AT&T

AT&T UNIX® PC
Terminal Emulation

User's Guide

This section contains important information about usi
Terminal Emulation version 3.51.   Please review th
information before using the Terminal Emulator, and ke
it with your AT&T **UNIX**®   PC Terminal Emulation User
Guide.   Page numbers below refer to related informati
in this guide.

NEW FEATURES:

1   Page 3-11. The Terminal Emulator now suppor
     132-column displays for VT100,   513BCT a
     UNIXPC emulations.   To access these, sele
     VT100-132, 513BCT-132 or UNIXPC-132 in t
     Terminal Type field on the Terminal Setup for

2   Page 3-18.   Two new special characters a
     available for send strings in the Auto-Log
     Sequences form.   In an **SS** field, **\b** generat
     a break character and **\p** pauses for 2 secon
     before transmitting characters to the host.

3   Page 4-5.   The Local Commands menu contains
     new entry for setting tabs during a termin
     session.   The tab settings remain in effect f
     the current session only.

     To use this feature:

     a   Access the host computer, type **stty ta**
          and press <Enter>.

     b   Press <Shift>-<Cmd> to show the Loc
          Commands menu.

     c   Select |Set Tabs| and press <Enter>.
          ruler showing the current tab settin
          appears at the bottom of the screen.

     d   Using the left and right arrow keys, mo
          the cursor along the ruler to set a
          remove tabs.

To set a tab, move the cursor to the desired column and press <Enter>. A **T** appears in the column to indicate a tab stop.

To remove a tab, position the cursor over the **T** and press <Enter>. The **T** indicator disappears.

e   To save the tab settings, press <Exit>.

You can change these settings at any time during the current session. If you want to make a change, repeat steps **b** through **e** above.

4   Page 4-3. In VT100 and 513BCT emulations, you can now view up to 3 previously displayed screens. To scroll or page through these screens, use these key combinations:

o   **<Ctrl>-<up arrow>** rolls the display up, revealing one line at a time from the top of the screen.

o   **<Ctrl>-<down arrow>** rolls the display down, revealing one line at a time from the bottom of the screen.

o   **<Ctrl>-<Next>** displays the next full screen.

o   **<Ctrl>-<Prev>** displays the previous full screen.

o   **<Ctrl>-<Beg>** displays the first 24 lines of display memory.

o   **<Ctrl>-<End>** displays the last 24 lines of display memory.

5   Page 4-21. The |Stop Printing| entry in the Local Commands menu now allows you to terminate printing that is turned on by an escape sequence sent by the host computer.

6 Page A-5. If you are using your **UNIX** PC as a 513BCT terminal, a <Ctrl>-<J> linefeed character is generated by default when you press <Enter>. Characters sent to the host by the Enter key can now be programmed using an escape sequence sent by the host to the console:

<Esc>[21;n|xxxx

where n̲ is the number of characters in the sequence (no more than 4) and x̲ is the character or characters.

7 Page A-5. The VT100 terminal escape sequences <Esc>H and <Esc>[g are now supported, but you must first enter **stty tabs** and press <Enter> while on the host system. **<Esc>H** sets a tab stop at the current column and **<Esc>[g** deletes a tab stop at the current column.

8 Page B-2. If you use your **UNIX** PC as a VT100 terminal, eight screen keys are now mapped. The first four keys are labeled **PF1, PF2, PF3** and **PF4**; these match the same keys on the VT100. The rest are labeled **UP, DOWN, LEFT** and **RIGHT**. These correspond with the VT100 cursor keys and can be used, for example, to move the cursor while using the vi editor.

TECHNICAL TIPS:

1 Page 3-16. Automatic login sequences assume that an error-free path exists between the **UNIX** PC and the host computer. If there are problems with communications, auto-login sequences can fail. After such a failure, try to place the data call again. If auto-login continues to fail, check the communications path between your **UNIX** PC and the host computer.

2 Page 4-2. If you are using your **UNIX** PC to emulate a VT100-132 terminal you should identify your terminal to the host computer as **vt100-w**. If you use **vt100-132**, the 132-column display features will not work correctly.

3 Page 4-3. When using the UNIX PC from a remote terminal to run an emulation session, a display at the top of the screen under the status line indicates that you enter "**<ESC>CM**" to access local commands. If you use the lowercase c and m, nothing happens. To access the Local Commands menu, you must use the uppercase C and M:

   <Esc> <Shift>-<C> <Shift>-<M>

The same display line indicates that you enter "**<ESC>EX**" to exit from the Emulator. If you use the lowercase e and x, nothing happens. To exit from the Terminal Emulator, you must use the uppercase E and X:

   <Esc> <Shift>-<E> <Shift>-<X>

See pages 4-13 and 4-14 in the AT&T **UNIX** PC Remote Access User's Guide.

4 Page 4-3. If your **UNIX** PC is connected by a serial port to a network such as the AT&T Information Systems Network (ISN), or a switch or device that supports hardware flow control, you should enable the hardware flow control on your **UNIX** PC and disable the software flow control associated with that serial port.

To enable hardware flow control on the **UNIX** PC, start by logging in as **install**.

a Select |Administration| and press <Enter>.

b Select |Hardware Setup| and press <Enter>.

c Select |RS232 Setup| or |RS232 Expansion Setup| and press <Enter>. If you are configuring an RS232 expansion port, select the port number.

d Highlight the **Enable Hardware Flow Control?** field and select **Yes.**

e Press <Enter> to save the change.

To disable the software flow control associated with a port, open the Profiles folder in your Filecabinet and open each RS232 profile to be used in conjunction with the port by Terminal Emulation.

a Highlight the **Flow Control to Host** field and select **No.**

b Highlight the **Flow Control from Host** field and select **No.**

c Press <Enter> to save the changes.

For most interactive software applications accessed with the Terminal Emulator, you can stop and restart the screen display with the <Ctrl>-<S> and <Ctrl>-<Q> key combinations. For this to work, you must set up the host computer to recognize <Ctrl>-<Q> and <Ctrl>-<S> as the XON/XOFF flow control characters. If your host computer is a UNIX system, typing **stty ixon** and pressing <Enter> will do this.

Note that some applications, such as the EMACS editor, use a full 8-bit character set and do not interpret <Ctrl>-<S> and <Ctrl>-<Q> the same way. You will not be able to stop and restart the screen display in this fashion.

If hardware flow control is unavailable on the device to which you are connected or not enabled on the **UNIX** PC, you should enable the software flow control. Subject to the above limitations, when using the Terminal Emulator you should be able to stop and restart the screen display with <Ctrl>-<S> and <Ctrl>-<Q> in most cases. Holding down the <Ctrl>-<S> key combination should help stop the screen display when the port speed is set to a high value, such as 9600 baud.

For more information on flow control see the "Important Information" section of the AT&T **UNIX** PC Owner's Manual.

5   Page 4-10. Before you transfer a file with UMODEM press <Suspd> and check the window manager to make sure that you have no more than five windows open. Close any extra windows. A file transfer will create two additional windows: Transfer Status and Confirm. The console requires that no more than eight windows be open at any one time.

6   Page 4-16. You should avoid using the |Terminate File Transfer| entry in the Local Commands menu when you have initiated a file transfer with UMODEM. If you do need to use this function, you will have to wait several minutes for UMODEM on the host computer to "time out" before you can again transmit data between your **UNIX** PC and the host computer.

After waiting, if the host still does not echo back typed characters to your screen, open the Local Commands menu. Select |Emulator Reset| and press <Enter>. In most cases this will clear up the problem. If not, you must press <Shift>-<Exit> to terminate your active data call. Place a new data call to continue your work.

You should not use |Terminate File Transfer| with a UMODEM file transfer when you are placing a data call from a remote terminal.

7   When placing a data call from a <u>remote</u> terminal, typing the sequence

<Esc> br

will send a "break" character from the remote terminal through the **UNIX** PC console to the remote host. In this configuration the [BREAK] key on your remote terminal may not work.

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NOTICE

The information in this document is subject to change without notice. AT&T assumes no responsibility for any errors that may appear in this document.

Welcome to the AT&T **UNIX**® PC Terminal Emulation User's Guide. This guide describes how to set up **UNIX** PC Asynchronous Terminal Emulation (ATE) and use its features. This guide is organized into the following chapters:

o **Introducing Terminal Emulation** describes the features of Asynchronous Terminal Emulation and what you'll need to get started.

o **Setting Up the Hardware** shows you how to set up the communications lines for your data calls. This chapter also discusses connecting an RS-232C cable to your computer.

o **Setting Up the Software for Data Calls** describes how to install the ATE software, and how to set up the software environment needed for terminal emulation. This chapter also shows you how to set up automatic login sequences.

o **Communicating with Other Computers** describes the procedures for calling another computer system, logging in, transmitting and receiving files, and capturing and printing screen data.

o **Appendix A Presentation Level Protocol** lists the terminal command sequences supported by Asynchronous Terminal Emulation.

o **Appendix B UNIX PC Keyboard Codes** lists the keyboard codes transmitted during terminal emulation.

o **Appendix C RS-232 Technical Information** provides pin assignments and technical details of the **UNIX** PC's DTE RS-232 port.

o **Appendix D UMODEM File Transfer Formats** describes the UMODEM protocol.

o **Appendix E Problem-Solving Checklist**
   provides a list of possible problems that can
   be encountered when placing a data call and
   lists some possible solutions.

o **Glossary** lists and defines commonly used
   terms.

How to Proceed

You should already be familiar with the basics of the
UNIX PC. If you're not, turn to the AT&T UNIX® PC
Getting Started Guide before continuing with this
guide.

For more detailed information about using the **UNIX** PC,
see the AT&T UNIX® PC Owner's Manual.

Also recommended are the following guides describing
telephone use and remote terminal operation during data
communications, which are included in your AT&T
UNIX® PC Communications Management binder:

o AT&T UNIX® PC Telephone Manager User's Guide

o AT&T UNIX® PC Remote Access User's Guide

Contents

Contents

This guide provides the information you need to use
Asynchronous Terminal Emulation (ATE). ATE lets you:

    o Set up terminal environments that emulate, or
       work the same way as, other terminals, such
       as the AT&T 513 BCT and DEC-VT100 terminals.
       While working in emulation mode, you are
       using the **UNIX** PC screen and keyboard as if
       they were the screen and keyboard of another
       terminal.

    o Select terminal options that allow you to
       gain access to other computers.

    o Set up automatic login sequences that
       automatically log into other computers for
       you.

    o Transfer data to and from other computers.
       You can exchange information (files and
       programs) with other computer users or call
       online information systems and bulletin
       boards and gain access to the wealth of
       information offered by these services.

    o Print on-screen data or store it in a file.

    o Place data calls from a remote terminal.

The Terminal Emulation software works with the
Telephone Manager software. To use Terminal Emulation,
you first create a data call entry in your telephone
Directory. When you create the data call entry, you
specify a data profile: a file providing the
information your computer needs to place the data call.
When you place the data call through Telephone Manager,
you gain access to Terminal Emulation.

What You Will Need

To use **UNIX** PC Terminal Emulation, you need:

      o A **UNIX** PC with at least one telephone line
         connected and capable of transmitting data
         calls. A second telephone line set up for
         DATA is recommended to take full advantage of
         the Telephone Manager and Terminal Emulation
         features.

      o Telephone Manager and ATE software installed.

Data calls can also be made using your **UNIX** PC's RS-232
port. For this type of call you need:

      o An RS-232C modified null modem cable to
         connect your computer to another computer, or

         an RS-232C modified straight cable to connect
         your computer to an external modem.

Note that you can also place data calls over a network,
such as STARLAN. Consult the owner's manual for the
network you want to use for details.

Conventions

This guide uses the following conventions:

Information displayed on the screen is shown in
boldface type. For example:

        Please login:

Information you type is shown in **boldface** type. For
example:

        Type **unixpc**

Names of keys on the keyboard are enclosed in <>'s.
For example:

        <Exit>

The mouse buttons are represented as follows:

        Left mouse button   <B1>
        Middle mouse button   <B2>
        Right mouse button   <B3>

Screen keys are enclosed in []'s. For example:

        [HOLD]

Items to select (highlight) from menus are enclosed in
||'s. For example:

        |RS232 Setup|

Key combinations are represented by the two keys
separated by a hyphen. For example:

        <Shift>-<Cmd>

To type this key combination, you hold down the Shift
key, press the Cmd key, and then release both keys.

The exit symbol in the lower-left corner of a window is
shown as:

        [X]

The help symbol in the upper-right corner of a window
is shown as:

        [?]

The symbol at the bottom of a form used to implement
changes is shown as:

        [OK]

This section briefly describes how to set up your **UNIX**
PC hardware for data communications.

The **UNIX** PC houses a built-in modem compatible with
AT&T's Model 103 (300 bps, or bits per second) and
Model 212 (1200 bps). This built-in modem is fully
integrated with the telephone lines and under control
of Telephone Manager. Telephone Manager also controls
data communication connections that use the **UNIX** PC's
RS-232 ports. So you can use Telephone Manager with RS-
232 connections to another computer and to externally
connected modems.

The **Setting Up the Software for Data Calls** chapter of
this guide describes how to install the ATE software
and set it up to accommodate the computer or network
you are calling.

Setting Up Built-in Modem Calls

Setting up for calls that use the built-in modem
includes connecting your telephone line or lines to the
UNIX PC and then setting up the lines through **install's**
Administration. Once the telephone lines are connected
and set up, you can create a data entry and a modem
profile, as described in the **Setting Up the Software
for Data Calls** chapter of this guide.

The picture below shows how your telephone lines should
be connected to the back panel of your computer.   If
you have only one line, you will use only the
connectors labeled **Line 1** and **Phone**.
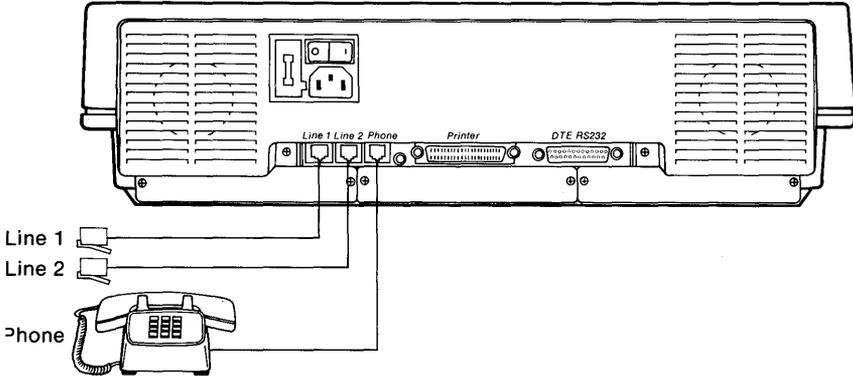
Refer to "Telephone Line Setup" in the **Setting Up
Telephone Manager** section of the <u>AT&T UNIX PC Telephone
Manager User's Guide</u> for complete instructions for
setting up your telephone lines.

If you have one telephone line connected to your **UNIX
PC**, that line is used for both voice and data calls.
Telephone Manager switches the line from voice to data
automatically when you place a call.   You can use the
screen key labeled LINE SELECT to switch the line
manually.

If you have two telephone lines connected to your **UNIX
PC**, line 1 is used for voice calls and line 2 is used
for data calls.   You can use the LINE SELECT screen key
to switch line 2 to voice and back to data.

Connecting an RS-232 Cable

Data calls using an exernal modem or direct connect
data calls require that an RS-232 cable be connected
from the **UNIX** PC to the other computer or device. If
you are connecting a modem, use a straight RS-232 cable
between the **UNIX** PC and the modem. If you are
connecting to another computer or network, use an RS-
232 null modem cable with a male D-type connector on
the **UNIX** PC end. Refer to Appendix C in this guide for
a description of these cables and the **UNIX** PC's RS-232
port.

To connect an RS-232 cable to the **UNIX** PC:

> 1 Plug one end of the cable into the connector
>   labeled DTE RS232 on the **UNIX** PC's back
>   panel. If you have an RS-232 expansion
>   board, you can plug the cable into one of the
>   expansion RS-232 port connectors.

> 2 Secure the two cable screws in the holes
>   provided in this connector, as shown below:
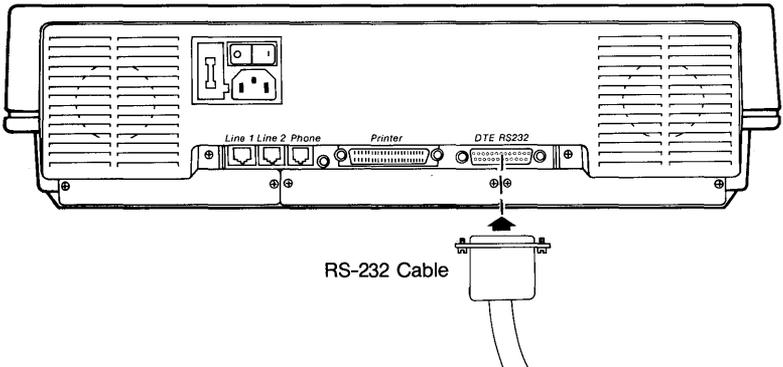
> 3 Plug in and secure the other end of the cable
>   to the appropriate connector on the other
>   computer or device.

Setting Up Direct Connection Calls

You can use direct connnections through an RS-232 port
to call another **UNIX** PC or another computer from your
UNIX PC. This allows you to share resources while
leaving your telephone lines available for other calls.

Before making a data call using an RS-232 port, you
must connect the RS-232 null modem cable between
computers and set up the RS-232 connection. See
"Connecting an RS-232 Cable" earlier in this chapter
for cabling procedures.

Once the RS-232 cable is connected, follow the
procedures below to set up the connection:

     1 Log in as **install** and select |Hardware Setup|
        from the Administration menu.

     2 Press <Enter> to display the Hardware menu.

     3 If you are setting up the **UNIX** PC's standard
        RS-232 port, select |RS232 Setup|, and then
        skip to step 6, or

        if you have an RS-232 expansion board and
        want to use an RS-232 expansion port, select
        |RS232 Expansion Setup|, and then go on to
        step 4.

     4 Press <Enter> to display this RS-232
        Expansion Ports menu:

```
┌─────────────────────────────┐
│ ▣ Port Selection         ▣  │
│                             │
│    RS-232 Expansion Ports   │
│   ┌──────────┐              │
│   │ Port 1   │              │
│    Port 2                   │
│                             │
│ ▣                        ▣  │
└─────────────────────────────┘
```

     5 The number of expansion ports depends on the
        expansion hardware and software you have
        installed. The RS-232 expansion ports are
        numbered 1 through 6 from left to right (when
        you look at the rear panel of the **UNIX** PC).

6 Press <Enter> to display this Connect to
 RS232 Device form:

```
┌─────────────────────────────────┐
│ ⌐ Connect to RS232 Device    [?]│
│                                 │
│       Connect to RS232 Device   │
│                                 │
│    Device Type:     NONE        │
│    Device Speed:    9600 baud   │
│                                 │
│              [OK]               │
│                                 │
│ [X]                             │
└─────────────────────────────────┘
```

7 Move the cursor to the **Device Type:** field and
 press <Mark> until you see **COMPUTER**.

 Note that the host **UNIX** PC, which receives
 data calls from your **UNIX** PC, should also be
 set up as **COMPUTER** in the setup for this RS-
 232 port.

8 Move the cursor to the **Device Speed:** field
 and press <Mark> until you see the speed
 required by your host computer or network.
 Choose **9600** for connection to another **UNIX**
 PC. This speed is likely to be appropriate
 for other computers as well.

9 Press <Enter> to save your selections and
 display this Connect to Computer form:
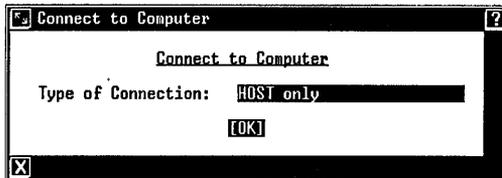
```
┌──────────────────────────────────────────┐
│ ⌐ Connect to Computer                 [?]│
│                                          │
│            Connect to Computer           │
│                                          │
│    Type of Connection:   HOST only       │
│                                          │
│                [OK]                      │
│                                          │
│ [X]                                      │
└──────────────────────────────────────────┘
```

10 Press <Mark> until you see **CALLER only**. This
    selection sets up direct connection outgoing
    calls from your **UNIX** PC to another computer.
    Do not use the HOST **only** selection for
    outgoing data calls.

    The host **UNIX** PC, which receives data calls
    from your **UNIX** PC, must be set up as **HOST
    only** in the setup for this RS-232 port.

11 Press <Enter> to save your selections.

                    Note

    For complete information about setting
    up a **UNIX** PC as a remote host computer
    (to receive data calls from your **UNIX**
    PC), refer to the AT&T **UNIX** PC Remote
    Access User's Guide.

Once the cable is connected and set up, you can create
a data entry and a serial (RS-232) profile, as
described in the **Setting Up the Software for Data Calls**
chapter of this guide.

Setting Up External Modem Calls

You can connect a separate modem to an RS-232 port and
use that modem to place data calls, leaving your
telephone lines and built-in modem available for other
calls.

Before making a data call using an RS-232 port, you
must connect the RS-232 straight cable between your
computer and the modem, and then set up the RS-232
connection. See "Connecting an RS-232 Cable" earlier
in this chapter for cabling procedures.

Once the RS-232 cable is connected, follow the
procedures below to set up the connection:

1 Log in as **install** and select |Hardware Setup|
   from the Administration menu.

2 Press <Enter> to display the Hardware menu.

3   If you are setting up the standard RS-232
    port, select |RS232 Setup|, and then skip to
    step 6, or

    if you have an RS-232 expansion board and
    want to use an RS-232 expansion port, select
    |RS232 Expansion Setup|, and then go on to
    step 4.

4   Press <Enter> to display this RS-232
    Expansion Ports menu:

```
┌─────────────────────────────┐
│ ▨ Port Selection         ▨  │
│                             │
│    RS-232 Expansion Ports   │
│                             │
│   ▄Port 1▄                  │
│    Port 2                   │
│                             │
│ ▨                        ▨  │
└─────────────────────────────┘
```

5   The number of expansion ports depends on the
    expansion hardware and software you have
    installed. The RS-232 expansion ports are
    numbered 1 through 6 from left to right (when
    you look at the rear panel of the **UNIX** PC).

6   Press <Enter> to display this Connect to
    RS232 Device form:

```
┌─────────────────────────────────┐
│ ▨ Connect to RS232 Device    ▨  │
│                                 │
│      Connect to RS232 Device    │
│                                 │
│   Device Type:    NONE          │
│   Device Speed:   9600 baud     │
│                                 │
│            [OK]                 │
│                                 │
│ ▨                               │
└─────────────────────────────────┘
```
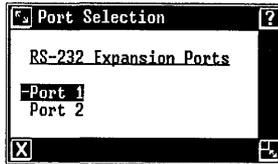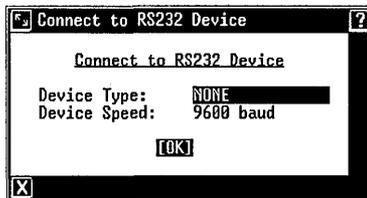
7   Move the cursor to the **Device Type:** field and
     press <Mark> until you see **MODEM**.

8   Move the cursor to the **Device Speed:** field
     and press <Mark> until you see the speed
     required by your external modem. Refer to
     your modem manual for this information. Most
     modems run at 1200 bps.

9   Press <Enter> to save your selections and
     display this Connect to Modem form:

```
┌──────────────────────────────────────┐
│█ Connect to Modem                   ?│
│                                        │
│            Connect to Modem            │
│                                        │
│   Modem Name:     Answer_only          │
│                                        │
│                  [OK]                  │
│                                        │
│ X                                      │
└──────────────────────────────────────┘
```
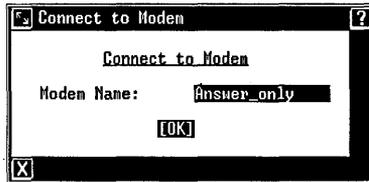
10   Press <Cmd> to display the modem types
     available.

11   Select the modem type.

     If your modem is not in the list but is
     compatible with one of the listed modems,
     select the compatible modem.

12   Press <Enter> to save your selections.

Setting up the ATE software for data calls involves installing the Telephone Manager and ATE software and creating data profiles to communicate with other computers (called host computers). Data profiles contain options, such as automatic login sequences, that accommodate the computer with which you want to communicate. This section describes how to create, modify, and save a data profile.

Because ATE works closely with Telephone Manager, the Telephone Manager software must be installed before you install and set up ATE.

Getting Ready

Before you install your ATE software, please do the following:

1   Select |Administration| from the Office and press <Enter>.

You see the Administration menu.

2   Select |Software Setup| and press <Enter>.

You see this Software menu:

```
┌─────────────────────────────────────┐
│ ⌐ Software                        ?  │
│ ┌───────────────────────────────────┐│
│ │-Install Software from floppy       ││
│ │ Install Software sent by Electronic Mail│
│ │ Remove Installed Software          ││
│ │ Show Installed Software            ││
│ │ X                               ⊡  ││
│ └───────────────────────────────────┘│
└─────────────────────────────────────┘
```
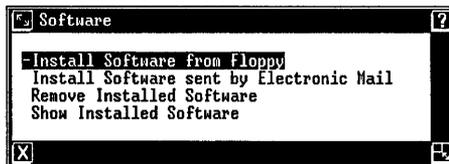
3   Select |Show Installed Software| and press
    <Enter>.

    You see a list of software packages installed
    on your system, similar to this list:

```
┌──────────────────────────────┐
│ ▣ Software              [?]  │
│                              │
│         Software             │
│  ▄AT&T TELEPHONE 3.5▄        │
│                              │
│  [X]                    ▣    │
└──────────────────────────────┘
```

4   Look for **AT&T TELEPHONE 3.5**. The Telephone
    Manager software must be installed before you
    can install the ATE software. If **AT&T
    TELEPHONE 3.5** is listed, the Telephone
    Manager software is already installed. If it
    is not yet installed, refer to the AT&T UNIX
    PC Telephone Manager User's Guide for
    installation procedures.

5   Next, look for **ATE 3.5**. If it is listed, the
    ATE software is already installed. You can
    skip the installation procedures. If you
    want to install a new version, refer to the
    Managing the UNIX **PC** section of the AT&T UNIX
    PC Owner's Manual for information on how to
    remove the old version. If **ATE 3.5** is not
    listed, use the following procedures to
    install it.

Installing ATE Software

To install the ATE software:

1   Select |Administration| from the Office and
    press <Enter>.

2   Select |Software Setup| from the
    Administration menu and press <Enter>.

You see this Software menu:

```
┌───────────────────────────────────────┐
│ ▣ Software                          ?  │
├───────────────────────────────────────┤
│ ─Install Software from Floppy          │
│  Install Software sent by Electronic Mail │
│  Remove Installed Software             │
│  Show Installed Software               │
│ ▣                                   ▣  │
└───────────────────────────────────────┘
```
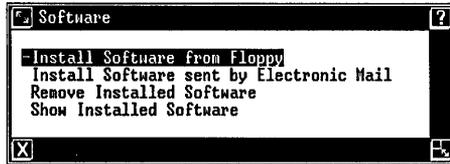
3 Select |Install Software from Floppy| and press <Enter>.

A message prompts you to install the first floppy disk.

4 Insert the ATE floppy disk and press <Enter>.

Several messages appear briefly, followed by the message **Checking for Size file.**

The message **Install in progress** appears.

When the first part of the installation is complete, a message tells you it is safe to remove the floppy. Next, messages tell you that certain files are being installed and updated.

A window appears to notify you that the installation is complete.

5 Remove the floppy disk and replace it in its envelope.

6 Press <Enter>.

7 Close the installation windows.

This completes the ATE software installation.

Creating Data Profiles

Data profiles are files that contain the information needed to set up your computer for a data call. Like other files that you work with on your **UNIX** PC, data profiles are stored in the Filecabinet. A folder named **Profiles** is set up for you when the ATE software is installed.

ATE uses the following types of data profiles:

> o   Modem profiles, which set up communications using the built-in modem and telephone lines
>
> o   RS-232 (or serial) profiles, which set up communications using the RS-232 ports

You can use existing data profiles or create new ones. You can create data profiles from the Office, the Filecabinet, or the Telephone Manager's Create Data Entry form.

The rest of this chapter tells you how to create, save, and modify a data profile.

Creating Profiles from the Office

You can use this method to create RS-232 (serial) or modem profiles.

To create a data profile from the Office or the Filecabinet:

> 1   Press <Creat> to display the menu of objects you can create:

```
┌─────────────────────────┐
│▐▔│ Create            ▐?▌│
├─────────────────────────┤
│  Select object to create│
│                         │
│ ▐File folder▌           │
│  Modem Profile          │
│  Phone Number           │
│  RS-232 Profile         │
│  Standard file          │
│                         │
│▐X▌                  ▐⬇▌│
└─────────────────────────┘
```
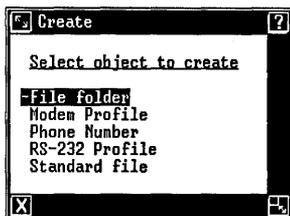
2   Select the profile type from the following:

    o |Modem Profile| to set up a call using the
        modem and telephone lines

    o |RS-232 Profile| to set up a call using
        the RS-232 port.

3   Press <Enter> to display the name form.

4   Type a name for the profile. The name should
    be descriptive of the type of profile you are
    creating.

5   Press <Enter> to display the Terminal Setup
    form.

6   Complete the Terminal Setup form, as
    described under "Filling In the Terminal
    Setup Form" later in this chapter.

7   Press <Enter> to save your terminal setup
    options.

The profile you created now exists in the **Profiles**
folder in your Filecabinet.

Creating Profiles from Telephone Manager

To create a data profile from Telephone Manager:

1   With the Call Screen or Directory displayed,
    press [EDIT DIRCTORY].

    You see the Edit Directory menu.

2   Select |Create data entry| from the Edit
    Directory menu and press <Enter>.

    You see this Create Data Entry form:

```
┌─────────────────────────────────────────────────────┐
│ ▣ Create Data Entry                              [?] │
│                                                       │
│   Name            ████████████████████████████████   │
│   Phone #                                             │
│   Alternate #                                         │
│   Data Profile Name 1200bps        ATE_Modem          │
│   Connection        Modem                             │
│   Field 8                                             │
│   Field 9                                             │
│   In Call Screen?   Yes                               │
│   Function Key      None                              │
│                              [OK]                     │
│ ▣                                                     │
└─────────────────────────────────────────────────────┘
```

3   Point to the **Data Profile Name** field. Press
    <Creat> to display the Terminal Profile form:

```
┌─────────────────────────────────┐
│ ▣                           [?] │
│            Terminal Profile      │
│   Profile Name    ████████████   │
│   Application Name  ATE_Modem    │
│              [OK]               │
│ ▣                               │
└─────────────────────────────────┘
```

4 Type a name for the profile. This name
   should be descriptive of the type of profile
   you're creating.

5 Select the **Application Name** field and press
   <Cmd> to see a menu of the different
   applications for which profiles can be
   created. For creating ATE profiles, use
   ATE_Modem or **ATE_Serial**.

Note

Application names other than **ATE_Modem**
and **ATE_Serial** may appear, representing
other emulator or communications
packages installed on your **UNIX** PC. To
create profiles for other communications
packages, refer to the documentation for
that package.

6 Select the application and profile type you
   want to use. Select |ATE_Modem| if you want
   to create a modem profile; select
   |ATE_Serial| to create an RS-232 profile.
   Press <Enter>.

   You see the Terminal Setup form.

7 Complete the Terminal Setup form, as
   described under "Filling In the Terminal
   Setup Form" below.

8 Press <Enter> to save your terminal setup
   options.

Procedures for filling in the Terminal Setup form are
given below.

Filling In the Terminal Setup Form

The Terminal Setup form contains options for setting up
your computer for terminal emulation and data
communication:

```
┌─────────────────────────────────┐
│▪ Terminal Setup              ?  │
│                                  │
│          Baudrate : 1200 bps     │
│       Send  Parity : No          │
│      Check  Parity : No          │
│       Terminal Type : UNIXPC     │
│    RS232 Modem Control : Off     │
│       Character Size: 7          │
│           Stop Bits: 1           │
│       Character Echo : No        │
│    Flow Control to Host: Yes     │
│  Flow Control from Host: Yes     │
│         Auto Login : No          │
│                                  │
│              [OK]                │
│                                  │
│ ☒                                │
└─────────────────────────────────┘
```

To fill in this form, you need to find out the settings
required by the computer or network with which you want
to communicate.

To display the selections for each field:

o   Point to the field and press <Mark>
     repeatedly until the selection you want
     appears, or

     point to the field and press <Cmd> to display
     a menu of the available choices. Select your
     choice and press <Enter>.

The following paragraphs describe the choices for each
field in the Terminal Setup form.

Baud Rate

The **Baudrate:** field offers selections for the speed at which data is transmitted in bits per second (bps).

The choices are:

110, 300, 1200, 2400, 4800, 9600, and **19200.**

A rate of 1200 bps is selected automatically when you create a modem profile. The **UNIX** PC's built-in modem is compatible with AT&T models 103 and 212 modems and supports the 300 and 1200 baud rates.

A rate of 9600 bps is selected automatically when you create an RS-232 or serial profile. If you are setting up an RS-232 or serial profile for an external modem connected through the RS-232 port, the 300 and 1200 baud rates are most common. The higher rates are generally supported by networks. Refer to your modem or network documentation to determine the speed to use.

Send Parity

The **Send Parity:** field works like a data quality controller and uses the host computer's parity checking capability to make sure data is not garbled during transmission.

Each character displayed on the screen is sent as a string of seven data bits, plus an eighth bit called the parity bit. Think of data bits as a series of zeroes and ones. The **UNIX** PC's Send Parity: option makes the eighth bit even or odd as needed to maintain an odd or even number of zeroes and ones. The other computer can then verify that the data you send to it is correct by checking whether each group of eight bits adds up to an even or odd number.

Select one of the following:

   o **No** means data is sent from the **UNIX** PC
      without parity. This default setting can be
      used when the other computer does not check
      parity.

   o **Even** means data is sent from the **UNIX** PC with
      even parity.

   o **Odd** means data is sent from the **UNIX** PC with
      odd parity.

Find out the requirements of the computer you plan to
call, and set this selection to match.

Note

Set **Send Parity** to **No** for accessing
other **UNIX** PCs.

Check Parity

The **Check Parity:** field value is the quality controller
for data being received by the **UNIX** PC.

Select one of the following:

   o **No** means no parity check is performed. Any
      garbled characters received are displayed.
      No is the default setting.

   o **Yes** performs a parity check and discards any
      garbled characters received.

Find out whether the host computer sends data with
parity, and set this selection to match.

Note

Set **Check Parity** to **No** for accessing
other **UNIX** PCs.

<u>Terminal Type</u>

The **Terminal Type:** field offers four selections for setting up the kind of terminal to be emulated.

Select one of the following:

o   **VT100** sets up a terminal mode compatible with the DEC VT-100 terminal. Use this setting when you communicate with a host computer that is set up to support DEC VT-100 series terminals.

o   **513BCT** sets up a terminal mode compatible with the AT&T 513 BCT terminal. Use this setting when you communicate with host computers, such as the AT&T 3B2, that use the 513 BCT terminal. **513BCT** is the default selection.

o   **UNIXPC** is used to log into other **UNIX** PCs. It provides support for all of the Office features and capabilities.

o   **REMOTE** is used to place a data call from a remote terminal. Refer to the <u>AT&T **UNIX** PC Remote Access User's Guide</u> for the procedures for placing a data call remotely. Note that any data call placed from a remote terminal uses **REMOTE** as the terminal type, even if you do not select it in this field.

The terminal control sequences supported by the **VT-100** and **513BCT** selections are listed in Appendix A. The **UNIX** PC keyboard codes and control sequences are described in the <u>AT&T **UNIX**® PC UNIX System V User's Manual</u> under kbd(7) and escape(7).

RS232 Modem Control

The **RS232 Modem Control:** field value determines whether
the emulator should exit when it receives a disconnect
signal from the host computer. The value of this field
does not affect modem profiles.

Select one of the following:

> o **On** in most cases, such as when your **UNIX** PC
> is connected to another **UNIX** PC.

> o **Off** if your **UNIX** PC is directly connected to
> a host computer or to certain networks, or to
> a DTDM in an AT&T System 75/85.

Be sure to check this selection before saving your
profile. It can be a source of errors when placing a
data call.

Character Size

The **Character Size:** field value determines the number
of data bits per character for both the transmission
and receipt of data.

Select one of the following:

> o **5** data bits per character (not for normal
> use)

> o **6** data bits per character (not for normal
> use)

> o **7** data bits per character·

> o **8** data bits per character

Typically, a character is transmitted in strings of:

> o Seven data bits and one parity bit (refer to
> the description of the **Send Parity:** field
> above), or

> eight data bits and no parity bit.

The other selections are included to ensure
compatibility with systems requiring different
character size selection. Set this selection to match
the requirements of the other computer.

Note

> To gain access to another **UNIX** PC, set
> the character size to eight bits.

Stop Bits

Stop bits are additional bits transmitted after each
character. The **Stop Bits:** field value determines how
many stop bits are sent for each character.

Select one of the following:

o   **1** stop bit (the default selection)

o   **2** stop bits, frequently used with the slower
    baud rates (110 to 300 bps)

Set this selection to match the requirements of the
other computer.

Note

> Set **Stop Bits** to **1** for accessing another
> **UNIX** PC.

Character Echo

The **Character Echo:** field value determines how
characters are displayed on your terminal screen during
terminal emulation. Some host computers send each
character you type back to your screen for display. If
your host computer does not display each character, the
UNIX PC can echo characters to the screen so that what
you type is both sent to the host computer and
displayed for you to see.

Select one of the following:

o **No** if the host computer echoes typed
  characters to your screen. This type of
  operation, also called remote or full-duplex
  mode, is the default setting.

o **Yes** to display typed characters and send them
  to the host computer simultaneously. This
  type of operation is also called local echo
  or half-duplex mode.

Note

Set **Character Echo** to **No** for accessing
another **UNIX** PC.

Flow Control to Host

Flow control acts as a data traffic manager to prevent
data from being lost if the holding area (input queue)
of either computer becomes full or if the data
transmission is for some reason interrupted. The **Flow
Control to Host:** field provides this service for data
being received from the host computer. If you plan to
print data during transmission, be sure to enable this
flow control.

Select one of the following:

o **Yes** (the default and recommended setting) to
  enable flow control for data received from
  the host computer.

o **No** to disable flow control.

For flow control to work, the host computer must be set
up to stop sending data to the UNIX PC when the **UNIX** PC
sends it an XOFF (DC3) signal and to resume sending
data when the **UNIX** PC sends it an XON (DC1) signal.

Note

Set **Flow Control to Host** to **Yes** for
accessing other **UNIX** PCs.

Flow Control from Host

This field sets up flow control for data being sent from your **UNIX** PC to a host computer, so that no data is lost if the host computer's input queue becomes full or transmission is interrupted.

Select one of the following:

  o **Yes** (the default and recommended setting) to enable flow control for data sent to the host computer.

  o **No** if the host computer does not use flow control.

For flow control to work, the host computer must be set up to send an XOFF (DC3) signal to the **UNIX** PC when its input queue is almost full and to send an XON (DC1) signal when it is ready to receive more data from the **UNIX** PC.

Note

Set **Flow Control from Host** to **Yes** for accessing other **UNIX** PCs.

Auto Login

The **Auto Login:** field lets you set up an automatic login sequence. An automatic login provides a login name, password, account number, and so forth, so that you log into another computer's system automatically when you place a data call. Automatic login sequences save you the effort of typing this information every time you place the call. You can also set up a file to receive the results of these commands.

Creating an Automatic Login Sequence

To set up an automatic login sequence:

  1 On the Terminal Setup form, point to the **Auto Login:** field.

  2 Select **Yes**.

3 Press <Enter> to display the Auto-Logon
Sequences form:

```
┌─────────────────────────────────────────────────────────────────┐
│ ▣ Auto-Logon Sequences                                        ❓ │
│                                                                   │
│    Timer: ███    File Name:                                       │
│    RS1:                            SS1:                            │
│    RS2:                            SS2:                            │
│    RS3:                            SS3:                            │
│    RS4:                            SS4:                            │
│    RS5:                            SS5:                            │
│    RS6:                            SS6:                            │
│    RS7:                            SS7:                            │
│    RS8:                            SS8:                            │
│    RS9:                            SS9:                            │
│    RS10:                           SS10:                           │
│    RS11:                           SS11:                           │
│    RS12:                           SS12:                           │
│    RS13:                           SS13:                           │
│                          [OK]                                     │
│ ▣                                                                 │
└─────────────────────────────────────────────────────────────────┘
```

4 Fill in the form with your information as
described below, under "The Auto-Logon
Sequences Form."

5 When you complete the form, press <Enter> to
save the automatic login sequence.

The Auto-Logon Sequences Form

Each of the **RS:** (Receive String) and **SS:** (Send String)
fields holds up to 29 characters. In these fields, you
enter information that follows the same sequence that
occurs when you receive and answer the prompts from the
host computer. When your UNIX PC receives the
characters you have entered in the **RS1:** field, it then
sends the host computer the characters in the **SS1:**
field, then waits to receive the characters in the **RS2:**
field, and so on.

For example, you could enter the host computer's login
prompt in the RS1: field, and enter the user name that
you type in response in the SS1: field. When you place
a data call to the host computer, the **UNIX** PC waits to
receive the login prompt, then automatically sends your
user name, logging you in. A detailed example is given
later in this chapter under "Sample Automatic Login
Sequences."

You fill in the form by using the arrow keys to
highlight the fields and typing your information. The
fields are described in the following paragraphs:

Timer

This field holds the maximum amount of time, in
seconds, for your **UNIX** PC to wait for data to be
received from the host computer. This field is used to
create a timeout period within which data must be
received or the line will be disconnected. This
feature can prevent wasted time on a call.

The **Timer:** field is optional and can contain up to 9999
seconds. If you leave this field blank, the default
timeout period is 30 seconds.

File Name

The **File Name:** field holds the name of a file that
records information resulting from any tasks that you
set up in your login sequence. This field is optional,
to be used if you want to capture information.

The file you name in this field is stored as a standard
file in your Filecabinet. Expert users can direct the
file to any UNIX directory by entering a full UNIX
pathname.

RS1: through RS13

The **RS:** fields on the left side of the menu are for
entering prompts or strings of characters that you
receive from the host computer. Some examples of
receive strings are prompts for a login name, password,
and terminal type. If the string received from the
host is too long to fit in the field, you can enter the
last few characters of the string.

SS1: through SS13

The **SS:** fields on the right side of the menu are for entering your answers to the host computer's prompts and commands. Some examples of send strings are answers to prompts for a login name, password, and terminal type.

Special Characters in Send and Receive Strings

Sometimes you receive special characters from the host computer, or you may want to send special characters or commands to the host computer. For example, the host computer might send a message followed by two carriage return characters. You can use the following special characters in your **RS:** and **SS:** fields:

\E In an **RS:** field, typing any one of these
\e special characters automatically ends the
\Q session with the host computer. Do not use
\q these characters in **SS:** fields.

\r In an **SS:** field, this special character has
        the same effect as pressing the Return key
        (CR) on the **UNIX** PC keyboard. Use this
        character in **RS:** fields when the host
        computer responds with more than one line of
        data.

\n In an **SS:** field, this character causes a line
        feed (LF), which places the cursor on the
        next line at the same position. Use this
        character in an **RS:** field when the host
        computer is sending a line feed.

  ^   To send or receive a control character, type
        a ^ followed by the character. For example,
        to send a Control-D to the host computer,
        type **^d** in an **SS:** field.

Procedures for Saving, Modifying, Deleting Sequences

To save your automatic login sequence as a part of the data profile you are creating:

      1 Fill in all the fields you want in the Auto-Logon Sequences form.

      2 Press <Enter>.

To modify an automatic login sequence that you have already saved:

      1 Follow the steps to modify a data profile, given later in this chapter, displaying the Terminal Setup form for the profile.

      2 Point to the **Auto Login:** field.

      3 Press <Enter>, displaying the Auto-Logon Sequences form containing your sequence.

      4 Make your changes to the form, and press <Enter> to save the sequence again.

To delete an automatic login sequence from a data profile:

      1 Follow the steps to modify a data profile, given later in this chapter, displaying the Terminal Setup form for the profile.

      2 Point to the **Auto Login:** field.

      3 Select |No| for this field, and press <Enter> to save the profile again.

Sample Automatic Login Sequences

Use the following examples to help you set up your own auto login sequences.

Sample 1:   Sequence for a UNIX PC

This sample automatic login sequence can be used to log into another UNIX PC. This host UNIX PC has a user name John with a password secret:

1   In the RS1: field, type Please login:

These characters are the prompt displayed by the host UNIX PC.

2   In the SS1: field, type John\r

These characters enter the login name followed by a return (\r).

3   In the RS2: field, type Password:

These characters are the prompt for a password.

4   In the SS2: field, type secret\r

These characters enter the password and a return (\r).

5   In the RS3: field, type by RETURN:

These characters are the last part of the prompt requesting terminal type. The entire prompt does not fit in the field, and this portion is sufficient for the automatic login feature to make an accurate match.

6   In the SS3: field, type unixpc\r

These characters enter the terminal type and a return (\r).

The Auto-Logon Sequences form looks like this:

```
┌────────────────────────────────────────────────────────────────┐
│ [▪] Auto-Logon Sequences                                    [?] │
├────────────────────────────────────────────────────────────────┤
│  Timer:      File Name:                                          │
│  RS1: Please login:              SS1: John\r                     │
│  RS2: Password:                  SS2: secret\r                   │
│  RS3: by RETURN:                 SS3: ██unixpc\r██████████████    │
│  RS4:                            SS4:                            │
│  RS5:                            SS5:                            │
│  RS6:                            SS6:                            │
│  RS7:                            SS7:                            │
│  RS8:                            SS8:                            │
│  RS9:                            SS9:                            │
│  RS10:                           SS10:                           │
│  RS11:                           SS11:                           │
│  RS12:                           SS12:                           │
│  RS13:                           SS13:                           │
│                           [OK]                                   │
│ [X]                                                              │
└────────────────────────────────────────────────────────────────┘
```

To save the sequence:

> o   Press <Enter>.

When you use the data profile containing this sequence to place a call to the host **UNIX** PC, you are logged in automatically. The host Office window appears shortly after you place the call, ready for work.

Sample 2:   Sequence for Expert Users

Expert users can also set up automatic login sequences that perform tasks for them.

In this example, the sequence logs the user into a host computer as **root** using a profile that selects AT&T 513 BCT terminal emulation. It then lists the files in the **root** directory, and checks the active processes. All of this information is recorded in a file named **log.chk** that can later be recalled. Logging out is automatic.

> 1   In the **File Name:** field, type **log.chk**

These characters store the results of the session in the file **log.chk** in your Filecabinet. To store the file elsewhere in the UNIX system you could enter a full pathname, such as **/usr/tmp/log.chk**.

2   In the **RS1:** field, type **login:**

These characters match the host computer's login prompt.

3   In the **SS1:** field, type **root\r**

These characters log you in as **root**.

4   In the **RS2:** field, type **Password:**

These characters are the prompt for a password.

5   In the **SS2:** field, type **secret\r**

These characters enter the password and a return (****).

6   In the **RS3:** field, type **RETURN:**

These characters match the host computer's terminal type prompt.

7   In the **SS3:** field, type **b513\r**

These characters identify you to the host computer as an AT&T 513 BCT terminal.

8   In the **RS4:** field, type **#**

This character matches the host computer's system prompt.

9   In the **SS4:** field, type **ls -l\r**

This executes the host computer's command to list the files.

10   In the **RS5:** field, type **#**

This character matches the system prompt that the host computer sends after listing the files.

11 In the **SS5:** field, type **ps -e\r**

These characters execute the host computer's command to list the active processes.

12 In the **RS6:** field, type **#\e**

These characters exit Terminal Emulation at the next system prompt.

The completed Auto-Logon Sequences form looks like this:

```
┌─────────────────────────────────────────────────────────────┐
│ 🔲 Auto-Logon Sequences                                   [?]│
│                                                              │
│  Timer:        File Name: log.chk                            │
│  RS1: login:                      SS1: root\r                │
│  RS2: password:                   SS2: secret\r              │
│  RS3: RETURN:                     SS3: b513\r                │
│  RS4: #                           SS4: ls -l\r               │
│  RS5: #                           SS5: ps -e\r               │
│  RS6: #\e                         SS6:                       │
│  RS7:                             SS7:                       │
│  RS8:                             SS8:                       │
│  RS9:                             SS9:                       │
│  RS10:                            SS10:                      │
│  RS11:                            SS11:                      │
│  RS12:                            SS12:                      │
│  RS13:                            SS13:                      │
│                        [OK]                                  │
│ 🔲                                                           │
└─────────────────────────────────────────────────────────────┘
```

To save the sequence:

o   Press <Enter>.

As part of a data profile, this login sequence also performs the tasks specified in the **SS3:** and **SS4:** fields, placing the information it collects in the **log.chk** file.

Saving Data Profiles

To save a data profile, and store it in the **Profiles** folder in the Filecabinet:

o   When you complete the Terminal Setup form, press <Enter>.

Modifying Data Profiles

You can make changes to a data profile that you have
already saved. You can change a data profile starting
from the Office or from Telephone Manager.

To change a data profile starting from the Office:

1 Open the Filecabinet.

2 Open the **Profiles** folder.

3 Point to the profile you want to change and
press <Enter> to display the Terminal Setup
form for the profile you have selected.

4 Make your changes to the Terminal Setup form
and press <Enter> to save the changes.

To change a data profile starting from Telephone
Manager:

1 Select the entry containing the data profile
to be modified in the Call Screen or
Directory.

2 Press [EDIT DIRCTORY].

3 Select |Modify entry| from the Edit Directory
menu and press <Enter>.

4 Point to the **Data Profile Name:** field.

5 If the profile you want to change is not
displayed in the field, press <Mark> until
the name of the profile you want appears.

6 Press <Rplac> to display the Terminal Setup
form for the profile you have selected.

7 Make your changes to the Terminal Setup form
and press <Enter> to save the changes.

Using Data Profile Files

To display a list of all profile files:

> o   Open the **Profiles** folder in the Filecabinet, or
>
>   press the <Cmd> key with the cursor on the **Data Profile Name:** field of Telephone Manager's Create Data Entry form.

Because data profiles are associated with data entries in your telephone directory, and because Telephone Manager expects data profiles to be stored in the **Profiles** folder, you should not move them to another folder. You should also take care not to delete a profile file unless you are certain that none of your telephone directory entries use the profile.

This section gives procedures for using Terminal
Emulation once the hardware and software have been set
up. The first part of this section covers placing a
data call, logging into a host computer, working in
terminal mode, and ending a data call.

The second part of this section gives detailed
procedures for performing data transfers while
communicating with a host computer. These procedures
include recording data displayed on your screen,
sending and receiving files, and printing screen data.
Two sample data transfer sessions are also included.

Placing a Data Call

Follow these general procedures to place a data call:

   1   Select the data call entry from the Telephone
       Manager Call screen or Directory, and then
       press <Enter> to place the call.

   2   When you are connected, you should see a
       prompt from the host computer. If you don't
       see a prompt, press <Return> and the prompt
       should appear.

   3   Follow the host computer's login procedure to
       gain access to the system.

Refer to the "Setting Up the Software for Data Calls"
chapter in this guide and to the AT&T UNIX PC Telephone
Manager User's Guide for more information on setting up
data calls.

Logging Into Other Computer Systems

Before calling a computer system, you should become
familiar with the information needed to log in and work
on that system. Online information and mainframe
computer services supply instruction manuals that give
you this information. Before calling another **UNIX** PC,
check with the person in charge of the system to find
out what user names have been established for logging
into the system, or establish your own user name.

If the host computer requests a terminal type, respond
with the emulation type you selected in the Terminal
Setup form--VT-100, AT&T 513 BCT, **UNIX** PC, or whatever
your terminal type is, if you are placing the data call
from a remote terminal. It is very important to
identify your terminal type correctly to the host
computer so your screen display is correct.

To call another **UNIX** PC, you should choose the **UNIX** PC
terminal type in the Terminal Setup form when you
create the data profile (see **Setting Up the Software
for Data Calls** in this guide). When you log into
another **UNIX** PC, type **unixpc** when you are prompted to
enter your terminal type.

When you place a data call between two **UNIX** PCs, you
will notice some differences in the way the screen is
displayed and used. For example, you cannot use the
mouse. You can, however, use the Office window and the
UNIX PC keys in the same way as when you are working in
your own system. See the AT&T UNIX PC Remote Access
User's Guide for full information on accessing another
UNIX PC. You may also want to refer to the AT&T UNIX
PC Owner's Manual for a list of the commands and Office
objects that you can gain access to by using the
command line.

Logging In Automatically

If you create an automatic login sequence as part of
your data profile, you are logged into the host
computer automatically when you place the data call.
Refer to "Creating an Automatic Login Sequence" in the
Setting Up the Software for Data Calls chapter of this
guide for more complete information about automatic
login sequences.

Working as a Terminal

Once you dial another computer and a connection is
established, ATE displays a window without a border
that fills the entire **UNIX** PC screen. For example, if
you dial into another **UNIX** PC, your screen looks like
this:

```
 _____
/                                                           \
|                                                           |
|   DATA 1                   Fri June 6, 2:06 pm       [w]  |
|                                                           |
|   Welcome to the AT&T UNIX pc                             |
|                                                           |
|   Please login:                                          |
|                                                           |
|                                                           |
|                                                           |
|                             `                             |
|                                                           |
|                                                           |
|                                                           |
|                                                           |
|                                                           |
|                                                           |
|                                                           |
|                                                           |
|  Use Shift-Exit to exit Emulator and Shift-Cmd to access local commands. |
\                                                           /
 -----------------------------------------------------------
```

The other **UNIX** PC's login prompt appears at the top of
the screen. If you don't immediately see a prompt,
press the Return key and the prompt should appear.

The prompt at the bottom of the screen is displayed by
ATE to remind you of two key combinations that you can
use at any time while you are communicating with the
host computer:

>   o   <Shift>-<Exit> to end the session and
>   disconnect from the host computer
>
>   o   <Shift>-<Cmd> to display a menu of Terminal
>   Emulation commands.

Note

Always press the Exit key when you want
to leave the Terminal Emulation Local
Commands menu. Do not suspend the
window containing the Local Commands
menu.

As soon as you enter commands for the host computer,
this prompt disappears.

If the data profile you are using specifies the VT-100
or AT&T 513 BCT terminal type, you can now operate as
if your **UNIX** PC is a terminal. The **UNIX** PC keyboard
has the same keys as the AT&T 513 BCT. VT-100 users
will want to check the information in Appendix B to
determine which **UNIX** PC keys to use to perform VT-100
functions. Appendix A gives expert users information
on escape and control sequences supported by both
VT-100 and 513 BCT emulation.

See "Transferring Data" below for information on
sending and receiving files, capturing the results of a
session in a **UNIX** PC file, and printing information.

Suspending and Resuming Terminal Emulation

You can suspend the full-screen Terminal Emulation
window and resume a different window. Doing so will
not disconnect you from the host computer. To work in
another window:

> 1 Press <Suspd>, or point to [W] with the mouse
>   and press <B1>.
>
> 2 Select the window you want from the Windows
>   menu and press <Enter>.

Follow the same steps to return to the Terminal
Emulation window, which is identified in the Windows
menu as **Async Emulator.**

Resetting Terminal Emulation

If you are familiar with the VT-100 or 513 BCT
terminal, you know that it is sometimes useful to reset
the terminal when you are working with a host computer.
Resetting returns the terminal to its original state
when you have been working in a different mode. For
example, sometimes the host computer does not respond
to your keyboard input; resetting the emulator often
solves this problem.

To reset Terminal Emulation:

> 1 Press <Shift>-<Cmd> to display the Local
>   Commands menu:

```
┌─────────────────────────┐
│ ▣ Local Commands     ? │
│                         │
│      available choices  │
│                         │
│ ─ Record Screen to File │
│   Stop Recording to File│
│   Transmit File - ASCII │
│   Receive  File - UMODEM│
│   Transmit File - UMODEM│
│  *Terminate File Transfer│
│   Start Printer         │
│   Stop Printer          │
│   Emulator Reset        │
│ ▣                    ⊞ │
└─────────────────────────┘
```
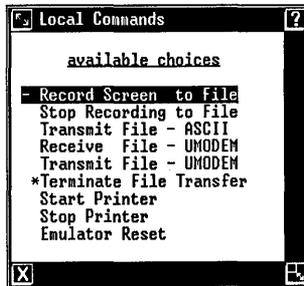
> 2 Select |Emulator Reset| and press <Enter>.

See "Transferring Data" below for descriptions of the
rest of the commands on this menu.

Logging Out

Follow these steps to end a session with a host
computer:

1 When you finish working, follow the logout
   procedure for that system. <u>Note that if you
   do not log out before disconnecting from the
   host computer, your session may still be in
   process. You should always log out before
   you disconnect</u>.

2 If logging out disconnects the line, a
   message tells you to press any letter key to
   return to Telephone Manager. Follow these
   instructions.

   If logging out does <u>not</u> disconnect the line,
   press <Shift>-<Exit>. Doing so always
   disconnects the line and returns you to
   Telephone Manager. This is a fail-safe way
   to terminate any connection with a host
   computer and should be used only after you
   have loggged out or if you are unable to log
   out.

Transferring Data

Terminal Emulation offers several options that allow
you to transfer data between computers. You can:

o Send files from your **UNIX** PC to another
   computer

o Receive files from another computer on your
   UNIX PC

o Record in a **UNIX** PC file information
   displayed on your screen during a Terminal
   Emulation session

o Print information displayed on your screen
   using your **UNIX** PC's attached printer

You can select these options by pressing <Shift>-<Cmd>
to display Terminal Emulation's Local Commands menu.
This menu is available at all times when you are logged
into the other system.

Note

Press <Exit> to leave the Local Commands
menu. Do not suspend the menu.

Several of the options in the Local Commands menu
display forms prompting you for a filename. Follow
these guidelines when entering names in these forms:

> o   To direct a file to or from the Filecabinet,
>   type the file name in the form.
>
> o   To direct a file to or from a folder in your
>   Filecabinet, type the folder name, a slash
>   (/) and then the file name. An example:
>   **Stocks/June10** directs the file **June10** to or
>   from a folder named **Stocks**.
>
> o   Expert users can direct a file to or from any
>   UNIX directory by typing the full UNIX
>   pathname.

The paragraphs that follow give procedures for each
kind of data transfer.

Recording Screen Data

The **Record Screen to File** option directs data that you
type and data displayed on the screen to a file. This
feature allows you to copy messages, data from
electronic bulletin boards and information services,
and text files directed to your **UNIX** PC screen from
another computer.

Once you select this option, data is captured in the
file until you select the **Stop Recording to File**
option. The file can be located in your Filecabinet or
in a UNIX directory.

To record screen data:

> 1   When you are logged into the host computer
>   and ready to begin recording data, press
>   <Shift>-<Cmd> to display the Local Commands
>   menu.
>
> 2   Select |Record Screen to File| and press
>   <Enter>, displaying the Name of File form.

---

3   Type a file name or pathname for the file.

The file that is created is a standard file. If you give the name of a file that already exists, the new information is added onto the end of this file.

4   Press <Enter> to begin capturing screen data.

5   Display the information you want to put into the file.

You see the message **Recording on file :** **filename** at the bottom of the screen, where **filename** is the name you gave the file.

6   When you finish displaying the information you want in the file, press <Shift>-<Cmd>.

7   Select |Stop Recording to File| from the Local Commands menu.

8   Press <Enter>.

Transmitting ASCII Files

The **Transmit File - ASCII** option lets you send a data file, or a file containing only alphanumeric characters, to another computer. Files containing control codes and binary files such as programs or object code cannot be transferred with this option.

You will need to set up a means of capturing the ASCII file on the other computer before sending the file from the **UNIX** PC. Most data communication programs have a capture or receive file option that can be used for this purpose.

When transmitting ASCII files between two **UNIX** PCs, use the UMODEM file transfer options described later in this section.

To send an ASCII file to another computer:

1   When you are logged into the host computer and the host computer is ready for you to begin sending a file, press <Shift>-<Cmd> to display the Local Commands menu.

2 Select |Transmit File - ASCII| and press
    <Enter>, displaying the Name of File form.

3 Enter the name of the file:

o Press <Enter> to display and select from a
   menu of the files in your Filecabinet, or

   type the name of the file to send, or the
   pathname to the file if it is elsewhere in
   your UNIX system.

4 Press <Enter> to transmit the file.

The file appears on the screen as it is sent
to the host computer. While the file is
being sent, you see the message **Transmitting
ASCII File : filename** at the bottom of the
screen, where **filename** is the name you gave
the file. When transmission is complete,
this message disappears.

5 You can stop the file transfer at any time.
    To end the file transfer before it is
    complete, press <Shift>-<Cmd> to display the
    Local Commands menu.

6 Select |*Terminate File Transfer| and press
    <Enter>.

Receiving ASCII Files

If the host computer has the UMODEM program available,
you should use this program to send ASCII files from
the host computer to your **UNIX** PC, as described later
in this chapter.

You can use the **Record Screen to File** option to receive
an ASCII file from a computer that does not support the
UMODEM file transfer protocol. You will also need to
know the host computer commands to display the contents
of an ASCII file on your screen.

To receive an ASCII file:

      1 Log into the host computer and type the
           command to display the contents of the file
           you want to receive. Do not press <Return>
           yet.

      2 Press <Shift>-<Cmd> and select |Record Screen
           to File|, as described earlier in this
           chapter.

      3 When you see the message telling you that
           file recording has begun, press <Return> to
           begin displaying the file from the host
           computer.

      4 When the host computer is finished displaying
           the file, press <Shift>-<Cmd> and select
           |Stop Recording to File|, as described
           earlier in this chapter.

The **UNIX** PC file that you specified for recording now
has the same contents as the host computer file. The
prompt displayed by the host computer after sending you
the file is also saved at the end of your **UNIX** PC file,
and you may want to edit the file to remove this
prompt.

Transferring Files with the UMODEM Option

The **Transmit File - UMODEM** and **Receive File - UMODEM**
options use the Christensen file transfer protocol to
ensure that files are transferred correctly. This
protocol is used by a number of data communications
programs, enabling your UNIX PC to exchange data with a
wide variety of systems. It allows you to transfer
both binary (object and program) files and text (ASCII)
files.

Overview of UMODEM

The UMODEM protocol must be available on both computer
systems that are transferring files. You cannot use
UMODEM to transfer files to or from another computer
that does not use this protocol.

Files are transmitted in blocks of 128 bytes. Each
block received undergoes a checksum test, where the
bits in all the characters are added together, and the
sum is compared to a checksum byte. This test ensures
that the block of data is correct. A message is
displayed for each block received. If no data or
garbled data reaches the receiving computer, a message
appears, and the UMODEM program tries to retransmit the
data up to 10 times before ending transmission.

To transfer a file using UMODEM, you first set up the
host computer to send or receive the file; then you
initiate the transfer to or from your **UNIX** PC.

To send a file to another **UNIX** PC, you first execute
UMODEM commands to that UNIX system; then you set up
the UMODEM transmit file function using the Terminal
Emulation Local Commands menu on your local system.

To receive a file from another **UNIX** PC, you first
execute UMODEM commands to that UNIX system; then you
set up the UMODEM receive file function using the
Terminal Emulation Local Commands menu on your local
system.

If you stop a transfer after it has begun, the program
responds after a timeout period of up to 30 seconds has
elapsed.

UMODEM Transfer Types

The UMODEM program supports three types of file
transfer:

        o   Binary

        o   ASCII 8-bit

        o   ASCII 7-bit

Appendix D contains a technical description of how
UMODEM processes each type of transfer. Follow these
general guidelines to choose the appropriate type for
your situation, and consult Appendix D if you need more
detailed information:

        o   To transfer files between two UNIX systems,
            use the binary type.

o   To receive a file from a UNIX system that can
    send only in 8-bit ASCII mode, use the <u>ASCII
    8-bit</u> type.

o   To transfer files between a **UNIX** PC and a DOS
    or CP/M system, use the <u>ASCII 8-bit</u> type for
    most ASCII text files, and use the <u>binary</u>
    type for program and other non-ASCII files.

o   To transfer an ASCII file created by a CP/M
    or DOS word processor to a **UNIX** PC, you may
    need to use the <u>ASCII 7-bit</u> type.

UMODEM Commands

To transfer files between **UNIX** PCs with UMODEM, you use
the following UNIX commands for the host **UNIX** PC:

UNIX Command	Function
umodem -rb filename	Receive binary files
umodem -sb filename	Send binary files
umodem -rt filename	Receive ASCII 8-bit files
umodem -st filename	Send ASCII 8-bit files
umodem -rt7 filename	Receive ASCII 7-bit files
umodem -st7 filename	Send ASCII 7-bit files

In these commands, **filename** is the pathname of the file
being transferred.

You can include an **m** after the hyphen (-) in these
commands to overwrite the existing file. For example,
umodem -mrt7 u/Jim/Filecabinet/myfile receives the 7-
bit ASCII file **myfile** on the host computer, overwriting
any file **myfile** already stored in the Filecabinet of
the user **Jim**.

These commands may not work for a UNIX system other
than a **UNIX** PC. You will need to find out what the
UMODEM commands are for the particular system with
which you are communicating.

Receiving a File with UMODEM

To receive a file with UMODEM, you will need to know
the host computer's commands to send a file to your
UNIX PC using the UMODEM protocol. If the host
computer is another **UNIX** PC, choose **umodem -sb**
filename. Note that you must type the command in a
UNIX window on the host computer.

To receive a file using UMODEM (note that you should
follow the procedures fairly quickly: if UMODEM times
out before you reach step 9 below, you must start
over):

    1 Log into the host computer using Terminal
        Emulation.

    2 Give the host computer the command to send
        the file with UMODEM.

    3 Press <Shift>-<Cmd> to display the Local
        Commands menu.

    4 Select |Receive File - UMODEM| and press
        <Enter> to display the Receive File - UMODEM
        form:
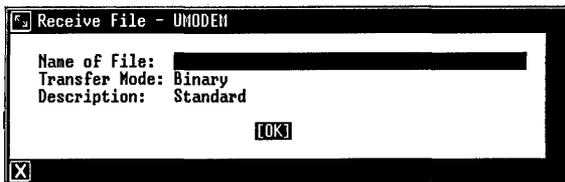
```
┌─────────────────────────────────────────────┐
│ ▣ Receive File - UMODEM                      │
│                                              │
│   Name of File:  ████████████████████████    │
│   Transfer Mode: Binary                      │
│   Description:   Standard                    │
│                                              │
│                    [OK]                      │
│ ┌─┐                                          │
│ │X│                                          │
│ └─┘                                          │
└─────────────────────────────────────────────┘
```

    5 Select the **Name of File:** field and type the
        name for the received file, or the pathname
        if you want to store the file in a directory
        other than the Filecabinet.

6 Select the **Transfer Mode:** field and press
<Slect> until the type of transfer you want
is displayed. Your entry in this field
should match the transfer type that you used
in the host computer command to send the
file. For example, **b** for **binary, t7** for 7-
bit ASCII, and **t** for **8-bit ASCII.**

7 Select the **Description:** field and press <Cmd>
to display a list of the **UNIX** PC file types
for the received file.

The types displayed are the same ones that
are available on the Create menu. You should
choose the type that is appropriate for the
file you are receiving. For example, if you
have a word processor application on your
UNIX PC, and you are receiving a file created
with the same word processor on the host
computer, you would choose the word processor
file type for the **Description:** field.

If you aren't sure what type is appropriate,
choose |Standard|.

8 Select the type of file that you want for the
received file and press <Enter>.

9 Press <Enter> to begin receiving the file.

UMODEM displays a series of status messages as the file
is transferred. When the transfer is complete, the
message **UMODEM terminating** is displayed. For examples
of the status messages, see the sample sessions below.

Sending a File with UMODEM

To send a file from your **UNIX** PC to another computer
with UMODEM, you will need to know the host computer's
commands to receive a file using the UMODEM protocol.
If the host computer is another **UNIX** PC, choose the
appropriate command from the list above.

To send a file using UMODEM:

1 Log into the host computer using Terminal
Emulation.

2 Give the host computer the command to receive the file with UMODEM.

3 Press <Shift>-<Cmd> to display the Local Commands menu.

4 Select |Transmit File - UMODEM| and press <Enter> to display the Transmit File - UMODEM form:
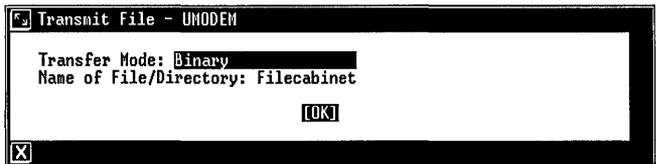
```
┌─────────────────────────────────────────────────┐
│ ▓ Transmit File - UMODEM                         │
│                                                  │
│  Transfer Mode: Binary                           │
│  Name of File/Directory: Filecabinet             │
│                    [OK]                           │
│ ┌─┐                                              │
│ │X│                                              │
│ └─┘                                              │
└─────────────────────────────────────────────────┘
```

5 Select the **Transfer Mode:** field and press <Mark> until the type of transfer you want is displayed. Your entry in this field should match the transfer type that you used in the host computer command to receive the file. For example, **b** for **binary, t7** for 7-bit **ASCII,** and **t** for 8-bit **ASCII.**

6 Point to the **Name of File/Directory:** field and enter the name of the file:

   o Press <Enter> to display and select from a list of the files in your Filecabinet, or

      type the pathname of the file you want to send, if it is in a UNIX directory elsewhere in your UNIX PC system.

7 Press <Enter> to begin sending the file.

UMODEM displays a series of status messages as the file is transferred. When the transfer is complete, the message **UMODEM terminating** is displayed. For examples of the status messages, see the sample sessions below.

Terminating a Transfer

You can stop a UMODEM transfer before it is complete.
When you terminate a transfer, it can take up to 30
seconds for the UMODEM program to respond.

To stop a UMODEM transfer:

> **1** Press <Shift>-<Cmd> to display the Local
> Commands menu.
>
> **2** Select |*Terminate File Transfer| and press
> <Enter>.

Reviewing Sample UMODEM Sessions

Two sample sessions demonstrating how to transmit and
receive files with the UMODEM option are included to
help you set up your system for these functions.

Sample 1: Receiving a File

In this example, a word processing file named
Junerpt.WP is stored on another **UNIX** PC, and you need
to get a copy of this file for a report. You have
dialed the other **UNIX** PC and logged into the Office as
an expert user, and now you want to receive this file
on your **UNIX** PC.

> **1** In the other computer's Office, select
> |UNIX System| and press <Enter>. You now
> have access to the other **UNIX** PC's UNIX
> system.
>
> **2** Type **umodem -sb Junerpt.WP**
>
> The **s** option sets up the other system to send
> a file to your **UNIX** PC. The **b** option selects
> binary transfer type, which is appropriate
> for transfers between two **UNIX** PCs.

3   Press <Return>. You see the following
    messages indicating that the send file
    function is now set up:

```
$ umodem -sb Junerpt.WP

UMODEM Version 2.8a

UMODEM:  File Name: Junerpt.WP
UMODEM:  Estimated File Size 1K, 3 Records, 358 Bytes
UMODEM:  8-Bit Transmission Enabled
UMODEM:  Ready to SEND File
```

4   Press <Shift>-<Cmd> to display the Local
    Commands menu.

5   Select |Receive File - UMODEM|, displaying
    the Enter Name of File form.

6   In the **Name of File:** field, type **Junerpt.WP**

    Notice that the other two fields, **Transfer
    Mode:** and **Description:**, are filled in for
    you:

```
[■] Receive File - UMODEM
    Name of File:  ████████████████████████
    Transfer Mode: Binary
    Description:   Standard
                        [OK]
[X]
```
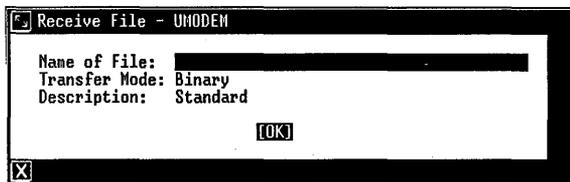
    If you were using the same word processor
    application on both **UNIX** PCs, you would
    select the word processor file type for the
    description.

7 Press <Enter> to start the file transfer.

You see this message:
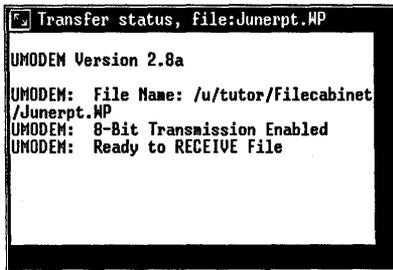
```
▓ Transfer status, file:Junerpt.WP

UMODEM Version 2.8a

UMODEM:  File Name: /u/tutor/Filecabinet
/Junerpt.WP
UMODEM:  8-Bit Transmission Enabled
UMODEM:  Ready to RECEIVE File
```

When transmission begins, the message **Received sector n** appears for each block of data transferred, where **n** is the number of the block of data.

When transmission is complete, you see this message:
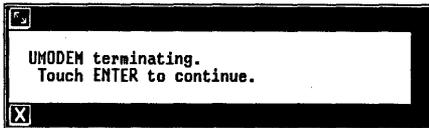
```
▓

  UMODEM terminating.
   Touch ENTER to continue.
X
```

The Standard File **Junerpt.WP** is now stored in your Filecabinet, in this case the Filecabinet belonging to the **tutor** login.

Sample 2: Transmitting a File

To demonstrate the procedure to transmit a file using
the UMODEM protocol, assume that you have a program
file named **demo** that you want to send to another **UNIX**
PC. You have called the computer and logged in, and
now you want to transmit this file.

1 In the other computer's Office, select |UNIX
   System| and press <Enter>. You now have
   access to the other **UNIX** PC's UNIX system.

2 Type **umodem -rb demo**

   The **r** option sets up the other system to
   receive a file from your **UNIX** PC. The **b**
   option selects binary transfer type, which is
   appropriate for transfers between two **UNIX**
   PCs.

3 Press <Return>. You see the following
   messages indicating that the receive file
   function is now set up:

```
$ umodem -rb demo

UMODEM Version 2.8a

UMODEM:  File Name: demo
UMODEM:  8-Bit Transmission Enabled
UMODEM:  Ready to RECEIVE File
```

4 Press <Shift>-<Cmd> to display the Local
   Commands menu.

5 Select |Transmit File - UMODEM| and press
   <Enter> to display the Transmit file - UMODEM
   form. Note that **binary** transfer mode is
   already selected for you.

6 Point to the **Name of File/Directory:** field
   and press <Enter> to display a list of the
   files in your Filecabinet (in this case, the
   Filecabinet of the **tutor** login).

7 Select the file **demo** and press <Enter> to
begin file transmission. You see this
message:

```
┌──────────────────────────────────┐
│ ▣ Transfer status, file:demo      │
├──────────────────────────────────┤
│UMODEM Version 2.8a                │
│                                   │
│UMODEM:  File Name: /u/tutor/Filecabinet│
│/demo                              │
│UMODEM:  Estimated File Size 6K, 45 Reco│
│rds, 5632 Bytes                    │
│UMODEM:  8-Bit Transmission Enabled│
│UMODEM:  Ready to SEND File        │
│                                   │
│                                   │
└──────────────────────────────────┘
```

When transmission begins, the message **Sent sector n**
appears for each block of data transferred, where **n** is
the number of the block of data.

When transmission is complete, the **UMODEM terminating**
message is displayed. The executable file **demo** is now
stored in the Filecabinet on the other **UNIX PC**.

Printing Screen Data

The Local Commands menu also contains options for
printing data that appears on your terminal screen.
These options are especially handy for obtaining a hard
copy of information--stock reports, news releases,
bulletin board listings--any type of information that
can be displayed on your screen from another computer.
A printer must be attached and installed on your
computer before you can use this feature.

The information is recorded on paper only and is not
saved in a file. To save the information in a file,
use the Record Screen to File command described earlier
in this chapter.

To print information from the screen:

    1 Press <Shift>-<Cmd> to display the Local Commands menu.

    2 Select |Start Printer| and press <Enter>.

    3 Display or type the information you want to print.

       The message ***PRINTING*** appears in the lower-right corner of the screen, and any information displayed on the screen or typed by you is now collected for printing.

    4 When you finish displaying or typing the information you want to print, press <Shift>-<Cmd> to display the Local Commands menu.

    5 Select |Stop Printer| and press <Enter>.

The information is sent to your printer.

You can also print a copy of the information on your screen at any time during your Terminal Emulation session. To do so you must have a dot matrix printer that supports screen prints attached to your **UNIX** PC.

To print the screen:

    o Press <Shift>-<Print>.

A message appears telling you to wait while the screen is being sent to your printer. When the message disappears, you can continue with your work.

A Presentation-Level Protocol

This appendix lists the terminal control codes and the escape and control sequences recognized during terminal emulation. In normal operation these codes are processed by the Terminal Emulation software when they are received in the datastream from the host computer; they need not concern the end user. This list is provided in support of software development activities.

Asynchronous Terminal Emulation has three operating modes: one that emulates the AT&T 513 BCT terminal, one that emulates the DEC VT-100 terminal, and the native **UNIX** PC mode. The tables in this appendix summarize the escape and control sequences supported during VT-100 and 513 BCT modes. For a complete description of the sequences used in each of the three modes, refer to the following programming reference manuals:

o   For VT-100 mode sequences, see the <u>VT100 User's Guide</u>, Digital Equipment Corporation part no. EK-VT100-UG-002.

o   For 513 BCT mode sequences, see the <u>513 BCT Technical Reference Manual</u>, AT&T catalog no. 999-700-493IS, Issue 1, November 1984.

o   For **UNIX** PC mode sequences, see the escape(7) and keyboard(7) sections of the <u>AT&T UNIX PC UNIX System V User's Manual</u>, AT&T catalog no. 999-801-312IS, Issue 2, October 1985.

ASCII Characters

Table A-1 below lists the standard ASCII characters by decimal number.

Table A-1   ASCII Characters

Dec.	Char.	Dec.	Char.	Dec.	Char.	Dec.	Char.
0	^@ NULL	32	space	64	@	96	`
1	^A SOH	33	!	65	A	97	a
2	^B STX	34	"	66	B	98	b
3	^C ETX	35	#	67	C	99	c
4	^D EOT	36	$	68	D	100	d
5	^E ENQ	37	%	69	E	101	e
6	^F ACK	38	&	70	F	102	f
7	^G BEL	39	'	71	G	103	g
8	^H BS	40	(	72	H	104	h
9	^I HT	41	)	73	I	105	i
10	^J LF	42	*	74	J	106	j
11	^K VT	43	+	75	K	107	k
12	^L FF	44	,	76	L	108	l
13	^M CR	45	-	77	M	109	m
14	^N SO	46	.	78	N	110	n
15	^O SI	47	/	79	O	111	o
16	^P DLE	48	0	80	P	112	p
17	^Q DC1	49	1	81	Q	113	q
18	^R DC2	50	2	82	R	114	r
19	^S DC3	51	3	83	S	115	s
20	^T DC4	52	4	84	T	116	t
21	^U NAK	53	5	85	U	117	u
22	^V SYN	54	6	86	V	118	v
23	^W ETB	55	7	87	W	119	w
24	^X CAN	56	8	88	X	120	x
25	^Y EM	57	9	89	Y	121	y
26	^Z SUB	58	:	90	Z	122	z
27	^[ESC	59	;	91	[	123	{
28	^\ FS	60	<	92	\	124	|
29	^] GS	61	=	93	]	125	}
30	^^ RS	62	>	94	^	126	~
31	^_ US	63	?	95	_	127	DEL

Control Characters

Table A-2 below is a summary of the control codes
recognized by Terminal Emulation with their hexadecimal
equivalents. The key or key combination that invokes
the character is included in parentheses.

Where no name appears in the **513 Name** or **DEC Name**
column, that character is not recognized in 513 BCT or
VT-100 emulation respectively. The ASCII control
characters not included in this list are not
recognized. Characters that are not recognized are
ignored when received by Terminal Emulation.

Table A-2   Control Characters

513 Name	DEC Name	Control Character	Description
BEL	BEL	0x07 (^G)	Bell. Sounds the bell
BS	BS	0x08 (^H)	Backspace. Moves cursor left one space
HT	HT	0x09 (^I)	Horizontal Tab. Moves the cursor forward to the next tab stop
LF	LF	0x0A (^J)	Line Feed. Moves the cursor down in the same column
	VT	0x0B (^K)	Vertical Tab. Has the same effect as LF
	FF	0x0C (^L)	Form Feed. Has the same effect as LF
CR	CR	0x0D (^M)	Return. Moves the cursor to the left margin
SO	SO	0x0E (^N)	Shift out. Switches to the G1 character set
SI	SI	0x0F (^M)	Shift in. Switches to the G0 character set

Table A-2   Control Characters (Continued)

513 Name	DEC Name	Control Character	Description
DC1	XON	0x11 (^Q)	Resumes transmission. Recognized if **Flow Control from Host** is enabled in the data profile
DC2		0x12 (^R)	Turns on print logging. All data is saved for printing until DC4 is received
DC3	XOFF	0x13 (^S)	Stops transmission. Recognized if **Flow Control from Host** is enabled in the data profile
DC4		0x14 (^T)	Turns off print logging and sends the data to the print queue
CAN	CAN	0x18 (^X)	Cancels escape sequence parsing
SUB	SUB	0x1A (^Z)	Cancels escape sequence parsing
ESC	ESC	0x1B (ESC)	Begins escape sequence parsing

Escape Sequences

Table A-3 below is a summary of the escape sequences recognized by Terminal Emulation. See the manuals referenced at the beginning of this appendix for detailed usage considerations for these sequences and charts of the character sets.

Where no name appears in the 513 **Name** or **DEC Name** column, that escape sequence is not recognized in 513 BCT or VT-100 emulation respectively. Escape sequences that are not recognized are ignored when received by the Terminal Emulation software.

Table A-3   Escape Sequences

513 Name	DEC Name	Escape Sequence	Description
IND	IND	ESC D	Index
NEL	NEL	ESC E	Next line
RI	RI	ESC M	Reverse index
RIS	RIS	ESC c	Reset to initial state
SCS	SCS	ESC (A	G0 = U.K. character set
SCS	SCS	ESC (B	G0 = ASCII character set
SCS		ESC (0	G0 = Basic Line Drawing Graphics
	SCS	ESC (0	G0 = Special Characters and Line Drawing set
SCS		ESC (1	G0 = Extended Line Drawing Graphics
	SCS	ESC (1	G0 = Alternative Character ROM Standard

Table A-3   Escape Sequences (Continued)

513 Name	DEC Name	Escape Sequence	Description
SCS		ESC (}	G0 = Videotex Block Mosaics
	SCS	ESC (2	G0 = Alternative Character ROM Graphics
SCS	SCS	ESC) A	G1 = U.K. character set
SCS	SCS	ESC) B	G1 = ASCII character set
SCS		ESC) 0	G1 = Basic Line Drawing Graphics
	SCS	ESC) 0	G1 = Special Characters and Line Drawing set
SCS		ESC) 1	G1 = Extended Line Drawing Graphics
	SCS	ESC) 1	G1 = Alternative Character ROM Standard
SCS		ESC) }	G1 = Videotex Block Mosaics
	SCS	ESC) 2	G1 = Alternative Character ROM Graphics
51XAT	DECALN	ESC # 8	Alignment Test
51XBSL		ESC <	Blank Screen Labels
51XCHD		ESC # 2	Cursor Home Down
51XDSPFL		ESC ?	Display System PF Labels
	DECKPAM	ESC =	Keypad Application Mode

Table A-3   Escape Sequences (Continued)

513 Name	DEC Name	Escape Sequence	Description
	DECKPNM	ESC >	Keypad Numeric Mode
51XRCP	DECRC	ESC 8	Restore Cursor Position
51XSCP	DECSC	ESC 7	Store Cursor Position

Control Sequences

Table A-4 below is a table of the control sequences recognized by Terminal Emulation. See the manuals referenced at the beginning of this appendix for detailed usage considerations for these sequences.

Where no name appears in the **513 Name** or **DEC Name** column, that control sequence is not recognized in 513 BCT or VT-100 emulation respectively. Control sequences that are not recognized are ignored when received by the Terminal Emulation software.

Table A-4   Control Sequences

513 Name	DEC Name	Escape Sequence	Description
CBT		ESC [Pn Z	Cursor Backward Tabulation
CHA		ESC [column G	Cursor Horizontal Absolute
CNL		ESC [Pn E	Cursor Next Line
CPL		ESC [Pn F	Cursor Preceding Line
CUB	CUB	ESC [Pn D	Cursor Backward

Table A-4   Control Sequences (Continued)

513 Name	DEC Name	Escape Sequence	Description
CUD	CUD	ESC [Pn B	Cursor Down
CUF	CUF	ESC [Pn C	Cursor Forward
CUP	CUP	ESC [row ; column H	Cursor Position
CUU	CUU	ESC [Pn A	Cursor Up
DA	DA	ESC [Pn c	Report Device Attributes
DCH	DCH	ESC [Pn P	Delete Character
DL	DL	ESC [Pn M	Delete Line
DSR	DSR	ESC [Ps n	Device Status Report
ED	ED	ESC [Ps J	Erase in Display
EL	EL	ESC [Ps K	Erase in Line
HPA		ESC [column `	Horizontal Position Absolute
HPR		ESC [Pn a	Horizontal Position Relative
HVP	HVP	ESC [row ; column f	Horizontal/ Vertical Position
ICH		ESC [Pn @	Insert Character
IL	IL	ESC [Pn L	Insert Line
IRM		ESC [4 h	Set Insertion/ Replacement Mode

Table A-4   Control Sequences (Continued)

513 Name	DEC Name	Escape Sequence	Description
IRM		ESC [4 l	Reset Insertion/ Replacement Mode
LNM	LNM	ESC [20 h	Set Linefeed/ Newline Mode
LNM	LNM	ESC [20 l	Reset Linefeed/ Newline Mode
MC		ESC [? 4 i	Media Copy (log text)
	MC*	ESC [? 4 i	Media Copy (turn off auto print)
	MC*	ESC [? 5 i	Media Copy (turn on auto print)
MC		ESC [? 8 i	Media Copy (stop print)
REP		ESC [Pn b	Repeat
SD		ESC [Pn T	Scroll Down
SGR	SGR	ESC [m	Select Graphic Rendition (turn off character attributes)
SGR	SGR	ESC [0 m	Select Graphic Rendition (turn off character attributes)

*VT-102 control sequence.

Table A-4   Control Sequences (Continued)

513 Name	DEC Name	Escape Sequence	Description
	SGR	ESC [1 m	Select Graphic Rendition (turn on bold attribute)
SGR		ESC [2 m	Select Graphic Rendition (turn on half intensity attribute)
SGR	SGR	ESC [4 m	Select Graphic Rendition (turn on underline attribute)
SGR	SGR	ESC [7 m	Select Graphic Rendition (turn on reverse video attribute)
SGR		ESC [8 m	Select Graphic Rendition (turn on concealed mode)
SU		ESC [Pn S	Scroll Up
VPA		ESC [row d	Vertical Position Absolute
VPR		ESC [Pn e	Vertical Position Relative
51XAWM	DECAWM	ESC [? 7 h	Set Auto-Wrap Mode

Table A-4   Control Sequences (Continued)

513 Name	DEC Name	Escape Sequence	Description
51XAWM	DECAWM	**ESC [? 7 l**	Reset Auto-Wrap Mode
51XOM	DECOM	**ESC [? 6 h**	Set Origin Mode
51XOM	DECOM	**ESC [? 6 l**	Reset Origin Mode
51XDSW	DECSTBM	**ESC [top row ; bottom row r**	Define Scrollable Window
51XDPFK		**ESC [Ps ; Pn ; l ; 0 p L + S**	Define System PF Key
51XSTO		**ESC [10 ; Ps |**	Set/Reset Auto-Wrap Mode
	DECCKM	**ESC [? 1 h**	Set Cursor Key Mode
	DECCKM	**ESC [? 1 l**	Reset Cursor Key Mode
	VT52	**ESC [? 2 l**	Set VT52 Mode
	VT52	**ESC A**	Cursor Up
	VT52	**ESC B**	Cursor Down
	VT52	**ESC C**	Cursor Left
	VT52	**ESC D**	Cursor right
	VT52	**ESC F**	Enter Graphics Mode
	VT52	**ESC G**	Exit Graphics Mode
	VT52	**ESC H**	Cursor Home

Table A-4   Control Sequences (Continued)

513 Name	DEC Name	Escape Sequence	Description
	VT52	ESC I	Reverse Line Feed
	VT52	ESC J	Erase to End of Screen
	VT52	ESC K	Erase to End of Line
	VT52	ESC Y line column	Direct Cursor Address (line and column are the numbers plus 037 octal)
	ANSI	ESC <	Exit VT52 Mode and enter ANSI Mode

This Appendix describes the special functions performed
by the **UNIX** PC keys during terminal emulation and lists
the codes transmitted by each key on the **UNIX** PC
keyboard in each Terminal Emulation mode.

See Appendix A for a chart of the ASCII codes.

Keyboard Layout

Figure B-1 below illustrates the **UNIX** PC keyboard
layout, showing the major groups of keys:
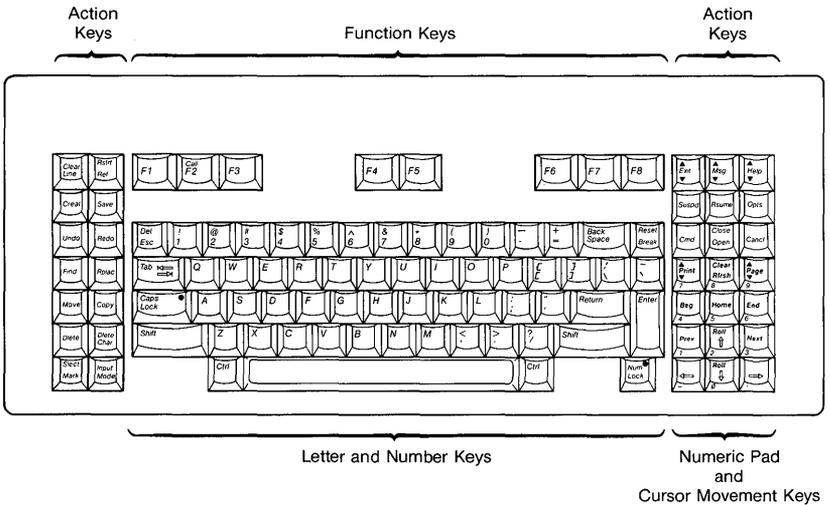
Figure B-1   UNIX PC Keyboard

VT-100 Mode Key Functions and Transmitted Codes

The VT-100 terminal's keyboard layout is different from
the **UNIX** PC layout and contains several keys not
present on the **UNIX** PC. VT-100 users can refer to
Table B-1 below to determine which **UNIX** PC keys to use
during Terminal Emulation for the functions performed
by VT-100 keys. The table gives **UNIX** PC equivalents
for the special VT-100 keys and functions.

The table also includes the codes transmitted to the
host computer by the **UNIX** PC keys when VT-100 emulation
mode is selected. Note that in this mode the 14 action
keys on the left side of the keyboard transmit nothing,
and the Exit, Suspd, Cmd, Msg, Rsume, and Help keys
transmit nothing. The alphanumeric keys function
similarly on both keyboards although some symbol keys
are located differently.

Table B-1   VT-100 Key Functions and Codes

VT100 Key	UNIX PC Key	Transmitted Code
SET UP	None	
ESC	Esc	ESC
BACKSPACE	Back Space	BS
BREAK	None	
SHIFT/BREAK	Shift-Exit	(disconnect)
CTRL/BREAK	None	(answerback)
TAB	Tab	HT
RETURN	Return	CR
DELETE	Shift-Esc	DEL
CTRL	Ctrl	
CAPS LOCK	Caps-Lock	
NO SCROLL	Ctrl-S and Ctrl-Q	DC3 and DC1
SHIFT	Shift	
LINE FEED	Opts	LF
Reset function	Shift-Break	ESC c

Table B-1 VT-100 Key Functions and Codes
(Continued)

VT-100 Cursor Keys	UNIX PC Keys	Transmitted Codes		
		ANSI CKM Set	ANSI CKM Reset	VT52 Cursor Key
UP ARROW	F5	ESC O A	ESC [A	ESC A
DOWN ARROW	F6	ESC O B	ESC [B	ESC B
LEFT ARROW	F7	ESC O D	ESC [D	ESC D
RIGHT ARROW	F8	ESC O C	ESC [C	ESC C

VT-100 Numeric Pad Keys	UNIX PC Keys	Transmitted Codes			
		ANSI KPNM	ANSI KPAM	VT52 KPNM	VT52 KPAM
PF1	F1	ESC O P	ESC O P	ESC P	ESC P
PF2	F2	ESC O Q	ESC O Q	ESC Q	ESC Q
PF3	F3	ESC O R	ESC O R	ESC R	ESC R
PF4	F4	ESC O S	ESC O S	ESC S	ESC S
7	Print	7	ESC O w	7	ESC ? w
8	Clear-Rfrsh	8	ESC O x	8	ESC ? x
9	Page	9	ESC O y	9	ESC ? y
-	Left Arrow	-	ESC O m	-	ESC ? m
4	Beg	4	ESC O t	4	ESC ? t
5	Home	5	ESC O u	5	ESC ? u
6	End	6	ESC O v	6	ESC ? v
,	Cancl	,	ESC O l		
1	Prev	1	ESC O q	1	ESC ? q
2	Up Arrow	2	ESC O r	2	ESC ? r
3	Next	3	ESC O s	3	ESC ? s
ENTER		CR	ESC O M	RETURN	ESC ? M
0	Down Arrow	0	ESC O p	0	ESC ? p
.	Right Arrow	.	ESC O n	.	ESC ? n

*CKM is Cursor Key Mode
**KPNM is Keypad Numeric Mode
***KPAM is Keypad Application Mode

UNIX **PC** and 513 BCT Mode Key Function Locations

Users familiar with the AT&T 513 BCT keyboard will
notice that the **UNIX** PC keyboard has the same keys in
the same locations.

UNIX **PC** and 513 BCT Mode Transmitted Key Codes

Tables B-2, B-3, B-4, and B-5 give the codes
transmitted by each **UNIX** PC key when **UNIX** PC or 513 BCT
emulation is selected. In normal operation these codes
are processed by the host computer when they are
received in the datastream from the **UNIX** PC; they need
not concern the end user. This information is provided
in support of software development activities.

The tables cover each of the four major **UNIX** PC key
groups. The location of these groups on the **UNIX** PC
keyboard is shown in Figure B-1. For each key, the
tables show the codes transmitted when the key is
pressed alone, with the Shift key held down, and with
the Ctrl key held down. The spaces in the code
sequences are included for readability; no spaces are
transmitted. Where no sequence appears in a column,
nothing is transmitted for that key or combination.

Table B-2   Left Action Keys

Key	Alone	With Shift	With Ctrl
Clear Line	ESC O a	ESC O A	ESC O A
Rstrt-Ref	ESC O b	ESC O B	ESC O B
Creat	ESC O n	ESC O N	ESC O N
Save	ESC O o	ESC O O	ESC O O
Undo	ESC O s	ESC O S	ESC O S
Redo	ESC O t	ESC O T	ESC O T
Find	ESC O x	ESC O X	ESC O X
Rplac	ESC O y	ESC O Y	ESC O Y
Move	ESC N c	ESC N C	ESC N C
Copy	ESC N d	ESC N D	ESC N D
Dlete	ESC N e	ESC N E	ESC N E
Dlete Char	ESC N f	ESC N F	ESC N F
Slect-Mark	ESC N i	ESC N I	ESC N I
Input Mode	ESC N j	ESC N J	ESC N J

Table B-3   Function Keys

Key	Alone	With Shift	With Ctrl
F1	ESC O c		
F2	ESC O d		
F3	ESC O e		
F4	ESC O f		
F5	ESC O g		
F6	ESC O h		
F7	ESC O i		
F8	ESC O j		

Table B-4   Right Action Keys and Cursor Keys

Key	Alone	With Shift	With Ctrl
Exit	ESC O k		
Msg			
Help			
Suspd			
Rsume			
Opts	ESC O r	ESC O R	ESC O R
Cmd	ESC O u		
Close-Open	ESC O v	ESC O V	ESC O V
Cancl	ESC O w	ESC O W	ESC O W
Print	ESC O z		
Clear-Rfrsh	ESC N a	ESC [J	ESC [J
Page	ESC [U	ESC [V	ESC [V
Beg	ESC 9	ESC N B	ESC N B
Home	ESC [H	ESC N M	ESC N M
End	ESC O	ESC N N	ESC N N
Prev	ESC N g	ESC N G	ESC N G
Roll-Up Arrow	ESC [A	ESC [T	ESC [T
Next	ESC N H	ESC N H	ESC N H
Left Arrow	ESC [D	ESC N K	ESC N K
Roll-Down Arrow	ESC [B	ESC [S	ESC [S
Right Arrow	ESC [C	ESC N L	ESC N L

Table B-5 Letter and Number Keys

Key	Alone	With Shift	With Ctrl
Del-Esc	ESC	DEL	
1	1	!	ESC P a
2	2	@	ESC P b
3	3	#	ESC P c
4	4	$	ESC P d
5	5	%	ESC P e
6	6	^	ESC P f
7	7	&	ESC P g
8	8	*	ESC P h
9	9	(	ESC P i
0	0	)	ESC P j
-	-	_	ESC P k
=	=	+	ESC P l
Back Space	BS	BS	BS
Reset-Break		ESC c	ESC c
Tab	HT	ESC O Z	ESC O Z
Q	q	Q	DC1
W	w	W	ETB
E	e	E	ENQ
R	r	R	DC2
T	t	T	DC4
Y	y	Y	CAN
U	u	U	NAK
I	i	I	HT
O	o	O	SI
P	p	P	DLE
[	[	{	ESC
]	]	}	GS
\	\	|	FS
`	`	~	NUL
Caps Lock			
A	a	A	SOH
S	s	S	DC3
D	d	D	EOT
F	f	F	ACK
G	g	G	BEL

Table B-5 Letter and Number Keys (Continued)

Key	Alone	With Shift	With Ctrl
H	h	H	BS
J	j	J	LF
K	k	K	VT
L	l	L	FF
;	;	:	
Return	CR	CR	CR
Enter	LF	LF	LF
Left Shift			
Z	z	Z	SUB
X	x	X	CAN
C	c	C	ETX
V	v	V	SYN
B	b	B	STX
N	n	N	SO
M	m	M	CR
,	,	<	
.	.	>	
/	/	?	
Right Shift			
Left Ctrl			
Space Bar	SPACE	SPACE	SPACE
Right Ctrl			
Num Lock			

C RS-232 Technical Information

This Appendix provides technical information for the
UNIX PC's DTE RS-232 port, including cabling
considerations.

Signals Supported on the RS-232 Port

The **UNIX** PC has an RS-232 port labeled **DTE RS-232** on
its back panel. RS-232 is a standard developed by the
Electronics Industry Association (EIA) to define the
signals used in communications between a computer and a
serial device such as a terminal or a printer. DTE
stands for Data Terminal Equipment. Data Terminal
Equipment includes output devices such as printers.
Typically a printer is connected at this port, but the
port can also be used to connect an intermediate device
such as a modem. These intermediate devices are
referred to as Data Communications Equipment (DCE).

An RS-232-C cable is used to connect a device to the
RS-232 port. This cable has a connector that attaches
to the pins on the RS-232 port. How the cable is wired
to the connector determines which signals will be
addressed on the port. Figure C-1 illustrates the pins
that are supported on the **UNIX** PC's RS-232 port. The
UNIX PC's RS-232 port, located on the rear panel, is a
female DB25 connector.
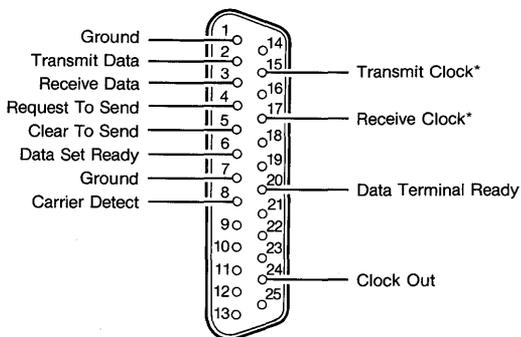
Figure C-1 UNIX PC RS-232 Port Pinout

There are two types of cables: <u>standard straight RS-232 cable</u> and <u>null modem (crossed) cable</u>.

Connecting a modem to the DTE port sets up a DTE-to-DCE communications link. The straight RS-232 cable pinout, shown below, supports this link:
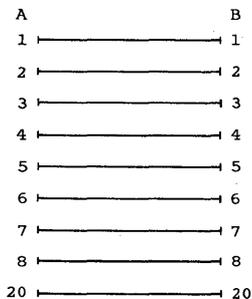
When a DTE device such as another computer is connected at the RS-232 port using the straight RS-232 cable, a problem occurs. A DTE-to-DTE communications link, which is what the user must set up to attach the **UNIX** PC directly to another computer, requires that the transmit and receive signals and some of the control signals be crossed. This type of connection requires a null modem cable. The pins of concern are pins 2 and 3, which must be reversed on <u>one</u> of the connectors.

The following illustrations show two different pinouts for null modem cables. A null modem cable using the pinout shown below works for terminal and UNIX-to-UNIX (uucp) connections. This null modem cable always works, since no control leads are passed across the interface; because of this, however, the line is not disconnected when you turn off the terminal:

```
   A                        B
   1 ├──────────────────┤ 1
   2 ├──────────┐  ┌─────┤ 2
                 ╲╱
   3 ├──────────┘  └─────┤ 3
   7 ├──────────────────┤ 7
   4 ├──┐            ┌──┤ 4
   5 ├──┘            └──┤ 5
   6 ├──┐            ┌──┤ 6
   8 ├──┤            ├──┤ 8
  20 ├──┘            └──┤ 20
```
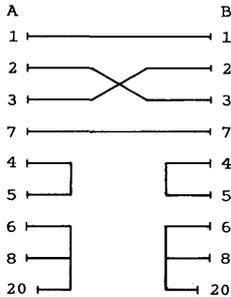
The null modem cable pinout shown below offers a bit
more control, but it is not compatible with all
equipment; it is used in terminal-to-**UNIX** PC
connections. When you use this type of cable, the line
is disconnected when you turn off the terminal:

```
     A                    B
     1 ├────────────────┤ 1
     2 ├──────┐  ┌───────┤ 2
     3 ├───────╳────────┤ 3
     4 ├──────┐  ┌───────┤ 4
     5 ├───────╳────────┤ 5
     7 ├────────────────┤ 7
     6 ├──────┐  ┌───────┤ 6
     8 ├───────╳────────┤ 8
    20 ├────────────────┤ 20
```
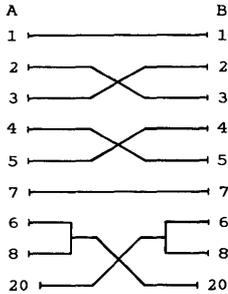
Both null modem and straight cables can be found at
most large computer dealers and electronics retailers.
Some of these businesses make custom cables for
particular applications.

This Appendix provides a detailed explanation of the three file transfer formats provided by the UMODEM program and gives some usage considerations for specific applications.

UMODEM protocol provides for binary, ASCII 8-bit, and ASCII 7-bit transfers. UMODEM is described in the **AT&T UNIX PC UNIX System V User's Manual**. The paragraphs below discuss transfers of each type both to and from a **UNIX** PC.

Sending Files from a UNIX PC

Binary   The file is sent exactly as it exists on the disk except that the end of the file is padded out to a multiple of 128 bytes, using the NULL character.

ASCII 8-bit   Carriage returns are added in front of each newline character in the file. The end of the file is padded out to a multiple of 128 bytes using the control-Z character. At least one control-Z character always appears at the end of the file. This treatment allows text files to be sent to MS-DOS and CP/M systems.

ASCII 7-bit   This transfer is the same as sending ASCII 8-bit above, except that the high-order bit of each character is set to 0. This treatment allows certain word processing files that set high-order bits to be viewed on the receiving system.

Receiving Files on the UNIX PC

Binary   The file is stored exactly as received.
                Padding characters at the end of the file
                are not removed.

ASCII 8-bit   Carriage returns followed by newline
                characters are discarded. Control-Z
                characters at the end of the file are also
                discarded. This treatment allows ASCII
                files to be received from MS-DOS and CP/M
                systems.

ASCII 7-bit   This transfer is the same as receiving
                ASCII 8-bit files above, except that the
                high-order bit of each character is set to
                0 when the character is received. This
                treatment allows certain word processing
                files from MS-DOS or CP/M systems to be
                viewed on the **UNIX** PC.

Sending Files to Other Systems

Sending to another UNIX system--Use binary transfer
        type on both the **UNIX** PC and the other UNIX
        system. Doing so transfers all types of files
        correctly with no need for translation.

Sending to an MS-DOS or a CP/M system--If the file is
an
        ASCII file, use ASCII 8-bit transfer to add the
        carriage returns between lines and control-Z at
        the end of the file that MS-DOS or CP/M
        requires. If the file is binary, use binary
        mode.

Receiving Files from Other Systems

Receiving from another UNIX system--Use binary transfer
        type on both the other UNIX system and the **UNIX**
        PC. If the other UNIX system can only send in
        ASCII 8-bit mode, then use ASCII 8-bit to
        receive the file.

Receiving from an MS-DOS or a CP/M system--If the file is an

ASCII file, use ASCII 8-bit transfer type for receiving. Doing so discards the carriage returns and control-Z's that are in the MS-DOS or CP/M file and are not used by UNIX.

If the file is a binary file, use binary transfer type to receive the file.

If the file is a certain type of word processing file that sets high-order bits to encode formatting information, use ASCII 7-bit transfer type to turn the high-order bits off. Doing so allows the file to be viewed on the **UNIX** PC.

This appendix offers guidelines for problem solving.
Refer to the chart below if you have problems making or
maintaining your connection during data communications.

Modem Profiles and Telephone Setup

Problem	Possible Cause	Solution
Dialing and connection errors	Wrong speed selection	Select same speed (**Baudrate**) as other computer or device in Terminal Setup form
	Modems incompatible	The **UNIX** PC's built-in modem is compatible with AT&T models 212A and 103
Login prompt repeats itself	Device set on RS-232 port	Set **Device Type:** to NONE on RS232 Setup form
Double characters displayed	Wrong **Character Echo** selection	Change Yes to No on Terminal Setup form

Problem	Possible Cause	Solution
Characters are garbled	Wrong parity selections	Change **Send Parity** and **Check Parity** selections on Terminal Setup form to match those required on host system
	Wrong terminal type entered	Enter the same terminal type at login as you selected in the data profile
	Wrong **Character Size** selection	Change **Character Size** selection on Terminal Setup form to match requirements of host system
	Wrong number of stop bits	Change **Stop Bits** selection on Terminal Setup form to match requirements of host system
Characters are missing	Flow control disabled	Enable **Flow Controls**
	Noise on phone line	Hang up and call again

Serial and RS-232 Profiles and RS232 Setup

Problem	Possible Cause	Solution
Dialing and connection errors	Wrong speed selection	Select same speed (**Baudrate**) as other computer or device on Terminal Setup form
	Incorrect or faulty RS-232C cable connections	Connect a null modem cable
	RS-232 port not set up correctly	Configure RS-232 port for COMPUTER device type with a CALLER only connection on RS232 Setup form
Double characters displayed	Wrong **Character Echo** selection	Change No to Yes, or the reverse, on Terminal Setup form

Problem	Possible Cause	Solution
Characters are garbled	Wrong parity selections	Change **Send Parity** and **Check Parity** selections on Terminal Setup form to match those required on host system
	Wrong **Character Size** selection	Change **Character Size** selection on Terminal Setup form to match requirements of host system
	Wrong number of stop bits	Change **Stop Bits** selection on Terminal Setup form to match requirements of host system
Character Controls are missing	Flow control disabled	Enable **Flow** on Terminal Setup form

Working in Emulation Mode

Problem	Possible Cause	Solution
Frozen screen menu	Leaving Local Commands menu without exiting window	Go into Windows (press the left mouse button on the window icon) and select the Local Commands menu window. Press the Enter key to display the menu; then press the Exit key to leave the menu

active window   The window you are currently using.
                    This window is displayed over other
                    windows and has a highlighted border.

ADF   Application Data Format - a file
                    format that supports data interchange
                    between different applications.
                    Refer to the AT&T UNIX PC UNIX System
                    V Manual for more details about ADF
                    file format.

Administration   Commands used to set up, maintain,
                    and update the computer system's
                    hardware and software configuration;
                    such as installing new software
                    packages, backing up and restoring
                    files, adding user logins, and
                    updating passwords.

ASCII   American Standard Code for
                    Information Interchange - a standard
                    file format with no formatting codes.
                    This format allows data to be
                    transmitted between computers and
                    other electronic devices in a form
                    easily recognized and translated.

autodial   The ability of a modem to dial
                    telephone numbers automatically.

baud rate   The rate at which data is transmitted
                    over communication lines. Typical
                    rates are 300, 1200, and 9600 bits
                    per second.

bit	Contraction of the words <u>b</u>inary and di<u>git</u>. A bit is represented by the binary number system (0's and 1's), and is the smallest unit of information used by a computer.
bps	Bits per second.
Call screen	A screen that displays up to 15 names and telephone numbers when Telephone Manager is opened.
character	A letter, number, or symbol.
command	An instruction that tells the computer to perform a function or carry out an activity.
communication line	The physical means of connecting one location to another for transmitting and receiving data.
computer	A machine that processes information by accepting data, performing operations on the data, and supplying the results of these operations.
configuration	The way the computer is set up to allow for particular uses or situations. For example, you configure the **UNIX** PC to work with your particular model of printer.
control character	An ASCII character that affects the way data is processed or displayed.

control sequence	A series of characters that affect the way data is processed or displayed.
cursor	A mark that shows where the next action will be taken or the next character will be displayed on the screen.
data	Facts, numbers, letters, and symbols that a computer can process.
data bits	A string of bits that represents a character. Eight bits make up one byte, or one character.
data calls	Calls made using a modem or the RS-232 port. Data is transmitted through communication lines.
default	A value the computer uses if you do not specify a value.
delete	To remove, erase, or discard data.
Directory	The list of all telephone number entries listed with Telephone Manager, including those listed in the Call screen. Generally, the term <u>directory</u> refers to both the Call screen and the Directory.
disk	Circular magnetic medium used to store data and programs. This term can refer to a floppy (flexible) disk or a hard disk.

disk drive	A device that reads and writes information on a disk. The disk in a floppy disk drive can be removed and replaced; a hard disk drive is sealed and its disk cannot be removed.
edit	To make changes, including additions and deletions, to the format or content of data.
emulate	The ability to initiate the functions of another system and thereby be compatible with programs that expect those functions. The **UNIX** PC's display screen emulates a VT-100 terminal during data communications, for example.
error message	A response from a program indicating that a problem has arisen or something unexpected has happened that requires your attention.
escape sequence	A control sequence starting with the ASCII character ESC.
field	An area in a form that you fill in with your choice or response. For example, you fill in a file name field with the name of a file.
file	A collection of data organized as a unit and identified by a name. All of the work you store in the computer is kept in files.

Filecabinet   An Office object in which you can
                    store work, including files and
                    folders.

file folder   A named container used to store files
                    and other folders.

floppy disk   Removable, flexible, plastic medium
                    used with the floppy disk drive to
                    store data and programs.

flow control   A means of regulating the exchange of
                    data so that the input areas of the
                    communicating computers do not
                    overflow.

form   A display that provides blanks for
                    you to fill in to give the computer
                    information it needs to complete a
                    task.

format   (1) To prepare a new floppy disk to
                    use with the UNIX PC.

                    (2) The way the data appears on your
                    screen or printed copy.

function keys   The top row of keys, F1 through F8,
                    that perform the commands displayed
                    on the screen keys.

hard copy   Information that has been printed on
                    paper by a computer.

host computer   A separate computer system, which you
                    work with using your own computer as
                    a terminal.

icon	A symbol you can select with the mouse to perform a function or command.
install	To set up the hardware and software of a computer so it can be used. Installing often includes customizing the system for a particular situation or user.
log in	To type your user name into a computer to identify yourself so you can gain access to your files.
log out	To exit from the Office when you have finished working.
menu	A list of selectable items displayed by a program. As in a restaurant, you must choose something from the menu before anything else happens.
modem	Contraction of the words modulator-demodulator. A device that encodes and decodes data transmitted over communication lines.
mouse	A device that moves a pointer on the screen as you move it along the surface of your desk. The **UNIX** PC mouse has three buttons that give you access to various computer functions. The left button, B1, is the Enter key; the middle button, B2, displays the Commands menu for the current menu or form; the right button, B3, marks items to be acted upon.

mouse pointer A symbol that moves on your screen when you move the mouse and indicates what you have selected. The pointer is usually an arrow, but it can change shape when you point to certain parts of the screen display.

multitasking The ability of a computer to perform more than one task at a time.

multiuser A computer system that allows simultaneous access to the system's software and hardware from multiple users.

network A system of computers connected locally by cable, or remotely by telephone lines, whereby information can be shared by the computer users. Telephone Manager and Electronic Mail enable **UNIX** PC users to form and use a network.

object An item in the Office you can act upon or use to store information. For example, the Filecabinet is an object that stores files and folders.

Office The central part of the **UNIX** PC system, from which you can get to objects and to which you return when you are finished doing work.

operating system The software that controls and allocates the **UNIX** PC's resources, such as memory, disk storage, and the screen display.

parity check   A means of checking whether data
transmitted through telephone lines
or an RS-232 cable is garbled during
transmission. The **UNIX** PC offers an
even- or odd-parity check in which
garbled characters are displayed as
small squares when a parity check is
displayed as received.

password   A word or series of characters you
type to gain access to a computer
system after responding to the **login**
prompt.

pathname   A means of identifying a file by
including the names of the folders
that must be opened to reach it from
the Filecabinet. The names of the
folders are separated by slashes (/).
For example, the pathname of the file
myfile, stored in the practice
folder, is **practice/my**file.

point   To select an object, command, or
field for action by highlighting it.
There are several ways to point: by
moving the mouse, pressing the arrow
keys, or typing the name or first few
characters of an item. You can
select several items by pointing to
each and pressing the B3 mouse button
or the Mark key.

port   A place where data enters and exits
from the computer. For example, data
is sent to a printer through the
printer port on the back of the **UNIX**
PC.

printer   An output device that transfers
information stored in or received by
the computer onto paper as a
permanent or <u>hard</u> copy.

program   A set of step-by-step instructions that tells a computer how to do a particular task.

remote mail   Mail being sent to another computer connected by cable or local area network, or a telephone line configured as a data line.

remote terminal   A communications device, such as a display screen and keyboard, you can use to enter data into and access data from a computer system.

Resume   A command that makes a suspended window active.

RS-232   The number given to a standard that governs the signals used in devices that electronically transmit strings of data. Data calls and Electronic Mail can be transmitted through the RS-232 port on the **UNIX** PC.

Save   A command to preserve information by storing it in a file on a disk.

screen   The **UNIX** PC's workstation display.

screen keys   The commands displayed at the bottom of the screen. Use these commands by pointing with the mouse or pressing a corresponding function key, F1 through F8.

scroll | An action that causes the window contents to move up or down, right or left, allowing you to display information not visible when a window is first opened. To scroll, point with the mouse to the scroll icons (arrows) in the lower-right window border and press the B1 mouse button.

scroll | An action that causes the window contents to move up or down, or right or left, allowing you to display information not visible when a window is first opened. To scroll, use the mouse to point to the scroll icons (arrows) in the lower-right border of the window, then press the B1 mouse button.

select | To point to an object, command, or field for action by highlighting it. There are several ways to select: by moving the mouse, pressing the arrow keys, or typing the name or first few characters of an item. You can select several items by pointing to each and pressing the B3 mouse button or the Mark key.

software | Computer programs that have been stored on a disk or other medium.

status line | An area at the top of the screen reserved for information about the current state of the computer and its activities.

Suspend | A command that makes the current window inactive, so you can use a different window or give window management commands.

system	A general term for a computer and its software and data.
system administration	The maintenance tasks required to keep the **UNIX** PC system current and in good working order, such as making backup copies of files and installing new software packages.
system administrator	The user who logs in with the **install** login. This user has access to all programs and functions of the **UNIX** PC.
tape	Magnetic medium used to store copies of your data and programs.
tape drive	A device that reads and writes information to and from a tape. The tape cartridge can be inserted and removed from the tape drive.
target	A means by which the **UNIX** PC can send mail to an alternative computer.
telecommuni- cations	A means of exchanging information electronically over a distance, as through a telephone line.
terminal	A communications device, such as a display screen and keyboard, you can use to enter data into and access data from a computer system.
user name	The name you type to log into a computer to identify yourself so you gain access to your files.

value	Information, often a number, that is entered into a field.
Wastebasket	An Office object that serves as a receptacle for discarded information. You can retrieve information that has been consigned to the Wastebasket, or discard it permanently.
window	A section of the screen surrounded by a border containing a portion of your work, or information necessary to perform your work. Windows are used to separate many tasks you may be working on at the same time.
workstation	A computer system, such as your **UNIX** PC, small enough to sit on a desk, and having the ability to run business application software and to be networked to larger computer systems.
write-protect	To protect a tape or floppy disk from having data erased accidentally.
write-protect notch	The rectangular cutout on one edge of a floppy disk. If this notch is covered with special tape that comes with the disk, new information cannot be written on the disk. In this way, data on the floppy disk is protected from alteration.

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