



Palm ReDirector

User's Manual

Copyright ©1999 by WAGWARE

Palm Device Screen Reproductions were made using the Palm OS™ Emulator

TRADEMARKS:

WAGWARE has attempted throughout this manual to distinguish proprietary trademarks from descriptive terms by following the capitalization style used by the manufacturer.

Copyright:

©1999 WAGWARE, PO Box 177, Harvest AL 35749-0177. All rights reserved. The application Palm ReDirector and PRDpad are products of WAGWARE. All other names mentioned are trademarks of their respective holders. This includes (but not limited to) any references to: Palm, PalmPilot, Palm OS, the Palm Computing platform logo, HotSync®, HotSync® Manager and Palm Pilot logo are trademarks of Palm Computing, Inc., 3Com Corporation or its subsidiaries. The CASL Language / Compiler are copyrighted by Feras Communications. cbasPad is copyrighted by Ronald H. Nicholson Jr. Windows 95®, Windows 98® and Windows NT® are registered Trademarks of Microsoft Corporation.

Table of Contents

| | |
|--|-----------|
| TABLE OF CONTENTS..... | 3 |
| INTRODUCTION..... | 6 |
| UPGRADE FROM PREVIOUS VERSIONS..... | 7 |
| NEW FEATURES..... | 7 |
| NEW USERS OF PALM REDIRECTOR..... | 9 |
| COMPLETE LIST OF FEATURES FOR PALM REDIRECTOR..... | 9 |
| SYSTEM REQUIREMENTS..... | 11 |
| MINIMUM REQUIREMENTS..... | 11 |
| ADDITIONAL RECOMMENDED COMPONENTS..... | 11 |
| 1.0 INSTALLATION INSTRUCTIONS..... | 12 |
| PALM REDIRECTOR INSTALLATION..... | 12 |
| PRDPAD INSTALLATION..... | 13 |
| 2.0 GETTING STARTED..... | 14 |
| STARTING PALM REDIRECTOR..... | 14 |
| COMMUNICATION CONFIGURATION..... | 15 |
| COMMUNICATION PORT IDENTIFICATION..... | 16 |
| <i>Identifying the Modem Port.....</i> | <i>16</i> |
| <i>Identifying the Palm Port.....</i> | <i>16</i> |
| ASSIGNING COMMON SETTINGS..... | 16 |
| 3.0 CUSTOMIZING PALM REDIRECTOR..... | 17 |
| REDIRECTION METHODS..... | 17 |
| ENABLE OR DISABLE REDIRECTION METHODS..... | 18 |
| STARTUP PREFERENCES..... | 18 |
| <i>Startup View Setting.....</i> | <i>19</i> |
| <i>Menu Bar Visible Setting.....</i> | <i>19</i> |
| <i>ReDirector Status Setting.....</i> | <i>19</i> |
| <i>Auto Close Application Setting.....</i> | <i>20</i> |
| <i>Auto Start Application Setting.....</i> | <i>20</i> |
| 4.0 THE INTERFACE..... | 21 |
| LED'S VIEW METHOD..... | 21 |
| SND/RCV VIEW METHOD..... | 22 |
| DATA SNIFFER VIEW METHOD..... | 22 |
| 5.0 PRINT REDIRECTION..... | 23 |
| SETTING YOUR DEFAULT WINDOWS PRINTER..... | 23 |
| 6.0 CLIPBOARD REDIRECTION..... | 24 |
| 7.0 SERIAL REDIRECTION – CONFIGURATION..... | 25 |
| MODEM SETUP..... | 25 |
| NETWORK SETUP..... | 25 |
| VERIFYING THE CONNECTION..... | 26 |
| DISCONNECTING FROM THE NETWORK..... | 26 |
| 8.0 PRDPAD APPLICATION..... | 27 |

| | |
|---|-----------|
| STARTING PRDPAD..... | 27 |
| CONFIGURING PRDPAD..... | 27 |
| THE PRDPAD INTERFACE..... | 28 |
| OPENING AN EXISTING MEMO IN PRDPAD..... | 28 |
| COPYING AND PASTING WITH PRDPAD..... | 28 |
| LOWER BUTTONS..... | 28 |
| <i>To Printer Button</i> | 28 |
| <i>To Clip Button</i> | 28 |
| <i>Dial-Out Button</i> | 28 |
| <i>Get Memo Button</i> | 29 |
| ADDITIONAL MENU OPTIONS..... | 29 |
| <i>File Menu</i> | 29 |
| Open..... | 29 |
| Save..... | 29 |
| Print..... | 29 |
| Clipboard..... | 29 |
| <i>Edit Menu</i> | 29 |
| Clear Text..... | 29 |
| Configure..... | 29 |
| Printer Info..... | 29 |
| <i>Add Menu</i> | 29 |
| Align Center..... | 29 |
| Align Left..... | 29 |
| Align Right..... | 30 |
| Page Number..... | 30 |
| Form Feed..... | 30 |
| Portrait..... | 30 |
| Landscape..... | 30 |
| <i>Demo Menu</i> | 30 |
| Print..... | 30 |
| Clipboard..... | 30 |
| <i>Help Menu</i> | 30 |
| About..... | 30 |
| <i>PRDPad updates</i> | 30 |
| 9.0 NEW FUNCTIONALITY FOR PALM APPLICATIONS..... | 31 |
| CODE EXAMPLES..... | 32 |
| <i>cbasPad Clipboard Send example</i> | 32 |
| <i>CASL Code example</i> | 33 |
| APPENDIX A. PRD PROTOCOL SPECIFICATION..... | 34 |
| PRIMARY COMMUNICATION HIGHWAY..... | 34 |
| SERIAL COMMUNICATION STANDARD..... | 34 |
| SPECIAL CHARACTERS..... | 34 |
| PRINT COMMUNICATIONS..... | 35 |
| <i>Page Manipulation</i> | 35 |
| PRD_P - Print Request Descriptor (Print)..... | 35 |
| PORIENT – Page Orientation Descriptor..... | 35 |
| FFEED - Form Feed Descriptor..... | 35 |
| NL – Next Line..... | 36 |
| <i>Font Styles</i> | 37 |
| FNORMAL – Font Normal Descriptor..... | 37 |
| FBOLD - Font Bold Descriptor..... | 37 |
| FITALIC - Font Italic Descriptor..... | 37 |
| FUNDER - Font Underline Descriptor..... | 37 |
| PAGEN – Page Number Descriptor..... | 37 |
| <i>Font Manipulation</i> | 38 |
| FONT - Font Type Descriptor..... | 38 |
| FSIZE – Font Size Descriptor..... | 38 |

| | |
|---|-----------|
| ALIGN – Font Align Descriptor | 39 |
| <i>Printer Status</i> | 40 |
| SRESP – Send Response | 40 |
| Error Responses | 40 |
| CLIPBOARD COMMUNICATIONS | 41 |
| <i>PRD_C - Print Request Descriptor (Clipboard)</i> | 41 |
| APPENDIX B. TROUBLESHOOTING | 42 |
| END USER LICENSE AGREEMENT | 43 |

Introduction

Congratulations on your purchase of Palm ReDirector! Palm ReDirector is a unique application, which provides many useful features that enhance the usefulness of your Palm Device. While applications exist today which allow data from your Palm Device to synchronize with information residing on the desktop computer, there has been no easy means of interfacing existing hardware on the Desktop such as Printers, Modems or sending data to your PC's clipboard. ***Until Now! Palm ReDirector makes all of this possible!***

Palm ReDirector's enhancements now allow you to print directly from your Palm Device to your PC's default printer. No need to Synchronize between both machines, just click "To Print" within PRDPA and send data directly to your Windows® default printer. Not just plain text, Palm ReDirector now supports the following print capabilities:

- Three Font Types
- Seven Font Sizes
- Many Styles (Bold, Italic, Underline or any combination of the three!)
- Print Page numbers
- Automatic Word-wrap
- Alignment capability
- Portrait or Landscape printing
- Plus even more!

WAGWARE is driven to provide you with software tools that make using your Palm Device more efficient and fun! So we added yet another form of ReDirection. This is the capability to send data from your Palm Device directly to your PC's Clipboard! Imagine the possibilities of this technology alone. After sending data from the Palm Device to your PC's clipboard, you can then immediately paste that information into any application that you choose on the PC. The receiving application may be Word processors, database applications, spreadsheets, contact managers, etc. You name it!

The version of Palm ReDirector that you now own makes sharing data between your Palm Device and your Desktop computer much easier. Palm ReDirector is now three (3) products in one, an incredible value! Imagine the cost of having to buy a Palm Device modem, Palm Device Printer and not having the ability at all to send data to your Desktop's clipboard.

These technologies now possible with Palm ReDirector allow you to do more with your Palm Device and have fun doing it! This is the goal of our product, Palm ReDirector and our company we call **WAGWARE**.

We hope you find Palm ReDirector a valuable addition to your Palm computing needs!

-The WAGWARE Team

Upgrade from Previous Versions

Welcome back! Earlier versions of Palm ReDirector allowed you to experience what it was like to be able to access the Internet on your Palm Device using Palm ReDirector and your PC's Modem. You could use most any Internet-based application on your Palm Device that only users with direct attached Modem's could use, previously. This version of Palm ReDirector takes you into a whole new level of Palm computing by adding features that extend the usefulness of your Palm Device in areas previously impossible or almost impossible.

Most notably of these new Features are the two new ReDirection Technologies that are not available anywhere! These new Technologies include Printer and Clipboard ReDirection. Print ReDirection allows you to print directly from your Palm Device to your Desktop's Default printer which may optionally utilize extended print functionality. An entirely unique feature is Clipboard ReDirection and allows you to send data from your Palm Device directly to your Desktop's Clipboard. WAGWARE is pleased to provide you with these new capabilities and we appreciate your interest in this version of Palm ReDirector.

Below is a list of Palm ReDirector's NEW capabilities:

New Features

- **Print ReDirection** – This Version of Palm ReDirector incorporates a form of ReDirection, which allows Text to be sent from the Palm Device directly to the User's Default Printer. Text may be sent in a variety of ways (or as plain text) including support for: 3 Font Styles, 7 Font Sizes, any combination of Bold/Italic/Underline, Page Numbers, plus many more!
- **Clipboard ReDirection** – Have you ever wanted to be able to quickly send a piece of information directly from your Palm Device to a document you were working with on the Desktop computer? With Clipboard ReDirection, you will now have the ability to send data from the Palm Device to the Desktop computers Clipboard using Palm ReDirector. From this point, just a quick Paste into your document is all that is needed to see the results!
- **Selective ReDirection Methods**– By adding new forms of ReDirection, it is understandable that some users may wish to selectively enable or disable certain capabilities of Palm ReDirector. Palm ReDirector will allow you to determine what forms of ReDirection you wish to enable within the "ReDirection Methods" option. Options presently include Serial, Print and Clipboard ReDirection.
- **Close Application on Startup / Start on Close** – Users of previous versions of Palm ReDirector have indicated that it was frustrating that Palm ReDirector required the HotSync Manager application to be continuously closed and restarted whenever Palm ReDirector was to be used. WAGWARE is proud to announce that this is now *an option* within Palm ReDirector to allow automatic closing and restarting of HotSync Manager when Palm ReDirector is used. This makes it much easier to switch between the two applications quickly.
- **On-line Documentation options** – Palm ReDirector now includes menu options that will allow you to easily proceed to key areas of the Palm ReDirector website. This capability will allow you to stay on top of new ReDirection Technologies that WAGWARE may release and how to make the most of existing functionality!
- **Open Protocol for Print / Clipboard ReDirection** – To support the Palm Device software development community, WAGWARE is releasing the Palm ReDirector Protocol (PRD Protocol) FREE to developers to implement within their own applications. This will allow any Palm Device application to become Print Capable!

-
- **Enhanced User Interface** – The Palm ReDirector interface has been enhanced for easier clarification of functionality. This includes the rearrangement of certain items, brighter colors and a more 3D Look and feel. The user can also quickly reset both the SND/RCV Rate and the Data Sent / Received window contents.

New Users of Palm ReDirector

Palm ReDirector is a unique application, which extends the overall usefulness of your Palm Device. Through advanced ReDirection Technologies, Palm ReDirector is the only application available that combines three of the most sought after features of Palm Device users. These features include the ability to share existing resources within your Desktop computer with that of your Palm Device.

WAGWARE realizes that most all of the communications that occur between your Palm Device and your desktop occur through the Palm Cradle (or IR Port). Palm ReDirector is the only product that taps this data highway of information by routing it to resources that, without Palm ReDirector, would be impossible to reach. Those resources include your PC's Modem (Serial ReDirection), Windows compatible Printer (Print ReDirection) and computer's clipboard (Clipboard ReDirection).

Don't worry about going out to buy additional hardware to use these new features. If you have a Palm Device (Palm Pilot, Palm Professional, or Palm III – Windows CE® devices could also be used with additional software for the CE), a PC (486/66 or Higher), a Modem (Internal or External), and a HotSync® cable, you have everything you need to do exactly what follows!

The following is a complete list of Palm ReDirector's capabilities!

Complete List of Features for Palm ReDirector

- **Serial ReDirection** – This capability allows your Palm device to access your Desktop computer's modem through the HotSync® Cable. Use of this ReDirection technology; will allow an easy means of connecting to your Internet Service Provider (ISP) using your Palm Device using Hardware you already own! Imagine being able to browse the web, check your e-mail, telnet to a remote host, or ping your pals all from your Palm Device without having to wait for the new Palm OS!
- **Print ReDirection** – Print ReDirection is a new Technology for Palm Computing which allows Text to be sent from the Palm Device directly to your Default Windows Printer. In fact, Palm ReDirector will work just fine with virtually any Windows Printer. The text sent by the Palm Device may be formatted a number of ways (or sent as plain Text). Palm ReDirector supports: 3 Font Styles, 7 Font Sizes, and any combination of Bold/Italic/Underline, Page Numbers, plus many more capabilities!
- **Clipboard ReDirection** – Have you ever wanted to be able to quickly send a piece of information directly from your Palm Device to a document you were working with on the Desktop computer? With Clipboard ReDirection, you will now have the ability to send data from the Palm Device to the Desktop computers Clipboard using Palm ReDirector. After sending data from the Palm Device to Palm ReDirector, just a quick Paste into your document is all that is needed to see the results!
- **Selective ReDirection Methods**– By adding new forms of ReDirection, it is understandable that some user's may wish to selective Enable or Disable certain capabilities of Palm ReDirector. Palm ReDirector will allow you to determine what forms of ReDirection you wish to enable within the "ReDirection Methods" option. Options presently include Serial, Print and Clipboard ReDirection.
- **Close Application on Startup / Start on Close** – Users of previous versions of Palm ReDirector have indicated that it was frustrating that Palm ReDirector required the HotSync Manager application to be continuously closed and restarted whenever Palm ReDirector was to be used. WAGWARE is proud to announce that this is now *an option* within Palm ReDirector to allow automatic closing and restarting of HotSync Manager when Palm ReDirector is used. This makes it much easier to switch between the two applications quickly.

-
- **On-line Documentation options** – Palm ReDirector now includes menu options that will allow you to easily proceed to key areas of the Palm ReDirector website. This capability will allow you to stay on top of new ReDirection Technologies that WAGWARE may release and how to make the most of existing functionality!
 - **Open Protocol for Print / Clipboard ReDirection** – To support the Palm Device software development community, WAGWARE is releasing the Palm ReDirector Protocol (PRD Protocol) FREE to developers to implement within their own applications. This will allow any Palm Device application to become Print Capable!
 - **Multiple View Methods** – Palm ReDirector may be configured to view data in a way, which is pleasing to the user. The selection of three primary view methods includes: LED's, SND/RCV Rate and Data Sniffer. The LED's option displays only the icons indicating the type of communications taking place (Palm Device, Serial, Print or Clipboard). SND/RCV Rate combines LED's with the actual number of characters Sent/Received. Data Sniffer allows you to watch the actual data being transmitted between the Palm Device and the ReDirection method.
 - **Enhanced User Interface** – The Palm ReDirector interface has been enhanced for easier clarification of functionality. This includes the rearrangement of certain items, brighter colors and a more 3D Look and feel. The user can also quickly reset both the SND/RCV Rate and the Data Sent / Received window contents.

System Requirements

The following is a set of the absolute minimum hardware needed to use Palm ReDirector. The minimum requirements will allow you to use the two newest capabilities, Print and Clipboard ReDirection. For access to the Internet through your Palm Device, please review the section Additional Recommended Hardware.

Minimum Requirements

The basic requirements, which follow, will provide you the ability to utilize the Print and Clipboard ReDirection features of Palm ReDirector.

- A Palm computing Device* (Palm Pilot, Palm Professional, Palm III).

| |
|--|
| <p>*Note- As of this writing, no applications have been created which make use of the PRD Protocol on Windows CE® Devices. Future applications from WAGWARE may support Windows CE® as well (in addition to the possibility of 3rd party developers). This is not a guarantee that Windows CE® support will exist in the future, just that the nature of Palm ReDirector's design will allow this possibility.</p> |
|--|

- PC Compatible Computer (Pentium Processor or Higher recommended)
- Windows 95® or 98® (Windows NT® is not supported at this time)
- Palm Cradle or an Infrared Port (IR) emulating operating as an RS-232 Serial Port (Use of the IR Port in replacement of the more traditional Cradle, may require additional software for IR use. Please visit the WAGWARE Website for the latest information on using an IR capable port with Palm ReDirector at <http://www.wagware.com>)

Additional Recommended Components

To gain the full benefit of everything Palm ReDirector has to offer, you will need the following items.

- Modem (Internal/External/PCMCIA) 14.4k Modem (or Higher) recommended.
- Internet Account with your ISP (Internet Service Provider)
- Available Phone Line.

1.0 Installation Instructions

Palm ReDirector is made up of two primary components the PC's Desktop software (Palm ReDirector) and PRD Pad (Palm Device component). While some functionality is possible without PRD Pad, most users will want to install this application for easier access to Print and Clipboard ReDirection features. *Before following this procedure, please make sure that you have the minimum requirements in terms of Hardware and Software before proceeding.*

Palm ReDirector Installation

1. Download the Palm ReDirector Installation program to any directory on your PC or directly to your PC's Desktop. If you received this documentation without the application, you can easily locate available Download sites by pointing your Web Browser at the following Address: <http://www.wagware.com>
2. Double-click PRD200.EXE to begin the installation process.
3. Click the "Setup" button, to begin the Installation of Palm ReDirector Version 2.0 (See Figure 1.0).

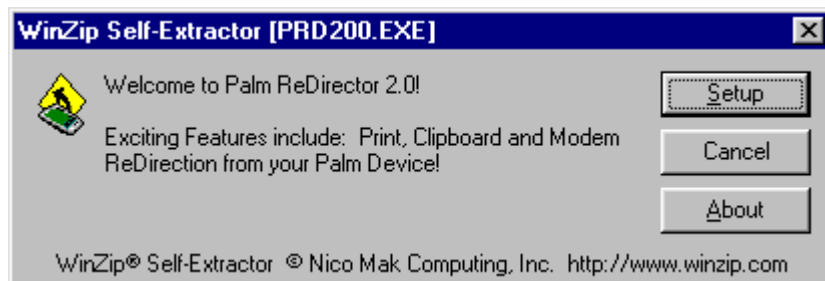


Figure 1.0

4. You may be requested to reboot your PC and asked to rerun Setup. This is to properly install and update your system to include the following updated System DLL's provided by Microsoft (and required by Palm ReDirector):

| |
|---|
| VB6STKIT.DLL COMCAT.DLL STDOLE2.TLB ASYCFILT.DLL OLEPRO32.DLL OLEAUT32.DLL MSVBVM60.DLL |
|---|

5. If you were asked to reboot your PC, please repeat Step number two (2) above and proceed to this point.
6. Once you see the "Welcome to Palm ReDirector" screen, click "OK" to proceed with the installation (See Figure 1.1)

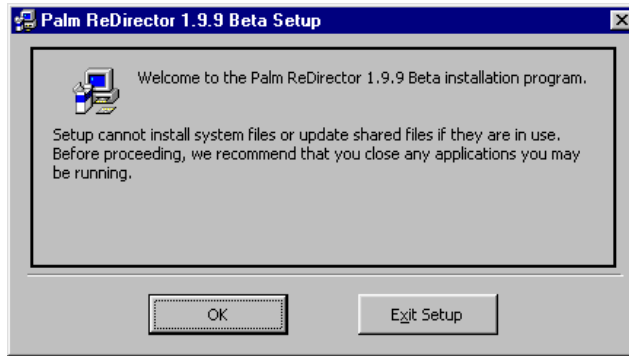


Figure 1.1

7. Verify that the application path specified is the location where you would like Palm ReDirector to be installed on your computer (Default is C:\Program Files\Palm ReDirector"). If the application path is approved, then click the Setup Icon to continue (See Figure 1.1).



Figure 1.2

8. The installation program will now begin copying the necessary files to the location you specified. In addition, a Program Group will be created under your "Start/Programs" list for "Palm ReDirector".
9. The Installation process is now complete and the Program Groups have now been created.

PRDpad Installation

The installation of Palm ReDirector on the Desktop also installed various Palm Device (Palm Pilot, Pro or PalmIII) files as well. These files consist of the CASL Runtime libraries (CASLrt_5k.prc, CASLrt_pro.prc, and MathLib.prc) and PRDpad.prc. PRDpad is the counterpart application that allows Print and Serial ReDirection to be initiated by the Palm Device. These files are not automatically installed to your Palm Add-on directory (Typically C:\Palm\add-on).

1. Locate the Palm ReDirector Group (Start Button/Programs/Palm ReDirector).
2. If you do not have the latest CASL Runtime files already installed on your Palm Device, then click on each of the following PRC files to be added for later Synchronization: CASLrt_5k.prc, CASLrt_pro.prc, and MathLib.prc.
3. Set the Palm Device in the Cradle and initiate the HotSync®.
4. Once the CASL Runtime files have been installed properly, you may now install PRDpad. From the same location as the CASL Runtimes, select the PRDpad.PRC file to be added to the next Synchronization session.
5. Set the Palm Device in the Cradle and initiate the HotSync®.
6. All required Palm Device software is now completely installed and ready for use!

2.0 Getting Started

If you are already familiar with Palm ReDirector, you may still wish to continue reading. Some portions within the “Using Palm ReDirector” section may be new or unfamiliar to you. Palm ReDirector contains functionality that allows you to configure the product the way you want to use it. There are three primary display modes (or views) that allow you to visualize the communications between the Palm Device and the Desktop PC’s hardware. In addition to a flexible interface, Palm ReDirector may also be configured to automatically close the HotSync® manager after clicking the Palm ReDirector icon. Conversely, Palm ReDirector can be setup to automatically restart HotSync® manager when the application is closed.

Starting Palm ReDirector

During the installation process, a group was created on your PC to house all of the icons you will need to use Palm ReDirector. These files include a Readme, License, PRC files, Documentation and the Palm ReDirector executable. As mentioned previously, Palm ReDirector is the name for the Desktop software and PRDPad is the name given to the Palm Device counterpart application. Within this section, we will concentrate primarily on the Desktop application, Palm ReDirector.

To start Palm ReDirector, locate the “Start” button and then select “Programs”, “Palm ReDirector” then select the icon for “Palm ReDirector” (See Figure 2.0).



Figure 2.0

After launching the application by clicking on the associated icon, you may be prompted with the following dialog (Previously, registered users of Palm ReDirector will not see this screen, only unregistered users enjoying the evaluation period). This dialog indicates that you have been granted a 15 day FREE trial period to evaluate Palm ReDirector. To proceed, click the “OK” button.

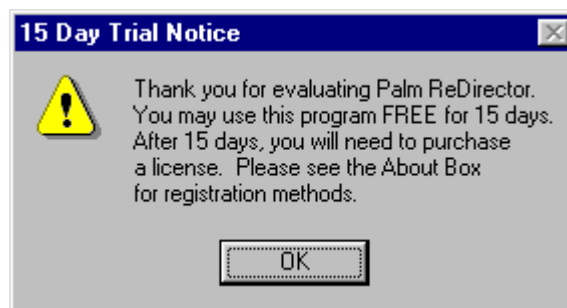


Figure 2.1

For unregistered users, you will see one more additional dialog. This dialog indicates the number of days remaining during your evaluation period. Options are provided which will allow you to easily purchase a key for Palm ReDirector and apply the License key you received from WAGWARE on this screen. Clicking on the “Purchase License” button will Launch your Web Browser and set the URL for the location where you can purchase a copy of Palm ReDirector over the Internet (See Figure 2.2).



Figure 2.2

If you do not wish to purchase a License key or enter a key at this time, click the “Continue” button.

Communication Configuration

Before Palm ReDirector will be able to communicate with your Palm Device, it needs to know certain pieces of information (See Figure 2.3). This information includes the Port assigned to the Palm Device (Where the HotSync® cable is connected) and the Port of your PC’s Modem (Even if you will not be using a modem with Palm ReDirector, an available port must be assigned). If you do not know what communication ports is assigned to your Palm Device and Modem, please read the following section. Otherwise, you may skip to the section titled “Assigning Common Settings”.

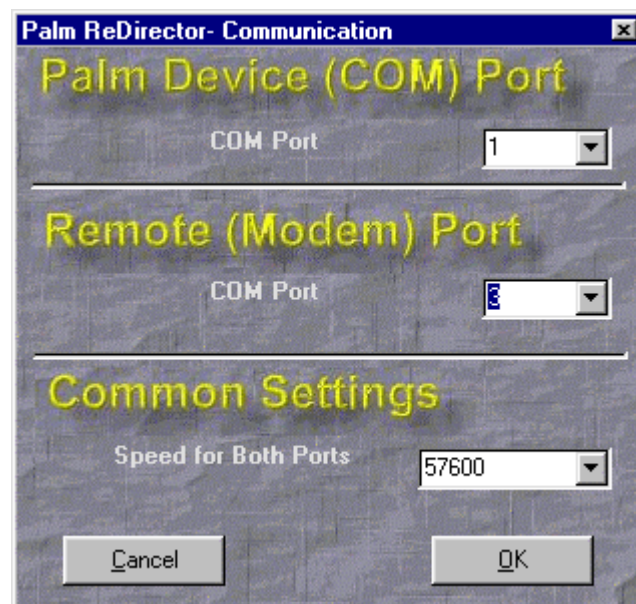


Figure 2.3

Communication Port Identification

If you are unsure of what communication port is being used for the Palm Device and/or the Modem, then follow these instructions to assist you.

Identifying the Modem Port

1. First, click on the "Start" button in the lower-left bottom of the screen.
2. Click Settings and then Control Panel. You should now see several icons (pictures) representing various different components within your system.
3. To Identify the Modem Port Click on the System Icon (You may need to click the down arrow, it is usually near the bottom). Then click on the 'Device Manager' Tab. Click the '+' to the left of 'Modem'. Click on the Modem you wish to use (Should be highlighted when you click on it).
4. Click on the 'Properties' button.
5. Then click on the 'Modem' Tab (Locate where the form indicates 'Port:') Write down this port number, this is the entry that you will want to make with Palm ReDirector for the Modem Port.

Identifying the Palm Port


1. On the bottom-right of the screen, you should see an icon with two diagonal arrows (Red and Blue). This is the HotSync icon and is typically loaded when Windows® is started. Click your left mouse button on the icon and move the mouse up to 'Setup'.
2. Click on the Tab, which indicates "Local". Note the port mentioned to the right of "Serial Port:" This is the port you will want to assign as the "Palm Device" COM Port.

Assigning Common Settings

Now that you have identified what ports are being used, click on the down arrow to the right of each Port for both the Palm Settings and the Modem Settings. Set the Port to the corresponding port number for each. In addition, you will want to set the 'Common Settings/Speed for Both Ports' to a speed acceptable by your Desktop computer's modem (We recommend: 19200 for 14.4k Modems, 38400 for 28.8k Modems and 57600 for 56k Modems).

Once you have selected the correct ports and assigned a valid Common communication Setting, you will need to make sure neither the Modem nor the HotSync® Manager is currently in use. If you are presently dialed into the Internet using the specified COM Port, disconnect at this time (before pressing 'OK' in the dialog).

Also, you will want to exit the HotSync® program as well (HotSync® and Palm ReDirector cannot share the same port at the exact same time. Although, Palm ReDirector can be configured to close and restart HotSync® automatically for you). To exit HotSync®, just click on the Diagonal arrows on the Lower-right Task bar and click "Exit". Once the Modem and HotSync are no longer running, click the 'OK' button on 'Palm ReDirector' (See Figure 2.3).

After you click 'OK', you will now need to 'Turn On' the Palm ReDirector. To do this, you will see a Power switch in the upper-left portion of the screen  Click this button to turn it on (Note- It may take a few seconds after clicking this button until the communication actually begins). Once communication is enabled, the Power LED will be turned on.

This is your indication that Palm ReDirector is currently operating and ready to ReDirect!



3.0 Customizing Palm ReDirector

The following sections inform you on how to customize Palm ReDirector to fit your needs. This includes the ability to turn on or off various ReDirection methods, configuring your Startup Preferences, and determining the View method that is right for the way you work (or play).

ReDirection Methods

Palm ReDirector allows you to turn on (or off) any of the ReDirection methods available to you. In some cases, you may find that certain ReDirection methods are less frequently and may conflict with more common uses. An example of this is Serial ReDirection. While Serial ReDirection may be used, having this feature enabled may possibly interfere with your ability to use your PC's modem. If you have more than one Modem installed in your PC, this may not be a problem to provide one modem for Palm ReDirector and one for your typical Desktop Dial-up communications.

Most users typically only have one modem installed within their PC. Your PC's modem may only have one communications program using it at a time. If you are using that modem with the Dial-Up adapter on the Desktop and want to run Palm ReDirector at the same time (for other forms of ReDirection to be used concurrently), you will need to disable "Serial ReDirection". This will still allow communications between the Palm Device and your Desktop to occur (for Print and Clipboard ReDirection), and temporarily disable Serial (or Modem) ReDirection so that you may utilize your Desktop's modem.

To locate the ReDirection methods settings, select the Menu option "Configuration/ReDirection Methods" from the Top menu bar of the Palm ReDirector screen (See Figure 3.0).

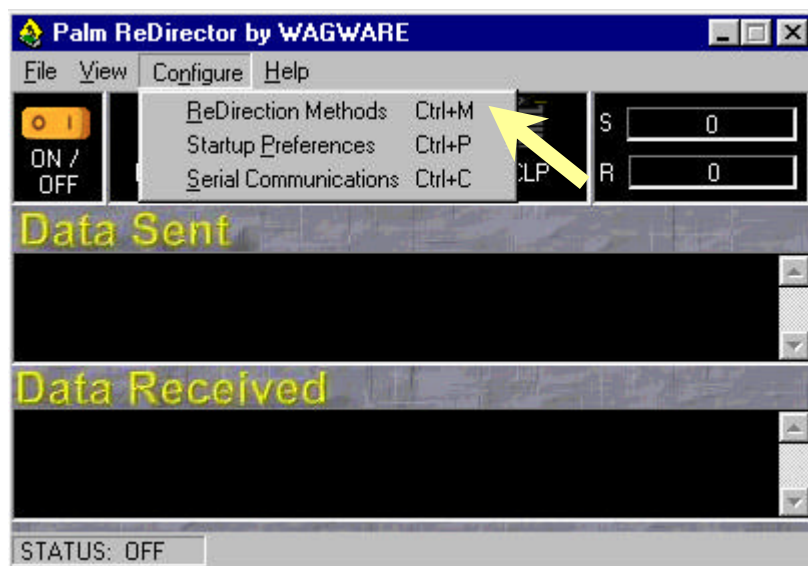


Figure 3.0

Enable or Disable ReDirection Methods

After selecting the menu option, the main “ReDirection Methods” screen will appear (See Figure 3.1). You may easily select the corresponding selection to the right of the ReDirection method indicated. For Example, to disable Serial ReDirection (to Modem), click the down arrow to the right of “YES/NO” and select the opposite option. Repeat this step for any additional ReDirection methods you wish to Enable/Disable. Keep in mind, that once a setting is disable it will not be usable until you re-enable it. To save your choices, click the “OK” button.

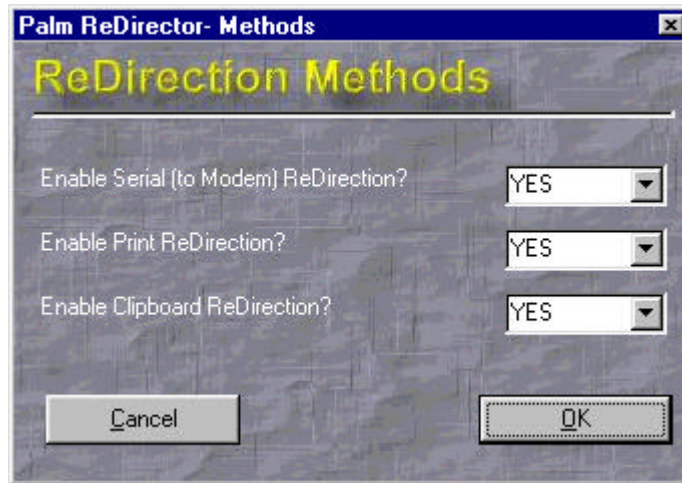


Figure 3.1

Startup Preferences

You can configure Palm ReDirector to startup in a number of different ways. Keep in mind, that these settings should represent your individual preferences and the following recommendations are made for illustrative purposes only. To configure your Startup Preferences, select the menu option “Configure/Startup Preferences” from the menu bar (See Figure 3.2).

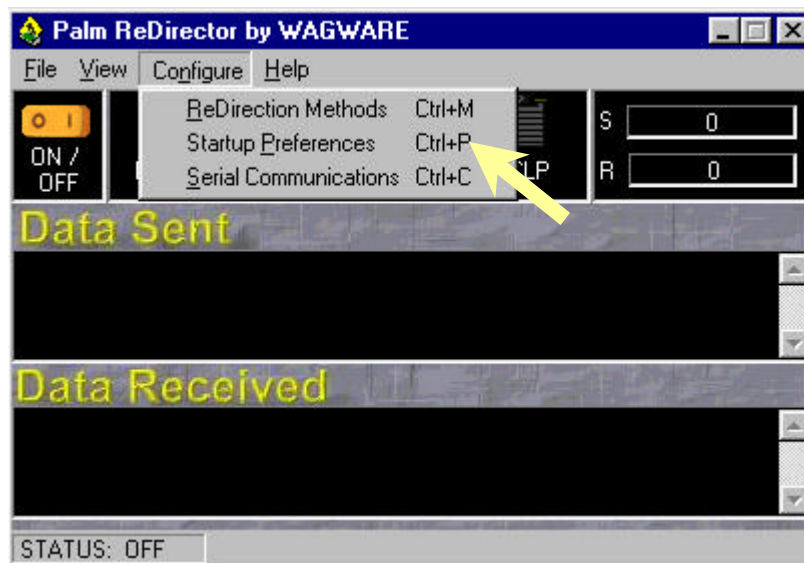


Figure 3.2

Once you have selected the “Startup Preferences” option, you will be prompted with options in the form of questions. Clicking the down arrow to the right of the answer boxes assigns your answer selections.

Startup View Setting

The first question, “How would you like the display presented when this application is started?” allows you to configure the display in one of three (3) primary views (See Figure 3.3). These are LED’s Only, SND/RCV and Data Sniffer. LED’s is a less obtrusive display, only showing you the LED indicators. SND/RCV will display the LED’s in addition to the number of bytes (characters) that have been sent/received during the Palm ReDirector Session. Lastly, the Data Sniffer option will allow you to see the same information made available with the LED and SND/RCV display and also include a small window for visualizing the data being exchanged between the Palm Device and the remote location. At this time, select the option that is most useful to you.

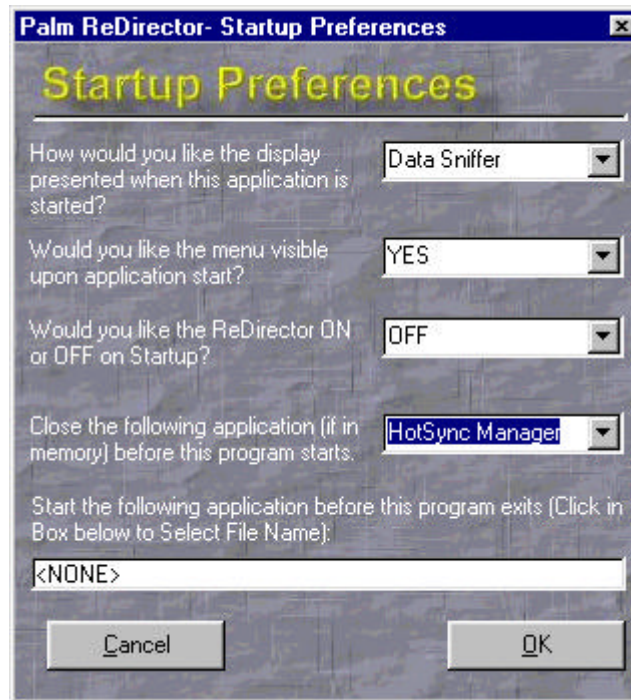


Figure 3.3

Menu Bar Visible Setting

To even further reduce the display size of Palm ReDirector, you can have the application disable the Menu Bar on startup. This setting will reduce the size of the window for the LED’s and SND/RCV view even more. If this setting is enabled and you would like to make the menu options visible once again, just double click anywhere in the Palm ReDirector screen (with the exception of the On/Off switch).

ReDirector Status Setting

The third question allows you to specify if you would like the ReDirection turned on for you Automatically. This option is very useful in that Palm ReDirector will be ready to Send and Receive data immediately after starting the application. You may set this option to ON or OFF.

Auto Close Application Setting

The Auto Close option is perhaps the most useful of all startup options. This allows you to automatically close an application on startup. The reason why you will likely want to enable this option is so the HotSync® Manager application may be closed automatically for you when starting Palm ReDirector. Palm ReDirector and HotSync® Manager may not run concurrently, this option makes it much easier for you switch between the two applications. Make sure that you are not Synchronizing data between the Palm Device and HotSync® Manager at the time you start Palm ReDirector, otherwise data loss may occur.

Advanced User TIP: You may also configure this section to automatically close another program other than HotSync® Manager. You can press CTL+ALT+DEL once to view your Windows® Task List. Write down the title of the application that you wish to close, exactly as it is indicated within the Task List (Case Sensitive and space dependent). You can then type this title into the Close Application Setting to have that Window closed on Startup.

Auto Start Application Setting

If you have assigned an application to be closed automatically on Startup, you may also wish to have that same application restarted once the Palm ReDirector session is closed. This allows a seamless transition swapping between Palm ReDirector and another application. To select an application to start when Palm ReDirector is closed, click in the box below the “Start the following application...” question. You will next be prompted to Select a File to Start on Exit, browse to the location of the application you wish to start when Palm ReDirector closes and click the “Open” button to make the assignment (See Figure 3.4).

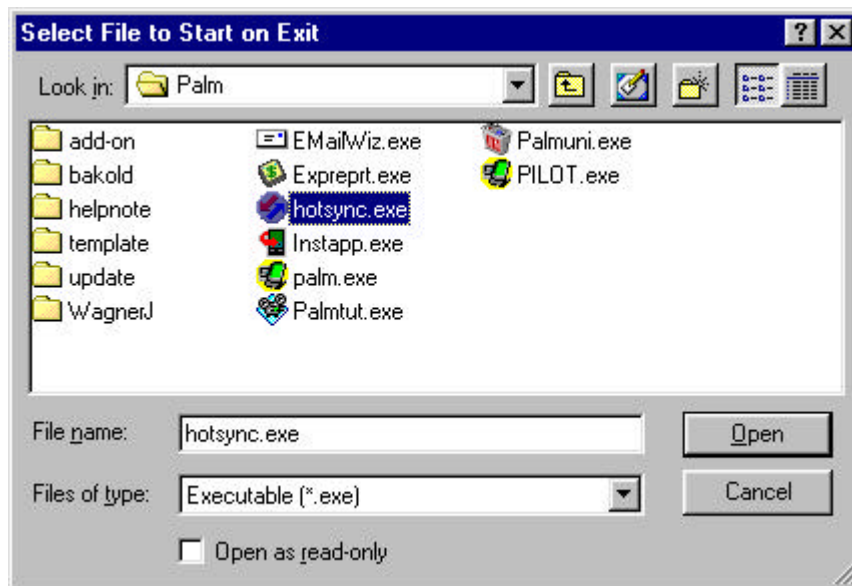


Figure 3.4

4.0 The Interface

Palm ReDirector has three primary viewing methods, which can be configured in a way that is comfortable to you. The three view methods include: LED's, SND/RCV Rate and Data Sniffer (See Figures 4.0-4.3). The LED's view takes up the least amount of screen real estate by showing you only the icons representing the ReDirection locations (Serial, Printer and Clipboard). The option SND/RCV Rate provides you with additional information, including the number of bytes (characters) sent / received during the session. Lastly, the Data Sniffer view allows you to see the actual data being exchanged between the hardware. This is useful for isolating problems, trouble shooting or if you are just curious what is being sent back and forth. To select a viewing method right for you, select the menu option "View" and the associated view type.

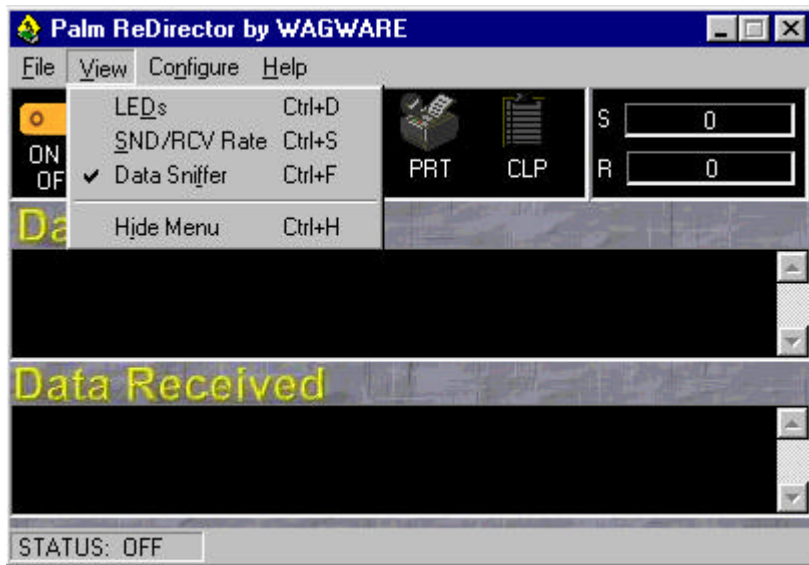


Figure 4.0

LED's View Method

The LED's View Method shows you only the icons representing each key component (See figure 4.1).

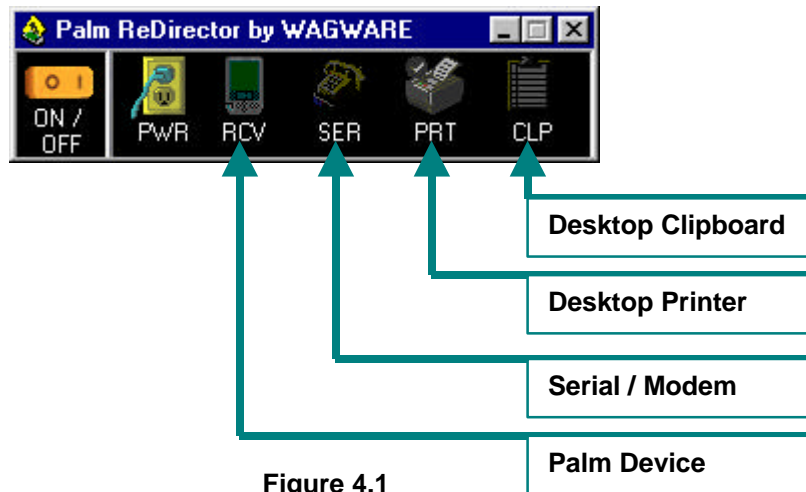


Figure 4.1

SND/RCV View Method

The SND/RCV view shows you the key component icons (See Figure 4.1) in addition to the number of bytes (characters) sent and received by the Palm Device (See Figure 4.2).



Figure 4.2

Data Sniffer View Method

The Data Sniffer View method is the most comprehensive view (See Figure 4.3). It consists of all of the previously described methods of viewing with the addition of the ability to see the actual exchange of data take place. This is very useful for troubleshooting, or just wanting to know what data is being passed between the ReDirection Locations.



Figure 4.3

5.0 Print ReDirection

Print ReDirection allows your Palm Device to transmit information directly to your Desktop computer's default Windows Printer. Print ReDirection must be initiated by the Palm Device itself and requires a program which supports the PRD Protocol to be able to Print (See Appendix A for additional information on the PRD Protocol Specification).

WAGWARE has included a small CASL Application, which allows you to access most all of Palm ReDirector's capabilities from your Palm Device (3Com Product Line). This application is called PRDPA. PRDPA must be installed on the Palm Device to send Print commands to Palm ReDirector running on your PC. See the section within this manual on Using PRDPA for additional information on how to Print from PRDPA.

Ensure that an application, which supports Print ReDirection, has been installed on your Palm Device. Select the option, which transmits that information to the Desktop Printer. Palm ReDirector will automatically handle the incoming print request and send the received data to your Default Windows Printer!

*Note - Keep in mind that any Palm Device Application could be developed to support Print ReDirection. Contact your favorite Palm Application Developer for additional information and if they support the PRD Protocol specification.

Setting your Default Windows Printer

Typically, you will not need to change your Default Windows printer. Since this is most likely the printer that you will use the most (or is closest to your location). However, in some situations a Networked printer may be unavailable or you may need to switch printers for some other reason. The following information will explain how to switch your Default Windows printer.

1. Click your "Start" button and select "Settings/Printers".
2. You will now see a Window similar to Figure 5.0
3. Locate the printer you wish to switch to and right-click the Printer name.
4. Next, select the Option for "Set as Default".
5. This printer is now your Default Windows printer and is the location where Palm ReDirector will send any documents it received.



Figure 5.0

6.0 Clipboard ReDirection

Clipboard ReDirection is an exciting technology, which allows your Palm Device to send Clipboard information directly to your PC Desktop computers Clipboard. To use this capability, you will need an application residing on the Palm Device (3Com Product Line) which includes Clipboard ReDirection capabilities.

The included CASL PRDpad application will allow you to send data from the Palm Device directly to the Desktop computer clipboard. See the section within this manual (or as a separately available updated manual) on Using PRDpad for additional information on how to Print from PRDpad.

Once an application which supports Clipboard ReDirection has been installed on your Palm Device, select the option which transmits that information to the Desktop's Clipboard. Palm ReDirector will automatically handle the incoming request and post the associated information to the Desktop's clipboard. Next, open a Windows application (such as Notepad) which supports clipboard operations. Select the option for "Paste" (Typically, Edit/Paste). The results of the data sent from the Palm Device should now appear in Notepad!

| |
|---|
| <p>*Note - Keep in mind that any Palm Application could be developed to support Clipboard ReDirection. Contact your favorite Palm Application Development provider for additional information and if they support the PRD Protocol specification.</p> |
|---|

7.0 Serial ReDirection – Configuration

The following section describes how to configure your Palm Device to dial your Internet Service Provider (ISP). Before you begin, ensure that the correct port assignments have been made for the Palm Device and Palm ReDirector (See the section, Communication Configuration). In addition, make sure that the HotSync® Manager application is not running and that Palm ReDirector is presently running and switched to the “On” position (Indicated by the number “1” being inset on the display panel).

Modem Setup

This section will instruct you on how to setup your Modem parameters on the Palm Device. To start, locate the “Prefs” icon on the Palm Device and then tap the icon. After taping this icon, select the drop down list (upper-right) and select 'Modem'. Select the Modem 'Standard' option, or if your particular modem is indicated within the list, select that one instead. Additionally, you may find it necessary to enter an initialization string different from the one specified (although, in many cases the default setting will work).

Make sure that the “Speed” indicated on the Modem preferences on the Palm Device matches the one specified earlier on the PC. These two communications speed must be the same for the Palm Device to use your PC's Modem.

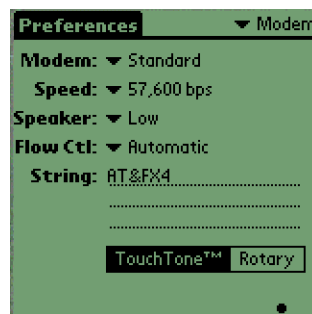


Figure 7.0

Network Setup

Once the Modem configuration has been completed, it is now time to setup your Internet Service Provider (ISP) or Dial-Up connection to your Intranet. This section will vary greatly depending on your ISP, but the following will give you some general assistance in setting this up.

Click in the upper-right corner of the “Preferences” dialog and select 'Network' from the List. After making this selection, you will see a screen similar to the second panel in figure 7.1. Under Service, tap in the name of your ISP (Example: MyISP). Next, tap in your User Name (or Login Name) for the remote system. Click on the '-Prompt-' or '-Assigned-' location to the right of 'Password:'. Tap in your password at the remote host. Then, tap in the remote modem number you wish to dial. You may also need to enter additional information, such as a Primary or Secondary DNS (Name Server) or IP Address assignments for your ISP. To do this, tap on the 'Details...' button. This information would have been provided to you when your Internet account was first setup.

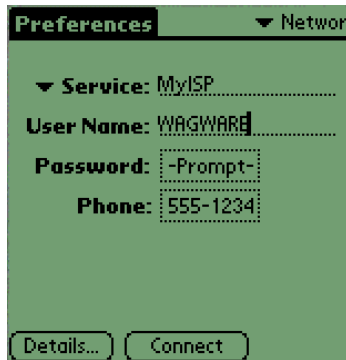


Figure 7.1

Some ISP's may also require a Login Script, you can easily create a Login script by clicking the 'Script...' button (It really is very easy, just remember to tell it to send a 'CR' after each Send). An Example Login Script (Although, more complicated than most) may look like:

```
Delay      3
Send CR:
Wait For: name
Send User ID:
Send CR:
Wait For: word
Send Password:
Send CR:
Wait For: action
Send:      2
Send CR:
End:
```

Verifying the Connection

Now that you have configured the Palm Device and Palm ReDirector has been setup properly, place the Palm Device in the Cradle (Make sure the cradle is plugged into the Com Port on the PC that you specified in the Palm ReDirector configuration). Turn on the power to the Palm Device (if it isn't already). Click on 'Prefs' and select 'Network' from the upper-right (down-arrow). Click the 'Connect' button in the lower right (See right panel in Figure 3.0). At this time, you should see the LED's blinking on the Palm ReDirector Display panel indicating that there is communications between the Palm Device and the Modem. After a successful connection, you can now use any Internet applications for your Palm Device! Please visit the WAGWARE website for information and links on where to obtain some of the best Internet applications for your Palm Device (<http://www.wagware.com>)

Disconnecting from the Network

To disconnect your Palm Device from the Network, click on the 'Prefs' icon. Then click on the upper-right arrow and select 'Network'. Click the 'Disconnect' button in the lower right of the screen. You should see the LED's flicker for a few seconds and then the Palm Device will hang up the modem.

8.0 PRDPA Application

PRDPA is an application for your Palm Device, which allows you to carry out most all of the functions that Palm ReDirector (The PC-Based Application) is capable of performing. This includes the ability to send text data entered into PRDPA or Loaded from an existing Memo to be sent to the PC's Default Windows Printer or to the Clipboard. To use the following information you will need to have installed PRDPA on your Palm Device (See the earlier section on installing PRDPA).

Starting PRDPA

To start PRDPA, locate the icon on the Palm Device (See Figure 8.0) and tap.



Figure 8.0

Configuring PRDPA

The first time you run PRDPA, you will need to assign the communication speed in which the Palm Device will be communicating. This speed must match the communication speed of Palm ReDirector on your PC. To select the speed, simply tap on the communication speed you wish to use.

If you will be using an IrDA Port, instead of the Palm Cradle then you will want to also tap the check box beside "This is an IR Port". Setting this option will actually consume more battery power but will greatly enhance reliability when communicating with an Ir Port. The Ir Port will be opened as soon as you start PRDPA and remain open until it is closed. Not checking this option only opens the serial port when data is actually ready to be sent.

After making the appropriate settings, click the "OK" button in the lower right to save your PRDPA configuration settings.

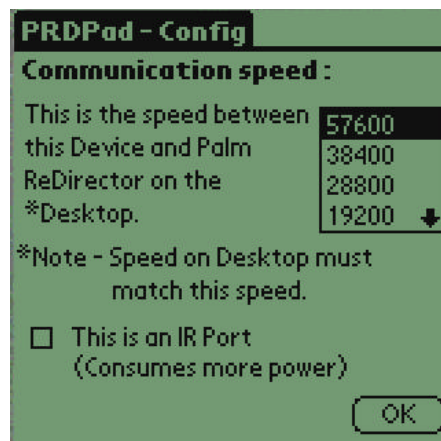


Figure 8.1

The PRDPA Interface

PRDPA is similar to 3Com's "Memo Pad", but has some advantages (and a few limitations). PRDPA allows you to quickly enter text, either by using Graffiti®, the pop-up Keyboard or read the contents of an existing Memo Pad memo. The most common functions that you are likely to use are represented by buttons either along the Top title bar or on the bottom section of the interface (See Figure 8.2).

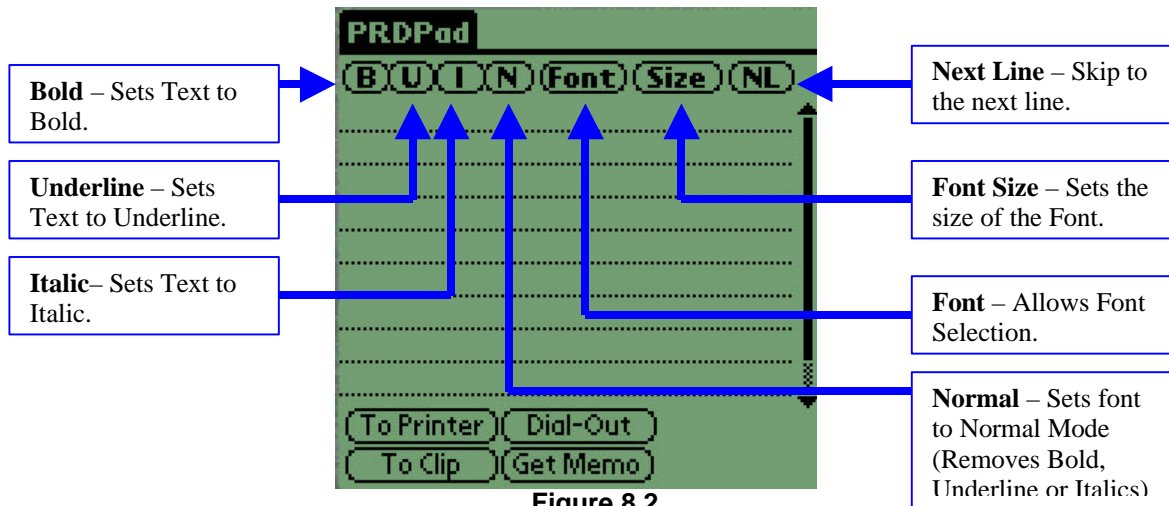


Figure 8.2

Opening an Existing Memo in PRDPA

To load an existing Memo into PRDPA, you may do this from either of two locations. You may select the Menu Option "Open", or you may click the "Get Memo" button directly on the PRDPA interface. Either location operates identically. After making your select, you will see an animated line briefly while loading the Memo Titles from the Palm Device's internal Database. Once loaded, you will see a list of all Memo entries. Click on the Memo Item you wish to Load into PRDPA and click the "Load" button.

Copying and Pasting with PRDPA

PRDPA does have menu options to Copy / Paste information from the Palm Device's clipboard. Instead, you may click the "." below the "abc" indicator to bring up the Palm Keyboard. From here, select "Menu" and you will have the option to Cut, Copy and Paste directly into PRDPA.

Lower Buttons

PRDPA contains four buttons on the lower portion of the user interface. These options have been placed because they will be used more frequently than any other options within PRDPA. The following is a description of what each button does.

To Printer Button

This option sends the current PRDPA Text contents to Palm ReDirector for printing.

To Clip Button

This option sends the current PRDPA Text contents to the Palm ReDirector for posting to the PC's clipboard.

Dial-Out Button

Clicking this button will allow you to quickly Dial your Internet Service Provider (ISP) and access the Internet.

Get Memo Button

This button allows you to load an existing Memo into PRDPAad.

Additional Menu Options

There are several more menu options available to you. These menu options allow you to perform additional formatting on the text within the PRDPAad application, Open Memo files, Save and existing file plus many other exciting capabilities. Below is a description of each menu option and what it is used for:

File Menu

The File menu option contains the following functions.

Open

The Open menu option loads a list of the Memos that currently reside on the Palm Device. You may select a memo name (indicated by the first line of the Memo), click the "Load" button to load an existing memo into PRDPAad.

Save

The Save menu Option allows you to save the current PRDPAad contents to the Memo Database. You can also access saved information directly from Memo Pad.

Print

The Print menu option will send the contents of the PRDPAad Text window directly to the Palm ReDirector on the PC. Palm ReDirector will the format your Print Request and send it to your Default Windows Printer.

Clipboard

The Clipboard menu option will send the contents of the PRDPAad Text window directly to the Palm ReDirector application running on the PC. You may then select the "Paste" function available in most Windows applications (alternatively, you may press Shift+INS).

Edit Menu

The Edit menu option contains the following functions.

Clear Text

Selecting the menu option "Clear Text" will first prompt you if you wish to "Clear All Text?" If you do, click the "Yes" button. Otherwise, select "No".

Configure

This option allows you to alter the configuration settings you originally setup. This includes the Port Speed and Ir Setting.

Printer Info

This handy option will provide you with information about your PC's Default Windows Printer configuration. It will return the following: Printer Name, Status of "Defined" or "Error" and the number of lines available (Both Height and Width).

Add Menu

The Add menu option consists of the following functions.

Align Center

This menu option will center the Text on the screen and will automatically revert back to Align after the next NL command.

Align Left

This menu option will Left-Align the Text entered.

Align Right

This option will Right-Align the Text entered and will automatically revert back to Left-Aligned after the next NL command.

Page Number

This option will post a request to replace the command with the actual page number while printing. The page number replacement is handled automatically by Palm ReDirector during the print process.

Form Feed

This option will force a Form Feed to occur (Eject the current page and skip to the next).

Portrait

This option sets the page orientation to Portrait.

Landscape

This option sets the page orientation to Landscape. This command must be issued before any other commands and directly after any subsequent Form Feed Requests. Otherwise, Palm ReDirector will reset back to Portrait print.

Demo Menu

The Demo menu is used to provide a quick print test to verify the communications between PRDPA and Palm ReDirector.

Print

Erases the current PRDPA text (without prompting) and replaces the text with a pre-programmed message utilizing some of the advanced print functions. This may be used to verify a printer's capability.

Clipboard

This option is used to replace the current PRDPA text (without prompting) with a preprogrammed message for sending to the PC's Clipboard.

Help Menu

The Help menu displays the About option.

About

The About option identifies the product name, Version, copyright information and the company that created PRDPA (WAGWARE).

PRDPA updates

Updates to the PRDPA application in the future may be posted as a separate download. The length of time required to download Palm ReDirector is significantly more than that of PRDPA. When searching your favorite Palm Software sites for the latest PRDPA update, look for PRDPA separately from Palm ReDirector. Or, you may visit <http://www.wagware.com> for the latest updates as well.

9.0 New Functionality for Palm Applications

It is clear that many users of Palm Devices (Palm Pilot or Windows CE®, etc.) are eager to embrace an inexpensive means of exchanging information between the Palm Devices and their Desktop machines. To fulfill this need, WAGWARE has created a means of Palm Device to Desktop communications called, the PRD Protocol specification.

The PRD Protocol Specification defines a structured means of Palm Device to PC (or Desktop Computer) communications. Developers of Palm Device applications (Document Readers, Mail Programs, Word Processors, plus an unlimited number of additional applications) can now add advanced capabilities within their own applications royalties to WAGWARE*.

The purpose of the PRD Protocol is to present a standard methodology to allow the exchange of information between the Palm Device and Desktop. The protocol is very small and compact. While it was possible to utilize other protocols such as HTML or RTF for the print capability, WAGWARE needed a more flexible approach that allows the addition of new packet types for future capabilities. Both RTF and HTML are very specific formats, which have associated committees that ensure standards across multiple platforms (A good thing). However, those same standards would limit our ability to provide you with additional functionality quickly and would have limited our capabilities to print only.

The intent of this document is to allow any developer the ability to utilize the PRD Protocol specification within his/her own palm applications. If you wish to add additional functionality to this specification which is not currently supported within Palm ReDirector, please forward your request to WAGWARE (devrequest@wagware.com) for consideration of implementing your request in future versions of the PRD Protocol Specification. Your requests will help advance the protocols future capabilities.

Periodically, new versions of this specification and Palm ReDirector will be made available at the WAGWARE website: <http://www.wagware.com>.

Code Examples

If you are an application developer, the following sample code will allow you to see how easy it is to integrate your existing applications to Palm ReDirector. Two examples are provided one for a nice Palm Device Basic Interpreter (by Ronald H. Nicholson Jr.) that allows you to send the Clipboard contents to Palm ReDirector. The other is a code segment for CASL (by Feras Information) which provides a subroutine for sending a print request to Palm ReDirector. For additional details on the PRD Protocol Specification, please see Appendix A).

cbasPad Clipboard Send example

The following example briefly explains how to send the Clipboard contents from the Palm Device's clipboard directly to your PC's Default Printer or Clipboard. Before proceeding with the following example, download and install the cbasPad application and follow the associated documentation you received with the application before proceeding.

1. Open the "Memo Pad" application on your Palm Device.
2. Enter some text in the following format (replace 'Some Text' with your own):

To send the Results to the Desktop Printer, enter the following:

```
<PRD_P>'Some Text'</PRD_P>
```

To send the Results to the Desktop Clipboard, enter the following:

```
<PRD_C>'Some Text'</PRD_C>
```

3. Next, you will need to select the menu option within "Memo Pad" for "Edit/Select All" (or Shortcut /S) and then copy the contents to the Palm Device Clipboard by selecting the menu option "Edit/Copy" (or Shortcut /C).
4. Exit the "Memo Pad" application and open cbasPad.
5. Click the "New" button.
6. Enter the following cbasPad code example:

```
# Send Clipboard contents to  
# Palm ReDirector  
new  
10 a=fn 18: n=fn 19  
20 if n>0 then sersend a,n,19200  
run
```

7. Make sure that Palm Redirector is currently running on the PC. In addition, make sure the serial communication speed matches that of the above program (19200).
8. Next, click the "SelectAll" button.
9. Click the "Exec" button to send the Palm Device Clipboard data to the assigned location (Printer or Clipboard).

CASL Code example

The example below will send the contents of the "SendDat" variable through the Palm Device's serial port. With Palm ReDirector running, the contents would then be transmitted to the Desktop computers Default Windows printer. As you can see, it is very easy to create an application that can send data to Palm ReDirector. This same routine could be easily modified to change the destination to the Desktop clipboard (changed the PRD_P to PRD_C).

The following code example requires a licensed copy of the CASL Compiler to generate a PRC file. However, the steps would apply to most any language you wish to use with Palm ReDirector it would mostly be a matter of Syntax.

```
Function SendClip;
# Send Data through Serial Port
Variables;
    String SendDat;
    String Temp;
    String ComSpeed;
    Numeric I;
End;

SendDat="Send this Data to Palm ReDirector";
File serout; End; # Define Serial Output
ComSpeed="57600"; # Define Communication Speed

Open serout,"COM1:"+ComSpeed+",N,8,1,RTS/CTS"; # Open Serial Port

# Loop 10 times to cause a delay directly after
# Serial communications.
For i = 0, i < 10;
Next i + 1;

Temp="<PRD_P>"+SendDat+"</PRD_P>"; # Format Packet for PRD Spec.
Put serout,temp ,Length(temp); # Send Packet through Serial Port
close serout;

End;
```

Appendix A. PRD Protocol Specification

Primary communication Highway

Most handheld devices (Palm Devices) utilize serial communications as a means of exchanging information between the Palm Device and the Desktop. While future impending technologies such as USB, Parallel Interfaces, etc. may re-invent the currently accepted form of communication this specification must be open to the acceptance of those technologies. The Palm ReDirection Specification should be a guideline and serve as a method to allow these forms of communications to take place. At the present time, this specification will assume serial communications as a common means of ReDirection methodology and subject to change.

Serial Communication standard

The standard means of communication between many popular forms of handheld devices today is based on typical communication parameters. The following communications parameters will be utilized as the foundation for the Palm ReDirection Specification:

$$\text{Baud Rate (May vary), } \frac{8}{A}, \frac{n}{B}, \frac{1}{C}, \frac{1}{D}$$

- A) **Baud Rate** - The rate of communications depends primarily on the fastest rate in which the machine may communicate. This rate is not dictated within this specification but assumed to be the fastest means of communication available between the Palm Device and the Desktop machine (*Common communications rates are 9,600bps, 14,400bps, 19,200bps, 28,800bps, 38,400bps and 57,600*).
- B) **Data Bits** - is the number of data bits and it's recommended value is 8.
- C) **Parity** - Parity is used for checking data transferred within a computer or between computers. (This specification indicates N or No Parity checking).
- D) **Stop Bits** – The recommended stop bit value is 1.

Special Characters

The following table represents how characters, when sent by the Palm Device, are converted on the Desktop PC.

| Character code on Palm Device | PC Equivalent |
|-------------------------------|------------------------------------|
| ASC Code 10 (Line Feed) | ASC Codes 13 and 10 (Respectively) |

IMPORTANT - It is imperative to note that all commands must exist in Upper Case. Lower Case is ignored and will print exactly as it is received, including the "<>".

Print Communications

The following protocol definition allows Palm Devices to send data encapsulated within <PRD_P> and </PRD_P> that will be output on the users default printer. Additional formatting capabilities are also supported (as identified below) for more advanced control over the printed output.

Page Manipulation

PRD_P - Print Request Descriptor (Print)

The Print Request Descriptor will be utilized to indicate a print request on the remote desktop machine. The remote desktop application will interpret the incoming serial communications as a Print request and process the following information accordingly. The descriptor PRD will indicate a print request, the destination request “_P” will indicate the receiving device. The following receiving devices are valid:

Example:

```
<PRD_P>Print this information on the Desktop machines default printer, multiple  
lines are OK as well.</PRD_P>
```

PORIENT – Page Orientation Descriptor

To print text in Portrait or Landscape on the remote desktop machine, a page orient descriptor will be issued. This will cause any subsequent text to be printed in either Portrait or Landscape mode. This command **must be issued immediately after the <PRD_P> descriptor (or directly after a Form Feed <FFEED> descriptor)**, otherwise Portrait will be assumed. The format of destination method must exist as either “_P” for Portrait or “_L” for Landscape.

| Destination | Description of Destination |
|-------------|----------------------------|
| _P | Print in Portrait mode. |
| _L | Print in Landscape mode. |

Example:

```
<PRD_P><PORIENT_L>Print this information on the Desktop machines default  
printer in landscape mode.</PRD_P>
```

FFEED - Form Feed Descriptor

To issue a form feed on the remote desktop machine, a form feed descriptor will need to be issued. This will cause the necessary action on the remote machine to generate a form feed or flush the current print job into printing the contents available within the print buffer.

Example:

```
<PRD_P>Print this information on the Desktop machines default  
printer.<FFEED>And then Skip a Page.</PRD_P>
```

NL – Next Line

To inform the ReDirector to print the following text on the next line, a NL or Next Line command is issued. It is recommended that a “NL” sequence is sent to Palm ReDirector instead of relying on a Character code 10 from the Palm Device.

Example:

```
<PRD_P>Print this information on the Desktop machines default  
printer.<NL>Then print this on the following line.</PRD_P>
```

Font Styles

FNORMAL – Font Normal Descriptor

To print text in normal mode on the remote desktop machine, a font normal descriptor will be issued. This will cause any subsequent text to be printed in normal mode (turn off Bold, Underline, or Italics). There is no ending descriptor needed for FNORMAL. Once it is found within the stream, the font will then be displayed in normal mode.

Example:

```
<PRD_P>Print this information on the Desktop machines default  
printer.<FBOLD>And print in Bold Characters!<FNORMAL></PRD_P>
```

FBOLD - Font Bold Descriptor

To print text in Bold on the remote desktop machine, a Font Bold descriptor will be issued. This will cause any subsequent text to be printed in bold until a corresponding closing argument is indicated.

Example:

```
<PRD_P>Print this information on the Desktop machines default  
printer.<FBOLD>And print in Bold Characters!<FNORMAL></PRD_P>
```

FITALIC - Font Italic Descriptor

To print text in Italics on the remote desktop machine, a Font Italic descriptor will be issued. This will cause any subsequent text to be printed in italics.

Example:

```
<PRD_P>Print this information on the Desktop machines default  
printer.<FITALIC>And print in Bold Characters! <FNORMAL></PRD_P>
```

FUNDER - Font Underline Descriptor

To print text in underline mode on the remote desktop machine, a Font Underline descriptor will be issued. This will cause any subsequent text to be printed in Underline mode.

Example:

```
<PRD_P>Print this information on the Desktop machines default printer. And  
print <FUNDER> in Bold Characters! <FNORMAL></PRD_P>
```

PAGEN – Page Number Descriptor

To print the Page number on the remote desktop machine, this command must be issued. It will print a single integer indicating the number of the page being printed.

Example:

```
<PRD_P>This is Page #<PAGEN><FFEED>This is Page #<PAGEN></PRD_P>
```

Font Manipulation

FONT - Font Type Descriptor

This descriptor will indicate the type of Font to be used in the printed output. The following Fonts are currently implemented:

| *Command | Font Type |
|-----------------|---|
| <FONT=ARIAL> | Prints in Arial Font |
| <FONT=TNR> | Prints in Times New Roman |
| <FONT=COURNEW> | Prints in Courier New (Default if unspecified) |
| <FONT=FDEFAULT> | Sets font to default values of font, Courier New at Size 10. The characteristics of Bold, Italic and Underline are turned off. |

*Note – The following fonts must be installed on the user's PC: Arial, Times New Roman and Courier New.

Example:

<PRD_P>This is printed as Courier(Default), <FONT=ARIAL>this is being printed in Arial. <FONT=TNR>Now it is in New Times Roman.</PRD_P>

FSIZE – Font Size Descriptor

The FSIZE descriptor will allow the font size to be altered during printing. The FSIZE descriptor may be used at any time during the print stream to indicate the size to be used.

| Command | Font Size |
|------------|---|
| <FSIZE=8> | Font size is printed in size 8pt. |
| <FSIZE=10> | Font size is printed in size 10pt. |
| <FSIZE=12> | Font size is printed in size 12pt. |
| <FSIZE=14> | Font size is printed in size 14pt. |
| <FSIZE=16> | Font size is printed in size 16pt. |
| <FSIZE=18> | Font size is printed in size 18pt. |
| <FSIZE=24> | Font size is printed in size 24pt. |

Example:

<PRD_P>This is printed as Courier(Default), <FONT=ARIAL><FSIZE=14>this is being printed in Arial in 14pts size. <FONT=TNR>Now it is in New Times Roman.</PRD_P>

ALIGN – Font Align Descriptor

The Align descriptor is used to position Text on the page in a particular format. It is recommended that any Alignment command occur after any Font Styles have been previously identified.

| Command | Font Size |
|----------------|---|
| <ALIGN=CENTER> | Centers the text following the Alignment command until a “NL” is found. |
| <ALIGN=RIGHT> | Right Aligns the text following the Alignment command until a “NL” is found. |
| <ALIGN=LEFT> | Left Aligns the text following the Alignment command until a “NL” is found. |

Example:

The following print request sets the font to Bold, New Times Roman font at 24 Pt. And centers “WAGWARE Presents...” on the page. When the “NL” or Next Line is encountered, a line feed occurs on the printer and then prints “Palm ReDirector 2.0!” Right aligned on the next line.

```
<FBOLD><FONT=TNR><FSIZE=24><ALIGN=CENTER>WAGWARE  
Presents...<NL><FBOLD><ALIGN=RIGHT>Palm ReDirector 2.0!<NL>
```

Printer Status

SRESP – Send Response

The SRESP Descriptor is useful to verify the communications to the default Print Device on the Desktop. At any point within the stream of data sent to the printer, a SRESP descriptor may be included. In this case, once the print request has completed a response is sent through the Palm Devices serial connection indicating the status and length of the text received at the Desktop. It is important to understand that use of the SRESP requires that the device sending the request be prepared to receive a response immediately after the request.

The SRESP Descriptor may also be used without any additional print commands. In this case, only the status of the default Print Device and length of the data stream received by the Desktop will be sent. In other words, no data will be sent to the printer. Using the SRESP Descriptor alone also requires that the program sending the request be prepared to receive the response (Through the serial port).

There are various elements of data that may be extracted from the resulting response data packet. Items such as: Printer Status, Indicated by “STA=”, printer Line Height/Width designated by “PRINT_HW=”, Font Height/Width determined by “FONT_HW=”, Length of data stream sent to Printer is determined by “LEN=” and the actual print device name may be returned by “NAME=”.

Example:

```
<PRD_P><SRESP></PRD_P>
```

Returns:

```
<PRD_RSP>STA=DEFINED~PRINT_HW=74,102~FONT_HW=212,212~LEN=7  
~NAME=Canon BJC-4300</PRD_RSP>
```

Error Responses

Error responses are a means of determining the nature of a problem and allow for programmatically handling of such errors. A typical Error response may be that the Desktop computer does not have a default printer setup. In this case, the SRESP Descriptor may be issued to determine the status of the printer. Upon an error condition, the response will also include an error code. This error code identifies the nature of the problem.

| Error Code | Description |
|------------|---|
| 482 | No Default Printer on Desktop is Defined |

Example:

```
<PRD_RSP>STA=ERROR(482)~PRINT_HW=0,0~FONT_HW=0,0~LEN=181~NAME=NOT_DEFINED</PRD_RSP>
```

Clipboard Communications

PRD_C - Print Request Descriptor (Clipboard)

The Print Request Descriptor will be utilized to indicate a clipboard request on the remote desktop machine. The remote desktop application will interpret the incoming serial communications as a clipboard request and process the following information accordingly. The PRD_C descriptor may also be used to transmit data from the remote desktop to the Palm Device. The descriptor PRD will indicate a Palm ReDirector request, the destination request “_C” will specify the receiving device as the clipboard. The following receiving devices are valid for clipboard ReDirection:

Example:

<PRD_C>This information will be made available on the Desktop machines clipboard.
Multiple lines are OK.**</PRD_C>**

Appendix B. Troubleshooting

The following is a list of the most common questions that have been posted to WAGWARE and their answers. If you have additional questions that are not covered by other areas of this manual, this is a good place to start. Alternatively, if you cannot find the answer you are looking for, please E-mail us at support@wagware.com.

Question: I use Palm ReDirector at work and we have a Local Area Network (LAN). Can I use Palm ReDirector directly on my LAN?

Answer: Not presently, WAGWARE is investigating this capability in future versions. Please visit the website for any updated versions of Palm ReDirector!

Question: Why can't I copy and Paste into PRDPAde?

Answer: The reason is that the current release of the compiler used to create PRDPAde does not yet support this functionality. The developers of the CASL Language have indicated that this is on the list of features for a later release. As soon as it becomes available, it will become an option within PRDPAde. However, there is a workaround. You can tap the "." in the lower left of the input panel for the Pop-Up Keyboard. Once the keyboard display shows up, you can select the Menu function to allow Copy/Paste, etc. These functions will work and the results will be displayed back within the PRDPAde Text entry.

Question: I have installed Palm ReDirector on my computer, and I can use the Print and Clipboard features without any problem. However, when I try to connect to America On-Line® I cannot connect.

Answer: The problem is that AOL does not support the ppp protocol need to negotiate a Dial-up connection directly. However, you may be able to find a Shareware application that will allow the Palm Device to make a connection to AOL.

Question: Why was CASL Selected as the language for PRDPAde instead of the more Powerful Codewarrior Compiler?

Answer: The primary reason was cross-platform capability. Feras Information, developers of the CASL Language, is readying a release of CASL for Windows CE (and may be available at the present time). Using CASL as our Palm Device programming language, WAGWARE will be better able to bring new features, to more customers in less time than trying to port from one OS to another using C.

Question: I'm a previously registered Palm ReDirector customer (own a license key from an earlier version), however when I downloaded this new version I didn't have to pay for the upgrade. Why?

Answer: WAGWARE believes in rewarding customers for their patronage, not charging them continuously for the same product. Your previous License key has worked because we value you as a customer and we want you to continue using our products! This does not guarantee that all future versions will operate this way, just that we will make upgrading as painless as possible ☺

END USER LICENSE AGREEMENT

LICENSE. You are authorized to use this application for a period of 15 days for evaluation purposes. If you find that it meets your needs or that you use it, you are requested to purchase a legal license. Please print and complete the registration form (or order through PalmPilotGear H.Q. 817.461.3480 / <http://www.pilotgear.com>). Doing so will allow WAGWARE to continue development of new Shareware applications in an effort to provide you with inexpensive high-quality applications.

DISCLAIMER OF WARRANTY. This software is provided on an "AS IS" basis, without warranty of any kind, including without limitation the warranties of merchantability, fitness for a particular purpose and non-infringement. The entire risk as to the quality and performance of the Software is borne by you. Should the Software prove defective, you and not WAGWARE assume the entire cost of any service and repair. In addition, the security mechanisms implemented by WAGWARE software have inherent limitations, and you must determine that the Software sufficiently meets your requirements. This disclaimer of warranty constitutes an essential part of the agreement. SOME JURISDICTIONS DO NOT ALLOW EXCLUSIONS OF AN IMPLIED WARRANTY, SO THIS DISCLAIMER MAY NOT APPLY TO YOU AND YOU MAY HAVE OTHER LEGAL RIGHTS THAT VARY BY JURISDICTION.

TITLE. Title, ownership rights, and intellectual property rights for Palm ReDirector shall remain in WAGWARE. Copyright laws and treaties protect the Software. Title and related rights in the content accessed through the Software is the property of the applicable content owner and may be protected by applicable law. This License gives you no rights to such content.

TERMINATION. The license will terminate automatically if you fail to comply with the limitations described herein. On termination, you must destroy all copies of the Software.

EXPORT CONTROLS. None of the Software or underlying information or technology may be downloaded or otherwise exported or reexported (i) into (or to a national or resident of) Cuba, Iraq, Libya, Yugoslavia, North Korea, Iran, Syria or any other country to which the U.S. has embargoed goods; or (ii) to anyone on the U.S. Treasury Department's list of Specially Designated Nationals or the U.S. Commerce Department's Table of Denial Orders. By downloading or using the Software, you are agreeing to the foregoing and you are representing and warranting that you are not located in, under the control of, or a national or resident of any such country or on any such list.

LIMITATION OF LIABILITY. UNDER NO CIRCUMSTANCES AND UNDER NO LEGAL THEORY, TORT, CONTRACT, OR OTHERWISE, SHALL WAGWARE OR ITS SUPPLIERS OR RESELLERS BE LIABLE TO YOU OR ANY OTHER PERSON FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY CHARACTER INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF GOODWILL, WORK STOPPAGE, COMPUTER FAILURE OR MALFUNCTION, OR ANY AND ALL OTHER COMMERCIAL DAMAGES OR LOSSES. IN NO EVENT WILL WAGWARE BE LIABLE FOR ANY DAMAGES IN EXCESS OF THE AMOUNT WAGWARE RECEIVED FROM YOU FOR A LICENSE TO THE SOFTWARE, EVEN IF WAGWARE SHALL HAVE BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES, OR FOR ANY CLAIM BY ANY OTHER PARTY. THIS LIMITATION OF LIABILITY SHALL NOT APPLY TO LIABILITY FOR DEATH OR PERSONAL INJURY TO THE EXTENT APPLICABLE LAW PROHIBITS SUCH LIMITATION. FURTHERMORE, SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THIS LIMITATION AND EXCLUSION MAY NOT APPLY TO YOU.

HIGH RISK ACTIVITIES. The Software is not fault-tolerant and is not designed, manufactured or intended for use or resale as on-line control equipment in hazardous environments requiring fail-safe performance, such as in the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, direct life support machines, or weapons systems, in which the failure of the Software could lead directly to death, personal injury, or severe physical or environmental damage ("High Risk Activities"). WAGWARE and its suppliers specifically disclaim any express or implied warranty of fitness for High Risk Activities.

MISCELLANEOUS. If the copy of the Software you received was accompanied by a printed or other form of "hard-copy" End User License Agreement whose terms vary from this Agreement, then the hard-copy End User License Agreement governs your use of the Software. This Agreement represents the complete agreement concerning this license and may amended only by writing executed by both parties. If any provision of this Agreement is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. The laws of the Commonwealth of Alabama shall govern this Agreement. The application the United Nations Convention of Contracts for the International Sale of Goods is expressly excluded.