

Network Utility Models TN1 and TX1



Installation and Initial Configuration Guide

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Note

Before using this information and the product it supports, be sure to read the general information under Appendix B, "Notices" on page B-1 and safety information in Appendix C, "Safety Information" on page C-1.

First Edition (July 1998)

This edition applies to the Network Utility Model TX1 or TN1.

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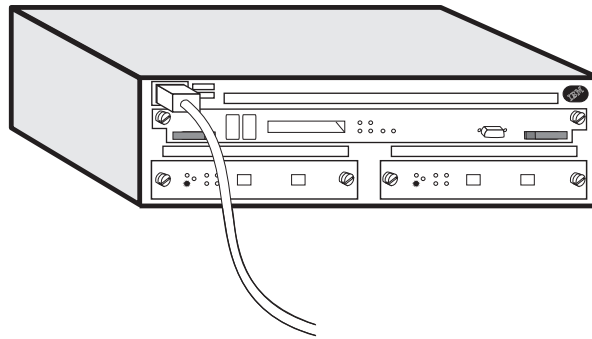
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About This Guide

This guide explains how to set up the Network Utility TN3270e Server (Model TN1) and the Network Utility Transport (Model TX1), perform initial configuration, and correct problems that might occur during installation.

Hereafter, these devices are referred to as the *Network Utility Model TX1 or TN1*.



Who Should Use This Guide

This guide is intended to be used by the person responsible for installing the Network Utility Model TX1 or TN1. This person should be familiar with installation and cabling charts.

About the Software

The software (IBM Nways Multiprotocol Access Services) that supports the Network Utility model TX1 or TN1 is loaded at the factory. The software has these components:

- The base code, which is installed at the factory on the Network Utility model TX1 or TN1, consists of:
 - The code that provides the routing, bridging, data link switching, and SNMP agent functions for the device.
 - The router user interface, which allows you to configure, monitor, and use the Network Utility Model TX1 or TN1 base code that is installed on this device. The router user interface is accessed locally through an ASCII terminal or emulator attached to the service port, or remotely through a Telnet session or modem-attached device.
- The Configuration Program for Network Utility Model TX1 or TN1 (*Configuration Program*) - This is a graphical user interface that allows you to configure the device from a stand-alone workstation. The configuration program includes error checking and online help information.

The configuration program is shipped in the box with the device. (See the *Configuration Program User Guide*, GC30-3830, for the server address and directories from which you can FTP a copy of the configuration program.)

How to Proceed

Installation and Initial Configuration

1. Install the device and cables. (Alternatively, installation by IBM service personnel is available. Contact your IBM representative for additional information.)
Note: Installation of the cables for the Parallel Channel Adapter (FC 2299) requires IBM service or channel-trained personnel.
2. Connect a terminal to the serial port on the system card to perform local initial configuration, or connect a phone line to the PCMCIA Modem plugged into the system card for remote Initial Configuration. (See “Access Methods” on page 3-1.)
3. Access the Network Utility to do initial configuration.
4. Create network interfaces for each port of each adapter that is installed in the Network Utility using the **Add Device** command. (See “Adding an Adapter at Initial Configuration” on page A-4 for information on using the “Add Device” command.
5. Run the “Quick Configuration” program to perform the initial configuration and activate your Network Utility. (See step 2 on page 4-1.)

Configuration

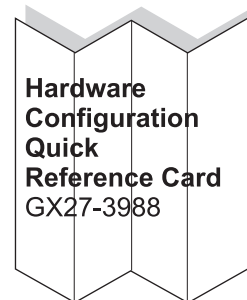
1. Perform final configuration. See the *Configuration Program User's Guide* and *Software User's Guide*.

Library Overview

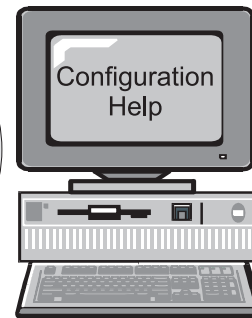
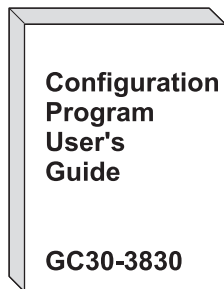
The following figure shows the publications in the IBM 2216 Model 400 and Network Utility library, arranged according to tasks.

Note: The Model 400 and the Network Utility share many of the same publications.

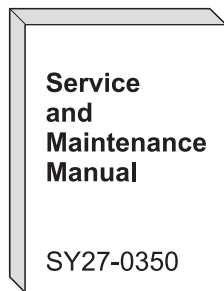
Planning and Installation



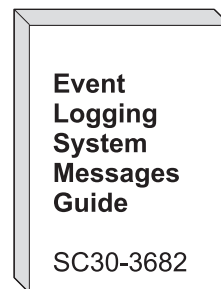
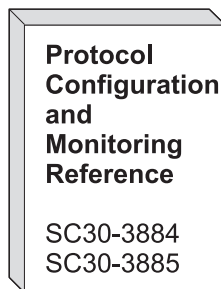
Configuration



Diagnostics/Maintenance



Operations and Network Administration



Common Tasks and the Library for the IBM 2216 Model 400 and Network Utility

Table 0-1. Hardcopy Publications that Are Shipped with the 2216. These documents are shipped in hardcopy and are also contained on the 2216 CD-ROM, SK2T-0405.

Planning

GA27-4105 *2216 Nways Multiaccess Connector and Network Utility Introduction and Planning Guide*

This book explains how to prepare for installation and select the hardware that you want to purchase. It includes specifications for the hardware and software for your network. It also provides information on the management of routing networks.

Installation

GA27-4106 2216 Model 400 only:
2216 Nways Multiaccess Connector Model 400 Installation and Initial Configuration Guide

This booklet explains how to install the 2216 Model 400 and verify its installation.

GA27-4167 Network Utility only:
Network Utility Model TX1 or TN1 Installation and Initial Configuration Guide

This booklet explains how to install a Network Utility and verify its installation.

GX27-3988 2216 Model 400 only:
2216 Nways Multiaccess Connector Hardware Configuration Quick Reference

This reference card is used for entering and saving hardware configuration information used to determine the correct state of an IBM 2216 Model 400.

Diagnostics and Maintenance

SY27-0350 *2216 Nways Multiaccess Connector and Network Utility Service and Maintenance Manual*

This book provides instructions for diagnosing problems with and repairing the Model 400 or the Network Utility.

Safety

SD21-0030 *Caution: Safety Information—Read This First*

This book provides translations of caution and danger notices applicable to the installation and maintenance of a device.

Configuration

GC30-3830 *Configuration Program User's Guide*

This book discusses how to use the Nways Multiprotocol Access Services Configuration Program.

Table 0-2. Publications that Are Shipped as Softcopy on the CD-ROM. These publications are also separately orderable as hardcopy.

Operations and Network Management

The following books support the Nways Multiprotocol Access Services program.

SC30-3886 *Nways Multiprotocol Access Services Software User's Guide*

This book explains how to:

- Configure, monitor, and use the Nways Multiprotocol Access Services software and microcode.
- Use the Nways Multiprotocol Access Services command-line router user interface to configure and monitor the network interfaces and link-layer protocols shipped with the 2216 base.

SC30-3884 *Nways Multiprotocol Access Services Protocol Configuration and Monitoring Reference, Volume 1*

SC30-3885 *Nways Multiprotocol Access Services Protocol Configuration and Monitoring Reference, Volume 2*

These books describe how to access and use the Nways Multiprotocol Access Services command-line user interface to configure and monitor the routing protocol software shipped with the product.

They include information about each of the protocols that the device supports.

SC30-3682 *Nways Event Logging System Messages Guide*

This book contains a listing of the error codes that can occur, along with descriptions and recommended actions to correct the errors.

Visit our Web Sites

This IBM web page provides product information:

<http://www.networking.ibm.com/216/216prod.html>

This IBM web page provides 2216 base books online:

<http://www.networking.ibm.com/did/2216bks.html>

Information, Updates, and Corrections

This page provides information on engineering changes, clarifications, and fixes that were implemented after the books were printed:

<http://www.networking.ibm.com/216/216changes.html>

Product Support

This page provides downloads and additional support information:

<http://www.networking.ibm.com/support/2216>

Chapter 1. Installing the Network Utility Model TX1 or TN1

Before You Begin: The illustrations in this guide represent one possible configuration for the Network Utility Model TX1 or TN1. The illustrations assume that all of the adapter slots are filled.

These instructions explain how to rack-mount and surface-mount the Model TX1 or TN1.

A fully populated Model TX1 or TN1 weighs about 15 kg (33 lb).

1. Unpack and Verify

Unpack the Network Utility Model TX1 or TN1 and verify that, along with this guide, the following items were included:

Documentation

- *Caution: Safety Information—Read This First*, SD21-0030
- *2216 Nways Multiaccess Connector and Network Utility Introduction and Planning Guide*, GA27-4105
- *2216 Nways Multiaccess Connector and Network Utility Service and Maintenance Manual*, SY27-0350
- *Configuration Program User's Guide*, GC30-3830

Hardware

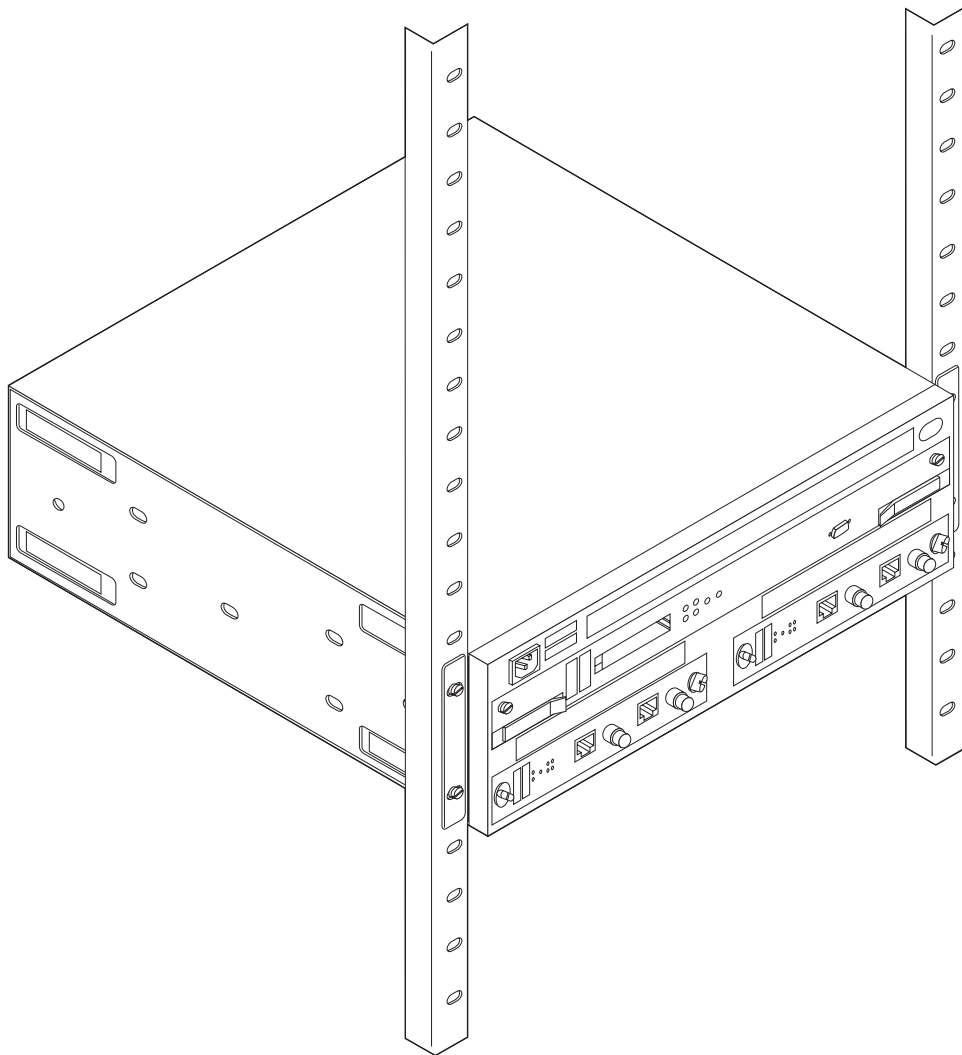
- Any cables ordered
- Rack-Mount Installation Aid
- Power cord
- PCMCIA modem (except in countries where the PCMCIA modem is not available)
- Rack-mounting cable bracket if the Network Utility contains FC 2299

For:

Surface-mounting - go to step 7 on page 1-6.

Rack-mounting - go to step 2 on page 1-2.

2. Rack-Mounting the Network Utility



You need the following items:

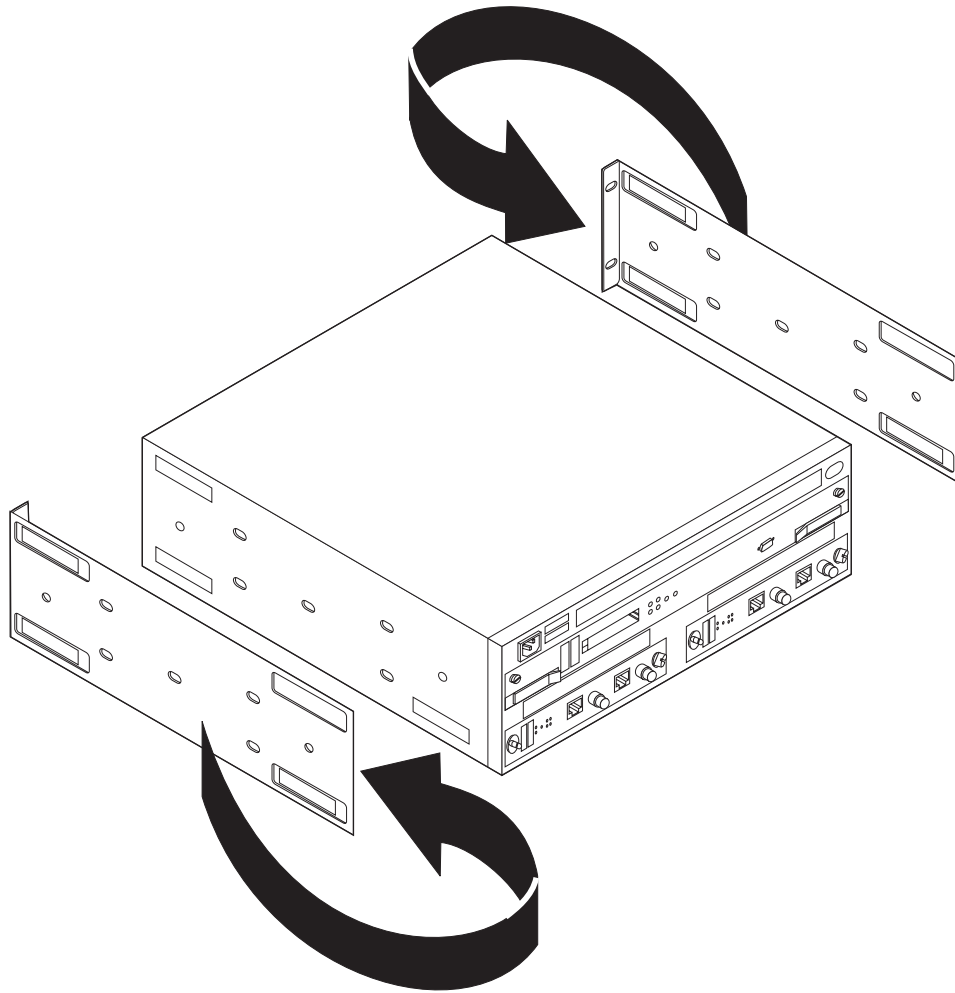
- Cables, as required
- Four rack-mounting screws
- Screwdriver

Notes:

1. If you have a shelf for the rack, install it before continuing.
2. Do not use the installation aid if you have a shelf installed.

Continue with step 3 on page 1-3.

3. Rack-Mounting (Optional for Surface-Mounting)

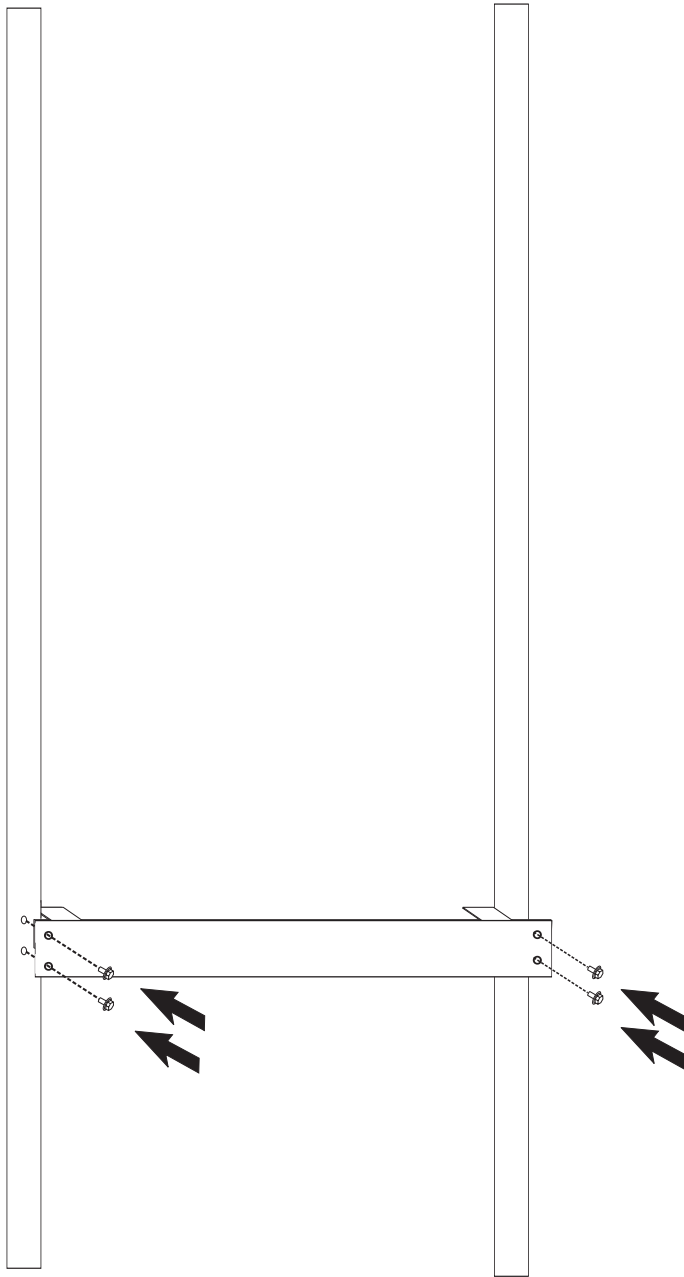


The Network Utility Model TX1 or TN1 mounting brackets are shipped with the flanges facing the rear:

1. Remove the two screws from each bracket (one at the front and one at the rear).
2. Reverse each bracket so that the Network Utility Model TX1 or TN1 can be rack-mounted.
3. Reinstall the four screws.

When the brackets are fitted correctly, the letter embossed on each bracket is on the rear edge; an A on the right side and a B on the left side.

4. Rack-Mounting



The installation aid is a metal bar that supports the Network Utility Model TX1 or TN1 as you install it in the rack. The installation aid ensures that the Network Utility Model TX1 or TN1 and rack are lined up correctly.

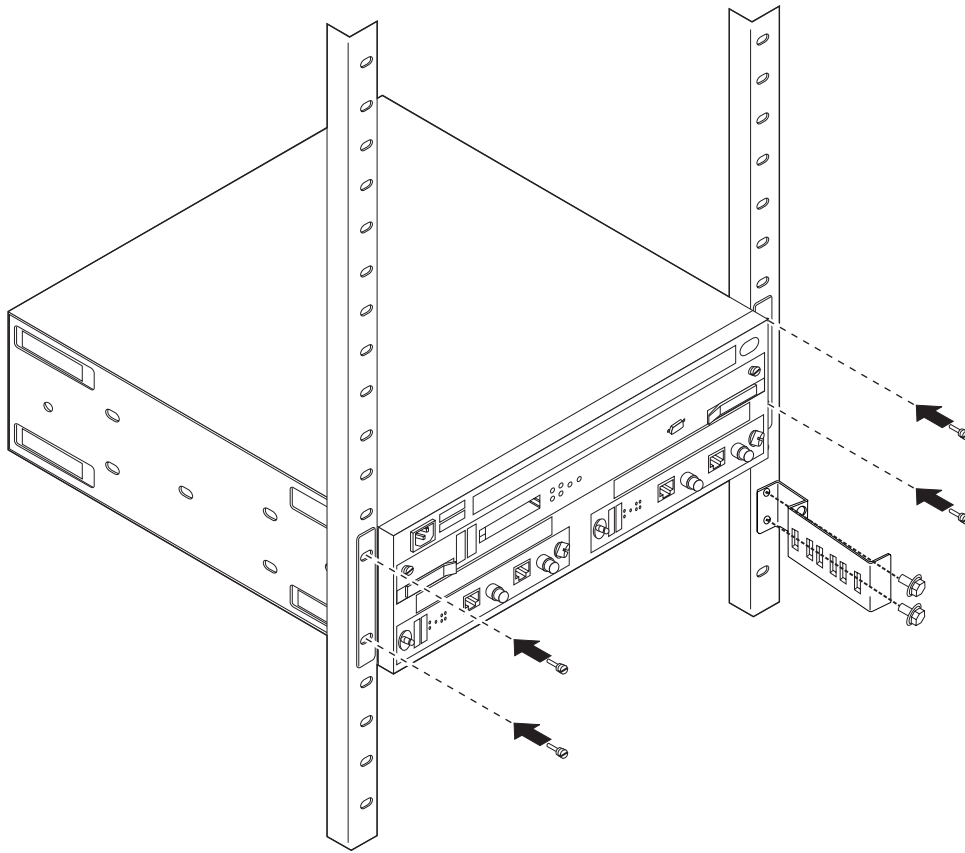
Line up the holes in the installation aid with the rack and install all screws.

5. Rack-Mounting

Set the Network Utility Model TX1 or TN1 on the IBM 2216 installation aid or on the shelf. The mounting brackets keep the Model TX1 or TN1 from falling into the rack during installation.

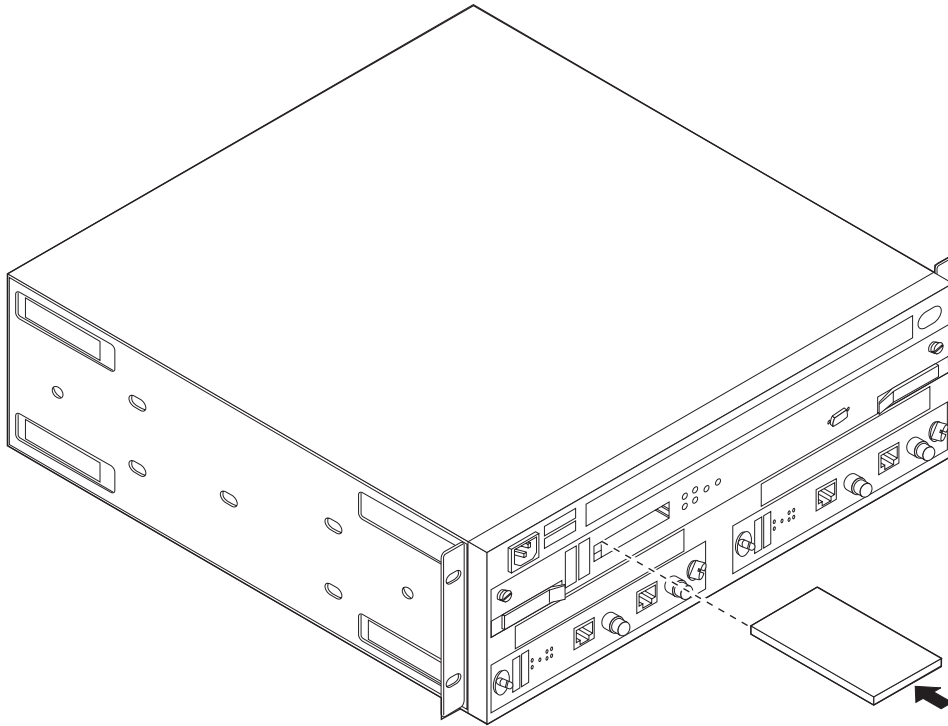
With the installation aid installed, steady the Network Utility while you complete the next step.

6. Rack-Mounting



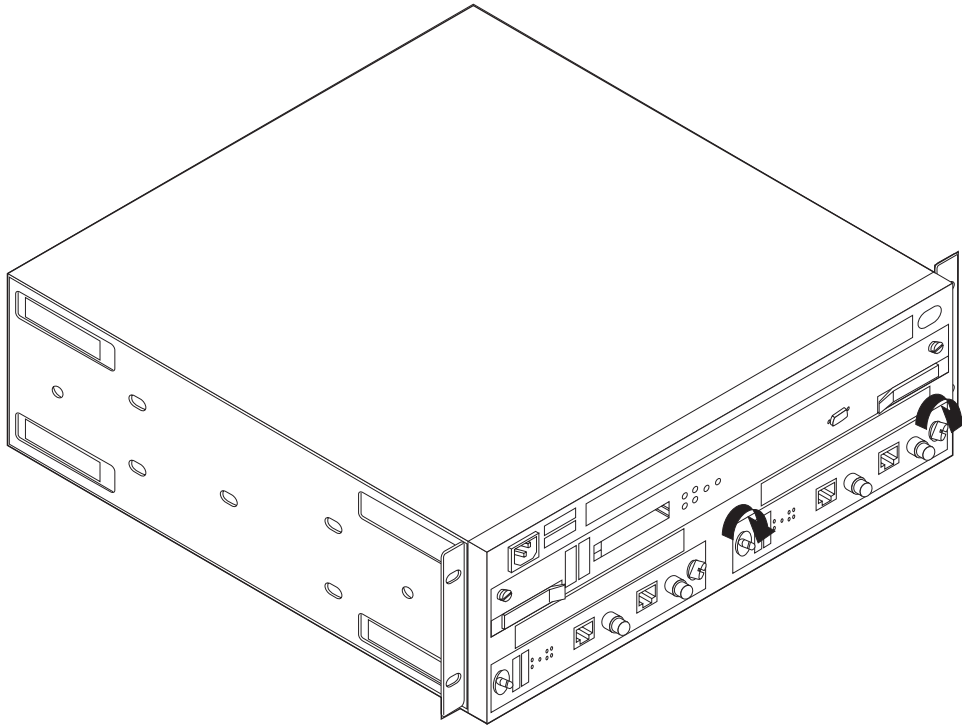
1. Install the screws beginning with the lower screws.
2. For FC 2299: Using 2 screws, install the rack-mounting cable bracket onto the front of the rack below the Network Utility Model TX1 or TN1.

7. Rack- or Surface-Mounting



If you are installing a PCMCIA modem or PCMCIA LAN adapter, slide it into either of the PCMCIA slots on the system card. Attach the telephone cable to the modem (a triangle identifies the left side of the cable).

8. Rack- or Surface-Mounting



1. Verify that **all** thumbscrews are tight (even if you did not loosen them during installation).
2. Connect the power cord to the Network Utility Model TX1 or TN1 and the power outlet. After about 4-5 minutes, verify that the correct LEDs are on. (See "System Card Status" on page 2-3.)

9. Complete the Setup (Rack- or Surface-Mounting)

1. Connect the cables (except for the Parallel Channel Adapter, FC 2299).

Note: If you have FC 2299, the installation of the cables requires a channel-trained IBM service representative or a customer's channel-trained person.

Call the IBM service representative to install the cables for FC 2299. The Parallel Channel and its attached devices will be disrupted if the cables are not installed correctly.

2. Report the phone number of the modem to the network administrator and return all the charts. The Network Utility is ready to be configured.

10. IBM Service Representative Tasks for FC 2299

1. Connect the adapter cables to FC 2299 (using the procedures in the *Service and Maintenance Manual* under "Installing Channel Adapters."). Do not connect to the host channel cables yet.
2. Run wrap tests to verify that all adapter cables are OK.
3. Connect the host channel cables to the adapter cables.

Chapter 2. Verification of Setup (Problem Solving)

Table 2-1 shows the desired status of the LEDs on the front of the unit. If all LEDs are in the correct state, you can begin to configure the unit. The LEDs (see Figure 2-1 on page 2-2) on the Model TX1 or TN1 should have the following status when the unit is operating normally.

Table 2-1. Machine LEDs When Operational

LED	Status
System card PCMCIA (with device installed) Port 1 yellow	OFF
System card PCMCIA (with device installed) Port 2 yellow	OFF
System card green	ON
System card yellow	OFF
All adapter green LEDs	ON
All adapter yellow LEDs	OFF
Wrong slot LED	OFF
All I/O port green LEDs (before the configuration is loaded on the unit)	OFF
All I/O port yellow LEDs	OFF

LED Indicators

The Network Utility Model TX1 or TN1 has a number of light-emitting diodes (LEDs) that indicate how the unit is functioning.

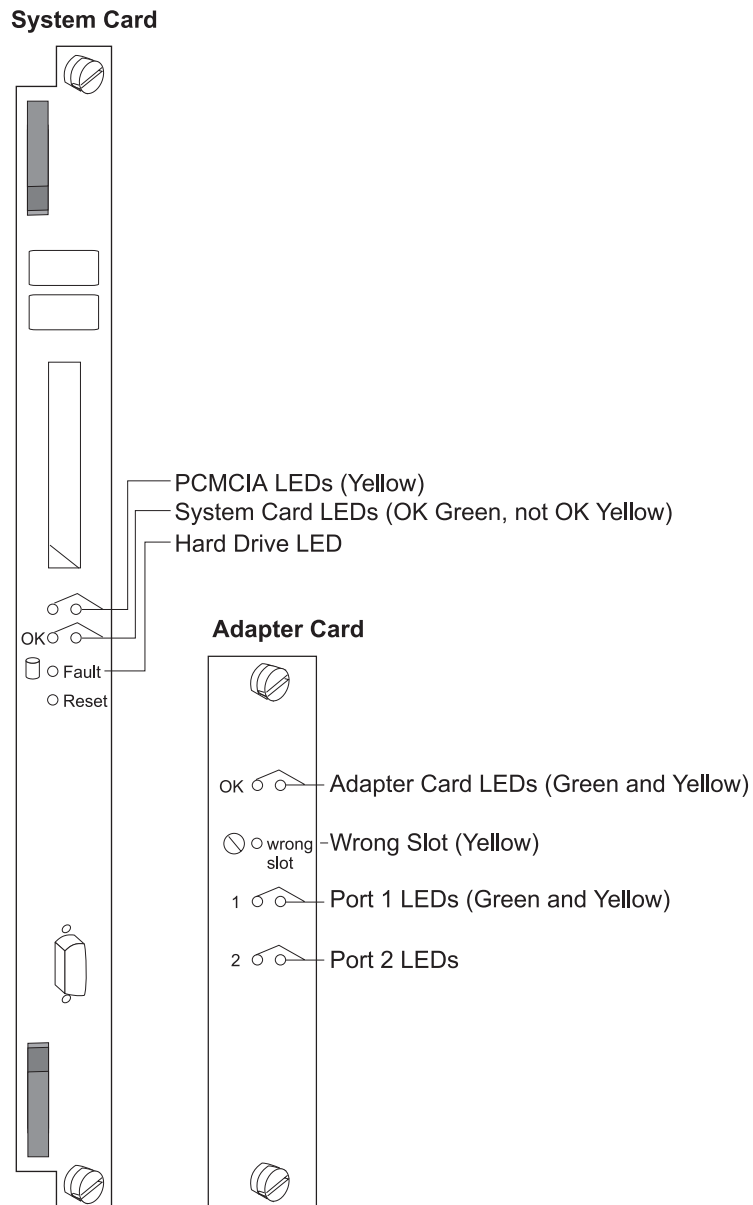


Figure 2-1. System Card and Adapter Card LEDs

System Card Status

LEDs	Meaning
PCMCIA 1 or PCMCIA 2 (Yellow)	On - PCMCIA device has a fault, is not installed, or is not seated correctly. Off - Device passed self-tests
OK (Green)	On - Card hardware is operating normally. Blinking - Loading from hard file
(Yellow)	On - Card hardware has a fault.
Fault Hard Drive (Yellow)	On - Hard drive has failed.

Adapter Card Status

LEDs	Meaning
OK (Green)	On - Adapter is operational.
(Yellow)	On - Adapter has a fault.
Wrong Slot (Yellow)	On - Contact your service representative.
Green port ¹	On - Port is operating normally (enabled and configured). Off - Port is not configured or is disabled. Blinking (for ESCON adapter only) - The optical power measurement test is running.
Yellow port ¹	On - One or more ports has a hardware fault. Blinking - One or more ports has a port I/O or network failure. Use the Maintenance Analysis Procedures (MAPs) in the <i>2216 Nways Multiaccess Connector and Network Utility Service and Maintenance Manual</i> to isolate. Off - No problem detected.

Important Phone Numbers

Contact Name	Telephone Number
System Administrator:	
Service Representative:	

¹ The port LEDs of the multiport WAN adapters (FC 2282, FC 2290, and FC 2291) reflect the status of one or more of the ports.

To identify and correct any problems that occur during setup, answer the questions and take the appropriate actions, as indicated:

On the system card, is the NOT OK yellow LED on?

Yes: There is a fault in the card.

1. Disconnect the system from its power source.
2. Reseat the card.
3. Reconnect the system to its power source.
4. Wait 4-5 minutes, and verify the state of the LEDs.

If the problem is not corrected, contact your service representative.

No: Go to the next question.

On the system card, is the OK green LED off?

Yes: The green LED is switched on by the operational code.

If the green LED fails to come on, contact your service representative.

No: Go to the next question.

On the system card, is the PCMCIA port LED on?

Yes: Either the PCMCIA card slot is empty or the card failed the power-on self-test. Reseat the card.

If the problem is not corrected, contact your service representative.

No: Go to the next question.

On I/O cards in slots 1 and 2, are the NOT OK yellow LEDs On?

Yes: There is a fault in the card. Reseat the adapter.

If the problem is not corrected, contact your service representative.

No: Go to next question.

On I/O cards in slots 1 and 2, are the OK green LEDs On?

Yes: The Network Utility appears to be OK.

No: Reseat the card. If the Green LED still fails to come on, the card is bad. Contact your service representative.

Chapter 3. Accessing the Network Utility

This chapter explains how to access and manage the operational and configuration software.

The network administrator or the IBM Support Center can access the Network Utility locally or remotely for configuration or diagnostics.

Access Methods

The Network Utility must be configured as part of the installation process. It needs an IP address, configuration for LAN emulation, or a LAN connection. Therefore, you have to access it in one of the following ways:

- Through the PCMCIA modem or through a modem attached to the EIA 232 service port. These are the forms of remote connection, which rely on the telephone lines.
- Through a null-modem cable attached to the EIA 232 service port. This is known as local connection.

Note: You can also access it through a PCMCIA LAN adapter (the IBM EtherJet PC card) when doing service and maintenance. The LAN adapter cannot be used during the initial configuration and setup.

You can set up a local, a remote, and a LAN connection to the Network Utility. However, only one port can be active at any given time. If a workstation is connected locally to the serial port and a call comes in over the PCMCIA modem, priority is given to the call. After the call, the workstation being used to configure will have to log back into the Network Utility.

With the local or remote connection, you use a teletypewriter (TTY) connection. TTY requires communications software. The preferred method is to use Serial Line Internet Protocol (SLIP) over the local or remote connection. If you use SLIP, you must have Transmission Control Protocol/Internet Protocol (TCP/IP) running on your workstation.

Alternatively, you can use the Xmodem protocol and ProComm or other communication software for file transfers.

Figures 3-1, 3-2, and 3-3 illustrate a remote connection using the PCMCIA modem, a local connection using a null modem, and a LAN connection using a PCMCIA LAN adapter.

Note: You can make post-installation configuration changes using the Configuration Program.

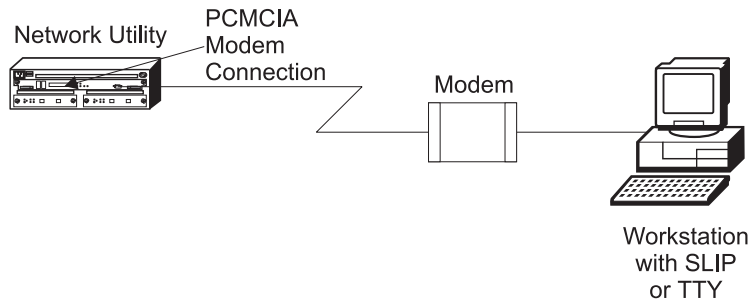


Figure 3-1. Remote Serial Connection to the PCMCIA Modem

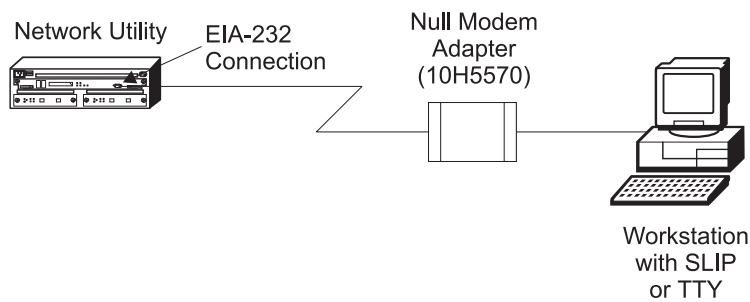


Figure 3-2. Local 25-pin Workstation Serial Connection to the EIA 232 Port

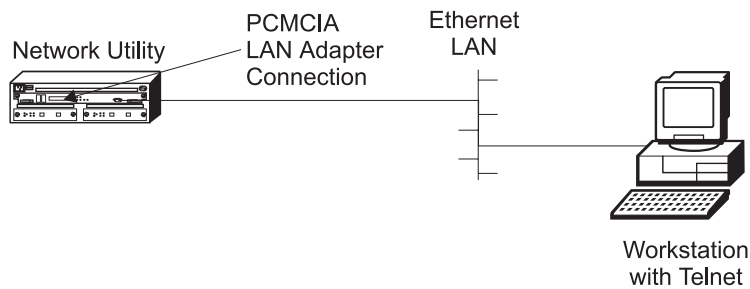


Figure 3-3. LAN Connection through the PCMCIA LAN Adapter

SLIP Addresses

The default SLIP IP addresses for use with the PCMCIA or external modems are:

For the workstation:

10.1.1.3

For the IBM 2216:

10.1.1.2

For instructions about installing SLIP, refer to the documentation for your version of TCP/IP.

There is no default IP address for the PCMCIA LAN adapter. To specify your own, see the *2216 Nways Multiaccess Connector and Network Utility Service and Maintenance Manual*. Use the instructions for setting up remote initial program load in the section "Using Firmware."

Attaching an ASCII Terminal

Attach an ASCII terminal or emulator (with the appropriate emulation software) to provide local or remote access as shown in Figure 3-1 on page 3-2 and Figure 3-2 on page 3-2.

The DEC VT100 ASCII terminal is supported, as well as devices such as personal computer systems that are configured to emulate it. Configure a VT100 with:

- No parity
- 8 data bits
- 1 stop bit
- 19.2 Kbps bit rate

Note: The speed must match the speed of the connected terminal. You can modify the PCMCIA modem's speed as mentioned in "Serial Port and PCMCIA Modem Default Settings."

Serial Port and PCMCIA Modem Default Settings

These are the default settings for the serial port:

Speed 19.2 Kbps
Parity None
Data Bits 8
Stop Bits 1

The PCMCIA modem is a standard item that is shipped with the Network Utility. The modem is a 33.6-Kbps V.34 data modem. It is set up with a default speed of 19.2 Kbps. The parity, data bits, and stop bits are the same as those of the serial port: None, 8, and 1. For information on changing the default speed, see the *2216 Nways Multiaccess Connector and Network Utility Service and Maintenance Manual*. Use the instructions on managing the configuration in the section "Using Firmware."

ASCII Terminal Setup Attributes

This is a list of all the options required to set up a terminal for use with the Network Utility that is connected to the service port. Not every terminal (particularly 3151 and 3161) will have all these options. You should use the information to set the options that you can set on your terminal.

Terminal Settings and Function Keys

Terminal Settings:

Baud Rate: 19200 bits per second

Note: Baud rate is modifiable through the firmware as mentioned in "Serial Port and PCMCIA Modem Default Settings."

Parity: None

Stop bits: 1

Duplex: Full Duplex

Flow Control: XON/XOFF and RTS/CTS (see Note 1)

Screen Control: ANSI Full screen

Screen Width: 80 Characters

Screen Height: 24 Lines
Line Wrap: ON
Screen Scroll: ON

Carriage Return Translation: CR (0Dx)
Backspace Translation: Destructive

Notes:

1. Terminals and Terminal emulator programs which do not have flow control options should be set to "Permanent Request to Send."
2. Terminal emulators that require a terminal type selection should be set to VT-220.

Attaching and Configuring a PCMCIA LAN Adapter

Network Utility supports an additional attachment method through a PCMCIA LAN adapter, the IBM EtherJet PC card (see Figure 3-3 on page 3-2). To attach via the PCMCIA Ethernet LAN card, see the *2216 Nways Multiaccess Connector and Network Utility Service and Maintenance Manual*. Use the instructions for setting up remote initial program load in the section "Using Firmware".

The PCMCIA LAN adapter cannot be used to route traffic through the Network Utility. The PCMCIA LAN adapter is used for maintenance when it is necessary to transfer files (configuration or code) to the Network Utility.

Chapter 4. Performing the Initial Configuration

If you have a new Network Utility with no configuration, or if you have cleared the Network Utility's configuration or encountered a problem that cleared the configuration, you must perform the steps in this section before you can send an existing configuration to the Network Utility.

Setting Up the Network Utility (Initial Configuration)

To perform initial configuration on the Network Utility, you must first establish access to the it. You can establish access either locally or remotely, as described in "Access Methods" on page 3-1. Then:

1. At the `Config Only>` prompt, use the **add device** command to configure the primary LAN interface.
2. At the `Config only>` prompt, type **qconfig** and press **Enter** to start the "Quick Configuration" program
3. Perform an initial configuration to establish the IP address and IP mask for the primary LAN interface for the Network Utility as follows:
 - a. **Configure Bridging**
 - 1) Enter **No** to Configure Bridging?
 - b. **Configure Protocols**
 - 1) Enter **Yes** to Configure Protocols?
 - c. **Configuring IP**
 - 1) Enter **Yes** to Configure IP?
 - 2) For the LAN interface that will communicate with the configuration program, enter **Yes** to Configure IP on this interface?
 - 3) Enter the IP address at the IP Address prompt.
 - 4) Enter the IP mask at the Address Mask prompt.
 - 5) If you have other interfaces, enter **No** to Configure IP on this interface?
 - 6) Enter **No** to Enable Dynamic Routing?
 - 7) Enter **Yes** to Define Community with Read_Write_Trap Access?
Enter the community name that will have Read_Write_Trap access
 - 8) Enter **Yes** to Save this configuration?
 - d. **Saving the Configuration file**
 - 1) Enter **Yes** to Do you want to write this configuration?
4. Press the **Ctrl-p** keys to exit `Config>`
5. Enter **reload** to restart the Network Utility.

When the Network Utility completes the restart sequence, it will be able to communicate with the configuration program.

After Initial Configuration

Important: After the Network Utility is configured and operational, **always** back up the active configuration file. Keeping this file enables you to re-establish the Network Utility on the network if the active configuration becomes corrupted.

You can back up the active configuration file by retrieving it and storing it in the workstation.

Full Configuration

The initial configuration procedure you have just performed will enable you to access the Network Utility over the network if you configured an IP address for it.

The configuration provided by QCONFIG depends on many default values for parameters, some of which may not be appropriate to your installation. You may need to modify the configuration that you have created using QCONFIG to customize the Network Utility to work on your network. You can do this using either of these methods:

- **Configuration Program**

The Configuration Program is the **recommended** configuration method for these reasons:

1. It can enable you to keep a number of copies of configuration files on a server for uploading to the appropriate Network Utility.
2. It does not alter any configuration parameters dynamically. This feature helps you control changes to the Network Utility configurations.
3. It performs more input validation and cross-checking of the configuration parameters than the other methods.

- **Command line interface (OPCON)**

The command line interface causes certain parameters to be altered dynamically. The binary files that are created are saved on the hard disk of the Network Utility, not in the workstation. This characteristic makes it more difficult to manage the configuration of the Network Utility than if the configuration program were used to create the configuration files. However, the command line interface can be used to monitor the operations of the Network Utility, whereas the Configuration Program cannot.

The command line interface is also useful when you want to change one of the parameters that can be dynamically altered. For more information about the command line interface, refer to the *Software User's Guide*.

Use the *Configuration Program User's Guide* in order to create a complete configuration that is suitable for your network.

Appendix A. Common Tasks

This appendix provides questions and answers dealing with common installation, operation, and maintenance tasks, with suggestions as to where to find further help in performing them.

LED States / Adapter Status

Question How do I check the state of the adapters in my 2216 Model 400 or Network Utility?

Answer The LED states on the front of the adapters indicate the status of the adapter. (See "Adapter Card Status" on page 2-3.) The *2216 Nways Multiaccess Connector and Network Utility Service and Maintenance Manual* treats problem determination in more detail.

Firmware Interface

Question What is the firmware interface? How do I access it?

Answer The firmware is the microcode lying underneath the operational code that is running on the 2216 Model 400 or Network Utility. It is used primarily by service personnel in problem determination. The firmware is accessed by stopping the boot process with the **F1** key. The firmware menu contains a number of options.

You must have a VT220 terminal with the following settings: 19.2 Kbps, 8-N-1 for parity, data bits, and stop bits. You can use a null-modem cable for local access or a modem attachment for remote access. See Chapter 3, "Accessing the Network Utility" on page 3-1 for more information.

Navigating Through the Command Line Interface

Question How do I use the commands in the Command Line Interface?

Answer The structure of the interface is shown in Figure A-1 on page A-2.

The *Multiprotocol Access Services Software User's Guide* describes the entire command line interface. The basic prompts that you use are the:

- * prompt, which is the OPERating CONsole (OPCON) prompt, the initial entry point to the command line interface
- Config> prompt, which is used for configuration changes
- + prompt, which is known as monitoring or GWCON.

The basic commands are:

- Type **?** and press **Enter** at any time to view a list of possible commands.
- Type **exit** and press **Enter** to return to the + prompt and to the Config> prompt.
- Press the **Ctrl-p** keys to return to the * prompt.

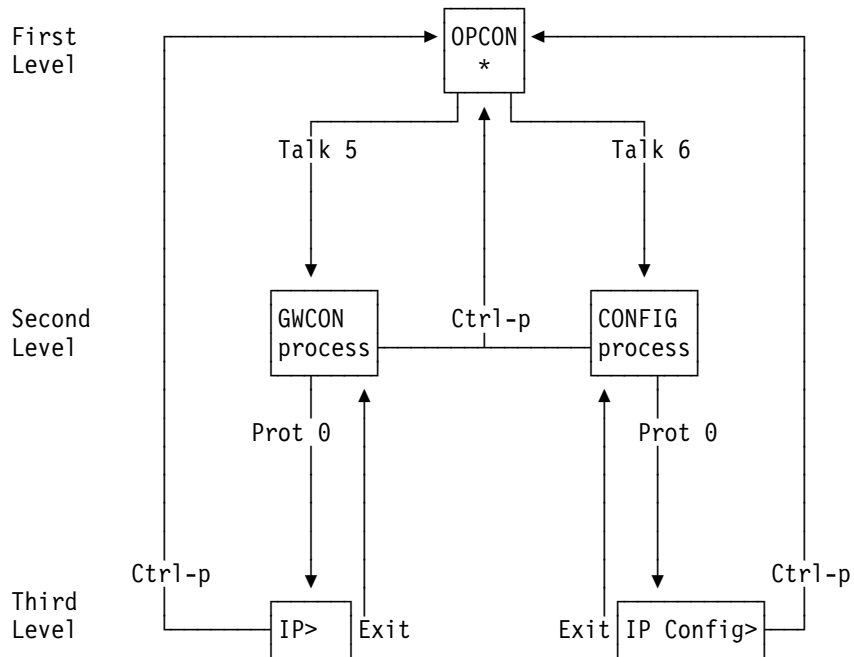


Figure A-1. Structure of the Command Line Interface (with the protocol command as an example)

Displaying List of Configured Interfaces

Question How do I display a list of active interfaces?

Answer

1. Access the command line interface (the * prompt).
2. Type **talk 6** and press **Enter** twice to reach the **Config>** prompt.
3. Enter **list dev**.
4. Press **Ctrl-p** to return to the **OPCON (*)** prompt.

Displaying the Operational State of the Interfaces

Question How do I display the state (up, down, disabled, etc.) of an interface?

Answer

1. Access the command line interface (the * prompt).
2. Type **talk 5** and press **Enter** twice to reach the + (monitoring) prompt.
3. Enter **configuration**.
4. Press **Ctrl-p** to return to the OPCON (*) prompt.

Verifying Connectivity

Question How do I verify that a given IP address is online?

Answer

1. Access the command line interface (the * prompt).
2. Type **talk 5** and press **Enter** twice to reach the + prompt.
3. Type **protocol** and press **Enter**.
4. Type **ip** and press **Enter**. The prompt changes to IP>.
5. Type **ping IP address value** and press **Enter**. Press **Enter** to stop the ping process.
6. Type **exit** at the IP> prompt and press **Enter**. The prompt changes to +.
7. Press **Ctrl-p** to return to the OPCON (*) prompt.

Viewing Vital Hardware Data

Question How do I view vital hardware data?

Answer

1. Access the firmware main menu: During boot-up, press **F1** at the Prematurely terminate boot sequence prompt.
2. Select **4. Utilities**.
3. Select **9. View or Set Vital Product Data**.
4. Select **Hardware Vital Product Data**. The vital hardware data is displayed.
5. Return to the firmware main menu.
6. Press **F9** to load the operational code.

Adding an Adapter at Initial Configuration

Question How do I add an adapter to the software configuration when I am creating the initial configuration?

Answer First, perform installation of the 2216 Model 400 or Network Utility and install any additional adapters. (The “FRU Exchange” sections in the *2216 Nways Multiaccess Connector and Network Utility Service and Maintenance Manual* describe the removal and replacement procedures.)

- When you install a 2216 Model 400 or Network Utility, you need to create a software configuration.
 - The operational code will put you at the configuration (Config only>) prompt.
1. Enter **add device** *type of device*.

Note: The steps create only the interface. You still have to use the **net** command to configure characteristics unique to that interface (for example, T/R, Ethernet, PPP, FR, SDLC, X.25). You also need to use the **protocol** command to configure protocols on the interface.

For example, **add device token**, or **add device ?** to see a list of device choices.

2. Enter the device slot number (1–x).
3. If you are adding an interface on a single-port adapter, continue with step 4. Otherwise, continue with this step.

Enter the port number (0–7, depending on the type of adapter).

The range of port numbers supported depends on the multi-port adapter type:

- For the Token-Ring (FC 2280) and Ethernet (FC 2281) adapters, port numbers 1 and 2 are supported.
- For the 8-port EIA-232E/V.24 (FC 2282) and 8-port X.21 adapters, port numbers 0–7 are supported.
- For the 6-port V.35/V.36 (FC 2290) adapter, port numbers 0–5 are supported.

4. Make a note of the interface number to which this port is assigned and the net number.

Repeat steps 1 to 4 if you have a multi-port adapter and you want to have more than one interface defined on that adapter.

Write the changes to save the configuration.

Reload the 2216 Model 400 or Network Utility to make the configuration changes active.

Adding an Adapter after Initial Configuration

Question How do I add an adapter to the configuration after the 2216 Model 400 or Network Utility has been initially configured?

Answer First, perform hardware installation of the adapter. (The “FRU Exchange” sections in the *2216 Nways Multiaccess Connector and Network Utility Service and Maintenance Manual* describes the removal and replacement procedure.) Then:

1. Access the command line interface (* prompt).
2. Type **talk 6** and press **Enter** twice to reach the Config> prompt.
3. Enter **add device** *type of device*.

For example, **add device x21**, or **add device ?** to see a list of device choices.

If you are adding a dial-circuit device, go to step 6. Otherwise, continue with step 4

4. Enter the device slot number (1–x).
5. If you are adding an interface on a single-port adapter, go to step 6. Otherwise, continue with this step.

Enter the port number (0–7, depending on the type of adapter).

The range of port numbers supported depends on the multi-port adapter type:

- For the Token-Ring (FC 2280) and Ethernet (FC 2281) adapters, port numbers 1 and 2 are supported.
 - For the 8-port EIA-232E/V.24 (FC 2282) and 8-port X.21 adapters, port numbers 0–7 are supported.
 - For the 6-port V.35/V.36 (FC 2290) adapter, port numbers 0–5 are supported.
6. Make a note of the interface number to which this port is assigned and the net number.
 7. Enter **net** *net number* to enable you to configure interface-unique characteristics.
 8. Enter **exit** after configuring the interface.
 9. Use the **protocol** command to configure protocols on the interface.
 10. Enter **write** to save your changes.
 11. Press **Ctrl-p** to return to the OPCODE (*) prompt.
 12. Use the **activate** command within **talk 5** to bring the new interface online to the network without rebooting the box. There are restrictions to this capability. See “Configuring Spare Interfaces” in the *Multiprotocol Access Services Software User’s Guide*.

Running Quick Configuration

Question How do I run the Quick Configuration program?

Answer First, make sure each adapter has been “added” (see “Adding an Adapter at Initial Configuration” on page A-4). Then, at the Config (only) or Config> prompt, enter **qc**.

Disabling an Adapter Port

Question How do I disable a configured adapter port to remove the adapter from the software configuration?

Answer

1. Access the command line interface (* prompt).
2. Type **talk 6** and press **Enter** twice to reach the Config> prompt.
3. Enter **list device**.
4. Make a note of the interface number of the adapter you wish to disable.
5. Enter **disable interface interface number**.
6. Enter **write** to save your changes. During the next time that you reboot, the configuration changes become active.

For details of this procedure, refer to the *Multiprotocol Access Services Software User's Guide*.

Enabling an Adapter Port

Question How do I enable a configured adapter port that was disabled using **disable interface** (in “Disabling an Adapter Port”)?

Answer Use this procedure to enable the port the next time that you reboot.

1. Access the command line interface (* prompt).
2. Type **talk 6** and press **Enter** twice to reach the Config> prompt.
3. Enter **list device**.
4. Make a note of the interface number of the adapter you wish to enable.
5. Enter **enable interface interface number**.
6. Enter **write** to save your changes. During the next time that you reboot, the configuration changes become active.

For details of this procedure, refer to the *Multiprotocol Access Services Software User's Guide*.

Suspending Traffic on an Adapter Port

Question How do I disable a configured adapter port to remove or test an adapter?

Answer

1. Access the command line interface (* prompt).
2. Type **talk 5** and press **Enter** twice to reach the + prompt.
3. Enter the **configuration** command.

4. Make a note of the interface net number of the adapter that you want to disable.
5. Enter **disable interface** *interface net number*.
6. Press the **Ctrl-p** keys to return to the * prompt.

Resuming Traffic on an Adapter Port

Question How do I enable a configured adapter port (that was disabled using the **talk 5 disable** command in “Suspending Traffic on an Adapter Port” on page A-6) to resume traffic?

Answer

1. Access the command line interface (* prompt).
2. Type **talk 5** and press **Enter** twice to reach the + prompt.
3. Enter the **configuration** command.
4. Make a note of the interface number of the adapter you wish to enable.
5. Enter **test** *interface number*.

Note: If you use the **test** command to enable an interface that has been configured at the Config> prompt (from **talk 6**) as disabled, the interface will be disabled again when you reboot.

Therefore, you should also use the Config> **enable interface** command to ensure that the interface is enabled the next time a reboot does occur.

For details of this procedure, refer to the *Multiprotocol Access Services Software User's Guide*.

Removing and Deleting an Adapter

Question How do I remove and delete an adapter from the configuration?

Answer

1. Access the command line interface (* prompt).
2. Type **talk 6** and press **Enter** twice to reach the Config> prompt.
3. Enter **list device**.
4. Write down the interface number of the adapter that you wish to delete.

Note: If you are removing a multi-port adapter, then you need to record the interface number of all interfaces configured for that adapter.

5. Enter **delete interface** *interface number*.
6. At the Are you sure? prompt, enter **y**.
7. Enter **write** to save your changes.
8. Reload the 2216 Model 400 or Network Utility to make the configuration changes active.

For details of this procedure, refer to the *Multiprotocol Access Services Software User's Guide*.

Running Diagnostics

Question How are diagnostics run on a particular adapter?

Answer Refer to the *2216 Nways Multiaccess Connector and Network Utility Service and Maintenance Manual*.

Up-to-Date Product Information

Question How can I find out the most current information about the 2216 Model 400 or Network Utility?

Answer Point your web browser to:
<http://www.networking.ibm.com/216/216prod.html> for 2216 information,
or to <http://www.networking.ibm.com> for general product information.

Disabling Interfaces that Have WAN Reroute Enabled

Question How do I ensure that WAN Reroute does not try to automatically enable an alternate interface that is on an adapter about to be removed?

Answer

1. Access the command line interface (* prompt).
2. Type **talk 5** and press **Enter** twice to reach the + (monitoring) prompt.
3. Type **disable slot slot#** or **disable interface#** for each interface on the adapter. For example:

```
+ disable slot 2
```

```
Interface 2 is enabled as a WAN Reroute alternate circuit and should be disabled as an alternate circuit if you will be removing the adapter
```

```
Do you want to disable WAN Reroute on this interface? (Yes, No): [No] Yes
```

```
Interface 2 has been disabled as a WAN Reroute alternate circuit
```

```
(adapter is removed and replaced)
```

Enabling WAN Reroute after You Have Disabled it

Question How do I enable WAN Reroute to automatically enable an alternate interface that is on an adapter that has been replaced?

Answer

1. Access the command line interface (the * prompt).
2. Type **talk 5** and press **Enter** twice to reach the + (monitoring) prompt.
3. Type **enable slot slot#** to start a self-test for each interface on the adapter **or** type **test interface#** for each interface that you want to bring up.

If you start a self-test for an alternate interface and the self-test is successful, the alternate interface will remain up even though it may

not be needed to back-up a primary interface. If this happens, you can issue the talk 5 **disable interface#** command to put the alternate interface back into the standby (disabled) state.

The following is a sample:

```
+ enable slot 2
```

```
Interface 2 is configured as a WAN Reroute alternate circuit.  
Do you want to enable WAN Reroute on this interface? (Yes, No):[No] Yes
```

```
Interface 2 is enabled as a WAN Reroute alternate circuit.  
Are you sure that you want to test this interface? (Yes, No): [No] Yes  
Testing net 4 ATM/0...successful  
+
```

Spare Interfaces

Question Can I move traffic from a defective adapter to another adapter without restarting the 2216 Model 400 or Network Utility?

Answer Yes. Use the spare interface function. See “Configuring Spare Interfaces” in the *Multiprotocol Access Services Software User’s Guide*.

Appendix B. Notices

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Industry Canada Class A Emission Compliance Statement

This Class A digital apparatus complies with Canadian ICES-003.

Avis de conformité aux normes d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

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

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Dieses Gerät ist berechtigt in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Konformitätserklärung nach Paragraph 5 des EMVG ist die IBM Deutschland Informationssysteme GmbH, 70548 Stuttgart.

Informationen in Hinsicht EMVG Paragraph 3 Abs. (2) 2:

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Appendix C. Safety Information

 **Danger:** Before you begin to install this product, read the safety information in *Caution: Safety Information—Read This First*, SD21-0030. This booklet describes safe procedures for cabling and plugging in electrical equipment.

 **Gevaar:** Voordat u begint met de installatie van dit produkt, moet u eerst de veiligheidsinstructies lezen in de brochure *PAS OP! Veiligheidsinstructies—Lees dit eerst*, SD21-0030. Hierin wordt beschreven hoe u elektrische apparatuur op een veilige manier moet bekabelen en aansluiten.

 **Danger:** Avant de procéder à l'installation de ce produit, lisez d'abord les consignes de sécurité dans la brochure *ATTENTION: Consignes de sécurité—A lire au préalable*, SD21-0030. Cette brochure décrit les procédures pour câbler et connecter les appareils électriques en toute sécurité.

 **Perigo:** Antes de começar a instalar este produto, leia as informações de segurança contidas em *Cuidado: Informações Sobre Segurança—Leia Isto Primeiro*, SD21-0030. Esse folheto descreve procedimentos de segurança para a instalação de cabos e conexões em equipamentos elétricos.



危險：安裝本產品之前，請先閱讀
"Caution: Safety Information--Read
This First" SD21-0030 手冊中所提
供的安全注意事項。這本手冊將會說明
使用電器設備的纜線及電源的安全程序。



Opasnost: Prije nego što počnete sa instalacijom produkta, pročitate naputak o pravilima o sigurnom rukovanju u
Upozorenje: Pravila o sigurnom rukovanju - Prvo pročitaj ovo, SD21-0030. Ovaj priručnik opisuje sigurnosne postupke za priključivanje kabela i priključivanje na električno napajanje.





Upozornění: než zahájíte instalaci tohoto produktu, přečtěte si nejprve bezpečnostní informace v pokynech „Bezpečnostní informace“ č. 21-0030. Tato brožurka popisuje bezpečnostní opatření pro kabeláž a zapojení elektrického zařízení.





Fare! Før du installerer dette produkt, skal du læse sikkerhedsforskrifterne i *NB: Sikkerhedsforskrifter—Læs dette først* SD21-0030. Vejledningen beskriver den fremgangsmåde, du skal bruge ved tilslutning af kabler og udstyr.


 **Gevaar** Voordat u begint met het installeren van dit produkt, dient u eerst de veiligheidsrichtlijnen te lezen die zijn vermeld in de publikatie *Caution: Safety Information - Read This First*, SD21-0030. In dit boekje vindt u veilige procedures voor het aansluiten van elektrische apparatuur.

 **VAARA:** Ennen kuin aloitat tämän tuotteen asennuksen, lue julkaisussa *Varoitus: Turvaohjeet—Lue tämä ensin*, SD21-0030, olevat turvaohjeet. Tässä kirjassessa on ohjeet siitä, miten sähkölaitteet kaapeloidaan ja kytketään turvallisesti.

 **Danger :** Avant d'installer le présent produit, consultez le livret *Attention : Informations pour la sécurité — Lisez-moi d'abord* SD21-0030, qui décrit les procédures à respecter pour effectuer les opérations de câblage et brancher les équipements électriques en toute sécurité.

 **Vorsicht:** Bevor mit der Installation des Produktes begonnen wird, die Sicherheitshinweise in *Achtung: Sicherheitsinformationen—Bitte zuerst lesen*, &ibm; Form SD21-0030. Diese Veröffentlichung beschreibt die Sicherheitsvorkehrungen für das Verkabeln und Anschließen elektrischer Geräte.

 **Vigyázat:** Mielőtt megkezdi a berendezés üzembe helyezését, olvassa el a *Caution: Safety Information— Read This First*, SD21-0030 könyvecskében leírt biztonsági információkat. Ez a könyv leírja, milyen biztonsági intézkedéseket kell megtenni az elektromos berendezés huzalozásakor illetve csatlakoztatásakor.

 **Pericolo:** prima di iniziare l'installazione di questo prodotto, leggere le informazioni relative alla sicurezza riportate nell'opuscolo *Attenzione: Informazioni di sicurezza — Prime informazioni da leggere* in cui sono descritte le procedure per il cablaggio ed il collegamento di apparecchiature elettriche.



危険： 導入作業を開始する前に、安全に関する小冊子SD21-0030 の「最初にお読みください」(Read This First)の項をお読みください。
この小冊子は、電気機器の安全な配線と接続の手順について説明しています。



위험: 이 제품을 설치하기 전에 반드시 "주의: 안전 정보-시작하기 전에" (SD21-0030) 에 있는 안전 정보를 읽으십시오.



Fare: Før du begynner å installere dette produktet, må du lese sikkerhetsinformasjonen i *Advarsel: Sikkerhetsinformasjon — Les dette først*, SD21-0030 som beskriver sikkerhetsrutinene for kabling og tilkobling av elektrisk utstyr.



Uwaga:

Przed rozpoczęciem instalacji produktu należy zapoznać się z instrukcją: "Caution: Safety Information - Read This First", SD21-0030.

Zawiera ona warunki bezpieczeństwa przy podłączaniu do sieci elektrycznej i eksploatacji.



Perigo: Antes de iniciar a instalação deste produto, leia as informações de segurança *Cuidado: Informações de Segurança — Leia Primeiro*, SD21-0030. Este documento descreve como efectuar, de um modo seguro, as ligações eléctricas dos equipamentos.



ОСТОРОЖНО: Прежде чем устанавливать этот продукт, прочтите Инструкцию по технике безопасности в документе "Внимание: Инструкция по технике безопасности -- Прочсть в первую очередь", SD21-0030. В этой брошюре описаны безопасные способы каблирования и подключения электрического оборудования.



Nebezpečnostvo: Pred inštaláciou výrobku si prečítajte bezpečnosté predpisy v

Výstraha: Bezpečnosté predpisy - Prečítaj ako prvé, SD21-0030. V tejto brožúrke sú opísané bezpečnosté postupy pre pripojenie elektrických zariadení.



Pozor: Preden začnete z instalacijo tega produkta preberite poglavje: "Opozorilo: Informacije o varnem rokovanju-preberi pred uporabo," SD21-0030. To poglavje opisuje pravilne postopke za kabliranje,



Peligro: Antes de empezar a instalar este producto, lea la información de seguridad en *Atención: Información de Seguridad — Lea Esto Primero*, SD21-0030. Este documento describe los procedimientos de seguridad para cablear y enchufar equipos eléctricos.



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