or Battery Exchange on NAS Based on 6282" on page 5-4
Hard Disk Drive	• Go to "MAP 0420: After Hard Disk Drive Exchange on NAS Based on 6282" on page 5-8
Ethernet Adapter	Go to "MAP 0410: After Ethernet Adapter Exchange on NAS Based on 6282" on page 5-5
Other FRU	• Go to"MAP 0430: After Other FRUs Exchange on NAS Based on 6282" on page 5-15

MAP 0400:
After Board or Battery Exchange on NAS Based on 6282

001

– Switch ON the Nways Switch administration station and the display using their respective power ON/OFF switch located on the front panel.

– The following icon

  appears at the upper-right corner of the display.

– A count of the computer memory appears at the upper-left corner of the display.

– If an error is detected, a message is displayed requesting an action. Select **Continue**, then press **Enter**.

– Follow the prompts to continue untill the **Configuration/Setup Utility** window is displayed.

– On the **configuration/Setup Utility** window the area where the configuration has been modified is pointed by an arrow. Refer to Appendix B, "Configuration Reference for NAS Based on 6282" on page B-1 to check the configuration and correct it if necessary.

– At the end of configuration, a message asks you if you want to save your changes.

– Select **YES** and press the **Enter** key to start the system.

– At the end of the boot, the Nways Switch Desktop window should be be displayed.

Nways Switch   Nways Switch   Nways Switch   Nways Switch
Configuration   How to use...   Installation   Services

Is the Nways Switch Desktop window displayed?
Yes No

002

Restart problem determination, or call your support for help.

003

Problem solved. Return the Nways Switch administration station to the customer. Call the Network Support Center to inform them, follow their instructions, then go to "Leaving Procedure" on page 5-18.

MAP 0410: After Ethernet Adapter Exchange on NAS Based on 6282

| 001 |

- Switch ON the Nways Switch administration station and the display using their respective power ON/OFF switch located on the front panel.

- The following icon

  appears at the upper-right corner of the display.

- A count of the computer memory appears at the upper-left corner of the display.

- If an error is detected, a message is displayed requesting an action. Select **Continue**, then press **Enter**. Otherwise the boot continue until the Nways Switch Desktop window is displayed.

- Follow the prompts to continue untill the **Configuration/Setup Utility** window is displayed.

- On the **configuration/Setup Utility** window the area where the configuration has been modified is pointed by an arrow. Refer to Appendix B, "Configuration Reference for NAS Based on 6282" on page B-1 to check the configuration and correct it if necessary.

- At the end of configuration, a message asks you if you want to save your changes.

- Select **YES** and press the **Enter** key to start the system.

- At the end of the boot, the Nways Switch Desktop window should be be displayed.

| Nways Switch Configuration | Nways Switch How to use... | Nways Switch Installation | Nways Switch Services |

Is the Nways Switch Desktop window displayed?
Yes   No

| 002 |

   Restart problem determination, or call your support for help.

| 003 |

- Double click on the **Nways Switch Services** icon.

MAP 0410 (continued)

```
        Nways Switch      Nways Switch     Nways Switch      Nways Switch
        Configuration     How to use...    Installation        Services
```
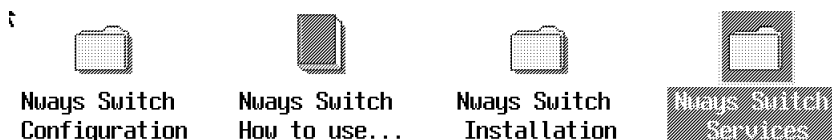
– In the **Nways Switch Services** window, double click on the **Ethernet Configuration & Diagnostics** icon.

```
┌──────────────────────────────────────────────────────────────────────┐
│ 📁 Nways Switch Services – Icon View                          ∷ □      │
│                                                                        │
│        ┌CTH┐         ┌──┐          ╱╲                ┌──┐               │
│                                                                        │
│         Ethernet      FTPPM     Hard Disk             NVDM             │
│   Configuration & Diagnostics  Backup/Rebuild  Graphical Interface     │
│                                                                        │
│        ┌──┐              ┌──┐               ┌──┐                        │
│                                                                        │
│     Nways Switch       Nways Switch        Nways Switch                │
│  Resource Control (Local)  Resource Control (Remote)   Alarm Desk      │
│                                                                        │
│        ┌──┐              ┌──┐           ┌──┐                            │
│                                                                        │
│     Nways Switch       Nways Switch    Telnet                          │
│  Control Program Inventory  RSF Customer Call                          │
│                                                                        │
└──────────────────────────────────────────────────────────────────────┘
```
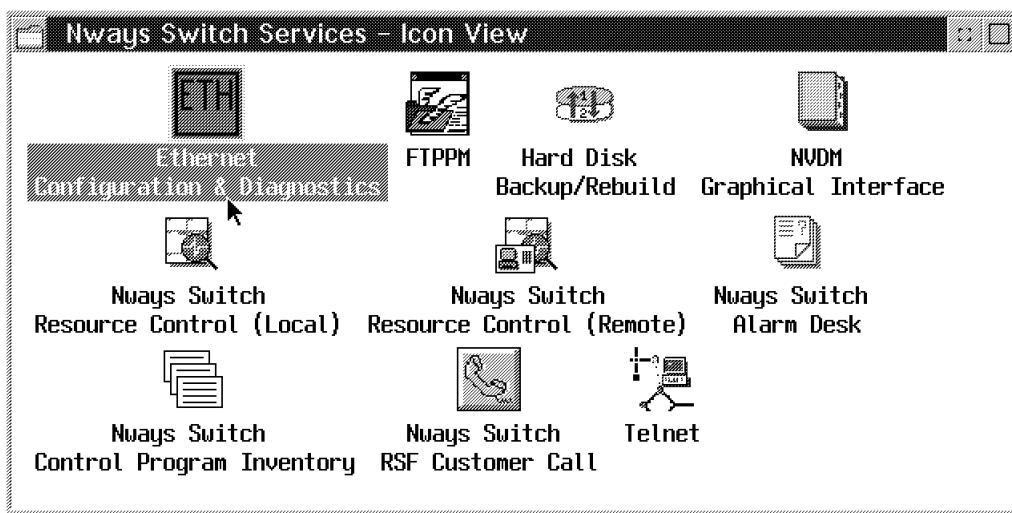
– In the **Ethernet Configuration & Diagnostics** window select the **Display / Change Adapter Configuration** option, using the arrow key, then press the **Enter** key.

– In the **Selected ADAPTER I/O PORT ADDRESS** window select the I/O port using the **Tab** key, press the **Enter** key.

– You obtain the following window. Modify your parameters to match those shown in the following screen.

```
┌──────────────────────────────────────────────────────────────────────┐
│              DISPLAY / CHANGE ADAPTER CONFIGURATION                    │
│                                                                        │
│   Novell Configuration            None                                 │
│   I/O Bus Address                 0X300        ---> 0X300              │
│   Interrupt Assignment            IRQ5         ---> IRQ5               │
│   Physical media                  Thin Ethernet ---> Thin Ethernet (Note) │
│   Adapter Architecture            Shared Memory ---> Shared Memory     │
│   Boot Prom                       No boot Prom                         │
│   Advanced Configuration Options                                       │
│                                                                        │
│   Temporarily change Configuration                                     │
│   Save Configuration                                                   │
│   Return to previous Menu                                              │
│   ------------------------------------------------------------------   │
│   Make selection using arrows keys and <enter>                         │
│   Scroll through option using <TAB>                                    │
│                                                                        │
└──────────────────────────────────────────────────────────────────────┘
```
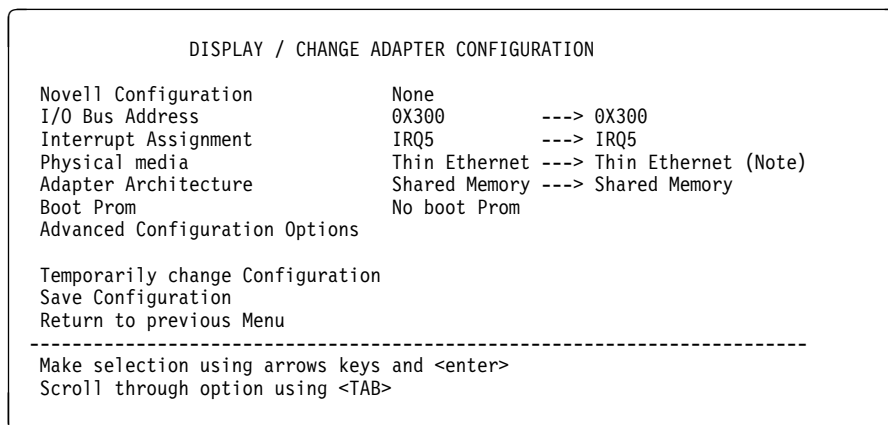
Note: Depending of your cabling you may have the following option:

```
│   Physical media                  TPI(10BaseT) ---> TPI (10baseT)     │
```

(Step **003** continues)

003 (continued)

– Once the parameters have been changed, select the **Advanced Configuration Options**, then press the **Enter** key.

– You obtain the following window. Modify your parameters to match those shown in the following screen.

```
        ADVANCED CONFIGURATION OPTIONS

  CHRDY generated as fast
  TPI Link integrety checking enabled
  No BOOT Rom

  Return to previous menu
```
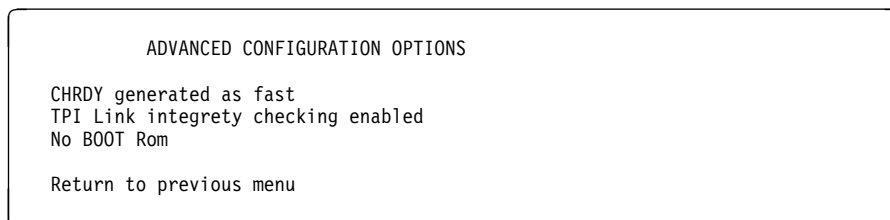
– Once the parameters have been changed, select the **Return to previous menu** option, then press the **Enter** key.

– On the next window, select the **Save Configuration** option, then press the **Enter** key.

– On the next window, select the **Quit Config** option, then press the **Enter** key.

– The following window is displayed

```
        Press 'X' to Confirm Exit,
        Press 'C' to Continue
```
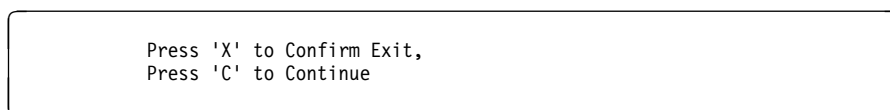
– Press the **X** key to return to the Nways Switch Desktop window.
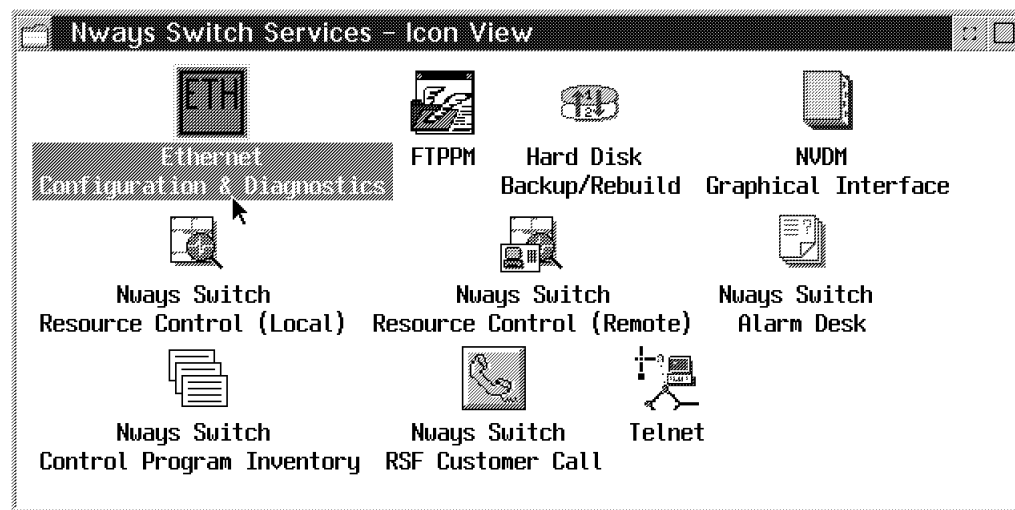
– Problem solved. Return the Nways Switch administration station to the customer. Call the Network Support Center to inform them, follow their instructions, then go to "Leaving Procedure" on page 5-18.

MAP 0420: After Hard Disk Drive Exchange on NAS Based on 6282

001

 – Run the advanced diagnostic tests using the following procedure.

- Insert the **Diagnostic** diskette in the diskette drive.

- Switch ON the Nways Switch administration station and the display using their respective power ON/OFF switch located on the front panel.

- Do not press **F1** when the icon appears.

- Several Messages are displayed. Wait until the following window is displayed.

```
Diagnostic - Interactive Tests - Hardware Info - Utility - Quit - F1=Help




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      Diagnostic tests that check the functionality of your PC.
      Use the Cursor keys and ESC to move in menus. Press ENTER to select.
```

- Select the **Diagnostics** option in the title bar and press **Enter**.

- The following window is displayed:

```
Diagnostic - Interactive Tests - Hardware Info - Utility - Quit - F1=Help

Run Normal Test
Run Quick Test
CPU/Coprocessor
System Board
Video Adapter
Serial Ports
Parallel Ports
Fixed Disks
Diskette Drives
Other Devices
Memory Test - Full
Memory Test - Quick

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      Use the Cursor keys and ESC to move in menus. Press ENTER to select.
```

- Select the **Fixed Disks** option, then press **Enter**.

- The following window is displayed:

```
                    FIXED DISK TEST CATEGORY (6/10)

                         Disk 0      Disk 1      Disk 2        Disk 3
                         4219 MB     2555 MB
Controller                  >>          >>
Hi-Low                      >>          >>
Funnel Seek                 >>          >>
Track to Track Seek         >>          >>
Random Seek                 >>          >>
Linear Verify               >>          >>
Radom Verify                >>          >>

                 Start Track     0           0
                 End Track     8183        4959

Clear All - Run Screen - Run All - Options - Next Cat - Prev Cat
```
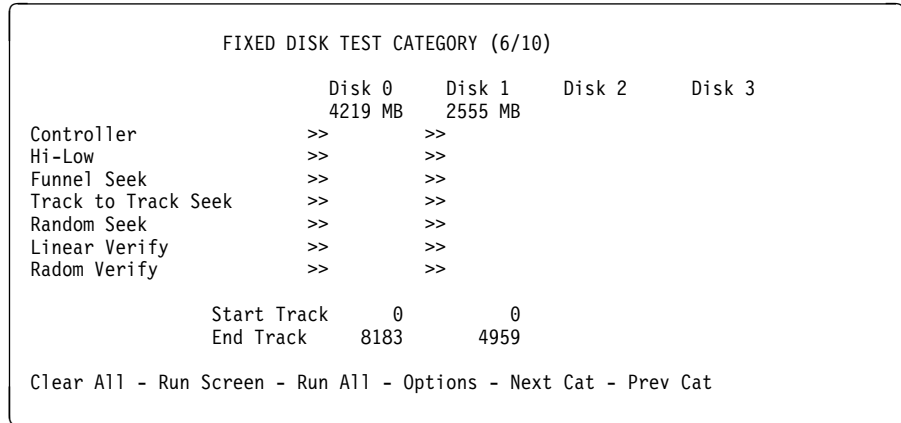
- Select the **Clear All** option to remove all the chevrons >>.

- With the arrows keys and the space bar select the test that you want to run on the desired Disk. At each selection a chevron >> is displayed.

- Select the **Run Screen** option at the bottom of the window. All the tests previously selected are started.

When the hard disk has been successfully tested, the **Fixed Disk Test Category** window is again displayed. The test result appears in front of each selected test.

Is the diagnostic error free?
Yes No

| **002** |

Go to *IBM Personal Computer 300 Series, 700 Series, IntelliStation; Hardware Maintenance Manual* S83G-7789.

| **003** |

You must restore the Nways Switch administration station disk after its replacement. Use the following table to select the procedure according to the hard disk that you have changed.

Hard Disk Exchanged	Go to
You have changed the first disk	Step 004
You have changed the second disk	Step 008 on page 5-12

| **004** |

– You have changed the first hard disk, continue using the following procedure.

- Press **Esc** for exit from the test window.

- Select **Quit** in the title bar, then press **Enter**.

- The following window is displayed:

MAP 0420 (continued)

```
Exit Diags
Park HD
Reboot
```

- Remove the **Diagnostic** diskette.
- Insert the **Restore 0** diskette in the diskette drive A.
- Select **Reboot**, then press **Enter**.
- You obtain the following screen.

```
                    IBM
      IBM Nways Switch Control Program
             NAS Disk Restore

      (c) Copyright IBM Corp. 1987, 1997. All rights reserved

      Remove the diskette from drive A.
      Insert the NAS Restore Diskette 1 into the Drive A
      Then, Press Enter
```

- Insert the **Restore 1** diskette, then press **Enter**. Continue with Step 005.

005

– You have changed the first hard disk, continue using the following procedure.

- The boot of diskette takes several minutes. Successively the IBM logo, the WARP logo and the following messages are displayed on screen:

```
      Do you really want to restore the primary disk on a xxxxx MB drive (Y/N)?
```

Note: xxxxx specify the disk size.

- Type **Y** then press the **Enter** key

```
      Do you want to stop the restore operation (Y/N)?
```

- Type **N** then press the **Enter** key.

```
      This is your last chance...
      If you reply "Y" the primary disk will be restored.
      Are you sure you want to continue restore (Y/N)?
```

- Type **Y** then press the **Enter** key.
- Disk partitionning is started and the following messages are displayed:

```
Creating --> Partition at location xxxx size yyy
Creating --> Partition at location xxxx size yyy
Creating --> Partition at location xxxx size yyy
--------          ----------------------------------
```

- At the end of the operation the following message is displayed:

```
Restart system to maintain configuration integrity.
The new MBR has successfully been written.

 First Disk preparation (FDISK) complete.
Remove the diskette from the drive.
Restore will continue from the second disk.

Press any key to continue.
```

- Remove the **Restore** diskette and press any key.

- One message appears

```
Booting the maintenance partition
```

- The IBM logo appears followed by WARP logo. The desktop of the maintenance partition is orange. The following messages is displayed on the screen:

```
Do you really want to restore the primary disk (Y/N)?
```

- Type **Y** then press the **Enter** key.

```
Do you want to stop the restore operation (Y/N)?
```

- Type **N** then press the **Enter** key.

```
This is your last chance.
If you reply "Y", the primary disk will be restored.
Are you sure you want to continue restore (Y/N)?
```

- Type **Y** then press the **Enter** key.

- Formating the partitions is started.

```
Formatting the partitions on Disk1
The new type of the system is...
```

- Several messages appear.

```
Warning: All data on hard disk C will be lost
Proceed with format (Y/N)
```

- The procedure continue automatically
(Step **005** continues)

MAP 0420 (continued)

005 (continued)

- Several messages addressing other partitions (F, G,...) are displayed on the screen, according to the running operation.

```
Partitions are formatted on the primary disk.
Files are decompressed and restored on the primary disk.
An automatic boot is done on the primary disk and
the data base are restored.
```

(this operation takes about thirty to forty minutes, The reboot of the primary disk appears followed by messages and files names)

- At the beginning of this operation the following message is displayed on the screen:

```
Database restore started at hh.mm.ss. Date
The command completed successfully
```

- At the end of this operation, for each data base, the following message is displayed on the screen:

```
Restore of database xxxx successful at hh.mm.ss. Date.
```

- When the data base has been restored, the following message is displayed:

```
Disk 1 restore complete
```

- Click on OK.

Do you obtain the "Disk 1 restore complete" message?
Yes   No

| **006**

  Call the Network Support Center for assistance.

007

The primary hard disk replacement and restore has been done successfully. IML is restarted automatically. Go to "Leaving Procedure" on page 5-18.

008

– You have changed the second hard disk, continue using the following procedure.

(Step **008** continues)

008 (continued)

- Remove the **Diagnostic** diskette.

- Simultaneously press the **Ctrl/Alt/Del** keys on the keyboard.

- When the Nways Switch administration station is initialized the Nways Switch Desktop window is displayed

| Nways Switch Configuration | Nways Switch How to use... | Nways Switch Installation | Nways Switch Services |

- Double click on the **Nways Switch Services** icon.

| Nways Switch Configuration | Nways Switch How to use... | Nways Switch Installation | Nways Switch Services |
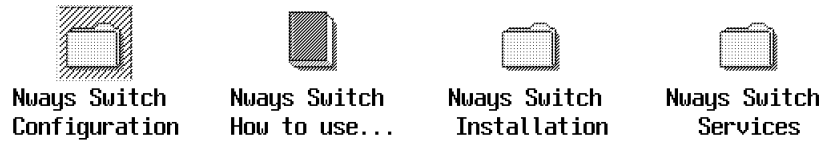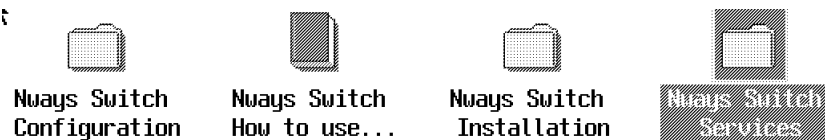
- Double click on the **Hard Disk Backup/Rebuild** icon.

```
┌─────────────────────────────────────────────────────────────────┐
│ ▭  Nways Switch Services - Icon View                        ⌷ □ │
├─────────────────────────────────────────────────────────────────┤
│                                                                   │
│       ┌ETH┐                                                       │
│                                                                   │
│       Ethernet              FTPPM      Hard Disk        NVDM       │
│  Configuration & Diagnostics        Backup/Rebuild  Graphical Interface │
│                                                                   │
│       Nways Switch            Nways Switch        Nways Switch     │
│  Resource Control (Local)  Resource Control (Remote)  Alarm Desk   │
│                                                                   │
│       Nways Switch           Nways Switch      Telnet             │
│  Control Program Inventory  RSF Customer Call                      │
│                                                                   │
└─────────────────────────────────────────────────────────────────┘
```
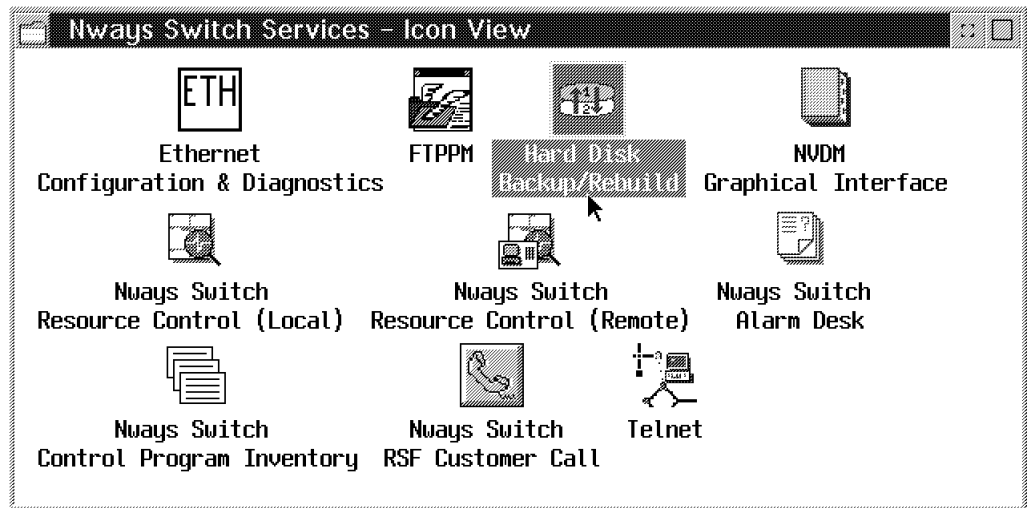
- Double click on the **Second Disk Rebuild** icon.

```
┌──────────────────────────────────┐
│ ▨ Hard Disk Backup/Rebuild - ⌷ □ │
├──────────────────────────────────┤
│                                    │
│                                    │
│     First disk    Second disk      │
│      Backup        Rebuild         │
│                                    │
└──────────────────────────────────┘
```

(Step **008** continues)

MAP 0420 (continued)

008 (continued)

- The following messages are displayed on screen:

```
Do you really want to restore the backup disk on a xxxxx MB drive (Y/N)?
```

Note: xxxxx specify the disk size.

- Type **Y** then press the **Enter** key

```
Do you want to stop the restore operation (Y/N)?
```

- Type **N** then press the **Enter** key.

```
This is your last chance...
If you reply "Y" the backup disk will be restored.
Are you sure you want to continue restore (Y/N)?
```

- Type **Y** then press the **Enter** key. The restore operation is started automatically. During the restore the NAS reboots. At the end of the restore operation the following message is displayed on the screen:

```
Restore Complete Normal operation resume.
```

Do you obtain the "Restore complete" message?
Yes No

    009

    Call the Network Support Center for assistance.

010

The secondary hard disk replacement and restore has been done successfully. Go to "Leaving Procedure" on page 5-18.

MAP 0430: After Other FRUs Exchange on NAS Based on 6282

$\boxed{001}$

– Run the advanced diagnostic tests using the following procedure:

- Insert the **Diagnostic** diskette in the diskette drive.
- Switch ON the Nways Switch administration station and the display using their respective power ON/OFF switch located on the front panel.
- Do not press **F1** when the icon appears.
- Several Messages are displayed. Wait until the following window is displayed.

```
Diagnostic - Interactive Tests - Hardware Info - Utility - Quit - F1=Help




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Diagnostic tests that check the functionality of your PC.
Use the Cursor keys and ESC to move in menus. Press ENTER to select.
```

- Select the **Diagnostics** option in the title bar and press **Enter**.
- The following window is displayed:

```
Diagnostic - Interactive Tests - Hardware Info - Utility - Quit - F1=Help

Run Normal Test
Run Quick Test
CPU/Coprocessor
System Board
Video Adapter
Serial Ports
Parallel Ports
Fixed Disks
Diskette Drives
Other Devices
Memory Test - Full
Memory Test - Quick

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Use the Cursor keys and ESC to move in menus. Press ENTER to select.
```

- Select the **Run Quick Test** option, then press **Enter**.
- During test execution several windows are displayed showing the part tested and the test status. Wait until the tests stop.

(Step **001** continues)

MAP 0430 (continued)

001 (continued)

Is the test error free?
Yes   No

> ```
> │
> │   ┌─────┐
> │   │ 002 │
> │   └─────┘
> ```

> – Go to *IBM Personal Computer 300 Series, 700 Series, IntelliStation;*
>   *Hardware Maintenance Manual* S83G-7789.

```
┌─────┐
│ 003 │
└─────┘
```

– Continue with the following procedure.

- Press **Esc** for exit from the test window.

- Select **Quit** in the title bar, then press **Enter**.

- The following window is displayed:

  ```
  ┌──────────┐
  │ Exit Diags │
  │ Park HD    │
  │ Reboot     │
  └──────────┘
  ```
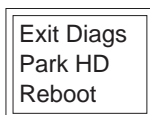
- Remove the **Diagnostic** diskette.

- Select **Reboot**, then press **Enter**.

- The system is booted. At the end of the boot, the Nways Switch Desktop
  window should be be displayed.

Nways Switch   Nways Switch   Nways Switch   Nways Switch
Configuration   How to use...   Installation   Services

Is the Nways Desktop window displayed?
Yes   No

> ```
> │
> │   ┌─────┐
> │   │ 004 │
> │   └─────┘
> ```

> – Problem solved. Return the Nways Administration Station to the customer.
>   Call the Network Support Center to inform, follow their instructions, then go
>   "Leaving Procedure" on page 5-18.

```
┌─────┐
│ 005 │
└─────┘
```

– Restart problem determination, or call your support for help.

Display Exchange

Display Removal

1. Switch OFF the display using the power ON/OFF switch located on the front panel.

2. Disconnect the power plug of the display from the ac power source.

3. At the rear of the Nways Switch administration station disconnect the display cable **L**
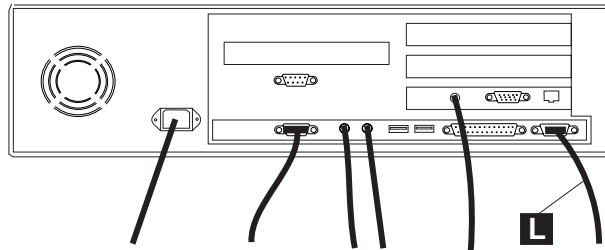
4. If the display is installed in a rack continue with Step 5, otherwise go to Step 6.

5. Slide out the display from the rack and install it on a table.

   Attention

   Be carefull the weight of the display assembly is about 18 kg.

6. Exchange the display then go to "Display Install" on page 5-18.

Display Install

1. Unpack the display.

2. Install the display in the rack (if the defective display was previously removed).

3. At the rear of the Nways Switch administration station, connect the display signal cable **L** (refer to Figure 5-2).
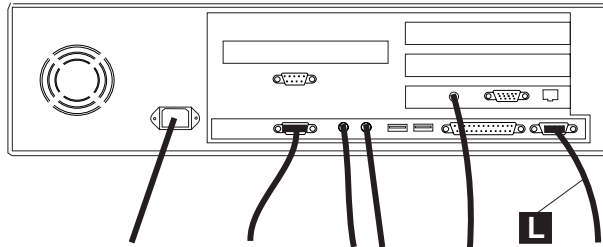
Figure   5-2. Display and Keyboard Cables Connection to the NAS

4. Connect the display power cable to the electrical outlets.

5. Switch ON the display using the power ON/OFF switch located on the front panel.

6. Check that your display is working.

7. Go to "Leaving Procedure."

Ending the Exchange Procedure

1. If you have another FRU to exchange return to "Nways Switch Administration Station FRU Exchange" on page 5-2. Otherwise continue with the next step.

2. After you have exchanged all faulty FRUs, continue with "Leaving Procedure."

Leaving Procedure

1. After you have terminated your investigation, call the Network Support Center to inform them and follow their instructions, if not already done.

2. Before leaving do not forget to Switch OFF the display of the NAS.

Appendix A. Locations

2220-300 and 2220-500 Locations (Front View)

Display

NAS

Service
Drawer

Control
Panel

FAN 2

FAN 1

CPA

TPAS
up to 8

Clock
Module
(Optional)

Power
Input 2

Power
Input 1
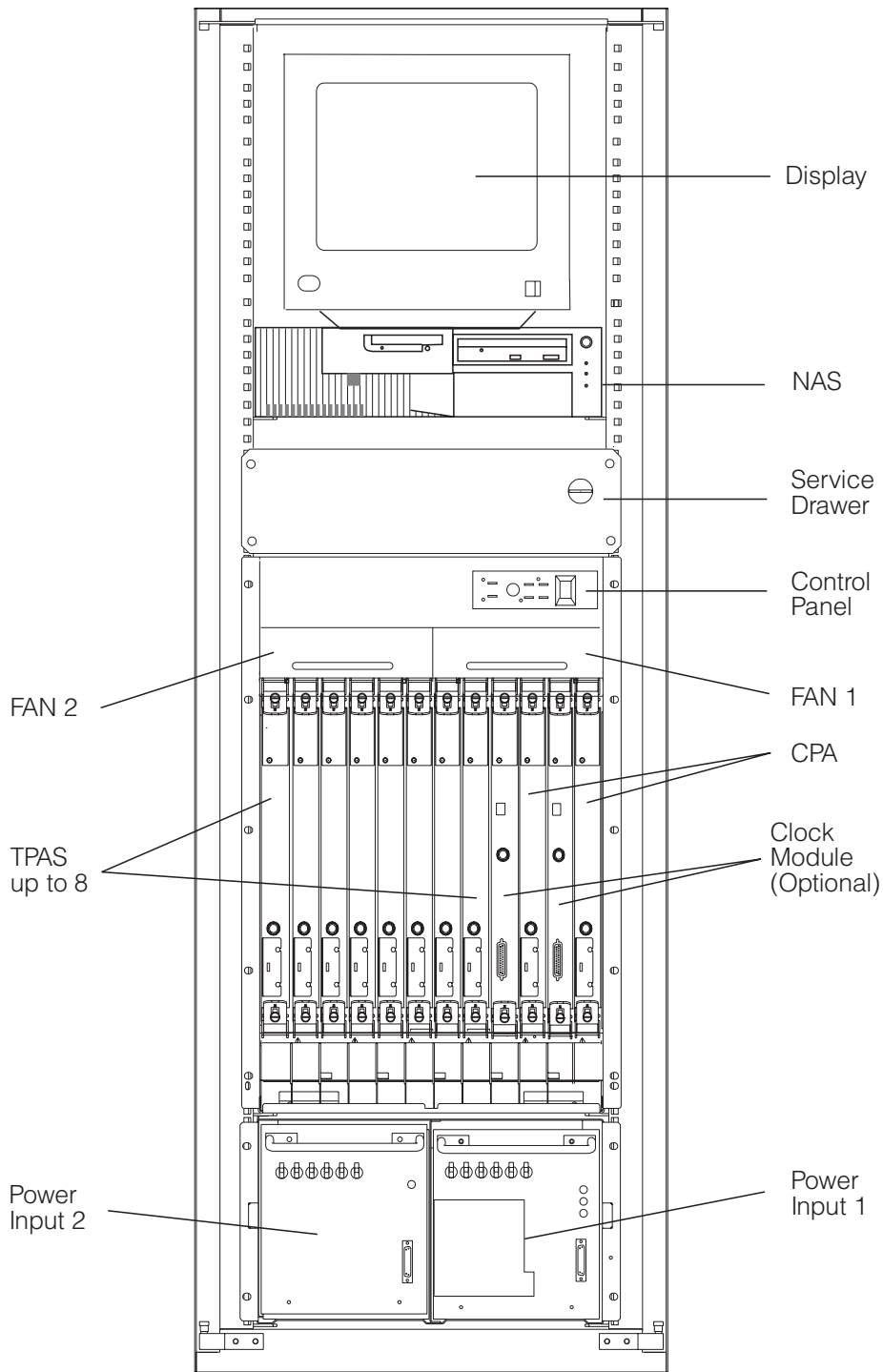
Figure   A-1. 2220-300 and 2220-500 Front View (Adapter Side)

2220-300 and 2220-500 Locations (Rear View)

ARCs

LCBB
or
LCBE

LCBB

NAS

Modem

Switches

LICs
up to 8

APC

DCD 1

DCD 2

Office
Clock
Tailgate
(Optional)

APC
Tailgate

Power
Input 1

Power
Input 2
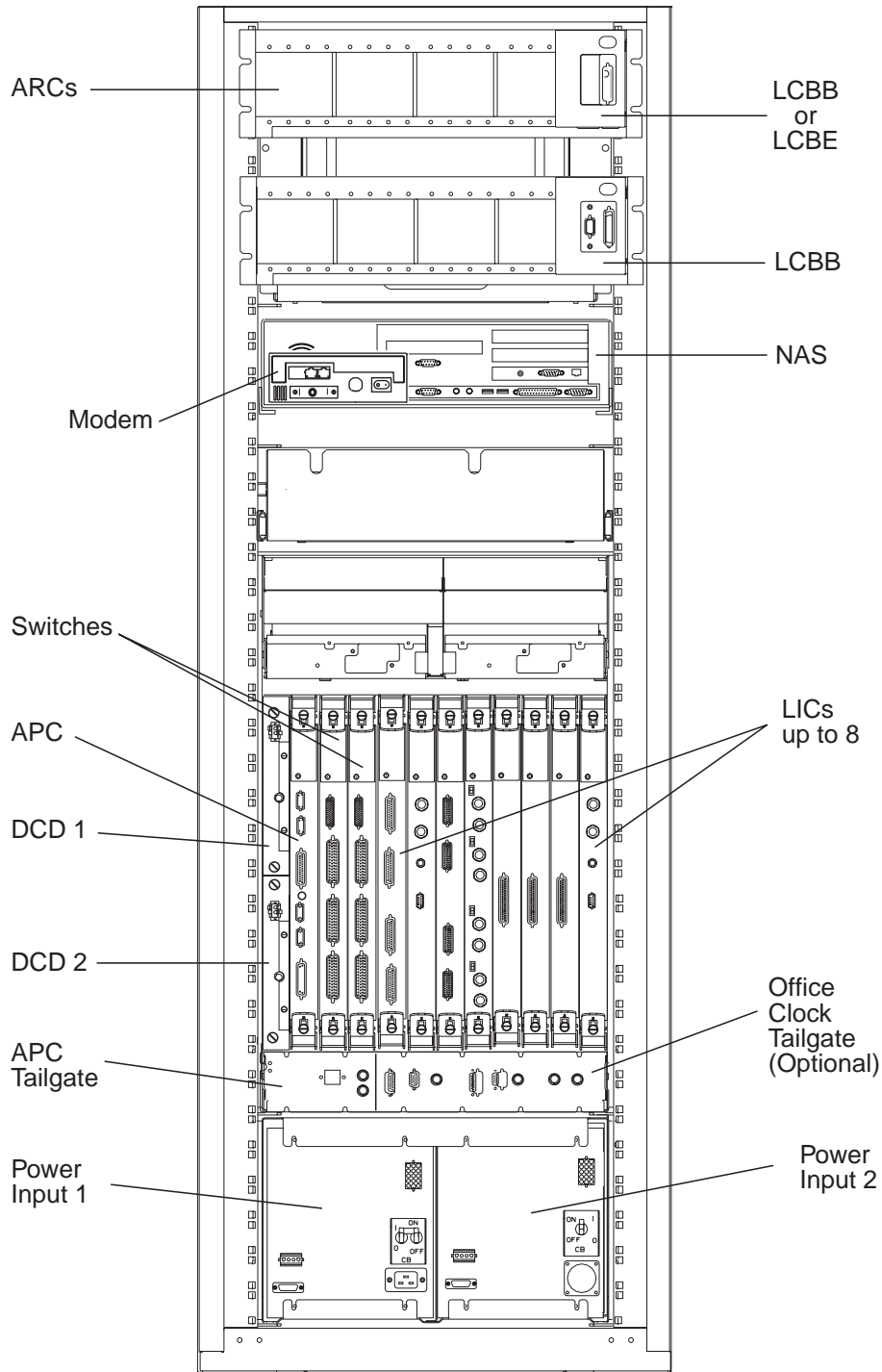
Figure A-2. 2220-300 and 2220-500 Rear View (LIC Side)

Rack Locations

NAS
Area

Service
Drawer

Logic
Subrack
Area

Power
Subrack
Area

View A

View B

View A

LCBE

LCBB

View B
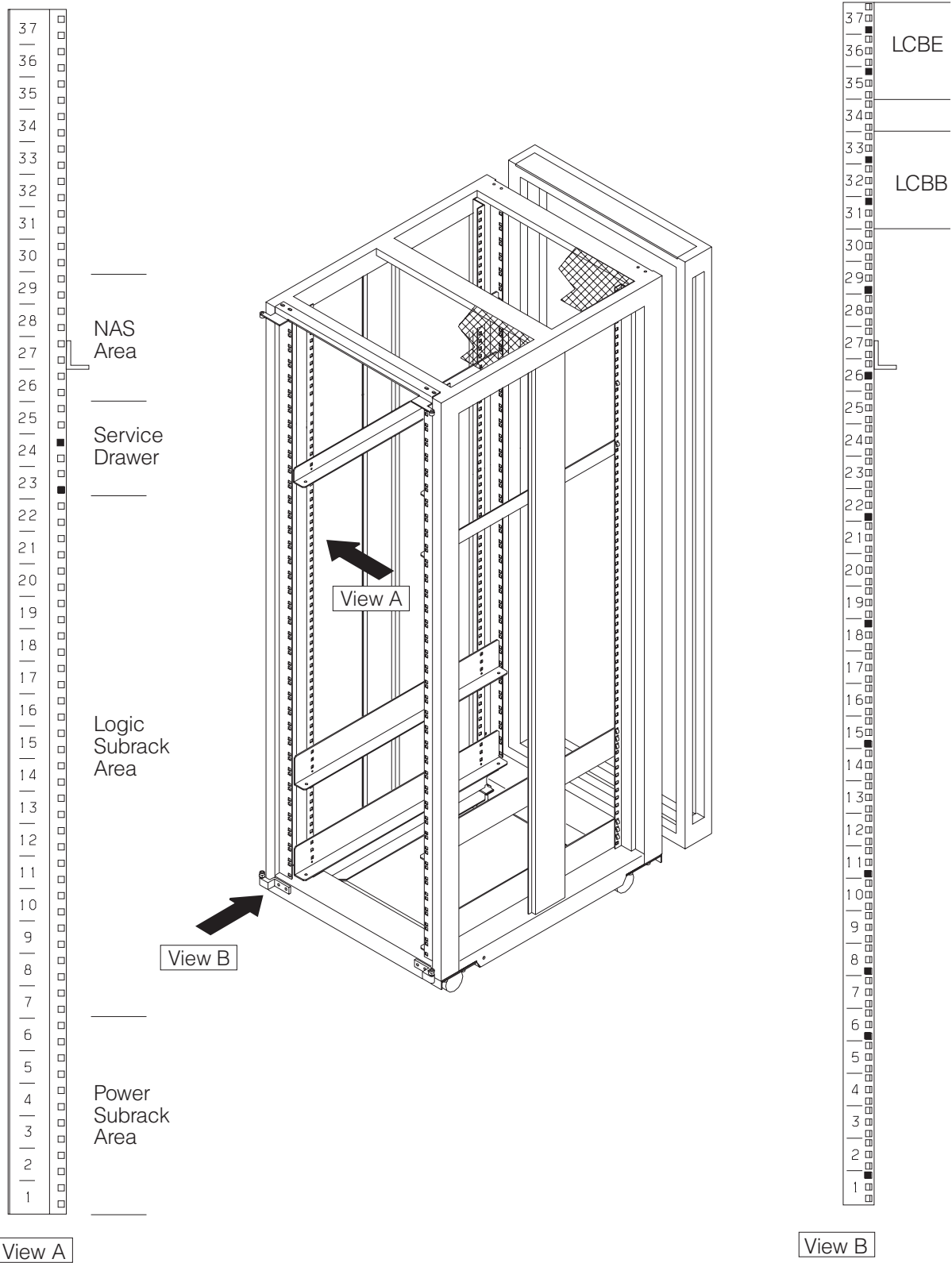
Figure   A-3. Rack Labels and Locations (Front View)

Appendix B. Configuration Reference for NAS Based on 6282

From the following window select the different options and go to the new windows for checking.

```
Configuration/Setup Utility

  Select Option:

  - System Summary             1
  - Product Data               2
  - Device and I/O Ports       3
  - Start Options              4
  - Date and Time              5
  - System Security            6
  - Advanced Setup             7
  - ISA Legacy Resources       8
  - Advanced Power Management  9

  Save Settings
  Restore Settings
  Load Default Settings

  Exit Setup
```

1

```
        System Summary

  Processor        Pentium MMX
  Processor Speed  200MHz
  Math Coprocessor Internal
  System Memory    640 KB
  Extended Memory  63 MB
  Video Controller Cirrus Logic GD-5436/46 VGA
  Cache Size       256 KB  (Note 1)
  Cache State      Enabled
  Shadow RAM       384 KB
  System ROM       F000h-FFFFFh
  Memory Type      Non-Parity
  Diskette Drive A 1.44 MB 3.5"
  Diskette Drive B Not Installed
  Hard Disk Drive 0 4224 MB (Note 2)
  Hard Disk Drive 1 2560 MB (Note 2)
  CD-ROM Drive 2   Installed
  Hard Disk Drive 3 Not Installed
```

Note:

Notes:

1. If the value of the **Cache Size** is not correct, set it before continuing (see Appendix C, "How to Set the Cache Size Value" on page C-1).

2. The hard disk drive size may be larger.

2

```
   Product Data

Machine type/ Model          628278U
Flash EEPROM Revision Level  NDKT22AUS
System Board Identifier      7BUBNWARFY4
System Serial Number         xxxxxxx
BIOS Date                    09/09/97
```

3

```
       Device and I/O Ports

  Mouse                    (Installed)
  Diskette Drive A:        (1.44 MB 3.5")
  Diskette Drive B:        (Not Installed)

- Serial Port Setup...
- Parallel Port Setup...
- Video Setup...
- IDE Drives Setup...
```

```
 Serial Port Setup

Serial Port A Address        (3F8h)
Serial Port A IRQ            (IRQ 4)
Infra Red Port Address       2F8h
Infra Red Port Address       (IRQ 3)
```

```
 Parallel Port Setup

Parallel Port                    (3BCh)
Parallel Port Mode               (Standard)
Parallel Port Extended Mode      (Bidirectional)
Parallel Port Extended Mode DMA (No DMA       )
Parallel Port IRQ                (IRQ 7)
```

```
Video Setup

Video Controller             Cirrus Logic GD-5436/46 VGA
Video Memory                 2048 KB
DDC Monitor checking         (Enabled)
Palette Snooping             (Disabled)
Video Feature Connector      (Disabled)
Video interrupt              (Disabled)

Video Display Type           (IBM 6541-DDC        )
Monitor Horizontal Frequency (Not Supported)
Refresh Rate for ( 640 X  480) (85 Hz)
Refresh Rate for ( 800 X  600) (85 Hz)
Refresh Rate for (1024 X  768) (60 Hz)
Refresh Rate for (1180 X 1024) (not supported)
Refresh Rate for (1600 X 1200) (not supported)
```

```
   IDE Drives Setup

- Hard Disk Drive 0
- Hard Disk Drive 1
- CD-ROM Drive    2
- Hard Disk Drive 3
```

```
 Hard Disk Drive 0

Size Disk Drive 0      (4224 MB)
IDE Performance        (High Performance)
IDE Read Refresh       (Disable)
```

```
   Hard Disk Drive 1

Size Disk Drive 0      (2560 MB)
IDE Performance        (High Performance)
IDE Read Refresh       (Disable)
```

```
   CD-ROM Drive 2

Size                   Installed
IDE Performance        (High Performance)
```

4

```
      Start Options
 Sartup Sequence

 Keyboard Numlock State        (ON)
 Keyboard Speed                (Fast)
 Disketteless Operation        (Disabled)
 Keyboardless Operation Mode   (Disabled)
 Power On Self-Test            (Enhanced)
 Power On Logos                (Enabled )
 Power On F1/Esc Option        (Enabled )
 Virus detection               (Disabled)
```

```
    Sartup Sequence

First Startup Device              (Diskette Drive 0)
Second Startup Device             (Hard Disk 0     )
Third Startup Device              (Disabled        )
Fourth Startup Device             (Disabled        )

Automatic Power On Startup Sequence (Enabled)
First Startup Device              (Hard Disk 0     )
Second Startup Device             (Disabled        )
Third Startup Device              (Disabled        )
Fourth Startup Device             (Disabled        )
```

5

```
Date and Time

    Time              HH/MM/SS
    Date              MM/JJ/YY
```

6

```
System Security

 - Secure Hard Disk Drives and Diskettes Drives
 - POST-BIOS Update
 - Power On Password
 - Administrator Password
```

```
Secure Hard Disk Drives and Diskette Drives

 Hard Disk Access          (Enable )
 Diskette Drive Access     (Enable )
```

```
   POST/BIOS Update

Update POST6BIOS from Network  (Enabled)
```

```
   Power-On Password

Enter your new Power-on password twice.

Enter Power-on Password       (       )
Enter Power-on Password Again (       )

Change Power-on Password
Delete Power-on Password

Password Prompt               (Dual)
```

```
Administrator Password

Enter your new Administrator password twice.
Enter Administrator Password          (        )
Enter Administrator Password Again    (        )

Change Administrator Password
Delete Administrator Password

Power-on Password changeable by user        (NO)
```

7

```
    Advanced Setup

Warning:

Items on the following menus control advanced Hardware features.
If they are configured incorrectly, the system might
malfunction.

- Cache Control
- ROM Shadowing
- PCI Control
- Plug and Play Control
```

```
Cache Control

  Cache State          (Enabled    )
  Cache Size           256 KB        (note)
```

Note: You can not set this value in this procedure. For changing the **Cache Size**
value see the Appendix C, "How to Set the Cache Size Value" on
page C-1.

```
ROM Shadowing

F0000h-FFFFFh (System BIOS)          (Enabled)
E8000h-EFFFFh                        (Enabled)
E0000h-E7FFFh                        (Enabled)
DC000h-DF000h                        (Disabled)
D8000h-DB000h                        (Disabled)
D4000h-D7000h                        (Disabled)
D0000h-D3000h                        (Disabled)
CC000h-CF000h                        (Disabled)
C8000h-CB000h                        (Disabled)
C0000h-C7FFFh (Adapter Video BIOS)   (Enabled)
```

```
        PCI Control

PCI Adapter Reset      (Enabled    )

PCI Bus Master...
Network Adapters       (Disabled)
Mass Storage Adapters  (Enabled)
Display Adapters       (Disabled)
Multimedia Devices     (Enabled)
Communication Adapter  (Enabled)
Serial Adapter         (Enabled)
```

```
   Plug and Play Control

   Set Device Mode                (Enabled    )
   Address Decode                 (16-Bit)
   Plug and Play Operating System (No)
```

■8

```
ISA Legacy Resources

Information: ISA legacy Resources (DMA, Interrupts, Memory,
            and I/O Ports) are resources that are used by
            ISA adapter which are not Plug-and-Play adapters.
            Use this menus to indicate which resources are
            Used by ISA Legacy adapters. Resources used by
            the system are already indicated.

- Memory Resources
- I/O Ports Resources
- DMA Resources
- Interrupt Resources
```

```
Memory Resources

A0000h-A3FFFh              (Video)
   -    -                     -
BC000h-BFFFFh              (Video)
C0000h-C1FFFh              (Video BIOS)
   -    -                     -
C6000h-C7FFFh              (Video BIOS)
C8000h-C9FFFh              (Available)
   -    -                     -
D2000h-D3FFFh              (Available)
D4000h-D5FFFh              (Not available)
D6000h-D7FFFh              (Not available)
D8000h-D9FFFh              (Available)
   -    -                     -
DE000h-DFFFFh              (Available)
E0000h-FFFFFh              (System BIOS)
100000h-1FFFFh            (Available)
   -    -                     -
E00000h-EFFFFFh            (Available)
F00000h-FFFFFFh            (Available)
```

```
   I/O Port Resources

   100h-103h   (Available)
    -    -        -
   16Ch-16Fh   (Available)
   170h-173h   (IDE Drives)
   174h-177h   (IDE Drives)
   178h-17Bh   (Available)
    -    -        -
   1ECh-1EFh   (Available)
   1F0h-1F3h   (IDE Drives)
   1F4h-1F7h   (IDE Drives)
   1F8h-1FBh   (Available)
    -    -        -
   2F4h-2F7h   (Available)
   2F8h-2FBh   (Serial Port B)
   2FCh-2FFh   (Serial Port B)
   300h-303h   (Not available)
   304h-307h   (Available)
    -    -        -
   370h-373h   (Available)
   374h-377h   (System Board)
   378h-37Bh   (Available)
    -    -        -
   3B8h-3BBh   (Available)
   3BCh-3BFh   (Parallel Port)
   3C0h-3C3h   (Available)-
    -    -        -
   3ECh-3EFh   (Available)
   3F0h-3F4h   (System Board)
   3F4h-3F7h   (System Board)
   3F8h-3FBh   (Serial Port A)
   3FCh-3FFh   (Serial Port A)
```

```
   DMA Resources

   Channel 0     (Available      )
   Channel 1     (Available      )
   Channel 2     (Diskette       )
   Channel 3     (Available      )
   Channel 4     (Available      )
   Channel 5     (Available      )
   Channel 6     (Available      )
   Channel 7     (Available      )
```

```
Interrupt Resources

        0           Timer
        1           Keyboard
        2           Interrupt Controller
        3           Serial Port B
        4           Serial Port A
        5           (Not available  )
        6           Diskette
        7           Parallel port
        8           Real Time Clock
        9           (Available      )
       10           (Available      )
       11           (Available      )
       12           Mouse
       13           Coprocessor
       14           IDE Drives
       15           IDE Drives
```

9

```
Advanced Power Management

 APM BIOS Mode                  (Enabled        )

 - Automatic Hardware Power Management
 - Activity Monitor
 - Automatic Power On
```

```
            Automatic Hardware Power Management

 Automatic Hardware Power Management  (Enabled)
    Time to Level 1 Power Management  (15 min)
          System Power                (ON)
          Processor Speed             (25%  )
          Display                     (Standby)
    Time to Level 2 Power Management  (30 min)
          System Power                (ON)
          Processor Speed             (01%  )
          Display                     (Suspend)
    Time to Level 3 Power Management  (1 hr  )
          System Power                (ON)
          Processor Speed             (01%  )
          Display                     (OFF     )
    Hard Disk Drive                   (Enabled)
```

```
        Activity Monitor

   Hard Files    (Enabled)
   IRQ 1         (Enabled)
   IRQ 2         (Enabled)
   IRQ 3         (Enabled)
   IRQ 4         (Enabled)
   IRQ 5         (Enabled)
   IRQ 6         (Enabled)
   IRQ 7         (Enabled)
   IRQ 8         (Enabled)
   IRQ 9         (Disabled)
   IRQ10         (Disabled)
   IRQ11         (Disabled)
   IRQ12         (Enabled)
   IRQ13         (Enabled)
   IRQ14         (Disabled)
   IRQ15         (Disabled)
```

```
   Automatic Power On

  Serial Port/ Modem Ring Detect     (Disabled)


  Wake Up on Alarm              (Disabled)
    Alarm Date MM/DD/YY         (MM/DD/YY)
    Alarm Time                  (HH:mm)

- Wake on LAN
```

```
        Wake on LAN

   Warning

   The following item controls LAN wake up
   requests only if a network adapter is
   installed in your system, the network
   adapter supports wake up requests,
   and the network adapter is configured
   properly

   Wake on LAN                   (Disabled)
```

Appendix C. How to Set the Cache Size Value

1. From the **Configuration/Setup Utility** select the **Load Default Settings** option, then press **Enter**.

2. Exit from the **Configuration/Setup Utility** by selecting **Exit Setup** option.

```
  Settings were changed
          Do you want save them

   Yes, save and exit the Setup utility
   No, exit the Setup Utility without saving
   No, return to the Setup Utility
```

3. Select the **Yes, save and exit Setup utility** option, then press **Enter**.

4. When the IBM logo is displayed, press the **F1** key to display again the **Configuration/Setup Utility** and check that the **Cache Size** is well set at 256.

5. Return to the procedure where you came from.

C-1

Appendix D. Modem Part Number

This section lists the modem part number by country.

Nways Switch HAYES Modem Part Number

Country	Modem Part Number	Telecommunication Cable Part Number
Argentina	80G4535	29H5482
Australia	80G4536	29H5476
Brazil	80G4537	29H5482
Canada	80G4538	29H5482
Denmark	80G4539	29H5471
Finland	80G4540	29H5472
France	80G4541	29H5479
Germany	80G4542	29H5477
Hong Kong	80G4543	29H5469
Iceland	80G4544	29H5475
Ireland	80G4545	29H5482
Italy	80G4546	29H5480
Japan	80G4547	29H5482
Morocco	80G4548	29H5482
New Zealand	80G4549	29H5469
Norway	80G4550	29H5474
Netherlands	80G4551	29H5473
Switzerland	80G4552	29H5478
Sweden	80G4553	29H5475
UK	80G4554	29H5469
USA	80G4557	29H5482

Bibliography

This section lists prerequisite and related publications.

Nways Switch Publications

- *2220 Nways BroadBand Switch At a Glance, an Overview*, GA33-0292

- *2220 Nways BroadBand Switch Planning Guide*, GA33-0293

- *2220 Nways BroadBand Switch Configuration Guide*, GA33-0474

- *2220 Nways BroadBand Switch Physical Lines Interface Specifications, External Cable References*, GA33-0379

- *2220 Nways BroadBand Switch Frame Relay Interface Specifications*, GA33-0374

- *2220 Nways BroadBand Switch HDLC Interface Specifications*, GA33-0375

- *2220 Nways BroadBand Switch CES Interface Specifications*, GA33-0376

- *2220 Nways BroadBand Switch ATM Interface Specifications*, GA33-0378

- *2220 Nways BroadBand Switch X.25 Interface Specifications*, GA33-0413

- *2220 Nways BroadBand Switch ISDN Interface Specifications*, GA33-0447

- *How to use the NAS*, online tutorial[1]

- *2220 Nways BroadBand Switch Setup Guide*, SY33-2105 (P/N 59G0544)

- *2220 Nways BroadBand Switch Service Guide*, SY33-2121 (P/N 02L4247)

- *Nways Switch Administration Station Setup and Service Guide (Based on 7585)*, SY33–2122 (P/N 02L4248)

- *Nways Switch Administration Station Setup and Service Guide (Based on 6282)*, SY33–2123 (P/N 02L4249)

- *2220 Nways BroadBand Switch Models 300, 500, and 501*; *Safety Information*, GA33-0401 (P/N 80G4908)

Nways 2220 Switch Manager Publications

- *IBM Nways 2220 Switch Manager for AIX Installation Guide*, SH11-3088

- *IBM Nways 2220 Switch Manager for AIX: Performance Monitoring and Accounting*, GA33-0366

- *IBM Nways 2220 Switch Manager User's Guide*, online manual[2]

Related Publications

- *Link Problem Determination Aid*, SY33-2064

- *Power Supply and Telecommunication Connections*, GA33-0054

- *IBM 7855 Guide to Operation*, GA33-0160

- *IBM 7857 Guide to Operation*, GA13-1839

- *IBM 7858 Professional Modem Guide to Operation*, GA13-1981

- For 7585 Model 001: *7585 Industrial Computer Information: Installation, Operation, Hardware Maintenance*, S06H-2298

- For 7585 Model P02: *7585 P02 Industrial Computer PCI/ISA: Information, Installation, Operation, Hardware Maintenance*, S76H-3792

- *IBM Personal Computer 300 Series, 700 Series, IntelliStation; Hardware Maintenance Manual*, S83G-7789

- *Planning for Enterprise Systems Connection Links* GA23-0367

World Wide Web

You can access the latest news and information about IBM network products, customer service and support, and microcode upgrades on the IBM World Wide Web server, via Internet, at the URL `http://www.ibm.com`

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[1] Online documentation delivered with the 2220 Nways Switch Control Program.

[2] Online documentation delivered with the Nways 2220 Switch Manager product.

Glossary

The following are the abbreviations and technical terms used in the 2220 Nways Switch library.

2220. The IBM 2220 Nways BroadBand Switch (also called Nways Switch) is a fast packet switch enabling high-speed communications over a broadband network. It implements the functions of the IBM Networking BroadBand Services (NBBS) architecture.

2220-300. 2220 Nways Switch Model 300.

2220-500. 2220 Nways Switch Model 500.

2220-501. 2220 Nways Switch Model 501.

2220 NSM. 2220 Nways Switch Manager

AAL. ATM adaptation layer.

ABR. Availability bit rate. A best effort service with a minimum bit rate and a maximum cell loss value.

ac. Alternating current.

access services. Functions that are performed by a port adapter of the IBM 2220 Nways BroadBand Switch to:

- Support the attachment of external user devices through port lines
- Prepare user data packets
- Control the input traffic on port lines
- Manage line protocols.

active remote connector (ARC). A connector that supplies the electrical and physical interfaces between a line interface coupler type 511 (LIC511) in an Nways Switch subrack and data circuit-terminating equipment (DCE) or data terminal equipment (DTE). ARCs are housed in line connection boxes (LCBs).

adapter. An Nways Switch module that can be used, depending on its hardware type and the code that it runs, as:

    Control point adapter

    Port adapter

    Trunk adapter

    Voice server adapter.

A trunk or port adapter is associated with a line interface coupler (LIC). A voice server adapter can be associated with a voice server extension (VSE).

ADPCM. Adaptive differential pulse code modulation.

AIS. Alarm indicator signal.

AIX. Advanced Interactive Executive.

alarm and power control (APC). In an Nways Switch, a module that connects the NAS, reports alarms, and controls the power supplies.

Alert Manager. An application that processes the SNA alerts received from IBM 3746s operating in IP mode.

AMI. Alternate mark inversion.

ANSI. American National Standards Institute.

APC. Alarm and power control (module).

AR. Access rate.

ARC. Active remote connector.

asynchronous transfer mode (ATM). A high-speed, connection-oriented switching and multiplexing protocol that transmits different types of traffic (voice, video, and data) simultaneously.

ATM. Asynchronous transfer mode.

ATMAn. ATM adapter type n (module).

ATM adaptation layer (AAL). In ATM devices, a set of protocols that adapt non-ATM devices to an ATM network. There are several classes of ATM adaptation layers which represent the main traffic types (for example, data, voice, and video).

ATM network interface. A logical resource generated by the Nways Switch Control Program to provide access services to a physical ATM port or trunk line. An ATM network interface sets up and maintains predefined ATM virtual connections.

AT&T. American Telephone & Telegraph (Company).

B8ZS. Bipolar eight-zero substitution.

Bc. Burst committed.

Be. Burst in excess.

bearer service profile (BSP). A set of parameters that defines a type of ISDN traffic (speech, audio, data, or video). One BSP is associated with each ISDN numbering plan table.

BECN. Backward explicit congestion notification.

B-ICI. Broadband inter-carrier interface.

BMI. Byte multiplexer interface.

BNC. Bayonet Niell-Concelman.

bps. Bit per second.

bridge. A functional unit that interconnects two local area networks. A bridge works at the data link level (layer 2) of the OSI reference model.

broadband network. A network that uses a large frequency band to transport different kinds of traffic (such as coded voice, video, and data) at the same time.

BS. Bearer services.

BSC. Binary synchronous communication.

BSP. Bearer service profile.

BT. Burst tolerance.

bursty. Refers to transmission at variable bit rate where the time between data transmissions is not always the same.

CAC. Connection admission control.

CAS. Channel associated signaling.

CBR. Constant bit rate.

CCS. (1) Common channel signaling (2) Change control server (also called CC server).

CDB. Configuration database.

CDV. Cell delay variation.

CDVT. Cell delay variation tolerance.

cell loss priority (CLP). A priority bit in the ATM cell header. When set, it indicates that the cell can be discarded during traffic congestion.

centralized configuration database. A database prepared with the Nways Switch Configuration Tool Version 2 (NCT2) on a configuration station. It stores the parameters of a 2220 network.

CES. Circuit emulation services.

change control server (CCS or CC server). A station that runs the IBM NetView Distribution Manager for AIX to store the Nways Switch Control Program and to manage code changes.

CIR. Committed information rate.

circuit emulation services (CES). An access service that emulates a leased line. It transports information

with a constant bit rate at the source and destination. The traffic can be PCM voice, video, fax, multimedia, or real-time synchronous data (such as BSC).

CLIP. Calling line identification presentation.

CLIR. Calling line identification restriction.

CLK. Clock (module).

CLKRD. Clock redrive (module).

clock module (CLK). A module of the 2220 Model 300 or 500 that transmits clock signals to the line interface couplers (LICs). It is optional and can have a backup.

clock redrive (CLKRD). A module of the 2220 Model 501 that drives the signals from the Model 500 clock module to the adapters of the Model 501. The clock redrive is optional and can have a backup.

clock references. In an Nways Switch, the software function that controls the transmission of clock signals to the LICs where they are used for bit synchronization.

CLP. Cell loss priority.

CMIP. Common management information protocol.

CMIS. Common management information services.

CMOT. CMIP over TCP/IP.

CNM. Communication network management.

code file. A named set of records stored as a unit in a change control server. An Nways Switch code file can include data or internal code.

COLP. Connected line identification presentation.

COLR. Connected line identification restriction.

configuration station. See Nways Switch configuration station.

control point (CP). In an Nways Switch, a logical resource that provides network control functions. It can have a backup.

CP. Control point.

CPA. Control point adapter (module).

CPE. Customer premises equipment.

CP spanning tree. In a 2220 network, a distribution tree that connects the Nways Switch control points through trunk lines.

The CP spanning tree supplies a very fast and efficient way to multicast control messages such as network topology data.

CRC.   Cyclic redundancy check.

CSU.   Channel access unit.

CTD.   Cell transfer delay.

data circuit-terminating equipment (DCE).   An equipment installed on a user premises that provides all the functions required to establish, maintain, and terminate a connection, and to do the signal conversion and coding between a data terminal equipment (DTE) and a line. A DCE can be separate piece of equipment or part of other equipment.

data terminal equipment (DTE).   That part of a data station that serves as data source, data sink, or both, and provides the data communication control function depending on the type of protocol used.

dB.   Decibel.

dBm.   Decibel based on 1 milliwatt.

DC48.   Dc power input type -48V

dc.   Direct current.

DCD.   Dc distribution (module).

DCE.   Data circuit-terminating equipment.

DDI.   Direct dialing-in.

DE.   Discard eligibility.

decibel (dB).   (1) One tenth of a bel. (2) A unit that expresses the ratio of two power levels on a logarithmic scale. (3) A unit for measuring relative power. The number of decibels is 10 times the logarithm (base 10) of the ratio of the measured power levels; if the measured levels are voltages (across the same or equal resistance), the number of decibels is 20 times the log of the ratio.

decibel based on 1 milliwatt (dBm).   A unit of absolute power measurement that is scaled such that 0 dBm equals 1 milliwatt.

dialog box.   On the screen of a station, an area with entry fields and push buttons. (Also called dialog.)

DLCI.   Data link connection identifier.

DNPT.   Destination numbering plan table.

DSP.   Digital service processor.

DSU.   Data service unit.

DTE.   Data terminal equipment.

DTMF.   Dual-tone modulation frequency.

DTR.   Data terminal ready.

dummy module.   In an Nways Switch, a cover inserted in the place of a module to ensure correct air cooling inside a logic subrack. During normal operation, the dummy modules must not be removed.

E1 standard.   A European standard for TDM digital transmission service at 2.048 Mbps.

E3 standard.   A European standard for TDM digital transmission service at 34.368 Mbps. An E3 line can transport up to 16 E1 circuits.

E&M.   Earth & mark.

ECMA.   European Computers Manufacturers Association.

EIA.   Electronics Industries Association.

equivalent capacity.   The minimum amount of bandwidth needed by a connection to ensure that the packet loss ratio is below a specified threshold.

ESF.   Extended status flags.

ETS.   European telecommunication standard.

FANB.   Fan box.

FAT.   File allocation table.

fax.   Document received from a facsimile machine. Synonym for telecopy.

FCS.   Frame check sequence.

FDDI.   Fiber Distributed Data Interface.

FE1.   Fractional E1.

FECN.   Forward explicit congestion notification.

FEP.   Front-end processor.

fiber.   Synonym for optical fiber.

fiber budget.   The optical power loss as result of the number of connections in the optical fiber link subtracted from the working budget. The loss as a result of connections includes connector loss and splice loss. The fiber budget is expressed in decibels.

Fiber Distributed Data Interface (FDDI).   A U.S. standard for 100 Mbps token-ring LANs using optical fiber cables over distances of several kilometers.

fiber optic cable. Synonym for optical fiber.

FR. Frame relay.

FRAD. Frame-relay access device.

frame relay (FR). A connection-oriented protocol to transport data frames over a fast packet-network with guaranteed end-to-end quality of service.

FRFH. Frame-relay frame handler.

front-end processor (FEP). A processor, such as the IBM 3745, 3746 Model 900 or 950, or 3174, that relieves a main frame from communication control tasks.

FRTE. Frame-relay terminal equipment.

FRU. Field replaceable unit.

FT1. Fractional T1.

FTP. File transfer protocol.

Gbps. Gigabit per second (10 to the power of 9 bits per second).

GCRA. Generic cell rate algorithm.

GFP. Generic function protocol.

GFT. Generic function transport.

GSM. Group special mobile.

GUI. Graphical user interface.

HDB3. High-density bipolar 3.

HDLC. High-level data link control.

high-level data link control (HDLC). A data network protocol.

hot pluggable. Refers to a hardware component that can be installed or removed without disturbing the operation of any other resource that is not connected to, or dependent, on this component.

HPFS. High-performance file system.

HPRI. High priority.

HSAn. High-speed adapter type n (module).

HSDS. High-speed digital services.

HSSI. High-speed serial interface.

hub (intelligent). A wiring concentrator, such as the IBM 8260, that supplies bridging and routing functions for LANs with different cables and protocols.

hunt group. See X.25 hunt group.

IDNX. Integrated Digital Network Exchange.

IE. Information element.

ILMI. Interim local management interface.

IMU. Inverse multiplexing unit

Integrated Digital Network Exchange (IDNX). A processor integrating voice, data, and image applications. It also manages transmission resources and connects to multiplexers and network management support systems. It permits integration of equipment from different vendors.

integrated services digital network (ISDN). A digital end-to-end public or private network that supports multiple services including, but not limited to, voice and data.

IP. Internet Protocol.

IP gateway adapter. In an Nways Switch, a port adapter that routes the IP control between the NAS and the network management station.

ISDN. Integrated services digital network.

ISDN network interface. A logical resource generated by the Nways Switch Control Program to provide access services to a physical ISDN or QSIG port line. An ISDN network interface sets up and maintains connections between calling ISDN terminal equipments and called terminal equipments attached through other Nways Switches.

ISO. International Organization for Standardization.

isochronous. Refers to transmission at a constant bit rate where there is a clock relationship between source and destination. The bit rates are the same on the destination and source.

ITU-T. International Telecommunication Union - Telecommunication (replaces CCITT).

jitter. Undesirable variations in the transmission delay of a digital signal. Also called cell delay variation (CDV).

KB. Kilobyte (storage capacity, 1024 bytes).

kbps. Kilobit per second (1000 bits per second).

LAN. Local area network.

LAPB. Link access procedure for B-channel.

LAPD. Link access procedure for D-channel.

LCB. Line connection box.

LCBB. Line connection box, base (LCEB and LCPB).

LCBE. Line connection box, expansion (LCEE and LCPE).

LCEB. Line connection enclosure, base.

LCEE. Line connection enclosure, expansion.

LCPB. Line connection power, base.

LCPE. Line connection power, expansion.

LCR. Least cost routing.

LED. Light-emitting diode.

LICn. Line interface coupler type n (module).

line. In a 2220 network, any physical medium, such as a telephone wire, microwave beam, or optical fiber, that transmits information. A line can be a trunk line or a port line.

line connection box (LCB). A metallic box that:

- Multiplexes up to 15 low-speed lines. There can be up to four LCBs per LIC type 511 for a total of 60 lines (two LCBs and 30 lines per LIC connector).

- Reduces cable lengths between Nways Switch and DCE or DTE locations.

An LCB fits in a standard 19-inch rack. Each one houses up to 15 active remote connectors (ARCs).

line interface coupler (LIC). In an Nways Switch, a module that physically attaches trunk or port lines. Each line interface coupler is associated with a trunk or port adapter, and supports specific line interfaces.

LIV. Link integrity verification.

LMI. Local management interface.

local area network (LAN). A computer network located on a user premises in a limited geographical area.

logical port. (Also called NBBS port.) A logical resource generated by the Nways Switch Control Program to provide access services to a physical port line (or channel of a TDM port line) using HDLC, FR, or CES protocol. A logical port sets up and maintains its predefined connections.

logical trunk. (Also called NBBS trunk.) A logical resource generated by the Nways Switch Control Program to provide transport services to a physical trunk line (or channel of a TDM trunk line). A logical trunk is mainly responsible for optimizing bandwidth and maintaining the CP spanning tree.

LSAn. Low-speed adapter type n (module).

MA/SR. Multi-access/sub-rate.

management access. Refers to an Nways Switch that connects a network management station or a change control server to a 2220 network through its service bus, which is a dedicated Ethernet LAN.

MB. Megabyte (storage capacity, 1 048 576 bytes).

Mbps. Megabit per second (10 to the power of 6 bits per second).

MBS. Maximum burst size.

MLT. Multiple logical trunks.

module. In an Nways Switch, a hardware unit plugged in a slot of the logic subrack. It houses, for example, an adapter, a line interface coupler, or a voice server extension. All modules are hot pluggable.

ms. Millisecond (1/1000 second).

NAS. Nways Switch administration station.

NBBS. Networking BroadBand Services (architecture).

NBBS architecture. See Networking BroadBand Services.

NBBS connection. See potential connection and virtual connection.

NBBS network. A network built with IBM 2220 Nways BroadBand Switches and conforming to the IBM Networking BroadBand Services (NBBS) architecture.

NBBS port. See logical port.

NBBS trunk. See logical trunk.

NCT2. Nways Switch Configuration Tool Version 2.

NDPS. Non-disruptive path switching.

NEM. Nways Enterprise Manager (see 2220 Nways Switch Manager).

network control. Functions that are performed by an Nways Switch control point to:

- Allocate and control the Nways Switch resources

- Provide topology and directory services

- Select routes
- Control congestion.

network management station (NMS). A station that runs IBM NetView for AIX and the 2220 Nways Switch Manager. It is used to manage network topology, accounting, performance, configuration, and error reporting.

network node interface (NNI). An interface between nodes in a communication network.

Network Support Center (NSC). A location from which IBM remotely supports 2220 networks.

Networking BroadBand Services (NBBS). An IBM architecture for high-speed networking that complements ATM standards and provides access services, transport services, and network control to user traffic.

NIC. Network Information Center.

NMS. Network management station.

NNI. Network node interface.

NPT. Numbering plan table.

NR. Non-reserved.

NRT. Non-real-time.

NRZI. Non-return-to-zero inverted recording.

NRZ-1. Non-return-to-zero change-on-ones recording.

NSAP. Network service address point.

NSC. Network Support Center.

NSM. (See 2220 Nways Switch Manager)

NVDM. NetView Distribution Manager for AIX.

NTT. Nippon Telegraph & Telephone (Corporation).

numbering plan table (NPT). A set of parameters, organized in origin NPT and destination NPT, that defines a type of called ISDN numbers. A numbering plan table is associated with each ISDN network interface.

Nways 2220 Switch Manager (2220 Switch Manager). An IBM licensed program that runs under NetView for AIX to manage the 2220 Nways Switch operation and configuration from a network management station. It replaces the Nways Enterprise Manager (NEM) which is no longer available.

Nways BroadBand Switch. Synonym for 2220 Nways BroadBand Switch.

Nways Enterprise Manager (NEM). An IBM licensed program that was used under NetView for AIX in a network management station to manage Nways Switches, routers, and bridges in a 2220 network (see 2220 Nways Switch Manager).

Nways Switch. Synonym for 2220 Nways BroadBand Switch.

Nways Switch administration station (NAS). A station attached to each 2220 to run the Control Program, and control and service the Nways Switch locally.

Nways Switch configuration station. A mandatory OS/2 or AIX station that runs a stand-alone version of the Nways Switch Configuration Tool Version 2 (NCT2) and stores the centralized configuration database of the NBBS network. An OS/2 station can be used as a remote user console.

Nways Switch Configuration Tool Version 2 (NCT2). A component of the Nways Switch Control Program that is used to configure physical and logical resources. It is also used in stand-alone version under OS/2 or AIX .

Nways Switch Control Program. The IBM licensed program that runs in the NAS and adapters of the 2220 Nways Switch. It includes a CMIP agent to work with the 2220 Switch Manager.

Nways 2220 Switch Manager for AIX. (See Nways 2220 Switch Manager)

Nways Switch Resource Control. A component of the Nways Switch Control Program. It is used from the NAS of an Nways Switch or from a remote user console to control resources and configuration files.

OAM. Operation, administration, and maintenance.

OC3. Optical carrier level 3.

ONPT. Origin numbering plan table.

operation, administration, and maintenance (OAM). A group of functions coded in specific ATM cells to handle alarms and loopback tests on ATM connections.

optical fiber. In fiber optics technology, a wave guide that propagates optical signals from light-generating transmitters to light-detecting receivers.

OSI. Open systems interconnection.

packet loss ratio. The probability that a packet will not reach its destination or not reach it in a specified

time. It is obtained by dividing the number of packets lost in transmission by the total number transmitted.

packet transfer mode (PTM).   The native transfer mode of the NBBS architecture. PTM divides the traffic into packets of variable length.

PBX.   Private branch exchange.

PCM.   Pulse code modulation.

PCR.   Peak cell rate.

PDH.   Plesiochronous digital hierarchy.

permanent virtual circuit (PVC).   A virtual circuit that has a logical channel permanently assigned to it at each item of data terminal equipment. It is activated by a program or by a network operator request.

plesiochronous.   Refers to transmission at a nominal bit rate where the source and destination are controlled by different clocks. The bit rates are nearly the same.

PLP.   Packet layer protocol.

PNP.   Private numbering plan.

port.   See logical port.

port adapter.   In an Nways Switch, a module that provides access services to one or more port lines. Each port adapter is associated with a line interface coupler (LIC).

port line.   A communication line that connects a device on user premises to an Nways Switch and serves as a port to the 2220 network. Port lines have different protocols and interfaces.

position.   When configuring an Nways Switch, the position parameter indicates the line attachment number on the LIC module (1 to 8, depending on the LIC type).

potential connection.   A predefined connection through a 2220 network between two HDLC, CES, or frame-relay devices.

PPP.   Point-to-point protocol.

PRA.   Primary Rate Access.

private branch exchange (PBX).   A switching system located on a user premises that relays inside lines (extensions) and provides access to the public telephone network.

PRS.   Primary reference source.

PSDN.   Packet switched data network.

PSN.   Public switched network.

PSTN.   Public switched telephone network.

PTF.   Program temporary fix.

PTM.   Packet transfer mode.

PTNX.   Private telecommunications network exchange.

pulse code modulation (PCM).   A standard adopted for the digitalization of analog voice signals. In PCM, voice is sampled at a rate of 8 kHz and each sample is coded in an 8-bit frame.

PVC.   Permanent virtual circuit.

Q signaling (QSIG).   An international standard for signaling procedures in private telecommunication networks. It applies to the PBX-to-Nways Switch interface, which is called the Q reference point.

QoS.   Quality of service.

QSIG.   Q signaling.

quality of service (QoS).   In a 2220 network, a set of parameters that guarantees the characteristics of a connection, mainly its end-to-end delay, delay variation, and packet loss tolerance.

RABM.   Router and Bridge Manager.

rack.   A metallic structure, with a standard 19-inch width, that houses the hardware elements of an Nways Switch, that is, logic subrack with modules, fan boxes, and power units.

When configuring an Nways Switch, the rack parameter indicates the 2220 Model (rack A is the Model 300 or 500, and rack B is the Model 501).

RDI.   Remote defect indication.

real-time processing.   Refers to the manipulations of data that are required, or generated, by certain process while the process is in operation. Usually, the results influence the process and, perhaps, related processes.

remote user console.   A station running OS/2, TCP/IP, and Nways Switch Resource Control. It can be connected to the NAS of an Nways Switch to remotely control and service it.

resource.   In an Nways Switch, a hardware element or a logical entity created by the Control Program. Adapters, modules, and line attachments are examples of physical resources. Control points, logical trunks, logical ports, and network interfaces are examples of logical resources.

resource profile.   A record of the characteristics of an Nways Switch resource. It includes (for example) the

part number or module name, the change level, and the name and phone number of the person to contact when a problem occurs.

RETAIN. Remote Technical Assistance Information Network

RIP. Route Information Protocol.

router. An attaching device that connects two LAN segments of the same or different architectures. It can also be connected to a wide area network. A router works at the network level (layer 3) of the OSI reference model by determining the best paths for network traffic flows.

Router And Bridge Manager. An application that provides distributed management for routers such as the IBM 2210 or 2216, bridges such as the IBM 8229, and communication controllers such as the IBM 3746 in IP mode.

RS. Recommended specification.

RSF. Remote support facility.

RSN. Receive sequence number.

RT. Real-time.

RVX. RS/EIA-232, V.24/V.35, X.21.

s. Second.

SCR. Sustainable cell rate.

SDH. Synchronous digital hierarchy.

SDLC. Synchronous data link control.

SDT. Structured data transfer.

serial line internet protocol (SLIP). A TCP/IP protocol used on a point-to-point connection between two IP hosts over a serial line (for example, an RS/EIA-232 connection to a modem over a telephone line).

SLA. Serial link architecture.

SLIP. Serial line internet protocol.

slot. When configuring an Nways Switch, the slot parameter indicates the module location (1 to 12) in the logic subrack.

SNA. Systems Network Architecture.

SNMP. Simple Network Management Protocol.

SONET. Synchronous optical network.

spanning tree. See CP spanning tree.

SRC. System reference code.

SSN. Send sequence number.

station. A microcomputer that is connected to a host or a network and at which a user can run applications.

STM-1. Synchronous transport module type 1.

STS-3c. Synchronous transport signal type 3 concatenated.

SUB. Subaddress.

subrack. A metallic structure installed in an Nways Switch rack. A logic subrack holds modules. A power subrack holds power supply components.

SVC. Switched virtual circuit.

SW. Switch (module).

switch module (SW). A module of the 2220 Model 300 or 500 that interconnects the adapters through an ATM cell switch. It can have a backup.

switch redrive (SWRD). A module of the 2220 Model 501 that drives the signals from the switch module in the Model 500 to the adapters of the Model 501. It can have a backup.

SWRD. switch redrive (module)

switched virtual circuit (SVC). A connection set up from a calling address to a called address following a call establishment protocol. It is released when a clear request signal is received.

synchronous digital hierarchy (SDH). A international recommendation for the internal operation of carrier optical networks.

synchronous optical network (SONET). A U.S. standard for transmitting digital information over optical interfaces. It is closely related to the international recommendation for synchronous digital hierarchy (SDH).

T1 standard. A TDM digital transmission service with a basic rate of 1.544 Mbps. Also called DS-1.

T3 standard. A TDM digital transmission service with a basic rate of 44.736 Mbps. A T3 line can transport up to 28 T1 circuits. Also called DS-3.

TCPA. Trunk and control point adapter.

TCP/IP. Transmission Control Protocol/ Internet Protocol.

TDM.   Time division multiplexing.

TE.   Terminal equipment.

Telnet.   In TCP/IP, an application protocol that allows a user at one site to access a remote system as if the display station were locally attached. Telnet uses the Transmission Control Protocol (TCP) as the underlying protocol.

time division multiplexing (TDM).   The process of breaking the bandwidth on a communication line into a number of channels, possibly of different size.

TME.   Tivoli Management Environment.

TMN.   Telecommunication Management Network.

TPA.   Trunk or port adapter.

Transmission Control Protocol/ Internet Protocol (TCP/IP).   A set of communication protocols that support peer-to-peer connections over both local and wide area networks.

transport services.   Functions that are performed by a trunk adapter of an Nways Switch to:

- Support the attachment of trunk lines
- Maximize bandwidth utilization
- Guarantee the quality of service of a connection
- Transfer packets between Nways Switches
- Manage logical queues and schedule transmission.

trunk.   See logical trunk.

trunk adapter.   In an Nways Switch, a module that provides transport services to one or more trunk lines. Each trunk adapter is associated with a line interface coupler (LIC).

trunk line.   In a 2220 network, a high-speed line connecting two Nways Switches. It can be, for example, a copper cable, optical fiber, or radio wave guide and can be leased from telecommunication companies.

UBR.   Unspecified bit rate. A best effort service with no quality commitment.

UNI.   User network interface.

UPC.   Usage parameter control.

URL.   Uniform resource locator.

user network interface (UNI).   A standardized interface between a user and a communication network.

UTC.   Universal time, coordinated.

UUS.   User-user signaling.

VBR.   Variable bit rate.

VC.   Virtual channel.

VCC.   Virtual channel connection.

VCI.   Virtual channel identifier.

VCN.   Virtual circuit number.

virtual channel (VC).   In ATM, a unidirectional route between two ATM devices. Virtual channels always come in pairs, one in each direction. They follow virtual paths.

virtual channel connection (VCC).   In ATM, a unidirectional connection established over a virtual channel. Virtual channel connections always come in pairs, one VCC in each direction.

virtual channel identifier (VCI).   In ATM, the unique numeric tag that identifies every channel. It is defined by a 16-bit field in the ATM cell header.

virtual connection.   In frame relay, the return path of an FR potential connection.

virtual path (VP).   In ATM, a group of virtual channels that are switched together as one unit. (Also called VC service.)

virtual path connection (VPC).   In ATM, a connection established over a virtual path. Virtual path connections always come in pairs, one VPC in each direction. (Also called VP service.)

virtual path identifier (VPI).   In ATM, an 8-bit field in the ATM cell header that indicates the virtual path over which the cell is to be routed.

voice server adapter (VSA).   In an Nways Switch, a module that supplies additional voice functions to voice connections operating in pulse code modulation at 64 kbps. It can attach a voice server extension (VSE).

voice server extension (VSE).   In an Nways Switch, a module associated with a voice server adapter (VSA) to supply voice functions to an extended number of PCM voice connections.

VP.   Virtual path.

VPC.   Virtual path connection.

VPD.   Vital product data.

VPI.   Virtual path identifier.

VPN.   Virtual private network.

VSA. Voice server adapter (module).

VSEn. Voice server extension type n (module).

WAN. Wide area network.

wide area network (WAN). A network that provides communication services to a large geographic area. It can use or provide public communication facilities.

window. On the screen of a station, an area with a title bar, a menu bar, and scroll bars.

X.25 hunt group. A group of X.25 network interfaces associated with one common subscriber address. If an interface is busy, the connection searches (hunts) for

the other interfaces of the group until a free one is found.

X.25 network interface. A logical resource generated by the Nways Switch Control Program to provide access services to a physical X.25 port line. An X.25 network interface sets up and maintains connections between calling X.25 subscribers and called subscribers attached to other Nways Switches.

X.25 Recommendation. An international standard for the interface between data terminal equipments and packet-switched networks.

X.25 subscriber. An X.25 end-user connected to an X.25 network interface through a DTE. A subscriber is defined by an address and a logical name.

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Readers' Comments — We'd Like to Hear from You

2220 Nways BroadBand Switch
  Models 300, 500, and 501
Nways Switch Administration Station
Setup and Service Guide
(Based on 6282)

Publication No. SY33-2123-00

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