Lucent Technologies
Bell Labs Innovations

PassageWay® Service Provider
for PARTNER® Communications System
Getting Started

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Introduction

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What is the PassageWay Service Provider?

The PassageWay® Service Provider is a device driver that enables applications that are compliant with the Microsoft Windows® Telephony Application Programming Interface (TAPI) (such as PassageWay Telephony Manager) to communicate with your telephone and your company's PARTNER® Communications System. The PassageWay Service Provider accepts the basic TAPI requests from your TAPI-compliant application and translates these requests into instructions to the PassageWay adapter to control your telephone and interact with your company's PARTNER system.

The PassageWay Service Provider runs with Microsoft® Windows® NT Server 4.0 or later, Microsoft Windows NT Workstation 4.0 or later, Microsoft Windows 95, Microsoft Windows version 3.1 or later, and Microsoft Windows for Workgroups version 3.11 or later and provides you with an interface between your PC and your company's PARTNER system via your telephone.

The PassageWay Service Provider software also contains the following applications:

- **PARTNER Extension Programming**

  PARTNER Extension Programming is an extension programming application that enables you to program user features and a personal speed dial list for your PARTNER system telephone from your PC. With PARTNER Extension Programming, you can create and save multiple button programming files for your telephone. You can also exchange these PARTNER Extension Programming files with other PARTNER Extension Programming users. If you are the System Manager, you can use PARTNER Extension Programming to perform Centralized Telephone Programming from your PC for any telephone type and to program the system speed dial list.

  ➤ **NOTE:**
  > PARTNER Extension Programming requires a PARTNER system telephone that has a display.
  >
  > PARTNER Extension Programming is **not available** on Microsoft Windows NT Server 4.0 or later or Microsoft Windows NT Workstation 4.0 or later.

- **Connect**

  Connect is the management software that enables PARTNER Extension Programming to communicate with your company's PARTNER system. PARTNER Extension Programming requires Connect to be running to program features to your telephone. You must start Connect before you start PARTNER Extension Programming.

  ➤ **NOTE:**
  > Connect is **not available** on Microsoft Windows NT Server 4.0 or later or Microsoft Windows NT Workstation 4.0 or later.

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About This Guide

This document describes how to install, configure, and troubleshoot the PassageWay Service Provider. This guide contains four chapters, one appendix, and an index:

■ **Chapter 1 - Introduction**

This chapter describes the structure and content of this guide. This chapter also provides a brief introduction to the PassageWay Service Provider.

■ **Chapter 2 - Installing and Configuring the PassageWay Service Provider**

This chapter describes how to install and configure the PassageWay Service Provider software.

■ **Chapter 3 - Using PARTNER Extension Programming**

This chapter provides an overview of PARTNER Extension Programming and describes how to start PARTNER Extension Programming for the first time.

■ **Chapter 4 - Troubleshooting**

This chapter provides information about possible error conditions and how to respond to them when you use the PassageWay Service Provider.

■ **Appendix A - PC Serial Ports**

This appendix provides detailed information about PC serial ports.

■ **Index**

The index provides a quick way of locating information within this guide.

NOTE:
To determine whether you are using the proper issue of the Getting Started Guide for the PassageWay Service Provider installed on your PC, perform the following steps:

a. Start the PassageWay Configurator.

— If you have Windows 95 or Windows NT 4.0 or later, select **PassageWay Configurator** from the application folder that contains the PassageWay Service Provider. (The default application folder is **PassageWay for PARTNER**.)

— If you have Windows 3.1 or later or Windows for Workgroups 3.11 or later, open the program group that contains the PassageWay Service Provider, and double-click on the PassageWay Configurator icon. (The default program group is **PassageWay for PARTNER**.)

The PassageWay Configurator - COM Port dialog box appears.

b. Choose the Help button.

c. Depending on your system, perform one of the following steps:

— If you have Windows 95 or Windows NT 4.0 or later, choose **Version** from the Help menu. The Version Information message box appears, displaying the issue of the Getting Started Guide that the software requires. The issue number should match the issue number on the cover of this book.

— If you have Windows 3.1 or later or Windows for Workgroups 3.11 or later, choose **About Help** from the Help menu. The About Help message box appears, displaying the issue of the Getting Started Guide that the software requires. The issue number should match the issue number on the cover of this book.

d. Choose the OK button.

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User Responsibilities

Before using the PassageWay Service Provider, you should be familiar with basic Windows functions and procedures. If not, consult your *Microsoft Windows User's Guide*.

You also may need to contact your PC vendor for information on configuring your PC to meet the PassageWay Service Provider requirements.

Conventions Used in This Guide

The following conventions are used in this guide:

- Throughout this guide, telephones are grouped into two different categories: system telephones and standard telephones. System telephones refer to Lucent telephones specifically designed to work with the PARTNER system. These telephones include the PARTNER-34D, PARTNER Endeavor-34D, MLS-34D, PARTNER-18D, PARTNER-18, PARTNER Endeavor-18D, PARTNER Endeavor-18, MLS-18D, MLS-12D, MLS-12®, PARTNER-6, PARTNER Endeavor-6, MLS-6®, and MLC-6 model telephones. Standard telephones refer to industry-standard, single-line rotary or touch-tone telephones, including feature phones with built-in feature buttons and lights.

- Text you should enter appears ***in this style of type***.

- Commands, values, instructions, and prompts that appear on the screen are **in this style of type**.

- Components of dialog boxes (such as boxes) appear *in this style of type*.

- Key names that are always located on the keyboard in the same place appear in all capital letters (for example, ENTER).

- Key combinations (holding down one key while pressing another key) are connected with a "+" (for example, SHIFT+TAB).

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- Only active windows are displayed.

- The terms *option buttons* and *radio buttons* refer to the same object.

- Throughout this guide, the term *PARTNER* refers to all versions of the following systems:

  — PARTNER Advanced Communications System (ACS)

  — PARTNER Endeavor

  — PARTNER II

  — PARTNER Plus

  — PARTNER

Getting Help

If you have questions about or problems with the PassageWay Service Provider that this guide does not resolve, call the Lucent Technologies National Customer Care Center at 1 800 628-2888 or your local Authorized Dealer.

Installing and Configuring the PassageWay Service Provider

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Overview

This chapter provides the procedures for installing and configuring the PassageWay Service Provider.

> **NOTE:**
> The appearance of dialog boxes and message boxes in this chapter may differ from the dialog boxes and message boxes that appear on your system, depending on the operating system you are using (that is, Windows NT 4.0 or later, Windows 95, or Windows 3.1 or later).

New PassageWay Service Provider Users

This section applies to new PassageWay Service Provider users. If you have an existing version of the PassageWay Service Provider or PassageWay Solution, proceed to the next section, "Upgrading the PassageWay Service Provider or PassageWay Solution."

If you are a new PassageWay Service Provider user, perform the following steps:

1. Read the section "PassageWay Service Provider Components" to make sure that you have all of the PassageWay Service Provider components.

2. Read the section "PassageWay Service Provider Requirements" to make sure that you have the required hardware and software to run the PassageWay Service Provider.

3. Read the section "Before You Begin" to make sure that you have the necessary information to set up the PassageWay Service Provider.

4. Connect your PassageWay adapter to your PC and your telephone by performing the procedures in the section "Installing the PassageWay Adapter."

5. Install the PassageWay Service Provider by performing the procedures in the section "Installing the Software."

Upgrading the PassageWay Service Provider or PassageWay Solution

This section applies to users who have an earlier version of the PassageWay Service Provider or PassageWay Solution installed. If you do not have an existing version of the PassageWay Service Provider or PassageWay Solution installed, refer to the previous section, "New PassageWay Service Provider Users."

If you have an earlier version of the PassageWay Service Provider software or PassageWay Solution installed on your PC, perform the following steps:

1. Read the section "PassageWay Service Provider Components" to make sure that you have all of the PassageWay Service Provider components.

2. Read the section "PassageWay Service Provider Requirements" to make sure that you have the required hardware and software to run the PassageWay Service Provider.

3. Read the section "Before You Begin" to make sure that you have the necessary information to set up the PassageWay Service Provider.

4. Install the PassageWay Service Provider by performing the procedures in the section "Installing the Software."

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PassageWay Service Provider
Components

The PassageWay Service Provider consists of the following components:

- software
- the PassageWay adapter

  The PassageWay adapter provides an interface between your
  telephone and an available serial (COM) port on your PC by
  connecting to the following objects:

  — the Line jack on your telephone

  — the wall jack in your office

  — the serial port on your PC

  Figure 2-1 shows the components of the PassageWay adapter.

- a 9-pin to 25-pin adapter for personal computers that have 9-pin serial
  ports
- a 7-foot, 2-pair, modular phone cord (D4BU)

  This modular phone cord connects your PassageWay adapter to your
  telephone.

- this guide
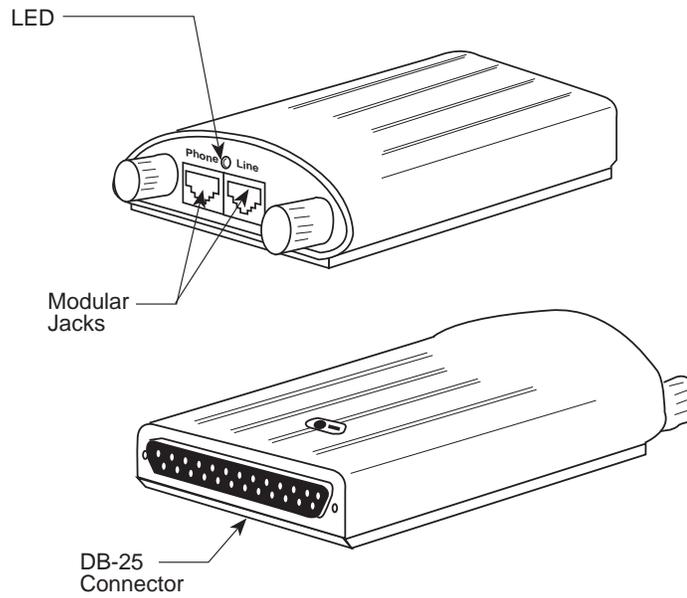
Figure 2-1. Components of the PassageWay Adapter

PassageWay Service Provider Requirements

The PassageWay Service Provider requires the hardware and software listed below. Install the required hardware and software before installing the PassageWay Service Provider software. Note that system performance may be adversely affected by lower system speeds and lower memory capacities.

- an IBM-PC compatible or PS/2®-compatible PC with the following hardware:

  — an 80386 or higher processor

  — an available serial port

  — a minimum of 4 MB of RAM

  — a 3.5-inch, 1.44-MB, high-density diskette drive

  — a hard disk with at least 4 MB of space available

  — a VGA or better monitor

  — a Windows-compatible pointing device (a mouse or trackball is recommended)

  ➡ **NOTE:**
  You must have an available serial port in your PC that is dedicated to the PassageWay Service Provider. The PassageWay Service Provider cannot share a serial port with other devices.

  If all the serial ports in your PC are already in use, you must purchase an additional serial port or free up an existing serial port to use with the PassageWay Service Provider. Consult Appendix A for more information on choosing a suitable serial port for the PassageWay Service Provider.

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■ any of the following operating systems:

≡➤ **NOTE:**

Only English (United States) is supported.

— Microsoft Windows 3.1 or later

— Microsoft Windows for Workgroups 3.11 or later

≡➤ **NOTE:**

Throughout this document, the phrase *Windows 3.1 or later* is
used to refer to Windows 3.1 or later and Windows for
Workgroups 3.11 or later.

— Microsoft Windows 95

— Microsoft Windows NT Server 4.0 or later or Microsoft Windows NT
Workstation 4.0 or later

■ a system or standard telephone connected to a PARTNER system that
is configured and operating properly.

≡➤ **NOTE:**

A complete list of all the telephones supported by the
PassageWay Service Provider is provided in the PassageWay
Configurator software.

The PassageWay Service Provider operates with all versions of the following PARTNER systems:

— PARTNER ACS

— PARTNER Endeavor

— PARTNER II

— PARTNER Plus

— PARTNER

➡ **NOTE:**
Throughout this document, the term *PARTNER* is used to refer to all of the systems listed above.

For caller ID capabilities, you must have:

— a PARTNER ACS, a PARTNER Endeavor, or a PARTNER II Release 3.0 or later system. A PARTNER ACS will provide caller ID (if available) for all outside lines connected to the control unit, a 206EC module, or a 400EC module. A PARTNER Endeavor will provide caller ID (if available) for all outside lines connected to the control unit or a 362EC module. A PARTNER II Release 3.0 or later system will provide caller ID (if available) for all outside lines connected to a 206EC module or a 400EC module.

— outside lines subscribed to caller ID from your local telephone company.

— a system telephone that has a display and a Caller ID Inspect button programmed. The Caller ID Inspect button is a display feature button that shows you call-related information for an incoming call when you are already active on a call.

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Before You Begin

Before installing the PassageWay Service Provider, you also must know the following information:

■ the version and release of the PARTNER system your company has (for example, PARTNER ACS R2.0)

■ the type of telephone you have

■ the extension number of your telephone

■ the location and telephone number of each outside line button on your telephone

■ the location of feature buttons on your telephone

■ the number of the COM port (for example, COM1, COM2, COM3, COM4, etc.) to which you are connecting the serial cord from the PassageWay adapter. (PassageWay supports up to COM9.)

NOTE:
If your PARTNER system supports caller ID and you have a system telephone, you should have a Caller ID Inspect button programmed on your telephone. A Caller ID Inspect button enables you to view caller ID information for an incoming call while you are already active on another call. Without a Caller ID Inspect button, the PassageWay Service Provider will present caller ID information for the first call that starts ringing at your telephone, but it will not provide caller ID information for any other calls you receive while you are active on a call.

Installing the PassageWay Adapter

This section describes how to connect the PassageWay adapter to your
telephone, your PC, and the line jack. The PassageWay adapter provides an
interface between the serial port on your PC and the Line jack on your
telephone, enabling you to access the PARTNER system from your PC. The
PassageWay adapter has a DB-25 connector for 25-pin serial ports. If you
have a 9-pin serial port on your PC, use the 9-pin to 25-pin adapter included
with PassageWay Solution to connect your PassageWay adapter to your serial
port.

≡▷ **NOTE:**
   Do not install the PassageWay adapter while you are active on a call.

To install the PassageWay adapter:

1. Turn off your PC.

2. Unplug the line cord from your telephone.

3. Connect the line cord to the jack labeled "Line" on the PassageWay
    adapter (Figure 2-2).

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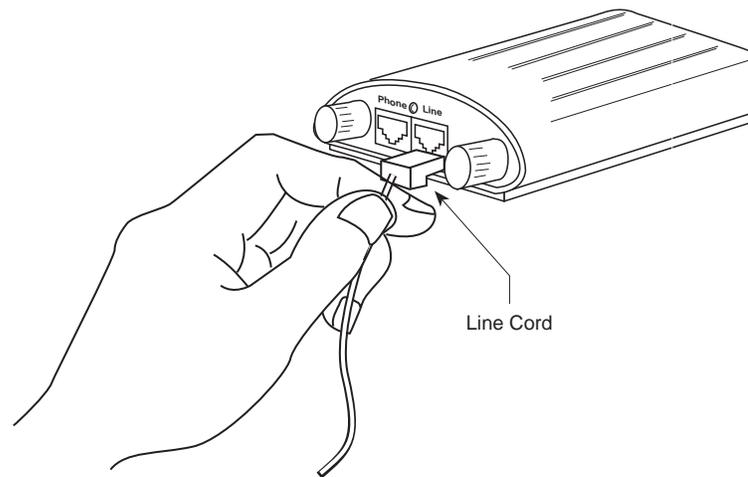
Line Cord

Figure 2-2. Connecting the Line Cord to the PassageWay Adapter

4. Determine the type of serial port (9 pin or 25 pin) you have on your PC. If you have a 9-pin serial port, you will use the 9-pin to 25-pin adapter.

5. Connect the DB-25 connector on the PassageWay adapter to the serial (COM) port on your PC. If your PC has a 9-pin serial (COM) port, connect the 9-pin to 25-pin adapter to the 9-pin serial (COM) port, and then connect the PassageWay adapter to the 25-pin connector on the 9-pin to 25-pin adapter.

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≡▷ **NOTE:**

You can use an RS-232 cable to connect the adapter to the PC
if you do not want to connect the adapter directly to the PC.

6. Connect one end of the 7-foot, 2-pair, modular phone cord (D4BU) to
the jack labeled "Phone" on the PassageWay adapter (Figure 2-3).

Modular Phone
Cord (D4BU)
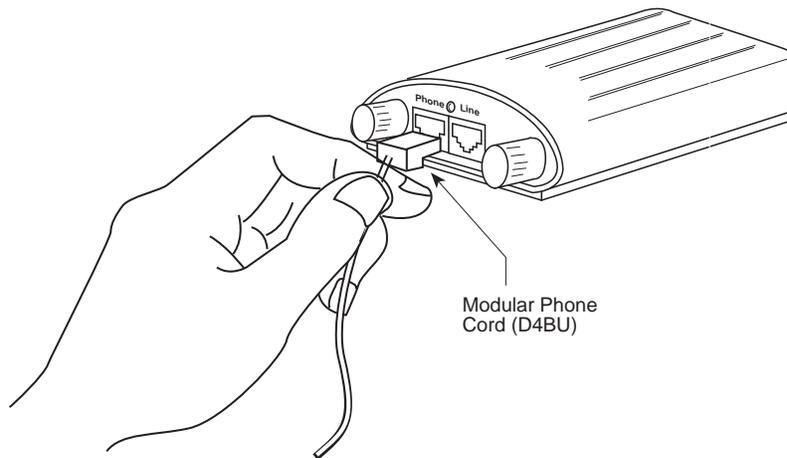
**Figure 2-3. Connecting the Modular Phone Cord to the PassageWay
Adapter**

7. Connect the other end of the 7-foot, 2-pair, modular phone cord (D4BU) to the Line jack on your telephone.

8. Check the LED on the PassageWay adapter. The LED is located next to the Phone and Line jacks on the PassageWay adapter.

   If the red LED is "on," proceed to Step 9.

   If the red LED is "off," proceed to the section "PassageWay Adapter LEDs" in Chapter 4.

9. Turn on your PC.

Now, proceed to "Installing the Software."

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Installing the Software

This section describes how to install and configure the PassageWay Service Provider. You can modify the PassageWay Service Provider configuration information later by running the PassageWay Configurator.

➡ **NOTE:**
If you have an earlier version of PassageWay Solution, you must exit Connect or AT&TConnect (if it is running) before installing the new PassageWay Service Provider.

To install the PassageWay Service Provider:

1. Start Windows (if it is not running already).

2. Shut down all telephony applications running on your PC.

3. If you have an earlier version of PassageWay Solution applications (for example, AT&TCall, AT&TConnect, or AT&TBuzz) installed already, perform one of the following steps:

— If you do not want to run the earlier version of PassageWay Solution applications again, delete the Connect icon or AT&TConnect icon from your StartUp group (if present).

— If you want to run the earlier version of PassageWay Solution applications again, leave the Connect icon or AT&TConnect icon in your StartUp group (if present). Be sure to install the PassageWay Service Provider in the directory that contains the PassageWay Solution applications. If you install the PassageWay Service Provider in a different directory, you must manually change the properties of the Connect icon or AT&TConnect icon in the StartUp group so that it uses the new Connect application. (See your Windows User's Guide to change the properties of an icon in the StartUp group.)

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4. If you are installing from diskette, insert diskette #1 of the
   PassageWay Service Provider software into the diskette drive of your
   PC.

   If you are installing from CD-ROM, insert the CD-ROM of the
   PassageWay Service Provider into the CD-ROM drive of your PC.

   If you are installing from a shared directory on a network server,
   proceed to Step 5.

5. Perform one of the following steps:

   — If you have Windows 95 or Windows NT 4.0 or later:

       a. From the Task Bar, click on the Start button.

          The Start menu appears.

       b. Select **Run**.

          The Run dialog box appears.

   — If you have Windows 3.1 or later, select **Run** from the File menu of
     Program Manager. The Run dialog box appears.

6. Depending on whether you are installing from a diskette, CD-ROM, or
   a shared directory, perform one of the following steps:

   — If the diskette is in drive A, type **a:\setup** in the Command Line
     box, and choose the OK button. If the diskette is in drive B, type
     b:\setup in the Command Line box, and choose the OK button.

   — If the CD-ROM is in drive D, type **d:\setup** in the Command Line
     box, and choose the OK button.

   — If you are installing from a shared directory, type the shared
     directory path (including the drive letter) provided by your Network
     Administrator and **setup** in the Command Line box, and choose the
     OK button.

   The PassageWay for PARTNER Service Provider Setup dialog box is
   displayed.

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7. Choose the Next button.

   The Select Destination Directory dialog box appears. This dialog box
   displays the name of the directory where the PassageWay Service
   Provider software will be installed by default.

8. If the default directory is unacceptable, choose the Browse button
   and specify an alternative directory. Otherwise, proceed to Step 9.

9. Choose the Next button.

   If you are using Windows 95 or Windows NT 4.0 or later, the Select
   App Folder dialog box appears. This dialog box displays the name of
   the application folder to which the PassageWay Service Provider
   icons will be added. Proceed to Step 10.

   If you are using Windows 3.1 or later, the Select ProgMan Group
   dialog box appears. This dialog box displays the name of the
   Program Manager group to which the PassageWay Service Provider
   icons will be added. Proceed to Step 10.

10. If the default application folder (for Windows 95 and Windows NT 4.0
    or later) or program group (for Windows 3.1 or later) is unacceptable,
    enter the name of the new folder or group to be created or select an
    existing folder or group. Otherwise, proceed to Step 11.

11. Choose the Next button.

    The Ready to Install dialog box appears.

12. Choose the Next button.

    The installation program copies files from the source diskette or CD-
    ROM to the destination directory. The installation program displays a
    message box to inform you of its status as it installs files.

    If you are installing from diskette, insert the requested diskette into
    the PC when prompted, and choose the OK button.

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If you are using Windows 95 or Windows NT 4.0 or later, the Creating Application Folder & Short Cuts message box appears.

If you are using Windows 3.1 or later, the Creating Program Group & Icons message box appears.

13. Choose the OK button.

The Installation Completed message box appears.

14. Choose the Finish button.

If you are using Windows 95 or Windows 4.0 or later, the PassageWay Configurator is launched, and it displays the Find PassageWay Link dialog box.

If you are using Windows 3.1 or later, the Configuring PassageWay Service Provider message box appears. Perform the following steps:

a. Choose the OK button in the Configuring PassageWay Service Provider message box.

The Telephony window appears.

b. In the Telephony window, choose the Driver Setup button.

The Telephony Drivers dialog box appears.

c. Perform one of the following steps:

- If the Lucent PassageWay Service Provider is listed in the Telephony Drivers dialog box, select it, and then choose the Setup button.

- If the Lucent PassageWay Service Provider is not listed in the Telephony Drivers dialog box:

  i. Choose the Add button.

     The Add Driver dialog box appears.

  ii. Select the Lucent PassageWay Service Provider, and then choose the Add button.

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The PassageWay Configurator is launched, and it displays the
Find PassageWay Link dialog box.
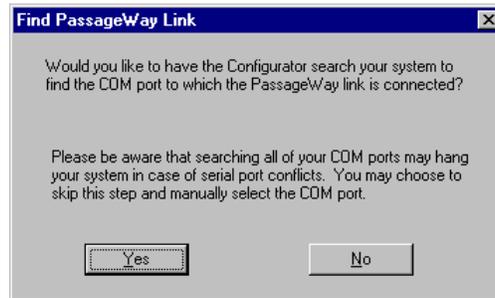
Figure 2-4. Find PassageWay Link Dialog Box

The PassageWay Configurator is a software application that enables
you to set up the PassageWay Service Provider. Until you set up the
PassageWay Service Provider, you will be unable to use any TAPI
applications.

Setting up the PassageWay Service Provider consists of specifying
the following information:

— the COM port to which the PassageWay adapter is connected

— the version and release of the PARTNER system your company has
(for example, PARTNER ACS R2.0)

— the type of telephone you have

— the extension number of your telephone

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— the location and telephone number of each outside line button on your telephone

— the location of feature buttons on your telephone

≡> **NOTE:**
The PassageWay Configurator does not verify whether the information you enter is correct. When you run a TAPI application (for example, Microsoft Dialer), the PassageWay Service Provider tries to use the information you entered via the PassageWay Configurator. If the information you entered in the PassageWay Configurator was correct, the TAPI application works properly. If any of the information you entered is incorrect, the TAPI application will not work. You must then run the PassageWay Configurator and change the incorrect information.

The Find PassageWay Link dialog box enables you to have the PassageWay Configurator determine the COM port to which your PassageWay adapter is connected.

15. Choose the Yes button.

If the PassageWay Configurator found the COM port to which your PassageWay adapter is connected, a message box appears, stating that the PassageWay link was found and providing the number of the COM port. Choose the OK button. The PassageWay Configurator - COM Port dialog box appears, and the option button for the corresponding COM port is selected.

If the PassageWay Configurator did not find the COM port to which your PassageWay adapter is connected, the PassageWay Link Not Found message box appears. Choose the OK button. The PassageWay Configurator - COM Port dialog box appears, and no COM port option button is selected.

2-19
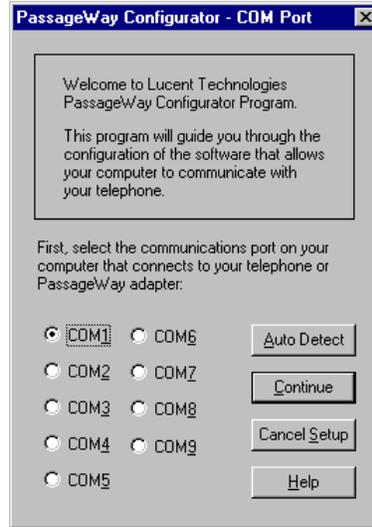
Figure 2-5. Sample PassageWay Configurator - COM Port Dialog Box

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16. Perform one of the following steps:

— If PassageWay "found" the COM port for you, choose the Continue button.

— If PassageWay did not find the COM port for you, select the option button of the COM port in your PC to which your PassageWay adapter is connected, and then choose the Continue button.

The PARTNER System Version dialog box appears.
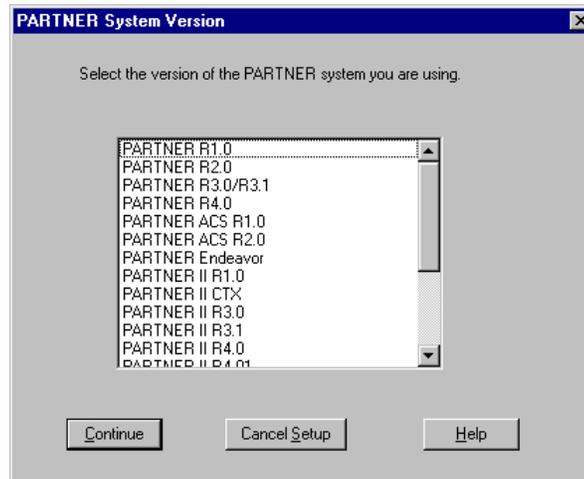
Figure 2-6. PARTNER System Version Dialog Box

17. From the PARTNER System Version dialog box, select the PARTNER
    system you are using, and then choose the Continue button.

    The Telephone Models dialog box appears.
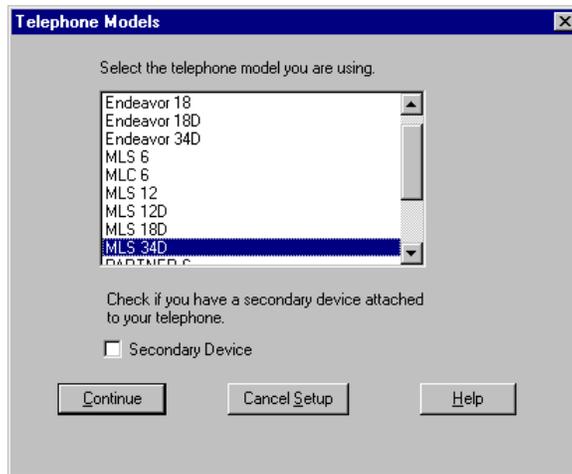
Figure 2-7. Telephone Models Dialog Box

18. Select the telephone you are using.

19. If a secondary device (such as answering machine or a fax machine)
    is attached your PARTNER system phone, choose the *Secondary
    Device* check box.

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20. Choose the Continue button.

   The Extension Number dialog box appears.
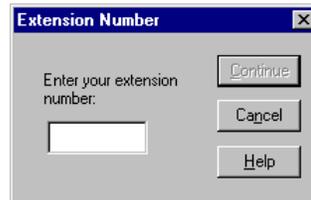
Figure 2-8. Extension Number Dialog Box

21. Enter your extension number, and then choose the Continue button.

   If you specified that you have a standard telephone, the Enter
   Number dialog box appears. Enter the telephone number for the
   outside line, and then choose the OK button. The PassageWay
   Configurator - Complete message box appears. Proceed to Step 31.

   If you specified that you have a PARTNER system telephone, the
   Phone Line Information dialog box appears for the telephone type you
   specified.
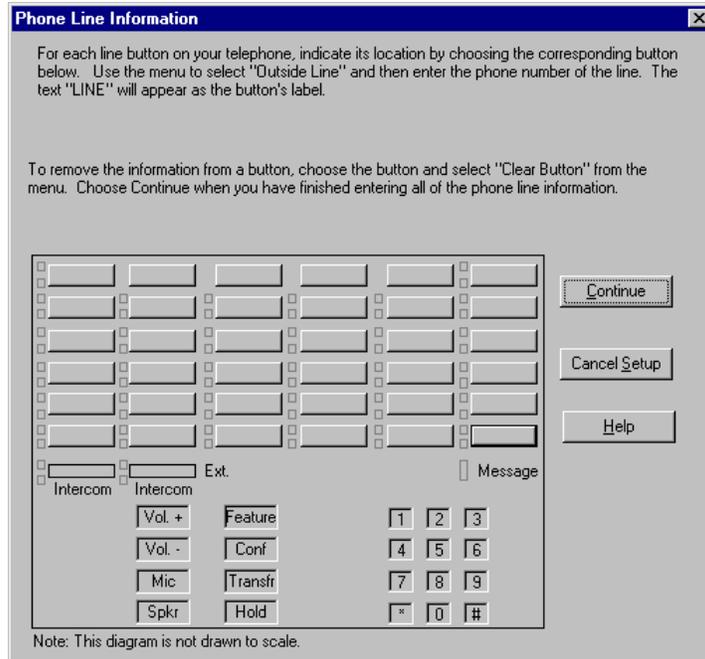
Figure 2-9. Sample Phone Line Information Dialog Box

This dialog box presents a representation of the buttons on your
telephone. Using this dialog box, you will specify the location for each
outside line on your telephone.

22. Choose the location of an outside line on your telephone.

    A submenu appears, displaying the following options:

— Clear Button, which removes the programming (if any) and label (if any) from the selected button.

— Outside Line, which enables you to specify the telephone number of the outside line for the selected button.

— Cancel, which closes the submenu without changing the programming for the selected button.

   ⇛ **NOTE:**
       Make sure you specify the correct location of each outside line on your telephone. If you incorrectly specify this information, your system will not work as expected.

23. Choose **Outside Line**.

    The Enter Number dialog box appears.

24. Enter the telephone number for the outside line, and then choose the OK button.

    The button displays "LINE."

25. Repeat Steps 22 through 24 for any other outside lines on your telephone.

26. When you are finished, choose the Continue button.

The Feature Buttons dialog box appears.
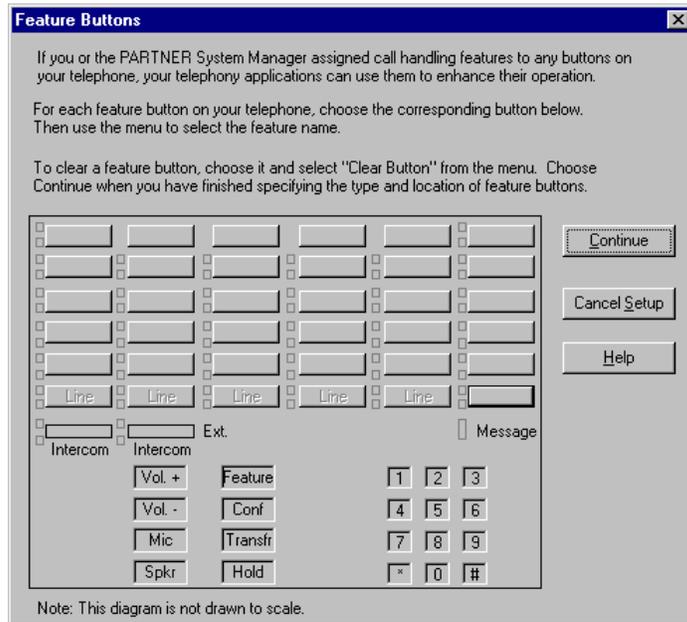
Figure 2-10. Sample Feature Buttons Dialog Box

Using this dialog box, you specify the location of call handling features assigned to buttons on your telephone by the PARTNER System Manager. By specifying the locations of feature buttons, telephony applications can use these call handling features to enhance their operation.

2-26

The PassageWay Service Provider can recognize the following call
handling features programmed to your telephone:

— Auto Dial

— Call Forward

— Do Not Disturb

— Caller ID Inspect (Inspect)

≡> **NOTE:**

- Features that cannot be programmed to buttons on your
  telephone are disabled (that is, you cannot program these
  features).

- Make sure you specify the correct type and location of each
  feature assigned to buttons on your telephone. If you incorrectly
  specify any of this information, your system will not work as
  expected.

2-27

27. Choose a button where a feature is assigned.

A submenu appears, displaying the following options:

— Clear Button

— Auto Dial

— Call Forward

— Do Not Disturb

— Inspect

— Cancel

28. Choose the appropriate feature for the selected button.

The label for the selected feature appears on the button.

29. Repeat Steps 27 and 28 for any other buttons.

30. When you are finished, choose the Continue button.

The PassageWay Configurator - Complete message box appears.

31. Choose the OK button.

If you are using Windows 95 or Windows NT 4.0 or later, the Configuration Complete message box appears. Proceed to Step 32.

If you are using Windows 3.1 or later, the Telephony Drivers dialog box appears. Perform the followings steps:

a. In the Telephony Drivers dialog box, choose the Close button.

b. In the Telephony window, choose the Close button.

The Configuration Complete message box appears. Proceed to Step 32.

32. Choose the OK button.

    The View README File dialog box appears. If you want to view the
    Readme file now, make sure the check box is selected. (This check
    box is selected by default). If you do not want to view the Readme file
    now, make sure the check box is not selected.

33. Choose the Finish button.

    If the Readme file check box was selected, the Notepad window
    appears, displaying the contents of the Readme file. Proceed to
    Step 34.

    If the Readme file check box was not selected, the About To Restart
    Windows message box appears. Proceed to Step 35.

34. When you are finished reading the Readme file, select **Exit** from the
    File menu to close the Notepad window.

    ≡▷ **NOTE:**

    If you have any other Notepad windows open, you must close
    all of them now. The installation will not continue until all
    Notepad windows are closed.

    The About To Restart Windows message box appears.

35. Choose the OK button.

    The Install dialog box appears.

36. Remove the diskette from the diskette drive (if you are installing from
    diskette), and choose the OK button.

    Depending on your version of Windows, either the system or Windows
    restarts.

The PassageWay Service Provider is now installed.

2-29

If you need to modify any of the information for your telephone (for example, lines or features are added to or removed from your telephone), run the PassageWay Configurator. (The PassageWay Configurator is located in the folder/program group that contains the PassageWay Service Provider.)

➡ NOTE:

If you experience any difficulties running telephony applications, ask your PARTNER System Manager to check the administration of your telephone and then run the PassageWay Configurator again to correct any errors you may have made.

Removing the PassageWay Service Provider

Use the following procedure to remove the PassageWay Service Provider.

If you are using Windows 95 or Windows NT 4.0 or later, proceed to
"Removing the PassageWay Service Provider in Windows 95 or Windows NT."

If you are using Windows 3.1 or later, proceed to "Removing the PassageWay
Service Provider in Windows 3.1 or Later."

Removing the PassageWay Service Provider in Windows 95 or Windows NT

To remove the PassageWay Service Provider from your PC in Windows 95 or
Windows NT 4.0 or later:

1. Close all PassageWay applications and telephony applications.

2. Select the Start button.

   The Start menu appears.

3. Select **Programs**.

4. Select the application folder that contains the PassageWay Service
   Provider. (The default application folder is **PassageWay for
   PARTNER**.)

5. Select **UnInstaller for Service Provider**.

   The PassageWay for PARTNER UnInstaller dialog box appears.

2-31

6. Choose the Next button.

   The Ready To UnInstall dialog box appears.

7. Choose the Finish button.

   The Perform Uninstall status box appears, displaying the status of the uninstall process. When the uninstall is completed, the UnInstaller Finished message box appears.

8. Choose the OK button.

   If you are using Windows 95, the PassageWay Service Provider is removed from your PC.

   If you are using Windows NT 4.0 or later, a dialog box appears, prompting you to restart your computer. Make sure there is no diskette in your diskette drive, and choose the OK button to restart your PC.

Removing the PassageWay Service Provider
in Windows 3.1 or Later

To remove the PassageWay Service Provider from your PC in Windows 3.1 or later:

1. Close all PassageWay applications and telephony applications.

2. Open the program group that contains the PassageWay Service Provider. (The default program group is **PassageWay for PARTNER**.)

3. Double-click on the UnInstaller for Service Provider icon.

   The PassageWay for PARTNER UnInstaller dialog box appears.

4. Choose the Next button.

   The Remove Service Provider dialog box appears.

5. Choose the OK button.

   The Telephony window appears.

6. Choose the Driver Setup button.

   The Telephony Drivers dialog box appears.

7. In the Installed Drivers box, select **Lucent PassageWay Service Provider**, and choose the Remove button.

   A Telephony dialog box appears, prompting you to confirm that you want to remove the selected Telephony Service Provider.

8. Choose the Yes button.

   The PassageWay Service Provider is removed from your PC and is no longer displayed in the Installed Drivers box of the Telephony Drivers dialog box.

9. Choose the Close button to close the Telephony Drivers dialog box.

2-33

10. Choose the Close button to close the Telephony window.

The Ready to UnInstall dialog box appears prompting you to confirm that you want to remove the PassageWay Service Provider and all associated files.

11. Choose the Finish button.

The Perform Uninstall status box appears, displaying the status of the uninstall process. When the uninstall is completed, the UnInstaller Finished message box appears.

➡ NOTE:

If you are running SHARE, a Share Violation error message box appears soon after the PassageWay Service Provider UnInstaller starts removing the files from your system. Choose the Cancel button (you may have to choose it two or more times), and you will be able to continue removing the files. Two PassageWay UnInstaller files will not be removed from your PC. (These files can be removed manually.) As a result, the directory containing the PassageWay Service Provider will not be removed. (The default directory for the PassageWay Service Provider is pwp.) The Share Violation error message box will appear two or more times.

12. Choose the OK button.

2-34

Using PARTNER Extension Programming

3

Overview

This chapter provides the following information:

- a description of PARTNER Extension Programming

- helpful hints describing how to use PARTNER Extension Programming

- the procedure for running PARTNER Extension Programming for the first time

> **NOTE:**
> PARTNER Extension Programming requires a system telephone with a display and supports the following PARTNER systems:
>
> — PARTNER ACS (all releases)
>
> — PARTNER Endeavor (all releases)
>
> — PARTNER II (all releases)
>
> — PARTNER Plus (all releases)
>
> — PARTNER Release 3 or later
>
> PARTNER Extension Programming **is not** available on Windows NT 4.0 or later.

What is PARTNER Extension Programming?

PARTNER Extension Programming is an application that enables you to perform Extension Programming for your system telephone from your PC. (You must have a system telephone with a display.) Extension Programming includes programming user features, Personal Speed Dial List, and Extension Name. (The Extension Name feature is available with PARTNER Plus Release 3.1 or later, PARTNER II Release 3.1 or later, and all releases of PARTNER ACS and PARTNER Endeavor.) With PARTNER Extension Programming, you can create and save multiple programming files for your telephone. If you are a PARTNER System Manager, you can also perform Centralized Telephone Programming for other extensions that have any system or standard telephones. Centralized Telephone Programming includes programming user features, Personal Speed Dial List, Automatic Line Selection, and ringing options for line buttons. The System Manager can also program the System Speed Dial List.

Each PARTNER Extension Programming file consists of the programmable information for your extension. Figure 3-1 shows a sample PARTNER Extension Programming file for a PARTNER-34D telephone.

3-2
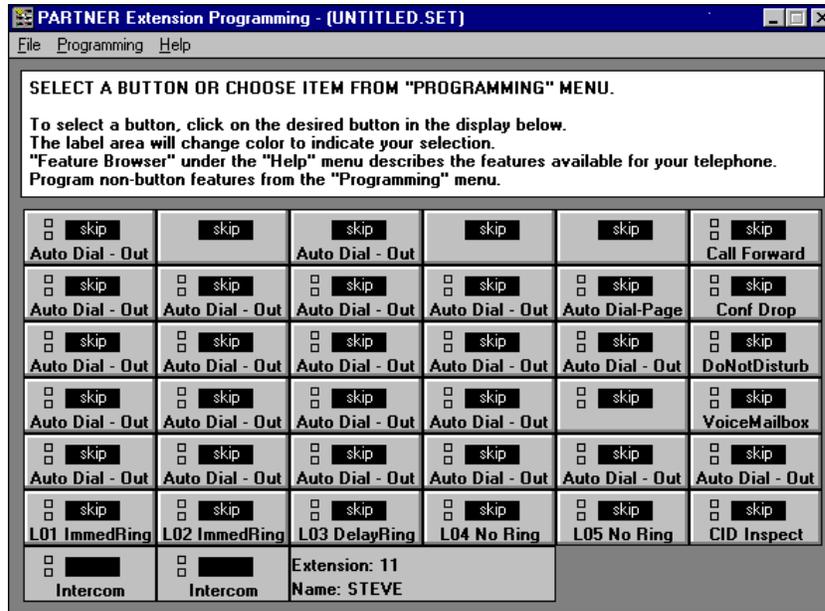
Figure 3-1. Sample PARTNER Extension Programming File for a PARTNER-34D Telephone

When you run PARTNER Extension Programming for the first time, the system "reads" the programming from your telephone and displays an untitled file containing the current programming for your telephone. When PARTNER Extension Programming "reads" the programming from your telephone, it identifies how each button or speed dial list entry on your telephone is programmed, providing you with an accurate and up-to-date status of the programming of your telephone. (If your PARTNER system supports Extension Name, PARTNER Extension Programming also reads this information from your telephone.) The untitled file that PARTNER Extension Programming displays after reading your telephone is a "workspace" in which you may modify the programming of your telephone. Every PARTNER Extension Programming file can be thought of as a workspace.

Each PARTNER Extension Programming file consists of the following items:

- button programming

- Personal Speed Dial List

- Extension Name (if available)

- System Speed Dial List (at a system administration extension)

- Automatic Line Selection (at a system administration extension)

If you are the System Manager, you may perform Centralized Telephone Programming on any extension (including your own). Files created at a system administration extension also include the Automatic Line Selection list for the extension being programmed. In addition, if you are the System Manager, your PARTNER Extension Programming file also includes the System Speed Dial List.

3-4

The main view of a PARTNER Extension Programming file is the button programming. You must use the menus to access the other options (for example, Personal Speed Dial List). Each button in a PARTNER Extension Programming file consists of a button label and a button position. The button label shows the feature that is programmed to that button, and the button position specifies the programming status of this button ("use" or "skip"). "Use" and "Skip" determine whether the feature that is programmed to this button will be programmed on your telephone. To change the label or feature programmed to a button, you must first select the button by clicking on the particular button. When a button is selected, it becomes highlighted. At this point, you can perform one of the following actions on the button:

- change the feature that is programmed to the button (via the **Change Button Programming** option in the Programming menu)

- change the label of the button (via the **Change Button Label** option in the Programming menu)

- select the button to be programmed to your telephone (via the **Use Button When Programming Phone** option in the Programming menu)

- retrieve full button programming information (via the **Button Information** option in the Programming menu)

Since PARTNER Extension Programming files are workspaces, any changes you make to a file are not immediately programmed to your telephone. To program these modifications to your telephone, you must "write" the file to the telephone (via the **Write to Telephone** option in the File menu). When you write a file to your telephone, PARTNER Extension Programming does not automatically program every button in the file to your telephone. PARTNER Extension Programming only programs buttons whose button positions display "use." As a result, you can change how every button is programmed in a PARTNER Extension Programming file, but if you select "use" for only one button position, only that button feature will be programmed to your telephone when you write the file to your telephone. If you select "skip" for all of the button positions, none of the button features in that file will be programmed to your telephone when you write the file to your telephone.

3-5

With PARTNER Extension Programming, you can create button programming files for any system telephone. Regardless of the telephone model you have, you may create a file for one of the other model types PARTNER Extension Programming supports. For example, if you have a PARTNER-34D telephone, you may create a file for a PARTNER-18D telephone. PARTNER Extension Programming also enables you to convert an existing PARTNER Extension Programming file to a file for one of the other model types.

> **NOTE:**
> You cannot directly write a file that was created for one type of telephone to another type of telephone without first converting the file. For example, if you want to write a file for a PARTNER-34D telephone to a PARTNER-18D telephone, you must convert the file to a PARTNER-18D file before writing the file to the PARTNER-18D telephone.

With PARTNER Extension Programming, you can program and print your speed dial lists. PARTNER Extension Programming also enables you to print labels for the button features programmed on your telephone. You can print these labels on a perforated Lucent button label form.

3-6

System Administration Capabilities

PARTNER Extension Programming enables the PARTNER System Manager to perform the following tasks:

- Perform the following Centralized Telephone Programming tasks for any user extension (system or standard telephone), including their own:

  — perform all extension programming tasks (for example, programming buttons and the Personal Speed Dial List)

  — set the Automatic Line Selection order

  — set the line ringing options for line buttons

- Program and print the System Speed Dial List

Every PARTNER system allows you to perform system administration from extension 10. However, you can perform system administration from extensions 10 and 11 on PARTNER Plus Release 3 or later and all releases of PARTNER II, PARTNER ACS, and PARTNER Endeavor.

➡ NOTE:

If both extension 10 and extension 11 are system administration extensions, only one of these extensions may be used to perform system administration at one time.

Refer to "Centralized Telephone Programming Tasks" in the online help for more information on how to perform these tasks.

3-7

Helpful Hints

When using PARTNER Extension Programming, keep in mind the following information:

- Only program your telephone through PARTNER Extension Programming. PARTNER Extension Programming only keeps track of programming you perform through this application. If you program features via your telephone, you can cause PARTNER Extension Programming to become out of sync with your telephone.

- Read the programming of your telephone at regular intervals to insure that PARTNER Extension Programming is in sync with the current programming of your telephone. PARTNER Extension Programming can become out of sync with the programming of your telephone if either of the following actions occurs:

  — You program your telephone via your telephone, instead of using PARTNER Extension Programming.

  — The System Manager programs your telephone via Centralized Telephone Programming or System Programming.

- Do not save any files as "attset.img." PARTNER Extension Programming uses this filename to store the current programming of your telephone. Every time you modify the programming of your telephone, PARTNER Extension Programming updates this file. If you save a file as "attset.img," you will cause PARTNER Extension Programming to become out of sync with your telephone.

3-8

Running PARTNER Extension Programming

This section describes how to run PARTNER Extension Programming.

⩧ **NOTE:**
Connect must be running if you want to program your telephone or read the programming from your telephone.

To run PARTNER Extension Programming:

1. Start Connect.

— If you are using Windows 95, select **PassageWay Connect** from the application folder that contains the PassageWay Service Provider. (The default application folder is **PassageWay for PARTNER**.)

— If you are using Windows 3.1 or later, double-click on the PassageWay Connect icon in the program group that contains the PassageWay Service Provider. (The default program group is **PassageWay for PARTNER**.)

2. Start PARTNER Extension Programming.

— If you are using Windows 95, select **PassageWay Extension Programming** from the application folder that contains the PassageWay Service Provider. (The default application folder is **PassageWay for PARTNER**.)

— If you are using Windows 3.1 or later, double-click on the PassageWay Extension Programming icon in the program group that contains the PassageWay Service Provider. (The default program group is **PassageWay for PARTNER**.)

3-9

An untitled PARTNER Extension Programming file appears, displaying the current programming of the buttons on your telephone. You can now program your telephone. Refer to the online help for programming procedures.

If you are running PARTNER Extension Programming for the first time, the following message box appears:

Figure 3-2. PARTNER Extension Programming Message Box

3. Choose the OK button.

PARTNER Extension Programming starts reading the programming from your telephone. The Reading Telephone status box appears.
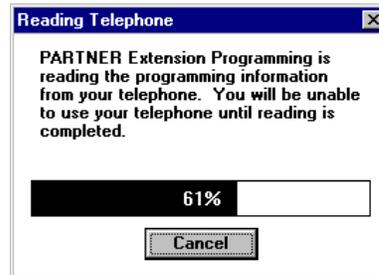
Figure 3-3. Sample Reading Telephone Status Box

When PARTNER Extension Programming finishes reading the programming from your telephone, an untitled PARTNER Extension Programming file appears, containing the current programming of your telephone. Figure 3-4 shows a sample PARTNER Extension Programming file.

3-11
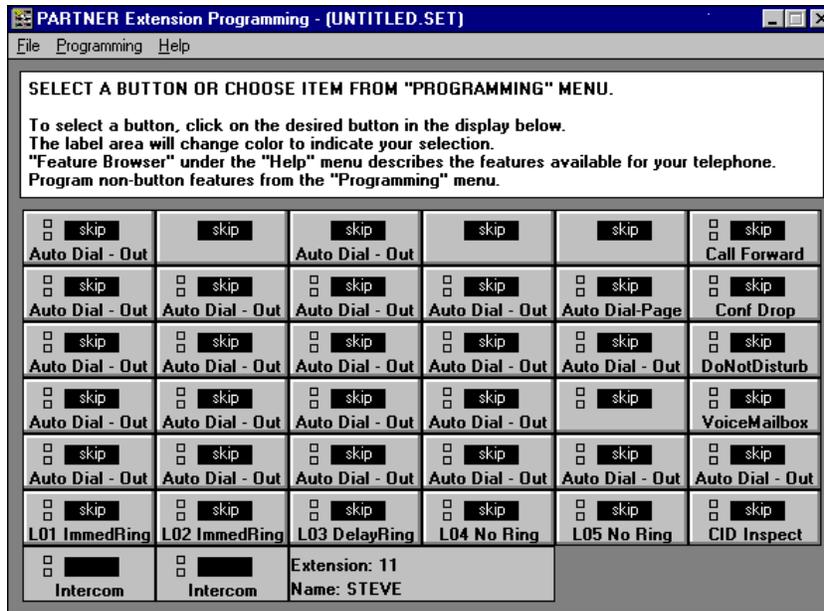
Figure 3-4. Sample PARTNER Extension Programming File

You can now program your telephone. Refer to the online help for the programming procedures.

3-12

Troubleshooting

4

Overview

This chapter provides information that can assist you in solving problems you might encounter when you use the PassageWay Service Provider. This chapter is divided into the following sections:

- General Troubleshooting

- PassageWay Adapter LED

- Troubleshooting PARTNER Extension Programming

- Troubleshooting Connect

Refer to the appropriate section to find the information required to solve your particular problem.

If you are using Windows 95 or Windows 3.1 or later, keep in mind that TAPI applications depend on Connect in order to communicate with your telephone. As a result, Connect may be used to help diagnose problems. Connect is **not available** for Windows NT 4.0 or later.

General Troubleshooting

This section presents some common problems you might encounter when configuring the PassageWay Service Provider and while using TAPI applications (for example, Microsoft Dialer). For each problem, a strategy is presented that you can follow to isolate and solve your problem.

Problem 1: When you start the PassageWay Configurator and use the Auto Detect feature (that is, the Find PassageWay Link dialog box), the PassageWay Link Not Found message box appears.

This message box appears there is a problem with the connection between your PC and your PassageWay adapter.

Perform the following steps:

1. Choose the OK button to close the message box.

    The PassageWay Configurator - COM Port dialog box appears.

2. Verify that the PassageWay adapter is installed properly. Refer to "Installing the PassageWay Adapter" in Chapter 2.

3. Look at the back of your PC and verify the COM port to which the PassageWay adapter is connected.

4. In the PassageWay Configurator - COM Port dialog box, select the option button of the COM port to which your adapter is connected, and then choose the Auto Detect button.

    If the PassageWay Configurator found the COM port to which your PassageWay adapter is connected, a message box appears, stating that the PassageWay link was found and providing the number of the COM port. Choose the OK button and finish configuring the PassageWay Service Provider.

    If the PassageWay Configurator could not find the COM port to which your PassageWay adapter is connected, the PassageWay Link Not Found message box appears. Choose the OK button, and then proceed to Step 5.

5. Choose the Continue button in the PassageWay Configurator - COM Port dialog box and finish configuring the PassageWay Service Provider.

6. If you are using Windows NT 4.0 or later, proceed to Step 8.

   If you are using Windows 95 or Windows 3.1 or later, start Connect after the PassageWay Service Provider is configured.

   — If you are using Windows 95, select **PassageWay Connect** from the application folder that contains the PassageWay Service Provider. (The default application folder is **PassageWay for PARTNER**.)

   — If you are using Windows 3.1 or later, double-click on the PassageWay Connect icon in the program group that contains the PassageWay Service Provider. (The default program group is **PassageWay for PARTNER**.)

   The Connect - Communications Error dialog box appears.

7. Choose the Test button and follow the instructions on the screen.

   If the PassageWay Adapter Test fails, note the error number and refer to the next section, "Troubleshooting Connect." If you still cannot solve the problem, proceed to Step 8.

   If all tests pass successfully, run your TAPI-compliant application.

8. Look at the bottom of your PassageWay adapter and check if there is a bar code label.

9. Contact the Lucent Technologies National Customer Care Center.

4-3

Problem 2: You are unable to dial from a TAPI-compliant application.

Perform the following steps:

1. Verify that the PassageWay Service Provider was installed and configured properly.

2. If you are using Windows 95 or Windows 3.1 or later, close all telephony applications, and then run Connect.

3. From the Setup menu in Connect, select **Test Adapter**, and follow the instructions on the screen.

   If the PassageWay Adapter Test fails, note the error number and refer to the next section, "Troubleshooting Connect."

   If all tests pass successfully, run the TAPI-compliant application.

Problem 3: Your TAPI-compliant application does not display caller ID information for incoming intercom calls.

The PassageWay Service Provider does not provide caller ID information for incoming intercom calls.

Problem 4: When you place an outgoing, ringing call on hold via your TAPI-compliant application, the call is dropped (that is, disconnected).

You should not place outgoing, ringing calls on hold. The PassageWay Service Provider will disconnect these calls.

Problem 5: When you conference an outgoing, ringing call via your TAPI-compliant application, the outgoing call is dropped, but your application indicates that the conference exists.

You should not conference outgoing, ringing calls. The PassageWay Service Provider will disconnect these calls. Even though the call was dropped, your application may incorrectly indicate that the call is part of the conference.

Problem 6: You cannot make a call with the speakerphone.

If you are using a TAPI application, like Microsoft Dialer (Dialer is an add-on package for Windows 3.1x but is provided with Windows 95 and Windows NT 4.x) to operate your PARTNER set, you may encounter a problem. You can make calls on the phone using the TAPI application. However, if the TAPI application is running and you try to make a call on the speakerphone manually, the line will be disconnected. This problem is the result of a problem with Microsoft TAPI. To correct this problem, you should close the offending TAPI application. Or, as a workaround, you should lift the hand-set first and then turn on the speakerphone.

➡ **NOTE:**
> This problem will exist with some TAPI applications. One application that does not exhibit this problem is Microsoft Phone (only available for Windows 95).

Problem 7: When you start the PassageWay Configurator and use the Auto Detect feature, you receive the message "Device Not Present."

In configuring the service provider, you may choose to let the Configurator search for the COM port to which the PassageWay link is connected. All of the COM ports known to the system will be searched. If the Windows system comes across a PCMCIA COM port that is not physically there, but is available to Windows, you will receive the following error message ("Device Not Present"). The following example is for COM4.

"A PCMCIA Card for the COM4 port is not present in a slot. Insert a card for the port and select the OK button. You may have to reconfigure the COM port."

4-5

Problem 8: The PassageWay Setup screen does not display properly.

On some PCs, depending on the type of video display adapter that is installed, some of the Setup screens may not display properly. That is, the background image for Setup may not be totally clear. This is an interaction with the video adapter and how the adapter switches from one resolution to another. This does not last throughout the entire Setup session.

Additionally, on some systems, if you move the current dialogue box displayed during Setup, it is possible that the painting of the dialogue box in its new position might also be accompanied with a residual image of the dialogue box in its old position. This phenomenon does not last and is cleared once the current dialogue is dismissed. Again, this problem is a result of the interaction with the video display adapter.

Problem 9: You receive a failure message after a completing a conference.

If you have successfully completed a conference and then receive a failure message about the conference, you most likely have an older PARTNER adapter and need to upgrade to the latest version of the PARTNER adapter. To verify whether you have the older adapter, see Problem 1 and perform Steps 6 to 9.

Problem 10: When you drop/hang up a consultation call, all other calls are disconnected.

If you are creating a conference call, have a consultation call, and then drop the consultation call (possibly to make a different consultation call), and find that calls on the conference go to the Idle state, you most likely have an older PARTNER adapter and need to upgrade to the latest version of the PARTNER adapter. To verify whether you have the older adapter, see Problem 1 and perform Steps 6 to 9.

Problem 11: You cannot place a consultation call on hold during a transfer.

If you are in the middle of a transfer, have an established consultation call that you then decide to place on hold, you will find that you are not able to place the consultation call on hold. This is a limitation of the service provider that may be addressed in a future release.

Problem 12: Your PassageWay adapter is not functioning with a standard phone.

If you are using a standard phone (that is, analog phone) and find that the link to the PC goes down when you go off-hook on the phone, you most likely are not using the proper phone cable. To ensure that your standard phone works, you should use a 2-conductor wire phone cable. The use of a 4-conductor wire phone cable may temporarily disable the adapter from working (until you place the standard phone on-hook again) or permanently disable the adapter from working (until you disconnect the phone line from the extension jack on the PARTNER system module).

⇛ **NOTE:**
    Even though the adapter is not functioning (that is, the link to the PC is gone), you can still make and receive calls from your telephone.

4-7

Problem 13: You cannot make or answer calls via your TAPI application.

If you are trying to use your TAPI application and find that it is unable to initiate a call or an incoming call is not seen by the application, it is possible that the PC link to the PARTNER adapter has not been properly established. To verify whether this is the cause of the failure, you should restart all of your telephony applications and try the application again.

Please keep in mind that there are many types of applications that classify as telephony applications. For example, Microsoft Exchange and Microsoft Schedule+ are both telephony applications. If either are running, they will have to be shutdown and restarted.

Problem 14: Your TAPI application does not properly reflect the status of your phone.

During the use of your application, it is possible that the application may get out of sync with the phone. There are many reasons why this may occur. Some of these reasons may be attributed to some of the issues documented in the above items.

If you are experiencing these problems, such as "phantom calls," where there are calls displayed on the application without a corresponding call on the phone, or the opposite, where there are calls on the phone that are not displayed on the application, then you should restart the application and any other telephony application that you have running on your system.

Please keep in mind that there are many types of applications that classify as telephony applications. For example, Microsoft Exchange and Microsoft Schedule+ are both telephony applications. If either are running, they will have to be shutdown and restarted.

4-8

Problem 15: Your TAPI application completes a conference without a real conference existing.

If you drop the consultation call or if the party on the other end of the consultation call hangs-up in midst of setting up a conference, the application may incorrectly show that the conference was completed. Meanwhile, there is only one call active on the phone. This is a known problem that will be addressed in a later release of the service provider.

If you are experiencing this problem, then you should restart the application and any other telephony application that you have running on your system. Please keep in mind that there are many types of applications that classify as telephony applications. For example, Microsoft Exchange and Microsoft Schedule+ are both telephony applications. If either are running, they will have to be shutdown and restarted.

Problem 16: Your TAPI application displays two calls when only one is active.

If you have one call on your telephone and the application is display two calls, you may be on a conference call that the other party has established. One call should report that it is in the connected state. The other should report that it is in the conferenced state. If you drop (hangup) the call that is in the connected state, the other call (in conferenced state) will also be dropped. This problem will be addressed in a later release.

4-9

Problem 17: The PassageWay Link is not always detected.

During the installation, you will be asked if you would like the system to search for your PassageWay link/adapter. If you choose to have this done for you, it is possible that the link will not be found. Assuming that you know the proper serial port, you can use the Auto Detect button on the PassageWay Configurator - COM Port dialog box to verify that the system can find the PassageWay adapter. Even though the automatic search did not find the link, assuming that you are properly connected and there isn't a conflict in the system, the adapter should be found. This problem will be addressed in a later release.

Problem 18: You receive an error when you shut down Windows.

During the shutdown of Windows, it is possible that you may encounter an error pointing to the PWTIMER.DLL file. This problem will be addressed in a later release.

Problem 19: Your COM (serial) port is not recognized.

If all of the COM Ports that are listed in the PassageWay Configurator - COM Port dialog box are disabled, then you may have a newer PC that supports Plug-n-Play (PnP) for the serial ports. The PassageWay software is trying to identify the location of the COM ports through the System BIOS. If that information is not there, as seen in PnP systems, then PassageWay does not know of the existence of the COM ports. If you have PnP, you will have to access the PC BIOS information to turn off Plug-n-Play for the serial ports. This problem will be addressed in a later release.

4-10

Problem 20: You have problems placing calls on hold using a standard phone.

If you are using a standard phone with your PARTNER system and you place a call on hold, you should not place the handset in the cradle. If you do so, you will not be able to answer another incoming call. If left out of the cradle, you will be able to answer incoming calls in addition to reconnecting to the held call. This problem will be addressed in a later release.

Problem 21: You are unable to remove intercom calls from a conference.

If you are on a conference that includes internal (intercom) calls, you will find that you cannot remove the internal calls using the application. You will have to remove them manually from the phone. This problem will be addressed in a later release.

Problem 22: You are unable to add more parties to a conference.

If you have established a conference, there are times that you will not be able to add more parties to the conference. If parties that are currently on the conference drop from the conference, this information may not be properly reflected in the application. Once this occurs, it may not be possible to add more parties to the conference.

At this point, you will have to add more parties using the phone. After the conference is completed, you should restart the application to resync the application with your phone. This problem will be addressed in a later release.

Problem 23: You experience problems while uninstalling the PassageWay service provider.

While running the UnInstaller on Windows 3.1x, the focus may change from the UnInstaller to the Program Manager. Assuming your Program Manager is not maximized, you will see the blue gradient screen of the UnInstaller in the background. Please give focus to the UnInstaller at this point by using ALT-TAB until you cycle back to the UnInstaller.

For Windows 3.1x, if you are running SHARE and try to UnInstall, you will get a Share Violation error message soon after the UnInstaller starts removing the files from your system. Choose the Cancel button (you may have to choose it about two or three times) and you will be able to continue with the UnInstall. You will see this error message box twice. This has no known detrimental impact on your system.

$\Longrightarrow$ **NOTE:**

When SHARE is loaded, the two UnInstaller files will not be removed from the system. This will prevent the removal of the PassageWay directory.

If you choose the Cancel button while running the UnInstaller, you may not be able to run UnInstaller again. You may also find pieces of the PassageWay software still installed. Your best bet at this point is to install the software again, run the UnInstaller, and allow the UnInstaller to complete its operation. When the UnInstaller has completed its operation, the PassageWay software will have removed itself.

Problem 24: A message box appears displaying the message:
`A required component of the PARTNER Service Provider is`
`corrupt. The registry does not contain a SwitchType`
`setting. Re-installing the PARTNER software may fix this`
`problem.`

Uninstall and reinstall the PassageWay Service Provider.

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Problem 25: A message box appears displaying the message:
`A required component of the PARTNER Service Provider is`
`corrupt.  The registry contains an inconsistent`
`SwitchType.  Re-installing the PARTNER software may fix`
`this problem.`

Uninstall and reinstall the PassageWay Service Provider.

Problem 26: A message box appears displaying the message:
`A required component of the PARTNER Service Provider is`
`corrupt. The registry does not contain a valid`
`PassageWayPath setting.  Re-installing the PARTNER`
`software may fix this problem.`

Uninstall and reinstall the PassageWay Service Provider.

Problem 27: A message box appears displaying the message:
`A required component of the PARTNER driver (file name) is`
`missing. Re-installing the PARTNER software may fix this`
`problem.`

Uninstall and reinstall the PassageWay Service Provider.

Problem 28: A message box appears displaying the message:
`A required component of the PARTNER driver (file name) is`
`corrupt. Re-installing the PARTNER software may fix this`
`problem.`

Uninstall and reinstall the PassageWay Service Provider.

Problem 29: A message box appears displaying the message:
`A required component of the PARTNER driver (file name)`
`could not initialize properly. Check your COM port`
`setting.`

Uninstall and reinstall the PassageWay Service Provider.

Problem 30: A message box appears displaying the message:
`A required component of the PARTNER driver (file name)`
`could not initialize properly. Re-installing the PARTNER`
`software may fix this problem.`

Uninstall and reinstall the PassageWay Service Provider.

Problem 31: A message box appears displaying the message:
`A required registry entry of the PARTNER Service Provider`
`is missing (PARTNER). Re-installing the PARTNER software`
`may fix this problem.`

Uninstall and reinstall the PassageWay Service Provider.

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PassageWay Adapter LED

This section describes the error conditions represented by the LED located next to the Phone jack and Line jack on the PassageWay adapter.

Problem 1: The LED is "off."

This indicates that your PassageWay adapter is not receiving power. Make sure the PassageWay adapter is installed properly. Refer to "Installing the PassageWay Adapter" in Chapter 2.

If you have verified that the PassageWay adapter is properly connected to your telephone, yet the LED on the adapter is NOT illuminated, verify that your telephone is working properly. If your telephone is not working properly, consult your PARTNER system documentation or your PARTNER System Manager for troubleshooting procedures.

If your telephone is working properly and the LED on the adapter is NOT illuminated, contact the Lucent Technologies National Customer Care Center.

Troubleshooting PARTNER Extension Programming

This section describes some common problems you might encounter while using PARTNER Extension Programming. For each problem, a strategy is presented that you can follow to isolate and solve your problem.

Problem 1: PARTNER Extension Programming does not permit you to program or read your telephone.

Connect must be running in order for PARTNER Extension Programming to program and/or read your telephone. If these options are disabled under the File menu in PARTNER Extension Programming, run Connect. After your telephone has been initialized, these options will become available to you.

Problem 2: PARTNER Extension Programming displays an error message after reading your telephone.

In order to read the information properly from your telephone, PARTNER Extension Programming must know the version and release of your PARTNER system. If this parameter is incorrect, PARTNER Extension Programming will be unable to read your telephone properly. To change this value, perform the following steps:

1. Close PARTNER Extension Programming and any other telephony applications that are running (including Connect).

2. Start the PassageWay Configurator.

3. Consulting the System Manager of your PARTNER system if necessary, verify that the setting in the PARTNER System Version dialog box is correct for your PARTNER system.

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4. Start Connect and then run PARTNER Extension Programming again. If PARTNER Extension Programming failed to read your telephone's programming the first time it was run, it will automatically try to read it now. If this happens, choose the Cancel button in the status dialog box that appears during the reading process, and choose the OK button in the message box indicating that the read operation was aborted by the user.

5. In PARTNER Extension Programming, select **Read from Telephone** from the File menu, and try to read your telephone's programming again.

Problem 3: PARTNER Extension Programming provides an error message while programming your telephone (`Attempt to replace feature X with feature Y failed…`).

This error occurs whenever PARTNER Extension Programming attempts to program a particular feature and the PARTNER system does not permit the operation to take place. Generally, PARTNER Extension Programming knows which operation the PARTNER system will permit and which it will not, and you will generally be unable to select invalid features for a given button. However, if your telephone's programming has been changed by any other means than using PARTNER Extension Programming, it is possible that PARTNER Extension Programming's image of your telephone's programming has become outdated, and operations that PARTNER Extension Programming thinks are permissible based on its outdated image may not be permissible when attempted on the telephone (for example, if your System Manager added an extra line button to your telephone using the PARTNER system's Centralized Telephone Programming capabilities).

If this occurs, you may continue programming your telephone or cancel the programming operation altogether. In most cases, it may be best to cancel the operation and then select **Read from Telephone** from the File menu. This operation will refresh PARTNER Extension Programming's image of your telephone, which should prevent programming problems in the future.

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Problem 4: PARTNER Extension Programming does not run.

You can only run PARTNER Extension Programming with system telephones that have displays. However, if you are a PARTNER System Manager, you can perform Centralized Telephone Programming with PARTNER System Programming for other extensions that have any system or standard telephones.

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Troubleshooting Connect

This section presents some common problems that you might encounter while using Connect. For each problem, a strategy is presented that you can follow to isolate and solve your problem.

Problem 1: Connect displays the message: `This application requires a serial port` and terminates.

This message indicates that Connect cannot find an available serial port on your system. This message will most likely appear immediately after you have completed the installation of the PassageWay software using the setup program since this is the first time Connect tries to run.

If you do not have an available serial port (for example, if you have only one serial port, and this port is being used by your mouse), you will need to add an additional serial port to your PC in order to use the PassageWay Service Provider. Your computer vendor can assist you in obtaining the necessary hardware to add another serial port. See Appendix A for more information.

If you are certain that you have an available serial port (other than a port being used by your mouse), the available port might be disabled, in which case Connect will be unable to detect its presence.

If you are able to determine that your PC has no active COM ports, or only COM1 is active (but is used by your mouse under Windows), you will need to either purchase an additional COM port for your PC or consult your PC's hardware documentation to determine how to re-enable a COM port that might be disabled. (Refer to Appendix A for information on COM ports.) Re-enabling a COM port may require changing the placement of a jumper on your computer's system board or running your PC's setup program.

Problem 2: Connect displays its Communications Error dialog box within a few seconds after it is run.

This message indicates that Connect cannot communicate properly with your telephone. This message can appear for one of the following reasons:

- Your PassageWay adapter is not connected properly to your PC serial port and/or your telephone.

- Your PassageWay adapter is not receiving power from the PARTNER system.

- Connect is administered to use a different serial port than the one to which the PassageWay adapter is connected.

- One or more cables and/or adapters are damaged, not properly attached, or not compatible with the PassageWay Service Provider.

You should follow the instructions provided in this dialog box to troubleshoot the problem. These instructions ask you to verify the following items:

- The PC-side and phone-side cabling are connected properly.

  Insure that the 7-foot phone cord between the jack marked "Line" on the telephone and the jack marked "Phone" on the PassageWay adapter is completely inserted into both jacks. A proper connection is confirmed by a tactile "click" as the cord is fully inserted.

  Also insure that any RS-232 cables and adapters that you might be using to connect the PassageWay adapter to your PC are NOT null modem cables (a special type of cable), and that the total length of the combined RS-232 cabling does not exceed about 40 feet (the length should be as short as is convenient for your setup).

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- Insure your PassageWay adapter is receiving power from the PARTNER system (as indicated by the illumination of the LED).

  If you have verified that the PassageWay adapter is properly connected to your telephone, yet the LED on the adapter is NOT illuminated, your telephone system wiring may not support the remote powering of adjuncts. If this is the case, you should consult you account representative or authorized dealer to obtain the proper wall supply to power your PassageWay adapter or to correct any wiring problems that may be the cause.

- Connect's software-based link test passes.

  To assist you in diagnosing problems, Connect contains a built-in link test procedure. This test can be run directly from the Communications Error dialog box by choosing the Test button.

  If the test procedure concludes successfully, Connect is communicating properly with your PassageWay adapter over the COM port you selected, and you should select the Continue button on the Communications Error dialog box to restore normal operation.

  If, however, the test fails, an error number will be provided. Refer to the following pages to interpret the error numbers and to find suggestions for how to resolve the particular error you encountered.

Failure Code -111

Meaning: The PC and the PassageWay adapter cannot communicate over your serial port.
Things to Try: Perform the following steps:

1. *Verify that the PassageWay adapter is installed correctly. Be sure to check the connections between the telephone wall jack and the adapter, the adapter and the telephone, and the adapter and the PC COM port. (Refer to Chapter 2.)*

2. *Make sure you have selected the proper COM port in Connect.*

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Failure Code -121

Meaning: The PC and the PassageWay adapter cannot communicate over your serial port.
Things to Try: Follow the instructions for Failure Code 111.

Failure Code -131, -132, -133, or -135

Meaning: The PC cannot communicate properly with your PassageWay adapter.
Things to Try: Try replacing any RS-232 cables or adapters you are using between your PC's COM port and the PassageWay adapter's 25-pin connector.

Failure Code -134 or -141

Meaning: The PassageWay adapter cannot communicate properly with your telephone.
Things to Try: Try replacing the 7-foot telephone cable between the PassageWay adapter and your telephone.

Failure Code -200 and above

Meaning: A conflict or application error has occurred which prevented Connect from operating your PC serial port.
Things to Try: Try closing all Windows applications except Connect and Windows Program Manager (for Windows 3.1 or later), and then try the test again.

You may need to modify your AUTOEXEC.BAT and CONFIG.SYS files to eliminate this conflict.

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Problem 3: Connect will not work on COM ports other than COM1 and COM2.

By default, many PCs are not configured to permit the simultaneous use of three or more COM ports. Specifically, most PCs are configured such that COM ports are grouped into pairs: COM1 is paired with COM3, and COM2 is paired with COM4. By default, such PCs permit only one COM port from each pair to be operating at the same time (for example, COM1 with COM2). COM ports within the same pair will usually conflict with one another and are not supported (that is, COM1 with COM3, or COM2 with COM4).

If you cannot get Connect to work properly on COM3, check if another device is using COM1 at the same time. Similarly, if you cannot get Connect to work on COM4, determine if another device is using COM2 at the same time. If so, you may need to make some changes to your PC configuration to support using the PassageWay Service Provider on COM3 or COM4. Refer to Appendix A for more information. If you need additional assistance in setting up devices on COM ports other than COM1 and COM2, consult your PC hardware vendor.

Problem 4: Connect occasionally displays its initialization window while one or more PassageWay applications are running.

Connect displays its initialization window whenever it establishes (or re-establishes) communication with the telephone. Generally, this window is displayed only once, at the time when a single PassageWay application is first executed. However, if a communications problem occurs at any time, Connect attempts to clear the problem by reinitializing itself, which causes the initialization window to reappear temporarily. If this occurs while a PassageWay application is performing a task involving the telephone, the operation in progress will be aborted and must be restarted manually once the initialization window disappears. If no task involving the telephone is in progress during this process, the operation of PassageWay applications is unaffected.

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The chance of a communications problem depends on your PC's configuration. The PassageWay Service Provider operates at a data rate of 4800 baud, and it relies on Windows to manage the flow of data through your PC's serial port. Depending upon the speed of your PC, the number and type of applications you are using, and various hardware components in your PC configuration, Windows will be able to manage serial communications with varying degrees of effectiveness.

If you encounter frequent communications errors using the PassageWay Service Provider, your PC's current hardware configuration may not support reliable high-speed communications under Windows. Appendix A includes information about choosing serial port hardware that can work reliably at high speeds under Windows.

Problem 5: Connect will not run. It displays the message: `Connect must terminate due to an unexpected communications error` and then terminates.

This message indicates that Connect cannot communicate with the COM port you specified using the PassageWay Configurator. Run the PassageWay Configurator and select a different COM port.

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PC Serial Ports

A

Overview

This appendix provides detailed information about PC serial ports, including background information about what they are and how they work. It also explains how Microsoft Windows 3.1 manages serial ports, how to resolve problems using COM3 or COM4 under Windows, and how to choose serial port hardware that is well-suited to the PassageWay Service Provider. If you are familiar with serial port terminology (for example, I/O port addresses, IRQs, etc.), you may wish to skip over the background section. If not, you should review the background section before reading further.

If you are having problems using the PassageWay Service Provider on COM3 or COM4, you should refer to "Workarounds and Solutions to the IRQ Conflict Problem." If you intend to purchase an add-on serial port card for use with the PassageWay Service Provider, you should refer to "Selecting an Add-On Serial Port Card" for information that can assist you in selecting a card.

Background

Serial ports (also sometimes referred to as communications ports or COM ports) are hardware interfaces that permit your PC's microprocessor to communicate with peripheral devices using a communications standard called RS-232 (hence, serial ports are also sometimes referred to as RS-232 ports). Many common computer accessories make use of serial ports, including serial mice, modems, and serial printers.

Under DOS (and Windows, which works cooperatively with DOS), the serial port interfaces in a PC are uniquely identified by specific device names: COM1 ("serial communications port 1"), COM2 ("serial communications port 2"), and so on, usually up through COM4. A particular PC might have none of these devices, some of them, or all of them installed. For example, most PCs currently on the market arrive from the manufacturer with two serial ports already installed (COM1 and COM2), often integrated onto the computer's main system board. Installing additional serial ports (for example, COM3 or COM4) is usually accomplished by purchasing an add-on card and installing it into a free expansion slot.

For most purposes (such as configuring software), the generic description of serial ports provided by their device names is sufficient. For example, during the PassageWay Service Provider installation procedure, you are asked to provide the device name of the serial port to which you have connected the telephone (for example, COM2). Unfortunately, this abstract view of serial ports is not sufficient for other purposes, notably for troubleshooting problems: To be able to do this effectively, a basic understanding of serial port hardware is required. In particular, it is essential to understand the mechanics by which the computer's microprocessor communicates with serial port hardware.

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The microprocessor/serial port communication consists of two aspects: an I/O port address and an interrupt request signal (IRQ). The I/O port address represents a small region of the microprocessor's input/output memory space that is used to pass data back and forth to the serial port. This memory region acts something like a mailbox: Outgoing mail (data from the microprocessor to be transmitted to the peripheral device) is placed in the mailbox by the owner (the microprocessor) to be picked up by the mail carrier (the serial port hardware) for subsequent delivery to the destination party (the peripheral device). In turn, the mail carrier (the serial port hardware) places incoming mail (data from the peripheral device) into the box to be picked up by the owner (the microprocessor). This analogy illustrates an additional important point about I/O port addresses: Just as individual mailboxes help the residents in a neighborhood keep their mail from getting mixed up, each device using an I/O port address to communicate with the microprocessor should have a unique address that does not conflict with that of any other device.

IRQ Mechanism

The mailbox analogy is also helpful in understanding the IRQ mechanism. Normally, we place our outgoing mail in our mailbox at any convenient time before the mail carrier arrives to pick it up. The outgoing mail sits in our mailbox until the mail carrier arrives, at which time it is picked up and possibly some incoming mail is placed in the mailbox. Then, some time later, we check our mailbox and retrieve our new incoming mail. The problem with this scheme is that it is not very efficient; both the outgoing and incoming mail spend some time just sitting in the mailbox. A better approach would be if the mail carrier provided some sort of signal (for example, ringing the doorbell) to announce his or her arrival, in which case we could hand over the outgoing mail and pick up the incoming mail immediately.

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In the PC architecture, IRQs acts like the doorbell in our analogy: They provide a method by which hardware devices in the computer can get the microprocessor's attention to deal efficiently with some process. The serial port hardware makes use of an IRQ to announce that it is ready to receive more outgoing data and/or that new data have arrived from the peripheral device that need to be processed.

Like I/O port addresses, IRQs must generally be unique among the active hardware devices in a computer system. In the mailbox analogy, the doorbell is probably not a good signal since virtually anyone could ring the doorbell for any number of reasons, not just to indicate the arrival of mail. Similarly, if a particular IRQ signal is used (PCs generally support 16 unique IRQ signals, denoted IRQ0, IRQ1, and so on, up through IRQ15), the microprocessor must take the appropriate action for the device associated with that IRQ. If there is a mix-up, or if more than one device attempts to use the same IRQ at the same time, a conflict occurs, and the outcome is often unpredictable and usually undesirable (for example, the computer may "hang"). Because IRQs are a limited resource, some newer PCs support IRQ sharing, a hardware mechanism that permits more than one device to make use of the same IRQ, but most PCs do not. For example, all PCs that use IBM's MicroChannel Architecture (MCA) support IRQ sharing, as do most PCs that use the Enhanced Industry Standard Architecture (EISA) design. However, most PCs in the marketplace -- even new models -- are based on the traditional Industry Standard Architecture (ISA), which generally does not support IRQ sharing.

NOTE:
> IRQ sharing is a PC feature. If your PC supports IRQ sharing, you can put two COM ports on one IRQ. You will not encounter the types of complications that this appendix addresses if your PC supports IRQ sharing.

The specific I/O port address and IRQ that a particular serial port uses is determined by the hardware configuration of the serial port. Generally, these parameters cannot be changed for built-in serial ports, but add-on cards containing serial ports often provide jumpers or switches that can be used to configure them to use one of several I/O port addresses and IRQ combinations.

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The table below lists the default I/O port addresses and IRQs used by the serial ports of IBM-PC/AT-compatible computers:

Serial Port Device Name	I/O Port Address	IRQ
COM1	03F8	4
COM2	02F8	3
COM3	03E8	4
COM4	02E8	3

The values in this table play an important part in understanding the "wrinkles" associated with serial ports: although there is provision for up to four serial ports, with four unique I/O addresses, there are only two unique IRQs associated with them (recall that most PCs require the IRQs used by each active device to be unique to avoid conflicts). To understand why, it is useful to recall what the PC world was like before the widespread availability of products like Windows.

When the architecture of the current generation of PCs was first being designed (for the IBM PC/AT), the concept of multitasking was not nearly as important in the PC marketplace as it is today. Consequently, since DOS (before Windows) did not permit multiple applications to run simultaneously (with the notable exception of certain specialized programs such as mouse drivers), there was little need to provide a mechanism by which several serial ports could be operated simultaneously. Consequently, the strategy used was to conserve IRQs by assigning the same IRQ to more than one COM port (that is, the COM1 and COM3 ports were both assigned to IRQ4, and the COM2 and COM4 ports were both assigned to IRQ3). Then, under the assumption that at most two serial ports would be active simultaneously (for example, COM1 and COM2, which have unique IRQs), conflicts would not occur.

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Serial Ports Under Windows 3.1

Unlike the DOS-only world of yesterday, today's multitasking environments like Windows permit the microprocessor to communicate with up to four active serial port devices at the same time (COM1 through COM4). For example, under Windows, if you are using a serial mouse (on COM1) within a terminal emulator program that operates a data modem (on COM2), while using a fax board (on COM3) to transmit or receive a fax "in the background," you are using three serial port devices simultaneously. You might even wish to make a phone call using the PassageWay Service Provider (on COM4) at the same time, bringing the total up to four simultaneously active serial port devices.

The fact that Windows permits this kind of powerful multitasking does not guarantee that the underlying PC hardware can support this level of operation, at least without some customizing at the hardware level. Since some PCs can support it by default (for example, those that support IRQ sharing), Windows does not prohibit you from configuring your system and attempting tasks like the one in the previous paragraph. Unfortunately, most PCs cannot support this operation by default, and the most likely result of attempting the above scenario is "hanging" the PC due to an IRQ conflict. On such systems, using COM1 along with COM2 is generally fine (recall that these devices have unique IRQs by default), but the addition of COM3 or COM4 causes the system to fail.

Fortunately, Windows 3.1 permits complete customization of all parameters involving serial ports through the Control Panel, including configuring nonstandard I/O port addresses and IRQs (that is, values different from those in the table -- these parameters can be viewed and/or modified by selecting the desired port in the Control Panel's Ports icon, selecting the Settings... button, and then selecting the Advanced... button). This flexibility offers the opportunity of salvation for owners of PCs that do not support IRQ sharing who require the use of three or more COM ports simultaneously.

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Workarounds and Solutions to the IRQ Conflict Problem

It is important to remember that the IRQ conflict is a problem in hardware; it cannot be resolved in software alone. Consequently, there are only three alternatives for working around or resolving it:

Workaround 1: Configure your serial devices such that you use only two at any one time, and those two use serial ports with unique IRQs.

This is the simplest workaround to the IRQ conflict problem, but it does not solve the underlying conflict. The idea is to assign your peripheral devices to your available serial ports in such a way as to avoid using any devices simultaneously which might conflict. For example, if you have a serial mouse on COM1 (IRQ4), a fax/modem card on COM2 (IRQ3), and your telephone on COM3 (IRQ4), you cannot effectively use the PassageWay Service Provider since you need to use your mouse under Windows while TAPI applications are running.

A better arrangement would be to move the PassageWay Service Provider to COM4 (IRQ3), which then could be safely used with your mouse on COM1 (IRQ4). In this case, the workaround is to avoid trying to use the PassageWay Service Provider at the same time you use the fax/modem on COM2, since the conflict now would be over IRQ3 (COM2 and COM4).

Workaround 2: Replace one or more of your serial peripherals with equivalent devices that do not require a serial port.

The idea with this approach is to eliminate the conflict by reducing the number of peripherals in your system that require serial ports. For example, replacing a serial mouse with a bus mouse (that is, a mouse that requires its own add-on card) would make another serial port available that then could be used by another device.

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Given the scenario described in item (1) above (that is, a mouse on COM1, a fax/modem card on COM2, and the PassageWay Service Provider on COM3), you might buy a bus mouse and configure it to use, say, IRQ2 or IRQ5. This would then permit you to move the PassageWay Service Provider onto COM1 (IRQ4), where it then could be used simultaneously with both the mouse and the fax/modem.

Likely candidates for conversion from a serial interface to some other interface include mice (which can be converted to bus mice) and serial printers (which can be converted to an additional parallel printer port).

Workaround 3: If your serial port hardware permits you to select IRQs other than the default ones (IRQ3 and IRQ4), make use of one or more unused IRQs in your system to assign to each COM port a unique IRQ.

This solution is generally not possible for built-in serial ports since these are usually "hard-wired" and cannot be changed. Although most add-on cards containing serial ports permit you to change the IRQs assigned to them, many cards do not let you select IRQs other than IRQ3 and IRQ4. For example, an internal modem card generally has jumpers or switches that permit you to administer the serial interface on the card to be COM1, COM2, COM3, or COM4, but the I/O port addresses and IRQs associated with each of these configurations are usually fixed to the settings in the table.

Fortunately, some serial port add-on cards do permit you to select IRQs other than 3 or 4 (the additional choices are often IRQ2 and IRQ5). If your serial port hardware provides this flexibility — and at least one of the IRQ numbers available as an option is currently unused in your PC setup — you can solve the IRQ conflict directly.

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For example, consider once again the scenario of a COM1 mouse, a COM2 fax/modem card, and a COM3 PassageWay Service Provider. If the COM3 serial port is located on an add-on card that permits IRQs other than 3 or 4 to be selected, you could configure the COM3 serial port to use a different (available) IRQ in your system, say IRQ5. After making the necessary changes to the card (for example, adding or removing some jumpers or adjusting the positions of some switches), the last step would be to configure Windows to monitor IRQ5 rather than IRQ4 for the COM3 serial port -- this is accomplished using the Windows Control Panel under the "Ports" option (see your Windows documentation for details).

If you attempt this solution, you must be certain that you do not choose an IRQ that is in use by some other device in your system -- if so, you will only trade one type of IRQ conflict for another. You should be aware that many common add-on cards use IRQs, including network cards and multimedia sound cards, both of which are commonly used under Windows. Your PC hardware vendor can assist you in configuring IRQs. You may also need to consult the documentation for your PC and any add-on cards that are installed to determine which IRQs, if any, are available on your system.

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Selecting an Add-On Serial Port Card

This section presents advice on how to choose an add-on serial port card for use with the PassageWay Service Provider. Because the PassageWay Service Provider does not have any unique requirements with respect to serial ports, this advice applies generically to selecting a serial port for use with any peripheral.

In general, there are two main things to consider when selecting a serial port for use with the PassageWay Service Provider:

1. Choose a card that offers the flexibility to configure its serial port IRQs to values other than IRQ3 and IRQ4 (for example, to IRQ2 or IRQ5).

   This capability often proves to be very beneficial, especially if you are purchasing the card to add a COM3 and/or COM4 port to your system. As was described at length in "Workarounds and Solutions to the IRQ Conflict Problem," for PCs that do not support IRQ sharing (which includes most PCs, unfortunately), the ability to relocate the IRQ for COM3 or COM4 away from the defaults (IRQ4 and IRQ3, respectively) represents the only direct solution to conflicts that may arise when attempting to use COM1 along with COM3 or COM2 along with COM4 under Windows.

   If you know that your PC does not support IRQ sharing, or if you are not sure, it is a good idea to purchase a card with this capability. If you know that your PC supports IRQ sharing, this capability is not as potentially important.

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2. For best performance with the PassageWay Service Provider, choose a card that has hardware support for high-speed communications.

   The PassageWay Service Provider operates at a data rate of 4800 baud, and it relies on Windows to manage the flow of data through your PC's serial port. Depending upon your configuration, Windows may have problems maintaining high data rates through traditional serial ports. In these situations, a serial port designed for high-speed communications can eliminate such problems while providing a reduced load on the microprocessor (thus increasing the performance of Windows during data transfers relative to standard serial ports). In most cases, the price differential for such a card is quite modest and a worthwhile investment.

   Many serial port cards on the market (and most built-in serial ports) use either the 8250 or 16450 Universal Asynchronous Receiver Transmitter (UART) as their key component. Although these UARTs can operate at high speeds, they do not assist the PC's microprocessor in dealing with high-speed data transfer. Under Windows, in particular, data can be lost at high baud rates using these UARTs. If this data loss occurs, the PassageWay Service Provider cannot function properly.

   Whenever possible, select a serial port card that uses the 16550 UART. This industry-standard UART is an improved version of the 16450 with hardware support to help offload the microprocessor during high-speed data transfers. Windows 3.1 has built-in support for the 16550, so no special software configuration is required to obtain the benefits of the 16550's enhanced capabilities. In addition, any high-speed peripheral can benefit from the 16550 (for example, a 9.6-Kbps or 14.4-Kbps data and/or fax modem), not only the PassageWay Service Provider.

   In general, since there is no way of knowing ahead of time if your particular PC configuration requires an enhanced serial port for the PassageWay Service Provider, Lucent strongly recommends that you purchase a card based on the 16550 UART to insure trouble-free operation with the PassageWay Service Provider.

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