Pipeline 25-Fx
User's Guide

Ascend Communications

Part Number 7820-0286-002 September 17, 1996

Important Safety Instructions

The following safety instructions apply to the Pipeline 25-Fx:

1 Read and follow all warning notices and instructions marked on the Pipeline 25-Fx or included in the manual.

2 The maximum recommended ambient temperature for the Pipeline 25-Fx is 104° Fahrenheit (40° Celsius). Care should be given to allow sufficient air circulation or space between units when the Pipeline 25-Fx is installed in a closed or multi-unit rack assembly, because the operating ambient temperature of the rack environment might be greater than room ambient.

3 The connections and equipment that supply power to the Pipeline 25-Fx should be capable of operating safely with the maximum power requirements of the Pipeline 25-Fx. In the event of a power overload, the supply circuits and supply wiring should not become hazardous. The input rating of the Pipeline 25-Fx is printed on its label.

4 Do not allow anything to rest on the power cord and do not locate the product where persons will walk on the power cord.

5 Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous high voltage or other risks. Refer all servicing to qualified service personnel.

6 General purpose cables are provided with this product. Special cables, which may be required by the regulatory inspection authority for the installation site, are the responsibility of the customer.

7 When installed in the final configuration, the product must comply with the applicable safety standards and regulatory requirements of the country in which it is installed. If necessary, consult with the appropriate regulatory agencies and inspection authorities to ensure compliance.

In addition, take the following precautions when dealing with telecommunications circuits:

- 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 uninsulated 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 equipment connected to telephone lines (other than a cordless telephone) during an electrical storm. There is a remote risk of electric shock from lightning.
- Do not use a telephone or other equipment connected to telephone lines to report a gas leak in the vicinity of the leak.

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About This Guide

This guide explains how to install the Pipeline 25-Fx, how to configure it with settings provided by your network service provider or system administrator, and how to use it for data and voice communications. It is written for all users of the Pipeline 25-Fx.

For comprehensive information about Pipeline configuration settings and network management, see the *Pipeline 25-Fx Administrator's Guide* included with your Pipeline.

What is in this guide?

This guide contains these chapters and appendixes:

- Chapter 1, "Introducing the Pipeline," describes the features of the Pipeline and how you can use them.
- Chapter 2, "Installing the Pipeline," lists the contents of the product package and explains how to install the hardware.
- Chapter 3, "Configuring the Pipeline," explains how to configure the Pipeline with settings provided by your network service provider.
- Chapter 4, "Using the Pipeline," tells you how to use the status windows, monitor connections, how to increase the speed of data connections, how to control telephone costs, how to use the voice features of the Pipeline, and other administrative information.
- Appendix A, "Connecting the Pipeline to an Ethernet Network," explains how to connect the Pipeline to a 10Base-T Ethernet hub or to a Thinnet Ethernet network.

- Appendix B, “Configuring Communications Software,” provides detailed instructions for configuring two widely used communications programs: PROCOMM PLUS Version 3 for Microsoft Windows and ZTerm for Macintosh.
- Appendix C, “Radio and Television Interference,” explains how to prevent the Pipeline from interfering with radio or television reception.
- Appendix D, “Warranty and Service,” includes the warranty for your Pipeline and explains how to get technical support.

This guide also includes an index.

What you should know

To use this guide, you must be familiar with the personal computer or workstation you’ll use to configure the Pipeline 25-Fx. You need to understand

- the basics of using programs
- how to connect an external device to a serial port on your computer

For information about these, see the user’s guide for your computer.

If you do not already have communication software, such as the PROCOMM PLUS or ZTerm programs described in Appendix B, “Configuring Communications Software,” you must know or learn how to install software on your computer. For more information, see the user’s guide for your computer.

If your computer does not already have a properly configured Ethernet adapter, you must know or learn how to install and configure the adapter. For more information, see the instructions included with the Ethernet adapter or your computer.

Documentation conventions

This section explains the conventions used in this guide.

Convention	Meaning
`Monospace text`	Monospace text represents information that you enter exactly as shown, and it identifies onscreen text, such as statistical information.
[]	Square brackets indicate an optional attribute that you append to a command. To include an attribute, type only the information inside the brackets. Do not type the brackets unless they appear in bold type.
italics	Italics represent variable information. Do not enter the words themselves in the command; enter the information they represent.
Key1-Key2	Keys displayed next to each other represent combination keystrokes. To enter combination keystrokes, press one key and hold it down while you press one or more other keys. Release all the keys at the same time.
Press Enter	This means to press the key on your computer or terminal keyboard that generates a carriage return. On IBM PC and compatible computers, this key is labeled Enter. On Apple Macintosh computers, most Unix workstations, and many commonly used terminals, this key is labeled Return.
Note:	A note signifies important additional information.
 **Caution:**	A caution means that a failure to follow the recommended procedure could result in a loss of data or damage to equipment.
 **Warning:**	A warning means that a failure to take appropriate safety precautions could result in physical injury.

Introducing the Pipeline

1

This chapter contains:

About this chapter

In this chapter, you'll learn about:

- The features of your Pipeline 25-Fx
- The ways in which you can use your Pipeline 25-Fx

Note: If you want to start using the Pipeline 25-Fx immediately, you can skip this chapter and go on to Chapter 2, "Installing the Pipeline."

Features of the Pipeline

The Pipeline 25-Fx lets small and home offices connect to the Integrated Services Digital Network (ISDN), the global digital telephone network that can transmit computer data as well as voice.

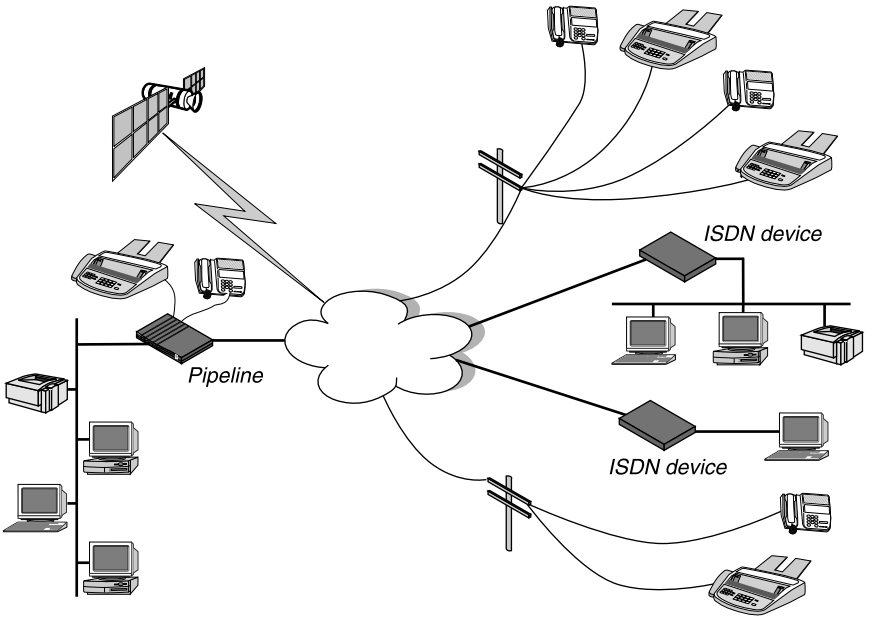


Figure 1-1. Connecting to the ISDN

The cloud in Figure 1-1 represents the global telephone network, and the many connections illustrate that it connects conventional telephones as well as computers and computer networks. Telephones and other telephone equipment, such as fax machines, use the network to transmit voice. Computers and computer networks with direct digital connections to the network, known as ISDN telephone service, can transmit data without first converting it to voice. ISDN telephone service lets computers send and receive information at much higher speeds than with conventional modems used on standard telephone lines.

The Pipeline 25-Fx uses a low-cost ISDN telephone service known as the Basic Rate Interface (BRI). A BRI telephone line normally provides two separate channels for carrying information, known as bearer or B channels. Each B channel can carry voice or data, but not both at the same time. A third channel, known as the D channel, carries signals that control the flow of information on the B channels.

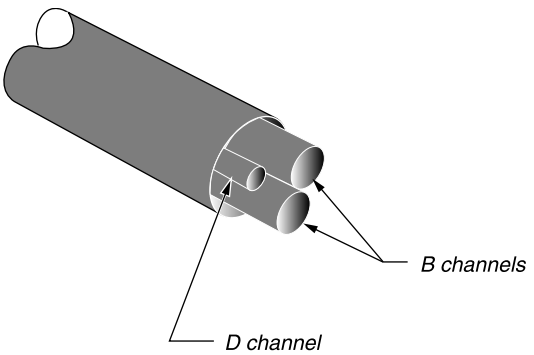


Figure 1-2. An ISDN Basic Rate Interface (BRI) line

Note: Although you can think of each channel as a separate “pipe” for data or voice, all three channels are carried on the same two wires used for conventional telephone service. In many cases, wiring for conventional telephone service can be reused without changes for ISDN service.

The Pipeline 25-Fx lets you use the two B channels in any of the following ways:

- You can use one B channel for a voice call and the other for another voice call (such a voice call used to send or receive a fax).

- You can use one B channel for a voice call and the other for transmitting data at 64 or 56 kilobits per second (Kbps).

  The speed of a B channel is either 64 Kbps or 56 Kbps. The speed is determined by the telephone company or companies you use for an ISDN connection.

- You can use one B channel to transmit data at 64 or 56 Kbps to one location and the other to transmit data at 64 or 56 Kbps to another location.

- You can use both B channels to transmit data at 128 or 112 Kbps to a single location.

  To use both channels for data, the Pipeline 25-Fx uses a technique known as inverse multiplexing, which divides a data stream that is too large for a single B channel and diverts the overflow into the second B channel. When the data is received by the other ISDN device, the two B channels are recombined to create the original data stream.

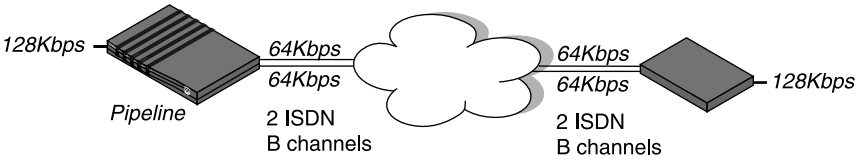


Figure 1-3. Inverse multiplexing

To use conventional phone devices—such as telephones and fax machines—on your ISDN telephone line, you simply plug them into the Phone jacks on the back of the Pipeline 25-Fx. This flexibility makes the Pipeline 25-Fx ideal for small and home offices.

The Pipeline 25-Fx provides these additional features for voice calls:

- Channel borrowing: If both B channels are being used for a data call to a single location and you get a voice call, one of the B channels can be borrowed for the voice call.
- Call Waiting: When you make or get a voice call and there is another call to the same telephone number, an audible signal tells you that you have another call. You can then put the first call on hold and switch to the other call.
- Call Hold: You can put a voice call on hold. This lets you get an incoming call signaled by Call Waiting or make another call.

- Call Conferencing: This lets you make voice calls connecting three or more telephone numbers.
- Call Drop: This lets you drop callers from a conference call.
- Call Transfer. This lets you transfer a voice call to another telephone number.

The Pipeline 25-Fx includes these additional features for data calls, network administration, and system management:

- Support for connecting up to four computers or other devices on a local-area network (LAN) to ISDN.
- Bandwidth on Demand: the ability to add an unused B channel to a data call when higher transmission speeds are needed, and to drop a B channel when less speed is needed.
- The ability to connect local-area computer networks either as a bridge (where all kinds of network traffic can be transmitted) or, if your Pipeline 25-Fx has an optional routing feature, the ability to route either Internet Protocol (IP) traffic on IP networks or the IPX protocol traffic on Novell NetWare networks.
- Security features: support for PAP and CHAP access control (which require passwords) and for security-card access.
- Support for Point-to-Point Protocol (PPP), Multichannel Point-to-Point Protocol (MPP), and Multilink Protocol Plus (MP+), which are three different techniques for encapsulating data sent over ISDN.
- The ability to be managed remotely from other Ascend products that support the Ascend Management Protocol (AMP).
- Flash memory, which makes it easy to upgrade the Pipeline 25-Fx software.

How you can use the Pipeline

The most common uses for the Pipeline 25-Fx are:

- Telecommuting
- Connecting to the Internet

The following sections give examples.

Telecommuting

For telecommuting, the Pipeline 25-Fx can connect a computer and up to three more devices on a local network to a central site, such as the main office of a company. A telecommuter can have access to electronic mail, file servers, and other facilities at the central site.

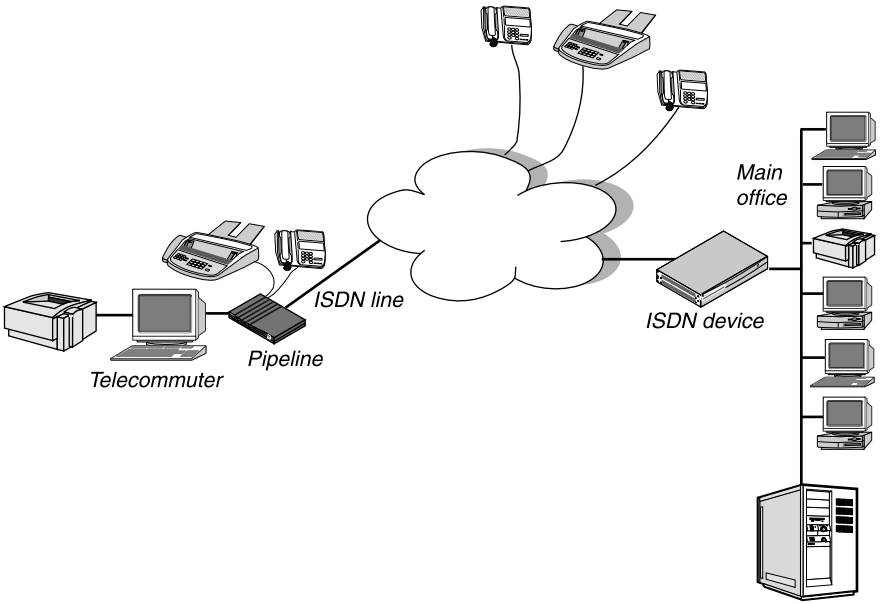


Figure 1-4. Telecommuting with the Pipeline 25-Fx

Connecting to the Internet

The Pipeline 25-Fx provides very fast access to the Internet. It can speed transfers of all kinds of data, including graphics, video, and sound on the World Wide Web, as well as making it faster to use all other Internet services.

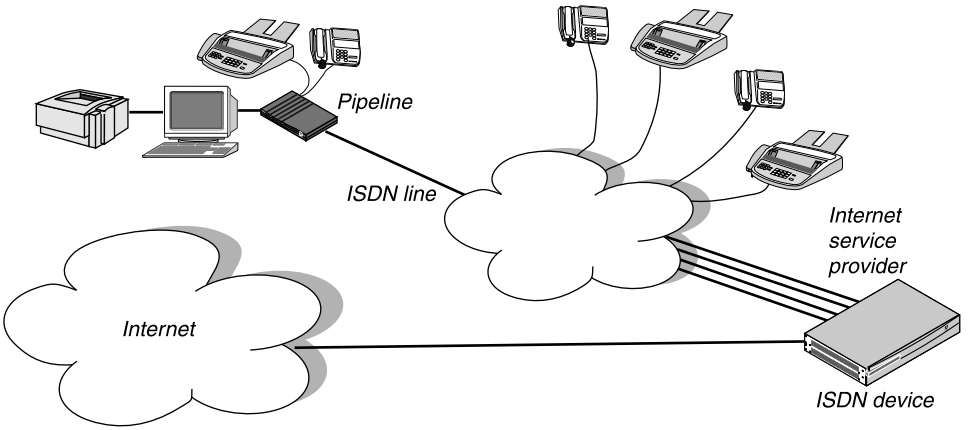


Figure 1-5. Using the Pipeline 25-Fx to connect to the Internet

Because the Pipeline 25-Fx can use the B channels of an ISDN BRI line independently, you can have simultaneous connections to the Internet and another network, such as the one at your company's main office. One B channel is used for each connection.

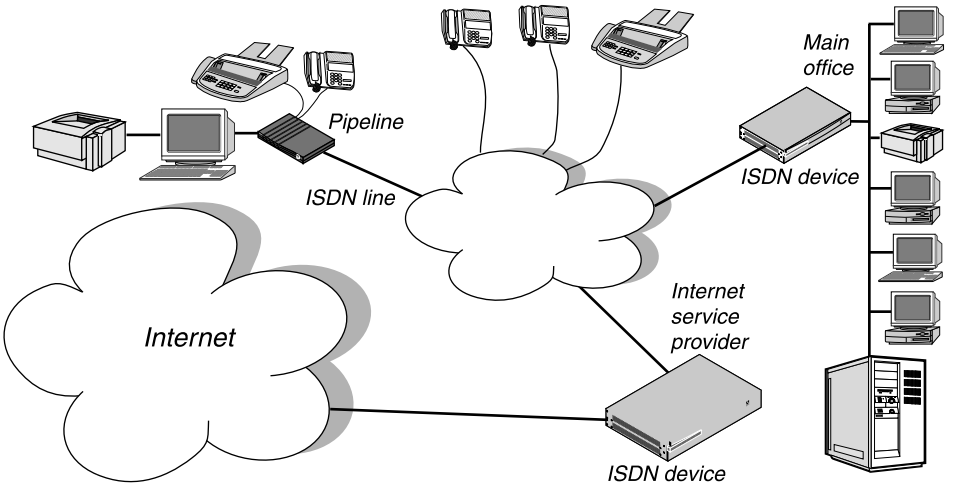


Figure 1-6. Connecting to both an office and the Internet

Installing the Pipeline

2

This chapter contains:

About this chapter

The chapter explains:

- What you need to do before installing your Pipeline 25-Fx, including checking the contents of the Pipeline 25-Fx box and making sure you have the other equipment you'll need, such as an Ethernet interface and a modem cable.
- How to choose a location for the Pipeline 25-Fx.
- How to connect the cables for the Pipeline 25-Fx.

When you're done, you'll be ready to configure your Pipeline.

Preparing for installation

Before you install your Pipeline 25-Fx, you need to do the following:

- Unpack the Pipeline 25-Fx box and check its contents.
- Identify the model of the Pipeline 25-Fx you have.
- Make sure you have everything else you need for installing the Pipeline 25-Fx, such as an Ethernet adapter and a modem cable.

The following sections explain how.

Checking the contents of the Pipeline 25-Fx box

Unpack the Pipeline 25-Fx box and make sure that you have these hardware components:

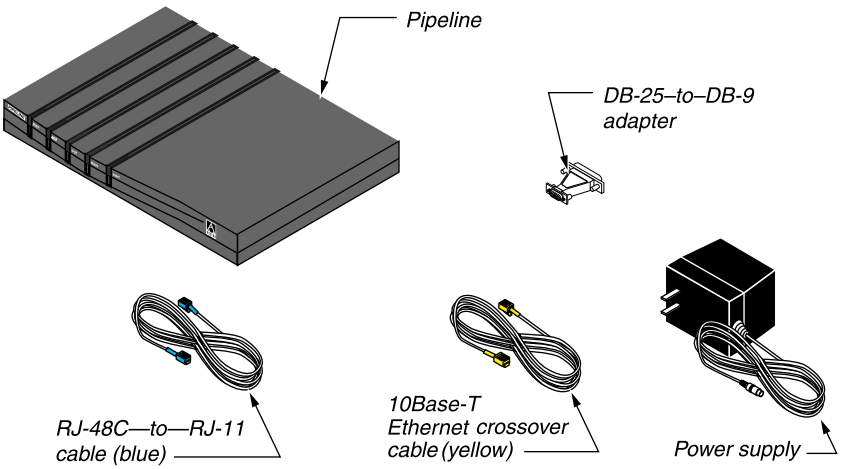


Figure 2-1. Hardware contained in the Pipeline box

- The Pipeline.
- An RJ-48C–to–RJ-11 ISDN cable (part number 2510-0122-001). The ends of this cable are blue.

Note: Each cable and the serial cable adapter has a small paper label with its part number. The label can be hard to see; keep looking if you don't find it immediately.

- A 10Base-T Ethernet crossover cable (part number 2510-0084-001). The ends of this cable are yellow.
- A DB-9–to–DB-25 serial cable adapter (part number 2510-0052-002).
- A power supply.

In addition, make sure you received the following:

- Two manuals: this one and the *Pipeline 25-Fx Administrator's Guide*.
- "Ordering ISDN Service for the Ascend Pipeline 25 and 75," a document containing information your telephone company needs when configuring ISDN telephone service for your Pipeline 25-Fx.
- A diskette containing optional IPX routing software for use in Novell networks.

Note: To use the IPX routing software, your Pipeline 25-Fx must have the IPX routing option. For information about this option, see "Pipeline 25-Fx options" on page 3-2.

- A registration card.

Identifying the model of your Pipeline 25-Fx

To install the Pipeline 25-Fx correctly, you need to know which model you have. There are two models:

- The U-interface model (model number P25-1U-FX) connects directly to an ISDN line.
- The S-interface model (model number P25-1S-FX) requires an external network terminator (NT1) device.

You can find the model number, which identifies the model, on the label on the bottom of the Pipeline 25-Fx.

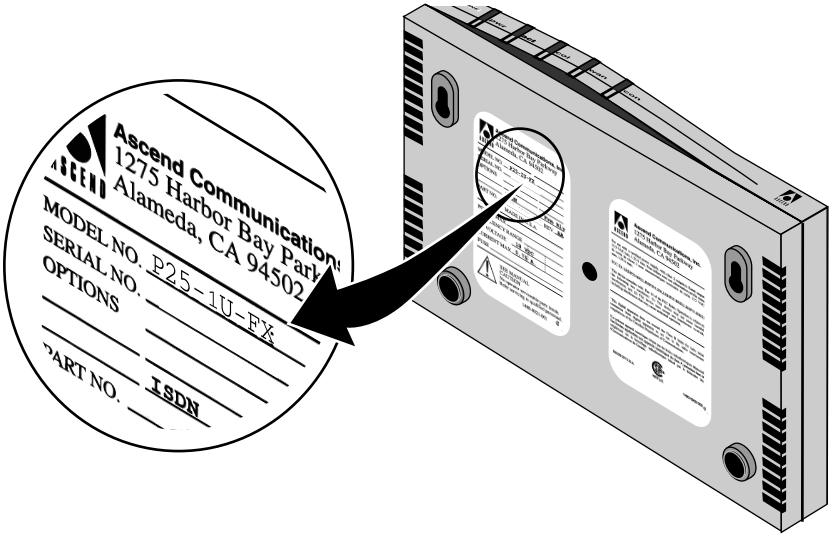


Figure 2-2. Finding the model number of the Pipeline

What else you need for installation

In addition to the contents of the Pipeline 25-Fx box, to install your Pipeline you need the hardware and software described in the following sections.

An ISDN telephone line

To use your Pipeline, you need a properly configured ISDN Basic Rate Interface (BRI) telephone line. For information on ordering ISDN service, see the "Ordering ISDN Service for the Ascend Pipeline 25 and 75" document included with your Pipeline 25-Fx.

A computer with a serial port

To configure and monitor the Pipeline, you need a computer with a serial communication port capable of transmitting data at 9600 bits per second. The serial communication port is normally one you could use to connect an external modem. If you are not already familiar with your computer's serial ports, refer to your computer's user guide for more information.

If possible, you should set aside a serial port for a permanent connection to the Pipeline. If there are not enough serial ports for all the devices that need serial connections, consider adding another serial port if you can. With a permanent serial connection, you can monitor the Pipeline at any time, manually connect to and disconnect from remote networks, and make configuration changes whenever necessary.

If no serial port is currently free and you cannot add a serial port to your computer, disconnect from one of the serial ports a device that you can temporarily do without, such as an external modem. You can reconnect the device when you've finished configuring the Pipeline.

An Ethernet interface

For the Pipeline to transmit data to and receive data from your computer, you need a properly configured Ethernet interface for your computer. The interface can be built into the computer, as it is on many recent Dell, Apple Macintosh, and Macintosh-compatible personal computers, or it can be an add-on circuit board or

PCMCIA card (PC card). Follow the instructions for installing and configuring the interface that are included with the interface or with your computer.

An Ethernet cable

If you're connecting a single computer to the Pipeline and the computer has a 10Base-T (twisted-pair) Ethernet interface, you don't need an additional Ethernet cabling. In this case, you can use the special "crossover" cable included with the Pipeline, as described in this chapter.

If you're connecting a 10Base-T Ethernet network that includes a hub, you need a standard 10Base-T cable to connect the Pipeline to the 10Base-T hub for the network and another standard 10Base-T cable for connecting the computer to the hub. Note that you *cannot* use the 10Base-T "crossover" cable included with the Pipeline 25-Fx for these connections. You can use the crossover cable only for a direct connection between a computer and the Pipeline, not for a connection to a 10Base-T hub

For Thicknet (10Base-5) or Thinnet (10Base-2) Ethernet networks, consult the documentation for your network for information about proper cables and termination.

Note: The Pipeline 25-Fx does not have a Thinnet (10Base-2) connector. To connect the Pipeline to a Thinnet Ethernet network, you also need an Ethernet transceiver that lets you attach a Thinnet cable to the Thicknet (10Base-5) connector on the Pipeline 25-Fx.

TCP/IP or IPX software

To communicate with a remote network, your computer must have the necessary networking software, often known as a "stack."

A TCP/IP stack lets you connect to the Internet and to other networks that use the same networking standards as the Internet. Many operating systems include software for TCP/IP. If TCP/IP software is not included in your operating system, you need to obtain a separate TCP/IP software package. For information on configuring the TCP/IP software, see the documentation for your operating system or TCP/IP software package.

An IPX stack lets you connect to Novell NetWare networks.

Communications software

To configure and monitor the Pipeline, you need communications software for your computer. This software must be able to:

- Emulate a VT100 terminal
- Make a direct connection to the Pipeline 25-Fx (through the serial port to which the Pipeline 25-Fx is connected, as described in "Connecting to the Control jack" on page 2-14) rather than through a modem.

Most communications software that you purchase separately, such as the PROCOMM PLUS program for Microsoft Windows, works reliably. For Macintosh computers, a shareware communications program, ZTerm, works well. PROCOMM PLUS and ZTerm are both described in Appendix B, "Configuring Communications Software."

Caution: The Terminal program included with Microsoft Windows 3.1 and the HyperTerm program included with Microsoft Windows 95 are not reliable enough for configuring the Pipeline 25-Fx.

A modem cable

To connect the Pipeline to your computer's serial port, you need a modem cable (a serial communication cable designed for connecting an external modem). The cable must be a "high-speed" modem cable, that is, one that supports the "hardware handshaking" technique used by almost all recently manufactured modems. This cable must have the appropriate plug for connecting to a serial communication port on your computer and either a 9- or 25-pin male "D" connector at the other end.

An external network terminator (S-interface only)

If your Pipeline has an S interface, you need an external ISDN network terminator (NT1). To connect more than one ISDN device to the same ISDN line, you must use an external NT1. For information on distinguishing the U- and S-interface models of the Pipeline 25-Fx, see "Identifying the model of your Pipeline 25-Fx" on page 2-4.

Telephone equipment and cables

If you will use the Pipeline 25-Fx to make or receive voice calls, you need the necessary telephone equipment (such as a conventional analog telephone or a fax machine) and a conventional telephone cable (normally with RJ-11 plugs at each end) for each device you connect.

Jacks on the Pipeline 25-Fx

The Pipeline 25-Fx has these jacks on the back.

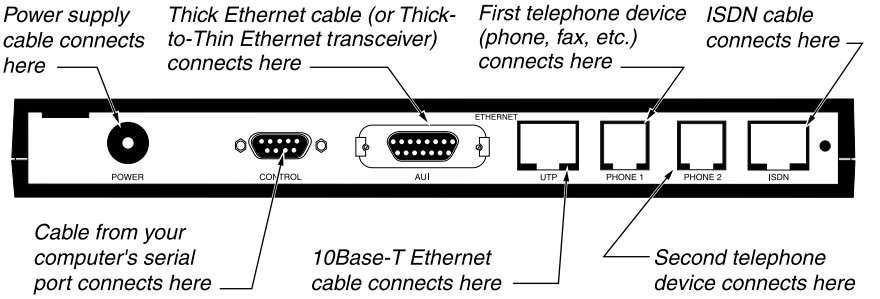


Figure 2-3. Back panel of the Pipeline

The following sections explain how to connect the appropriate cables to these jacks.

Choosing a location for the Pipeline 25-Fx

If possible, choose a location for the Pipeline 25-Fx that lets you view the lights on the front. These lights show the current status of the Pipeline, such as whether the ISDN line is in use, and can help you diagnose problems.

Connecting the cables

The sections that follow explain how to connect the cables for the Pipeline. When you're done, you'll be ready to configure the Pipeline as described in the next chapter.

Connecting the Pipeline 25-Fx to the ISDN line

The first step in installing your Pipeline 25-Fx is connecting it to your ISDN telephone line. How you connect the Pipeline 25-Fx to the ISDN line depends on what version of the Pipeline 25-Fx you have.

Look at the box your Pipeline 25-Fx came in or the bottom of the unit.

- If your Pipeline 25-Fx is model number P50-1UBRI it has a U interface. Follow the instructions in the next section, "Connecting a U-interface Pipeline 25-Fx" on page 2-9 to connect the ISDN line.
- If your Pipeline 25-Fx is model number P50-1SBRI it has an S interface. Follow the instructions in the "Connecting an S-interface Pipeline 25-Fx" on page 2-10 to connect the ISDN line.

Connecting a U-interface Pipeline 25-Fx

To connect a Pipeline 25-Fx with a U interface to the ISDN line:

1 Insert the end of the RJ-48C to RJ-11 ISDN cable (part number 2510-0122-001) with the larger jack into ISDN jack on the back of the Pipeline 25-Fx. The ends of this cable are blue.

2 Insert the other end of the cable into the ISDN wall jack.

Warning: *Do not* use a 10Base-T Ethernet cable, such as the crossover cable included with the Pipeline 25-Fx (part number 2510-0084-001), to connect the Pipeline 25-Fx to the ISDN line. Using the wrong cable can damage or destroy the Pipeline 25-Fx.

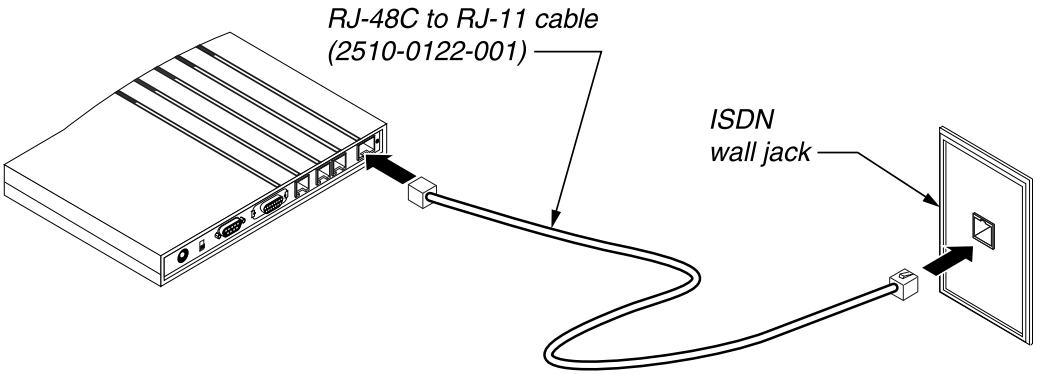


Figure 2-4. Connecting a U-interface Pipeline 25-Fx to the ISDN line

When you're done, skip to "Connecting the Pipeline to a single computer" on page 2-11.

Connecting an S-interface Pipeline 25-Fx

To connect a Pipeline 25-Fx with an S interface to the ISDN line:

1 Insert the end of the RJ-48C to RJ-11 ISDN cable (part number 2510-0122-001) with the larger jack into ISDN jack on the back of the Pipeline 25-Fx. The ends of this cable are blue.

Warning: *Do not* use a 10Base-T Ethernet cable, such as the crossover cable included with the Pipeline 25-Fx (part number 2510-0084-001), to connect the Pipeline 25-Fx to the ISDN line. Using the wrong cable can damage or destroy the Pipeline 25-Fx.

2 Insert the other end of the cable into the appropriate jack on the external network terminator (NT1) device for your ISDN connection. Consult your NT-1 documentation to identify the correct jack.

3 Connect the external NT1 to the ISDN wall jack following the directions provided in your NT1 documentation.

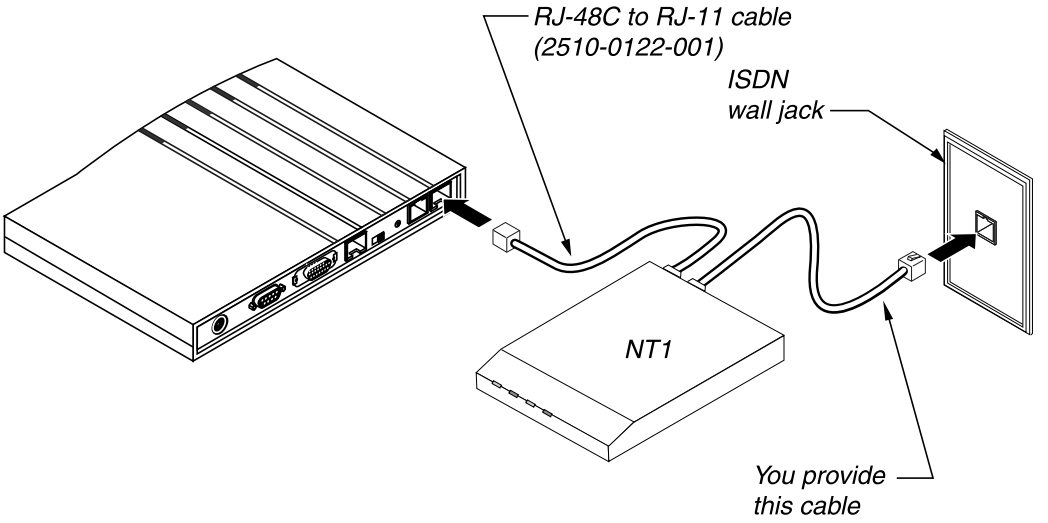


Figure 2-5. Connecting an S-interface Pipeline 25-Fx to the ISDN line

Connecting the Pipeline to a single computer

If you will use only one computer with the Pipeline 25-Fx, and the computer has a 10Base-T (twisted-pair) Ethernet interface, you can connect the Pipeline 25-Fx and computer with the special 10Base-T cable, known as a crossover cable, that is included with the Pipeline. (For information on connecting more than one computer to the Pipeline 25-Fx, see Appendix A, "Connecting the Pipeline to an Ethernet Network.")

Note: In a 10Base-T crossover cable, two of the internal wires are crossed. Such a cable makes it possible to build a simple 10Base-T Ethernet network that has just two devices. It eliminates the need for a 10Base-T hub, which is required for all 10Base-T Ethernet networks with more than two devices.

1 Insert one end of the 10Base-T crossover cable (part number 2510-0084-001) into the UTP jack on the back of the Pipeline.

The ends of this cable are yellow.

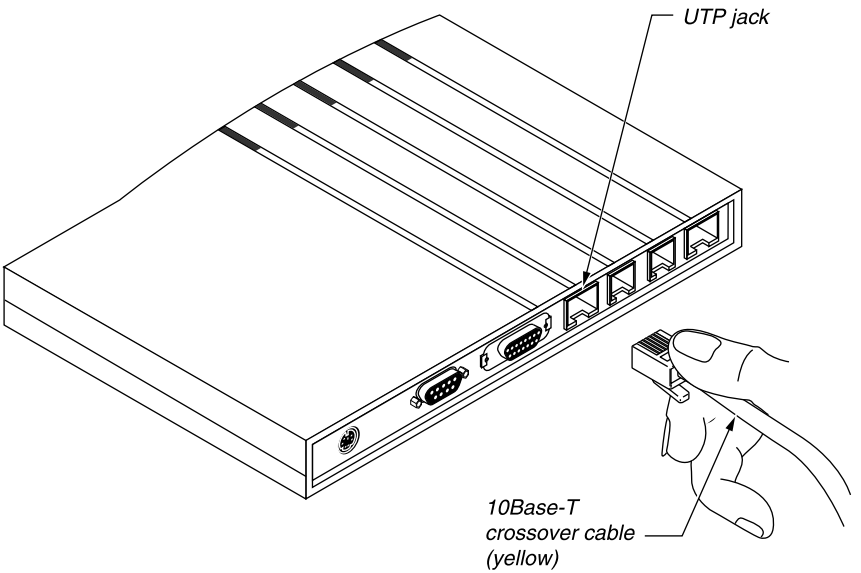


Figure 2-6. Inserting the 10Base-T crossover cable into the Pipeline

Note: "UTP" stands for "unshielded twisted pair," the type of cabling used for 10Base-T networks.

2 Insert the other end of the cable into the 10Base-T Ethernet jack on the computer.

The following illustrations show how to connect the cable to an IBM PC, an Apple Macintosh, and a Unix workstation.

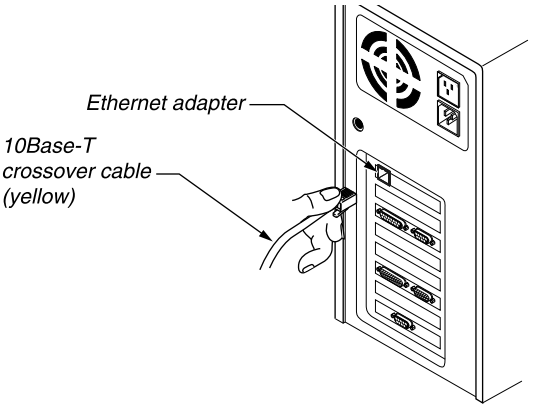


Figure 2-7. Inserting the 10Base-T crossover cable into an IBM PC

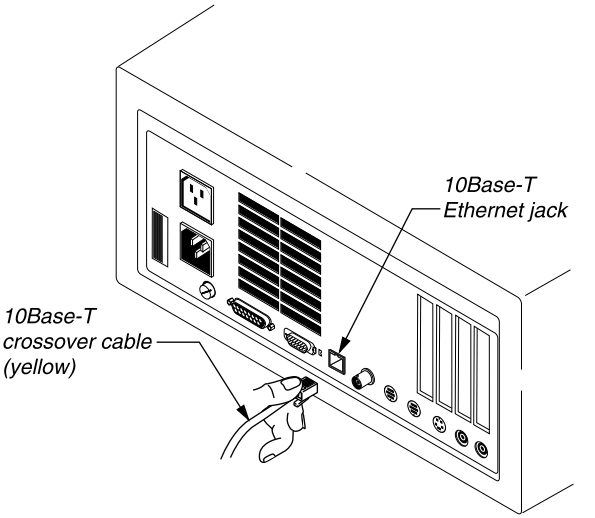


Figure 2-8. Inserting the 10Base-T crossover cable into a Macintosh

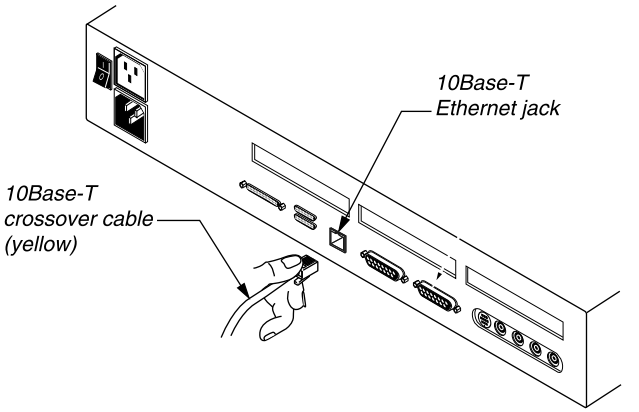


Figure 2-9. Inserting the 10Base-T crossover cable into a Unix workstation

When you're done connecting the computer to the Pipeline 25-Fx, skip to the next task: "Connecting to the Control jack" on page 2-14.

Connecting to the Control jack

To configure the Pipeline 25-Fx, you need a second connection between your computer and the Pipeline: from a serial communication port on your computer to the Control jack on the Pipeline.

Before connecting to the Control jack, identify the serial port you will use (for example, COM1 or COM2 on an IBM or IBM-compatible personal computer or the printer port or modem port on an Apple Macintosh or Macintosh-compatible personal computer).

Note: Write down which serial port you'll use. You'll need this information later when setting up the Pipeline 25-Fx configuration software.

The following sections explain how to connect different types of computers to the Control jack:

- If you are using an IBM or IBM-compatible personal computer to configure the Pipeline 25-Fx, follow the instructions in "Connecting an IBM-compatible computer" on page 2-15.

- If you are using a Macintosh computer to configure the Pipeline 25-Fx, skip to the instructions in “Connecting a Macintosh” on page 2-17.
- If you are using a Unix workstation to configure the Pipeline 25-Fx, skip to the instructions in “Connecting a Unix workstation” on page 2-19.

Connecting an IBM-compatible computer

To connect an IBM or IBM-compatible personal computer to the Pipeline, follow these steps:

1 Connect a modem cable to the serial connector.

The cable must have a plug that fits the connector.

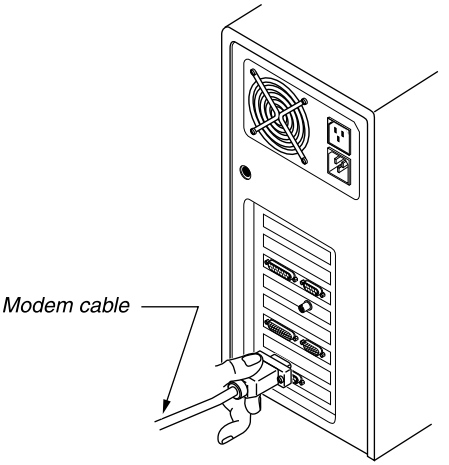


Figure 2-10. Connecting the modem cable to the computer

2 If the plug at the other end of the modem cable has 25 pins, connect the 25-to-9 pin adapter included with the Pipeline (part number 2510-0052-002) to the plug.

Note: Try plugging in the cable first to see if it works, as described in the next step. If it does, you don't need the adapter.

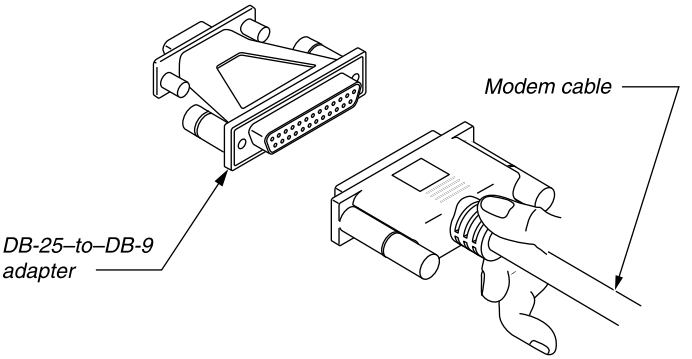


Figure 2-11. Connecting an adapter to the modem cable

3 Connect the cable to the Control jack on the back of the Pipeline.

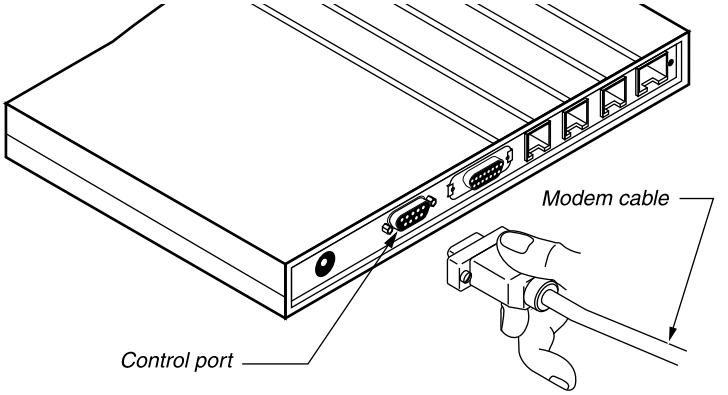


Figure 2-12. Connecting the modem cable to the Pipeline Control jack

When you're done connecting the computer to the Pipeline 25-Fx, skip to the next task, "Connecting telephone equipment" on page 2-20.

Connecting a Macintosh

To connect a Macintosh or compatible personal computer to the Pipeline, follow these steps:

1 Connect the 25-to-9 pin adapter included with the Pipeline (part number 2510-0052-002) to the DB-25 end of a Macintosh modem cable.

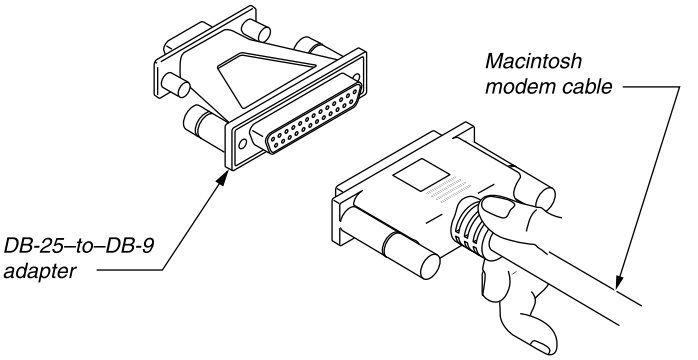


Figure 2-13. Connecting an adapter to a Macintosh modem cable

2 Connect the cable to the Control jack on the back of the Pipeline.

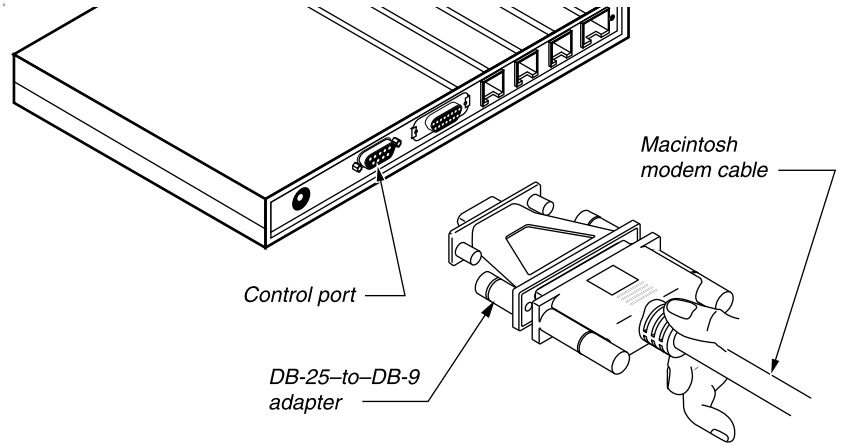


Figure 2-14. Connecting the Macintosh modem cable with adapter to the Pipeline Control jack

3 Connect the other end of the cable to a serial port (either the Modem or Printer port) on the computer.

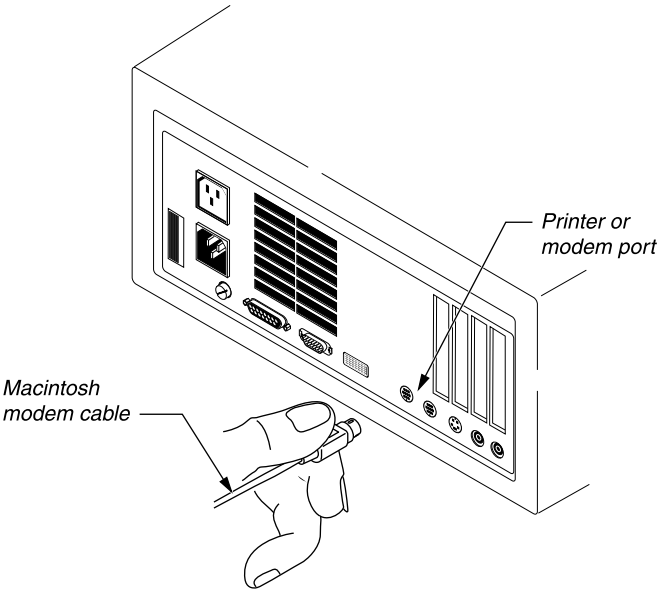


Figure 2-15. Connecting the modem cable to the Macintosh

When you're done connecting the computer to the Pipeline 25-Fx, skip to the next task, "Connecting telephone equipment" on page 2-20.

Connecting a Unix workstation

To connect a workstation or other computer running Unix, follow these steps:

1 Connect a modem cable for the computer to the Control jack on the back of the Pipeline.

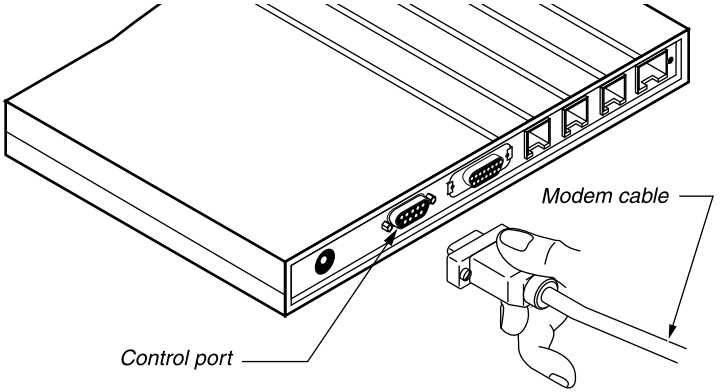


Figure 2-16. Connecting the modem cable to the Pipeline Control jack

2 Connect the other end of the cable to the serial port on the computer.

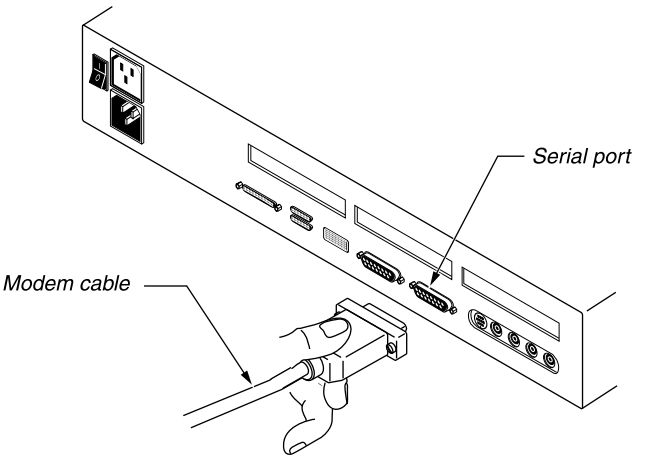


Figure 2-17. Connecting the modem cable to the serial port

Connecting telephone equipment

You can connect conventional telephones or other analog telephone equipment, such as a fax machine, to the Phone jacks on the back of the Pipeline. With most kinds of ISDN service, each of the two Phone jacks can get or receive voice calls for one of the two telephone numbers for your ISDN line.

Although you can connect more than one analog device to a particular Phone jack, you can make or receive no more than one call on each jack at a time.

Note: Whenever possible, connect no more than one analog device to each Phone jack. If you must connect more than one device, see "Analog devices and REN limits" on page 2-23.

If you want to connect a conventional telephone or another analog telephone device to the ISDN line, follow these steps:

1 Connect one end of a modular telephone cable to a conventional telephone or other telephone device.

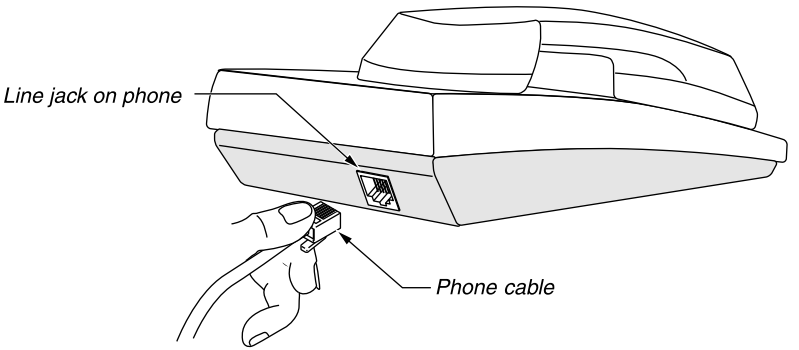


Figure 2-18. Connecting the telephone cable to a telephone

2 Connect the other end of the cable to the Phone 1 jack on the Pipeline 25-Fx.

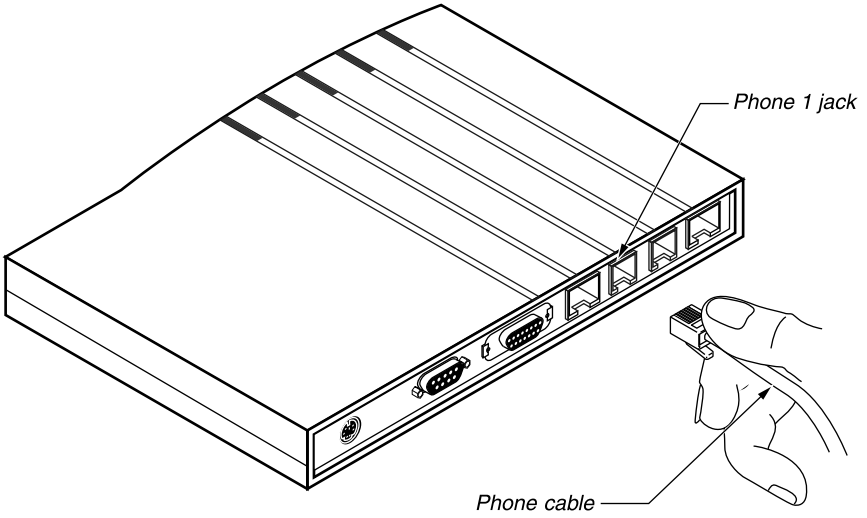


Figure 2-19. Connecting the telephone cable to the Pipeline Phone 1 jack

Note: Although you've connected a phone, you won't get a dial tone when you pick up the receiver until you connect the power supply for the Pipeline 25-Fx as described later in this chapter.

If you want to connect a second conventional telephone or another analog telephone device, such as a fax machine, to the ISDN line, follow these steps:

Note: If the ISDN service provided by your telephone company is AT&T Custom Point-to-Point, you can receive incoming calls only on the Phone 1 jack. If you have this service, connect all telephone equipment to the Phone 1 jack using a line splitter or other device.

1 Connect one end of another modular telephone cable to the device.

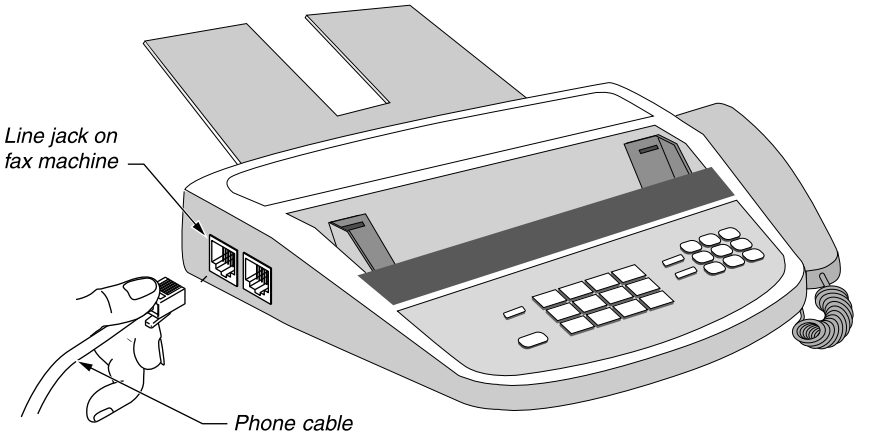


Figure 2-20. Connecting the telephone cable to a fax machine

2 Connect the other end of the cable to the Phone 2 jack on the Pipeline 25-Fx.

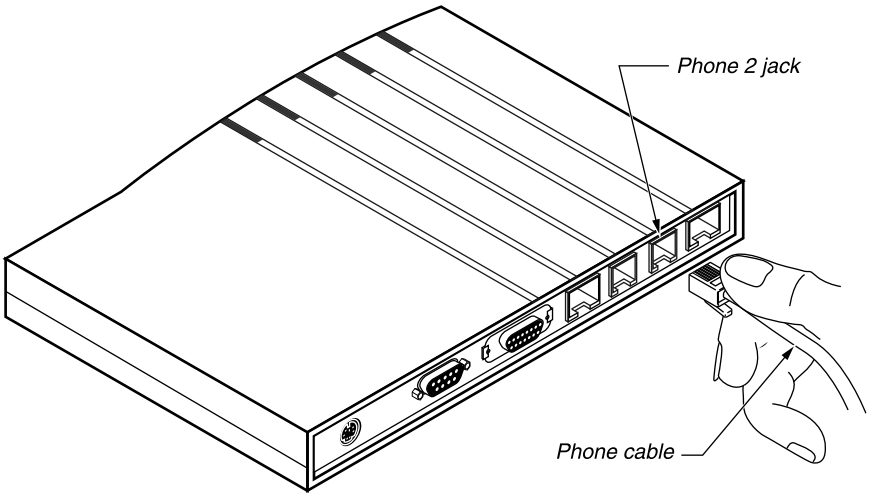


Figure 2-21. Connecting the telephone cable to the Pipeline Phone 2 jack

Analog devices and REN limits

Note: If you are connecting no more than one analog device to each Phone port, you can skip this section.

The number of analog devices you can connect to a single Phone port is limited. The limit is determined by the total "ringer equivalence" (or REN) of the devices connected to the jack, as well as by other factors such as the length of the phone cable. ("Ringer equivalence" specifies how much electricity a device requires from the phone line, and REN is the unit used to measure it. The REN value of a device is often marked on its case, and it may also be listed in product specifications for the device.) In no case should the sum of the REN values of the devices connected to a single Phone jack exceed 3.

Attaching the power cord

The last step in installing the Pipeline 25-Fx is attaching the power supply.

Warning: You **must** perform the following steps **in the order listed.** Plugging the power supply into the wall socket before plugging the power cable into the Pipeline 25-Fx can create sparks, cause an electrical fire, or destroy the Pipeline.

To connect the power supply, follow these steps:

1 Plug the power cord into the Power jack of the Pipeline.

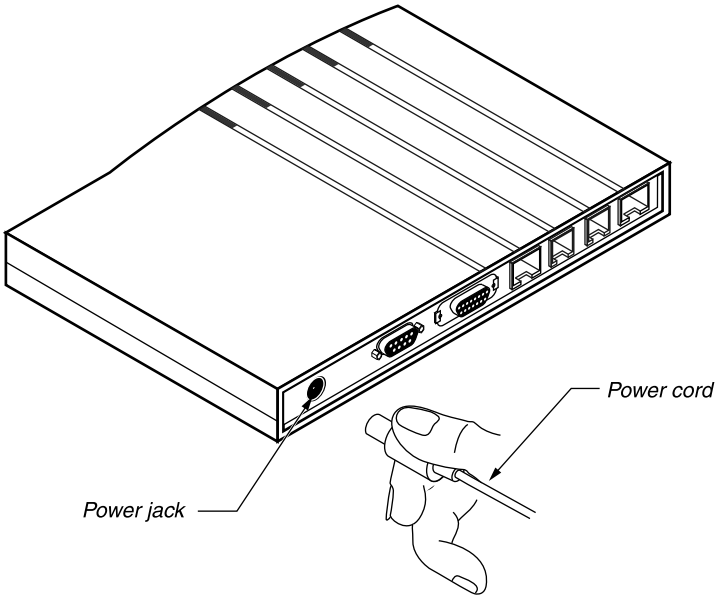


Figure 2-22. Connecting the power cord to the Pipeline

2 Insert the AC power plug into an electrical outlet.

Because the Pipeline 25-Fx has no Power switch, plugging in the power supply turns the Pipeline 25-Fx on.

After you plug in the Pipeline, it takes about a minute for it to be ready to use. The status light on the front of the Pipeline 25-Fx labeled PWR comes on immediately to indicate that the power is on. Refer to Figure 2-23 for descriptions of all the Pipeline 25-Fx status lights.

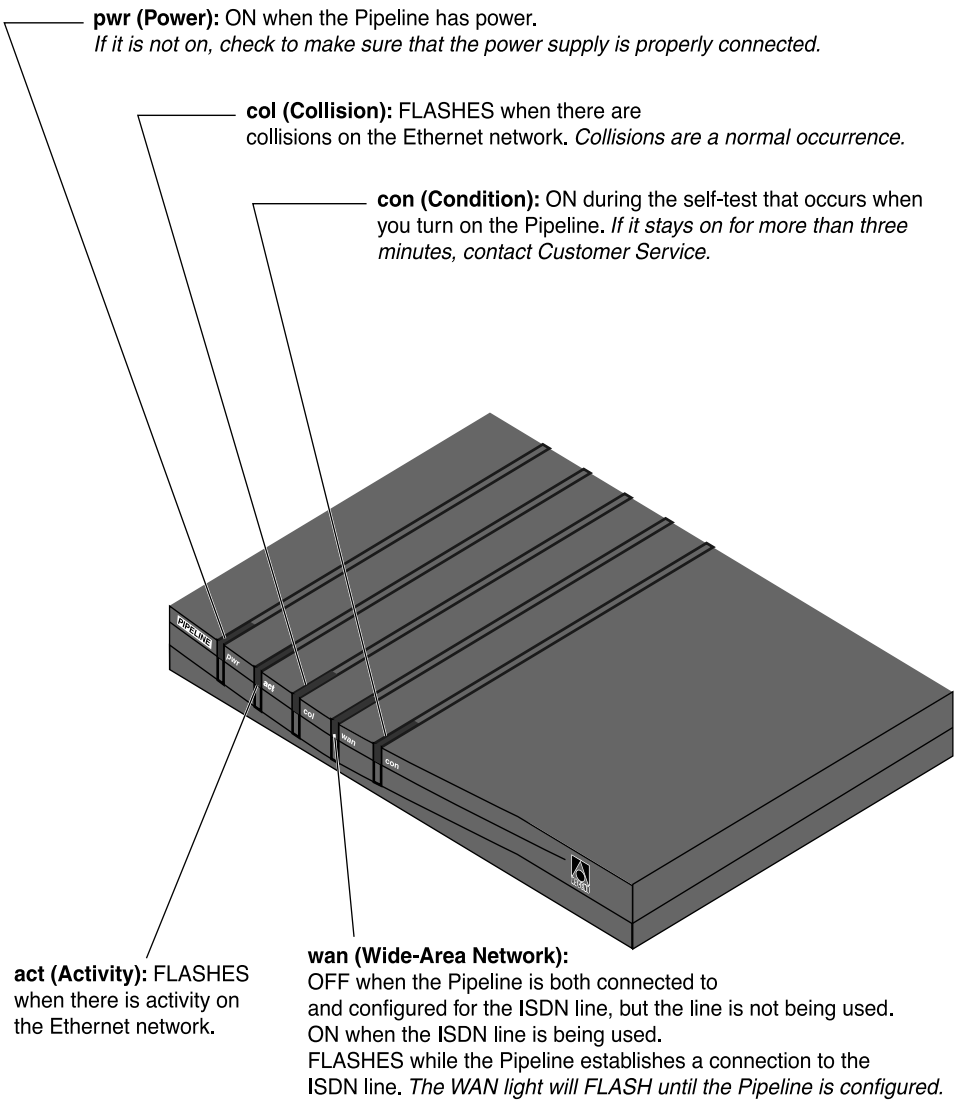


Figure 2-23. Pipeline 25-Fx status lights

If you encounter problems, refer to the Troubleshooting appendix in the *Pipeline 25-Fx Administrator's Guide*.

Mounting the Pipeline on a wall

In some cases, it may be useful to mount the Pipeline on a wall rather than putting it on a flat surface. The bottom of the Pipeline 25-Fx includes two screw slots for this purpose.

Note: Wall mounting is optional.

The following figure shows the size and spacing of screws you need for wall mounting.

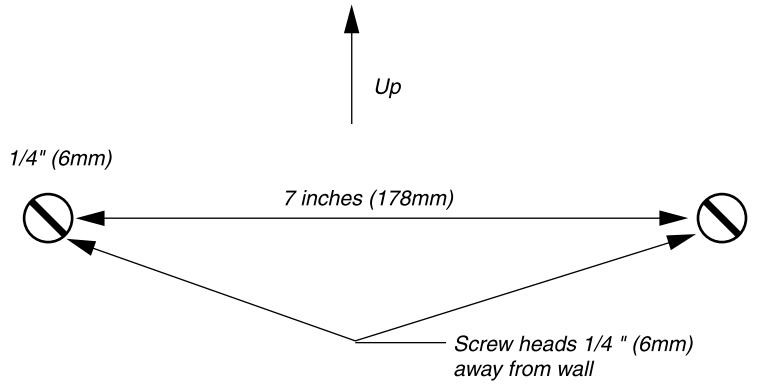


Figure 2-24. Placement of screws for mounting the Pipeline on a wall

Note: Although the status lights are visible when the Pipeline 25-Fx is mounted on a wall, the labels for the lights are not. To make it easy to identify the lights, write the labels on a piece of tape and tape them to the Pipeline.

What to do next

You've finished installing the Pipeline. The next chapter, "Configuring the Pipeline," explains how to configure it for your ISDN service and network service provider.

Configuring the Pipeline

3

This chapter contains:

About this chapter

To make the Pipeline work, you first need to give it a variety of information, such as information about the ISDN service provided by your telephone company and one or more telephone numbers that the Pipeline dials to connect to other locations. This process is called configuring the Pipeline 25-Fx. In this chapter, you'll learn how to configure your Pipeline 25-Fx by using its configuration menus.

The chapter explains:

- How to set up a communications program on your personal computer or workstation to communicate with the Pipeline 25-Fx
- How to use the configuration menus to configure the Pipeline 25-Fx
- How to test the ISDN line

If your Pipeline 25-Fx has already been configured for you by a network administrator, you can skip this chapter.

This chapter assumes that you have been given the necessary configuration settings by a network administrator. In many cases, these settings will be specific to the Pipeline 25-Fx, and they will be easy to find in the configuration menus. If, however, you get only general configuration information that applies to a number of different ISDN devices, the information in this chapter will help you to identify the settings you need to change. If after reading this chapter you are not certain which settings to change, contact the administrator or customer support personnel at the site to which you are connecting.

Note: This chapter provides only basic information about the most commonly used configuration settings. For detailed information about all configuration settings, see the *Ascend Pipeline 25-Fx Administrator's Guide*.

Pipeline 25-Fx options

How you configure the Pipeline 25-Fx is determined in part by the options, if any, that it has. Certain configuration settings apply only to Pipelines with a particular option. If an option is required for a setting, it is noted in the description of the setting.

There are three options available for the Pipeline 25-Fx:

- Data compression hardware module (part number P25-HP-COMP)

  For maximum data transmission speeds (up to 512 Kbps), you can order the Pipeline 25-Fx with the data compression option. This optional module, which compresses data you send and receive via ISDN, works only when the ISDN communications device to which you're connecting is made by Ascend. The module must be installed by Ascend.

- IP routing software option (part number P25-SO-IP)

  The IP routing option enables the Pipeline 25-Fx to act as an IP router. This can increase the speed and efficiency of connections to the Internet and to other networks that use Internet protocols.

- IPX routing software option (part number P25-SO-IPX)

  The IPX routing option enables the Pipeline 25-Fx to act as an IPX router. This can increase the speed and efficiency of connections to Novell NetWare networks. It also permits connections to NetWare servers.

You can determine if your Pipeline 25-Fx has any options by checking the white label on your Pipeline 25-Fx packing box or on the bottom of the Pipeline 25-Fx. For information on how to upgrade your Pipeline 25-Fx to include any of these options, contact your Ascend reseller.

Setting up your communications software

The first step in configuring your Pipeline 25-Fx is setting up the software your computer uses to communicate with the Pipeline. This section explains how.

Installing the communications software

If you haven't already installed your communications software, do it now. Follow the installation instructions provided with the software.

Checking for the correct settings

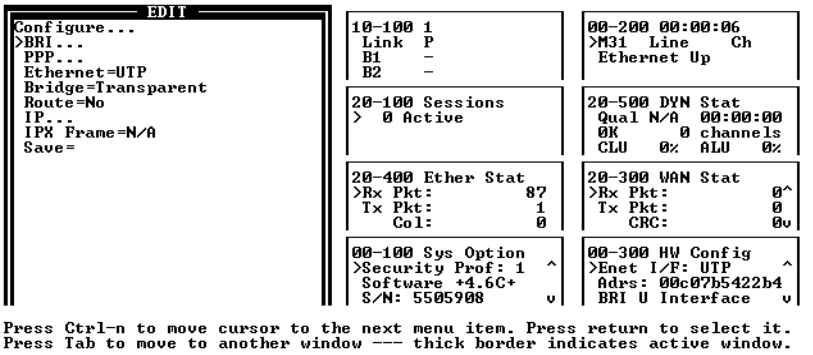
In some cases, the communications software may already be configured properly. To check, follow these steps:

1. Open the communication software.

   If the software includes a separate a Terminal or Data Terminal utility, open that utility.

2. Press Control-L (by pressing the L key on the keyboard while holding down the Control key).

If the software is configured correctly, the Pipeline 25-Fx configuration windows shown in the following illustration appear.



If the software is configured correctly, skip to “Entering configuration settings” on page 3-7. If not, go on to the next section.

Setting up PROCOMM PLUS or ZTerm

For step-by-step instructions for setting up two commonly used communications programs, PROCOMM PLUS for Windows and ZTerm for Macintosh, see Appendix B, “Configuring Communications Software.” When you’re finished with Appendix B, skip to “Viewing the configuration windows” on page 3-6.

Settings for the communications software

To communicate with the Pipeline 25-Fx, set up your communications software as follows:

Note: If you are not already familiar with the settings listed, see the documentation for your communications software. If you're using the software for the first time, going through an online or printed tutorial if the software includes one is a good way to get started.

- **Direct connection:** Tell the software that there is a serial cable connecting the Pipeline directly to the computer.
- **Serial port:** Specify which of the computer's serial ports the software uses. This is the port to which you connected the Pipeline with a modem cable, as described in "Connecting to the Control jack" on page 2-14.

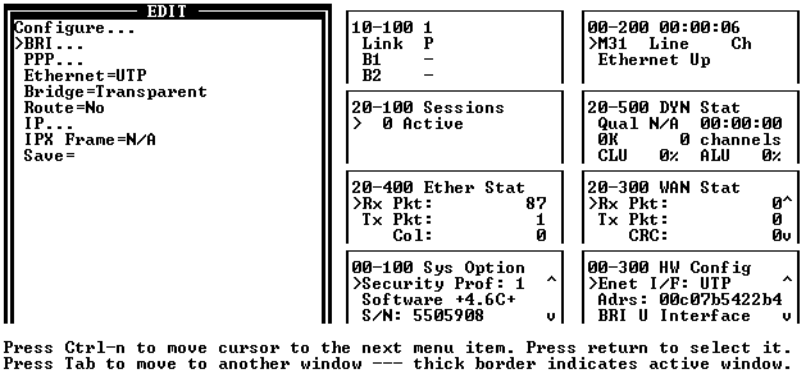
  Note: If the only serial port available is currently used by an internal modem, you may need to use your computer's setup software to specify an external connector for the port that will be used in place of the internal modem. In some cases, you also may need to remove the modem. See the manual for the modem and your computer's user manual for details.
- **Flow control:** Turn *off* software flow control (XON/XOFF) and, if possible, hardware flow control (RTS/CTS).
- **Default file transfer protocol:** Specify Xmodem CRC/1K if it is available, or Xmodem 1K or Xmodem if Xmodem CRC/1K is not one of the choices. (Most versions of Xmodem perform CRC—cyclical redundancy checking, a way to detect data transmission errors—and can perform 1K transfers without the need to specify these separately.) Although Xmodem is not needed for configuring the Pipeline, you use it when you upgrade the Pipeline software.
- **Terminal type:** Specify VT100 or, if it is not available, VT102.
- **Duplex:** If the software lets you choose, specify Full. Because this is by far the most common choice, most communications software sets this by default.
- **Data bits:** Specify 8.
- **Stop bits:** Specify 1.
- **Parity:** Specify None.

Viewing the configuration windows

Once you've installed and configured your communications software and opened the VT100 terminal window, you can view the Pipeline configuration windows by following this step:

1 Press Control-L (by pressing the L key on the keyboard while holding down the Control key).

The configuration windows appear.



The Edit window at the left of the screen displays the menus you use to enter configuration settings, as described in the following sections. The other windows, know as status windows, provide information about the current status of the Pipeline. Status windows are discussed in Chapter 4.

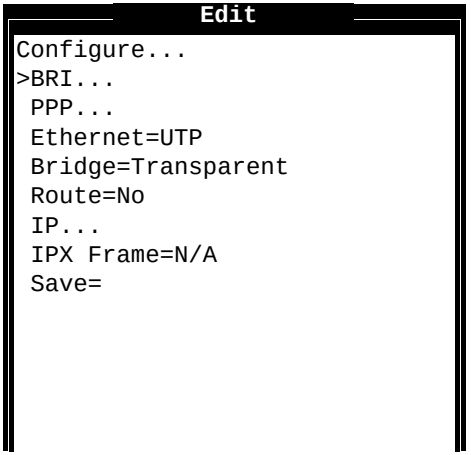
Note: The heavy border around the Edit window indicates that it is the active window, the one that responds to what you type at the keyboard. To enter configuration settings, as described in the next section, the Edit window must be active. If you accidently press the Tab key, another window becomes active. To make the Edit window active again, press Tab repeatedly until the window is shown with a heavy border.

Entering configuration settings

If your Pipeline 25-Fx was not configured for you, you need to enter configuration settings for connecting to the remote site. These settings are normally provided for you by the administrator of the remote site. This section lists the most common settings and explains how to change them.

Note: For information about settings not described here, and to learn how to select the correct values for a particular connection, see the *Ascend Pipeline 25-Fx Administrator's Guide*.

When you first open the configuration windows, the Configure profile appears. A profile is a collection of related settings, and the Configure profile contains settings for making an ISDN connection to a particular remote site.



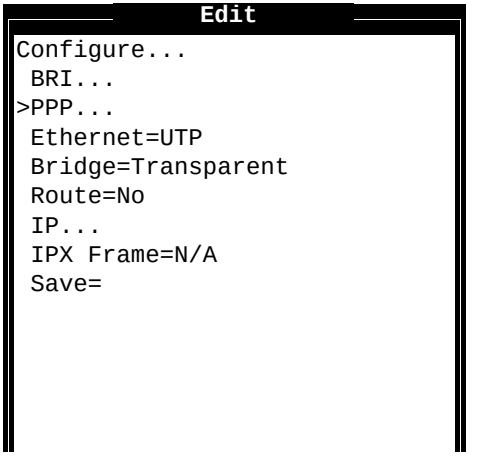
The marker is a greater-than (>) sign that indicates where you are in a menu, in this case the BRI... menu item.

Note: The marker is not the pointer that you move with a pointing device, such as a mouse, on most modern computers. You use the keyboard to move the marker, as described in this section.

To move down the marker, follow this step:

1 Press the down-arrow key on the keyboard or, if that doesn't work, press Control-N (by pressing the N key on the keyboard while holding down the Control key).

The marker moves down to the next item.



To move up the marker, follow this step:

1 Press the up-arrow key on the keyboard or, if that doesn't work, press Control-P (by pressing the P key on the keyboard while holding down the Control key).

Specifying BRI settings

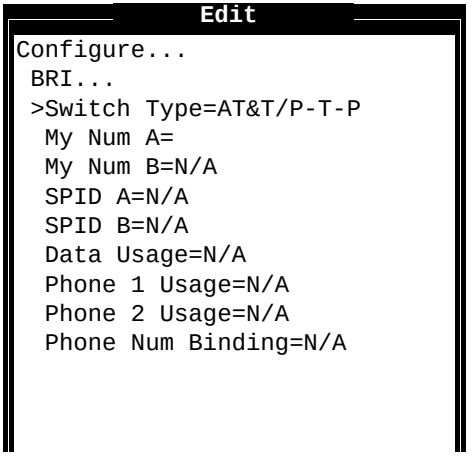
Within the Configure profile are a number of submenus. Each of these contains settings. One of these is the BRI... submenu that contains settings related to your ISDN service.

To open the BRI... submenu, follow these steps:

1 Move the marker to BRI... if it isn't already there.

2 Press the Enter key.

The BRI submenu appears.



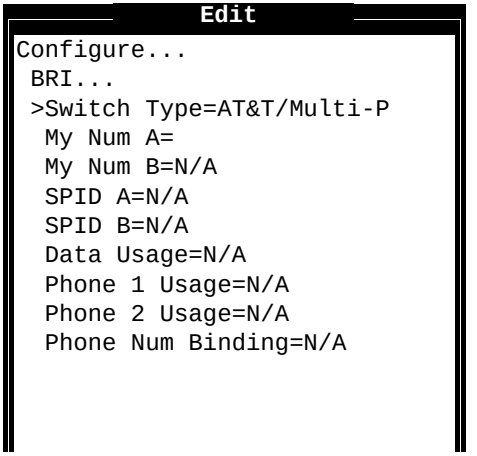
Specifying the switch type

The Switch Type setting specifies the type of service for your ISDN line. By default, the value of Switch Type is AT&T/P-T-P, which specifies that your ISDN service is AT&T Custom Point-to-Point.

To set the value of Switch Type, follow these steps:

1 If the value shown is not correct, press the Enter key.

This changes the setting to its next possible value, AT&T/Multi-P, which specifies that your ISDN service is AT&T Custom Multipoint.



Pressing the Enter key again chooses the next value, and so on. When you reach the last possible value, pressing Return again chooses the first value.

The most common values for Switch Type are

- AT&T/P-T-P, which specifies that your ISDN service is AT&T Custom Point-to-Point.
- AT&T/Multi-P, which specifies that your ISDN service is AT&T Custom Multipoint.
- NI-1, which specifies that your ISDN service is National ISDN-1 (NI-1), a standard service that is available from most telephone companies.

Specifying ISDN telephone numbers

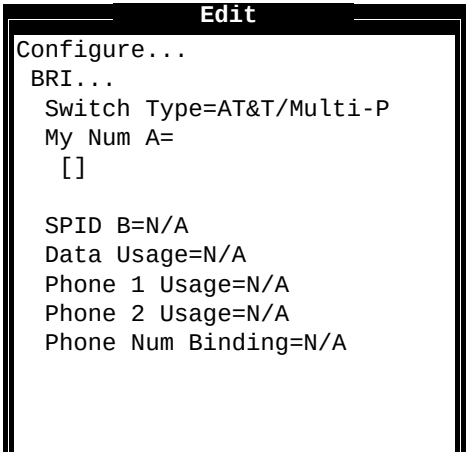
There can be one or two telephone numbers for your ISDN line.

To enter the first number, follow these steps:

1 Move the marker to My Num A.

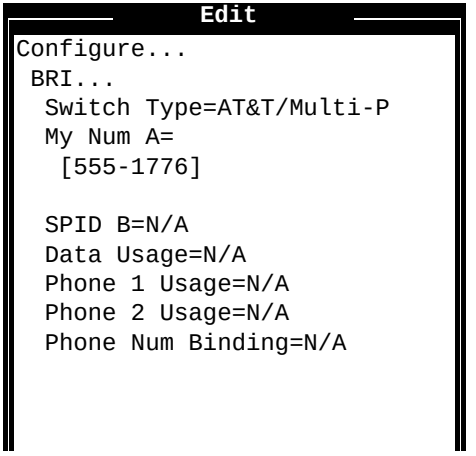
2 Press the Enter key.

This opens a text box.



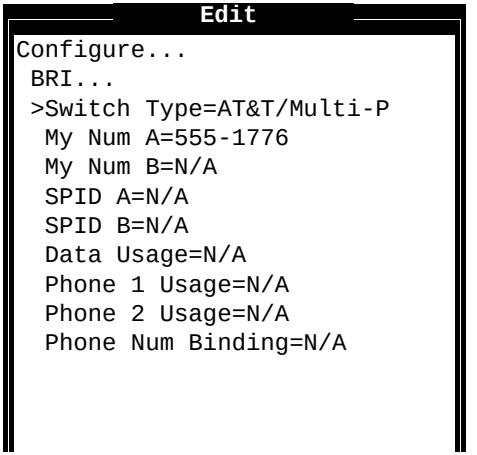
3 Type the telephone number in the text box.

Note: If you make a mistake when typing text into a text box, press the Backspace (or Delete or Del) key on the keyboard to delete the incorrect characters. You can also delete characters by pressing Control-H (by pressing the H key on the keyboard while holding down the Control key).



4 Press the Enter key.

When you're done, the telephone number appears in the menu.



If there is second telephone number for your ISDN line, enter it by following these steps:

Note: Not all settings apply to all configurations. For example, if AT&T/P-T-P is the value of the Switch Type setting, My Num B—the setting for a second telephone number—does not apply, because there can be only one telephone number for AT&T Custom Point-to-Point service. For these settings, N/A (for "not applicable") appears in place of a value, and you cannot enter a value.

1 Move the marker to My Num B.

2 Press the Enter key.

3 Type the telephone number.

4 Press the Enter key.

Specifying SPIDs

A service profile identifier (SPID) identifies an ISDN device, such as the Pipeline 25-Fx, that is connected to an ISDN line. Depending on the type of ISDN service you have, you may need to specify one, two, or no SPIDs for your Pipeline 25-Fx.

Note: If AT&T/P-T-P is the value of the Switch Type setting, the settings for SPIDs—SPID A and SPID B—are both N/A.

To enter the first SPID, follow these steps:

1. Move the marker to SPID A.
2. Press the Enter key.
3. Type the SPID.
4. Press the Enter key.

To enter the second SPID, follow these steps:

1. Move the marker to SPID B.
2. Press the Enter key.
3. Type the SPID.
4. Press the Enter key.

Specifying data and phone usage

The Data Usage setting specifies whether one or both of the B channels for your ISDN line (identified by the SPIDs you just entered) are used to carry data.

Note: If AT&T/P-T-P is the value of the Switch Type setting, Data Usage is N/A.

To enter a value for the Data Usage setting, follow these steps:

1. Move the marker to Data Usage.
2. If the value shown is not correct, press the Enter key until the correct value appears.

   The possible values are:

   - A, which specifies that only the B channel specified by the SPID A setting is to be used for data.
   - B, which specifies that only the B channel specified by the SPID B setting is to be used for data.
   - A+B, which specifies that both B channels are to be used for data.

The Phone 1 Usage and Phone 2 Usage settings specify the telephone numbers for analog telephones or other devices connected to the Phone 1 and Phone 2 jacks of the Pipeline 25-Fx.

Note: If AT&T/P-T-P is the value of the Switch Type setting, Phone 1 Usage and Phone 2 Usage are N/A.

To enter a value for the Phone 1 Usage setting, follow these steps:

1. Move the marker to Phone 1 Usage.
2. If the value shown is not correct, press the Enter key until the correct value appears.

   The possible values are:

   – A, for using the telephone number specified by the My Num A setting for the device connected to the Phone 1 jack.

   – B, for using the telephone number specified by the My Num B setting for the device connected to the Phone 1 jack.

   Note: The values of Phone 1 Usage and Phone 2 Usage must not both be A or both be B. You cannot use the same telephone number for both Phone jacks.

   – None, which disables the Phone 1 jack.

   Note: You cannot make or receive voice calls through a disabled Phone jack. Moreover, if a telephone number for your ISDN service is not assigned to a Phone jack (or to an ISDN device other than the Pipeline 25-Fx that is connected to same ISDN line and that handles voice calls, such as an ISDN telephone), it is not possible to make a voice call to that number.

To enter a value for the Phone 2 Usage setting, follow these steps:

1. Move the marker to Phone 2 Usage.
2. If the value shown is not correct, press the Enter key until the correct value appears.

   Note: This value must not be the same as the value for the Phone 1 Usage setting

   The possible values are:

– A, for using the telephone number specified by the My Num A setting for the device connected to the Phone 2 jack.

– B, for using the telephone number specified by the My Num B setting for the device connected to the Phone 2 jack.

Note: The values of Phone 1 Usage and Phone 2 Usage must not both be A or both be B. You cannot use the same telephone number for both Phone jacks.

– None, which disables the Phone 2 jack.

Note: You cannot make or receive voice calls through a disabled Phone jack. Moreover, if a telephone number for your ISDN service is not assigned to a Phone jack (or to an ISDN device other than the Pipeline 25-Fx that is connected to same ISDN line and that handles voice calls, such as an ISDN telephone), it is not possible to make a voice call to that number.

Specifying phone number binding

When the value of the Switch Type setting is NTI or NI-1, the Phone Num Binding setting specifies whether to always use the same telephone number for a particular telephone or other analog device, even if when the number is already in use and the number for the other B channel is available. For complete information about this setting, see the *Ascend Pipeline 25-Fx Administrator's Guide*.

Note: If the value of the Switch Type setting is not NTI or NI-1, Phone 2 Usage is N/A.

To enter a value for the Phone Num Binding setting, follow these steps:

1 Move the marker to Phone Num Binding.

2 If the value shown is not correct, press the Enter key until the correct value appears.

The possible values are:

– Yes, which turns on phone number binding.

– No, which turns off phone number binding.

Specifying PPP settings

Another submenu in the Configure profile is PPP..., which contains settings related to the remote site to which you're connecting.

To get to the PPP... submenu from the BRI... submenu, follow these steps:

1. Press the Escape (Esc) key.
   This closes the BRI... menu and returns you to the Configure... menu.
2. Move the marker to PPP... .
3. Press the Enter key.

Specifying the name of the Pipeline 25-Fx

The My Name setting specifies the name of the Pipeline 25-Fx.

To enter a value for My Name, follow these steps:

1. Move the marker to My Name if it isn't already there.
2. Press the Enter key.
3. Type the name.
   The name can contain up to 72 characters. Upper- and lowercase letters in the name are distinguished.

   Note: My Name is one of the settings that a remote site can use to identify the Pipeline 25-Fx. The remote site can deny entry if the value of My Name or the values for other settings, such as passwords, are not correct. For this reason, the value must be exactly the same as the one you are given by the administrator of the remote site.
4. Press the Enter key.

Specifying the name of the remote ISDN device

The Rem Name setting specifies the name of the ISDN device at the remote site to which you're connecting.

To enter a value for Rem Name, follow these steps:

1. Move the marker to Rem Name.

2 Press the Enter key.

3 Type the name.

Note: The name must match exactly the name provided by the administrator of the remote site, including upper- and lower-case letters.

4 Press the Enter key.

Specifying the phone number to dial

The Dial # setting is the telephone number of the ISDN device to which you're connecting.

To enter a value for Dial #, follow these steps:

1 Move the marker to Dial #.

2 Press the Enter key.

3 Type the number.

Note: The number can include hyphens, but it **must not** include commas. If you need to press one or more numbers on your telephone (such as 9) to get an outside line, include the number or numbers before the telephone number.

4 Press the Enter key.

Specifying security and passwords

The Send Auth setting specifies the kind of password authorization, if any, that is used when connecting to the remote site.

To enter a value for Send Auth, follow these steps:

1 Move the marker to Send Auth.

2 If the value shown is not correct, press the Enter key until the correct value appears.

The most common values are:

- PAP, for Password Authorization Protocol authorization.
- CHAP, for Challenge Handshake Authentication Protocol authorization.
- None, when no password authorization is required.

The Send PW setting is the password to use when connecting to the remote site.

Note: If the value of the Send Auth setting is None, Send PW is N/A.

To enter a value for Send PW, follow these steps:

1. Move the marker to Send PW.
2. Press the Enter key.
3. Type the password.
   The password must be exactly the same as the one you are given by the administrator of the remote site. Upper- and lowercase letters in the password are distinguished.
4. Press the Enter key.

There can also be password authorization for incoming calls to the Pipeline 25-Fx. The Recv Auth setting specifies the kind of password authorization, if any, that is used when an ISDN device at a remote site dials the Pipeline 25-Fx.

To enter a value for Recv Auth, follow these steps:

1. Move the marker to Recv Auth.
2. If the value shown is not correct, press the Enter key until the correct value appears.
   The most common values are:
   - PAP, for Password Authorization Protocol authorization.
   - CHAP, for Challenge Handshake Authentication Protocol authorization.
   - None, when no password authorization is required.

The Recv PW setting is the password to use when connecting to the remote site.

Note: If the value of the Recv Auth setting is None, Recv PW is N/A.

To enter a value for Recv PW, follow these steps:

1. Move the marker to Recv PW.
2. Press the Enter key.
3. Type the password.
   The password can contain up to 20 characters. Upper- and lowercase letters in the password are distinguished.

4 Press the Enter key.

Specifying a call filter

A call filter restricts the kinds of information that is sent to the remote site. By default, the Pipeline makes or continues a call to the remote site whenever there is information to be sent to the site. You can use a call filter to filter out unnecessary information, such as periodic status messages sent by network software or application programs. By filtering out unnecessary information, you avoid extra phone charges for sending the information.

The Call Filter setting specifies the call filter, if any, to use when connecting to the remote site. To enter a value for Call Filter, follow these steps:

1 Move the marker to Call Filter.

2 If the value shown is not correct, press the Enter key until the correct value appears.

The possible values are:

- IP Call, a filter that restricts unnecessary traffic to a network using the Internet Protocol.
- NetWare Call, a filter that restricts unnecessary traffic to a Novell NetWare network.
- AppleTalk Call, a filter that restricts unnecessary traffic to an AppleTalk network.
- None, if no filter is required.

Specifying the type of Ethernet

The Ethernet setting specifies which of the two Ethernet connectors you've used to connect the Pipeline 25-Fx. To get to and change this setting from the PPP... submenu, follow these steps:

1 Press the Escape (Esc) key.

This closes the PPP... menu and returns you to the Configure... menu.

2 Move the marker to Ethernet... .

3 If the value shown is not correct, press the Enter key until the correct value appears.

The possible values are:

– UTP, which specifies the that you've used the UTP connector to connect a single computer to the Pipeline 25-Fx or to connect the Pipeline 25-Fx to a 10Base-T Ethernet network.

– AUI, which specifies the that you've used the AUI connector to connect the Pipeline 25-Fx to a Thicknet (10Base-5) Ethernet network or to a Thinnet (10Base-2) Ethernet network using a Thicknet-to-Thinnet transceiver.

Specifying bridging and routing

Bridging and routing are two different ways to connect computer networks. For information on the differences between bridging and routing, see the *Ascend Pipeline 25-Fx Administrator's Guide*.

The Bridge setting specifies the kind of bridging, if any, to do. To enter a value for the Bridge setting, follow these steps:

1 Move the marker to Bridge.

2 If the value shown is not correct, press the Enter key until the correct value appears.

The possible values are:

– Transparent, which bridges all network traffic.

– IPX Client, which bridges all network traffic and in addition provides special filtering for Novell NetWare networks. Select this only if there are NetWare clients **and no NetWare servers** at your site.

– No, which turns off bridging.

Note: If the value of Bridge is No, the Route setting must have a value other than No. If both settings are No, you will not be able to save the profile.

The Route setting specifies the kind of routing, if any, to do.

Note: You can change the value of the Route setting only if your Pipeline 25-Fx has the IP or IPX Routing option installed. For information about these options, see "Pipeline 25-Fx options" on page 3-2.

To enter a value for the Route setting, follow these steps:

1. Move the marker to Route.
2. If the value shown is not correct, press the Enter key until the correct value appears.

   The possible values are:

   – IP, which routes Internet Protocol traffic. This value appears only if your Pipeline 25-Fx has the IP Routing option.

   – IPX, which routes Novell NetWare traffic. This value appears only if your Pipeline 25-Fx has the IPX Routing option.

   – No, which turns off routing.

   Note: If the value of Route is No, the Bridge setting must have a value other than No. If both settings are No, you will not be able to save the profile.

Specifying IP settings

The last submenu you open in the Configure profile is the IP... submenu, which contains network addresses for the Pipeline 25-Fx and for the ISDN device to which it connects.

To get to the IP... submenu from the Configure... menu, follow these steps:

1. Move the marker to IP... .
2. Press the Enter key.

Specifying the IP address of the Pipeline 25-Fx

The My Addr setting specifies the Internet Protocol address of the Pipeline 25-Fx. This address identifies the Pipeline 25-Fx on the network.

To enter a value for My Addr, follow these steps:

1. Move the marker to My Addr.
2. Press the Enter key.
3. Type the address.

The address consists of four numbers (decimal numbers from 1 to 255) separated by periods, as in this example:

```
My Addr=111.11.1.1
```

The address can include an optional subnet mask (indicated by a slash followed by a number), as in this example:

```
My Addr=111.11.1.1/28
```

If the address includes a subnet mask, type the address exactly as shown.

Note: *(For network experts)* A subnet mask indicates how many of the last bits of an IP address are used to determine the IP addresses that are on the same subnet. For the Pipeline 25-Fx, the value 28 means that first 28 bits of the address specify the subnet, and the remaining four bits specify addresses on that subnet. If you don't enter a subnet mask, the value 24 is used.

4 Press the Enter key.

Specifying the IP gateway

The IP Gateway setting specifies IP address of the default gateway, the device through which communications to computers not on your local-area network are automatically routed. This is normally the ISDN device to which your Pipeline 25-Fx connects.

To enter a value for IP Gateway, follow these steps:

1 Move the marker to IP Gateway.

2 Press the Enter key.

3 Type the address of the gateway.

The address consists of four numbers (decimal numbers from 1 to 255) separated by periods, as in this example:

```
IP Gateway=222.22.2.2
```

4 Press the Enter key.

Specifying the IP address of the remote ISDN device

The Rem Addr setting specifies the Internet Protocol address of ISDN device to which the Pipeline 25-Fx connects.

To enter a value for Rem Addr, follow these steps:

1. Move the marker to Rem Addr.
2. Press the Enter key.
3. Type the address.

   The address consists of four numbers (decimal numbers from 1 to 255) separated by periods, as in this example:

   ```
   Rem Addr=222.22.2.2
   ```

   The address can include an optional subnet mask (indicated by a slash followed by a number), as in this example:

   ```
   Rem Addr=222.22.2.2/28
   ```

   If the address includes a subnet mask, type the address exactly as shown.

   Note: *(For network experts)* A subnet mask indicates how many of the last bits of an IP address are used to determine the IP addresses that are on the same subnet. For the Pipeline 25-Fx, the value 28 means that first 28 bits of the address specify the subnet, and the remaining four bits specify addresses on that subnet. If you don't enter a subnet mask, the value 24 is used.
4. Press the Enter key.

Specifying IPX framing

The IPX Frame setting specifies the type of Ethernet frame to use on a Novell NetWare network.

Note: If the Pipeline 25-Fx is not on a Novell NetWare network, you can ignore this setting.

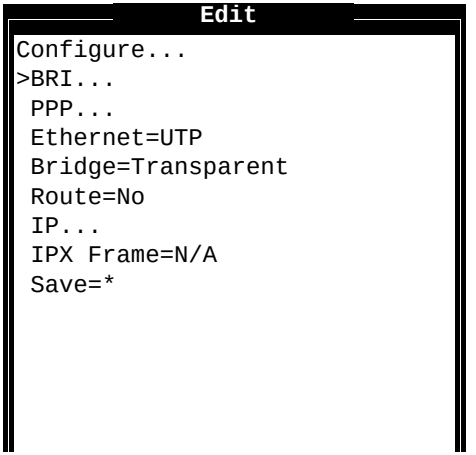
To enter a value for the IPX Frame setting, follow these steps:

1. Move the marker to IPX Frame.
2. If the value shown is not correct, press the Enter key until the correct value appears.

   For information about the possible values, see the *Ascend Pipeline 25-Fx Administrator's Guide*.

Saving the settings

Changes you make to settings in the Configure profile do not take effect until they're saved. If there are changes that have not been saved, an asterisk appears in the Save item in the Configure... menu.



To save changes to the Configure profile, follow these steps:

1 Move the marker to Save.

2 Press the Enter key.

If there any more values you need to provide, an error message appears. If not, you get the message that the profile has been saved.

Testing the ISDN line

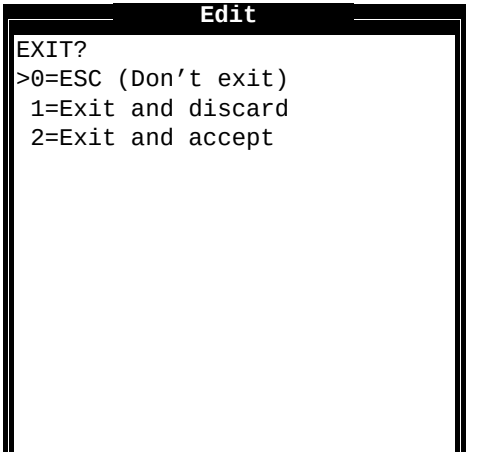
Once you've configured the Pipeline 25-Fx, you can test the ISDN line to make sure it is working properly. The following sections explain how.

Testing data transfer

To test whether the ISDN line handles data properly, follow these steps:

1 Press the Escape (Esc) key until the Main Edit Menu appears.

Note: If you've changed any settings in the Configure profile and haven't saved them, you have to say whether to save the changes before closing the profile:



To save the changes, move the marker to `2=Exit and accept` and then press the Enter key.

2 In the Main Edit Menu, move the marker to 00-000 System and then press the Enter key.

This opens the System menu.

3 In the System menu, move the marker to 00-200 Sys Diag and then press the Enter key.

This opens the Sys Diag menu.

4 In the Sys Diag menu, move the marker to 00-204 Cmd Mode and then press the Enter key.

This opens the Command Mode interface, where you type in commands and view the results:

```
** Ascend Pipeline Terminal Server **

ascend%
```

5 Type `test` followed by the second telephone number for your ISDN line (the number you entered for the My Num B setting), or the first telephone number if the line has only one number (the number you entered for the My Num A setting).

> **Note:** The telephone number can include hyphens, but it **must not** include commas. If you need to press one or more numbers on your telephone (such as 9) to get an outside line, include the number or numbers before the telephone number.

Here's an example:

```
ascend% test 555-2222
```

6 Press the Enter key on the keyboard to start the test.

The Pipeline 25-Fx displays the results of the test:

```
calling...answering...testing...end
100 packets sent, 99 packets received
```

If all but one or two of the packets sent were received, the ISDN line is working properly.

To close the Command Mode interface and return to the configuration menus, follow this step:

1 Type `quit` and then press the Enter key.

```
ascend% quit
```

Checking for a dial tone

Another test to do before using your Pipeline 25-Fx is to make sure you get a dial tone for analog telephones or other telephone equipment connected to the Phone jacks. Follow these steps to check the Phone jacks:

1 Plug a conventional (analog) telephone into a Phone jack you want to use (either Phone 1 or Phone 2) if you haven't already done so.

2 Pick up the handset and listen for a dial tone.

It sometimes takes longer to get a dial tone on an ISDN line than on a conventional analog line. Wait a few seconds if you don't hear a dial tone immediately.

3 If you want to use the other Phone jack for another analog telephone device, such as a fax machine, repeat steps 1-2 with the other jack.

Transferring data

If the tests in the previous sections were successful, try using one or more applications that connect to your network service provider, such as an electronic mail client or a World Wide Web browser. With its default settings, the Pipeline 25-Fx should dial the network service provider automatically and disconnect automatically when the line isn't used for a specified period (two minutes by default).

What to do next

You've finished configuring the Pipeline. The next chapter, "Using the Pipeline," explains how to monitor the Pipeline, improve its performance, and use it for voice calls.

Using the Pipeline

4

This chapter contains:

About this chapter

This chapter explains how to use your Pipeline 25-Fx. It tells how to:

- Monitor the Pipeline 25-Fx and confirm that it is working properly.
- Improve the performance of the Pipeline 25-Fx.
- Control telephone costs when using the Pipeline 25-Fx.
- Use the voice features of the Pipeline 25-Fx.
- Connect to more than one site.
- Allow the Pipeline 25-Fx to be managed from another site.
- Connect and disconnect manually.
- Get help from Ascend if problems occur.

Monitoring the Pipeline

When you use the Pipeline 25-Fx, it is essential that you monitor it to assure that it is working properly. You do this by

- checking the contents of the status windows
- observing the status lights on the front of the Pipeline 25-Fx

The following sections explain how.

Note: There is a great deal of information in the Pipeline 25-Fx status windows, and only the information you need most often is described here. For complete information about the status windows, see the *Pipeline 25-Fx Administrator's Guide*.

Using the status windows

The Pipeline 25-Fx status windows appear alongside the Edit window you use to configure the Pipeline. The sections that follow explain how to use the status windows.

Viewing the status windows

To view the status windows, you must first open the VT100 configuration windows as described in “Viewing the configuration windows” on page 3-6. The Edit window, where you configure the Pipeline, is on the left. The other windows are all status windows.

The information in status windows can only be read; you cannot change it directly.

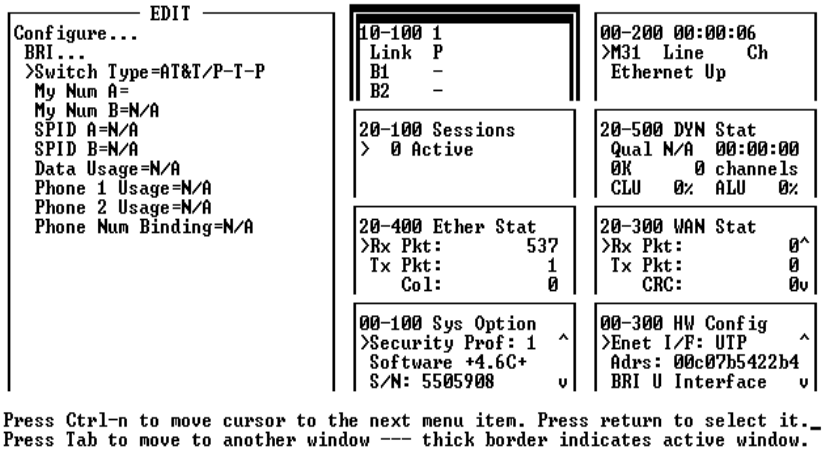
Switching windows

Only one of the windows on the VT100 terminal screen responds to what you type at the keyboard. This window, known as the active window, is surrounded by a thicker border. When you first turn on the Pipeline, the Edit window is active.

To make a status window active, follow this step:

1 Press the Tab key.

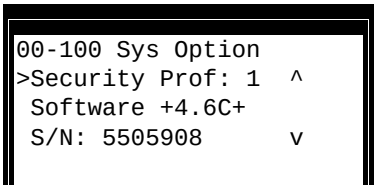
The first status window—the one labeled 10-100—becomes active.



Each time you press the Tab key, the next window becomes active. If the bottom right window is active, pressing the Tab key again makes the Edit window active.

Scrolling through windows

A few of the status windows are too small to display all of the information they contain. When this occurs, “arrows” (^ and v symbols) appear at the right of the window to indicate that you can scroll up or down to display more.



To scroll through the contents, make the window active and then press Control-N (or the down-arrow key) to move down or Control-P (or the up-arrow key) to move up.

Checking the ISDN connection

Blinking question marks in the status windows and a blinking WAN status light on the front of the Pipeline 25-Fx indicate that the Pipeline is not connected to the ISDN line or that there is a problem with the line. For a list of possible causes and solutions, see the Troubleshooting appendix in the *Pipeline 25-Fx Administrator’s Guide*.

Checking if the ISDN line is in use

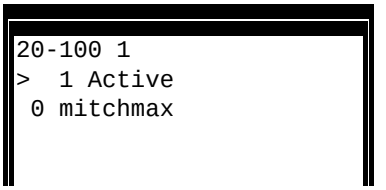
When your ISDN line is being used for a data or voice call, the WAN status light on the front of the Pipeline 25-Fx is lit. If you’re being charged by your telephone company for your calls, it’s a good idea to put the Pipeline somewhere that lets you see the WAN light while you work. The WAN light is especially useful when you first start using the Pipeline and want to discover the causes of unwanted calls, as explained in “Controlling telephone costs” on page 4-10.

Viewing active data calls

The status menu labeled 20-100 shows whether there are any active data calls. The number to the right of `Active` indicates the number. The following lines list

the call; the letter O indicates that it is online, that is, that the connection has been established and data can be transferred. To the right of that is the name of the remote ISDN device to which the Pipeline is connected.

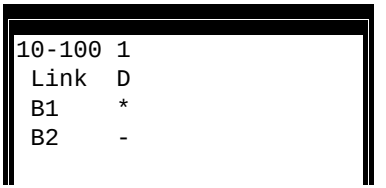
In this example, there is one active session to the device mitchmax.



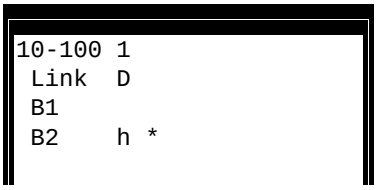
Monitoring channel usage

The status window labeled 10-100 shows whether either or both of the B channels for your ISDN line is being used for a voice or data call. An asterisk (*) to the right of B1 or B2 indicates that the channel is in use. If the letter d appears, it indicates that a call is being dialed. The letter h indicates that a voice call is on hold.

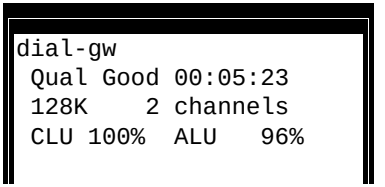
In this example, B1—the first B channel—is in use.



In this example, B2—the second B channel—has one voice call on hold as well as an active voice call.



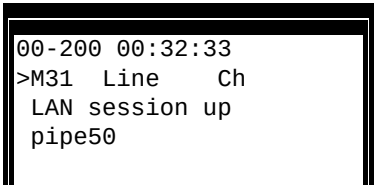
The DYN Stat status window also provides information about B channel usage. Its contents reflect the current state of data calls and change often during calls. When a data call is in progress, the name DYN Stat that appears at the top of the window is replaced by the name of the ISDN device to which you're connected. The second line shows the quality of the connection and how long the connection has been active. The third line shows the current speed of the connection in Kbps and how many B channels are currently being used.



Viewing system messages

System messages are records of events that occur during Pipeline 25-Fx operation. The Pipeline 25-Fx stores the last 31 system messages. These messages, which are described in the *Pipeline 25-Fx Administrator's Guide*, are often needed by technical support personnel when diagnosing problems.

To view the messages, make the window labeled 00-200 active. The most recent message is displayed.



Above the message is a timestamp (using the clock in the Pipeline 25-Fx, which cannot be set to outside time) that indicates when the message was logged. The message marked M31 is always the most recent message; previous messages, if any, are labeled M30, M29, and so on. The text for the message appears on the following line. To see earlier messages, press Control-N or the down-arrow key.

Improving performance

There are several ways you can increase the speed and efficiency of data transfers with the Pipeline 25-Fx. The following sections explain these.

Increasing data transmission speed

By default, the speed of each B channel of the Pipeline 25-Fx is 56 Kbps, which is the slower of the two possible speeds for a B channel. Most telephone companies offer 64 Kbps service. If your telephone company provides 64 Kbps service, and if the other telephone companies, if any, handling your data calls also provide 64 Kbps service, you can increase your data transmission speed to 64 Kbps per channel by following these steps:

1 Press the Escape (Esc) key until the Main Edit Menu appears.

2 Move the marker to Ethernet and press the Enter key.

3 Move the marker to Connections and press the Enter key.

4 Move the marker to the name of a Connection Profile and press the Enter key.

The profile you specified in the Configure menu is at the top of the list.

5 Move the marker to Telco options... and press the Enter key.

6 Move the marker to Data Svc.

7 Press the Enter key until 64K appears.

8 Press the Escape (Esc) key until EXIT? appears at the top of the menu.

9 Move the marker to 2=Exit and Accept.

10 Press the Enter key.

Using both B channels for data calls

Using both B channels for a data call doubles the speed of the connection. Using both channels is possible if

- Both the Pipeline 25-Fx and the ISDN device to which you're connecting are configured to use the Multilink Protocol Plus (MP+) protocol.

This protocol, which specifies how data is be transmitted between the two ISDN devices, is the default for the Pipeline 25-Fx.

Note: MP+ is supported only by ISDN devices manufactured by Ascend. If the device to which you're connecting is also made by Ascend, it is likely to use MP+. If you're not sure if this protocol is being used by the ISDN device to which you're connecting, contact the administrator of the remote network.

- Both the Pipeline 25-Fx and the ISDN device are configured to allow two-channel data calls.

  This is true by default for the Pipeline 25-Fx.

- The amount of data transmitted and the length of time it is transmitted is sufficient to trigger the use of a second B channel.

  How this works is described in the next section.

The important thing to remember is that to use both B channels for a single data call, *both* ISDN devices must be properly configured. The sections that follow describe the settings that are needed for the Pipeline 25-Fx, all of which are set correctly by default. If you cannot use both B channels and the settings for your Pipeline 25-Fx are correct, you'll need to contact the system administrator for the remote network and find out if the ISDN device to which you're connecting is properly configured.

About dynamic bandwidth allocation

Dynamic bandwidth allocation (DBA) is a technique used by the MP+ protocol for adding and subtracting B channels for a data call in response to the amount of data being transmitted. If more data is transmitted, a channel can be added and the speed of the transmission increases. If less data is transmitted, a channel can be removed and used for another purpose.

Here's an example of how DBA works:

- You connect to your Internet service provider.

  By default, the connection uses a single B channel.

- You start a file transfer.

  There is a lot of data to be transferred, and the entire capacity of the single B channel is used. When the usage of the B channel remains high for a certain length of time, a second B channel is added to the call and the speed of the transfer doubles.

- The file transfer is complete.

  You're no longer using the entire capacity of the two B channels, and after a period of time one of the B channels is removed from the call.

There are several settings that control how much a B channel must be used and how long the wait is before a B channel is added. The default values for these work well for most connections.

Using data compression

A Pipeline 25-Fx that includes the optional data compression hardware module (part number P25-HP-COMP) can transmit data up to four times as fast as a standard Pipeline 25-Fx. The data compression hardware module can be preinstalled at the factory or it can be installed later by Ascend or one of its value-added resellers.

For data compression to work, both of the ISDN devices must be made by Ascend and support either the STAC LZS compression technique or a variation of the STAC technique used by the Microsoft Windows 95 operating system. (Compression support is standard on many Ascend products and optional on the Pipeline 25-Fx.) In addition, compression must be enabled on both devices.

The extent to which data can be compressed depends on the data. Only rarely can data be compressed to 1/4 its original size, which quadruples transmission speeds, but it is common to compress data to 1/2 its original size, which doubles transmission speeds.

If your Pipeline 25-Fx has the data compression hardware module, Stac compression is done by default. To specify compression, follow these steps:

1 Press the Escape (Esc) key until the Main Edit Menu appears.

2 Move the marker to Ethernet and press the Enter key.

3 Move the marker to Connections and press the Enter key.

4 Move the marker to the name of a Connection Profile and press the Enter key.

The profile you specified in the Configure menu is at the top of the list.

5 Move the marker to Encaps options... and press the Enter key.

6 Move the marker to Link Comp.

7 Press Enter repeatedly until the correct value appears.

Choose Stac to specify the STACKER LZS data compression technique, MS-Stac to specify the Microsoft LZS Coherency Compression technique used by the Windows 95 operating system, or None to turn off data compression.

8 Press the Escape (Esc) key until EXIT? appears at the top of the menu.

9 Move the marker to 2=Exit and Accept.

10 Press the Enter key.

Controlling telephone costs

For many Pipeline users, controlling the cost of ISDN telephone service can be a challenge. The following sections offer advice for dealing with some of the more common problems.

Using a single B channel for data calls

If your telephone company charges you separately for each B channel you use, one way to limit charges is to use only one B channel. The drawback, of course, is that the speed of your connection is limited to a speed of a single channel (either 64 Kbps or 56 Kbps). To do this, follow these steps:

By default, data calls begin with only one B channel. If you always want the highest possible data transmission speed, you can specify to always use both B channels for a data call by following these steps:

1 Press the Escape (Esc) key until the Main Edit Menu appears.

2 Move the marker to Ethernet and press the Enter key.

3 Move the marker to Connections and press the Enter key.

4 Move the marker to the name of a Connection Profile and press the Enter key.

The profile you specified in the Configure menu is at the top of the list.

5 Move the marker to Encaps options... and press the Enter key.

6 Move the marker to Min Ch Count and press the Enter key.

7 Type 1 and press the Enter key.

8 Move the marker to Max Ch Count and press the Enter key.

9 Type 1 and press the Enter key.

10 Press the Escape (Esc) key until EXIT? appears at the top of the menu.

11 Move the marker to 2=Exit and Accept.

12 Press the Enter key.

Preventing unwanted calls

By default, data calls are made automatically whenever a program or service requests something from a remote network. For example, if you are using a World Wide Web browser to view a Web page at another location and you do not currently have a connection to the remote network, the Pipeline dials the remote network for you automatically. Also by default, the Pipeline hangs up if the ISDN line has not been used for two minutes. This approach is normally very convenient, because it requires no intervention. If you need something on a remote network, the connection is made automatically.

The drawback to this approach is that there are programs and services that either cause unwanted data calls to be made or that prevent calls from being hung up. The tasks they perform are either not worth the cost of a call or are not worth tying up the line for. For example, certain network protocols use “I’m alive” messages to say that a printer, server, or other service is still available. When such messages are sent once a minute or more, the ISDN line would normally be used continuously, resulting in enormous phone bills.

Use the information in the following sections to help you identify when unwanted calls are being made and to find approaches for dealing with them. If the suggestions don’t work for your configuration, contact your network service provider, network administrator, or Ascend for advice.

Watching for calls

The simplest way to see when calls are being made automatically is to watch the WAN light on the front of the Pipeline. When the WAN light is lit continuously, the line is use. If you don’t know why the WAN light is lit and it either remains lit for long periods or is lit frequently, you need to investigate.

The status windows also display when calls are made, as described in “Viewing active data calls” on page 4-4 and “Monitoring channel usage” on page 4-5.

Closing programs

A common cause of unwanted calls is an application that makes frequent or continuous use of network services. World Wide Web browsers, File Transfer Protocol (FTP) clients, and network monitors are just some of the programs that can cause calls to be made or that keep calls up. Electronic mail clients that frequently check for new mail are other possible culprits. Try to identify what programs cause calls and either quit those that you do not have to have open all the time or change their configuration settings, such as frequency of e-mail checks. If necessary, quit all programs and see if unwanted calls are still being made. If not, open one program at a time and observe what happens before opening another.

Turning off network services

Certain services provided by networks can also keep an ISDN line up. For example, continuous access to remote printers or servers may require frequent “I’m alive” messages that cause calls to be made. These problems can be more difficult to solve and in some cases can only be solved by eliminating the service. If you suspect a problem with a network service, contact your network administrator.

Using filters

In many cases, you can use filters to prevent unwanted calls. Filters can identify the source of data, such as particular network protocol or service, and can selectively filter data that does not need to be transmitted over the ISDN connection.

Filters are almost always written by network administrators, often in response to the specific needs of your configuration. For information about possible filters, contact your network administrator.

Using voice features

An ISDN telephone line can carry data, voice, or both at once. You can use the Phone 1 and Phone 2 jacks on the Pipeline 25-Fx to connect standard telephones, fax machines, or other analog telephone equipment to the same ISDN line you use for data.

Note: In the following sections, the term analog device refers to any conventional telephone device, such as a telephone or fax machine, that you connect to one of the Phone jacks of the Pipeline 25-Fx.

Making outgoing voice calls

The Pipeline 25-Fx makes it easy to make outgoing voice calls. If the ISDN line is not being used, you simply use a telephone, fax machine, or other analog device connected to the Pipeline and dial a number. In addition, you can make a voice call in most cases even if the ISDN line is being used. Here's how it works:

- If just one of the ISDN line's two B channels is currently in use for a data call, you can make a voice call by picking up the receiver of a telephone connected to either Phone jack. The other B channel is then used for the call.

  Note: If the switch is a Northern Telecom DMS-100 and the value of the Phone Num Binding parameter (described in the *Pipeline 25-Fx Administrator's Guide*) is Yes, you cannot make the call if the currently used B channel and the Phone jack to which the phone is connected both use the same telephone number.

- If a single B channel is currently in use for a voice call, you can make a voice call on the other telephone number by picking up the receiver of a telephone connected to the other Phone jack. The other B channel is then used for the call.

  Note: If the type of ISDN service is AT&T Custom Point-to-Point, there can be only one voice call at a time. Because AT&T Custom Point-to-Point service includes only one telephone number, all outgoing voice calls use that number.

- If both B channels are used for a data call to the same location, you can make a voice call by picking up the receiver of a telephone connected to either Phone jack. The Pipeline 25-Fx automatically borrows one of the B channels

for the voice call. This feature works for outgoing calls on all types of ISDN service and all switches.

Note: If both B channels are used in use for any other combination of calls—for two voice calls, for one voice call and one data call, or for two data calls to different locations—you cannot make another voice *or* data call.

During a voice call, the WAN status light on the front of the Pipeline is lit.

Receiving incoming voice calls

The voice-handling features of the Pipeline 25-Fx also make it easy to receive incoming voice calls. If the ISDN line is not being used, you can receive a call on a telephone, fax machine, or other analog device connected to the Pipeline. In addition, you can receive a voice call in most cases even if the ISDN line is being used. Here's how it works:

- If a single B channel is currently used for a data call, you can receive a voice call on either telephone number. The other B channel is used for the voice call. The call is routed to the Phone jack assigned to the telephone number.

  Note: If the switch is a Northern Telecom DMS-100, the caller receives a busy signal if the incoming call is for the same telephone number used by the data call. Note that when a single-channel data call is made and there is no other call in progress, the telephone number specified by the My Num B parameter is always used, leaving the telephone number specified by the My Num A parameter available for voice calls.
- If a single B channel is currently used for a voice call, you can receive a voice call for the telephone number not used by the current voice call. The call is routed to the Phone jack assigned to the telephone number.
- If a single B channel is currently used for a voice call, and there is an incoming call to the same telephone number as the current call, the caller receives a busy signal.
- If both B channels are used for a data call to the same location, you can receive a voice call to either telephone number. The Pipeline 25-Fx automatically borrows one B channel for the voice call, and the call is routed to the Phone jack assigned to the telephone number.

Note: AT&T Custom Multipoint service and AT&T Custom Point-to-Point service do not support channel borrowing for incoming calls. With these services, callers receive a busy signal whenever both B channels are in use.

- If both B channels are used in use for any other combination of calls—for two voice calls, for one voice call and one data call, or for two data calls to different locations—the Pipeline 25-Fx cannot handle another voice call, and callers to either telephone number receive a busy signal.

Incoming voice calls are handled differently with AT&T Custom Point-to-Point service. Because this service includes only one telephone number, it can handle only one voice call at a time.

- If a single B channel is currently used for a data call, you can receive a voice call. The call is routed to the Phone 1 jack.
- If a B channel is currently used for a voice call, a caller to the telephone number receives a busy signal.
- If both B channels are in use, a caller to the telephone number receives a busy signal.

During a voice call, the WAN status light on the front of the Pipeline is lit.

Supplementary voice features

The Pipeline 25-Fx supports a number of additional features for voice calls:

- Call Hold, which lets you put a call on hold
- Call Waiting, which signals you during a call when another call is made to the same telephone number
- Call Conferencing, which lets you make calls connecting three or more telephone numbers
- Call Drop, which lets you drop callers from a conference call
- Call Transfer, which lets you transfer a call to another telephone number

Note: These features are available for all types of ISDN service in North America provided from AT&T 5ESS and Northern Telecom DMS-100 switches except AT&T Custom Point-to-Point. For information on how your ISDN telephone line must be configured for these features, see the document “Ordering ISDN Service for the Pipeline 25 and 75” included with your Pipeline.

Putting a call on hold

To put the current call on hold, follow these steps:

1. Quickly press and release your telephone's switchhook (the button that is depressed when you hang up the telephone).

   You can now make another call or get another incoming call.

2. To return to the call you put on hold, quickly press and release your telephone's switchhook again.

   If you have a second call, this puts the second call on hold while you take the first call.

Using Call Waiting

The Pipeline 25-Fx supports Call Waiting, a feature that generates a distinctive tone when you are using a telephone number for a voice call and another voice call is made to the same telephone number. The Call Waiting tone, which is generated by the Pipeline 25-Fx, is either an approximation of the Call Waiting tone provided by most telephone companies or, on a Pipeline 25-Fx with a U interface, a brief "burr" tone.

To use Call Waiting, follow these steps:

1. When you hear the call waiting tone, decide whether you want to answer the new call.
2. If you do want to answer the new call, put the current call on hold by quickly pressing and releasing your telephone's switchhook (the button that is depressed when you hang up the telephone).
3. To return to the first call, quickly press and release your telephone's switchhook again. This puts the second call on hold.

Making a conference call

To establish a conference call, follow these steps:

1. Call a person to include in the conference, or have that person call you.
2. Put the call on hold by quickly pressing and releasing your telephone's switchhook (the button that is depressed when you hang up the telephone).

3 Call another person to include in the conference, or have that person call you.

4 Add anyone on hold to the call by quickly pressing and releasing your telephone's switchhook twice.

5 To add more callers to the conference call, repeat steps 2-4.

A caller normally leaves a conference call by hanging up. You can also drop the caller you most recently added in step 4 by following this step:

1 Quickly press and release your telephone's switchhook twice.

Note: If the call is currently a two-way call, pressing and releasing your telephone's switchhook twice terminates the call.

If you hang up while there are other people in the conference call, the call continues with the remaining people.

Transferring a call

To transfer a call, follow these steps:

1 Put the call to be transferred on hold by quickly pressing and releasing your telephone's switchhook (the button that is depressed when you hang up the telephone).

The call you put on hold can be a call to a single person or a conference call.

2 When you get a dial tone, dial the number to transfer the call to.

3 When you complete the call, quickly press and release your telephone's switchhook twice to connect the person or people on hold.

At this point, the call includes you, anyone who was on hold, and the person you just called. You can speak to all the callers before hanging up.

4 Hang up.

Connecting and disconnecting manually

Normally, the Pipeline 25-Fx automatically connects to and disconnects from remote networks. To connect manually, follow these steps:

1 Open the VT100 configuration menus if they are not already open.

2 Go to the Configure menu if it is not already open.

3 Press Control-D (by holding down the Control key while you press the D key).

The DO menu appears.

4 Move the marker to 1=Dial and then press the Enter key.

To disconnect manually, follow these steps:

1 Open the VT100 configuration menus if they are not already open.

2 Go to the Configure menu if it is not already open.

3 Press Control-D (by holding down the Control key while you press the D key).

The DO menu appears.

4 Move the marker to 2=Hang Up and then press the Enter key.

Connecting the Pipeline to an Ethernet Network

A

This appendix contains:

About this appendix

This appendix explains how to connect the Pipeline to different types of Ethernet networks:

- To connect a 10Base-T (twisted-pair) Ethernet network with a hub to the Pipeline 25-Fx, follow the instructions in the next section, “Connecting to a 10Base-T network with a hub.”
- To connect a Thinnet (10Base-2) Ethernet network to the Pipeline 25-Fx, skip to “Connecting to a Thinnet network” on page A-4.

Connecting to a 10Base-T network with a hub

If the local-area network (LAN) at your site uses 10Base-T (twisted-pair) cabling and a 10Base-T hub, follow these steps to connect the Pipeline to the LAN:

1 Insert one end of a 10Base-T cable into the UTP jack on the back of the Pipeline.

Caution: Do not use the 10Base-T crossover cable included with the Pipeline (part number 2510-0084-001) to connect the Pipeline to a 10Base-T hub. This cable is only for connecting the Pipeline directly to a computer, as described in “Connecting the Pipeline to a single computer” on page 2-11.

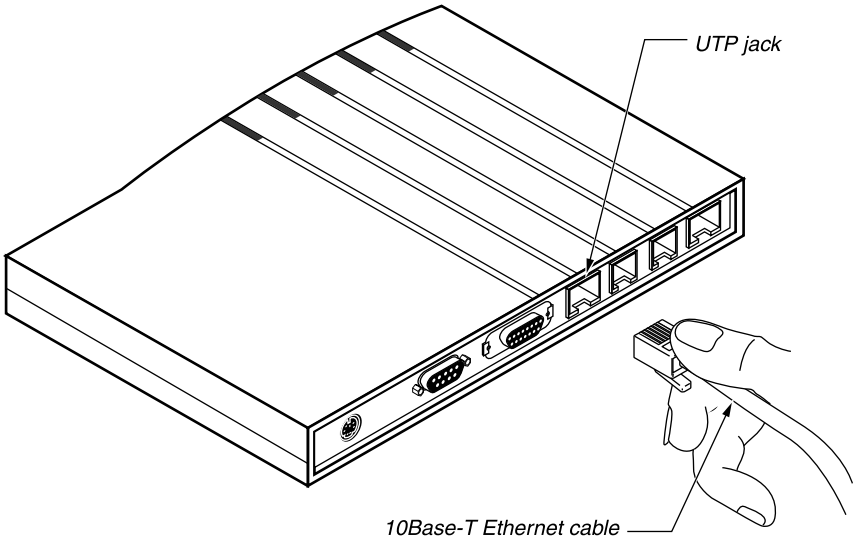


Figure 4-1. Inserting the 10Base-T cable into the Pipeline

2 Insert the other end of the cable into an unused jack on the 10Base-T hub.

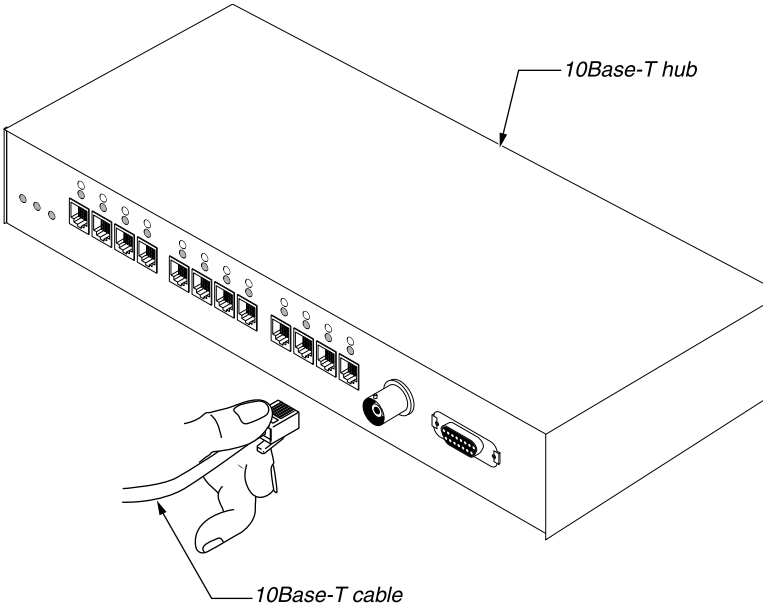


Figure 4-2. Inserting the 10Base-T cable into the hub

When you're done connecting the computer to the network, skip to the next installation task: "Connecting to the Control jack" on page 2-14.

Connecting to a Thinnet network

To connect the Pipeline to a Thinnet (10Base-2) network, follow these steps:

1 Connect a Thicknet-to-Thinnet transceiver to the AUI jack on the back of the Pipeline.

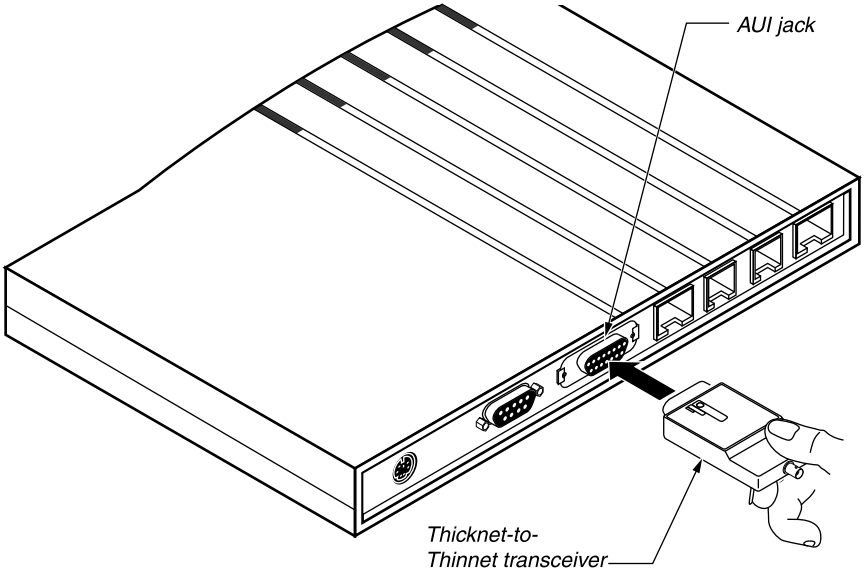


Figure 4-3. Connecting the Thicknet to Thinnet transceiver

2 Connect a T connector to the transceiver and, if the Pipeline is the last device on the network, connect a terminator to it.

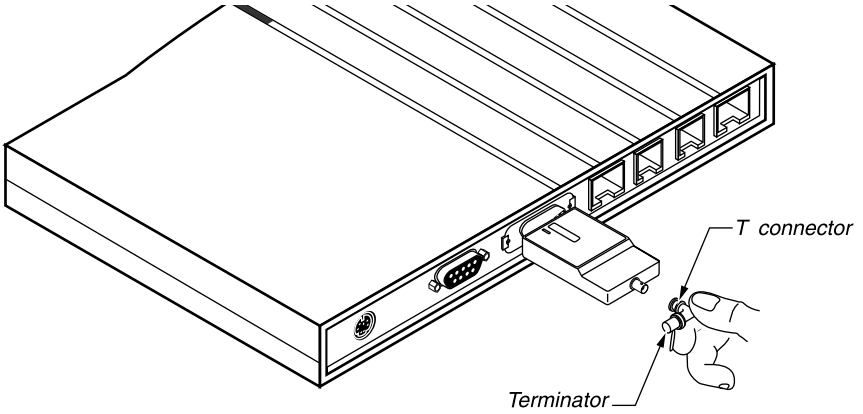


Figure 4-4. Connecting the T connector and terminator to the transceiver

3 Connect the Thinnet coaxial cable to the T connector.

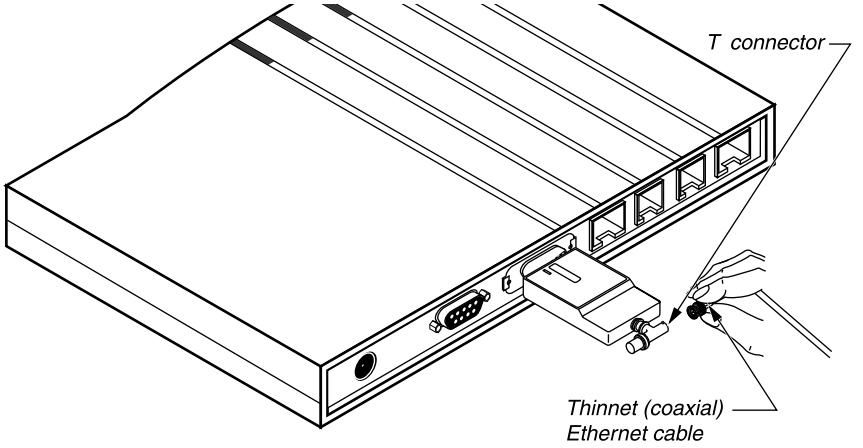


Figure 4-5. Connecting the Thinnet cable

4 Get a T connector for the other end of the cable.

If the computer at the other end of the cable is the last device on that end of the network, connect a terminator to it.

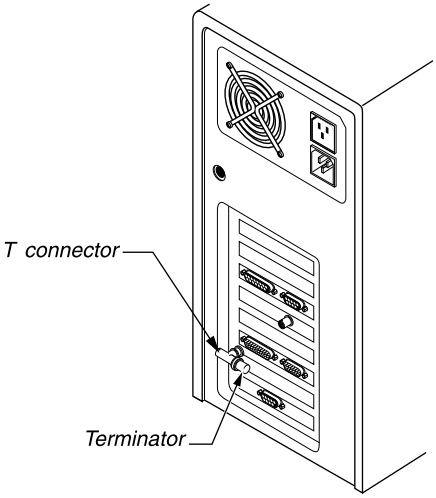


Figure 4-6. Connecting a second T connector and terminator

5 Connect the other end of the cable to the T connector and connect the T connector to the computer's Ethernet interface.

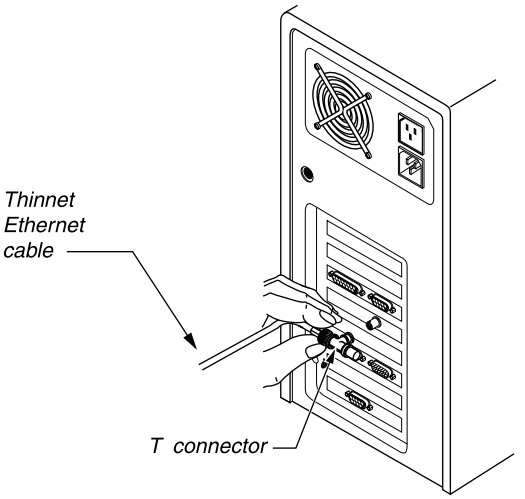


Figure 4-7. Connecting the Thinnet cable to the T connector

When you're done connecting the computer to the network, skip to the next installation task: "Connecting to the Control jack" on page 2-14.

Configuring Communications Software

B

This appendix contains:

About this appendix

This appendix provides step-by-step instructions for configuring version 3 of PROCOMM PLUS the most commonly used communications software for Microsoft Windows, and ZTerm, a widely-used shareware communications program for the Apple Macintosh and compatibles. You can use either of these programs to communicate with the Pipeline 25-Fx.

Because all communications programs have many features in common, these instructions may help you find and understand relevant settings in other communications software.

Configuring PROCOMM PLUS

The following sections explain how to install PROCOMM PLUS and how to configure it.

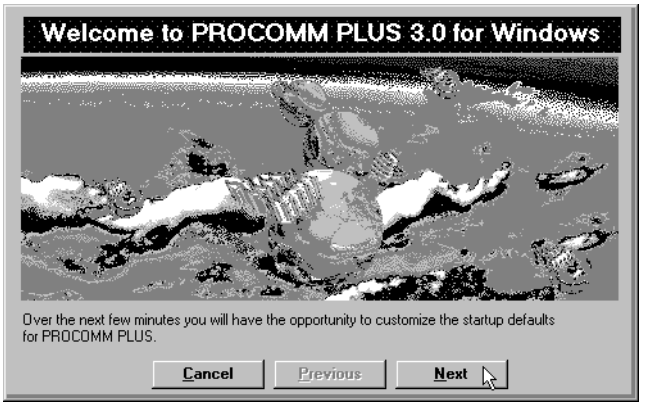
Note: The procedures described here apply only to Version 3.0 of PROCOMM PLUS. The exact procedures are different in earlier versions.

Installing PROCOMM PLUS

To install PROCOMM PLUS version 3, follow these steps:

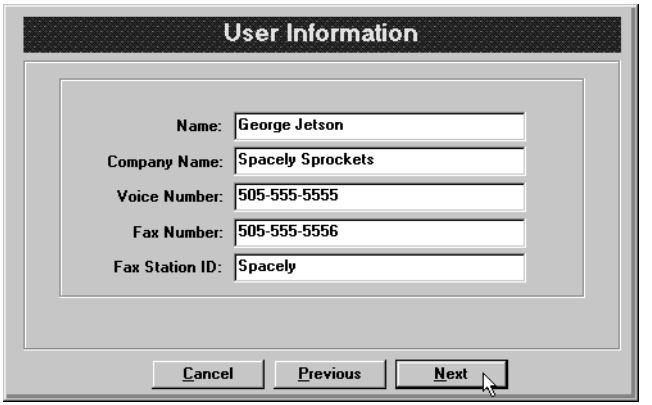
1 Insert the first floppy disk or CD-ROM and run the Setup utility.

The following startup screen appears.

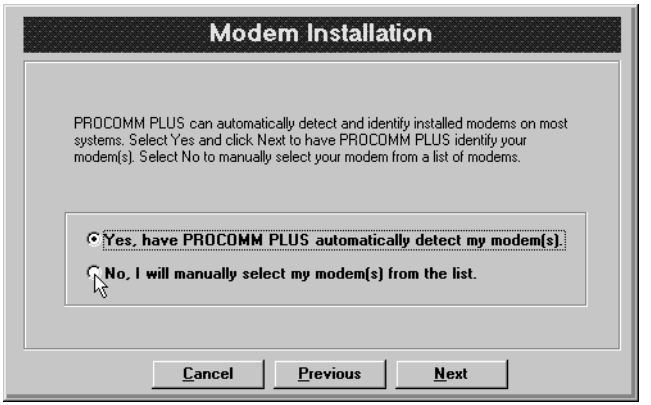


2 Click Next to continue.
The User Information window appears.

3 Enter the information about yourself and your telephone numbers.



4 When you're done, click Next.
The Modem Installation window appears.



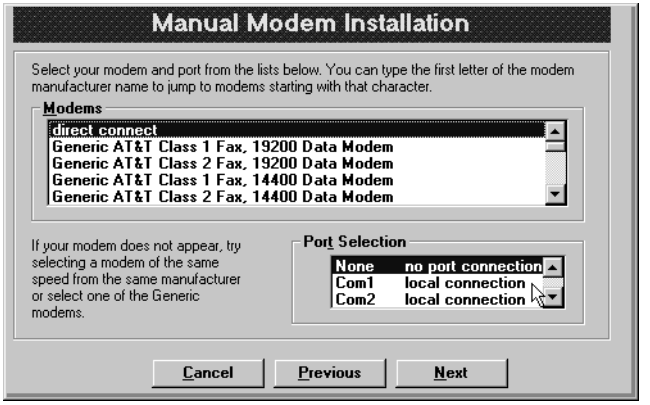
5 Click the No button.

6 Click Next to continue.

The Manual Modem Installation window appears.

7 In the Modems list, select Direct Connect if it isn't already selected. From the Port Selection list, select the serial port you will use to connect to the Pipeline.

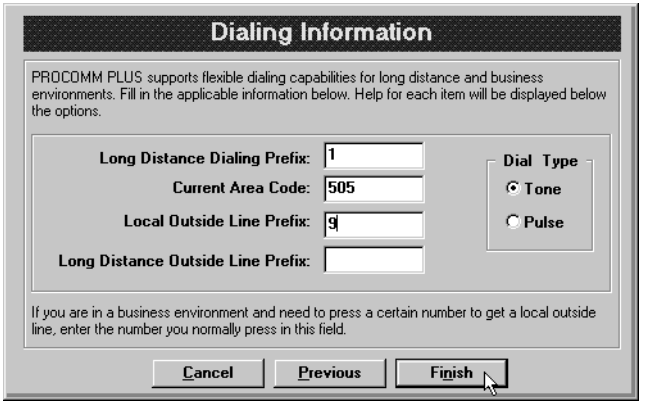
For information on choosing a serial port, see "A computer with a serial port" on page 2-5 and "Connecting to the Control jack" on page 2-14.



8 Click Next to continue.

The Dialing Information window appears. You do not need to enter information in this window.

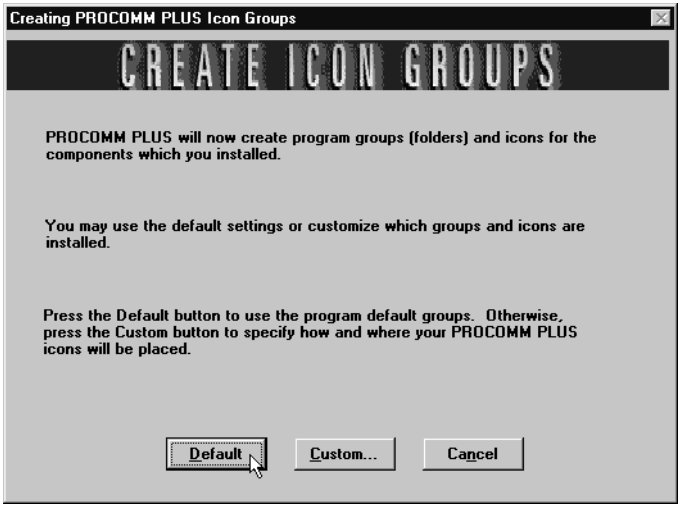
9 Click Finish.



If other windows appear that ask what features you want to install, select those that are appropriate for you.

When Create Icon Groups window appears, follow this step:

10 Click Default.

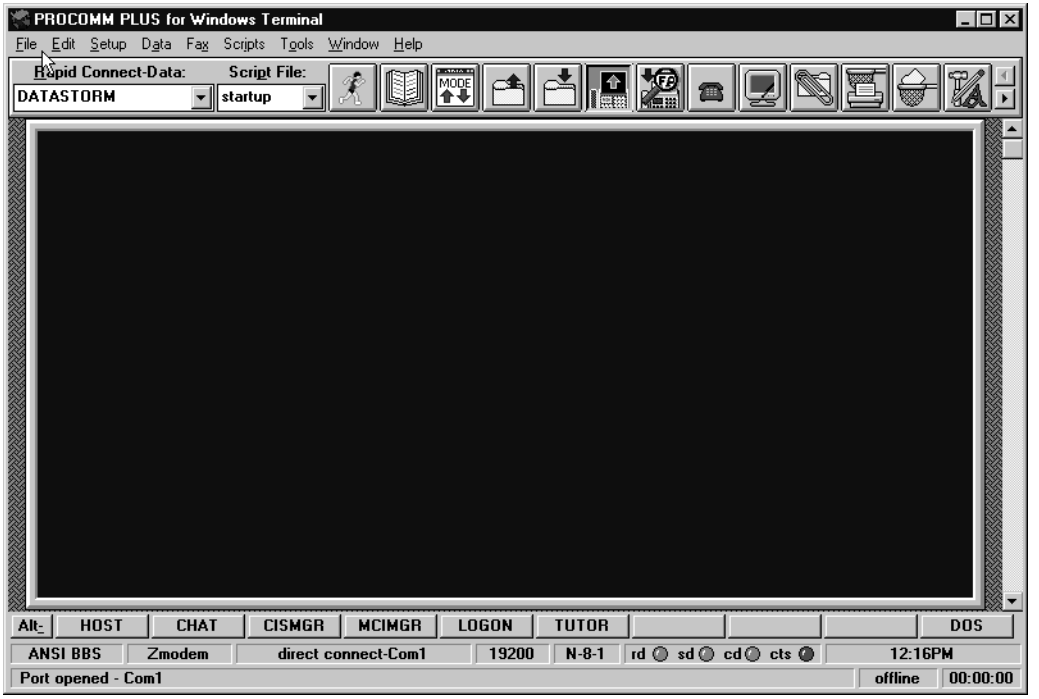


The View README File window appears. If you are using PROCOMM PLUS for the first time, you may want to read this file. If not, click No.

The installation is now complete. Click Finish to begin entering communications settings.

Entering communications settings

When you finish installing PROCOMM PLUS, the Terminal window appears.

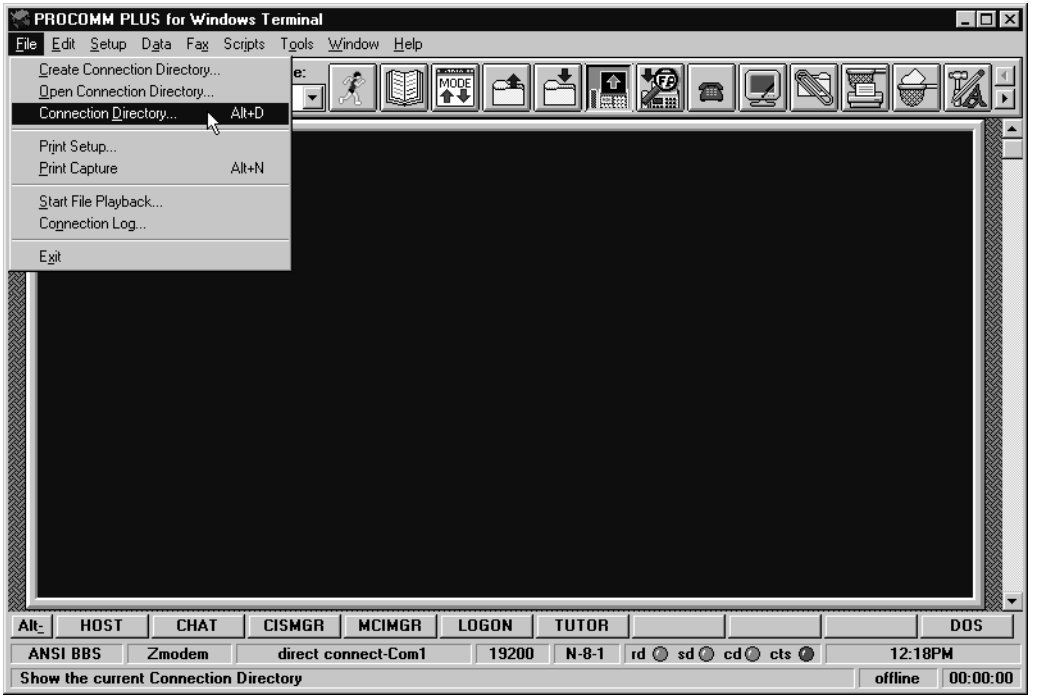


Creating a directory entry

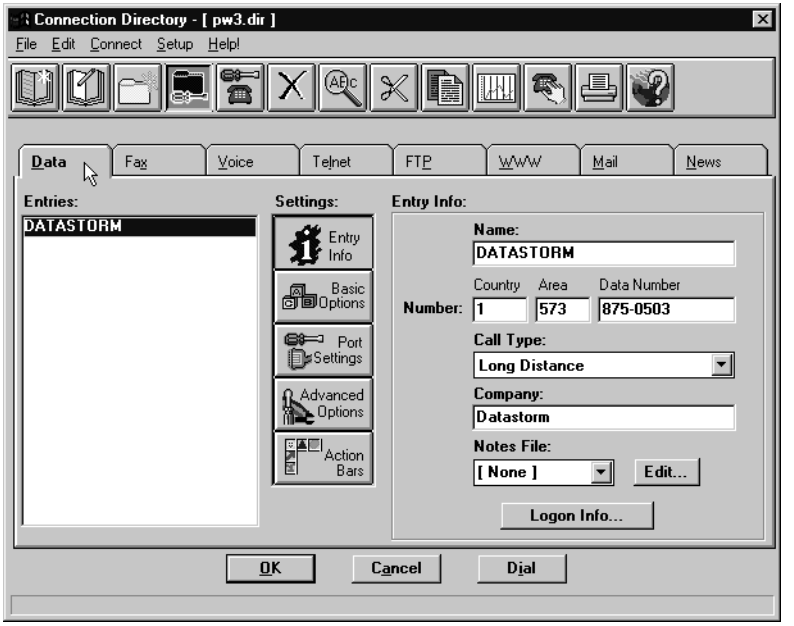
Saving the directory entry and its communications settings allows you to connect to the Pipeline at any time. To save the entry, follow these steps:

1 From the File menu in the Terminal window, choose Connection Directory.

Note: Be sure to chose from the menu in the Terminal window, not the main PROCOMM PLUS window.

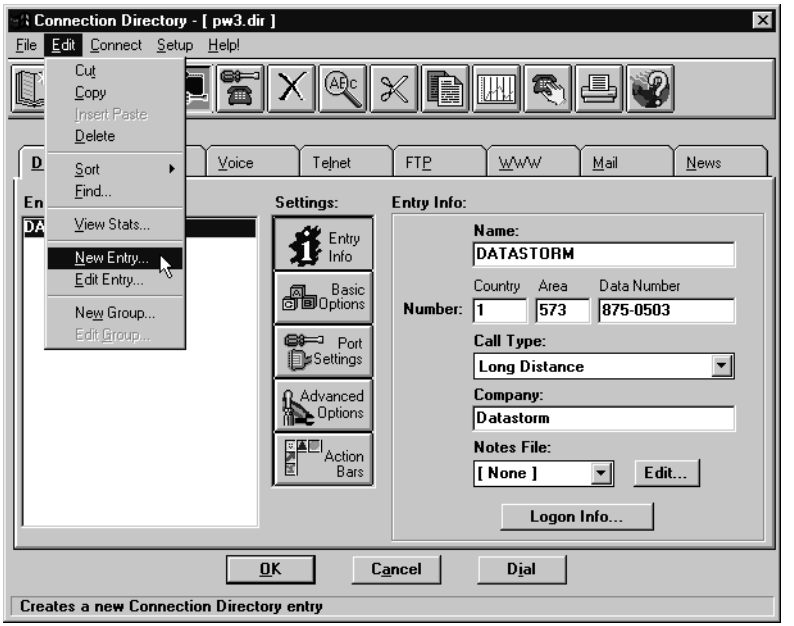


The Connection Directory window appears.

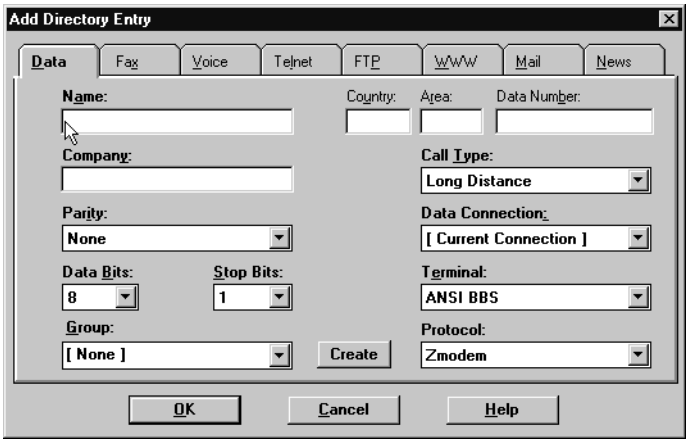


You next create the directory entry.

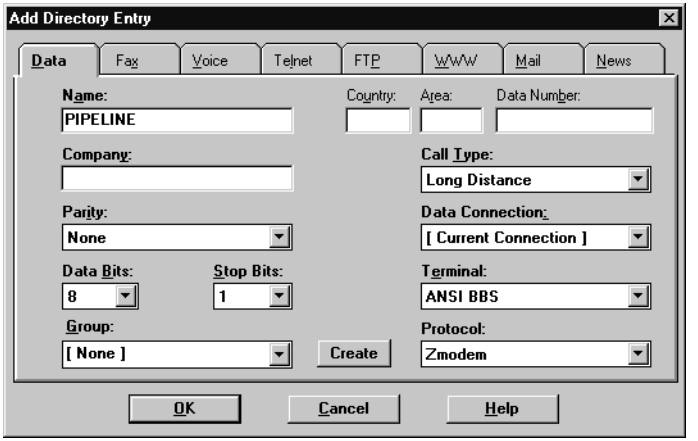
2 From the Edit menu, choose New Entry.



The Add Directory Entry window appears.

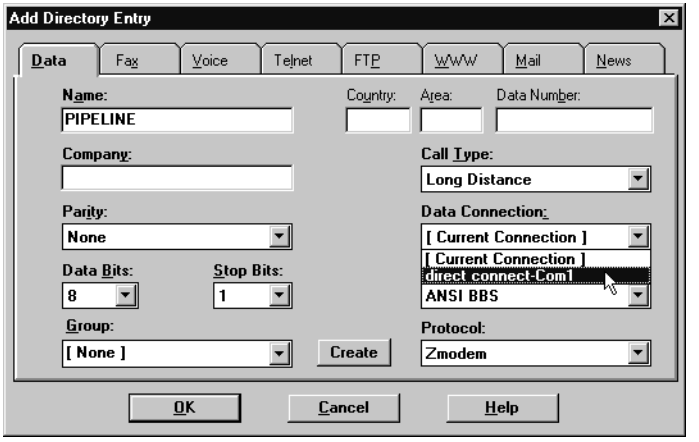


3 Enter a name for the entry in the Name field.
Choose a name that identifies this as the entry for connecting to the Pipeline.



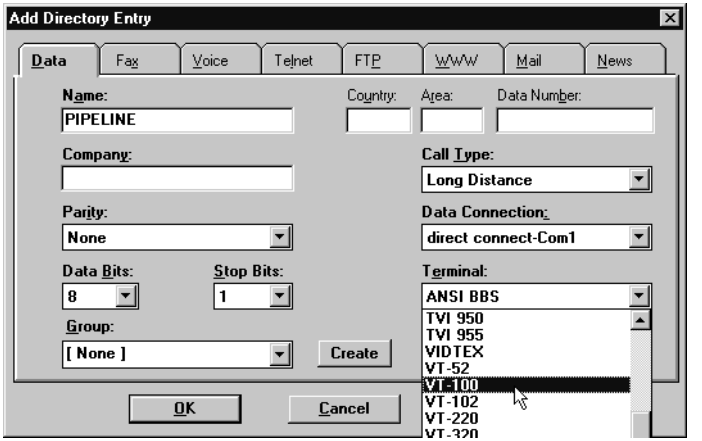
You next specify the kind of connection to the Pipeline.

4 From the Data Connection list, choose Direct Connect.



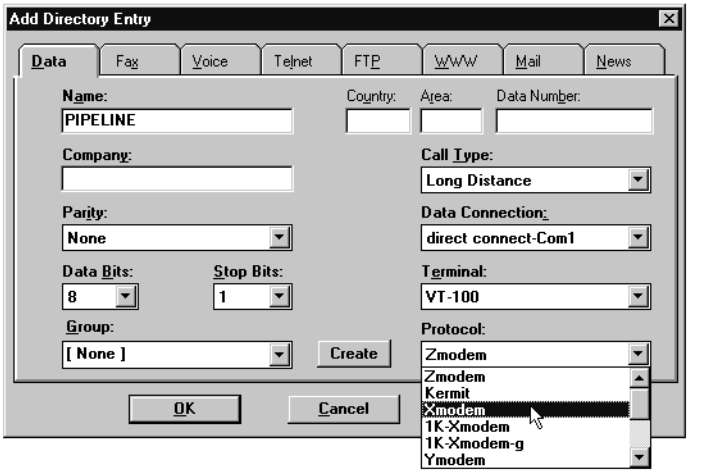
You next specify the type of terminal that PROCOMM PLUS emulates when communicating with the Pipeline.

5 From the Terminal list, choose VT-100.



You next specify the file transfer protocol to use when downloading software to the Pipeline.

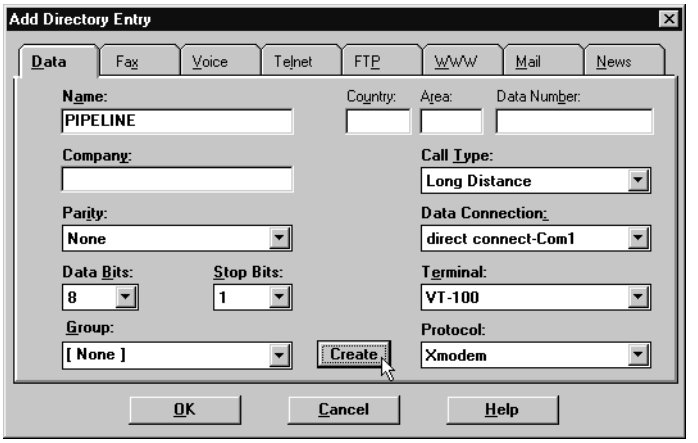
6 From the Protocol list, choose 1K-Xmodem.



7 Set Parity to None, Data Bits to 8, and Stop Bits to 1 if they are not already set to these values.

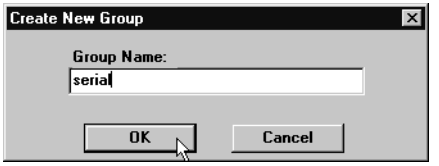
You next create a group in which to store the directory entry. You use groups for organizing entries.

8 Click the Create button to the right of the Group list.



The Create New Group window appears.

9 Type the name of the group and click OK.
Choose a name that specifies the relationship of the entries in the group. For example, you may want a group for all the entries that make direct connections through the serial port rather than with a modem.



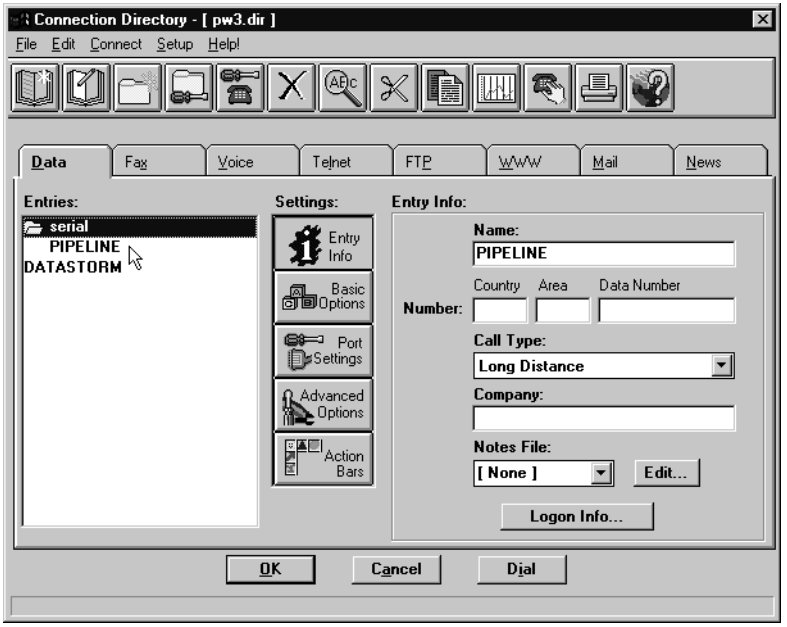
You're now ready to create the directory entry for connecting to the Pipeline. The entry is automatically added to the group you specified.

10 Click OK.

The new directory entry should appear in the list of entries at the left of the Connection Directory window. If the folder for the group you just created is closed, double-click its icon to reveal the group's contents.

You next select the new entry and specify additional settings for it.

11 Click the name of the entry in the list.

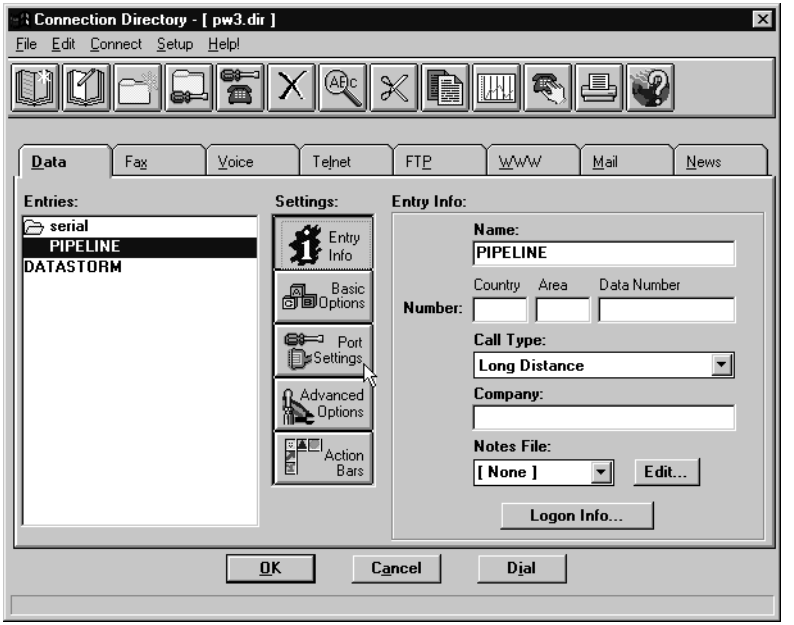


The settings you specify in the following sections apply to the selected entry.

Entering serial port settings

To specify the serial port settings to use for the new directory entry, follow these steps:

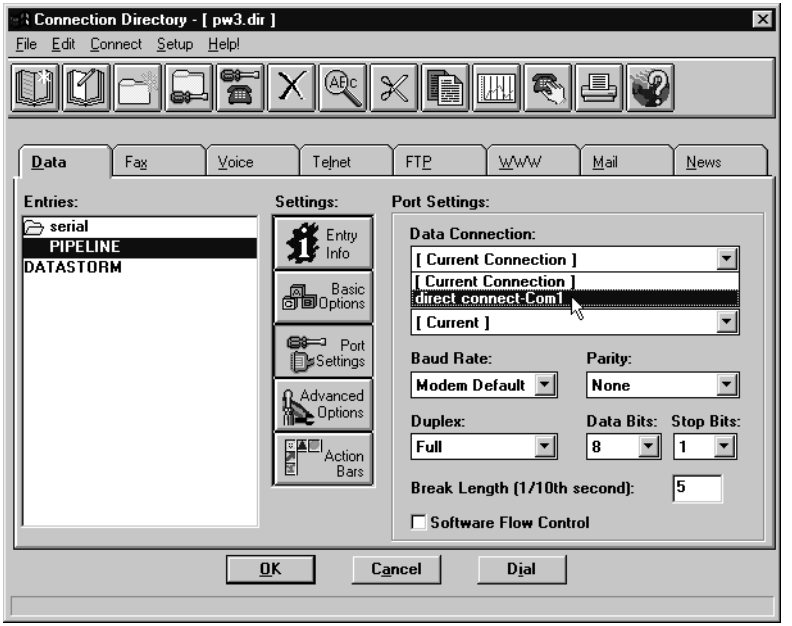
12 Click Port Settings.



The current port settings appear at the right of the window.

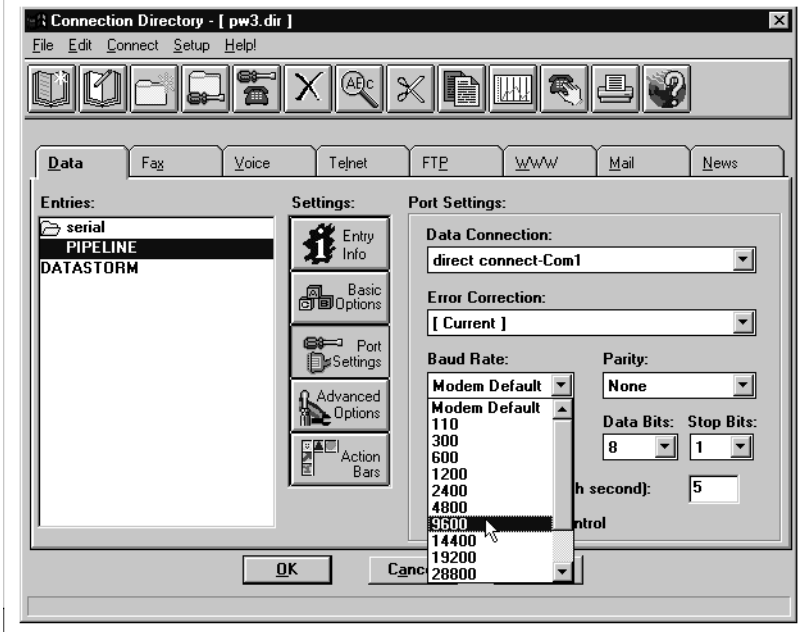
13 From the Data Connection list, choose Direct Connect and the serial port you'll use for the connection to the Pipeline.

Note: For information on choosing a serial port, see "What else you need for installation" on page 2-5 and "Connecting to the Control jack" on page 2-14.



You next specify the speed of the connection to the Pipeline.

14 From the Baud Rate list, choose 9600.



Saving the directory entry

You've finished entering the settings and are ready to save the directory entry.

15 From the File menu for the Connection Directory window, choose Save.

This saves any changes you've made to directory entries.

Connecting to the Pipeline

To establish a connection to the Pipeline, follow this step.

1 From the Connect menu, choose Connect.

You can now follow the instructions in "Viewing the configuration windows" on page 3-6.

Configuring ZTerm

ZTerm is a shareware communications program for Apple Macintosh and compatible computers. It is available from the Ascend FTP site and from archives of Macintosh software on the Internet and on major online services.

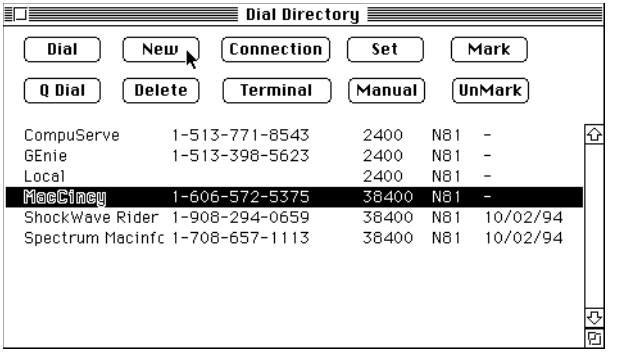
Creating a directory entry

To create a ZTerm directory entry for connecting to the Pipeline, follow these steps:

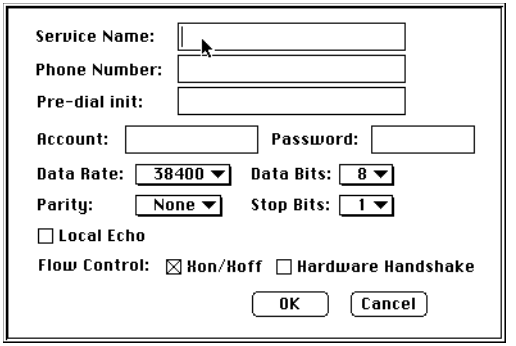
1 Open ZTerm.

2 From the Dial menu, choose Directory.

3 In the Dial Directory window that appears, click New to create a new directory entry.

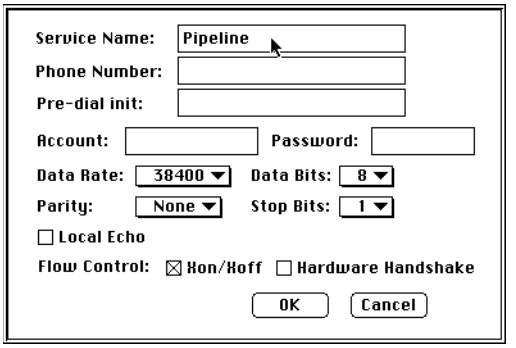


A dialog box appears in which you enter the name of the directory entry and settings for the connection.

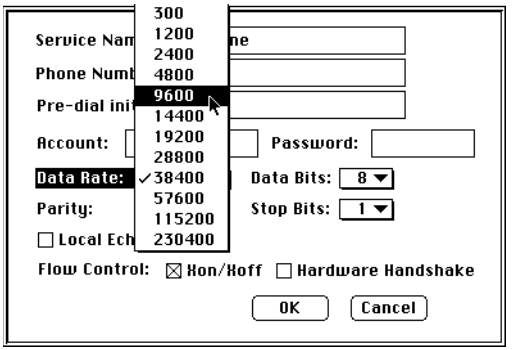


4 In the Service Name field, type a name for the directory entry.

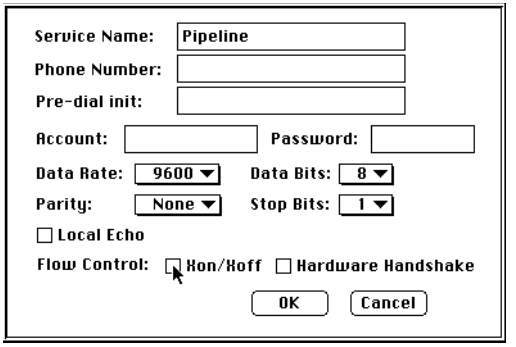
This will be the name you select when you later want to connect to the Pipeline.



5 Choose 9600 from the Data Rate pop-up menu.



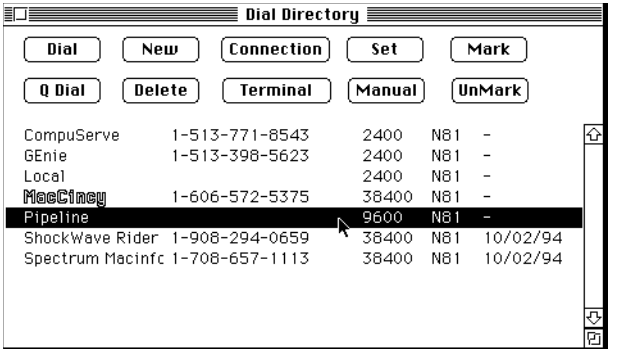
6 If either the Xon/Xoff or Hardware Handshake buttons is selected, click it to deselect it.



7 Choose 8 for Data Bits, 1 for Stop Bits, and None for Parity if they are not already chosen.

8 Click OK.

The new directory entry for connecting to the Pipeline appears in the Dial Directory window. The settings for the connection appear to the right of the entry's name.



Specifying a terminal type

You next specify the type of terminal to emulate when connecting to the Pipeline.

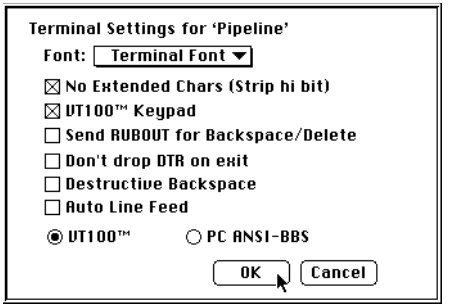
1 From the Settings menu, choose Terminal.

A dialog box appears in which you specify a terminal type and settings for that type.

2 Click the VT100 button if it isn't already selected.

3 Click the VT100 Keypad button if isn't already selected.

4 Click the No Extended Chars button if isn't already selected.



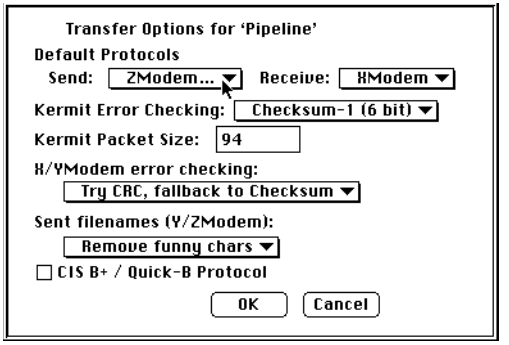
5 Click OK.

Specifying file transfer options

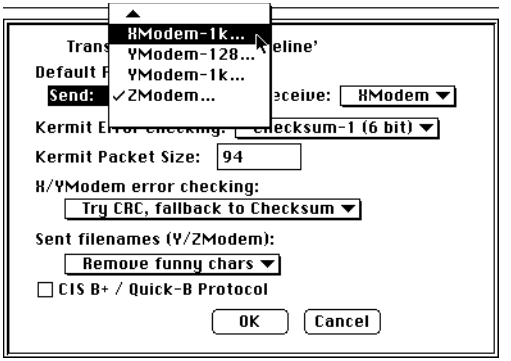
You can now specify how to transfer files to the Pipeline, which you do when you upgrade the Pipeline software.

1 From the Settings menu, choose Transfer Options.

The Transfer Options dialog box appears.



2 From the Default Protocols pop-up menu, choose Xmodem-1k.



3 Choose Try CRC, Fallback to Checksum from the X/YModem Error Checking pop-up menu if it isn't already chosen.

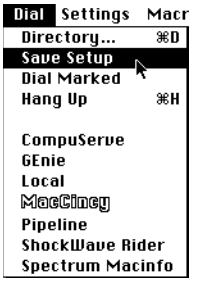
4 Click OK.

Saving the settings

You've now entered all the settings you need to connect to the Pipeline. The next step is to save the settings so that you can connect to the Pipeline at any time.

To save the settings, follow this step.

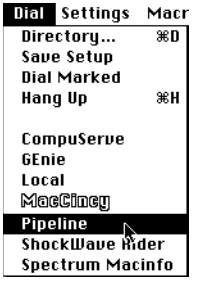
1 From the Dial menu, choose Save Setup.



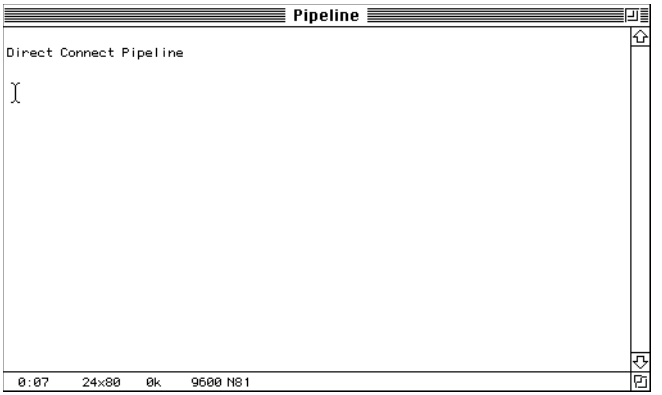
Connecting to the Pipeline

To connect to the Pipeline, follow these steps.

1 From the Dial menu, choose the name of the directory entry for Pipeline.



After a brief pause, the following appears in the window for the directory entry to indicate that there's a direct connection to the Pipeline.



You can now follow the instructions in “Viewing the configuration windows” on page 3-6.

Radio and Television Interference

C

FCC Part 15

Warning: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.

The authority to operate this equipment is conditioned by the requirement that no modifications will be made to the equipment unless the changes or modifications are expressly approved by Ascend.

Canadian Notice

Note: The Canadian Department of Communications label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual

service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or any equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the Load Numbers of all the devices does not exceed 100.

This equipment does not support line loopbacks.

Warning: THE DIGITAL APPARATUS DOES NOT EXCEED THE CLASS A LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS SET OUT IN THE RADIO INTERFERENCE REGULATIONS OF THE CANADIAN DEPARTMENT OF COMMUNICATIONS.

LE PRESENT APPAREIL NUMERIQUE N'EMET PAS DE BRUITS RADIOELECTRIQUES DEPASSANT LES LIMITES APPLICABLES AUX APPAREILS NUMERIQUES DE LA CLASSE A PRESCRITES DANS LE REGLEMENT SUR LE BROUILLAGE RADIOELECTRIQUE EDICTE PAR LE MINISTERE DES COMMUNICATIONS DU CANADA.

Warranty and Service

D

Product warranty

1 Ascend warrants that the Pipeline 25-Fx will be free from defects in material and workmanship for a period of twelve (12) months from date of shipment.

2 Ascend shall incur no liability under this warranty if

- the allegedly defective goods are not returned prepaid to Ascend within thirty (30) days of the discovery of the alleged defect and in accordance with Ascend's repair procedures; or
- Ascend's tests disclose that the alleged defect is not due to defects in material or workmanship.

3 Ascend's liability shall be limited to either repair or replacement of the defective goods, at Ascend's option.

4 Ascend MAKES NO EXPRESS OR IMPLIED WARRANTIES REGARDING THE QUALITY, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE BEYOND THOSE THAT APPEAR IN THE APPLICABLE Ascend USER'S DOCUMENTATION. Ascend SHALL NOT BE RESPONSIBLE FOR CONSEQUENTIAL, INCIDENTAL, OR PUNITIVE DAMAGE, INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR DAMAGES TO BUSINESS OR BUSINESS RELATIONS. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES.

Warranty repair

1 During the first three (3) months of ownership, Ascend will repair or replace a defective product covered under warranty within twenty-four (24) hours of receipt of the product. During the fourth (4th) through twelfth (12th) months of ownership, Ascend will repair or replace a defective product covered under warranty within ten (10) days of receipt of the product. The warranty

period for the replaced product shall be ninety (90) days or the remainder of the warranty period of the original unit, whichever is greater. Ascend will ship surface freight. Expedited freight is at customer's expense.

2 The customer must return the defective product to Ascend within fourteen (14) days after the request for replacement. If the defective product is not returned within this time period, Ascend will bill the customer for the product at list price.

Out-of warranty repair

Ascend will either repair or, at its option, replace a defective product not covered under warranty within ten (10) working days of its receipt. Repair charges are available from the Repair Facility upon request. The warranty on a serviced product is thirty (30) days measured from date of service. Out-of-warranty repair charges are based upon the prices in effect at the time of return.

Ascend Customer Service

When you contact Ascend Customer Service, make sure you have this information:

- The product name and model
- The software and hardware options
- The software version
- The SPIDs (Service Profile Identifiers) for your ISDN line
- Your local telephone company switch type and operating mode
- The type of computer you are using
- A description of the problem

How to contact Ascend Customer Service

Ways to contact Ascend Customer Service	Telephone number or address
Telephone in the United States	800-ASCEND-4 800-272-3634
Telephone outside the United States	510-769-8027
E-mail	support@ascend.com
Facsimile (FAX)	510-814-2300

You can also contact the Ascend main office by dialing 510-769-6001, or you can write to Ascend at the following address:

Ascend Communications
1275 Harbor Bay Parkway
Alameda, CA 94502

Need information on new features and products?

We are committed to constantly improving our products. You can find out about new features and product improvement as follows:

- For the latest information on the Ascend product line, visit our site on the World Wide Web:
  `http://www.ascend.com/`
- For software upgrades, release notes, and addenda to this manual, visit our FTP site:
  `ftp.ascend.com`

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