NetBlazer ® *LS*

Installation and Setup Utility Guide

Part Number 90362-01

Revision A0

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Installation Safety Guidelines

Follow these guidelines when installing your NetBlazer:

- Never install telephone wiring during a lightning storm.

- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.

- Never touch non-insulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

- Use caution when installing or modifying telephone lines.

- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.

- Do not use the telephone to report a gas leak in the vicinity of the leak.

Power Cord

The NetBlazer LS I-1BS and NetBlazer LS 2S/A can be used only with a power cord that meets the rating of the unit, that is, 1.5A/250V. THE POWER CORD MUST BE AP-PROVED ACCORDING TO THE STANDARDS OF THE COUNTRY IN WHICH THE UNIT IS USED. Telebit is not responsible for damages or losses caused by the use of the unit with an underrated, nonstandard, and unapproved power cord.

Bitte, verwenden Sie nur ein zugelassenes Netzanschlußkabel.

FCC Warning

This equipment generates and uses radio frequency energy, and if not installed and used in strict accordance with the instructions in this manual, may cause interference to radio and television reception. It has been tested and found to comply with the limits for a Class A computing device under Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a commercial installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the system on and off, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.

- Relocate the system with respect to the receiver.

- Move the system away from the receiver.

- Plug the system into a different outlet so that the system and receiver are on different branch circuits.

If necessary, consult your dealer or any experienced radio/television technician for additional suggestions. You may find a booklet prepared by the FCC entitled *How to Identify and Resolve Radio-TV Interference Problems* helpful in resolving any problems. This booklet is available from the U.S. Government Printing Office, Washington DC 20402, Stock Number 004-000-00345-4.

Emissions Statement

This equipment has been tested and found to comply with the limits of CISPR22 Class B, EN55022 Class B, and FCC Part 15 Class B.

Canadian Emissions Standards

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministére des Communications du Canada.

Table of Contents

Getting Started 1

Use this manual together with the Worksheets in Appendix B, "NetBlazer LS Configuration Worksheets" to install and configure your NetBlazer for the type of system and applications you have. You should fill out the Worksheets before you begin the configuration process.

NetBlazer Applications

In order to know which worksheets to fill out (or that your system administrator or service provider should fill out for you), you need to know which protocols and which related applications you want to configure. Your choices for configuring your local network and for setting up your applications are interconnected. The following diagrams describe some of the most common NetBlazer configurations. See Appendix A, "Configuring for Multiple Protocols," for information on configuring to route multiple protocols.

- **LAN-to-LAN routing** involves routing information from one local area network (LAN) to another local network.
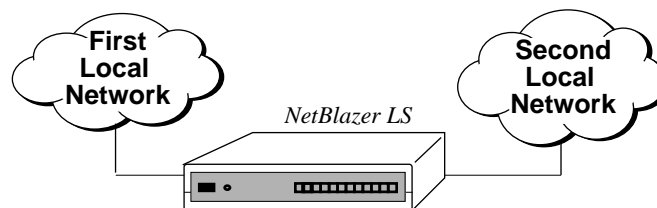
Figure 1-1. LAN-to-LAN Routing

A NetBlazer can work with more than one LAN *interface* to route packets between Ethernet, AppleTalk, or Token Ring networks.

- **Dial-up LAN-to-LAN routing** is used to route information between the local network and a dial-up remote network.
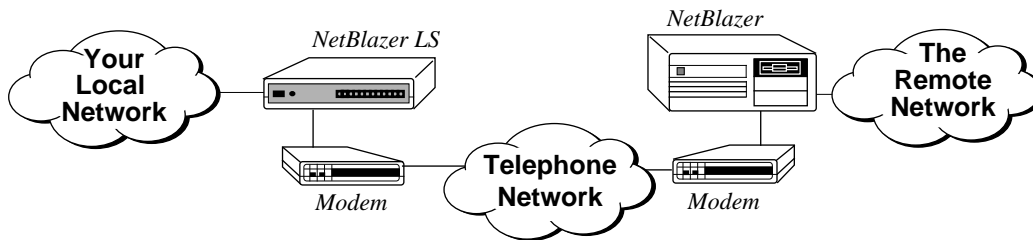
Figure 1-2. Dial-up LAN-to-LAN Routing

This application routes packets between NetBlazers on a dial-up connection over a Public Switched Telephone Network (PSTN) or an ISDN connection.

- **Dedicated LAN-to-LAN routing** is used to route information between the local network and a remote network over a dedicated or leased telephone line.
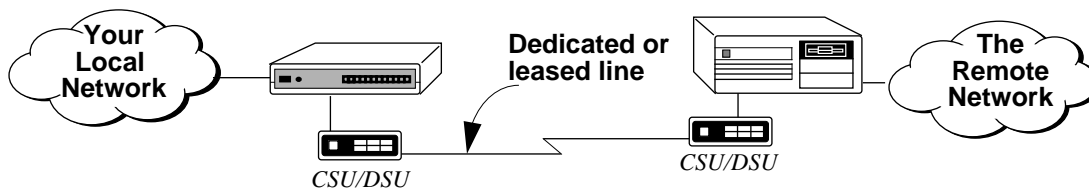
Figure 1-3. Dedicated LAN-to-LAN Routing

You can set up the NetBlazer as a leased-line router with the unique ability to automatically establish a dial-up backup connection if the leased-line connection fails.

- **Dial-up Client-to-LAN routing** is used to route information to and from your local area network and a dial-in user.
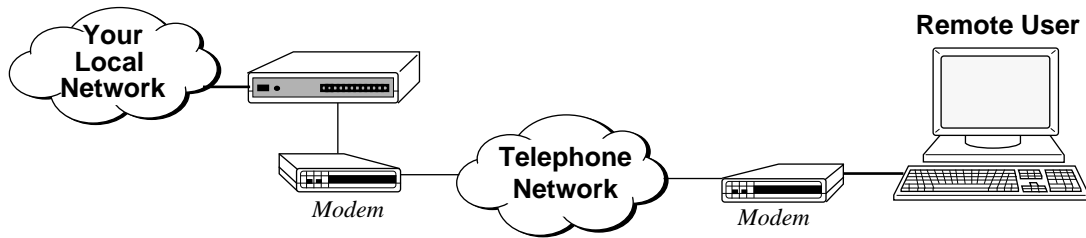
Figure 1-4. Client-to-LAN Routing

This application allows remote users to access servers on your local LAN through a dial-in connection to your NetBlazer.

For example, remote users could login to the NetBlazer and access files or print servers on the local network, or they could use the NetBlazer as a terminal server for telnet or dial-out connections.

- **Modem pooling** uses a network modem pool to communicate between your local network and a remote site, such as a bulletin board.
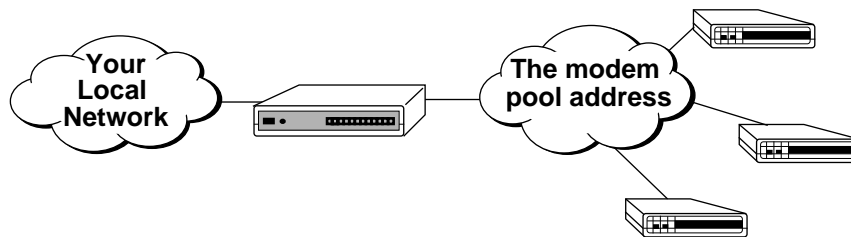
Figure 1-5. Modem Pooling

This application allows IP LAN users to use the first available modem without having to check to see which one is available. By associating an IP address with a pool of modems, a user can telnet to the address of the pool to have the NetBlazer use the first available modem.

Configuration Flowchart

The following flowchart shows the major steps you might take to configure your NetBlazer using the Setup Utility.

1. Fill out any necessary or required worksheets in Appendix B, "NetBlazer LS Configuration Worksheets."

2. Turn on the NetBlazer and log on as **setup**.

3. Set your NetBlazer's name and password.

4. Set up the "port" configurations:

- Configure the protocols (IP, IPX, and/or AppleTalk) you want your Netblazer to use to route information on the LANs attached to the NetBlazer.

- If necessary, change the defaults for your lines. You can change a line from async to sync, for example.

- If your NetBlazer includes ISDN hardware, configure the NetBlazer to route over ISDN lines.

5. Configure your NetBlazer to route information using one or more of the following applications:

- Dial-up LAN-to-LAN communications
- Dedicated LAN-to-LAN communications
- Dial-in remote users
- Dial-out modem pooling

6. Register your NetBlazer with Telebit.

7. Save your settings and exit the Setup Utility, then back up your saved configuration.

NetBlazer LS Installation 2

The NetBlazer LS is currently shipped in two models, the LS ISDN (LS I-1BS) and the LS 2-PT (LS 2S/A), known as Dual DTE. Illustrations of these model's back panels are shown in the following sections.

Both models have one LocalTalk port, and one Ethernet port which can use either a BNC or UTP connection. Both models are shipped with one Ethernet and one LocalTalk adapter pre-installed. You can have a maximum of two LANs connected to your NetBlazer LS (one Ethernet and one LocalTalk).

Dual DTE Installation

1. Connect a null modem cable from your computer to the NetBlazer.*

2. Connect any LAN cables to the LocalTalk or Ethernet ports.

3. Plug in the power cable.

Sync/Async DTE Line 00   Sync/Async DTE Line 01

Ethernet MAC Addr   SN

LocalTalk   BNC   UTP   Power
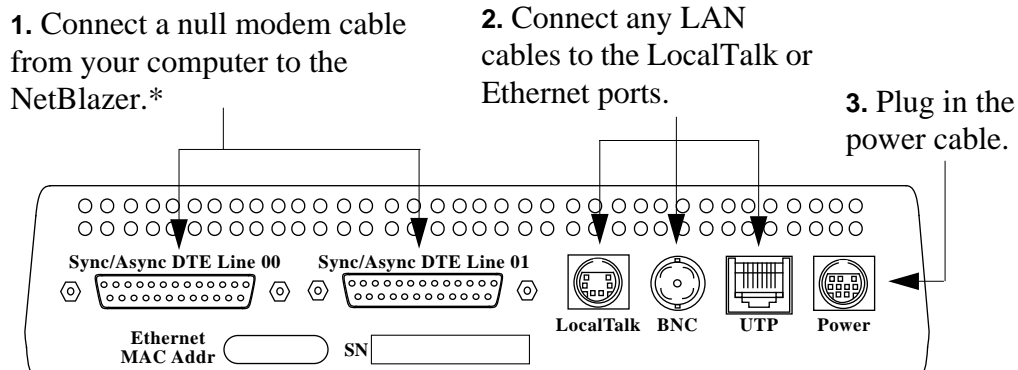
4. Turn on the power switch.

*Or, if your setup will be done remotely, connect the NetBlazer to a modem so you can dial in to configure it.

Figure 2-1. Dual DTE Back Panel and Install Instructions

ISDN Installation
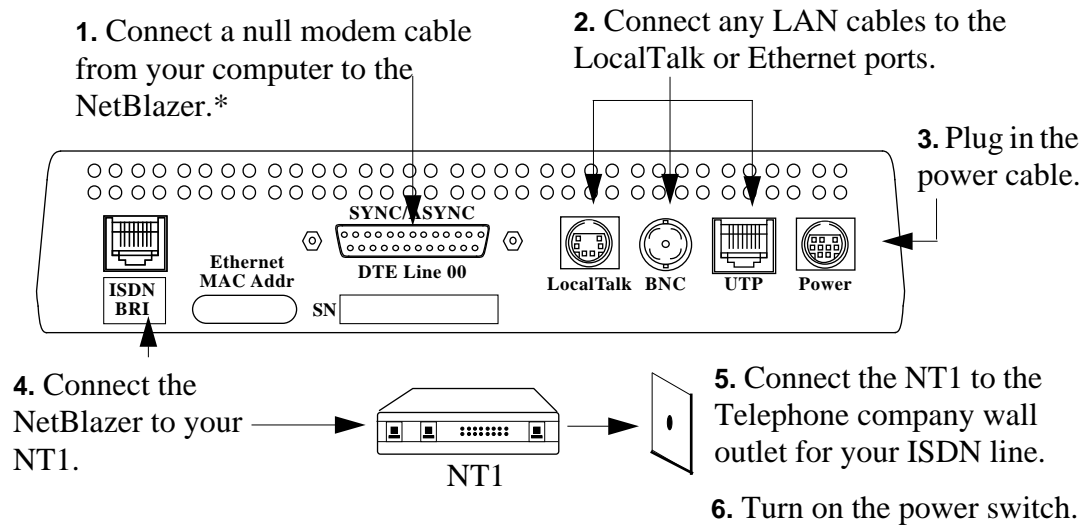
1. Connect a null modem cable from your computer to the NetBlazer.*

2. Connect any LAN cables to the LocalTalk or Ethernet ports.

3. Plug in the power cable.

SYNC/ASYNC

Ethernet
MAC Addr   DTE Line 00   LocalTalk BNC   UTP   Power

ISDN
BRI   SN

4. Connect the NetBlazer to your NT1.

NT1

5. Connect the NT1 to the Telephone company wall outlet for your ISDN line.

6. Turn on the power switch.

*Or, if your setup will be done remotely, connect the NetBlazer to a modem so you can dial in to configure it.

Figure 2-2. ISDN Back Panel and Install Instructions

NetBlazer Front Views

Figure 2-3 shows the front panels for both the ISDN and Dual DTE models of the NetBlazer LS. Both models feature a rocker-type power switch on the left side of the front panel.

Dual DTE

ISDN
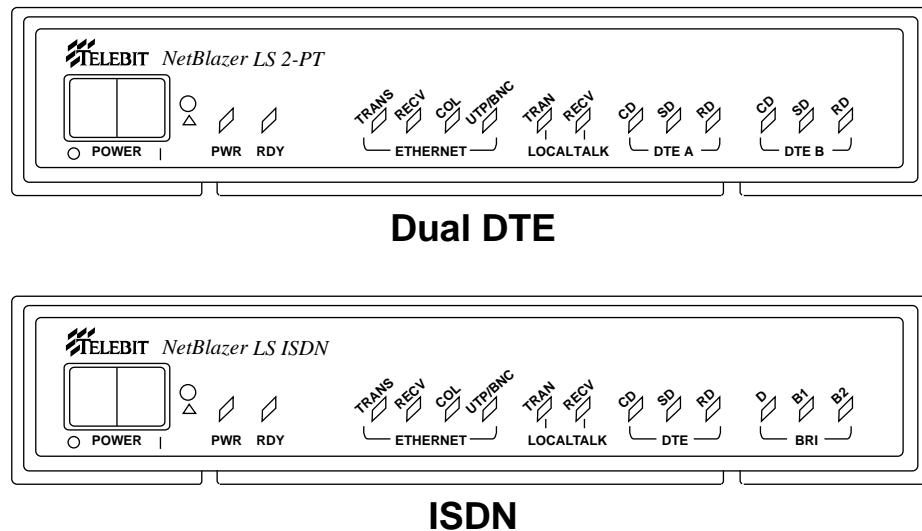
Figure 2-3. NetBlazer LS Front LED Panels

Note: *The pinhole to the right of the power switch is used to reset your NetBlazer to the factory defaults by erasing all saved configuration files. To reset the NetBlazer, turn the NetBlazer's power off and insert one end of a straightened paper clip into the pinhole. Holding the paper clip firmly pushed in, turn the NetBlazer back on and continue to press in on the paper clip for five or more seconds. When you release the paper clip, the NetBlazer will boot up using factory default settings.*

Both NetBlazer models show **PWR** (Power) and **RDY** (Ready) status indicators by the power switch. The **PWR** LED is on when AC power is applied to the NetBlazer. The **RDY** LED is on when the NetBlazer has completed booting up.

The other status indicators light to show activity on the respective channels; unused channels do not light. The Ethernet status indicators include **TRAN** (Transmit), **RECV** (Receive), **COL** (Collision), and **UTP/BNC** (UTP and BNC ports). The LocalTalk indicators are **TRAN** and **RECV**.

For the Dual DTE model, both DTE ports have status lights for **CD** (Carrier Detect), **SD** (Send Data), and **RD** (Receive Data). The ISDN NetBlazer has **CD**, **SD**, and **RD** lights for the DTE port, and for the BRI lines has LED lights for **D** (D-channel), **B1** (first B-channel), and **B2** (second B-channel) status indicators.

LED Activity

When the NetBlazer is first powered on, it performs an automatic Power-On Self Test (POST). This test consists of a series of hardware exercises that must be completed successfully before the NetBlazer can begin operation. Passing the POST test indicates that the NetBlazer is functioning normally.

If an error is detected during POST, the LEDs on the right side of the front panel turn on in a specific pattern that indicates the type of POST error that occurred.

Note: *If there is a POST failure, make a note of which LEDs are on before calling Telebit Technical Support at 1-408-734-5200. The LED information helps your technical support representative determine the most appropriate course of action.*

When the POST sequence finishes, the NetBlazer loads the software. During loading, the **RDY** light blinks to indicate activity. Once the software is loaded, the **RDY** light stays on continually.

While the NetBlazer is running, the **COL** light should only blink on rare occasions. If you see the **COL** light on very often, there may problem with data colliding when it is being transmitted. The **COL** light may also come on if the Ethernet cables have been disconnected or are not properly terminated.

Dual-DTE LEDs

The Dual DTE LEDs on the NetBlazer LS display the current status of the dual port connections. The lights for both DTE A and DTE B indicate the same information.

If the **CD** light is on, the Netblazer has detected a telephone connection. If the **CD** light goes off, the connection has been lost. If the **SD** light is on, your NetBlazer is currently sending data. If the **RD** light is on, your NetBlazer is currently receiving data.

ISDN LEDs

The ISDN LEDs on the NetBlazer LS display the current status of ISDN connections.

If the **D** LED is steadily on (not blinking) once the NetBlazer has completed both booting and loading the software, your cables are all connected and you have an active ISDN connection. If the **D** light is blinking, the NetBlazer is trying to connect but a cable may be loose. If the **D** light is off, you are not connected for ISDN, either because a cable is unplugged or because the ISDN line into your site is not active.

The two **B** lights indicate the status of the two BRI lines into the NetBlazer. If these lights are off, there is no data being sent or received. If these lights are blinking, the NetBlazer is setting up a call. If the lights are steadily on, you have a connection and data is being exchanged.

Equipment Requirements

Each NetBlazer LS model has different equipment requirements. As you read through the following sections, keep in mind which of the two models you have.

For both models, you need the following components for the installation:

- NetBlazer LS, AC cord, and power supply

- 25-pin female-to-female null modem adapter (14674-01)

- ISDN cable WT-MM1430-006 (used to connect the NT1 to the NetBlazer ISDN BRI port), shipped with ISDN model only.

- Any additional cables appropriate to the systems and devices that you are installing. Depending on your setup, you may need to order cables from Telebit (see Appendix K, "Telebit Cables and Adapter Pinouts").

The following sections show cabling information for all of the possible NetBlazer LS connections. Look at the following illustrations and find the ones that relate to your connections to see which cables are needed for those connections.

Terminal to NetBlazer LS Connection
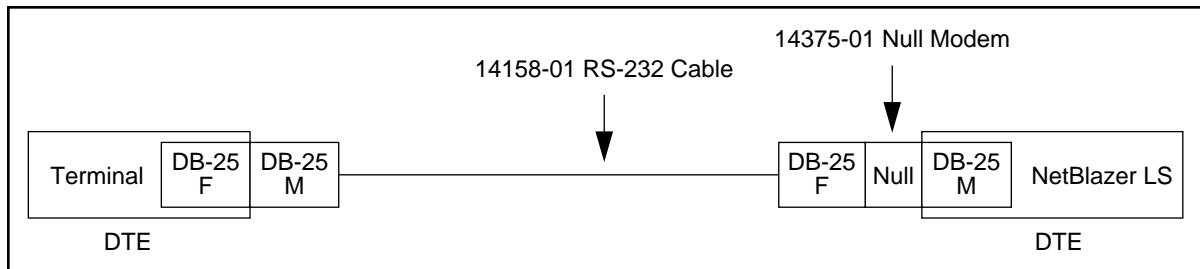
Computer (25 pin) to NetBlazer LS Connection
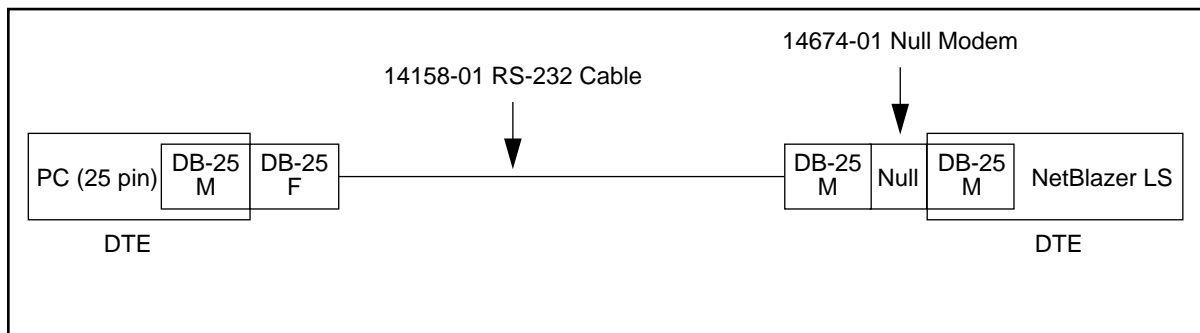
Computer (9 pin) to NetBlazer LS Connection

14674-01 Null Modem

14339-01 RS-232 Cable

| PC (9 pin) | DB-9 M | DB-9 F | | DB-25 M | DB-25 F | | DB-25 M | Null | DB-25 M | NetBlazer LS |

DTE

14158-01 RS-232 Cable

DTE

Modem to NetBlazer LS Connection

14158-01 RS-232 Cable

| Modem | DB-25 F | DB-25 M | | DB-25 F | DB-25 M | NetBlazer LS |

DCE

DTE
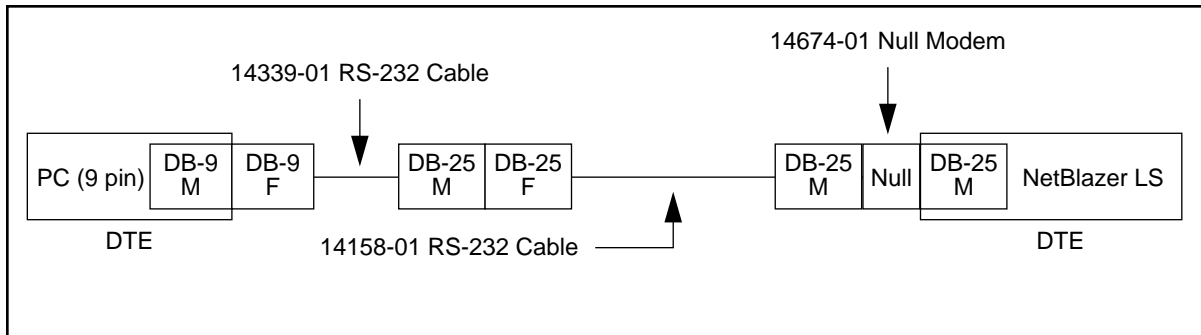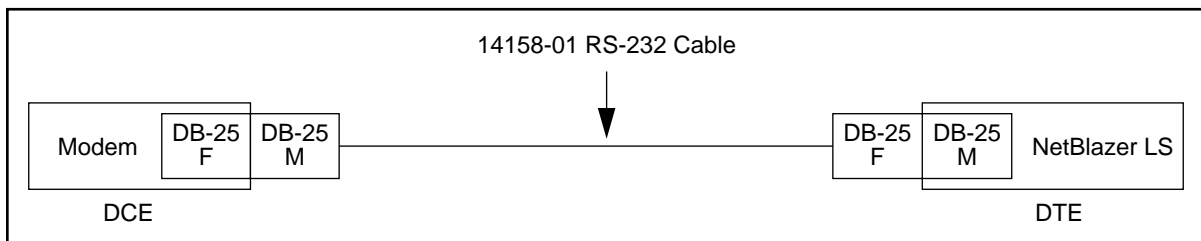
DSU or TA RS-232 Connection to NetBlazer LS (ISDN or Dual DTE)

14358-01 RS-232 Cable

| DSU or TA | DB-25 F | DB-25 M | | DB-25 F | DB-25 M | NetBlazer LS |

DCE

DTE
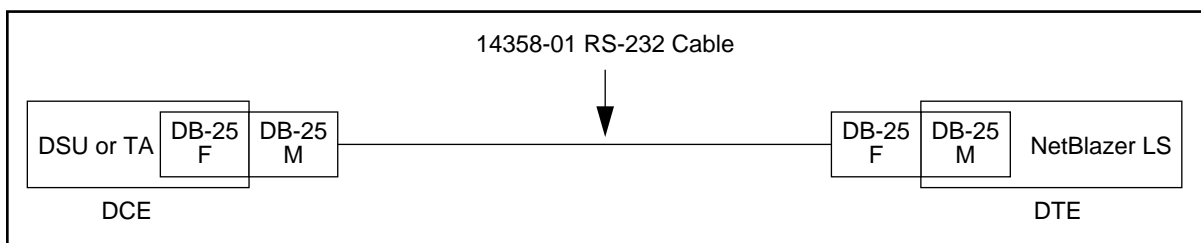
DSU or TA RS-449 Connection to NetBlazer LS (Dual DTE only)

14385-01 RS-449 Cable

DSU or TA	DB-37 F	DB-37 M

DCE

DB-25 F	DB-25 M	NetBlazer LS

DTE
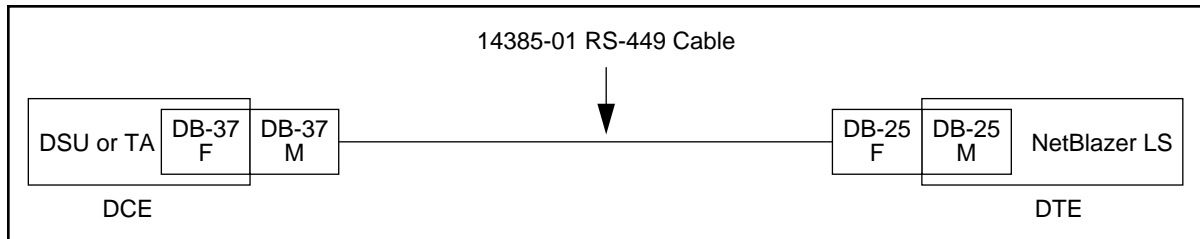
DSU or TA V.35 Connection to NetBlazer LS (Dual DTE only)

14384-01 V.35 Cable

DSU or TA	V35 S	V35 P

DCE

DB-25 F	DB-25 M	NetBlazer LS

DTE
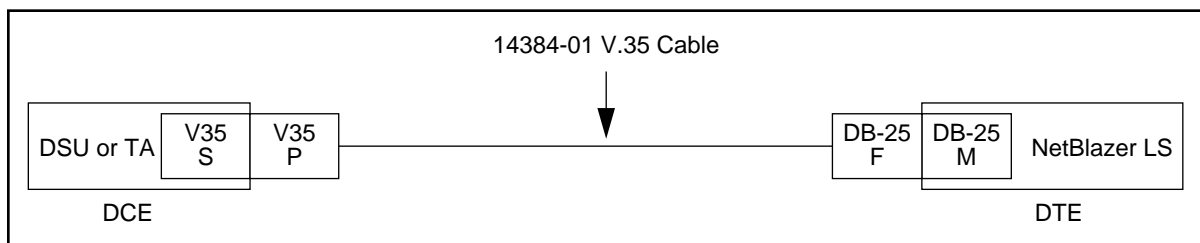
DSU or TA X.21 Connection to NetBlazer LS (Dual DTE only)

14386-01 X.21 Cable

DSU or TA	DB-15 S	DB-15 P

DCE

DB-25 F	DB-25 M	NetBlazer LS

DTE

NT1 Connection to NetBlazer LS (ISDN only)

WT-MM1430-006 RJ45 - RJ45 Cable

| NT1 | RJ48 S | RJ45 P | | RJ45 P | RJ48 S | NetBlazer LS |
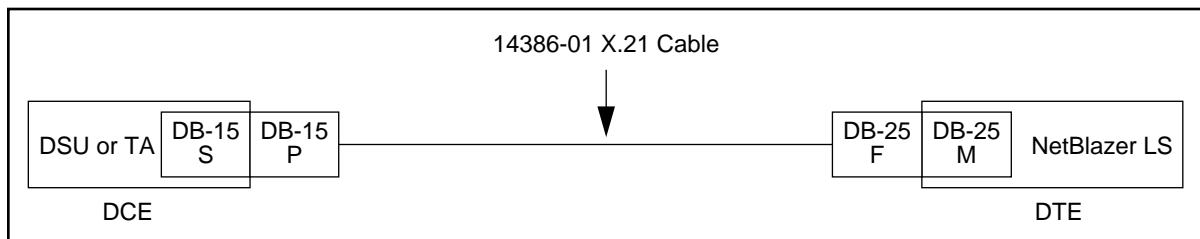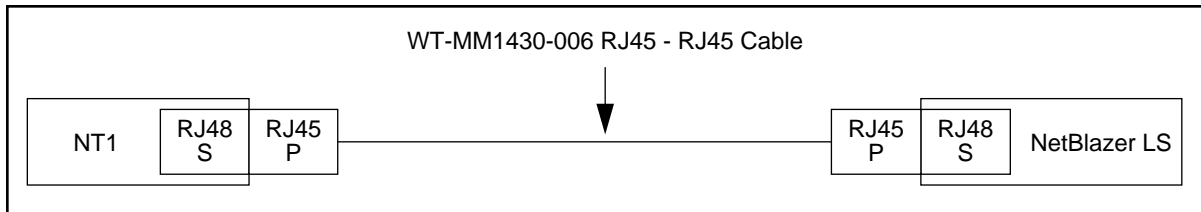
Power Requirements

Your NetBlazer LS is supplied with an autoranging, universal power supply that automatically adapts itself to your line voltage. Your wall plug should be a 110v (or 220v) connection. If for any reason you need to know the power requirements, the NetBlazer LS ISDN (LS I-1BS) requires +5 Volts DC; the NetBlazer LS 2-PT (LS 2S/A) or Dual DTE requires +5 Volts DC, +12 Volts DC and -12 Volts DC.

Warning: *The NetBlazer LS is designed to allow connection to LAN and WAN interfaces with the power turned on. However, as a general safety precaution, turn off the power before making any connections. If the unit is being serviced with the power applied, do not hold or wear any conductive or metallic objects (for example, screwdrivers, watches, or rings) while making the LAN and/or WAN connections.*

ISDN Requirements

The NetBlazer LS ISDN model provides an integrated point to point Basic Rate S/T interface.

To install the ISDN NetBlazer you need:

- ISDN phone lines installed at your location.

- An NT1 (Network Terminator of Layer 1). See Appendix J, "ISDN Service Providers and Manufacturers" for a list of manufacturers.

Note: *Only one NetBlazer can be connected to an NT1. Do not connect any additional NetBlazers or any TAs to the NT1 used for the NetBlazer.*

Before you can configure ISDN in the NetBlazer LS you must obtain the following information from your local telephone service provider:

- The type of switch (5ESSB, DMS100B, or NI1B)

- The SPID (Service Profile IDentifier) numbers

These items are also explained in detail in Appendix J, "ISDN Service Providers and Manufacturers." See Chapter 6, "ISDN Connections" for information on configuring the NetBlazer to use an ISDN connection.

Using the Setup Utility 3

The Setup Utility simplifies NetBlazer configuration by allowing you to fill in fields and make choices on a full-screen display. Here is the Main Menu screen of the Setup Utility:

```
Main Menu                              NetBlazer Setup Utility V3.0

Welcome to the NetBlazer Setup Utility. To learn how to use the
Setup Utility, press Enter on  "First-time user help". To get Help
on individual items, Tab to that item and press the "?" key.

        First-time user help

        NetBlazer setup
        NetBlazer port setup

        Dial-up LAN-to-LAN
        Dedicated LAN-to-LAN
        Dial-in users
        Dial-out modem pool

        Register/Update

        Save/Exit



Press Enter to get Help on using the Setup Utility
```

Figure 3-1. The Main Menu Screen

Note: *The details of what appears on each screen in the Setup Utility depends on the hardware and software configuration of your NetBlazer. The screens you see won't necessarily appear exactly as they do in the manual.*

Depending on your NetBlazer model, you have access to as many as 30 different screens. The following illustration shows the organization of the most commonly used screens.
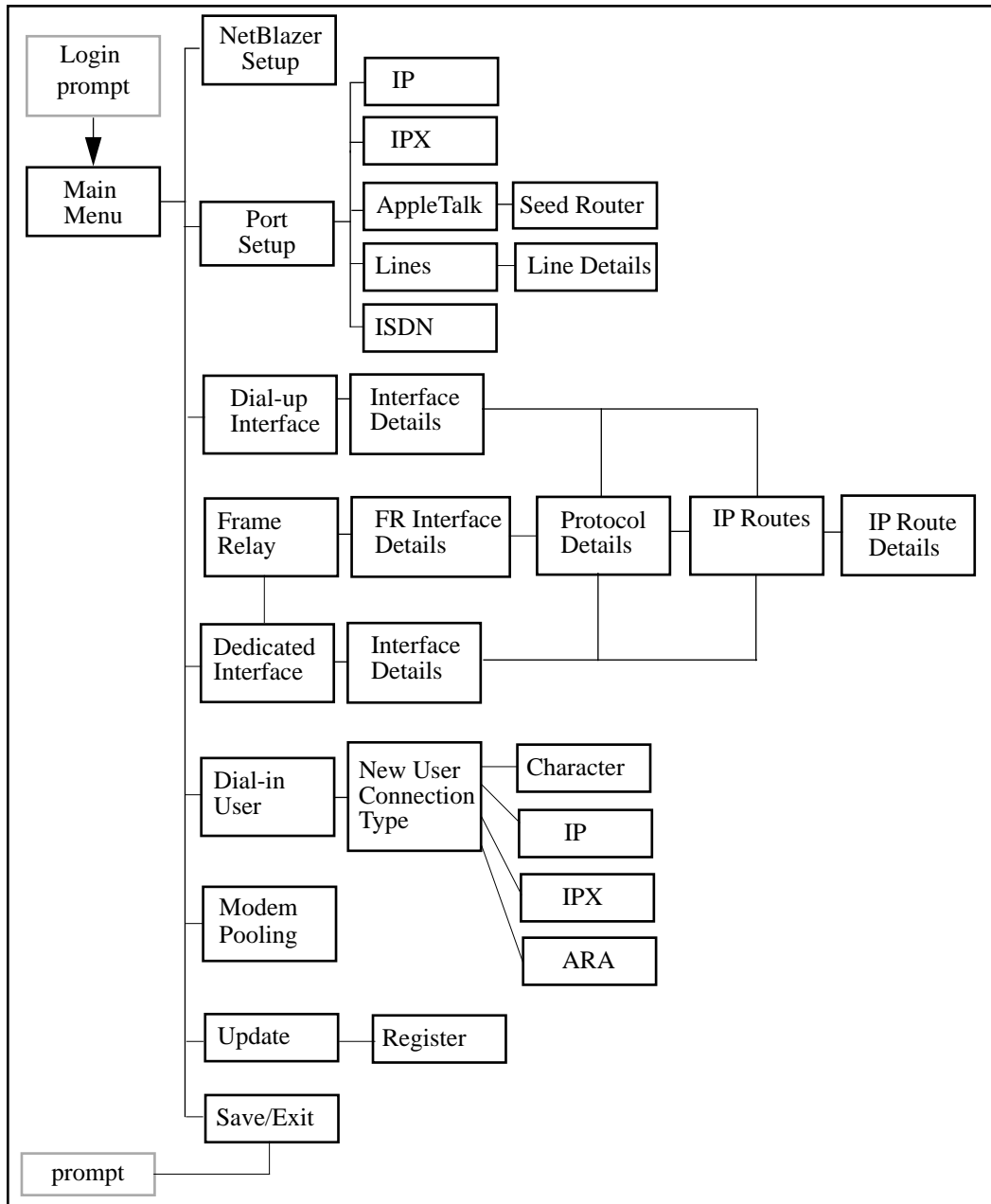
Figure 3-2. Map of Screens in Setup Utility

Most screens allow you to return to the previous screen or to the Main Menu screen when you are done working on that screen.

Each screen has a name in the upper-left-hand corner of the screen; this guide uses those names to refer to the screens.

Online Help is included with the Setup Utility to help you determine what information is required on each screen. See page 3-18 for more information on Help.

Note: *Although the Setup Utility is the easiest way to configure your NetBlazer, you have the option of using a* command-line *interface if you have a complex setup that goes beyond the capabilities of the Setup Utility. To get more information, exit the Setup Utility and log in as* **root***, then type* **man introduction** *for information on how to use the man pages. You can also type* **man netblazer** *for information on the NetBlazer commands. In addition, printed copies of the* NetBlazer Command Reference Manual *and the* NetBlazer Configuration Guide *can be ordered by calling 1-800-TELEBIT (1-800-835-3248) or by calling your Telebit distributor.*

Establishing a Terminal Connection

There are four methods you can use to establish a connection with the NetBlazer for software configuration:

- Direct null-modem connection

- Telnet to the NetBlazer's default IP address

- AppleTalk Data Stream Protocol (ADSP) connection

- Dial-in connection to remote NetBlazer

Direct Null-modem Connection
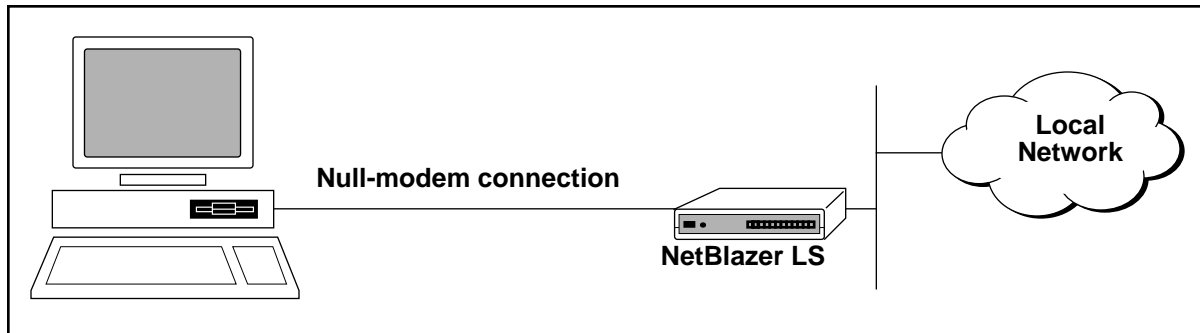
To use the NetBlazer Setup Utility by way of a null-modem connection, perform the following steps:

1. Connect a null-modem cable assembly between your NetBlazer and a PC or terminal.

2. If you are using a PC with a terminal emulation program such as Windows Terminal, start your communications program and make sure that it is set to 9600 bps, 8 bits, 1 stop bit, no parity, and XON/XOFF flow control.

3. Turn on your NetBlazer. If your connection is set up properly, you will see the NetBlazer's login prompt after it has loaded its operating software.

4. Log in as **setup** to run the NetBlazer Setup Utility. Refer to "Starting the Setup Utility" on page 3-7 for instructions on using the Setup Utility.

Telnet to NetBlazer's Default Address
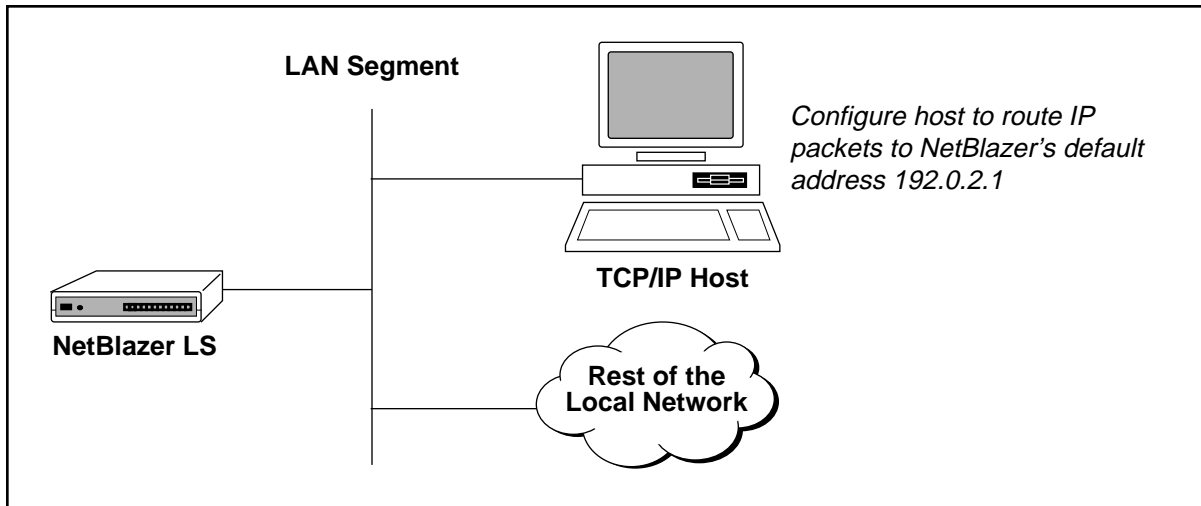
If you are able to add an IP route to a host on the same LAN segment as the NetBlazer, you can use the following procedure to configure the NetBlazer through a telnet session:

1. Choose a TCP/IP host that is on the same LAN segment as the NetBlazer and add the NetBlazer's default address (192.0.2.1) to that host's routing table. For example, on a Sun system you would enter a **route add 192.0.2.1 'hostname' 0** command.

2. Verify that you can communicate with the NetBlazer by issuing a **ping 192.0.2.1** command.

3. If you received the proper response from the ping, enter a **telnet 192.0.2.1** command to establish a connection with the NetBlazer.

4. When the telnet connection is established, you should see the NetBlazer's login prompt. Log in as **setup** to run the NetBlazer Setup Utility. Refer to "Starting the Setup Utility" on page 3-7 for instructions on using the Setup Utility.

Note: *The NetBlazer's default address is a temporary address defined by the IANA (Internet Assigned Number Authority). This address cannot be used for normal operation. You must assign the NetBlazer its own unique address.*

After you have configured the NetBlazer for IP, you should remove the IANA address from your host's routing table and use the NetBlazer's address for subsequent connections with the NetBlazer.

AppleTalk Data Stream Protocol (ADSP) Connection
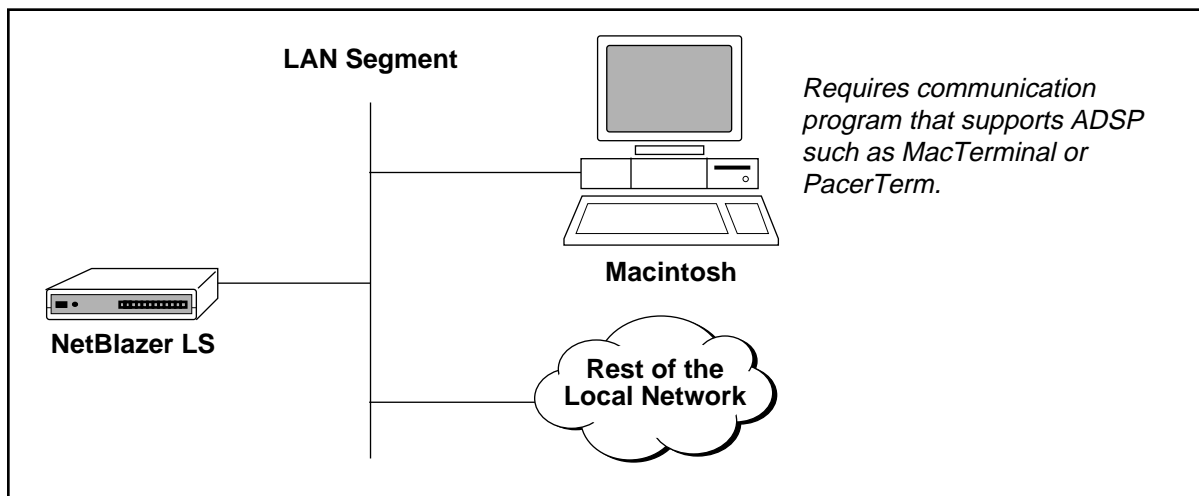
To configure the NetBlazer from a Macintosh using ADSP, perform the following steps:

1. Start a communication program that supports ADSP on Macintosh that is on the same LAN segment as the NetBlazer.

2. Select an ADSP connection from the communications program's Connections Settings dialog screen.

3. Choose the NetBlazer for a ADSP connection.

4. When the ADSP connection is established, you should see the NetBlazer's login prompt. Log in as **setup** to run the NetBlazer Setup Utility. Refer to "Starting the Setup Utility" on page 3-7 for instructions on using the Setup Utility.

Dial-in Connection to Remote NetBlazer
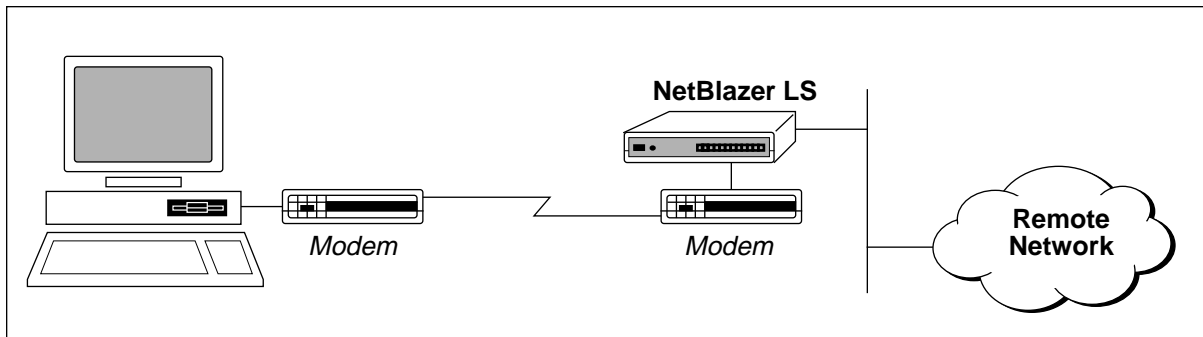
You can use a dial-in connection to configure a NetBlazer at a remote site by performing the following steps:

1. Make sure that the remote NetBlazer is set up and ready to accept a telephone call.

2. Use a communications program on your computer to make a modem connection with the remote NetBlazer.

3. When the connection is established, you should see the NetBlazer's login prompt. Log in as **setup** to run the NetBlazer Setup Utility. Refer to the following section, "Starting the Setup Utility," for instructions on using the Setup Utility.

Starting the Setup Utility

To use the Setup Utility to configure your NetBlazer, follow these steps:

1. Fill in the Worksheets in Appendix B. Ask your service provider or System Administrator for the necessary information.

Note that if you'll be configuring ISDN connections, you need to get information from your local telephone service provider on the switch type and SPID for your ISDN line. Also, if you'll be using a Frame Relay connection, you'll need the DLCI for your connection.

2. Make sure the NetBlazer is correctly connected to your LAN according to the instructions in Chapter 2, "NetBlazer LS Installation." You should be set up to login to the NetBlazer using one of the scenarios described in the previous section.

3. If necessary, start your terminal emulation software. Make sure your terminal emulation software is set to 9600 bps, 8 bits, 1 stop bit, no parity, and XON/XOFF flow control.

4. Turn on the NetBlazer.

After a couple of minutes, the NetBlazer's login prompt appears on your screen or in the window where your terminal emulation software is running.

```
Telebit's NetBlazer Version 3.0

Login as "setup" to configure the NetBlazer

NetBlazer login: setup


If the Setup Utility screens look garbled or you can't move
around on-screen using the Arrow keys, press Ctrl-x Ctrl-x
(hold down the Control key and press x twice) to exit the
Setup Utility.

reading code ... done
found ansi
```

Figure 3-3. The Login Prompt

5. Type **setup**.

Note: *If your NetBlazer has already been configured, you may be prompted to type a password at this point.*

The system displays a couple of informational messages while the software is loaded, then you see the Main Menu screen:

```
Main Menu                                    NetBlazer Setup Utility V3.0

Welcome to the NetBlazer Setup Utility. To learn how to use the
Setup Utility, press Enter on  "First-time user help". To get Help
on individual items, Tab to that item and press the "?" key.

        First-time user help

        NetBlazer setup
        NetBlazer port setup

        Dial-up LAN-to-LAN
        Dedicated LAN-to-LAN
        Dial-in users
        Dial-out modem pool

        Register/Update

        Save/Exit


Press Enter to get Help on using the Setup Utility
```

Figure 3-4. The Main Menu Screen

Note: *If you have any problems displaying the Main Menu screen, press Ctrl-x Ctrl-x to exit the Setup Utility. Your terminal or terminal emulation software must be set to ANSI.*

Only one session of the Setup Utility should be running at a time. Attempting to run multiple sessions may result in memory problems in the NetBlazer LS.

If your screens get garbled, you can press Ctrl-l to refresh the current screen.

If you are reconfiguring an already configured NetBlazer and would like to return all settings to the factory defaults, turn the NetBlazer off and insert a paperclip in the small hole to the right of the on/off power rocker. Keep the paper clip inserted for five or more seconds while you turn on the power. This will completely delete all saved configuration and password files.

Working on the Main Menu Screen

The Main Menu screen displays the major tasks you need to perform to configure the NetBlazer. After completing each task you should return to the Main Menu to select another task.

1. Your cursor is initially on the **First-time user help** item; this item is highlighted to show the location of the cursor. Press Enter to see a menu of Help items relating to using the Setup Utility.

2. Use the Tab key or the Down Arrow key to move the highlight to any of the other menu items and press Enter to configure that application.

Select:	To:	Using this worksheet from Appendix B:
NetBlazer setup (Chapter 4)	Name the NetBlazer and set a password.	Worksheet 1
NetBlazer port setup (Chapter 4, Chapter 5, Chapter 6)	Set up the NetBlazer to route IP, IPX, and/or AppleTalk packets to and from the local networks.	Worksheet 2 Worksheet 3 Worksheet 4
	Modify the default settings for any lines connected to the NetBlazer.	Worksheet 5
	Configure the NetBlazer to use an ISDN connection. You must have ISDN hardware in your NetBlazer in order to select this menu item.	Worksheet 6
Dial-up LAN-to-LAN (Chapter 7)	Configure the NetBlazer for dial-up routing between the local network and a remote network.	Worksheet 7 Worksheet 8 Worksheet 9 Worksheet 10

Select:	To:	Using this worksheet from Appendix B:
Dedicated LAN-to-LAN (Chapter 8)	Configure the NetBlazer for any dedicated or leased line routing between the local network and a remote network. This includes Frame Relay connections.	Worksheet 11 Worksheet 12 Worksheet 13 Worksheet 14 Worksheet 15
Dial-in users (Chapter 9)	Configure the NetBlazer for Client-to-LAN routing as a terminal server or ARA server for dial-in users.	Worksheet 16 Worksheet 17 Worksheet 18 Worksheet 19
Dial-out modem pool (Chapter 10)	Configure the NetBlazer so local IP users can use the NetBlazer's modem pool to dial out.	Worksheet 20

Warning: *You may run into memory problems during configuration depending on the number of interfaces, number of users, and size of routing tables for your configuration. See the Release Notes that came with your NetBlazer for the latest information on memory management. Appendix G, "Troubleshooting and Customer Support" has information on contacting customer support if you run into problems.*

3. When you are done configuring your applications, use the Tab key or the Arrow keys to move to **Register/Update** and press Enter to register your NetBlazer or to get software patches and updates. See Chapter 11, "Registering and Updating," for more information.

4. Once you have registered your NetBlazer, move to the **Save/Exit** menu item and press Enter to save your configuration and/or exit the Setup Utility. For more information on the items on the Save/Exit screen, see "Working on the Save/Exit Screen" on page 3-16.

5. After you have saved your configuration and have exited the Setup Utility, you should back up your configuration. For information on backing up your configuration to the network, see Appendix F, "NetBlazer Backup."

Moving Around and Entering Data

To use the Setup Utility, you move around on-screen, select menu items, type information in fields, change settings for fields, and save your work. You may also want to access the online Help.

The following sections describe the keys you use to move around, perform tasks, and enter data. For a one-page summary of the keys used in the Setup Utility, see Appendix I, "Key Summary."

Moving Around

As you move, the highlight on the screen moves to show the location of the cursor.

To:	Use:
Move down one line through the menus or fields on a screen.	Down Arrow key, the Tab key, or Ctrl-d.
Move up one line.	Up Arrow key or Ctrl-u.
Select a menu item.	Enter, Return, or Ctrl-m. (Note that any time the documentation or Help says "press Enter" you can press Return or Ctrl-m instead.)
Move back to the previous screen	Ctrl-p.
Go to the Main Menu screen.	Ctrl-t.
Go to the Save/Exit screen, or exit the Save/Exit screen.	Ctrl-x.

Entering and Editing Data

The Setup Utility has three different types of fields where you can enter or select data: text fields, list fields, and choice fields.

Text Fields

Text fields are those fields in the Setup Utility where you can type in letters or numbers. All text fields are shown in the Setup Utility with colons (:) following the text so you have a visual way to tell fields from menu items.

```
NetBlazer name:        <<NOT SET>>
System password:       <<NOT SET>>

Date:                  Jul 04 1995
Time:                  12:07:24
```

Figure 3-5. Some Text Fields

When you move to a text field and press Delete you blank the field and go into *input mode*; once you are in input mode, you can type your changes. (If you want to change part of the current setting but don't want to retype the entire field, use the keys described below to edit the text in the field.)

When you are done typing information into a field, press Enter or Return to have the NetBlazer accept the information, or use the Tab key or the Arrow keys to move to another field. Once you move out of a text field, the information in that field is *set*. For example, once you move out of the NetBlazer name field, the NetBlazer's name is set.

Note: *Be aware that certain fields in the NetBlazer Setup Utility are case sensitive. You need to be very careful with case when entering a NetBlazer name, any passwords or crypto keys, any interface names, and user names.*

Also, to avoid problems with remote password files, user names, passwords, and hostnames should not include any of the following:

> "@" *(at sign)*
> ":" *(colon)*
> "%" *(percent sign)*
> "\" *(slash)*
> "/" *(backslash)*
> "{" *and* "}" *(curly brackets)*
> *any nonprinting characters*

Text Editing Keys

You can use the following keys to edit the text in text fields:

To:	Use:
Blank an entire field (if your cursor is on the first character in a field) and go into input mode.	Delete.
On some systems, delete the selected (highlighted) character when in edit mode. On other systems, deletes the last character in a field if the cursor is to the left of that character.	Delete.
Delete the character to the left of the cursor.	Backspace or Ctrl-h.
Delete all contents in a text field, leaving the field blank and placing the cursor at the beginning of the field.	Ctrl-e.
Cancel all changes to a field and return the field to the previous setting.	Ctrl-c.
Move the cursor one character to the left.	Left Arrow or Ctrl-a.
Move the cursor one character to the right.	Right Arrow or Ctrl-k.

Note: *The Macintosh extended keyboard does not have a backspace key so Macintosh extended keyboard users must always use Ctrl-h.*

List Fields

List fields are those where you type information and what you typed is added to the list below the field:

```
List field                                    Type here

       New connection:        <<NAME>>

       001 agate
       002 opal          ←  List items
       003 pearl
       004 ruby
       005 topaz
       --MORE--
```
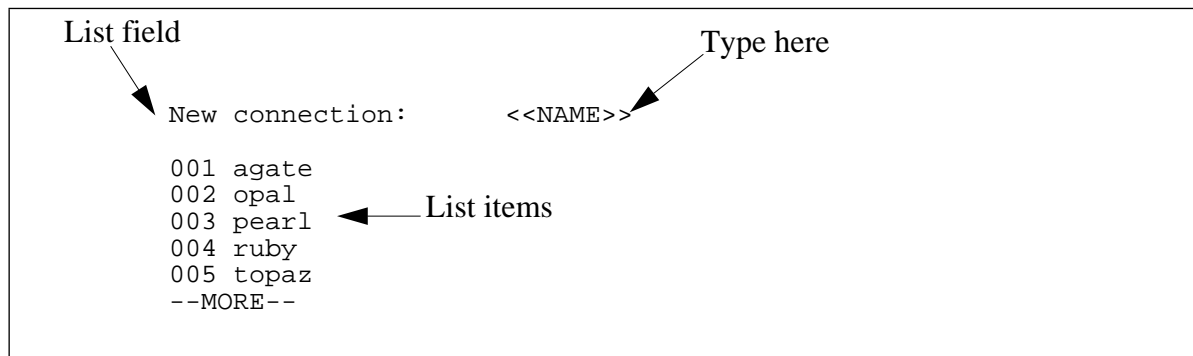
Figure 3-6. A List Field and List Items

When you press Enter or move to another field, what you typed in the List field is added to the list below the field. For most lists, you can move to an item in the list and press Enter to see another screen where you can change or delete the selected item. (However, for the list of zones for an AppleTalk Seed Router, you delete zones by using Tab or the Arrow keys to move to its name and then press Delete.)

For long lists, you may see <<MORE>> or --MORE-- at the bottom of the list, indicating that there are more items in the list than are visible on the screen. To scroll to the rest of the list, you can press the Down Arrow key to move one item at a time down through the list. When you reach the <<MORE>> the screen redisplays showing a second "page" of text. You can then use the Up Arrow key to move back up through the list.

If you have a large number of list items, you can also search for items using Ctrl-f. For example, to search for an interface named "india" in the screen shown in the previous illustration, type **Ctrl-f india** and press Enter or Return to have the cursor move to the interface named india. Or, if you want to go to the 25th interface in the list, you type **Ctrl-f 25** and press Enter or Return to have the cursor move to the 25th interface in the list. Note that user names, interface names, and NetBlazer names are case sensitive, so be sure to use the correct case when searching lists of these items.

Choice Fields

Choice fields are those where you can choose items by pressing the Spacebar (or the Left or Right Arrow keys) to cycle through the choices.

```
Dial-out:          yes
Telnet/rlogin:     yes
Multi-login:       yes
Configuration:     no
Status:            no
```

Figure 3-7. Choice Fields

When the choice you want is displayed in the field, press Enter or use the Tab key or the Arrow keys to move to another field to set that choice.

Working on the Save/Exit Screen

Once you have completed your NetBlazer setup, you need to save your configuration. Any time you modify your NetBlazer configuration, you should save your configuration. *If you don't save your changes and the NetBlazer is rebooted, all settings revert to the last saved configuration.* For information on backing up your configuration files to a host on your network, see Appendix F, "NetBlazer Backup."

To use the Save/Exit screen items:

1. Press Ctrl-x (or select **Save/Exit** from the Main Menu screen). The Save/Exit screen is displayed:

```
Save/Exit                                NetBlazer Setup Utility V3.0

Save the current configuration and exit the Setup Utility.
Reboot resets the NetBlazer to the last saved configuration.

        Previous

        Save configuration
        Reboot NetBlazer
        Help

        Return to Main Menu

        Exit Setup Utility






Press Enter to return to the previous screen
```

Figure 3-8. The Save/Exit Screen

2. Select one or more of the items on the menu.

   a. To save your current settings, select **Save configuration**. The NetBlazer will display various messages indicating what files were saved. (For information on backing up those files to a machine on the network, see Appendix F, "NetBlazer Backup.")

   b. When you select **Reboot NetBlazer**, the NetBlazer reboots using the last saved settings.

   c. When you select **Exit Setup Utility** on the Save/Exit screen, you return to the login prompt. (If you used telnet or a dial-in connection, you may leave the NetBlazer entirely.)
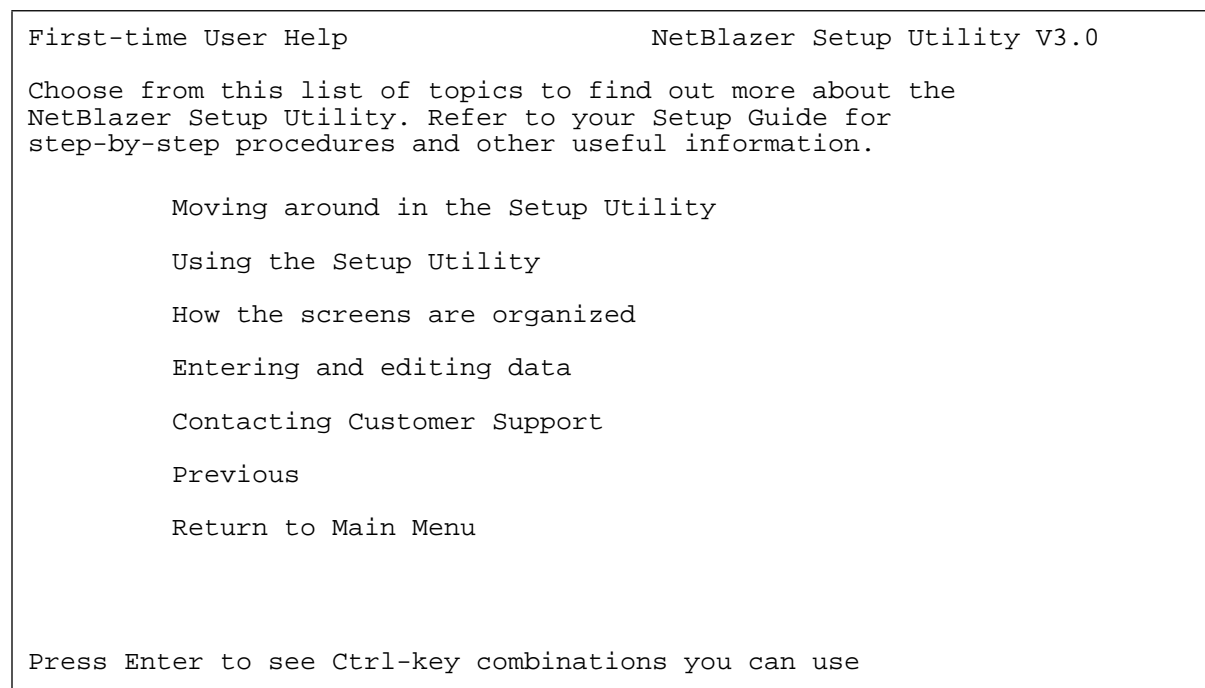
Getting Online Help

There are several different ways for you to get Help in the Setup Utility.

First-time User Help

The Main Menu screen has a menu item named **First-time user help**. When you select it, you see a menu of Help items that you may find useful:

```
First-time User Help                    NetBlazer Setup Utility V3.0

Choose from this list of topics to find out more about the
NetBlazer Setup Utility. Refer to your Setup Guide for
step-by-step procedures and other useful information.

        Moving around in the Setup Utility

        Using the Setup Utility

        How the screens are organized

        Entering and editing data

        Contacting Customer Support

        Previous

        Return to Main Menu




Press Enter to see Ctrl-key combinations you can use
```

Figure 3-9. The First Time User Help Screen

The first time you use the Setup Utility, you should go to the Help Menu screen and read through the items shown there. Each of the four items on the Help Menu screen displays one or more screens of information. Having this information on-screen is very useful, since it is easy to go to the Help screens as you are working in the Setup Utility.

On-screen Help Messages

At the top of each screen is a one- to three-line explanation of the screen. Use that explanation together with the one-line informational message shown at the bottom of each screen. The informational message changes as you move from item to item on each screen. These messages clue you in to whether or not your cursor (highlight) is on a choice field, a menu item, or a text field by using key words in each line:

- **Type** indicates a field where you can type information.

- **Press Spacebar** indicates a choice field.

- **Press Enter** usually indicates a menu item or a list item where pressing Enter displays another screen. You can also press Enter on some fields to delete the current interface or connection.

Context Sensitive Help

If you have a question at any time while you're using the Setup Utility, press the question mark key (?) to display a message about the current item. (For some computers, you can press F1 or PF1.) The Setup Utility displays a paragraph or two specifically about the field or area where your cursor is. When you are done reading the Help, press any key to return to the Setup Utility screen.

Full Screen Help

Each Setup Utility screen has a Help menu item that displays one or more screens of explanation on how that specific screen works and discusses what items on the screen are optional or only apply in certain situations. On any screen, move to a **Help** menu item, then press Enter to see the Help screen.

Note: *If you would like to find out more about working on the command line, exit the Setup Utility and log in to the NetBlazer as* **root**. *Then type* **man introduction** *for information on how to use the man pages. You can also type* **man netblazer** *for information on the NetBlazer commands.*

NetBlazer and LAN Setup 4

NetBlazer Setup

You can use Worksheet 1, the "NetBlazer Name and Password" worksheet on page B-4 to collect and organize the information you need to complete the tasks in this section.

To set up your NetBlazer:

1. Establish a connection to your NetBlazer as described on page 3-3.

2. On the Main Menu screen, select **NetBlazer setup**.

The NetBlazer Setup screen appears.

```
NetBlazer Setup                          NetBlazer Setup Utility V3.0

Assign a name and password to your NetBlazer. You only need
to change the date and time if they are incorrect.

        Previous

        NetBlazer name:        <<NOT SET>>
        System password:       <<NOT SET>>

        Date:                  Jul 04 1995
        Time:                  12:07:24

        Help

        Return to Main Menu




Press Enter to return to the previous screen
```

Figure 4-1. The NetBlazer Setup Screen

3. In the **NetBlazer name** text field, type a *hostname* for your NetBlazer. A NetBlazer name is required. Short, easy-to-remember names are the best, especially if you want to set up LAN-to-LAN applications where both sides have to be sure to enter the correct NetBlazer hostname.

Note: *This field is case sensitive. You need to be very careful with case when entering a NetBlazer name.*

Be careful not to type any spaces in the hostname; the NetBlazer does not recognize hostnames when they have spaces in them.

Also, to avoid problems with remote password files, your NetBlazer name should not include any of the following characters: "@", ":", "%", "\", "/", "{", "}", or any nonprinting characters.

4. In the **System password** field, type a password for the root and setup accounts. Type the password a second time to confirm it. Assigning a password keeps unauthorized users from reconfiguring your NetBlazer.

The NetBlazer accepts a maximum of eight characters for a password. If you chose a password larger than eight characters, the NetBlazer ignores the remaining characters.

Note: *This field is case sensitive. You need to be very careful with case when entering a NetBlazer password.*

Also, to avoid problems with remote password files, your NetBlazer name should not include any of the following characters: "@", ":", "%", "\", "/", "{", "}", or any nonprinting characters.

5. In the **Date** text field, you can type a new date in the *mmm dd yy* format.

For example, July 4, 1995 is entered as **jul 04 95**. You need only assign a date if the displayed date is incorrect.

6. In the **Time** text field, you can type a new time in the *hh:mm:ss* format.

For example, 1:30 in the afternoon can be entered as **01:30:00p**, or 1:30 in the morning can be entered as **01:30:00a**. Or, you can use the military time convention and enter the p.m. time as **13:30:00**. You should assign a time only if the displayed time is incorrect.

NetBlazer LAN Configuration

When the NetBlazer is turned on, it automatically creates an *interface* for every LAN interface card installed in your NetBlazer. In this manual, the term interface is used for connections between devices or systems, specifically network connections.

To configure an interface, you tell the NetBlazer which of the physical NetBlazer ports the LAN is attached to, and provide the NetBlazer with a LAN address for that interface (in the case of IP and IPX).

You need to configure at least one interface for each protocol you'll be routing over the LANs attached to your NetBlazer. (See Appendix A, "Configuring for Multiple Protocols" for information on setting up multiple protocols.) Note, however, that if your NetBlazer will only be used as a dial-up ARA server, the NetBlazer is preconfigured as an AppleTalk nonrouter on both the en0 port and the lt0 port. This means that if you will only be using ARA (and doing no other routing) your NetBlazer is completely configured once you have named it and set a password. For all other routing, however, you need to set up the NetBlazer so it can route IP, IPX, and/or AppleTalk on the LANs.

To configure your LAN protocols:

1. Complete the NetBlazer setup steps described on page 4-1 and return to the Main Menu.

2. Select **NetBlazer port setup**.

You see the NetBlazer Port Setup screen:

```
NetBlazer Port Setup                          NetBlazer Setup Utility V3.0

To configure the LAN protocols, move to "IP LAN", "IPX LAN" or
"AppleTalk LAN" and press Enter. Use "Line setup" to configure lines,
"ISDN setup" to set the switch type and SPIDs for ISDN connections.

          Previous

          IP LAN
          IPX LAN
          AppleTalk LAN

          Line setup

          ISDN setup

          Help
          Return to Main Menu



Press Enter to return to the previous screen
```

Figure 4-2. The NetBlazer Port Setup Screen

3. Move to **IP LAN**, **IPX LAN**, or **AppleTalk LAN** and press Enter.

The following section describes how to configure the NetBlazer to route IP packets to the local network. Configuring the NetBlazer to route IPX is described on page 4-6; configuring the NetBlazer to route AppleTalk is described on page 4-8. When you are done configuring the protocols, remember to save your configuration.

Selecting **Line setup** is described in Chapter 5, "Line Setup." Selecting **ISDN setup** is described in Chapter 6, "ISDN Connections."

Configuring IP Routing

You can use Worksheet 2, the "LAN Setup for IP" worksheet on page B-5 to record and organize the information you need to complete the tasks in this section.

To configure the NetBlazer to route IP packets, follow these steps:

1.   On the NetBlazer Port Setup screen, select **IP LAN**. The IP LAN Setup screen appears.

```
IP LAN Setup                              NetBlazer Setup Utility V3.0

Use this screen to set up the NetBlazer for a local IP network.
You must assign an IP address/bits to the NetBlazer and each of
its interfaces.

        Previous

        Global address/bits: 192.0.2.1/24

        Domain name suffix:
        Domain name server:

        en0 address/bits:    192.0.2.1/24

        Help

        Return to Main Menu




Press Enter to return to the previous screen
```

Figure 4-3. The IP LAN Setup Screen

2.   In the **Global address/bits** text field, specify the IP Address for the NetBlazer; for example, **143.191.11.5/24**. If the NetBlazer has not previously been configured for IP, this address is temporarily set to **192.0.2.1**, a default IP address suggested by the IANA (Internet Assigned Number Authority).

      For the **/bits** part of the address, for example, you might specify **/24** for a netmask of **255.255.255.0**. See Appendix C, "IP Addressing," for more information on IP addresses and subnet bitmasks.

3.   For **Domain name suffix**, type the suffix the domain name server uses instead of the numeric routing addresses. For example, one of Telebit's domain name servers uses the suffix **sunnyvale.telebit.com** for its routing. If you do not have a domain name server on the local network, leave this field unchanged and skip step 4.

4. For **Domain name server**, type the IP address of the domain name server on your local network.

5. The NetBlazer fills in the first **address/bits** field listed with the Global IP address; leave this field set as prompted.

   You may see interfaces named **en0** or **lt0** in this list. Interface names beginning with **en** are Ethernet interfaces. Interfaces names beginning with **lt** are LocalTalk interfaces.

6. If additional interfaces appear on this screen, type a different IP address for each interface you plan to route IP packets over. Only one of the NetBlazer interfaces can have the same address as the Global IP address, so you need to make sure any additional interfaces have a different address.

7. Once you have finished IP configuration, you can configure other protocols or return to the Main Menu.

Configuring IPX Routing

You can use Worksheet 3, the "LAN Setup for IPX" worksheet on page B-6 to record and organize the information you need to complete the tasks in this section.

To configure the NetBlazer to route IPX packets, follow these steps:

1. On the NetBlazer Port Setup screen, select **IPX LAN**. The IPX LAN Setup screen appears.

```
IPX LAN Setup                           NetBlazer Setup Utility V3.0

Use this screen to set up the NetBlazer for a local IPX network.
You must set the Global address and assign a network address to
any interface that has not learned its address from the LAN.

        Previous

        Global address:      0

        en0  address:        0

        Help

        Return to Main Menu



Press Enter to return to the previous screen
```

Figure 4-4. The IPX LAN Setup Screen

2. In the **Global address** text field, specify the global IPX address for the NetBlazer. The global address has two parts: the IPX network number and the IPX node number. For example, you might enter **bac.1** for your global address. You must enter the network number part of the address; however, if you don't enter a node number (the part after the period), the NetBlazer automatically generates a node number for you. See Appendix D, "IPX Addressing," for more information on IPX addresses.

3. In most cases, the NetBlazer automatically determines the interface address, but if it cannot determine this address, you need to set the **address** field yourself. If any interfaces on this screen are set to **0**, the NetBlazer was unable to determine the address for that interface.

   You may see interfaces named **en0** or **lt0** in the address field. Interface names beginning with **en** are Ethernet interfaces. Interface names beginning with **lt** are LocalTalk interfaces.

4. If any other interfaces appear on this screen, type a different IPX address for any interface you plan to route IPX packets over. These addresses must be different from the global address.

5. Once you have finished IPX configuration, you can configure other protocols or return to the Main Menu screen.

Configuring AppleTalk Routing

If you want to use the NetBlazer as an AppleTalk router, you need to set the NetBlazer up as either a node or router on the LocalTalk LAN. If you want the NetBlazer to be a router, you must decide whether it is a seed router or a non-seed router. (See Appendix E, "AppleTalk Routing," for more information on routers and nodes.)

Note that seed routers are the primary routers for AppleTalk. Seed routers maintain a static list of the routes on an AppleTalk network; this list is shared with nonseed routers. If you set up the NetBlazer as a nonseed router, there must be at least one seed router somewhere on the same LAN segment as the interface for the nonseed NetBlazer to get information from.

Note: *If you plan to use the NetBlazer only as an ARA server (in other words, so someone on a remote Macintosh can call in to the NetBlazer to access a modem or the LocalTalk LAN), you do not need to configure the NetBlazer for AppleTalk. The NetBlazer is shipped with both en0 and lt0 preconfigured with all necessary settings.*

You can use Worksheet 4, the "LAN Setup for AppleTalk" worksheet on page B-7 to record and organize the information you need to complete the tasks in this section.

To configure the AppleTalk protocol, follow these steps:

1. On the NetBlazer Port Setup screen, select **AppleTalk LAN**. The AppleTalk LAN Setup screen appears.

```
AppleTalk LAN Setup                      NetBlazer Setup Utility V3.0

Select AppleTalk router type for each interface. If you set an
interface as a seed router, you will be taken to another screen
to configure the router.

        Previous

        en0 router type:    nonroute
        lt0 router type:    none

        Help

        Return to Main Menu




Press Enter to return to the previous screen
```
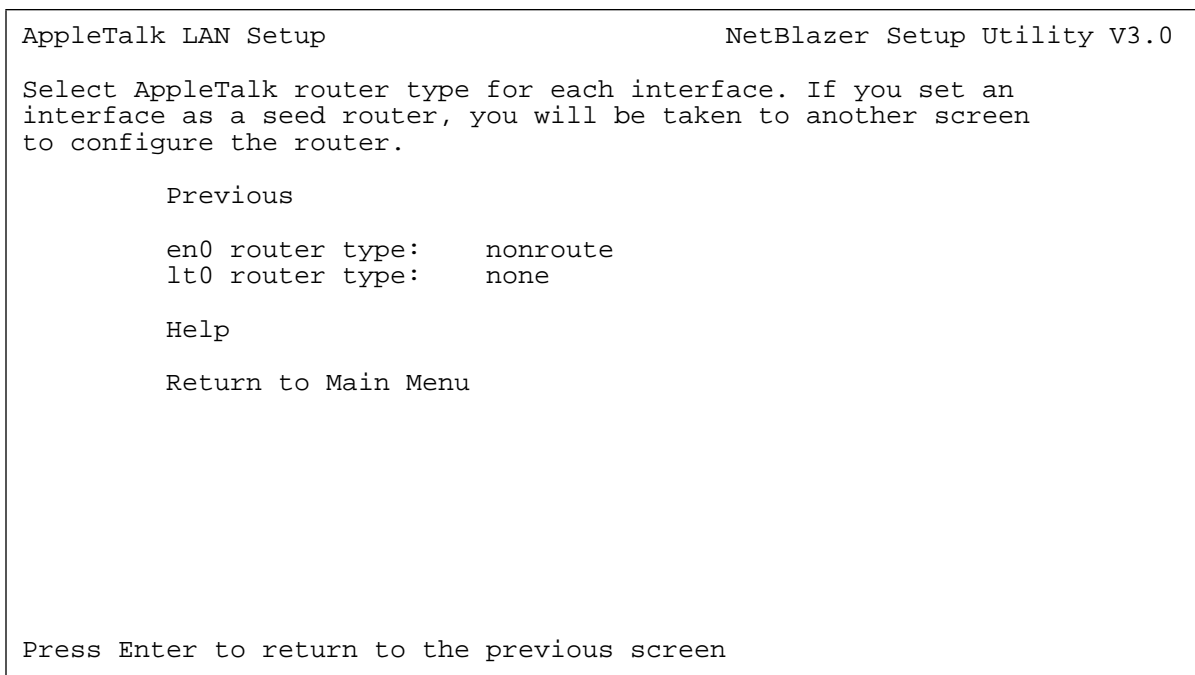
Figure 4-5. The AppleTalk LAN Setup Screen

2. For the first **router type** field shown, press the Spacebar to select **seed**, **nonseed**, **nonroute**, or **none**.

   You may see interfaces named **en** or **lt** for router type. Interface names beginning with **en** are Ethernet interfaces. Interface names beginning with **lt** are LocalTalk interfaces.

Note: *If you are running the Setup Utility through ADSP, and en0 is the default port (that is, the first port configured), you can only change the en0 port from* **nonroute** *to* **nonseed** *or from* **nonroute** *to* **seed**. *Any other selections result in an error message. (The default setting for en0 is* **nonroute**.*)*

   Select **nonroute** if you want the NetBlazer to appear only as a node on a network. Select **nonseed** if you want to acquire route information from another router on the LAN. (Selecting **nonseed** only works if there is an AppleTalk seed router on the network.)

Select **seed** if you want the NetBlazer to perform as the primary router for AppleTalk. Seed routers maintain a static list of the routes on an AppleTalk network; this list is shared with nonseed routers. If **seed** is selected, when you press Enter you see the AppleTalk Seed Router screen described in step 1 of the following section, "Seed Router Configuration."

3. Move to any additional interfaces shown and set a router type for each interface listed. If **seed** is selected, when you press Enter you see the AppleTalk Seed Router screen described in step 1 of the following section, "Seed Router Configuration."

4. Once you have finished AppleTalk configuration, you can configure other protocols or return to the Main Menu.

Note: *The default port for any NetBlazer is the first added or enabled LAN inter-face. The NetBlazer is shipped with en0 enabled as* **nonroute**. *To change the default port, change all interfaces to* **none**, *then select the port you want as the default port and change its setting to* **seed**, **nonseed**, *or* **nonroute**.

Seed Router Configuration

In some cases, the NetBlazer needs to be set up as an AppleTalk Seed router. (See Appendix E, "AppleTalk Routing," for more information on routers.)

To set up a seed router:

1. Select **seed** for an interface and press Enter to see the AppleTalk Seed Router screen:

```
AppleTalk Seed Router                      NetBlazer Setup Utility V3.0

Configure AppleTalk Seed router for lt0. Changes to this screen
do not take effect until you return to the previous screen.

          Previous
          Cancel
          Help

          Network number:     0
          New zone:           <<ZONE>>

          ZONES DEFINED







Type a new zone name, then press Enter
```

Figure 4-6. The AppleTalk Seed Router Screen

2. If you are configuring an **en** interface, you see a **Begin range** field; type a network number from 1 to 65,279 for the beginning of the range. For information on ranges, see Appendix E, "AppleTalk Routing," or Apple Computer's *Inside Macintosh*.

3. If you see an **End range** field, type a network number from 1 to 65,279 for the end of the range. This number must be the same or a higher number than what you typed for **Begin range**.

4. If you are configuring an **lt** interface, you see a **Network number** field, and you should type a single network number between 1 and 65,279 for the entire range.

5. For **New zone**, type a new zone name and press Enter. The new zone appears in the **Zones Defined** list. For **It** interfaces you can have only one zone per interface.If you are configuring an **en** interface, you can have a multiple zones. To add any additional zones, type names one at a time, pressing Enter after each name. Note that you need to set at least one zone before you can leave this screen.

    To delete a zone, move to the zone name in the **Zones Defined** list and press Delete to delete that zone.

    For more information on zones, see Appendix E, "AppleTalk Routing," or Apple Computer's *Inside Macintosh*.

6. When you are done, you can configure another interface as a seed router, configure another protocol, or return to the Main Menu screen.

Note: *The items on this screen are not set until you exit the screen by moving to the Previous screen. This means that if you change a field after you have moved the cursor to a new field, the settings currently in effect for the NetBlazer do not change. Also, if you return to the Main Menu instead of selecting Previous, your changes are not set.*

Line Setup 5

For some NetBlazer applications, you need to modify the default settings on one or more lines. For example, to use Frame Relay you need a sync line, but NetBlazer lines default to async. You can use the Line screens to make these types of changes.

Configuring a Line

You can use Worksheet 5, the "Lines" worksheet on page B-8 to collect and organize the information you need to complete the tasks in this section.

To set up your lines, follow these steps:

1. Establish a connection to your NetBlazer as described on page 3-3.

2. Select **NetBlazer port setup**.

3. Select **Line setup**. You see the Line Selection screen.

```
Line Selection                        NetBlazer Setup Utility V3.0

Move to the line you want to configure and press Enter.

          Previous
          Help
          Return to Main Menu

          #     Line      Modem/TA
          001   line00
          002   line01




Press Enter to return to the previous screen
```

Figure 5-1. The Line Selection Screen

4. Move to the line you want to configure and press Enter.

Note: *You may be disconnected if you attempt to configure a line while connected to it.*

You see the Line Details screen for that line:

```
Line Details                        NetBlazer Setup Utility V3.0

Make any changes to the configuration details for Line line01,
then move to Reset line and press Enter to set the changes.

        Previous
        Help
        Return to Main Menu

        Modem or TA:        <<None>>
        Type:               async
        Speed:              9600
        Autoconfigure:      off
        Login:              on
        Note:               <<None>>
        Reset line          no


Press Enter to return to the previous screen
```

Figure 5-2. The Line Details Screen

5. For the **Modem or TA** field, if the NetBlazer detects a modem or TA on the line and fills in a name for this field, leave this field set as prompted.

Note: *If your modem or TA is not automatically identified by the NetBlazer, you need to set* **Autoconfigure** *to* **config**, *type the modem name in the* **Modem or TA** *field, and then change* **Reset** *to* **yes***.*

6. For the **Type** field, you can set the line to be either a **sync** line or an **async** line. The default is **async**. You might set the current line to sync, for example, if you want to set up a Frame Relay interface on this line.

7. Leave the **Speed** field set to the automatically detected speed. The speed of the line and the speed of the connecting device should match. If the two speeds do not match, it causes communications problems.

If you need to change the speed, press the Spacebar to select a speed. Async lines can be set to one of the following speeds: **300**, **1200**, **2400**, **4800**, **9600**, **19700**, **38400**, **57600**, **115200**. Sync lines can be set to either **56000** or **64000**.

8. For **Autoconfigure**, you can select **on**, **off**, or **config**. If you select **on**, the NetBlazer automatically identifies the modem or TA type and sets the line up accordingly. Selecting **off** turns off the automatic detection and configuration. Selecting **config** tells the NetBlazer to take whatever modem or TA you type in the **Modem or TA** field as the modem to use. The NetBlazer then sets the line up for that modem and uses that modem's modemcap settings in configuring the line.

9. The **Login** field tells the NetBlazer whether or not a connection on this line should see a login prompt. Select **on** to have the NetBlazer display a login prompt on this line, or **off** to have the NetBlazer not show a prompt.

Note: *When you set up a dedicated connection, the NetBlazer automatically turns off the login prompt. If you later decide to use that line for something other than dedicated point-to-point communications, you need to use this field to manually turn the login prompt back on.*

10. In the **Note** field you can type a comment or description about the configuration. For example, you might type the phone number of the modem on the line.

11. Set the **Reset line** field to **yes** to reset the line once you make a change. For example, if you had set up a line to be a sync line to run Frame Relay and later want to use the line for asynchronous communications, you need to set **Reset line** to **yes** after you change the setting for **Type**.

Once you are done configuring the line, you can configure the applications you want for the line (such as Frame Relay or ISDN).

ISDN Connections 6

You can only configure for ISDN (Integrated Services Digital Network) on NetBlazers that have the appropriate hardware. If your NetBlazer does not have the appropriate integrated ISDN hardware, you will not be able to access the ISDN configuration screen.

The NetBlazer LS ISDN model provides an integrated point to point Basic Rate S/T interface. The BRI (Basic Rate Interface) is defined as two 64Kbps Bearer (B) channels and one 16Kbps Data (D) channel that carries call setup and user packet data across the network. This standard BRI connection links your site directly to an ISDN-ready switch in your local telephone company's central office (C.O.). For the LS, the recommended line speed in the U.S. is 56Kbps for the B-channels (the default).

The ISDN interface supports two independent 56 or 64Kbps calls. You can create a set of balanced interfaces for a dial-up connection for ISDN to yield a throughput of up to 128Kbps; see "Setting Balanced Interfaces" on page 7-7 for more information.

The NetBlazer supports the Internet Draft of Compression Control Protocol (CCP) for PPP. To use ISDN, the NetBlazer needs to be configured to use PPP framing when you configure your applications.

The NetBlazer functions as an S/T interface and serves as a NT2 (Network Termination type 2). You need to purchase an NT1 device to provide the U interface (see Appendix J, "ISDN Service Providers and Manufacturers" for more information on purchasing an NT1). If you need more information on the acronyms and terminology used for ISDN, see Appendix L, "Glossary."

Note: *The NetBlazer does not support Bonding (a mechanism to use both B-channels for one 128Kbps call). You can use interface balancing instead; see "Setting Balanced Interfaces" on page 7-7 for more information.*

As a point-to-point interface, the passive bus is not supported.

Configuring an ISDN Connection

You can use Worksheet 6, the "ISDN" worksheet on page B-9 to collect and organize the information you need to complete the tasks in this section. (If you need information on ISDN service providers, see Appendix J, "ISDN Service Providers and Manufacturers.")

To set up ISDN, follow these steps:

1. Establish a connection to your NetBlazer as described on page 3-3.

2. Select NetBlazer **port setup**.

3. Move to **ISDN setup** and press Enter.

    The NetBlazer checks to see if your NetBlazer includes ISDN capabilities. If it does, you see the ISDN Configuration screen; otherwise, you get an error message.

```
ISDN Configuration                         NetBlazer Setup Utility V3.0

Enter the SPID values provided by your ISDN service
provider, then set the ISDN switch type.

        Previous

        SPID/DN bri011:        <<NOT SET>>
        SPID/DN bri012:        <<NOT SET>>

        Switch type:           none

        Help
        Return to Main Menu







Press Enter to return to the previous screen
```

Figure 6-1. The ISDN Configuration Screen

4. For each ISDN connection to the NetBlazer, you see two B-channels listed on the screen (just below the **Switch type** field). In the ISDN NetBlazer LS, the channels are **bri011** and **bri012**.

```
        SPID/DN bri011      /
        SPID/DN bri012      /
```

Figure 6-2. BRI Lines

You need to type the assigned **SPID** (Service Profile IDentification) number and **DN** (Directory Number) for each bri (basic rate interface) channel listed. The SPID and DN are used in pairs, and should be entered by typing the SPID number, followed by a slash, followed by the DN. For example, you might type **1555121205/5551212** for **bri011** and **1555121210/5551212** for **bri012**.

If you only have one **SPID/DN** pair, you can type it on either channel for a port. If you have two sets of **SPID/DN** pairs, you can type either set of numbers on either channel.

SPID/DN numbers are assigned by the local phone company when you subscribe to an ISDN service. For the NetBlazer, the DN will usually only be a seven-digit number (the phone number without the area code), but make sure that what you type for the SPID number exactly matches the number your Service provider gives you. At the current time, SPID/DN numbers are *not* required if you have a 5ESSB switch type (see step 5). For the other switch types, you can not make any ISDN calls until one or more SPID numbers have been set on this screen.

Note: *If you move your NetBlazer from one area code to another, you may have to reset the SPIDs and/or DNs to avoid dialing errors. Check your SPID/DN to see if it includes a three-digit area code to see if this is necessary.*

5. Move to the **Switch type** field and press the Spacebar to select the type of ISDN service you ordered through your local telephone company. You can select **5ESSB**, **DMS100B**, or **NI1B** (National ISDN 1).

The default setting is **5ESSB**; currently, you do not need to set SPID numbers if you are using **5ESSB**. Contact your service provider if you are unsure which setting to choose. All ISDN lines on a NetBlazer must use the same switch type.

When you are done configuring your ISDN connection, you need to set up any applications (Dial-up LAN-to-LAN, Dedicated LAN-to-LAN, and Dial-in users) that you want to use on the ISDN connection. See the following chapters for information on setting up NetBlazer applications.

Note: *In the US, most telephone lines only support 56Kbps connections. Before using ISDN within the US, be sure that the remote site is set up for 56K transmission (not the 64K transmission speed traditionally used by Europe and the Pacific Rim). The NetBlazer's default call speed for ISDN is 56Kbps.*

PPP is the only framing type that is directly supported on ISDN. When you configure your applications, be sure to select PPP for the framing type.

ISDN Connections 6

You can only configure for ISDN (Integrated Services Digital Network) on NetBlazers that have the appropriate hardware. If your NetBlazer does not have the appropriate integrated ISDN hardware, you will not be able to access the ISDN configuration screen.

The NetBlazer LS ISDN model provides an integrated point to point Basic Rate S/T interface. The BRI (Basic Rate Interface) is defined as two 64Kbps Bearer (B) channels and one 16Kbps Data (D) channel that carries call setup and user packet data across the network. This standard BRI connection links your site directly to an ISDN-ready switch in your local telephone company's central office (C.O.). For the LS, the recommended line speed in the U.S. is 56Kbps for the B-channels (the default).

The ISDN interface supports two independent 56 or 64Kbps calls. You can create a set of balanced interfaces for a dial-up connection for ISDN to yield a throughput of up to 128Kbps; see "Setting Balanced Interfaces" on page 7-7 for more information.

The NetBlazer supports the Internet Draft of Compression Control Protocol (CCP) for PPP. To use ISDN, the NetBlazer needs to be configured to use PPP framing when you configure your applications.

The NetBlazer functions as an S/T interface and serves as a NT2 (Network Termination type 2). You need to purchase an NT1 device to provide the U interface (see Appendix J, "ISDN Service Providers and Manufacturers" for more information on purchasing an NT1). If you need more information on the acronyms and terminology used for ISDN, see Appendix L, "Glossary."

Note: *The NetBlazer does not support Bonding (a mechanism to use both B-channels for one 128Kbps call). You can use interface balancing instead; see "Setting Balanced Interfaces" on page 7-7 for more information.*

As a point-to-point interface, the passive bus is not supported.

Configuring an ISDN Connection

You can use Worksheet 6, the "ISDN" worksheet on page B-9 to collect and organize the information you need to complete the tasks in this section. (If you need information on ISDN service providers, see Appendix J, "ISDN Service Providers and Manufacturers.")

To set up ISDN, follow these steps:

1. Establish a connection to your NetBlazer as described on page 3-3.

2. Select NetBlazer **port setup**.

3. Move to **ISDN setup** and press Enter.

   The NetBlazer checks to see if your NetBlazer includes ISDN capabilities. If it does, you see the ISDN Configuration screen; otherwise, you get an error message.

```
ISDN Configuration                          NetBlazer Setup Utility V3.0

Enter the SPID values provided by your ISDN service
provider, then set the ISDN switch type.

         Previous

         SPID/DN bri011:       <<NOT SET>>
         SPID/DN bri012:       <<NOT SET>>

         Switch type:          none

         Help
         Return to Main Menu










Press Enter to return to the previous screen
```

Figure 6-1. The ISDN Configuration Screen

4. For each ISDN connection to the NetBlazer, you see two B-channels listed on the screen (just below the **Switch type** field). In the ISDN NetBlazer LS, the channels are **bri011** and **bri012**.

```
        SPID/DN bri011      /
        SPID/DN bri012      /
```

Figure 6-2. BRI Lines

You need to type the assigned **SPID** (Service Profile IDentification) number and **DN** (Directory Number) for each bri (basic rate interface) channel listed. The SPID and DN are used in pairs, and should be entered by typing the SPID number, followed by a slash, followed by the DN. For example, you might type **1555121205/5551212** for **bri011** and **1555121210/5551212** for **bri012**.

If you only have one **SPID/DN** pair, you can type it on either channel for a port. If you have two sets of **SPID/DN** pairs, you can type either set of numbers on either channel.

SPID/DN numbers are assigned by the local phone company when you subscribe to an ISDN service. For the NetBlazer, the DN will usually only be a seven-digit number (the phone number without the area code), but make sure that what you type for the SPID number exactly matches the number your Service provider gives you. At the current time, SPID/DN numbers are *not* required if you have a 5ESSB switch type (see step 5). For the other switch types, you can not make any ISDN calls until one or more SPID numbers have been set on this screen.

Note: *If you move your NetBlazer from one area code to another, you may have to reset the SPIDs and/or DNs to avoid dialing errors. Check your SPID/DN to see if it includes a three-digit area code to see if this is necessary.*

5. Move to the **Switch type** field and press the Spacebar to select the type of ISDN service you ordered through your local telephone company. You can select **5ESSB**, **DMS100B**, or **NI1B** (National ISDN 1).

The default setting is **5ESSB**; currently, you do not need to set SPID numbers if you are using **5ESSB**. Contact your service provider if you are unsure which setting to choose. All ISDN lines on a NetBlazer must use the same switch type.

When you are done configuring your ISDN connection, you need to set up any applications (Dial-up LAN-to-LAN, Dedicated LAN-to-LAN, and Dial-in users) that you want to use on the ISDN connection. See the following chapters for information on setting up NetBlazer applications.

Note: *In the US, most telephone lines only support 56Kbps connections. Before using ISDN within the US, be sure that the remote site is set up for 56K transmission (not the 64K transmission speed traditionally used by Europe and the Pacific Rim). The NetBlazer's default call speed for ISDN is 56Kbps.*

PPP is the only framing type that is directly supported on ISDN. When you configure your applications, be sure to select PPP for the framing type.

Dial-up Connections 7

To create a dynamic dial-up connection between two NetBlazers you need to configure the same things at both ends of the connection. If a dial-up connection named for your NetBlazer is not set up on the NetBlazer at the opposite end of the connection, your dial-up connection will fail.
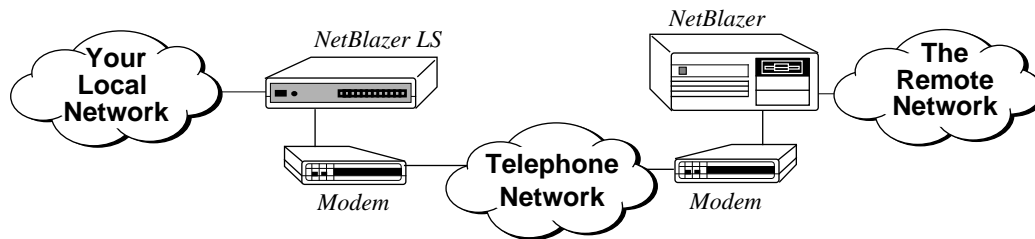
Figure 7-1. A Dial-up LAN-to-LAN Connection

Dial-up interfaces are used for both inbound and outbound connections.

For outbound connections, when your NetBlazer receives a packet with an address that is on a remote network, your NetBlazer checks for an existing connection with that remote site. If a connection does not currently exist, your NetBlazer selects a modem, ISDN line, or Frame Relay connection and calls the remote NetBlazer.

When a connection is established, the answering NetBlazer tries to authenticate the connection. In order to be authenticated, the calling NetBlazer's name and password have to be in the answering NetBlazer's dial-up configuration files. Once the connection is validated, the two NetBlazers can send packets to each other through the dial-up connection.

Configuring a Dial-up Connection

Note: *The following steps are also used to set up a backup dial-up connection for a dedicated line, an ISDN connection, or a frame relay connection.*

You can use Worksheet 7, the "Dial-up LAN-to-LAN Interface" worksheet on page B-10 to record the information necessary to complete the tasks in this section.

To configure your NetBlazer to use a dial-up LAN-to-LAN connection, follow these steps:

1. Establish a connection to your NetBlazer as described on page 3-3.

2. On the Main Menu screen, select **Dial-up LAN-to-LAN**.

The Dial-up LAN-to-LAN screen appears.

```
Dial-up LAN-to-LAN                          NetBlazer Setup Utility V3.0

Set up dial-up LAN-to-LAN connections. Type a new connection name
or use the Arrow keys to move to an existing name and press Enter
to change its settings.

        Previous
        Help
        Return to Main Menu

        New connection:        <<NAME>>

        001 ruby




Press Enter to return to the previous screen
```

Figure 7-2. The Dial-up LAN-to-LAN Screen

In the **New connection** field, type the hostname of the remote NetBlazer for which you want to create a new connection.

Note: *This field is case sensitive, so be sure to type the remote NetBlazer's name correctly. The name of the connection must **exactly** match the name of the remote NetBlazer.*

Be careful not to type any spaces in the remote hostname; the NetBlazer does not recognize hostnames when they have spaces in them.

To set up balanced interfaces type **hostname.***n-n,* where *n-n* are two numbers between 0 and 9 indicating the number of balanced interfaces you want to create. For example, if you type **chicago.1-3** the NetBlazer creates three balanced interfaces: chicago.1, chicago.2, and chicago.3. If you want to create balanced interfaces, skip the rest of the steps in this section and go to "Setting Balanced Interfaces" on page 7-7.

To change the configuration information on an existing connection, move to the applicable name in the list below the **New connection** field and press Enter.

When you press Enter, the Dial-up Connection screen appears:

```
Dial-up Connection: ruby                    NetBlazer Setup Utility V3.0

Add or change information for the current dial-up LAN-to-LAN
interface. You must set either a crypto key or a password on this
screen. When you are done, select Protocol details.

         Previous

         DELETE ruby

         Framing type:      PPP
         Password:          <<NOT SET>>
         Crypto key:        <<NOT SET>>
         Dial-In:           Yes
         Phone number:      -
         Characteristics:   dialout

         Protocol details

         Help
         Return to Main Menu


Press Enter to return to the previous screen
```

Figure 7-3. The Dial-up Connection Screen

3. If you want to delete the currently selected interface, move to the **Delete** field and press Enter. You are asked if you really want to delete the interface. If you type **y**, the interface is deleted and you return to the Dial-up LAN-to-LAN screen, where you can create or choose another interface.

4. In the **Framing type** field, select either **SLIP** or **PPP** for the framing type you want to use for the connection. The remote connection *must* use the same framing type.

    SLIP and **PPP** are both ways of encapsulating packets of information so the packets can be sent over a serial line. Note that if you select **SLIP**, you can route only IP packets over this connection, so if you want to route AppleTalk or IPX packets, you need to select **PPP**. Also, if you want to use this interface only for a dial backup or for ISDN, you can only use PPP framing.

5. In the **Password** field, type the password used by the remote site to authenticate your dial-up connection to that NetBlazer. You must confirm your password by typing it a second time.

    If you are using PAP authentication (which is on by default for inbound calls), this password needs to correspond to the PAP "peer-passwd" sent from the remote end of the connection.

    Note that if you change a password for an already created interface, you need to make a corresponding change to the password at the other end of the connection. Note also that adding or changing the password for a dial-up connection also changes the password in the dial-in user record of the same name.

Note: *Setting either a password or a Crypto key is required. If you try to exit this screen without setting one of these two fields, you get an error message and are returned to this screen.*

This field is case sensitive. You need to be very careful with case when entering a password.

Also, to avoid problems with remote password files, your password should not include any of the following characters: "@", ":", "%", "\", "/", "{", "}", or any nonprinting characters.

6. In the **Crypto key** field, type the crypto key used by the remote site to authenticate a dial-up connection to the NetBlazer.

If you are using CHAP authentication (which is on by default for inbound connections), this crypto key needs to correspond to the CHAP "secret" sent from the remote end of the connection.

Note that adding or changing the crypto key for a dial-up connection also changes the crypto key in the dial-in user record of the same name.

Note: *This field is case sensitive. You need to be very careful with case when entering a password.*

Also, to avoid problems with remote password files, your crypto key should not include any of the following characters: "@", ":", "%", "\", "/", "{", "}", or any nonprinting characters.

7. In the **Dial-in** field, select whether or not you want to create a dial-in user record to authenticate any inbound connections from the remote NetBlazer. Select **yes** to have the dial-in record created, **no** if you do not want a record created. If you do not create a dial-in record, then calls from the remote NetBlazer will be rejected because your NetBlazer does not have the user record necessary to authenticate the connection. If you do create a dial-in record, it will use the same password and/or crypto key as you enter on this screen.

8. In the **Phone number** field, type the phone number of the remote NetBlazer. You can format the number using spaces, dashes, and parentheses; for example, **9,1 (408) 555-1234**. If your modem needs to dial a prefix, such as 9, to reach an outside line, be sure to include that number as the first number in this field.

9. For most configurations, you should leave the **Characteristics** field set to the default setting of **dialout**. However, if you are using ISDN, you should select **isdndialout**, which configures a line for use with either an ISDN terminal adapter or with a built-in Basic Rate ISDN (BRI) adapter.

All of the other settings are used only in very specific instances. **pep-dialout** is used to override standard modem settings when you are using pep-compatible modems at both ends of a connection. **v25dialout** configures a synchronous line for use with a TA. **bridial-out** is used for BRI-only ISDN connections. **v32dialout** configures a modem for v.32 operations.

Note that these are default characteristics tags, and your system administrator could have created new ones or removed some of the ones in this list.

10. When you move to **Protocol Details** and press Enter, the Setup Utility displays one of two screens:

   a. If you selected **SLIP** for **Framing type**, you see the IP Routes screen. Skip to step 1 of "IP Routing Choices" on page 7-12.

   b. If you selected **PPP** for **Framing type**, you see the Protocol Details screen, which is described in "Setting Protocol Details" on page 7-9.

After setting up the interface on this NetBlazer, you need to follow the same steps on the remote NetBlazer.

Setting Balanced Interfaces

When you type the name for a set of balanced interfaces (for example, chicago.1-3) on the Dial-up LAN-to-LAN screen and press Enter, you see the Dial-up Connection screen for the *primary* interface. The primary interface is the first interface of the group you created, so in the case of chicago.1-3, the primary interface is chicago.1.

```
Dial-Up Connection: chicago.1                NetBlazer Setup Utility V3.0

Add or change information for the current dial-up LAN-to-LAN
interface. You must set either a crypto key or a password on this
screen.

        Previous

        DELETE chicago.1

        Framing type:       PPP
        Password:           <<NOT SET>>
        Crypto key:         <<NOT SET>>
        Dial-In:            Yes
        Phone number:       -
        Characteristics:    dialout

        Protocol details

        Help
        Return to Main Menu

Press Enter to return to the previous screen
```

Figure 7-4. The Dial-up Connection Screen for a Primary Interface

Note: *Any changes or selections made on this screen the first time you see it for a newly-created primary interface are duplicated on all of the secondary interfaces as well. For example, if you set a telephone number for the primary interface, and then view this screen for one of the secondary interfaces, you see the same phone number. However, any changes made to the primary interface at any time after leaving this screen are not duplicated for the secondary interfaces.*

You can create up to 10 balanced interfaces per line, from *name*.0 to *name*.9. Balanced interfaces can only have a one-digit number following their name.

Follow these steps to configure balanced interfaces using the fields and items on the Dial-up Connection screen:

1. If you want to delete the primary interface, move to the **Delete** field and press Enter. You are asked if you really want to delete the interface. If you type **y**, the interface is deleted and you return to the Dial-up LAN-to-LAN screen, where you can create or choose another interface.

   Note that if you decide to delete the primary interface, the next incremented interface becomes the primary interface; this means that chicago.2 becomes the primary interface if chicago.1 is deleted. However, if you delete all except one of a set of balanced interfaces, the remaining interface is treated as a normal interface, not a balanced interface. You must leave at least two interfaces in existence for them to remain balanced.

2. In the **Framing type** field, select the framing type you want to use for the connection. The remote connection *must* use the same framing type.

Note: *The framing type, password, and crypto key need to be the same at both ends of the dial-up connection. To simplify things, you should keep these three fields the same for **all** interfaces in a set of balanced interfaces. Otherwise, there is a greater possibility that the two ends of the connection might get set to different settings.*

3. In the **Password** field, type the password used by the remote site to authenticate your dial-up connection to that NetBlazer. You must confirm your password by typing it a second time.

   Note that if you are using PAP authentication (which is on by default for inbound connections), this password needs to correspond to the PAP "peer-passwd" sent from the remote end of the connection.

4. In the **Crypto key** field, type the crypto key used by the remote site to authenticate a dial-up connection to the NetBlazer.

   Note that if you are using CHAP authentication (which is on by default for inbound connections), this crypto key needs to correspond to the CHAP "secret" sent from the remote end of the connection.

5. In the **Dial-in** field, select whether or not you want to create a dial-in user record to authenticate any inbound connections from the remote NetBlazer. Select **yes** to have the dial-in record created, **no** if you do not want a record created. If you do not create a dial-in record, then calls from the remote NetBlazer will be rejected because your NetBlazer does not have the user record necessary to authenticate the connection.

6. In the **Phone number** field, type the phone number of the remote NetBlazer. Check your modem manual for a description of acceptable dial strings.

7. For most configurations, you should leave the **Characteristics** field set to **dialout**. However, if you are using ISDN, you should select **isdndialout**.

8. When you move to **Protocol Details** and press Enter, the Setup Utility displays one of two screens:

    a. If you selected **SLIP** for **Framing type**, you see the IP Routes screen. Skip to step 1 of "IP Routing Choices" on page 7-12.

    b. If you selected **PPP** for **Routing type**, you see the Protocol Details screen, which is described in the following section.

After setting up the balanced interfaces on this NetBlazer, you need to follow the same steps on the remote NetBlazer.

Setting Protocol Details

You can set up the current interface to route one, two, or all three protocols.

For dial-up connections, you can use the following worksheets to record the information necessary to complete the tasks in the following sections:

- Worksheet 8, the "Dial-up IP Protocol" worksheet on page B-11.

- Worksheet 9, the "Dial-up IPX Protocol" worksheet on page B-12.

- Worksheet 10, the "Dial-up AppleTalk Protocol" worksheet on page B-13.

Note: *If you are creating a dial backup connection, you* **do not** *want to set the Protocol details since the backup interface inherits all routes from the interface it is backing up.*

Also, you only need to set the protocol details for the primary interface of a set of balanced interfaces.

The worksheets to use for dedicated interfaces are listed on page 8-4.

To set the Protocol details for your interface, follow these steps.

1. Display the Protocol Details screen:

```
Protocol Details: ruby                      NetBlazer Setup Utility V3.0

For IPX or AppleTalk, first make sure that the remote NetBlazer is
configured to allow a connection through this interface. Then, enable
the protocol and select its Learn function. For IP select IP routes.

         Previous

         IP routes

         Enable IPX          no
         Learn IPX routes
         Forget IPX routes

         Enable AppleTalk    no
         Learn AppleTalk routes
         Forget AppleTalk routes

         Help
         Return to Main Menu



Press Enter to return to the previous screen
```

Figure 7-5. The Protocol Details Screen

2. Check to see if the remote network has configured a connection for your NetBlazer. Until the remote network has been set up for your connection, the settings on this screen and the IP screens cannot take effect.

3. To set up IP routes for the remote network, select **IP routes**. Skip to step 1 of "IP Routing Choices" on page 7-12.

4. To set up IPX routing:

    a. To enable your network to use the IPX routes for the remote LAN, set **Enable IPX** to **Yes**. See Appendix D, "IPX Addressing" for more information on IPX routing.

    b. To have your network learn the IPX routes for the remote LAN from routers on that network, move to **Learn IPX routes** and press Enter. You should not do this until you are positive that the remote network has configured a connection for your NetBlazer. Your NetBlazer dials the remote NetBlazer and listens for the routes. Note that it may take a few minutes for this process to complete.

Note: *Learning is only required for dial-up connections. Dedicated connections learn routes automatically.*

    c. If you are reconfiguring a NetBlazer that already has an IPX routing table and you wish to remove all learned routes from the routing table, move to **Forget IPX routes** and press Enter. (Once the routes are removed, you can select **Learn IPX routes** to have the NetBlazer learn the new routes.)

5. To set up AppleTalk routing:

    a. To enable your network to use the AppleTalk routes for the remote LAN, set **Enable AppleTalk** to **Yes**. See Appendix E, "AppleTalk Routing" for more information on AppleTalk routing.

    b. To have your network learn the AppleTalk routes for the remote LAN from routers on that network, move to **Learn AppleTalk routes** and press Enter. You should not do this until you are positive that the remote network has configured a connection for your NetBlazer. Your NetBlazer dials the remote NetBlazer and listens for the routes. Note that it may take a few minutes for this process to complete.

Note: *Learning is only required for dial-up connections. Dedicated connections learn routes automatically.*

    c. If you are reconfiguring a NetBlazer that already has an AppleTalk routing table and you wish to remove all learned routes from the routing table, move to **Forget AppleTalk routes** and press Enter. (Once the routes are removed, you can select **Learn AppleTalk routes** to have the NetBlazer learn the new routes.)

6. When you are done, you can select **Previous** to move back to the previous screen, **Help** to access the online Help for this screen, or **Return to Main Menu** to go to Main Menu screen.

IP Routing Choices

1. To configure your NetBlazer to route IP packets to the remote NetBlazer, display the IP Routes screen:

```
IP Routes                               NetBlazer Setup Utility V3.0

Set up IP routes for ruby. Use the Arrow keys to move to an
existing route and press Enter to change it, or type a new
address/bits at New IP route.

        Previous
        Help
        Return to Main Menu

        New IP route:          <<ADDRESS/BITS>>




Press Enter to return to the previous screen
```

Figure 7-6. The IP Routes Screen

2. Check to see if the remote network has configured a connection for your NetBlazer. Until the remote network has been set up for your connection, changes to the IP screens cannot take effect.

3. If you are configuring a new IP route, type the address and subnet bitmask in the **New IP route** text field. The subnet bitmask (the numbers after the /) sets the number of bits included in the network portion of the route's IP destination address. See Appendix C, "IP Addressing," for information on what IP addresses are and how to find out what your NetBlazer's IP address is.

Note that you can also type **default** to set up a default IP route. This is useful if all traffic from your network to the remote network is going through a single dial-up connection, with the result that you only need one default route. However, you only want a single "default" route to be advertised to the net, so only do this once. You may also want to make the default address private once you have created it.

To delete or change any of the static routes currently available through this interface, use the Arrow keys to move to a name in the list and press Enter to select that route.

When you press Enter, the IP Route Details screen appears:

```
IP Route Details                        NetBlazer Setup Utility V3.0

Configure IP route: 143.199.65.0/24 for ruby
If you want this route advertised by RIP, set Public to yes.
Metric is the number of hops to the destination network.

        Previous

        DELETE 143.199.64.0/24



        Public              no

        Metric              1

        Help

        Return to Main Menu




Type the number of hops to the destination network
```

Figure 7-7. IP Route Details Screen.

4. If you want to delete the currently selected route, move to the **Delete** field press Enter. You are asked if you really want to delete the route. If you type **y**, the route is deleted and you return to the IP Routes screen, where you can choose another route.

5. In the **Public** field, select **Yes** to have this route be broadcast on the LAN so that all routers on this LAN know of that route's existence. Select **No** to have the route be a private route whose existence is not broadcast. This field is initially set to **No**, so new routes are not broadcast to the network until you change this setting to **Yes**.

6. In the **Metric** field, type a number between 1 and 16 to indicate how far away this new route is by the number of "hops" (other routers) needed to reach it. For example, if the route you are adding is on a LAN that is directly connected to the NetBlazer at the other end of the phone line, type a 1 for this field.

7. When you are done, you can select **Previous** to move back to the previous screen, **Help** to access the online Help for this screen, or **Return to Main Menu** to go to the Main Menu screen.

When you have completed all necessary steps, you can save the current configuration. Return to the Main Menu screen and select **Save/Exit**, then select **Save configuration**.

Dedicated Connections 8

A NetBlazer can be set up as a leased-line router with the unique ability to automatically establish a dial backup connection if the leased-line connection fails.
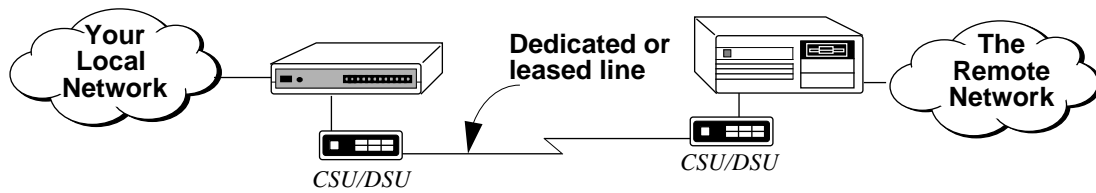
Figure 8-1. Dedicated Line Connection

Configuring Dedicated LAN-to-LAN Interfaces

You can use Worksheet 11, the "Dedicated LAN-to-LAN Interface" worksheet on page B-14 to record the information necessary to configure a dedicated connection. You can use the following worksheets to record the information necessary to complete the Protocol Details steps:

- Worksheet 12, the "Dedicated IP Protocol" worksheet on page B-15.

- Worksheet 13, the "Dedicated IPX Protocol" worksheet on page B-16.

- Worksheet 14, the "Dedicated AppleTalk Protocol" worksheet on page B-17.

Note: *When you set up a dedicated connection, the NetBlazer automatically turns off the login prompt on that line. If you later decide to use that line for something other than dedicated point-to-point communications, you need to manually turn the login prompt back on. See page 5-3 for information on setting a login prompt on a line.*

If your dedicated connection will need a dial backup, you should create a dial-up interface to use as this backup before creating the dedicated interface; see Chapter 7, "Dial-up Connections" for more information. Note that the dial backup **must** have the same name as the remote NetBlazer.

To configure the NetBlazer for dedicated LAN-to-LAN connections, follow these steps on both sides of the link.

1. Establish a connection to your NetBlazer as described on page 3-3.

2. On the Main Menu screen, select **Dedicated LAN-to-LAN**.

   The Dedicated LAN-to-LAN screen appears.

```
Dedicated LAN-to-LAN                      NetBlazer Setup Utility V3.0

Set up dedicated LAN-to-LAN connections. Press Enter on an existing
interface to change it. Type a new name for any line to create a new
dedicated link. Type "frame" to set up a Frame Relay connection.

        Previous
        Help
        Return to Main Menu

        #   DEVICE            INTERFACE (modem etc.)
        001 line00            -console
        002 line01            -




Press Enter to return to the previous screen
```

Figure 8-2. The Dedicated LAN-to-LAN Screen

3. Move to the first line you want to add or change and type an interface name for that line. If you are planning to have a dial backup with this dedicated interface, you may want to give the dedicated interface a similar name; for example if **jade** is the name of the remote NetBlazer, then your dial backup should be named **jade**, so you might name your dedicated interface **jade-ded**.

Note: *This field is case sensitive. You should be very careful with case when entering an interface name.*

Be careful not to type any spaces in the interface name; the NetBlazer may have problems with interface names that have spaces in them.

Also, to avoid problems with remote password files, your interface name should not include any of the following characters: "@", ":", "%", "\", "/", "{", "}", or any nonprinting characters.

To create a frame relay interface, go to "Setting Frame Relay Connections" on page 8-5.

When you type a name and press Enter, the Dedicated Interface screen is displayed.

```
Dedicated Interface: chelmsford            NetBlazer Setup Utility V3.0

Configure the dedicated interface chelmsford on line01. Select
Protocol details to set up routes for the remote LAN.

         Previous

         DELETE chelmsford

         Framing type:      PPP
         Enable interface:  no

         Protocol details

         Dial backup:

         Help

         Return to Main Menu


Press Spacebar to select framing type: SLIP PPP
```

Figure 8-3. The Dedicated Interface Screen

4. If you want to delete the currently selected interface, move to the **Delete** field and press Enter. You are asked if you really want to delete the interface. If you type **y**, the interface is deleted and you return to the Dedicated LAN-to-LAN screen, where you can choose another interface.

5. In the **Framing type** field, select the framing type you want to use for the connection. The remote connection must use the same framing type.

    SLIP and **PPP** are both ways of encapsulating packets of information so the packets can be sent over a serial line. Note that ISDN connections only support **PPP** framing. Also, if this interface will have a dial-up backup, you must select **PPP** since **SLIP** cannot be used for dedicated interfaces with dial-up backups. If your dedicated interface won't have a dial-up backup, note that if you select **SLIP**, you can only route IP packets over this connection, so if you want to route AppleTalk or IPX packets, you need to select **PPP**.

6. Move to **Protocol details** and press Enter. The Setup Utility displays one of two screens:

    a. If you selected **SLIP** for **Framing type**, you see the IP Routes screen. Go to step 1 of "IP Routing Choices" on page 7-12.

    b. If you selected **PPP** for **Framing type**, you see the Protocol Details screen. Go to "Setting Protocol Details" on page 7-9.

    The steps for setting the Protocol details are the same for both dial-up and dedicated interfaces, so to save space those steps are described on page 7-9 of Chapter 7, "Dial-up Connections" instead of duplicating them here. You can use the following worksheets to record the information necessary to complete the Protocol Details steps:

    • Worksheet 12, the "Dedicated IP Protocol" worksheet on page B-15.
    • Worksheet 13, the "Dedicated IPX Protocol" worksheet on page B-16.
    • Worksheet 14, the "Dedicated AppleTalk Protocol" worksheet on page B-17.

7. When you are done setting the protocols, press Previous as many times as necessary to return to the Dedicated Interface Screen.

8. If you want to set up a dial backup for this line (to be used if the dedicated line goes down), type the name of a previously configured dial-up connection in **Dial backup**. If you type a name that does not match the list of dial-up interfaces set for this NetBlazer, you get an error message. Remember, you must select **PPP** for **Framing type** in order to use a dial-up backup for a dedicated interface.

9. Once you have configured the NetBlazer at the other end of the dedicated connection up to this same point, the **Enable interface** field should automatically change to **Yes** to enable the currently selected interface. The NetBlazer only allows this setting to be changed if the other end of the connection has also been configured. Change this field to **No** if you do not want the currently selected interface to be enabled.

Setting Frame Relay Connections

You can use Worksheet 15, the "Frame Relay Connections" worksheet on page B-18 to record and organize the information necessary to complete the tasks in this section.

To set up a dedicated frame relay LAN-to-LAN connection:

1. If necessary, change one of the asynchronous lines to a synchronous line; see Chapter 5, "Line Setup" for information on changing the line type.

2. On the Dedicated LAN-to-LAN screen, move to a sync line and type **frame** and press Enter. You see the Frame Relay Connection screen:

```
Frame Relay Connection                      NetBlazer Setup Utility V3.0

Set up dedicated Frame Relay connections. Use the Arrow keys to
move to an existing interface and press Enter to change it, or
type a new name at "New interface".

        Previous
        Help
        Return to Main Menu

        New interface        <<Name>>

        #   LINE             DLCI INTERFACE










Press Enter to return to the previous screen
```

Figure 8-4. The Frame Relay Connection Screen

3. In the **New interface** text field, type the name for your frame relay interface. Frame relay interfaces are often named **fr*XX*** where the *XX* is the DLCI number. (See step 5 for more information on DLCI numbers.) However, you do not need to name your frame relay interface in this manner if you wish to use some other style of naming. Check with your frame relay service provider to see if they have any naming conventions they wish you to use.

To change the configuration information on an existing frame relay connection, use the Arrow keys to move to that name in the list and press Enter.

When you press Enter you are asked to enter a number for your DLCI (Data Link Channel Identifiers). When you type a number and press Enter, you see the Frame Relay Line screen:

```
Frame Relay Line: syn11                    NetBlazer Setup Utility V3.0

Configure interface jones on syn11. Select Protocol details
to set up routes for the remote LAN. Type a dial-up connection
name at Dial backup.

          Previous

          DELETE jones

          DLCI:               16

          Protocol details
          Dial backup:

          Line management:    none

          Help

          Return to Main Menu


Type name of an existing dial-up LAN-to-LAN interface
```

Figure 8-5. The Frame Relay Line Screen

4. If you want to delete the currently selected interface, move to the **Delete** field and press Enter. You are asked if you really want to delete the interface. If you type **y**, the interface is deleted and you return to the Frame Relay Connection screen, where you can choose another interface.

5. The **DLCI** field displays the number you typed for your DLCI. If you need to change that number, type a number from 16 to 9007. Data Link Channel Identifiers are provided by your frame relay service provider.

6. If you want to have a dial backup for this frame relay connection (to be used if the frame relay connection goes down), type the name of a previously configured dial-up connection in the **Dial backup** text field. If you type a name that doesn't match the list of dial-up interfaces already set for this NetBlazer, you get an error message.

7. To select the type of line management, move to the **Line management** field and press the Spacebar to select **LMI**, **ANSI**, or **none**. **LMI** is the local management interface Rev 1 as defined by the Frame Relay Forum. **ANSI** is the ANSI-defined Annex D management option. If you aren't sure which type of management to select, ask your Service Provider for assistance.

8. The steps for setting the **Protocol details** for a Frame Relay interface are the same as they are for both dial-up and dedicated interfaces, so to save space those steps are described in Chapter 7, "Dial-up Connections" instead of duplicating them here.

When you move to **Protocol details** and press Enter, the Setup Utility displays the Protocol Details screen, which is described in "Setting Protocol Details" on page 7-9.

You can use the following worksheets to record the information necessary to complete the Protocol Details steps:

- Worksheet 12, the "Dedicated IP Protocol" worksheet on page B-15
- Worksheet 13, the "Dedicated IPX Protocol" worksheet on page B-16
- Worksheet 14, the "Dedicated AppleTalk Protocol" worksheet on page B-17.

Dial-In Users 9

Dialing in to the NetBlazer gives a remote user access to the network as if their workstation is connected directly the network. For example, remote IP users who are logged in to the NetBlazer can issue a telnet or rlogin command to reach a network host.
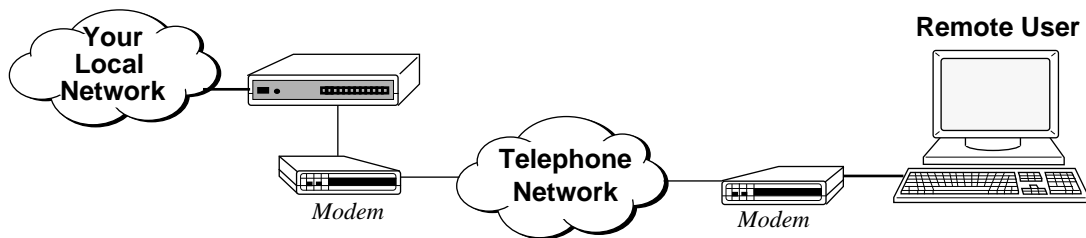
Figure 9-1. A Dial-in User Connecting to Your NetBlazer

The NetBlazer can work with four different types of dial-in users:

- ARA users

- IP users

- IPX users

- Character-mode (terminal) users

Once the user is set up as one of these four types of users, the user type can not be changed; if you want to change the user from one type to another, you need to delete the user and recreate the user as that other type.

The remote IP or IPX user's workstation or terminal must be running software that supports PPP or SLIP packet framing. Remote AppleTalk users must use ARA software.

Remote users running on a terminal or running terminal emulation software can establish a connection as a character-mode user. Only character-mode users can have the possibility of seeing the status of the NetBlazer or configuring the NetBlazer remotely. In addition, when a character-mode

user logs on to the NetBlazer, the NetBlazer can be configured to automatically issue a command (such as **telnet** *hostname*) that is initiated the moment the user connects to the NetBlazer; this shortcut is useful for those who do the same process every time they log in.

Configuring a Dial-in User

To configure the NetBlazer so dial-in users can connect to the local network, follow these steps:

1.	Establish a connection to your NetBlazer as described on page 3-3.

2.	On the Main Menu screen, select **Dial-in users**.

	The Dial-in Users screen appears.

```
Dial-in Users                           NetBlazer Setup Utility V3.0

Set up dial-in users. Type a new user name or use the Arrow keys
to move to an existing name and press Enter to change its settings.

         Previous
         Help
         Return to Main Menu
         New user:              <<NAME>>

         001 root              (character)
         002 ruby              (ip)
         003 setup             (character)
         004 snmp              (character)









Press Enter to return to the previous screen
```

Figure 9-2. The Dial-in Users Screen

3. In the **New user** field, type the name of the user you want to set up.

Note: *Also, to avoid problems with user names in remote password files, your user name should not include any of the following characters: "@", ":", "%", "\", "/", "{", "}", or any nonprinting characters.*

If you type the name of an existing user, the NetBlazer informs you that a user already exists with that name. You can then delete the old user and enter a new one of a different type.

To reconfigure an already configured user, use the Arrow keys to move through the list on the bottom of the screen to the user's name and press Enter. Depending on the connection type shown in parentheses next to the user's name (Character, IP, IPX, or ARA), you see the correct configuration screen for that type. Skip ahead to step 4.

Note: *ACS users show up in this list if someone created them using the command line interface. You cannot edit ACS users from within the Setup Utility. If you select an ACS user, you see an error message when you press Enter.*

When you press Enter on the Dial-in Users screen, you see the New User screen.

```
New User: barney                        NetBlazer Setup Utility V3.0

Choose conection type for the user. See the Help for descriptions
of Character, IP, IPX, and ARA users.

        Previous

        Character
        IP
        IPX (PPP Shell)
        ARA

        Help

        Return to Main Menu




Press Enter to return to the previous screen
```

Figure 9-3. The New User Screen

4. Select a type for the user and press Enter:

   a. If you select **Character**, you see the Character Mode User screen. See page 9-4.

   b. If you select **IP**, you see the Remote IP User screen. See page 9-6.

   c. If you select **IPX (pppshell)**, you see the Remote IPX User screen. See page 9-8.

   d. If you select **ARA**, you see the ARA User screen. See page 9-9.

Configuring Character Mode Users

You can use Worksheet 19, the "Dial-in Character Mode User" worksheet on page B-22 to record and organize the information necessary to complete the tasks in this section.

To set up users who are using terminal-based, non-packet-mode connections, follow these steps:

1. When you select **Character** on the New User screen (or select the name of a previously configured remote character-mode user), you see the Character Mode User screen:

```
Character Mode User: barney                 NetBlazer Setup Utility V3.0

Set up character mode users so that they can log in to the
NetBlazer. You must set the password; all other fields are
optional.

        Previous

        DELETE barney

        Password:           <<NOT SET>>

        Dial-out:           yes
        Telnet/rlogin:      yes
        Multi-login:        yes
        Configuration:      no
        Status:             no

        Login command:
        Help
        Return to Main Menu


Press Enter to return to the previous screen
```

Figure 9-4. The Character Mode User Screen

2. If you want to delete the currently selected user, move to the **Delete** field and press Enter. You are asked if you really want to delete the interface. If you type **y**, the user is deleted and you return to the Dial-in Users screen, where you can choose another user.

3. In the **Password** field, type the user's password on their remote workstation. You must confirm the password by typing it a second time.

4. For **Dial-out**, select **yes** to allow the user to dial out from the NetBlazer. If you select **yes**, the remote user can then use a second modem connected to the NetBlazer to dial back out from the NetBlazer's local network.

5. For **Telnet/rlogin**, select **yes** to allow the remote user to telnet or rlogin to hosts on the local network once they have logged in to the NetBlazer. Select **no** to not allow this function.

6. For **Multi-login**, select **yes** to allow the remote user to log on to the NetBlazer multiple times (for example, once via their dial-in connection, and a second time in person from a local host). Select **no** to not allow this function.

7. For **Configuration**, select **no** to prevent the remote user from being able to configure the NetBlazer. This field should only be set to **yes** for System Administrators.

8. For **Status**, select **no** to prevent the remote user from being able to check the status of the NetBlazer. This field should only be set to **yes** for System Administrators.

9. For **Login command**, type a command you want executed when the user logs on to the NetBlazer. For example, you might type **rlogin** *hostname* to have the user connect to a host on the local network the moment they logon to the NetBlazer. To have more than one command executed (for example, to login to a host, then logout from the NetBlazer when you exit the host), separate the commands with a semicolon. For example, **rlogin napa;logout**.

10. When you are done, you can select **Previous** to move back to the previous screen, **Help** to access the online Help for this screen, or **Return to Main Menu** to go to the Main Menu screen.

Configuring Remote IP Users

You can use Worksheet 16, the "Dial-in IP User" worksheet on page B-19 to record and organize the information necessary to complete the tasks in this section.

To set up remote IP users, follow these steps:

1. When you select **IP** on the New User screen (or select the name of a previously configured remote IP user), you see the Remote IP User screen:

```
Remote IP User: ruby                          NetBlazer Setup Utility V3.0

Set up user account to allow IP packet mode connection from a
remote node.

        Previous

        DELETE ruby

        Password:           <<NOT SET>>
        Crypto key:         <<NOT SET>>

        Framing type:       PPP
        IP address/bits:

        Help

        Return to Main Menu




Press Enter to return to the previous screen
```

Figure 9-5. The Remote IP User Screen

2. If you want to delete the currently selected user, move to the **Delete** field and press Enter. You are asked if you really want to delete the interface. If you type **y**, the user is deleted and you return to the Dial-in Users screen, where you can choose another user.

3. In the **Password** field, type the user's password on their remote workstation. In addition, if this user will be using PAP, you need to set this password to correspond to the PAP "peer-passwd" on the remote end.

4. In the **Crypto key** field, type the user's crypto key. In addition, if this user will be using CHAP, then you need to set this field to correspond to the CHAP "secret" at the remote end.

5. In the **Framing type** field, select **SLIP** or **PPP**.

6. In the **IP address** field, type the IP address of the remote user.

Configuring Remote IPX Users

You can use Worksheet 17, the "Dial-in IPX User" worksheet on page B-20 to record and organize the information necessary to complete the tasks in this section.

To set up remote IPX users, follow these steps:

1. When you select **IPX** on the New Dial-in User Connection Type screen (or select the name of a previously configured IPX user), you see the Remote IPX User screen:

```
Remote IPX User: stan                      NetBlazer Setup Utility V3.0

Set up user account to allow IPX packet mode connection from a
remote node.

        Previous

        DELETE stan

        Password:           <<NOT SET>>
        Crypto key:         <<NOT SET>>


        Help

        Return to Main Menu




Press Enter to return to the previous screen
```

Figure 9-6. The Remote IPX User Screen

2. If you want to delete the currently selected user, move to the **Delete field** and press Enter. You are asked if you really want to delete the interface. If you type **y**, the user is deleted and you return to the Dial-in Users screen, where you can choose another user.

3. In the **Password** field, type the user's password on their remote workstation. In addition, if this user will be using PAP, you need to set this password to correspond to the PAP "peer-passwd" on the remote end.

4. In the **Crypto key** field, type the user's crypto key. In addition, if this user will be using CHAP, then you need to set this field to correspond to the CHAP "secret" at the remote end.

Configuring ARA Users

You can use Worksheet 18, the "Dial-in ARA User" worksheet on page B-21 to record the information necessary to complete the tasks in this section.

To set up remote AppleTalk users, follow these steps:

1. When you select **ARA** on the New Dial-in User Connection Type screen (or select the name of a previously configured ARA user), you see the ARA User screen:

```
ARA User: mac                              NetBlazer Setup Utility V3.0

Set up ARA user account to allow remote user access to the local
AppleTalk network.

        Previous

        DELETE mac

        Password:              <<NOT SET>>

        Call back:
        Home zone:
        Time limit:           unlimited

        Help

        Return to Main Menu




Press Enter to return to the previous screen
```

Figure 9-7. The ARA User Screen

2. If you want to delete the currently selected user, move to the **Delete** field and press Enter. You are asked if you really want to delete the interface. If you type **y**, the user is deleted and you return to the Dial-in Users screen, where you can choose another user.

3. In the **Password** field, type the user's password on their remote workstation.

4. In the **Call back** field, type the user's telephone number as it needs to be dialed from your NetBlazer; for example, **9,1 (408) 555-1234**. If you type a number in this field, when the user logs on to the NetBlazer, the NetBlazer will disconnect and call the user back using the number in this field.

5. In the **Home zone** field, type the name of the user's home zone. If you indicate a zone in this field, the user automatically appears in that home zone when calling in. If you do not indicate a zone for this field, the user defaults to the NetBlazer's home zone. See Apple Computer's *Inside AppleTalk* for more information on home zones.

6. For **Time limit**, type the total number of minutes that the user can remain connected to the NetBlazer before the NetBlazer automatically disconnects. To set an unlimited number of minutes, type **unlimited**.

Modem Pools 10

If your site has many users that need to dial out to many different sites, you can configure the NetBlazer to allow IP users to telnet from a host on the network to a pool of modems and then use the modem's dial command to call a remote system. Assigning an IP address to a pool of modems allows IP users on the network to talk to the first available modem that meets their requirements.
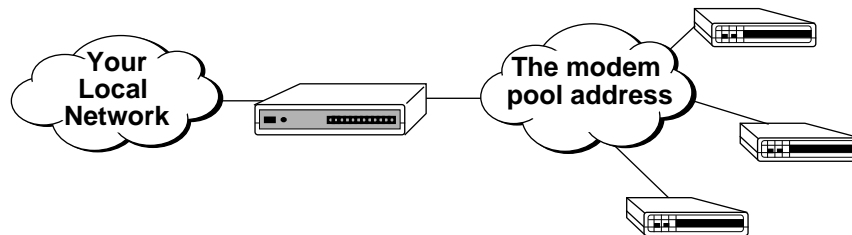
Figure 10-1. The Dial-out Modem Pool

Configuring a Modem Pool

You can use Worksheet 20, the "IP Modem Pool" worksheet on page B-23 to record and organize the information necessary to complete the tasks in this section.

Note: *The dialout modem pool is only available if you have set up your NetBlazer to route IP on the LAN; if you don't have IP protocol set up for the LAN, you cannot access the modem pool.*

To set up a modem pool:

1. Establish a connection to your NetBlazer as described on page 3-3.

2. On the Main Menu screen, select **Dial-out Modem Pool**.

The Dial-out Modem Pool screen appears.

```
Dial-out Modem Pool                      NetBlazer Setup Utility V3.0

Set the IP address that can be used to access the modems attached
to the NetBlazer. If you telnet to this address, the NetBlazer
finds the first available modem for you to use.

        Previous

        Pool IP address:      0.0.0.0

        Help

        Return to Main Menu




Press Enter to return to the previous screen
```

Figure 10-2. The Dial-out Modem Pool Screen

> **3.** In the **Pool IP address** field, type an IP address. See Appendix C, "IP Addressing," for information on what IP addresses are and how to find out what your modem pool's IP address is.

Once the address is set, you can telnet to the address and the NetBlazer will find the first available modem for you to use. You then issue a dial command to dial out from the modem. (For more information on the commands to use when dialing a modem, see your modem manual.)

Registering and Updating 11

You need to register your NetBlazer with Telebit *before* you can update your NetBlazer software with patches from the Telebit server.

Registering Your NetBlazer

You can use Worksheet 21, the "NetBlazer Registration" worksheet on page B-24 to record and organize the information necessary to complete the tasks in this section.

Use the NetBlazer registration screen to record information about your site and a contact person. This information is then sent to Telebit.

1. Complete all your NetBlazer configuration tasks.

2. On the Main Menu screen, select **Register/Update**. You see the Update Software screen, which is described on page 11-4.

3. Select **Register NetBlazer**; you see the NetBlazer Registration screen:

```
NetBlazer Registration                       NetBlazer Update V3.0

Fill in all appropriate fields on this two-screen form, then move to the
"Register NetBlazer" item on the second screen and press Enter. The
information is then sent to Telebit.

          Help
          Previous
          Return to Main Menu

          Company or site:
          Contact person:
          Address line 1:
          Address line 2:
          City or town:
          State or province:
          Zip/postal code:
          Country:             USA
          Email address:
          Phone number:
          Fax number:
          <<MORE>>

Press Enter if you need more information on using this screen
```

Figure 11-1. The First Page of the Register NetBlazer Screen

The Register NetBlazer screen is a two-page screen. To see the second screen, keep pressing the Down Arrow key to move down past the **<<More>>** item.

```
NetBlazer Registration                          NetBlazer Update V3.0

Fill in all appropriate fields on this two-screen form, then move to the
"Register NetBlazer" item on the second screen and press Enter. The
information is then sent to Telebit.

          <<MORE>>
          Fax number:
          Serial number:
          Save information:    no
          Register NetBlazer




Press Enter if you need more information on using this screen
```

Figure 11-2. Second Page of the Register NetBlazer Screen

To return to the first screen of information, press the Up Arrow key.

4. Fill in all relevant items on the first page of the screen, then move to the second page and continue filling in relevant information.

5. If you want to save the information you entered, move to **Save information** and press Enter to save your information. When the NetBlazer is done saving the information, the setting changes to **yes**.

6. When you are done, move to **Register NetBlazer** and press Enter. The NetBlazer displays a screen of information on how it contacted Telebit and delivered the information. (The method of contacting Telebit is determined by the **Connection type** setting on the Update Software screen; see the following section for information on how to change the connection type.)

Note: *If there are any problems sending the registration information to Telebit, please call Telebit Customer Support at 1-800-TELEBIT or 1-408-734-5200*

7. Once you are registered, you can select **Previous** to move back to the Update Software screen.

Updating Your Software

To get software updates and patches for your NetBlazer:

1. Complete all your NetBlazer configuration tasks.

2. On the Main Menu screen, select **Register/Update**. You see the Update Software screen.

```
Update Software                              NetBlazer Update V3.0

Fill in the appropriate fields and then move to "Query updates" and
press Enter to download patches from Telebit. Move to a patch name
and press Enter to apply that patch. Press "?" on a patch name to see
the patch description.

        Previous
        Return to Main Menu
        Help

        Register NetBlazer

        Connection type      auto
        Phone                1-408-745-3822
        Phone prefix
        Kernel patch level   none
        File patch level     none
        Delete Kernel patch
        Query updates


Press Enter to return to the previous screen
```

Figure 11-3. The Update Software Screen

3. If you have not yet registered your NetBlazer, move to the **Register NetBlazer** item and press Enter. See page 11-1 for information on filling out the items on the registration screens.

4. Move to the **Connection type** field and select a connection type of **auto**, **isdn**, **internet**, or **dialup**.

   isdn uses an isdn connection (if you have one). **internet** assumes an internet connection that would allow information to be downloaded from Telebit's servers. **dialup** creates a dial-up connection to Telebit based on the phone number you enter for the next field.

If you leave the connection type set to **auto**, the NetBlazer uses the connection type assumed to be the fastest for your situation (usually **internet**, followed by **isdn**, with **dialup** assumed to be the slowest of the three).

5. For **Phone number**, you should only change the default telephone number for the update server if Telebit has informed you of a telephone number change. Otherwise, leave the number set to the default. If you accidentally delete the number, you can retype it in: **1-408-745-3105**. You can use dashes and paraentheses to format the telephone number, or you can type a string of numbers with no formatting.

    If you are using ISDN, you can use either of two numbers: **1-408-745-3768** or **1-408-745-3769**. The first of those numbers automatically appears in this field if you select **isdn** for **Connection type**.

6. For **Phone prefix**, type the number or symbol you need to dial from your own telephone lines to reach an outside line. For example, in some locations you need to dial a 9 to reach an outside line. If your modem needs to dial a prefix number, type that number in this field.

7. The next two fields are filled in automatically by the NetBlazer and are not editable at this time. If you have not yet applied any updates, you'll notice that the **Kernel patch level** and the **File patch level** are both set to none.

8. Press Enter on **Delete Kernel patch** if you have previously applied a Kernel patch that you now want to delete.

9. When you are done filling in the other fields, move to **Query updates** and press Enter.

    The NetBlazer displays some brief messages that relate to the type of connection being made.

Note: *If there is a problem with your connection, the NetBlazer displays a message telling you to call customer support; call 1-800-TELEBIT (1-800-835-3248) or 1-408-734-5200 for Customer Support.*

    If no patches are found, the **Query updates** field displays a message stating that no patches were found.

If one or more patches are found, the NetBlazer displays a message in the **Query updates** field stating how many patches have been found. The Update Software screen becomes a two-page screen, with the second page showing the list of updates. To see the second screen, keep pressing the Down Arrow key to move down past the **<<More>>** item. To return to the first screen of information, press the Up Arrow key.

```
Update Software                                 NetBlazer Update V3.0

Fill in the appropriate fields and then move to "Query updates" and
press Enter to download patches from Telebit. Move to a patch name
and press Enter to apply that patch. Press ? on a patch name to see
patch description.
          <<MORE>>

          001 Patch 1          fixes flash filesystem bug
          002 Patch 2          fixes chat and modemcap bugs

Press Enter to return to the previous screen
```

Figure 11-4. The Update Software Screen with Patches

10. Move to one of the patches and press the **?** key to get information on the patch:

```
NetBlazer Patch 1 for Version 3.0 contains the following fix:


Fixes a bug in the Flash Filesystem where if you had a file that
was exactly 124k bytes long and then appended to it, no error
indication would be returned and the file would be silently truncated.

--End--
```

Figure 11-5. Example of Patch Information

11. Move to the patch you want to apply and press Enter. The software patch is saved on the NetBlazer.

Configuring for Multiple Protocols A

This appendix discusses how the different protocols work together.

For many NetBlazer users, configuring your NetBlazer will involve setting up LAN (or WAN) protocols for *only* IP, *only* IPX, or *only* AppleTalk. Unfortunately, most networks today involve a variety of computers using a variety of protocols on the same networks. The NetBlazer can be configured to route IP, IPX, and AppleTalk packets all at the same time. However, setting up the NetBlazer to route multiple protocols means you need to know which steps (or Worksheets) need to be repeated, and which do not.

Imagine you have the following network setup:
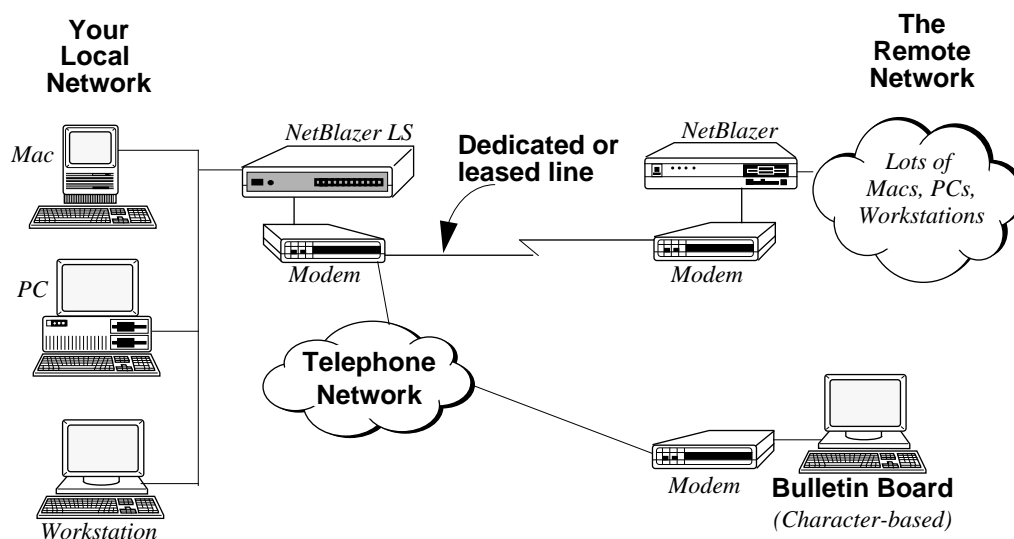
Figure A-1. Sample Network

As you fill out the Worksheets to set this up, you notice some duplication. For example, the steps to set up a dedicated line's "interface" is the same for all three protocols.

This means you actually only need to set up the interface portion to the remote LAN once, no matter how many protocols you then configure the NetBlazer to use over that interface.

To set up the local LAN to use multiple protocols:

Set the NetBlazer name, password, date, and time (select **NetBlazer setup**). Then select **NetBlazer port setup** and select the first protocol to configure. When you finish that protocol, select **Previous** to move back to the NetBlazer Port Setup screen so you can set the next protocol.

To set up a dedicated line to send and receive packets using multiple protocols:

Fill in the fields on the Dedicated Interface screen. Then select **Protocol details** and make your choices for the first protocol. When you are done, you can configure the next protocol (if you configured IP, you may need to select **Previous** to return to the Protocol Details screen). Remember that if you have more than one dedicated line, each line can be set up differently.

Note: *If you select SLIP for your type of dedicated line, you can only set up IP routing. If you want to have AppleTalk and IPX routing on your dedicated line, you need to select **PPP** for **Framing type** on the Dedicated Interface screen.*

To set up a dial-up line to send and receive packets using multiple protocols:

Fill in the fields on the Dial-up Connection screen. Then select **Protocol details** and make your choices for the first protocol. When you are done, you can configure the next protocol (if you configured IP, you may need to select **Previous** to return to the Protocol Details screen).

Note: *If you select SLIP for your type of dedicated line, you can only set up IP routing. If you want to have AppleTalk and IPX routing on your dedicated line, you need to select **PPP** for **Framing type** on the Dial-up Connection screen.*

Be aware that for dial-in users each user (or account name) is restricted to having only having one connection type; this means that Josephine Jones can only be IP or IPX, but not both IP and IPX. To work around this, you can create separate "users" for Josephine Jones, such as "Josephine-IP" and "Josephine-IPX."

Note also that a dialout modem pool is only available if you have set up your
NetBlazer to route IP on the LAN; if you don't have IP protocol set up for
the LAN, you cannot access a modem pool.

NetBlazer LS Configuration Worksheets B

You (or your System Administrator or Service Provider) can use the worksheets shown on the following pages to record and organize the information you need to configure your NetBlazer. You should fill in the worksheets before beginning your configuration. You may want to photocopy the worksheets first so you can reuse them if you need to.

There are 21 worksheets you can use:

For:	Use Worksheet:	On Page:
NetBlazer Setup	**1.** NetBlazer Name and Password	B-4
NetBlazer LAN Setup	**2.** LAN Setup for IP	B-5
	3. LAN Setup for IPX	B-6
	4. LAN Setup for AppleTalk	B-7
Line configuration	**5.** Lines	B-8
ISDN configuration	**6.** ISDN	B-9
Dial-up LAN-to-LAN applications	**7.** Dial-up LAN-to-LAN Interface	B-10
	8. Dial-up IP Protocol	B-11
	9. Dial-up IPX Protocol	B-12
	10. Dial-up AppleTalk Protocol	B-13
Dedicated LAN-to-LAN applications	**11.** Dedicated LAN-to-LAN Interface	B-14
	12. Dedicated IP Protocol	B-15
	13. Dedicated IPX Protocol	B-16
	14. Dedicated AppleTalk Protocol	B-17
Frame Relay applications	**15.** Frame Relay Connections	B-18

For:	Use Worksheet:	On Page:
Dial-in Users	**16.** Dial-in IP User	B-19
	17. Dial-in IPX User	B-20
	18. Dial-in ARA User	B-21
	19. Dial-in Character Mode User	B-22
Modem Pooling	**20.** IP Modem Pool	B-23
Registering your NetBlazer with Technical Support	**21.** NetBlazer Registration	B-24

Note: *Be aware that certain fields in the NetBlazer Setup Utility are case sensitive. You need to be very careful with case when entering a NetBlazer name, any passwords or crypto keys, any interface names, and user names.*

Also, to avoid problems with remote password files, your NetBlazer name should not include any of the following characters: "@", ":", "%", "\", "/", "{", "}", or any nonprinting characters.

To get you started filling in the worksheets, the following illustration shows a sample worksheet as it has been filled out.

Worksheet 2.   LAN Setup for IP

To configure your NetBlazer to route IP on the LAN:

1. Set your NetBlazer name and password (Worksheet 1).	
2. Select "NetBlazer port setup" from the Main Menu screen.	
3. Select "IP LAN" from the NetBlazer Port Setup screen, and work through the fields below that apply to your network.	
Global address/bits	143 . 191 . 63 . 1 / 24
Bits (the number after the slash) are the number of bits in the network portion of the address. The most common setting for bits is 24. For more information on IP addressing, see Appendix C, "IP Addressing."	
Domain name suffix	sunnyvale.telebit.com
telebit.com, is one example of a domain name suffix.	
Domain name server	143 . 191 . 10 . 100
interface address/bits en0	143 . 191 . 63 . 0 / 24
If you'll also be routing IPX and/or AppleTalk, useWorksheet 3 and Worksheet 4 as you continue with the configuration. Or, you may want to save your configuration at this point; return to the Main Menu and select "Save/Exit" to save.	

Figure B-1. Sample Worksheet

Worksheet 1.   NetBlazer Name and Password

Use this worksheet to record the name and password for your NetBlazer.

1. Select "NetBlazer setup" from the Main Menu screen and set the following fields.	
NetBlazer name	
This field is case sensitive. The name you select for this field has relevance to other NetBlazers that have LAN-to-LAN links to this NetBlazer.	
System password	
This field is case sensitive.	
2. Verify that the "Date" and "Time" fields are correct; if not, make the necessary changes.	
When you finish, you need to configure the NetBlazer LAN protocols before you configure any lines, ISDN usage, and/or your applications. Use Worksheet 2, Worksheet 3, and B-5 *to configure the LAN protocols.*	

Worksheet 2.   LAN Setup for IP

To configure your NetBlazer to route IP on the LAN:

1.   Set your NetBlazer name and password (Worksheet 1).
2.   Select "NetBlazer port setup" from the Main Menu screen.
3.   Select "IP LAN" from the NetBlazer Port Setup screen, and work through the fields below that apply to your network.

Global address/bits	
	_____ . _____ ._____ . _____ / _____

Bits (the number after the slash) are the number of bits in the network portion of the address. The most common setting for bits is 24. For more information on IP addressing, see Appendix C, "IP Addressing."

Domain name suffix	

telebit.com. is one example of a domain name suffix.

Domain name server	
	_____ . _____ ._____ . _____

interface address/bits	en0	_____ . _____ ._____ . _____ / _____

If you'll also be routing IPX and/or AppleTalk, useWorksheet 3 and Worksheet 4as you continue with the configuration. Or, you may want to save your configuration at this point; return to the Main Menu and select "Save/Exit" to save.

Worksheet 3.   LAN Setup for IPX

To configure your NetBlazer to route IPX on the LAN:

1. Set your NetBlazer name and password (Worksheet 1).	
2. Select "NetBlazer port setup" from the Main Menu screen.	
3. Select "IPX LAN" from the NetBlazer Port Setup screen and work through the fields below that apply to your network.	

Global address		
The Global address must be different from every other network device.		
interface address	en0	_____
Interfaces with names beginning with **en** *are for Ethernet.*		
NOTE: If an address already exists in an interface address field, **do not** *change it. The NetBlazer may automatically learn the current IPX address. If you need to enter an address in this field, it should match the Global address.*		
If you'll also be routing IP or AppleTalk, use Worksheet 2 and Worksheet 4 as you continue with the configuration. Or, you may want to save your configuration at this point; return to the Main Menu and select "Save/Exit" to save.		

Worksheet 4.   LAN Setup for AppleTalk

To configure your NetBlazer to route AppleTalk on the LAN:

1. Set your NetBlazer name and password (Worksheet 1).	

2. Select "NetBlazer port setup" from the Main Menu screen.

3. Select "AppleTalk LAN" from the NetBlazer Port Setup screen and work through the fields below that apply to your network.

en0 router type:	❏ none	❏ seed	❏ nonseed	❏ nonroute
lt0 router type:	❏ none	❏ seed	❏ nonseed	❏ nonroute

Select one router type per interface. See "Configuring AppleTalk Routing" on page 4-8 for information on the differences between seed, nonseed, and nonroute.

4. If you select "Seed" for en0, configure the NetBlazer as a Seed Router using the fields below.

Begin range:	
End range:	
New zone:	

If you have more than one new zone for a range, be sure to press Enter after each new zone name.

5. If you select "Seed" for lt0, configure the NetBlazer as a Seed Router using the fields below.

Begin range:	
New zone:	

You can only have one range and one zone per range.

If you'll also be routing IP and/or IPX, use Worksheet 2 and Worksheet 3 as you continue with the configuration. Or, you may want to save your configuration at this point; return to the Main Menu and select "Save/Exit" to save.

Worksheet 5.   Lines

To configure the lines attached to your NetBlazer:

1. Set your NetBlazer name and password (Worksheet 1).			
2. Select "NetBlazer port setup" from the Main Menu screen.			
3. Select "Line setup" from the NetBlazer Port Setup screen.			
4. Select a line and work through the fields below that apply.			
If you have more than one line you need to configure, copy this page and fill out the fields shown below with the additional information.			
Modem or TA			
If the NetBlazer automatically detects a modem or TA, don't change this setting.			
Type	❏ sync	❏ async	
Speed			
Autoconfigure	❏ on	❏ off	❏ config
Login	❏ on	❏ off	
Note			
5. Move to "Reset line" and press the Spacebar to select "yes". When you press Return, the changes are applied to the line.			
If you want to save your configuration at this point, return to the Main Menu and select "Save/Exit" to save.			

Worksheet 6.   ISDN

To configure your NetBlazer to route over an ISDN line:

<table>
<tr><td colspan="4">1.   Set your NetBlazer name and password (Worksheet 1).</td></tr>
<tr><td colspan="4">2.   Select "NetBlazer port setup" from the Main Menu screen.</td></tr>
<tr><td colspan="4">3.   Select "ISDN" from the NetBlazer Port Setup screen and work through the fields below that apply to your ISDN line.</td></tr>
<tr><td>SPID values</td><td>bri011

bri012</td><td colspan="2">_____

_____</td></tr>
<tr><td colspan="4">Be sure to set the SPID numbers before selecting the switch type.

If you have a switch type of 5ESSB, you may not have SPID numbers. If you only get one SPID number when you subscribe, you can set the SPID number on either bri line.</td></tr>
<tr><td>Switch type:</td><td>❏ 5ESSB</td><td>❏ DMS100B</td><td>❏ NI1B</td></tr>
<tr><td colspan="4">If you want to save your configuration at this point, return to the Main Menu and select "Save/Exit" to save.</td></tr>
</table>

Worksheet 7. Dial-up LAN-to-LAN Interface
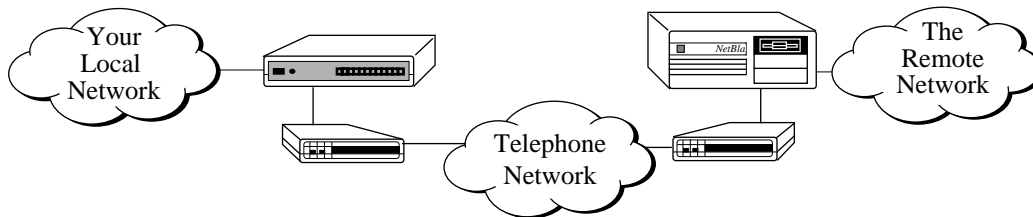
To configure an interface for a dial-up LAN-to-LAN connection (or a dial backup):

1. Set NetBlazer name and password (Worksheet 1) and configure applicable NetBlazer LAN protocols (Worksheet 2, Worksheet 3, or Worksheet 4).	
2. Select "Dial-up LAN-to-LAN" from the Main Menu screen and work through the fields below that apply to your connection.	

New connection		
This should be the remote NetBlazer's name. This field is case sensitive.		
Framing type	❏ SLIP	❏ PPP
Password		
The password must be the same on the corresponding dial-up LAN-to-LAN interface on the other NetBlazer. This field is case sensitive.		
Crypto key		
You must set either the password or the crypto key. This field is case sensitive.		
Dial-in	❏ Yes	❏ No
Phone number		
Characteristics	❏ Dialout	❏ ISDNdialout
*It is advised you select **dialout** for most configurations, unless you are using ISDN. The other settings for this field apply only in very limited circumstances.*		

3. Select "Protocol details" and continue configuring the current connection for your protocols using Worksheet 8, Worksheet 9, and/or Worksheet 10.

Worksheet 8.   Dial-up IP Protocol
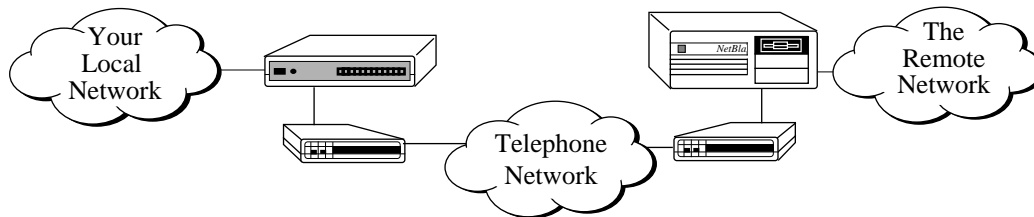
To configure a dial-up connection so your local NetBlazer can route IP packets:

1. Set NetBlazer name and password (Worksheet 1) and configure NetBlazer LAN protocols (Worksheet 2, Worksheet 3, or).		
2. Set up the Interface as shown in the Dial-up LAN-to-LAN Interface Worksheet (Worksheet 7).		
3. On the Dial-up Connection screen, select "Protocol details"; if you go to the Protocol Details screen, select "IP routes".		
4. On the IP Routes screen, type the address of a new IP route, then set that route's Public and Metric settings on the IP Route Details screen. Return to the IP Routes screen if you want to add another route.		
Route Address/Bits	Public	Metric (hops)
❏ default	❏ Yes ❏ No	
_____ . _____ . _____ . _____ / _____	❏ Yes ❏ No	
_____ . _____ . _____ . _____ / _____	❏ Yes ❏ No	
_____ . _____ . _____ . _____ / _____	❏ Yes ❏ No	
_____ . _____ . _____ . _____ / _____	❏ Yes ❏ No	
_____ . _____ . _____ . _____ / _____	❏ Yes ❏ No	
Type "default" in place of a route number if you only need to add a single default route for all the traffic from your network to the remote network.		
If you have additional routes, copy this page and fill out the fields shown above with the additional information. If you need more information on routing IP, see "IP Routing Choices" on page 7-12.		

Worksheet 9.   Dial-up IPX Protocol
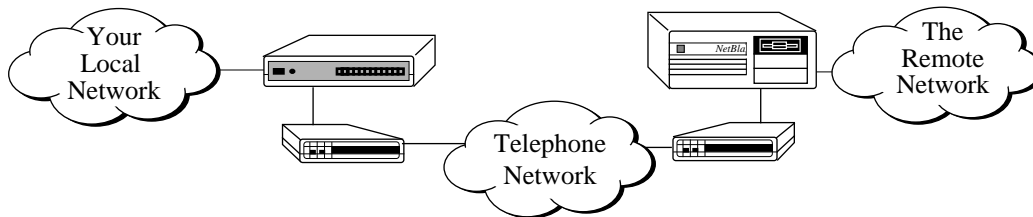
To configure a dial-up connection so your NetBlazer can route IPX:

1.   Set NetBlazer name and password (Worksheet 1) and configure NetBlazer LAN protocols (Worksheet 2, Worksheet 3, or Worksheet 4).
2.   Set up the Interface as shown in the Dial-up LAN-to-LAN Interface Worksheet (Worksheet 7).
3.   On the Dial-up Connection screen, select "Protocol details".
4.   Select "Enable IPX".
5.   Once you know that the other end of the connection has been configured, select "Learn IPX routes".
When you select "Learn IPX routes" the NetBlazer dials the NetBlazer at the other end of the link to learn its routing information. Allow up to three minutes for this to be completed. You cannot proceed until this operation is complete.

Worksheet 10. Dial-up AppleTalk Protocol
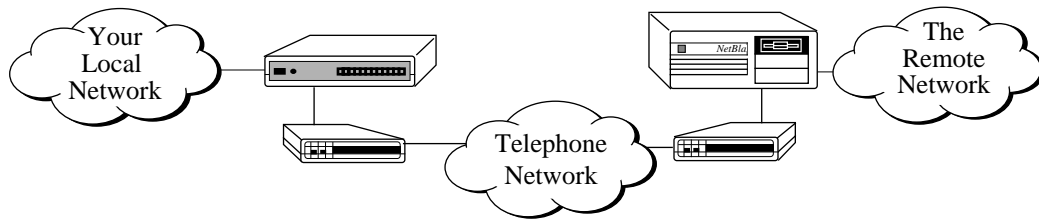
To configure a dial-up connection so your local NetBlazer can route AppleTalk:

1. Set NetBlazer name and password (Worksheet 1) and configure NetBlazer LAN protocols (Worksheet 2, Worksheet 3, or Worksheet 4).
2. Set up the Interface as shown in the Dial-up LAN-to-LAN Interface Worksheet (Worksheet 7).
3. On the Dial-up Connection screen, select "Protocol details".
4. Select "Enable AppleTalk".
5. Once you know that the other end of the connection has been configured, select "Learn AppleTalk routes".
When you select "Learn AppleTalk routes" the NetBlazer dials the NetBlazer at the other end of the link to learn its routing information. Allow up to three minutes for this to be completed. You cannot proceed until this operation is complete.

Worksheet 11.   Dedicated LAN-to-LAN Interface
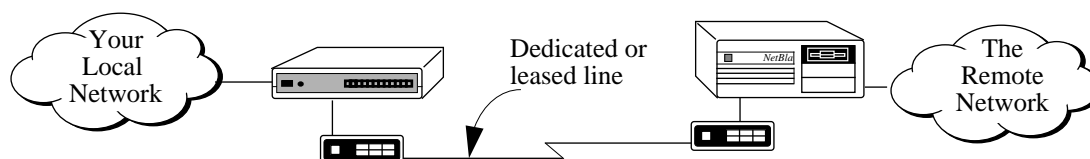
To configure an interface for a dedicated LAN-to-LAN connection:

1.	**Set NetBlazer name and password (Worksheet 1) and configure NetBlazer LAN protocols (Worksheet 2, Worksheet 3, or Worksheet 4).**
2.	**Select "Dedicated LAN-to-LAN" from the Main Menu screen.**
3.	**Select a line and work through the fields below that apply.**

If you have more than one line you need to configure, copy this page and fill out the fields shown below with the additional information.

DEVICE	INTERFACE	Framing type		Enable interface	
		❏ SLIP	❏ PPP	❏ Yes	❏ No

Devices on this screen may be named lineXX (where XX is the line number).

4.	**If you want to backup this dedicated line with a dial-up connection in case the dedicated line goes down, move to "Dial backup" and type the name of an existing dial-up interface.**

Dial backup	

If you need to create a new dial-up LAN-to-LAN interface to use as a dial backup for this interface, use Worksheet 7, Worksheet 8, Worksheet 9, and Worksheet 10 to organize the information you need to configure the new dial-up LAN-to-LAN connection.

5.	**Select "Protocol details" and continue configuring the current connection for your protocols using Worksheet 12, Worksheet 13, and Worksheet 14.**

Worksheet 12.   Dedicated IP Protocol
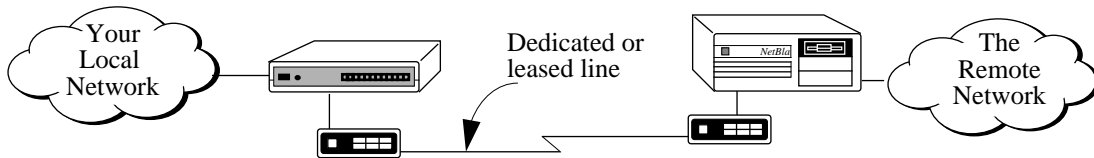
To configure your NetBlazer so it can use a dedicated line to route IP packets:

1. Set NetBlazer name and password (Worksheet 1) and configure NetBlazer LAN protocols (Worksheet 2, Worksheet 3, or Worksheet 4).		
2. Set up the interface as shown in the Dedicated LAN-to-LAN Interface Worksheet (Worksheet 11).		
3. On the Dedicated Interface screen, select "Protocol details"; if you go to the Protocol Details screen, select "IP routes".		
4. On the IP Routes screen, type the address of a new IP route, then set that route's Public and Metric settings on the IP Route Details screen.		
Route Address/Bits	Public	Metric (hops)
❏ default	❏ Yes ❏ No	
_____ . _____ . _____ . _____ / _____	❏ Yes ❏ No	
_____ . _____ . _____ . _____ / _____	❏ Yes ❏ No	
_____ . _____ . _____ . _____ / _____	❏ Yes ❏ No	
_____ . _____ . _____ . _____ / _____	❏ Yes ❏ No	
_____ . _____ . _____ . _____ / _____	❏ Yes ❏ No	
Type "default" in place of a route number if you only need to add a single default route for all the traffic from your network to the remote network.		
If you have additional routes, copy this page and fill out the fields shown above with the additional information.		

Worksheet 13. Dedicated IPX Protocol
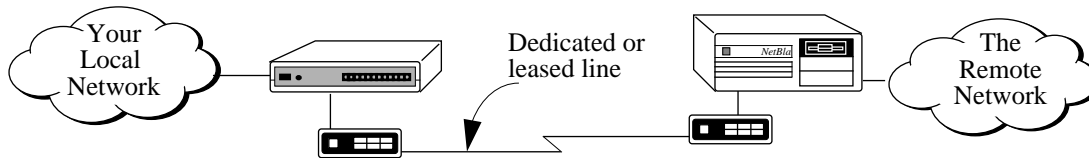
To configure a dedicated connection so your NetBlazer can use a dedicated line to route IPX packets:

1. **Set NetBlazer name and password (Worksheet 1) and configure NetBlazer LAN protocols (Worksheet 2, Worksheet 3, or Worksheet 4).**
2. **Set up the interface as shown in the Dedicated LAN-to-LAN Interface Worksheet (Worksheet 11).**
3. **On the Dedicated Interface screen, select "Protocol details".**
4. **Select "Enable IPX".**
5. **Once you know that the other end of the connection has been configured, select "Learn IPX routes".**
When you select "Learn IPX routes" the NetBlazer dials the NetBlazer at the other end of the link to learn its routing information. Allow up to three minutes for this to be completed. You cannot proceed until this operation is complete.

Worksheet 14.   Dedicated AppleTalk Protocol
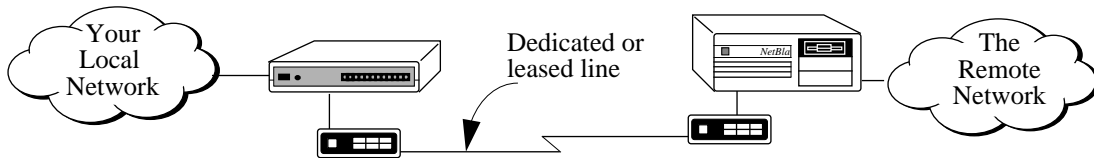
To configure a dedicated connection so your local NetBlazer can route AppleTalk packets:

1. **Set NetBlazer name and password (Worksheet 1) and configure NetBlazer LAN protocols (Worksheet 2, Worksheet 3, or Worksheet 4).**
2. **Set up the interface as shown in the Dedicated LAN-to-LAN Interface Worksheet (Worksheet 11).**
3. **On the Protocol Details screen, select "Routing details".**
4. **Select "Enable AppleTalk".**
5. **Once you know that the other end of the connection has been configured, select "Learn AppleTalk routes".**
When you select "Learn AppleTalk routes" the NetBlazer dials the NetBlazer at the other end of the link to learn its routing information. Allow up to three minutes for this to be completed. You cannot proceed until this operation is complete.

Worksheet 15.   Frame Relay Connections
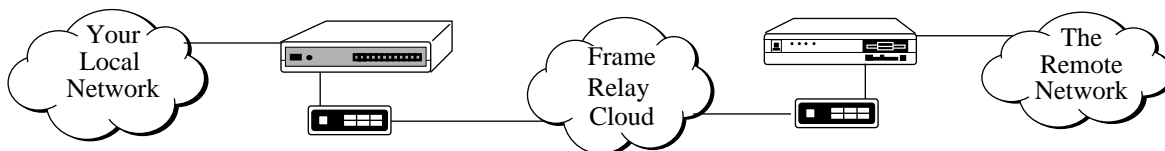
To configure your NetBlazer to use a Frame Relay connection:

1. **Set NetBlazer name and password (Worksheet 1) and configure NetBlazer LAN protocols (Worksheet 2, Worksheet 3, or Worksheet 4).**
2. **If necessary, set the line you want to use for Frame Relay to be a sync line (Worksheet 5).**
3. **Select "Dedicated LAN-to-LAN" from the Main Menu screen.**
4. **Move to a sync line (or a line you've set to be sync) and type "frame" in the INTERFACE column to see the Frame Relay screens.**
5. **In the Frame Relay Connection screen enter a name for the frame relay interface, then set the DLCI.**

If you have additional connections you need to configure, copy this page and fill out the fields shown below with the additional information.

Interface name	
DLCI	

6. **Type the name of an existing dial-up LAN-to-LAN connection in the "Dial backup" field.**

Dial backup	

If you need to create a new dial-up LAN-to-LAN interface to use as a dial backup for this interface, use Worksheet 7, Worksheet 8, Worksheet 9, and Worksheet 10 to organize the information you need to configure the new dial-up LAN-to-LAN connection.

7. **Move to "Line management" and press the Spacebar to select a line management type.**

Line management	❏ LMI	❏ ANSI	❏ none

8. **Select "Protocol details" and continue configuring the current connection for your protocols using Worksheet 12, Worksheet 13, and Worksheet 14.**

Worksheet 16.   Dial-in IP User
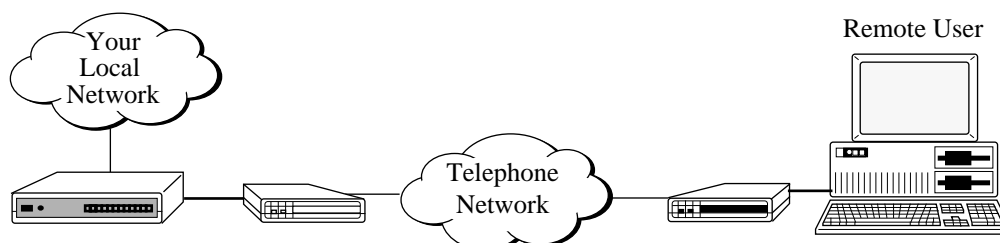
To configure your NetBlazer so remote users can dial in and route IP packets:

1. Set NetBlazer name and password (Worksheet 1) and configure NetBlazer LAN protocols (Worksheet 2, Worksheet 3, or Worksheet 4).	
2. Select "Dial-in users" from the Main Menu screen and type a name for your user.	
If you have more than one user, copy this page and fill out the fields shown with the additional information for each dial-in IP user.	
User name	
This field is case sensitive.	
3. Select "IP" for the connection type and fill in the appropriate fields on the Remote IP User screen.	
Password	
This field is case sensitive. If this user will be using PAP, you need to set this field. This password needs to correspond to the PAP "peer-passwd" on the remote end.	
Crypto key	
This field is case sensitive. If this user will be using CHAP, you need to set this field. This crypto key needs to correspond to the CHAP "secret" at the remote end.	

Framing type	❏ SLIP	❏ PPP	
IP Address/bits	_____ . _____ ._____ . _____ / _____		
See Appendix C, "IP Addressing" for more information on IP addressing. Normally, remote node users are host routes and use 32 bits.			

Worksheet 17.   Dial-in IPX User
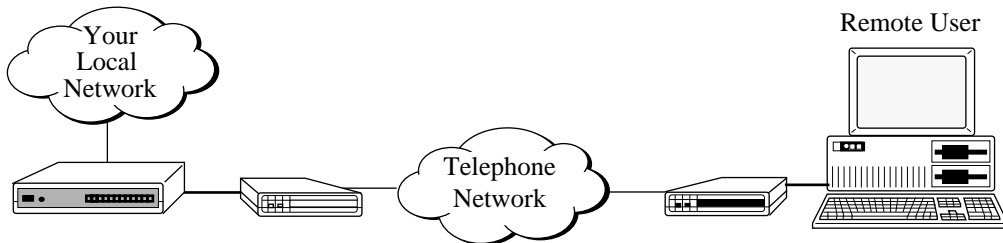
To configure your local NetBlazer so remote users can dial in and route IPX packets:

1. Set NetBlazer name and password (Worksheet 1) and configure NetBlazer LAN protocols (Worksheet 2, Worksheet 3, or Worksheet 4).
2. Select "Dial-in users" from the Main Menu screen and type a name for your user.
If you have more than one user, copy this page and fill out the fields shown with the additional information for each dial-in IPX user.

User name	

This field is case sensitive.
3. Select "IPX (PPP Shell)" for the connection type and fill in the appropriate fields on the Remote IPX User screen.

Password	

This field is case sensitive. If this user will be using PAP, you need to set this field. This password needs to correspond to the PAP "peer-passwd" on the remote end.

Crypto Key	

This field is case sensitive. If this user will be using CHAP, you need to set this field. This crypto key needs to correspond to the CHAP "secret" at the remote end.

Worshet 18.   Dial-in ARA User

An Apple
Remote User

Your
Local
Network

Telephone
Network

To configure your NetBlazer so ARA (Apple Remote Access) users can dial in and route
AppleTalk packets:

1. Set NetBlazer name and password (Worksheet 1) and configure NetBlazer LAN protocols (Worksheet 2, Worksheet 3, or Worksheet 4).	
2. Select "Dial-in users" from the Main Menu screen and type a name for your user.	
If you have more than one user, copy this page and fill out the fields shown with the additional information for each dial-in ARA user.	
User name	
This field is case sensitive.	
3. Select "ARA" for the connection type and fill in the appropriate fields on the ARA User screen.	
Password	
This field is case sensitive.	
Call back	
Home zone	
Time limit	

Worksheet 19.   Dial-in Character Mode User
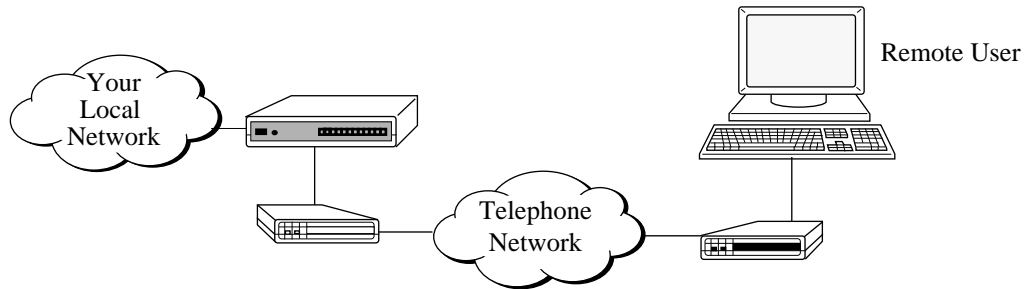
To configure your local NetBlazer so remote character-mode users can dial in:

1.   Set NetBlazer name and password (Worksheet 1).
2.   Select "Dial-in users" from the Main Menu screen and type a name for your user.
If you have more than one user, copy this page and fill out the fields shown with the additional information for each dial-in character-mode user.

User name	
This field is case sensitive.	

3.   Select "Character" for the connection type and fill in the appropriate fields on the Character Mode User screen.

Password		
This field is case sensitive.		
Dial-out	❏ Yes	❏ No
Telnet/rlogin	❏ Yes	❏ No
Multi-login	❏ Yes	❏ No
Configuration	❏ Yes	❏ No
Status	❏ Yes	❏ No
Login command		
This field is case sensitive. Use the semi-colon (;) to separate commands. For example, **rlogin napa; logout**.		

Worksheet 20. IP Modem Pool
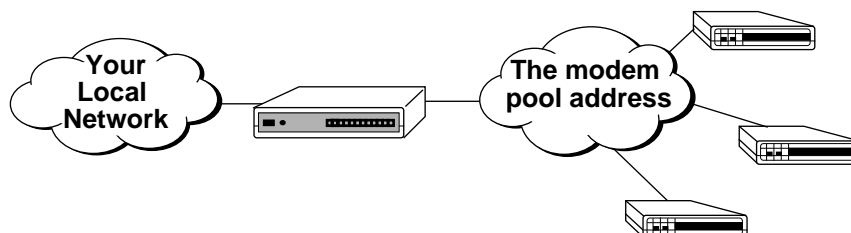
To configure your local NetBlazer so any IP user can take control of a modem to dial out to a character-based information service (such as a Bulletin Board or CompuServe®):

1. Set NetBlazer name and password (Worksheet 1) and configure NetBlazer LAN for IP protocol (Worksheet 2).	
2. Select "Dial-out modem pool" from the Main Menu screen and type an IP address to use to access any modem attached to the NetBlazer.	
Pool IP address	_____ . _____ . _____. _____

Worksheet 21.   NetBlazer Registration

Use this worksheet to organize the information you need to fill in the fields on the Registration screen.

1. Set NetBlazer name and password (Worksheet 1) and configure NetBlazer LAN protocols (Worksheet 2, Worksheet 3, or Worksheet 4).	
2. Select "Register/Update" from the Main Menu screen, then select "Register NetBlazer" from the Update Software screen. Fill out the fields on this screen with the information that pertains to your site.	
Company or site	
Contact person	
Address line 1	
Address line 2	
City or town	
State or province	
Zip/postal code	
Country	
Email address	
Phone number	
Fax number	
3. Move to "Save information" and press Enter to save the information.	
4. Move to "Register NetBlazer" and press Enter to send the information you entered to Telebit.	
5. Move to Previous and press Enter to return to the Update Software screen.	
If you want, you can now check the Telebit server for any software updates. Move to "Query updates" and press Enter to check which updates are available. For more information, see "Updating Your Software" on page 11-4.	

IP Addressing   C

All the computers on the world-wide Internet have unique Internet
addresses called IP addresses. The essential point to understand about IP
addresses is that each gateway on an IP network knows of or can determine
the existence of all others. This means that they can route packets of infor-
mation to their destination through the quickest routes, which makes for an
extremely flexible network. If your computer can get a properly addressed
packet of information from your LAN to a remote NetBlazer's LAN (or to
the Internet), that gateway will worry about how to deliver the packet.

IP addresses are numbers, similar to a ZIP code or telephone number, which
uniquely identify a location on the network. To simplify routing, IP
addresses are in two sections, a *network ID* and a *host ID*. The network ID
identifies the network to which a host is attached, and the host ID uniquely
identifies the host on that network. Thus, the IP addresses of all hosts on a
given network share a common network ID.

An IP address is a 32-bit number, broken down into two sections: the host
ID section and the network ID section. The length of the section depends on
the *class* of the address. Figure B-1 shows the primary classes of IP
addresses used on the Internet.

High order bits   **Low order bits**

```
                    8              16             24             32
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
```

Class A	0	Net ID		Host ID	
Class B	1 0	Net ID		Host ID	
Class C	1 1 0	Net ID			Host ID
Class D	1 1 1 0	Multicast Address			
Class E	1 1 1 1 0	Reserved for future use			
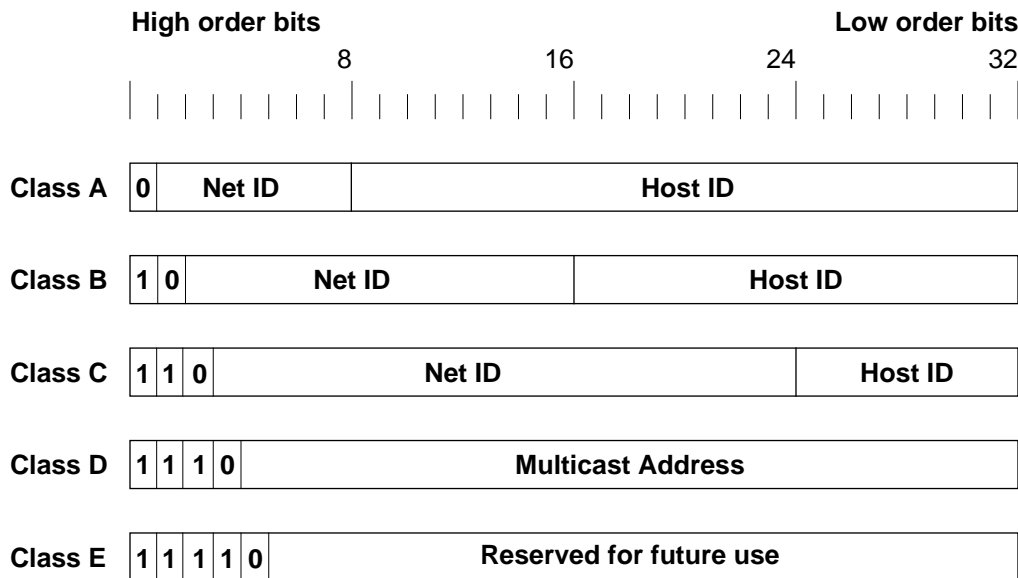
Figure B-1. Primary Internet Protocol (IP) Address Classes

Most Internet sites are assigned Class B or Class C addresses. Class B addresses are for intermediate size networks that have between 256 and 65,536 hosts. Class C addresses are for networks with fewer than 256 hosts.

Hosts with multiple LAN connections must have an IP address assigned to each LAN connection. Therefore, if your NetBlazer includes more than one LAN interface connection, you must assign a unique IP address to each LAN interface.

Assigning IP Addresses

IP addresses are 32-bit numbers most commonly represented as four numbers joined by periods, for example 128.30.10.2. These addresses are divided into four octets or 8-bit groupings (the 128, 30, 10, and 2 in the previous example). For example, the 32–bit address 10000000 00011110 00001010 00000010 is written as 128.30.10.2 in the common "dotted decimal" notation.

As figure B-1 shows, the A, B, and C addresses all include a section for the network ID. This section is called the *subnet*. If the NetBlazer is interconnected to an existing network, assign each LAN interface an unassigned IP address that uses the same network ID as other hosts on the LAN. Use the same IP address assigned to one of the LAN interfaces for the NetBlazer's global IP address.

If you are setting up a new network that will be attached to the Internet, you must obtain IP network addresses from the Network Information Center (NIC). The NIC only assigns the network portion of the address and delegates responsibility for assigning host addresses to the requesting organization. For more information on connecting to the Internet, see Appendix H, "Joining the Global Internet."

Setting the Subnet Mask

The subnet bitmask tells the NetBlazer how many high-order bits are assigned to the network ID part of the IP address. You will need to set the subnet mask based on the class of the IP address you enter. Class B addresses are usually assigned a 16-bit subnet mask while Class C addresses are usually assigned a 24-bit subnet mask.

Class A and Class B addresses have a surplus of Host ID bits. Turning some of those excess Host ID bits into a Subnet ID can:

- help reduce the number of routing table entries

- allow decentralized management of host addressing

- help localize traffic to a subnetwork

The subnet bits are specified by a bit mask called the *subnet mask*. The subnet mask can have up to 32 bits and is typically represented like an IP address such as 255.255.255.0. The NetBlazer uses a different style of representation to simplify things, so the above bitmask is represented as /24 following the network address. The most common subnet bitmask is /24.

As illustrated in Figure B-2, many sites with Class B networks use a 24-bit subnet mask that allows them to use the third octet of the address to identify specific physical LANs. The fourth octet identifies a host on the LAN.

```
        ┌──────── 24-bit Subnet Address ────────►
        │                  │           │         │
        ┌──────────────────┬───────────┬─────────┐
        │   Internet ID    │  LAN ID   │ Host ID │
        └──────────────────┴───────────┴─────────┘
```
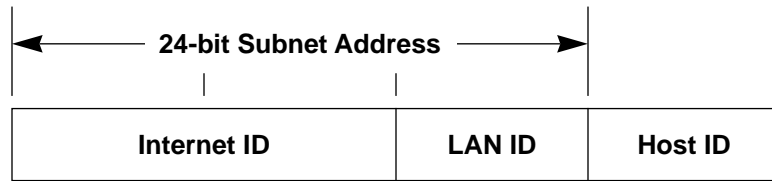
Figure B-2. Example of a Class B Subnet Address

You can set the subnet mask to any number of bits equal to or greater than the number of bits required by the Internet network address. However, Telebit recommends aligning the subnet addresses on octet boundaries (that is, 8, 16, or 24 bits). This simplifies the network design and avoids possible routing problems, especially when Routing Information Protocol (RIP) is used to propagate routing information throughout the network.

Once a subnet partition has been selected, all machines on the network must use it; otherwise, routing problems may occur.

IPX Addressing D

An IPX address is the uniqe identifier for an IPX network and a particular node on the network. Work with your network administrator to assign addresses.

To configure the NetBlazer, you need to enter an IPX address, which is a combination of the IPX network number and the IPX node number. In the Setup Utility, this address is entered in the format *networknumber.nodenumber*. Two other address numbers often associated with IPX are the internal network number and the port number.

To improve readability, this appendix shows hexadecimal numbers this way: 500hex or simply 500h with "hex" or the letter "h" indicating hexadecimal. However, do not enter **hex** or **h** when entering an IPX network number to the NetBlazer.

IPX Network Number

An IPX network number is an address that uniquely identifies a network. The network administrator assigns an 8-digit hexadecimal number in the 1 to FFFFFFFE range. You need to know this number to configure IPX routing in the Setup Utility. Note that you should omit any leading zeros when entering the number.

IPX Node Number

An IPX node number uniquely identifies an individual station on a network. A node number is a 12-digit hexadecimal in the 1 to FFFFFFFFFFFE range), such as CEE2h, CO703420h, or simply 1h. (Note that you should omit any leading zeros when entering the number.) A station on a network can be a workstation, a file server, or a router such as a NetBlazer.

A node number follows a network number. Together, the network number and the node number make up the IPX address of a station, such as a NetBlazer, on a network.

When you assign an IPX network number to a NetBlazer, the NetBlazer assigns a random node number. For example, you can assign the network number 331hex to the NetBlazer. The NetBlazer assigns the node number of CEE2hex. Its full IPX address is 331.CEE2 in hexadecimal.

When you assign an IPX network number to an interface such as "en0" (an Ethernet card), the NetBlazer finds the Media-Access Control protocol (MAC) address of the device and uses the MAC number as the IPX node number. The NetBlazer finds the MAC address of en0, that is, C0703420hex, and sets that as en0's IPX node number. The full IPX address of en0 is then 333.C0703420 in hexadecimal.

IPX Internal Network Number

An IPX internal network number uniquely identifies a logical network that may or may not be the same as a physical network. An internal network number is an 8-digit hexadecimal similar to an IPX network number. The NetBlazer internal network numbers are mainly used for ACS and IPX SNMP.

IPX Port Number

An IPX address can have a third part: the port or socket number. A port number is a 4-digit hexadecimal number in the 1 to FFFE range (omit leading zeros). Not every IPX address has a port number; for example, an interface address has only two parts.

Stations such as file servers have port or socket numbers. For example, a file server can have the address 321.1.451 in hexadecimal. Port numbers are used by IPX servers and devices to communicate with each other.

AppleTalk Routing E

For in-depth information on AppleTalk network design, refer to:

- Apple Computer's *Inside Macintosh*, second edition, published by Addison Wesley and dated 1990.

- Apple Computer's *Inside AppleTalk*, second edition, published by Addison Wesley and dated 1990.

AppleTalk LAN Routing

You can set up one or more NetBlazer LAN interfaces as:

- AppleTalk seed routers

- AppleTalk nonseed routers

- nodes on the LAN (nonroute)

You can have each interface function as a seed router, a nonseed router, a nonrouting node, or you can select not to run AppleTalk over that specific interface.

Set the interface up as "nonroute" if you want the NetBlazer to appear only as a node on a network. Set the interface up as "nonseed" if you want to acquire route information from another router on the LAN. (Selecting nonseed only works if there is an AppleTalk seed router on the network.)

Set the interface up as "seed" if you want the NetBlazer to perform as the primary router for AppleTalk. Seed routers maintain a static list of the routes on an AppleTalk network; this list is shared with nonseed routers.

AppleTalk Zones and NetWork Numbers

To set up a NetBlazer as a AppleTalk Seed Router, you need to know what network numbers and zones to enter.

Network Numbers and Ranges

With AppleTalk, large networks (called internetworks) are subdivided into smaller networks by network numbers. All AppleTalk routers use AppleTalk network numbers to differentiate their ports. These network numbers work similarly to ZIP codes by helping the NetBlazer identify which network connection a packet needs to be routed to.

Generally, when you are setting up a network you will pick one number for the network, as opposed to a range of numbers. However, if you have more than 64 AppleTalk nodes on an Ethernet network, you should use a range of network numbers. The numbers from 1 to 65,279 are legal numbers. (Apple has reserved the range from 65,280 to 65,534.)

If you are setting up a very large network, pick a range of one number for about every 64 nodes. For example, if you have 256 nodes, pick four network numbers such as 1000 to 1003. Because of AppleTalk's dynamic addressing, you always want to have more node addresses available on a network than you have devices. The ratio of 1:64 assumes you have many more workstations than servers. If your ratio of servers to workstations is about even, however, you don't need to use as large of a range.

Zones

To help users find network services, Apple devised a way to associate names with networks. These names are called zones. AppleTalk zone names are stored in the router along with the network numbers.

Unlike AppleTalk network numbers which have to be unique, AppleTalk zone names can be duplicated throughout the network. Zone names are typically selected on the basis of physical location or function. A small site may have a single zone name such as *Chicago Office*. A larger site may have several logical zones; for example, *Accounting*, *Engineering*, *Marketing*, and *Customer Support*.

For the NetBlazer, you need to be aware that a LocalTalk LAN connection can only have one zone name (and one range number), but other LAN connections (such as Ethernet) can have multiple zone names associated with them. For information on setting zones, see "Configuring AppleTalk Routing" on page 4-8.

TokenRing and Ethernet are considered "extended networks" while LocalTalk is considered a "non-extended network". Extended networks may have a range of one or more network numbers. Associated with this range may be one or more zone names. Non-extended networks may have only a single network number, and one zone name.

Here are some sample ranges and zones for various interfaces.

Interface	Network Range	Zones
en0	40000 to 40000	Marketing, Finance, Administration
en1	30000 to 33333	Engineering
tr0	20 to 30	Sales
lt0	5	Shipping
tr1	300 to 301	Shipping, Sales, Finance

Note that it is legal and possible to have the same zone name associated with multiple network ranges. the relationship between network numbers and zone names is very flexible.

Learning and Forgetting Routes

The NetBlazer uses AppleTalk learning and forgetting of routes to make building and updating of routing tables a little easier. Instead of manually entering all the information about a route on a remote LAN, Learning adds the routing information to your AppleTalk routing table for you.

When you tell your NetBlazer to learn routes on a remote LAN connection, the NetBlazer "listens" on the line to information distributed by AppleTalk Seed Routers and adds that information to its routing tables.

When the remote network's topology changes, you can tell the NetBlazer to forget all of the routes learned on for that remote LAN connection. Removing the learned entries removes any bad routes in your routing table. You then tell the NetBlazer to learn the routes on that connection again, to update the routing table with the most recent (and most correct) information.

A learn command doesn't delete any routes that are bad or inactive. The learn command can be used repeatedly to keep adding routes to the NetBlazer's routing table, but using the learn command without ever using the forget command may result in a routing table full of inactive remote routes.

NetBlazer Backup F

To make a backup copy of your NetBlazer configuration and password files, perform the following steps:

1. Save your current configuration and exit out of the Setup Utility.

2. Log back in to the NetBlazer as root.

```
Telebit's NetBlazer Version 3.0

Login as "setup" to configure the NetBlazer

NB login: root
Password:

NB:Top>
```

3. Start an FTP session with the host where you want your backup files to reside.

```
NB:Top> ftp napa
Type ^] (decimal 29) <CR> to return to NetBlazer
Trying 143.191.10.100:21...
FTP session 0 connected to napa
220 napa FTP server (SunOS 4.1) ready.
Enter user name: root
331 Password required for root.
Password:
230 User root logged in.
```

4. Go to the directory where you want to put the backup files.

```
ftp> cd netblazer
250 CWD command successful.
```

5. Enter a **put startup.cnf** command to save a copy of the NetBlazer startup configuration file.

```
ftp> put startup.cnf
200 PORT command successful.
150 ASCII data connection for startup.cnf (143.191.63.1,1030).
Put complete: 4201 bytes in 0 sec (40009/sec)
226 ASCII Transfer complete.
```

6. Enter a **put passwd** command to save a copy of the NetBlazer password file.

```
ftp> put passwd
200 PORT command successful.
150 ASCII data connection for passwd (143.191.63.1,1031).
Put complete: 120 bytes in 0 sec (0/sec)
226 ASCII Transfer complete.
```

7. Enter a **quit** command to exit the FTP session.

```
ftp> quit
221 Goodbye.
FTP session 0 closed: EOF
```

8. Now you should be back at the NetBlazer command prompt. Enter logout to exit the NetBlazer.

```
NB:Top> logout
```

Troubleshooting and Customer Support   G

Telebit Corporation has made every effort to ensure that the product you have purchased is of excellent quality in all respects. Telebit products are rigorously tested and subjected to strict quality control procedures. However, if you experience difficulty in the use of this product, this appendix contains tips for troubleshooting some common installation and configuration problems. It also contains instructions for contacting customer support and information on how to order additional manuals.

General Troubleshooting

NetBlazer's power light does not come on.	Make sure the AC power adapter is plugged into an active wall outlet. Then make sure the power adapter is securely connected to the NetBlazer and turn on the NetBlazer. See Chapter 2, "NetBlazer LS Installation" for illustrated instructions. If the power light still doesn't turn on, you may have a defective power cable. See "Obtaining Customer Support" on page G-5.
The **COL** light on the front panel is often on.	Your Ethernet cables have been disconnected or are not properly terminated. Or, multiple devices on the line are all attempting to use the line. You might want to think about segmenting the line so there aren't so many hosts on it competing for time.
You get garbage characters on your screen when you try to run the Setup Utility.	Type Ctrl-x Ctrl-x to exit the Setup Utility. If you are running from a non-ANSI terminal, you'll need to change to a different terminal. The Setup Utility only works with ANSI-compatible terminals. If you are running from an ANSI-compatible terminal, check your terminal settings. They should be set to 9600 bps, 8 bits, 1 stop bit, no parity, and XON/XOFF flow control. If your settings are correct, try starting the Setup Utility again. If you still get garbage characters, contact Telebit customer support (see page G-5).
You saved your configuration, and now need to reset the NetBlazer to the default (factory) settings.	The pinhole to the right of the power switch is used to reset your NetBlazer LS to the factory defaults by erasing all saved configuration files. To reset the NetBlazer, turn the NetBlazer's power off and insert a paper clip into the pinhole. Holding the paper clip firmly pushed in, turn the NetBlazer back on and continue to press in on the paper clip for five or more seconds. When you release the paper clip, the NetBlazer will boot up using factory default settings. This procedure erases any saved configuration and/or password files.

Microsoft Windows Troubleshooting

You only see part of the screens or the message line at the bottom is missing.	The automatic window size in your terminal emulator is too small. You need to maximize the terminal emulator window, then you can manually size the window so the Setup Utility screens are completely visible. Note that the Setup Utility's default window size is 24 lines by 80 characters.

Setup Utility Troubleshooting

You set a password for a connection or user that shouldn't have a password	You can reset any password field back to <<NOT SET>> by moving to that field, typing one letter, pressing Ctrl-h to delete the letter, and then typing Ctrl-e and pressing Enter twice.
Messages appear onscreen but they disappear before you can read them.	These are informative messages from the NetBlazer, stating that something has been set (such as an IP address), created, or changed. If the message required an action or contained information about an error, it would stay on the screen long enough for you to read and (if necessary) respond to it.
Ctrl-C doesn't seem to be working to restore text fields to their original text.	If you are using telnet to connect to the NetBlazer, check to see if the telnet product you are using overrides control characters. In some systems, Ctrl-c is used to interrupt a process or suspend the output of a process. If this is happening, you need to remove Ctrl-c from the setup or preferences settings for the telnet session so it can work correctly in the Setup Utility.

NetBlazer LS ISDN Troubleshooting

The D-channel light is off.	Something is wrong with your ISDN connection. Either the cables are not connected to the NT1, or the NT1 is not connected to an active ISDN line. If you suspect that your ISDN line is not active, call your Service Provider.
The D-channel light is flashing.	There is a partial connection, but one of the cables may be loose, or you've attached more than one NetBlazer to the same NT1. You should only have one NetBlazer attached to each NT1. Also, make sure that no other ISDN devices (such as ISDN monitoring devices) are attached to the NetBlazer or the NT1; if any attached monitoring devices are left in *emulation mode* it may cause connection problems.
The B-channel light is flashing.	The NetBlazer is attempting to initiate or receive an ISDN connection. The light should blink briefly, then stay on once the connection is made. If the light continues to blink, the NetBlazer is unable to create the connection. Check to make sure the phone number to the remote NetBlazer is correct, and that the remote NetBlazer is up. Also, check to see if the B-channels on the remote NetBlazer are all in use. The B-channel lights may also flash if the SPIDs or DNs are incorrect (for example, in some cases the DNs should not include an area code), or if you've selected the wrong switch type.
You fixed one of the above problems, but ISDN still isn't working.	Try turning the NetBlazer off for a few seconds and then rebooting; this makes sure that the NetBlazer resets.

Your BRI port is not communicating successfully with your phone company's ISDN switch.	Try one of the following solutions:
	1. Make sure you are using the full 8-wire RJ-45 phone cable that came with your NetBlazer for the connection between the NetBlazer and the NT1.
	2. Exit from the Setup Utility and log on to the NetBlazer as **root**. Type **line list bri***XXX* (where *XXX* is the number of your bri line, such as 011 or 012). Check to see if ISDN Layer 1 shows **F7: Activated**. If not, there is a problem with the physical connection. ISDN will not work on the NetBlazer until Layer 1 is in state F7.
	3. Make sure your ISDN line has been configured by your provider for point-to-point, not multi-drop.
	4. Make sure you have configured the NetBlazer for the correct ISDN switch type. (If the switch needs to be changed and the NetBlazer was already connected to an active ISDN line, then change the switch settings, save your configuration, and reboot the NetBlazer.) Note that the NetBlazer defaults to a 5ESSB switch type.
	5. If your Service Provider's CO (Central Office) has a DMS100 or NI1 switch, make sure you have your SPID set to the correct number. If you have a DMS100 switch, make sure your DN is correct.
	If everything is set correctly within the Setup Utility, but you suspect a problem with the SPID or DN, exit the Setup Utility and log on as **root**. Type **line list bri***XXX* (where *XXX* is the number of your bri line, such as 011 or 012). The list displayed will indicate if the SPIDs have been registered. If the SPIDs have not been registered, type **line reset bri011 port** to reset both B-channels.
	6. Verify that the NetBlazer is the only TE1(Terminal Equipment 1) device attached to the NT1.

Obtaining Customer Support

If you have a question about your NetBlazer, first check the installation chapter (Chapter 2, "NetBlazer LS Installation") to make sure the NetBlazer is installed correctly. Then check the tables on the previous pages to see if there is a known solution to your problem.

Before you call customer support, you should also try to do the following steps (if you are unable to run the Setup Utility, skip to step 6). You should also prepare for the call by following the checklist on page G-7.

1. Read this manual and check the on-line Help for additional information.

2. Register your NetBlazer. See page 11-1 for instructions on using the Setup Utility to register your NetBlazer.

3. Check to see if there are any bug fixes or updates you could download that might fix your problem. See page 11-4 for instructions on downloading patches and updates.

4. Review the Telebit application notes available through the following services:

     FTP - `ftp.telebit.com /pub/tech-support` directory

     Gopher - `ftp.telebit.com`

     Telebit BBS - (408) 745-3861

     CompuServe - `MODEMVENDOR` Forum Library 5 or `GO TELEBIT`

     Telebit TeleFax System - (408) 745-3310

5. Contact your dealer. Telebit authorized dealers are familiar with Telebit's products and should be able to help you resolve any problems that you may encounter while setting up and using the system.

6. Call Telebit Customer Support at (408) 734-5200 or (in the USA) 1-800-TELEBIT (1-800-835-3248). On the East Coast, you can call 1-800-336-8396 or (508) 656-9110. In the United Kingdom you can call +44-635-528730. From Hong Kong you can call +852-847-3377. Telebit can also be reached electronically by the following means:

     CompuServe - `75300,2170` or `GO TELEBIT`

     E-mail - `support@telebit.co`

     AppleLink - `Telebit`

7. Telebit has also established an e-mail forum called `netblazer-users@telebit.com` for communication among NetBlazer users. If you want to be included, send your request to `netblazer-users-request@telebit.com`. You will receive a pre-formatted message detailing how to subscribe and unsubscribe to this e-mail forum.

Pre-Call Checklist

When you call customer support, you should be at your computer with the following information available.

The NetBlazer's product name and model number.
The NetBlazer's serial number.
The date you purchased the NetBlazer.
The name of your NetBlazer reseller.
The make and model of your computer or terminal.
The exact wording of any error messages that appeared on your screen.
The name of the screen you were on (for example, the Dial-in Users screen). This name is located in the upper right-hand corner of each screen.
What happened and what you were doing when the problem occurred.
How you tried to solve the problem.

Ordering Additional Documentation

You can order additional manuals by calling 1-800-TELEBIT
(1-800-835-3248) or 1-408-734-5200. You can order applications notes
(from customer support) or other Telebit manuals.

Joining the Global Internet H

Throughout this manual, we use the term "your Service Provider" when talking about Internet connection providers. If you don't already have an Internet connection and you want to access the Internet through your NetBlazer, you'll need to find a service provider who can connect you to the Internet through their network.

Internet Overview

The Internet is a global cooperative network of university, corporate, government, and private computers, all communicating with each other by means of something called TCP/IP (Transmission Control Protocol/Internet Protocol). Computers directly on the Internet can exchange data quickly and easily with any other computer on the Internet.

Do You Need Your Own Internet Connection?

Not everyone needs their own fully supported connection to the IP Internet. For one thing, if you are a leaf site of a large corporation, the odds are that your corporate headquarters has an Internet connection of its own; if so, you may not need one for your location. Instead, you can access the Internet through your dial-up or dedicated link to your central site; check with your system administrator to find out if your central site provides access to Internet features such as email and FTP (File Transfer Protocol).

Many small and home-based businesses (as well as individuals) are discovering the benefits of having their own internet connection.

Getting an internet connection involves 5 steps:

1. Obtain a network number.

2. Register your domain name.

3. Set up your physical connection.

4. Find a network service provider.

5. Choose your access method (leased-line or dialup with the correct SLIP or PPP software) and configure your router for that method.

Obtaining an IP Network Number

Every machine on the Internet has a unique address, called its Internet number or IP address (See Appendix C, "IP Addressing" for more information on IP addressing). All Internet addresses and Domain Names are assigned by the Internet Network Information Center, or InterNIC.

The InterNIC assigns the network number based upon the needs of your organization. The various classes of network numbers are described in Appendix C, "IP Addressing."

Once the network address is obtained, individual host numbers are assigned to entities on your IP network. Each network entity must have a unique host number. Of these, one of the most important addresses that you must assign is that of your Domain Name System (DNS) server.

About the InterNIC

The InterNIC is a collaborative project of three organizations which work together to offer the Internet community a full scope of network information services. These services include providing information about accessing and using the Internet, assistance in locating resources on the network, and registering network components for Internet connectivity. The overall goal of the InterNIC is to make networking and networked information more easily accessible to researchers, educators, and the general public.

If you have access to email, you can get general information about the InterNIC by sending email to:

info@internic.net.

You'll receive an automated reply with information on how to get fast answers to frequently asked questions.

InterNIC Registration Services

The InterNIC Registration Services is located at Network Solutions, Inc. in Herndon, Virginia. InterNIC RS provides assistance in registering networks, domains, and other entities to the Internet community via telephone, electronic mail, and U.S. postal mail.

Telephone Access

Telephone service is available Monday through Friday, 7 a.m. to 7 p.m., Eastern Standard Time.

Phone: +1-703-742-4777

Fax: +1-703-742-4811

Email Access

You can also contact the InterNIC RS via electronic mail 24 hours a day, 7 days a week. For information on host, domain, network changes and updates:

hostmaster@rs.internic.net

For information on computer operations:

action@internic.net

To get information from the automatic mail service:

mailserv@rs.internic.net

MAILSERV@RS.INTERNIC.NET is an automated service that allows access to documents and information via electronic mail. To use the mail service, send a mail message to the above address. In the SUBJECT: field, request the type of service you wish, followed by any needed arguments. The body of the message is usually ignored. To get template forms for use in requesting a domain name, your subject line might read:

SEND templates/domain-template.txt

To get the FAQ (a list of Frequently Asked Questions) on registration services, your subject line might read:

SEND /faq/registration-services

Some of the information in this appendix comes from the file you get with the following subject line:

SEND /netinfo/what-registration-services-are.txt

U.S. Mail Access

You can also communicate with the InterNIC via U.S., postal mail:

Network Solutions
Attn: InterNIC Registration Services
505 Huntmar Part Drive
Herndon, VA 22070

Other InterNIC Services

General Atomics in San Diego, California, manages Information Services, providing the Scout Report, net-happenings, NSF Network News, InterNIC InfoGuide, InterNIC Briefcase, Reference Desk, seminars and other services that respond to the needs of the scientific and education community.

Phone: +1-619-455-4600

Fax: +1-619-455-4640

Email:**refdesk@is.internic.net**

AT&T in South Plainfield, New Jersey, manages Directory and Database Services, providing the Directory of Directories, Directory Services, Database Services and a help desk to assist both people making use of their services and additional support organizations who want to know more about offering these services to their own audiences.

Phone: +1-908-668-6587

Fax: +1-908-668-3763

Email:**admin@ds.internic.net**

Registering a Domain

Once you have a network address, you need to register a domain name. The domain name uniquely identifies your organization in the Internet community. It is used in electronic mail addresses, and for many other IP services. You must have a network number to assign host addresses for your DNS server before you can complete the Domain Application form from the NIC.

The NIC will not register a domain unless there are two domain servers: a primary server and a secondary server. Two servers are required for reliability, and it is strongly recommended that the servers be physically separated. Most often, an organization runs its own primary server, while the secondary is off site. The offsite server can be arbitrary and often is simply a "network neighbor". The commercial IP network providers can also act as DNS servers for smaller sites -- check with your potential service providers to see if they are set up to do this for your site.

Getting a Physical Connection

The minimum equipment needed to connect to the Internet is a computer and a modem. However, to connect a LAN to the Internet, you need a router on the LAN that's hooked to a modem (or has a built-in modem). Your physical connection to the Internet must be supported with an IP router; the NetBlazer can be easily configured to route IP through both LAN and WAN interfaces. The router directs network traffic outside of your local organization, to and from the Internet.

Modems connect to phone lines, of course. You may want to get additional phone lines, especially if you will be using a dedicated (leased) line for Internet access.

Your NetBlazer can be set up to use a dedicated line for high speed transmission, or a dial-up connection (through the Public Switched Telephone System) for a lower-cost connection.

Choosing a Service Provider

There are many organizations that can provide interconnection to the Internet. Military users are generally attached to the Defense Data Network (DDN). Research and Educational organizations often connect through the National Science Foundation network (NFSnet). Recently, commercial IP networks have been placed into operation. These networks generally have fewer restrictions on the traffic they carry when compared to Military and Research networks.

Buying an Internet connection can be compared to buying a computer -- the choice should be driven by your intended use. Look for a service that provides the features you want at the speeds you need.

You might want to ask the following questions:

- What is the speed of the slowest link in the path of your network connection? If you're running from a slow modem, this may not be necessary information, but if you have a high-speed connection, you want your service provider to be at the same rate (or higher).

- Does the service provider have a single connection to the Internet or do they have multiple connections? If they have a single connection, there is a higher potential for failure. Find out what happens if the link goes down.

- How experienced is the service provider's staff? If you are a novice at networking, it may be difficult to determine whether the staff is truly knowledgable or if they are just throwing jargon at you. What you want is a staff that will know how to get your connection up and keep it running. Ask about the average years of experience (you only need a few people with 10+ years since most problems won't require a senior advisor) and find out if they have enough staff so someone will be there at the hours when you are likely to have a question or need assistance.

Tying It All Together

Once you have obtained a network address and registered your domain, you can begin building the network connection. Coordinate with your network Service Provider for the appropriate access method, such as a dial-up link using the SLIP or PPP protocols.

Your telephone company may need to install circuits if a high-speed leased line is required. Once the leased line (or other access method) is in place, you can test LAN access.

Once your router is configured for the network topology, the packets should flow, making you a member of the IP internet community.

Key Summary   I

Keys	What happens
Ctrl-a or Left Arrow key	Move the cursor one character to the left in a text field.
Ctrl-c	Cancel all changes to a field and return to the previous setting.
Ctrl-d, Down Arrow key, or Tab key	Move down one line. If your cursor is on the last item on a screen and <<More>> appears at the bottom of the screen, you go to the first line of the next screen.
Ctrl-e	Erase the contents of a field.
Ctrl-f	In a list of items (users, interfaces), press Ctrl-f and type a name to go to the named item in the list.
Ctrl-h or backspace	Delete the character to the left of the cursor.
Ctrl-k or Right Arrow key	Move the cursor one character to the right.
Ctrl-l	Redisplay or refresh the current screen. Use this key combination if the screen display has gotten garbled.
Ctrl-m, Enter, Return, or a movement key	Select the currently highlighted item. In a field where you've typed something or made a choice, it sets that item.
Ctrl-n or Page Down key	Display the next full screen of text; only works if there is a "next" screen in the hierarchy.
Ctrl-p or Page Up key	Display the previous full screen of text; only works on screens that have a **Previous** menu item.
Ctrl-t	Go to the Main Menu screen.
Ctrl-u or Up Arrow key	Move up one line. If your cursor is at the top of a multiple screen display, you move to the previous screen of items.
Ctrl-x	Go to the Save/Exit screen. If you are on the Save/Exit screen, you exit the Setup Utility.
Spacebar, Left Arrow, or Right Arrow key	Cycle through the values for a field that has several choices.

ISDN Service Providers and Manufacturers $\quad$ J

Ordering ISDN (Integrated Services Digital Network) service from your local telephone company and long distance provider can sometimes be complicated. This appendix is designed to help you order basic ISDN service.

Selecting Your ISDN Service

The NetBlazer works with any of three types of ISDN (Integrated Services Digital Network) service available from your local phone company:

- National ISDN 1 (called NI1B in the Setup Utility)

- AT&T 5ESS "Custom" (called 5ESSB)

- Northern Telecom DMS100 (called DMS100B)

Note: *The term "Custom" is used to indicate that there are various hardware and software revisions of the 5ESS switch; which version of the 5ESS you get may vary depending on your local phone company. For example, your local phone company may tell you that your switch type is* **5E8***, which is software version 8 of the 5ESS switch. The NetBlazer calls all revisions* 5ESS *to simplify the interface and documentation.*

SPIDs and DNs

If you get either National ISDN1 or DMS100, the telephone company provides you with numbers called SPIDs (Service Profile IDentifiers) and DNs (Directory Numbers). A SPID tells the phone company what types of features and services you've agreed to pay for.

In some cases, the SPID number is identical to its full ten-digit DN (the phone number plus the area code; note that the NetBlazer only uses the seven-digit phone number for the DN). In other cases, the SPID may be the Directory Number concatenated with various other strings of digits. How a SPID number appears depends on the individual implementation by the telephone company.

Note: *If you move your NetBlazer from one area code to another, you may have to reset the SPIDs and/or DNs to avoid dialing errors. Check your SPID/DN to see if it includes a three-digit area code to see if this is necessary.*

DNs and Switches

On a 5ESS switch there is usually one phone number for both B channels. So, the same phone number can be used to dial both B channels regardless of which channel is idle.

On DMS100 and NI1 switches, there are two DNs. These two DNs function like two independent phone lines. For example, say you have the following two DNs: 555-1111 and 555-2222. If the 555-1111 line is in use and the 555-2222 line is not, an attempt to call the 1111 line will fail (since the number is busy) but an attempt to call the 2222 line will succeed.

On the NetBlazer LS, the DNs are not really assigned to a particular B-channel; this means that a call to 555-2222 might appear on bri011 or bri012.

Ordering ISDN Service

When you order ISDN service, the telephone company will provide the following information:

- The ISDN switch type
- The ISDN phone number(s)
- The SPID and DN numbers

You can use the following items as a checklist when you order your ISDN service.

- Request an ISDN Basic Rate Interface (BRI) line with 2B+D circuit-switched data service.

- Tell the phone company that you do **not** need voice service or D-channel packet data. (Many phone companies offer a wide variety of new services along with ISDN; most of these services are not applicable for router applications.)

- For service offered from AT&T for 5ESS, request a **point-to-point line** with the following features:

Feature	Value
B1 Service	On Demand (DMD)
B2 Service	On Demand (DMD)
Data Line Class	Point-to-Point (PP)
Maximum B Channels	2 if 2B+D
Circuit Switched Data (CSD) Bearer Channels	Any
Number of CSD calls	2 if 2B+D

- For service offered from Northern Telecom for DMS100, request a **point-to-point line** with the following features:

Feature	Value
Line Type	Basic Rate, Functional
Electronic Key Telephone Sets (EKTS)	No
Call Appearance Handling (CACH)	No
Non-Initializing Terminal	No
Circuit Switched Terminal	Yes
Packet Switched Service	No

TEI	Dynamic
Bearer Service	Circuit Switched Data Permitted on any B channel (Packet-mode data not permitted)

You will also need to tell the local telephone company who your long distance carrier is.

Long Distance Service Requirements

When you subscribe for long distance service you should request circuit-switched 64kbps (kilobytes per second) clear channel access, if possible.

If you are going to be making long distance ISDN calls, it is very likely that your call will be routed through some older phone equipment and the bandwidth reduced to 56kbps per B channel. The NetBlazer default mode of operation is to use 56kbps service for each call.

Note: *To change the default speed for ISDN calls, you need to change the speed of the line. See Chapter 5, "Line Setup" for more information. You may also need to change the default call speed; see the* NetBlazer Command Reference Manual *for information on changing the ISDN call speed.*

Note that many telephone lines are limited to 56kbps, so you should not change the line or call speeds unless you know that all lines you will be using can transmit at that speed, and that the NetBlazer or TA at the other end of the connection can receive at a different speed.

ISDN Manufacturers

In North America, you have to buy and maintain your own NT1 device for ISDN. You will need to buy a power supply with the NT1.

AT&T and Northern Telecom NT1s can be ordered from Bell Atlantic Teleproducts.

> Bell Atlantic Teleproducts
> West Building, Suite 150
> 50 E. Swedesford Road
> Frazer, PA 19355
> Telephone +1-215-695-2300
> or 800-221-0845

Tone Commander offers their own NT1 for sale.

> Tone Commander Systems
> 4379 150th Ave NE
> P.O. Box 97039
> Redmond, WA 98073-9739
> Telephone +1-206-883-3600
> or 800-524-0024
> Fax +1-206-881-7179

Adtran offers their own NT1 products for sale.

> Advanced Transmission Products, Inc.
> 901 Explorer Blvd.
> Huntsville, AL 35806-2807
> Telephone +1-205-971-8030
> Fax +1-205-971-8030

The following table shows the various part numbers from each manufacturer.

Maker	Description	Part No.
Northern Telecom	NT1 standalone	IN51000
Northern Telecom	10w power supply	IN61000
Northern Telecom	2w power supply	IN61005
AT&T	NT1	IA51007
AT&T	10w power supply	IA61000
AT&T	NT1	L-230

Tone Commander	NT1 standalone	NT1U-220TC
Tone Commander	Power supply	901034
Adtran	NT1	NT1 ACE
Adtran	Power supply	PS2
Adtran	Power kit	
Adtran	Standalone NT (includes 7w power supply)	NT1/T400
Adtran	Rackmount NT1	NT1/T400

Telebit Cables and Adapter Pinouts   K

The following illustrations show Telebit-specific cables. In some cases you may need to order these cables from Telebit.

Standard 25-pin RS-232 Cable (Part No. 14158-01)

DB-25M

DB-25F

	DB-25M	DB-25F
	1	1
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
	9	9
	10	10
	11	11
	12	12
	13	13
	14	14
	15	15
	16	16
	17	17
	18	18
	19	19
	20	20
	21	21
	22	22
	23	23
	24	24
	25	25
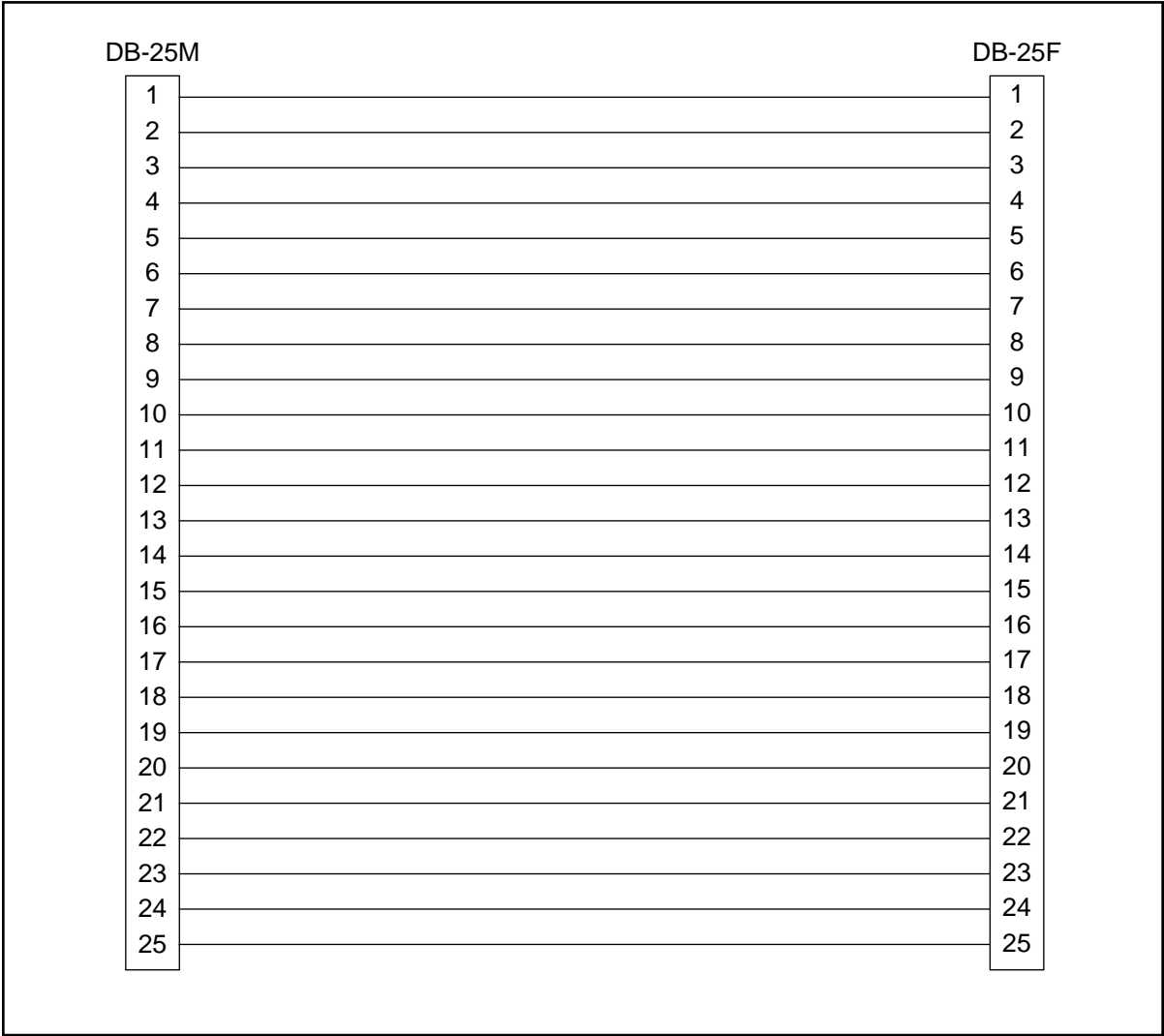
DB-9 to DB-25 RS-232 Cable (Part No. 14339-01)

DB-9F		DB-25M
5	Signal Ground	7
3	Transmitted Data (TD)	2
2	Received Data (RD)	3
7	Request to Send (RTS)	4
8	Clear to Send (CTS)	5
6	Data Set Ready (DSR)	6
1	Data Carrier Detected (DCD)	8
4	Data Terminal Ready (DTR)	20
9	Ring Indicator (RI)	22

Synchronous RS-232 Cable (Part No. 14358-01)

DB-25M		DB-25F
1	Protective Ground	1
2	Transmitted Data (TD)	2
3	Received Data (RD)	3
4	Request to Send (RTS)	4
5	Clear to Send (CTS)	5
6	Data Set Ready (DSR)	6
7	Signal Ground	7
8	Data Carrier Detected (DCD)	8
15	Transmit Clock (TxCLK)	15
17	Receive Clock (RxCLK)	17
20	Data Terminal Ready (DTR)	20
22	Ring Indicator (RI)	22

Null-Modem Adapter (Part No. 14375-01)
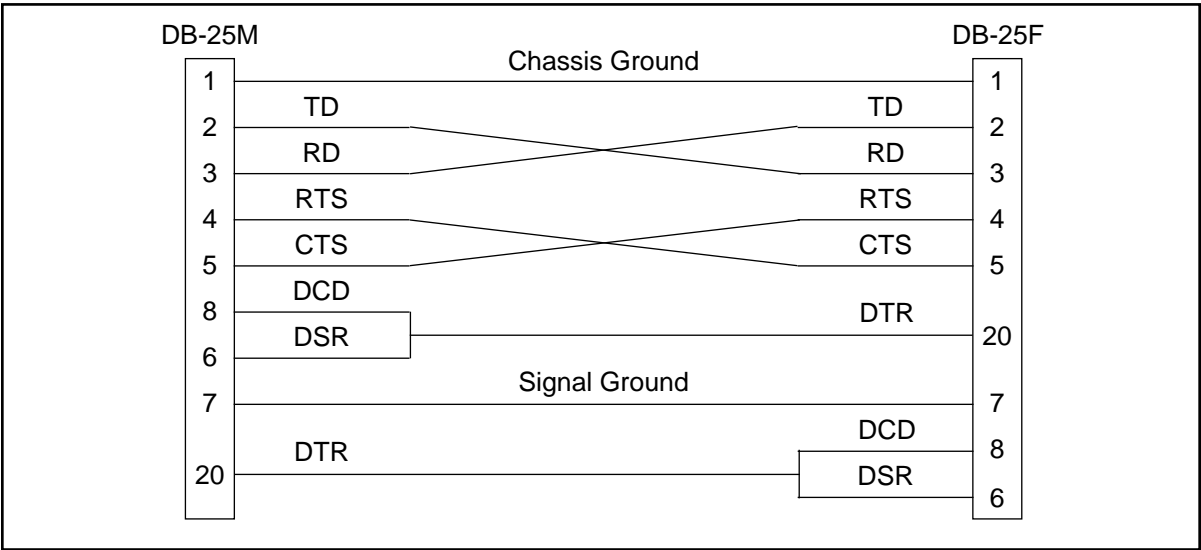
Null-Modem Adapter (Part No. 14674-01)
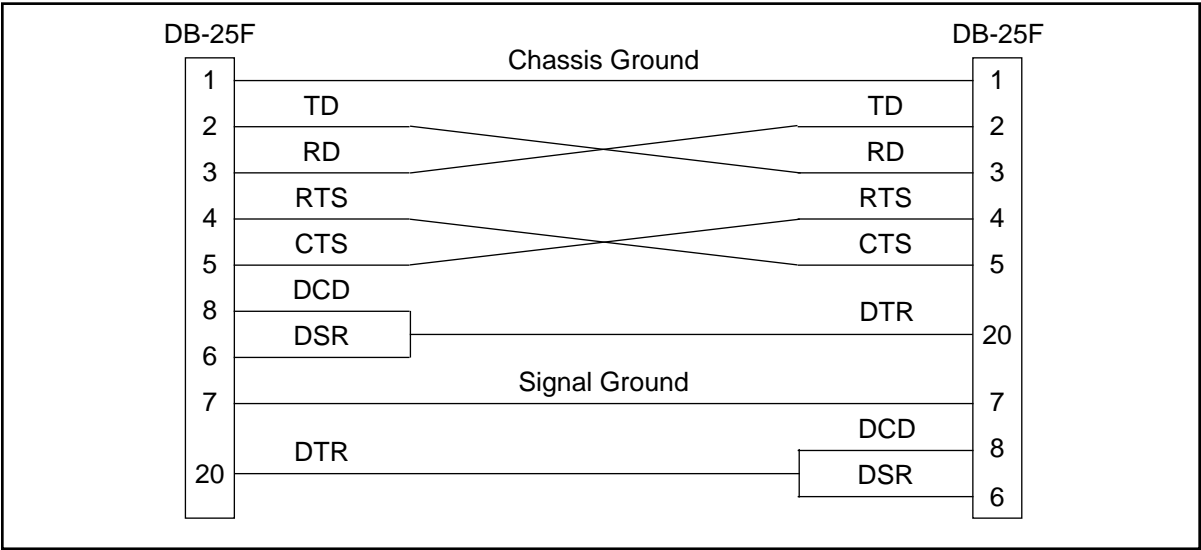
RS-449 Cable (Part No. 14385-01)

DB-25F

FR GND	1		1	FR GND
RX-	3		6	RD(A)
CTS-	5		9	CS(A)
DSR-	6		11	DM(A)
GND	7		19	GND
			20	GND
DCD-	8		13	RR(A)
RCLK+	9		26	RT(B)
TCLK+	10		23	ST(B)
DTR-	11		12	TR(A)
DCD+	12		31	RR(B)
CTS-	13		27	CS(B)
TX-	14		4	SD(A)
TCLK-	15		5	ST(A)
RX+	16		24	RD(B)
RCLK-	17		8	RT(A)
DSR+	18		29	DM(B)
RTS+	18		25	RS(B)
449SEL	21			
RI	22		15	RI
DTR+	23		30	TR(B)
RTS-	24		7	RS(A)
TX+	25		22	SD(B)

DB-37M
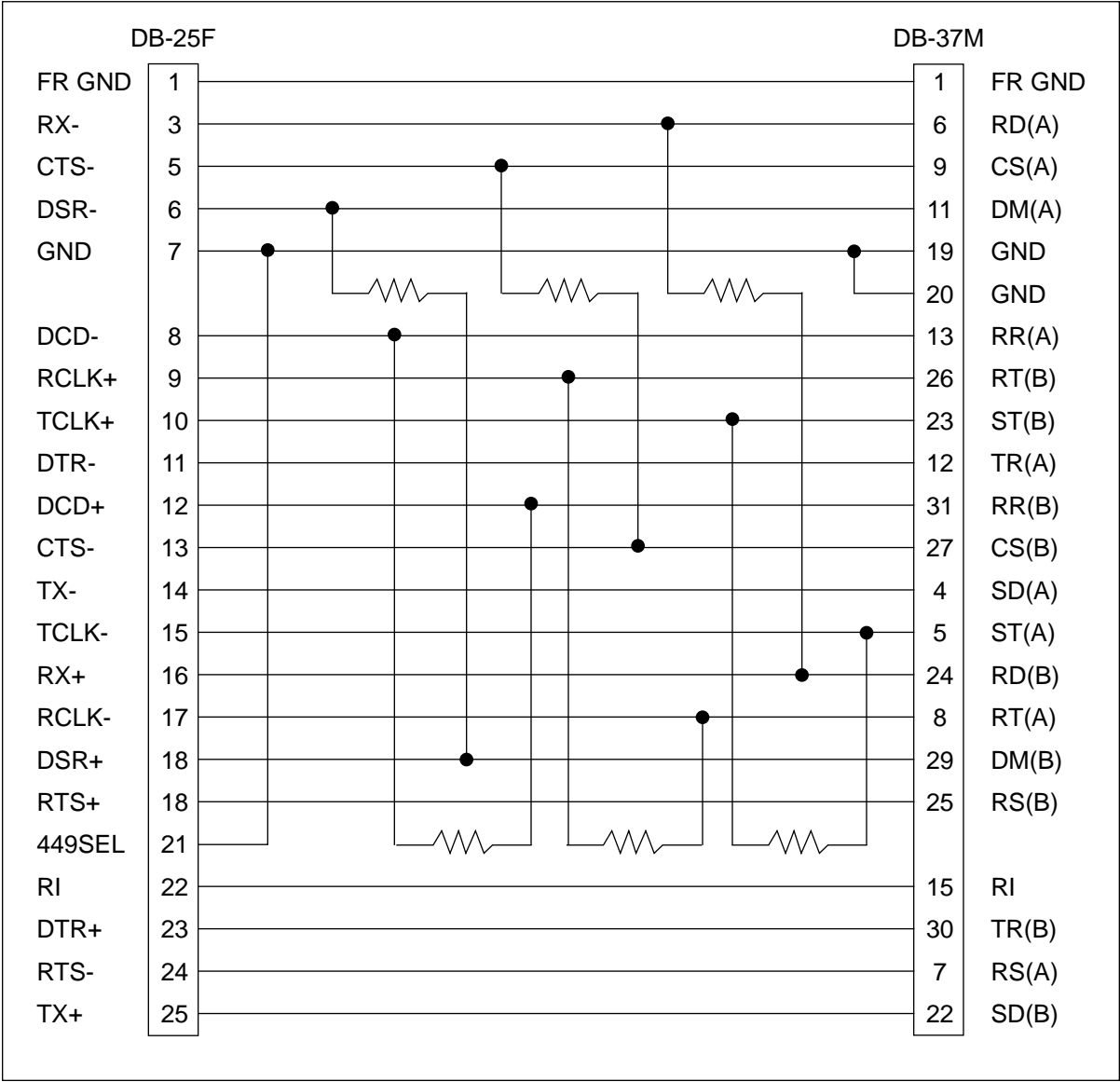
V.35 Cable (Part No. 14384-01)

DB-25F			V35P	
RX-	3		R	RX-
RTS	4		C	RTS
CTS	5		D	CTS
DSR	6		E	DSR
DSR	7		B	DSR
DCD	8		F	DCD
RCLK+	9		X	RCLK+
TCLK+	10		AA	TCLK+
TX-	14		P	TX-
TCLK-	15		Y	TCLK-
RX+	16		T	RX+
RCLK-	17		V	RCLK-
DTR	20		H	DTR
	21			
RI	22		J	RI
TX+	25		S	TX+
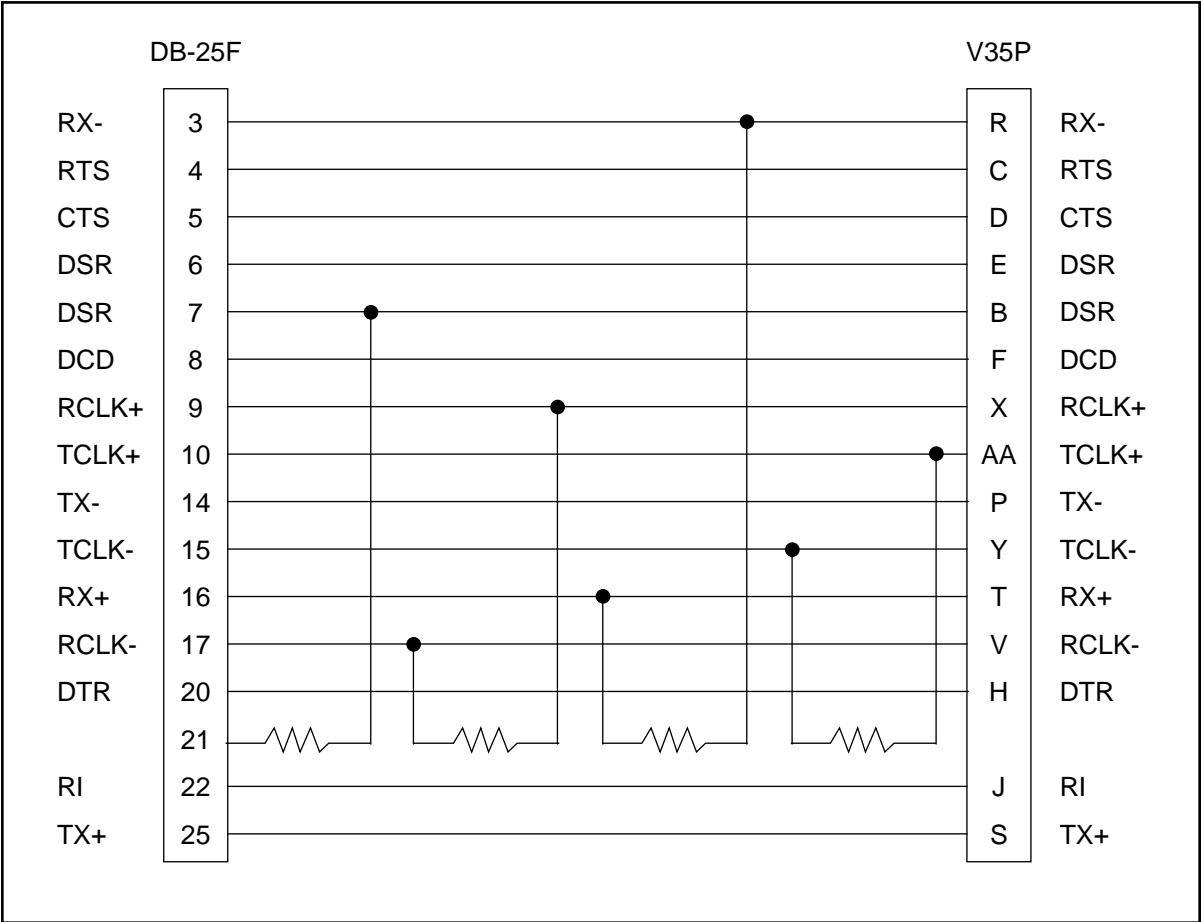
X.21 Cable (Part No. 14386-01)

DB-25F				DB-15P	
FR GND	1			1	FR GND
RX-	3			4	R(A)
CTS-	5			5	I(A)
GND	7			8	GND
RCLK+	9			13	S(B)
TCLK+	10			14	B(B)
CTS+	13			12	I(B)
TX-	14			2	T(A)
TCLK-	15			7	B(A)
RX+	16			11	R(B)
RCLK-	17			6	S(A)
RTS+	19			10	C(B)
449SEL	21				
RTS-	24			3	C(A)
TX+	25			9	T(B)
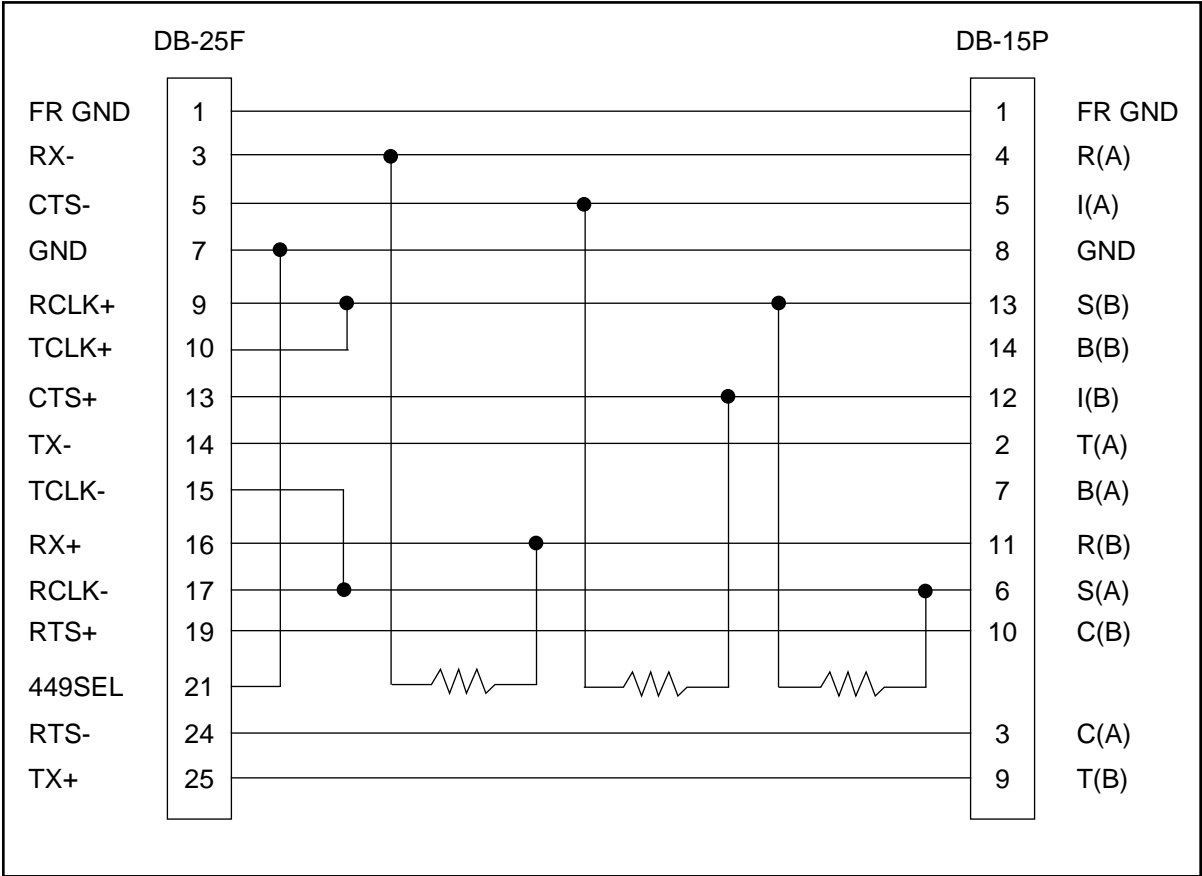
Glossary L

Since it's easy to get all the three-letter-acronyms confused, here's a glossary to clarify some of the terms used in this guide.

ADSP	**A**ppleTalk **D**ata **S**tream **P**rotocol. A session-layer protocol that provides a reliable, bidirectional steam of data between two sockets in an AppleTalk network.
ANSI	**A**merican **N**ational **S**tandards **I**nstitute. In the NetBlazer Setup Utility you need to use an "ANSI-compatible computer" for your terminal type.
AppleTalk	Apple Computer's protocol stack used in Macintosh networks.
AppleTalk addresses	AppleTalk network numbers are 16-bit numbers assigned by a network administrator. They are either single numbers or number ranges. The addresses of nodes on AppleTalk networks are 8-bit numbers generated dynamically by the NetBlazer. In addition, each logical connection is dynamically assigned an 8-bit socket number. Addressing for remote users is handled by ARA software. See Appendix E, "AppleTalk Routing" for more information.
AppleTalk network number	A 16-bit number used to indicate the AppleTalk network a node is connected to. Nodes choose their network number from within the network number range assigned to their network.
AppleTalk node identifier (or ID)	An 8-bit number that, when combined with the AppleTalk network number of a node, is used to uniquely identify each node on a network.

ARA	**A**pple **R**emote **A**ccess. With ARA, Apple Macintoshes using modems can send AppleTalk protocols over serial connections, such as RS-232. A modem-equipped Macintosh, including the PowerBook, that has ARA software can dial into a NetBlazer and become a node on an AppleTalk network. Users who want to do this need ARA software from Apple Computer. A Macintosh does not have to be dedicated for each user. The remote Macintosh becomes a part of the network and can use network services. A remote ARA user can log in to TCP hosts as well as AppleTalk servers when the remote user runs both ARA and TCP stacks simultaneously.
ARP	**A**ddress **R**esolution **P**rotocol for TCP/IP. ARP is a means of mapping network-layer addresses onto media-specific addresses. It is the Internet protocol used to dynamically bind a high-level Internet address to a low-level physical-hardware address. ARP is used only across single physical networks and is limited to networks that support hardware broadcast.
async	The NetBlazer's abbreviation for asynchronous.
asynchronous	Data transmission with a random time between characters. Each character, word, or block is individually timed, usually by start and stop bits. See also synchronous.
b-channel	A "bearer" channel that carries voice or data at 56 or 64 Kbps in either direction and is circuit-switched. See also BRI.
BRI	**B**asic-**R**ate **I**nterface. ISDN standard that specifies how a user's desk-top terminals and telephones can connect to the ISDN switch. It specifies two B-channels that allow 64-Kbps simultaneous voice and data service, and one D-channel that carries call information and customer data at 16 Kbps.
bri*XXX*	The name of the BRI channels (lines) in the NetBlazer Setup Utility.
CHAP	See PAP/CHAP.
command-line interface	The NetBlazer's command-line interface gives users the means to carry out text-based configuration. The extensive command set gives users flexibility when they set up their NetBlazers. See the *NetBlazer Commands Reference Manual* for descriptions of the commands.
crypto key	Similar to a password, a crypto key is used to authenticate a user.

d-channel	A "data" channel. It carries control signals and customer-call data in a packet switched mode. See also BRI.
dedicated line	A private phone line that ensures constant transmission capabilities. Dedicated lines may be leased or privately owned.
dial backup	For dedicated or leased line connections, a dial backup is a dial-up connection that only comes up if something happens to the dedicated connection.
DLCI	**D**ata **L**ink **C**hannel **I**dentifier. Used for frame relay connections.
Domain Name server	A network administrator can designate a domain server for NetBlazer use. This means that NetBlazer users don't need to remember IP addresses, but can use names such as **telebit.com**.
en0	The name of the first Ethernet port in the NetBlazer Setup Utility.
Ethernet	Ethernet is the LAN specification developed by Xerox. This LAN technology uses CSMA/CD signaling over thick or thin coaxial cable with interconnections to computer-related devices such as PCs and printers. It has a bandwidth of 10 Mbps. NetBlazer's Ethernet support includes Ethernet II frames or Novell's 802.3 frames.
frame relay	A fast packet-switching technology that achieves up to 10 times the speed of X.25 packet-switching networks that use the same hardware. Error checking and flow control are minimized in frame relay.
hops or hop count	A count of the number of routers through which a packet has to pass before the network disposes of the packet as faulty.
host	An end system, such as a PC, on a network; this system can perform network activities.
IANA	**I**nternet **A**ssigned **N**umber **A**uthority. The technical body that assigns and coordinates the use of Internet protocol parameters such as Internet addresses, domain names, port numbers, and many others.
interface	Connection between two devices or systems. In routing, a network connection.

IP	**I**nternet **P**rotocol is the Internet standard network-layer protocol. It sends and receives the Internet datagram or packet across the Internet, then passes packets to a higher-level protocol to decipher. IP provides the basis for connectionless, best-effort packet delivery service. IP includes ICMP control and error message protocol as an integral part. The protocol suite is often referred to as TCP/IP because IP is one of the two most fundamental protocols.
IP Address	The address of a specific computer or router. An IP address is the network equivalent of a phone number; you can't connect to another computer on an IP-based network without knowing its IP address. See Appendix C, "IP Addressing" for more information.
IPX	**I**nternet **P**acket e**X**change. Network-layer protocol used in Novell's NetWare. See Appendix D, "IPX Addressing" for more information.
IPX address	An IPX address is a combination of the IPX network number and the IPX node number in the format *networknumber.nodenumber*. In the Setup Utility, this number is entered in the Global address field on the IPX LAN Setup screen.
IPX internal network number	An IPX internal network number is used mainly for ACS. This number uniquely identifies a logical network that may or may not be the same as a physical network. It is an 8-digit hexadecimal number similar to an IPX network number.
IPX network number	An IPX network number is an address that uniquely identifies a network. The network administrator assigns an 8-digit hexadecimal number in the 1 to FFFFFFFE range. You need to know this number to configure IPX routing in the Setup Utility.
IPX node number	An IPX node number uniquely identifies an individual station on a network. The NetBlazer randomly assigns a 12-digit hexadecimal number in the 1 to FFFFFFFFFFFE range as the IPX node number. For an interface such as en0 (an Ethernet board) the NetBlazer assigns the board's MAC address as the IPX node number.
ISDN	**I**ntegrated **S**ervices **D**igital **N**etwork. An internationally accepted high-speed technology used to transmit voice, data, and signaling information over a single transmission circuit. Combines voice and digital network services through a single connection, so customers can have digital data services and voice connections. See also BRI.
kbps	**K**ilo**B**its **P**er **S**econd. A measure of the rate of data transmission.

LAN	**L**ocal **A**rea **N**etwork. Any physical network technology that operates at high speed over short distances (up to 1000 meters), for example, Ethernet.
leased lines	A communications line rented by organizations for exclusive use. See also dedicated line.
LocalTalk	Apple Computer's LAN that runs over twisted-pair wiring. It has a bandwidth of 230.4 kbps.
lt0	The name of the first LocalTalk port in the NetBlazer Setup Utility.
metric	For IP routes, the metric number is the number of other routers between the current router and the address. See also hops.
modem pooling	Modem pooling lets authorized users on a LAN use a group of modems to dial out to various hosts, bulletin boards, and online services. Authorized users can telnet to the NetBlazer and issue a dial command followed by any phone number. The NetBlazer will find the first available modem and dial that phone number. A user can dial any phone number without having the network administrator enter the number first.
NetBlazer	Telebit's remote LAN access product. A dial-up router, terminal server, and dial-up modem-pool server for TCP/IP, IPX, and AppleTalk networks.
NetWare	Novell's series of network operating systems and related products.
network address	A unique identifier for a particular node in a network. See also AppleTalk address, IP address, and IPX address.
node	A data-link addressable entity on a network.
nonroute	For AppleTalk, a NetBlazer interface can be configured to be non-route.
nonseed router	For AppleTalk, a NetBlazer interface can be configured to be non-seed. See seed router.
NT2	**N**etwork **T**ermination type **2**. An NT2 is a device providing customer site switching, multiplexing, and concentration. This includes PBXs, LANs, terminal controllers, and other CPE for voice and data equipment.The NetBlazer LS functions as an NT2.
null modem	A connector or cable that replaces a modem on a connection between, for example, a data terminal or PC and a NetBlazer.

packet	The unit of data, including a header, sent across a packet-switching network. With the Internet, IP datagrams are packets.
PAP/CHAP	**P**assword **A**uthentication **P**rotocol/**C**hallenge **H**andshake **A**uthentication **P**rotocol. Security protocols used to authenticate PPP connections.
POST	**P**ower-**O**n **S**elf **T**est. This test in the NetBlazer consists of a series of specific hardware exercises that must be successfully completed in turn. The test uses the NetBlazer's LEDs to display possible error codes. Passing this test indicates that the NetBlazer is functioning normally.
PPP	**P**oint to **P**oint **P**rotocol for TCP/IP. An Internet standard used to create synchronous or asynchronous connections to provide router-to-router and host-to-network connections.
PPP Shell	Telebit product for remote IPX access.
protocol	A set of procedural rules for information exchange over a communication medium. These rules govern the content, format, timing, sequencing, and error control of messages exchanged in a network. The NetBlazer can route three protocols: IP, IPX, and AppleTalk.
public routes	For IP routes, a public route is one where the route's information and address is broadcast to all other routers.
range	The range of network numbers that are valid for use by nodes on a given AppleTalk network. Also called network number range.
RIP	**R**outing **I**nformation **P**rotocol for wide-area TCP/IP routers, used to control the exchange of information between hosts and gateways.
rlogin	Remote login. Allows users of one machine to connect to other UNIX systems across the Internet and interact as if their terminals connected to the machines directly. Rlogin and telnet offer the same service. However, rlogin passes information about a user's environment (such as terminal type) to the remote machine.
route	The path network traffic takes from its source to its destination. On the Internet, each IP datagram is routed separately, so the route the datagram follows may include many gateways and physical networks.

router	A machine that makes decisions about which of several paths data-communications traffic will follow. A router uses a routing protocol to gain information about the network, and algorithms to choose the best route based on several criteria known as "routing metrics." At the lowest level, a bridge is a router because it chooses where to pass packets from one wire to another. In a WAN each packet switch is a router because it chooses routes for individual packets. In the Internet, each IP gateway is a router because it chooses routes based on the IP destination addresses. A router appears as a host on a network, not just a transparent link. A router operates at the network layer.
routing table	A table that works as a map, showing all the paths and distances between the router and other networks. Routing tables are used by routers to determine where to forward a data packet.
SecurID	SecurID provides user authentication similar to that available on NetBlazer/ACS. A remote SecurID user has a credit-card-sized, calculator-like device that generates a six-digit code once each minute. When this user logs in to a NetBlazer, the NetBlazer prompts the user to enter the code and a PIN. If these entries are correct, the NetBlazer prompts the user to request authentication. The user may have to supply more information. When authentication is complete, the user is either accepted or rejected.
seed router	A router on an AppleTalk network that has the network number range built into its port descriptor. Each AppleTalk network must have at least one seed router. This router defines the network number range for the other routers in that network.
SLIP	**S**erial-**L**ine **I**nternet **P**rotocol. The Internet standard serial line interface protocol, a packet-framing protocol that controls the process of transferring TCP/IP packets across a serial link. SLIP allows the network-routing codes to send any IP packet through a serial port instead of an Ethernet port. SLIP provides data-transmission speed up to19.2 Kbps on asynchronous serial ports. The NetBlazer can use TCP/IP header compression with SLIP as well as PPP. The NetBlazer is both compatible with the installed base of SLIP products and can take advantage of the more advanced capabilities of PPP. See also PPP, frame.

SPID	**S**ervice **P**rofile **ID**entifier. A SPID number is assigned by your service provider. SPIDs are used to identify what sort of services and features the switch provides to the ISDN device. When a new subscriber is added, the telephone company allocates a SPID just as they allocate a directory number.
subnet bit mask	The subnet bit mask is an extension of the IP address that allows a site to use a single IP network address for several networks. A bit mask is used to select bits from an IP address for subnet addressing. See Appendix C, "IP Addressing" for more information.
sync	The NetBlazer's abbreviation for synchronous.
synchronous	Data transmission that includes transmitting timing information with the data. Characters are synchronized by the transmission of initial synchronization characters and a common clock signal. No stop or start bits are used. See also asynchronous.
TA	**T**erminal **A**dapter for ISDN. Allows terminals without ISDN to operate on ISDN lines.
TCP/IP	**T**ransmission **C**ontrol **P**rotocol / **I**nternet **P**rotocol. The communications protocol used on the Internet. If you are using a direct, SLIP, or PPP connection to the Internet, you must have TCP/IP on your workstation.
TE	**T**erminal **E**quipment. TEs are end-user devices such as digital telephones, ISDN workstations, X.25 data terminal equipment, and so on.
telnet	A program that connects you to a remote computer, with your computer acting as a dumb terminal. Any commands you type take effect on that remote computer.
WAN	**W**ide **A**rea **N**etwork.
zone	An arbitrary subset of the nodes within a network. AppleTalk routers set up zones.

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