



6620 Hand-Held Computer

**TECHNICAL
REFERENCE**

P/N: 977-054-007
Revision B
June 1999

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" NOTICE

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- " Never install telephone wiring during a lightning storm.
- " Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- " Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- " Use caution when installing or modifying telephone lines.
- " Avoid using a telephone (other than cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
- " Do not use the telephone to report a gas leak in the vicinity of the leak.

Installation du téléphone : avertissements

Les avertissements qui suivent s'appliquent à tout équipement qui peut être branché aux lignes ou systèmes téléphoniques. Pour votre sécurité personnelle et pour protéger l'équipement de tout dommage électrique ou physique potentiel, NE PAS brancher un ordinateur tablette électronique ou ses périphériques aux lignes téléphoniques ou équipements avant que les avertissements suivants aient été lus, compris et observés :

- " Ne jamais installer de câblage téléphonique pendant un orage électrique.
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- " Ne jamais toucher les fils de téléphone ou de l'équipement terminal non isolés à moins que la ligne téléphonique n'ait été débranchée de l'interface réseau.
- " User de prudence lors de l'installation ou de la modification de lignes téléphoniques.
- " Éviter d'utiliser un téléphone (autre qu'un appareil téléphonique sans fil) pendant un orage électrique. Il pourrait y avoir un faible risque d'électrocution par la foudre.
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WARNING: *The lithium ion battery may explode if replaced incorrectly. Replace only with the same or equivalent type.*



ADVERTISSEMENT: *La batterie au lithium peut exploser si elle est remplacée de manière incorrecte. Elle ne doit être remplacée que par une batterie identique ou similaire.*



WARNING: *Lithium ion batteries may explode or catch fire if overcharged due to improper dock installation.*



ADVERTISSEMENT: *Les batteries au lithium peuvent exploser ou prendre feu si elles sont trop chargées à cause d'une mauvaise installation de la station d'accueil.*

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Section 1

Introduction

The material presented in this publication provides technical reference for the PEN*KEY^R 6620 Hand-Held Computer and is intended for experienced application programmers and information systems engineers.

About the Book

The following shows how this publication is structured:

- **Section 1 — Introduction**
Introduces the 6620 Computer and related docks, provides installing tips, reprogramming flash memory, setting up for development, and gives some development environments and resources.
- **Section 2 — Tool Kit for the 6620 Computer**
Lists various tool kit drivers, from video support to internal flash drive support. Each driver is defined and includes sample configurations.
- **Section 3 — 6620 Recovery Procedures**
Defines how to do successful 6620 System recoveries using CD-ROM.
- **Section 4 — GPS Drivers**
Describes the GPS drivers and how to configure these for testing.
- **Section 5 — Entering Text**
Instructs how to use either a screen keyboard or a screen palette to enter text.

- **Section 6 — Ericsson M2100 Series Wireless Modem**
Explains how to configure the Support Panel that monitors the M2100 Series Wireless Modem.
- **Section 7 — Infrared Communications Support 2.0**
Describes how to configure the Support Monitor that searches for infrared devices on a continual basis.
- **Section 8 — CMOS Setup Options**
Contains set up pages that include integrated peripherals, caches, passwords, power-on modes, etc.
- **Section 9 — CDPD Radio**
Looks at two applications provided by Sierra Wireless Inc.: “Watcher” and “Sierra Wireless Expert.”
- **Section 10 — Minimal Windows 95 Load**
Provides a “minimal” operating system configuration for users who want to reduce storage size.

An Open System Environment

The 6620 Operating System is Windows 95. One of the major benefits of this open-system approach is that you can acquire development equipment and software from many different vendors, including Norand Mobile Systems Division of Intermec Technologies Corporation. This provides you with wide latitude in selecting the equipment and software tools that are best suited to your particular development needs. The challenge lies in finding pieces that work well together, especially when you are working in the areas of communications and interfaces. If you have Windows programming experience, you will quickly feel comfortable with the PEN*KEY 6620 platform.

Introducing the 6620 Computer

The 6620 Computer is a ruggedized, ergonomic, battery-powered, touch-based computer, with input from finger touch, stylus, keyboard, or scanner. It has integrated communications and various combinations of external and internal peripherals. It is designed for a mobile environment.

AC Power

Alternating Current (ac) power is available through an ac power adapter. This allows the computer to be operated from standard electrical outlets using an appropriate power cord to the adapter. The adapter cable charges the main and backup batteries while simultaneously powering the computer.

Batteries

The 6620 Computer contains a rechargeable lithium ion (Li ION) main battery pack and a smaller rechargeable Li ION backup battery.

" NOTE:

A discharged main battery pack takes up to 4.5 hours to recharge. A backup battery that no longer accepts a charge must be replaced by a factory-approved service provider.

BIOS

The 6620 Computer is shipped with a BIOS firmware (PhoenixBIOS V4.0) and Windows 95. See the 6620 Computer User's Guide for instructions on how to change or upgrade the computer.

Display

The 6620 Computer features a backlit, liquid crystal, touch-sensitive display, that consists of either 8.4" of color VGA display, or 8.7" of monochrome display. The touch panel is of the analog resistive type that is passive and does not require a battery. Backlight features Cold Cathode Florescent Lamp (CCFL) with brightness control.

Flash

There are 256 KB of flash memory to hold the Basic Input/Output System (BIOS); this memory is not available to the system or the application programs. Flash memory for a flash drive is available in 2, 4, or 8 MB options. This drive behaves as a standard disk drive and can store critical data.

Hard Drives

If installed in the system, the hard disk is a 2.5" IDE hard disk drive located under the two external PC Card slots.

Infrared Communications

An infrared port, located at the lower left-hand side of the 6620 Computer, permits two-way wireless communication between the computer and IrDA-compatible peripheral devices.

Keypad

The keypad below the display consists of four two-color light emitting diode (LED) indicators located between nine software-configurable buttons, a suspend/resume button, and four cursor-control buttons.

Three of the LEDs indicate the status of the backup battery, the main battery pack, and the external power. Section 1 in the 6620 Computer User's Guide has the meanings of these LED indicators. The fourth LED lights up when the optional hard drive is used.

The buttons control the scanner, the pen functioning as the right or the left mouse button, the brightness and contrast on the display, and the suspend or resume functions. See Section 1 in the 6620 Computer User's Guide for more information on these buttons.

Memory

The 6620 Computer comes with 16 MB of standard DRAM; memory is expandable from 16 to either 32 MB or 48 MB.

PC Card Slots

The standard system has three card slots: two slots located behind the PC Card door at the upper end of the computer, the third internal slot is located from the back right door.

The two external PC Card slots can each accept one type II card. The upper slot (slot 1 — *closest to the display*) can accept one type III card (which blocks the lower slot — slot 0). If you have a 2.5" hard drive installed, these slots are accessible through the rear pod door.

The third internal PC Card slot also accepts either one type II card or one type III card. Some type III cards can be installed at the factory or by authorized service technicians. Typically, these cards are used for data storage or communications.

Pen

The special pen shipped with the 6620 Computer is provided to make manual entries on the display. The passive pen has a tip made to reduce touchscreen wear and scratching. The default function of the pen is that of the left mouse button, buttons on the keypad can switch the pen function to the right mouse button.

Power Management

Power management is controlled in two locations. One is the CMOS setup and the other is through the Windows Control Panel.



From the Windows desktop, double-click the **My Computer** icon, then double-click the **Control Panel** icon. Once in the Windows Control Panel, double-click the **Power** icon to access the Power Properties window, which allows changes to power management options.

Processor

The 6620 Computer contains an AMD 5X86, 133 MHz processor.

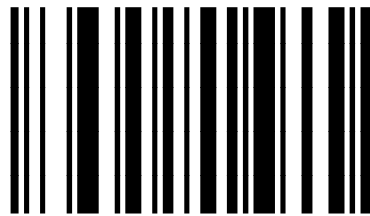
Scanner

The 6620 Computer can be ordered with either a standard or long-range, 5-volt laser internal scanner. This computer also supports tethered (external) CCD, wand, and laser scanners.

Note that internal scanners must be initialized before being used. Use the following two bar codes to initialize the internal scanner with the default parameters:

- **Reset to Default Settings**

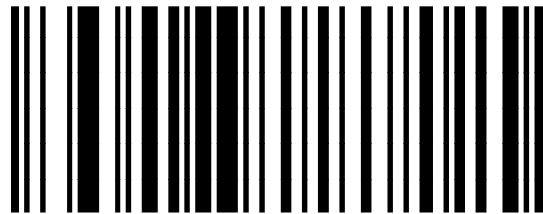
Scanning this bar code returns all parameters to their original values.



RESET TO DEFAULT SETTINGS

- **Decode Data Packet Format**

Select this option after you scan the **Reset To Default Settings** bar code. This is necessary for the computer to receive any decodes.



SEND PACKETED DECODE DATA

See the *SE 1223 Integrated Scanner User's Guide* (P/N: 961-032-042) for additional information.

Docks

Two basic dock accessories are used for the 6620 Computer: the single dock and the vehicle dock. Custom versions of these docks may be created for customer requirements. See the 6620 Computer User's Guide for meanings to the dock LED indicators.

Connections

The following connections are on the docks:

Parallel

The LPT1 Printer Port is an enhanced parallel port with a 25-pin (DB-25) *female*, D-Sub for connecting parallel devices such as a printer or storage device to the computer.

Serial Port

A 9-pin D-sub connector (COM1), located behind the flap on the upper end of the computer, supports RS-232 signals for two-way communication between peripheral devices and is capable of supporting a 5-volt bar code scanner. When docked, these computer signals are carried on the docking connector and are accessed through the RS-232 port on the dock.

Mouse

A 6-pin mini-DIN connector connects a PS/2 standard external mouse to the computer.

Video

(Single docks only — not present on the vehicle dock) A VGA connector provides RGB (red, green, blue), horizontal and vertical synchronous signals to a remote VGA monitor.

Network

(Single docks only — not present on the vehicle dock) Although all 6620 Computers have Ethernet capability, the connection is physically located on the single dock.

Infrared

A line-of-sight pass-through opening in the dock permits infrared (short-range wireless) communication between the docked computer and certain peripheral devices, such as a printer. The distance between the dock and the device must be less than one meter.

Keyboard

The 6-pin Mini-DIN connector directly supports PS/2 or PC AT keyboards through an adapter cable. Keyboard signals are available on the docking connector to permit the use of an external keyboard when the computer is docked.

Auxiliary Port

The AUX connector is a 15-pin male D-Sub connector that can serve as a third 3-wire COM port providing TXD, RXD, and GND. This connector also provides a general purpose open-collector output on pin #11 and a general purpose TTL/CMOS compatible input on pin #10.

AC Power

AC power is available through an ac power adapter. This allows the dock to be operated from standard electrical outlets using an appropriate power cord to the adapter.

Docking and Undocking

Instructions on how to insert and remove a 6620 Computer from a dock are found in the 6620 Computer User's Guide.

Tips for Getting Started

As you prepare to develop applications for the 6620 Computer (or port existing applications), keep in mind the following basic considerations, ideas, and suggestions:

- Windows 95 is the operating system. If you are experienced with this operating system, you should be able to start developing or porting applications.
- Become familiar with the tools and techniques for power management. Monitoring the state of battery power can be an especially critical function.
- When developing for pen input, remember that interpreting handwriting is still a developing field; accuracy has not yet reached 100 percent. Furthermore, interpreting and storing the results puts an additional load on the processor. Excessive use of handwriting recognition software can slow down an otherwise speedy application. Instead, try to use buttons, item lists, and pull-down menus for common tasks.
- When designing a pen-centric interface, make full use of the area provided by the VGA screen. Make buttons, pull-down menus, text entry fields, etc. large enough for easy, accurate use in a mobile or high-pressure environment.
- Make your applications *drive-independent*. Do not hard-code drive designations. Utilize the many available PC Card storage solutions, remembering that the devices can be moved about as required by different configurations. The PC Card slots can accept nonvolatile SRAM, flash, hard disk devices, RF devices, radio or land modems, and other devices.
- Keep in mind the general system design of the target 6620 Computer: file system (hard drive, 40 MB SanDisk, or 85 MB SanDisk), a VGA screen and keypad that are built-in, etc.

- There are some files listed in this publication that could be useful for your configuration or application. If you need any of these files, first look in the Tool Kit for them. If not found there, try one of the Product Forums on the Norand Mobile Systems Division BBS. Information about accessing the BBS is on page 1-20.
- Finally, for development purposes you may consider using certain external devices. Keep in mind whether these items are available (or practical) for the application to use in the field.

Reprogramming Flash Memory

To reflash the BIOS, you must first boot to DOS, either by:

- pressing [Shift] + <F5> during the Windows 95 boot process; or
- booting to a floppy or ATA drive.

Then, from the DOS prompt, run FLASH.EXE as follows:

```
FLASH /w /fFILENAME. EXE
```

/w specifies to overwrite the flash.

/fFILENAME specifies the file to write to the flash

Or, use the UPDTROM.BAT batch file that can be found in the /ROM subdirectory on the Recovery CD.

Set Up for PC Development

" **NOTE:** *Always keep the 6620 Computer on charge while performing any setup.*

The following is a general approach for equipment setup:

1. Connect power to the dock.
2. Install the main battery.
3. Insert the 6620 Computer into the dock.
4. As the 6620 Computer starts the boot process, you will hear a beep signal. One beep is a normal boot, two beeps indicate a CMOS error.

Do the following to correct a CMOS error:

- a. Press <**F2**> to enter the CMOS Setup window.
- b. Go to the Exit Menu.
- c. Select **Default Values**.
- d. Click the **OK** button to save changes and exit the CMOS Setup window.

If there were any other beep signals, you must return the 6620 Computer for service. See Section 8 for more information about CMOS setup options.

System Configuration

Note that the following paragraphs apply to the standard configuration for the computer; but keep in mind that it can be configured to meet your specific needs. Additional RAM can be obtained, to bring the total RAM to 48 MB.

The following constitutes the configuration items needed for a minimum development.

- PEN*KEY 6620 Computer, with a minimum of 16 MB of system RAM for Windows.
- The Windows Toolkit for the 6620 Computer.
- Main batteries: at least one.
- Single dock or wall charger.
- The parallel diskette drive to update flash software.
- The parallel floppy disk drive (dock required) or some type of PC Card storage media for transferring files.

Development Environments

Windows 95

The 6620 Computer can run any mouse-aware Windows application. Note, if the system is using a 40 MB or 80 MB ATA Card for the operating system, the Windows configuration provided by Norand Mobile Systems Division is not a full-featured Windows. You may find that files you need have not been included. Add the files if you do need them.

Borland's C compiler includes a utility called TDUMP. You can run TDUMP on an executable file to display the files or libraries called by the executable.

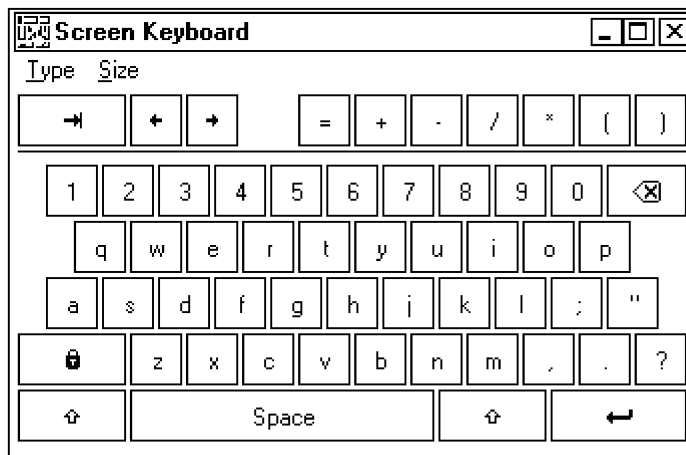
Handwriting Recognition

The handwriting recognition product, *CIC Handwriter Recognition System for Windows* from Communication Intelligence Corporation, is installed on all 6620 Systems. It is a full-featured recognizer which includes a “trainer” that trains the recognizer to better recognize the handwriting of the user. It recognizes handwriting in any text field; and recognizes standard Pen Extensions for Windows 2.0 gestures.

If signature capture (bit maps) is required, but handwriting recognition is not required, this can be done with regular Windows. Simply trap the mouse-move and mouse-pressed events and manually draw the ink. The ink then can be saved as bit maps and compressed, if necessary. Microsoft Visual Basic Professional Edition has an example of “catching ink” in this way.

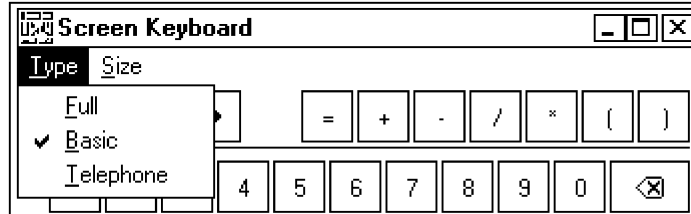
Keyboard Options

The SK.EXE screen keyboard, from *Microsoft Windows for Pen Computing*, runs on Windows 95 and can be found in the C:\Windows directory; and also on **Start** → **Programs** → **Pen Services** → **Screen Keyboard**.

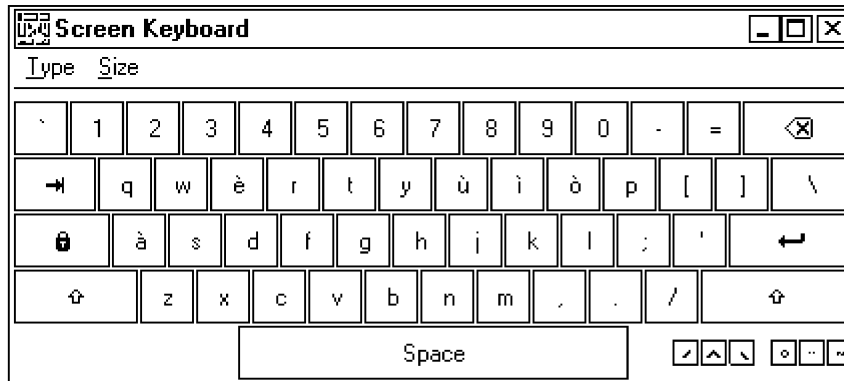


You can alter the type or size of this keyboard. Pictured above is the basic keyboard of normal size.

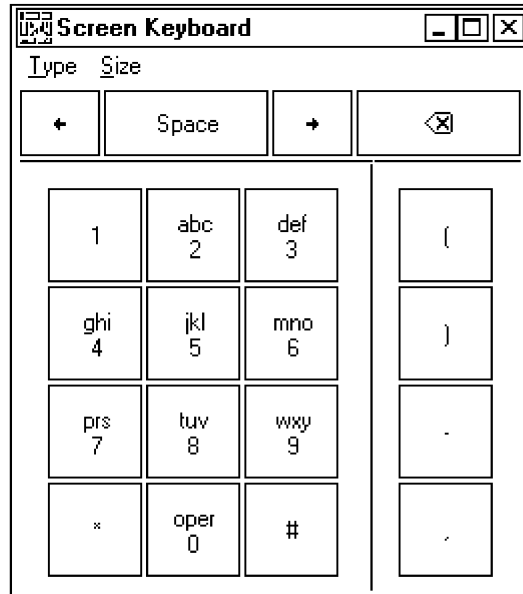
From the Screen Keyboard's menu bar, select **Type** → **Basic** to use the above keyboard:



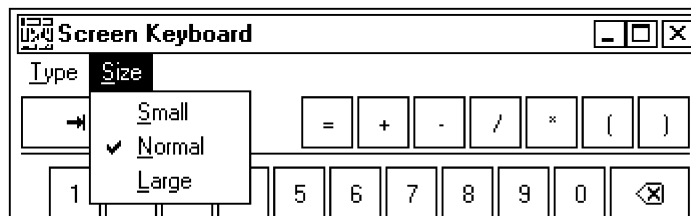
Select **Type** → **Full** for a full-sized keyboard that includes more punctuation marks and other symbols:



Select **Type** → **Telephone** for a numeric keyboard that resembles that of a digital telephone, but includes the punctuation marks where necessary for proper telephone number entries:



All three keyboards pictured previously are of normal size. You can also elect to make the keyboard large or small. Use the **Size** menu on the Screen Keyboard title bar to make the change:



Microsoft Visual Basic for Windows

Microsoft Visual Basic (VB) for Windows, is an easy-to-use tool that lends itself to quick creation of prototype screens for customer demonstrations and reviews. It includes screen drawing plus an easy method for inserting code to control the application. A few warnings, however, are in order.

If frequently used forms are not preloaded, the screen drawing may be slow. Also, the data-aware controls are very nice, but supporting a database with these controls consumes a lot of memory. VB can handle a large number of databases, including dBase, Access, Paradox, and Foxpro. It can also handle ASCII and text files.

When you encounter a Visual Basic program, you should be aware of some common requirements.

- Files with the VBX and OCX extensions are Visual Basic custom controls. These files support common features (such as command buttons, list boxes, pen edit boxes, data-aware controls, etc.) that are frequently seen in Windows applications. They are typically distributed with the application requiring them.
- Programs written in Visual Basic V4.0 can be compiled for 16-bit or 32-bit mode, depending on installation. Visual Basic 5.0 is 32-bit mode only.

Microsoft Visual C++ or Borland C++ for Windows

Microsoft Visual C++ or Borland C++ for Windows are tools for experienced C Windows programmers. The foundation class libraries or the object windows library can be used; just make sure to watch for space limitations because they are statically linked. Windows programs, in general, grow to a large size quickly and can require a lot of extra DLLs, OCXs, or VBXs.

Pen for Windows 2.0

Pen for Windows 2.0 consists of standard Windows with extra files, some changes to SYSTEM.INI, and a new file called PENWIN.INI. Pen Extensions for Windows provides character recognition and an easier interface for capturing ink. A handwriting capture engine must be purchased separately, either through Norand Mobile Systems Division or other sources.

Other Environments

Obviously, any development environment, that runs on the aforementioned operating systems, may potentially be used to develop software for the 6620 Computer. However, not all of the development environments will necessarily work as well, nor are they recommended. This is mainly, because of storage capacity and speed limitations of the 6620 Computer.

There are other usable development environments. Here are some guidelines that can help to determine whether a particular environment is viable for a 6620 application.

- **How much space is required?**
Many environments assume the target machine is a desktop or laptop with virtually unlimited hard drive space. This may not be the case if the target system is to run off an ATA card. Keep storage requirements in mind during development. For example, Power Builder is a very popular environment for development. However, just to get an application started, Power Builder uses more than 3 MB of DLLs in addition to Windows just to run the Hello World program.
- The 6620 Computer uses an AMD 5X86, 133 MHz processor. Test the performance of your application on a comparable computer.

Related Publications

- *PEN*KEY Model 6620 User's Guide*
(P/N: 961-028-101)
- *SE 1223 Scanner User's Guide*
(P/N: 961-032-042)

Customer Support

If you have any questions about application development for the 6620 Hand-Held Computer or need additional technical support, contact Customer Support at 800-755-5505 (U.S.A. or Canada) or 425-356-1799 for personal consultation.

The fax number for Customer Support is 1-319-369-6832.

You can also use the following email address to contact Customer Support with a problem or question:

`crc@norand.com`

Be sure to include your name, your company name and address, phone number and email address where you (or your customer) can be reached, Value-Add Reseller (VAR) information if equipment was purchased through a VAR, and a description of the problem (as specific as possible).

Bulletin Board

The Customer Support Bulletin Board (BBS), provided by Norand Mobile Systems Division, is also a source for additional software and documentation:

- **Phone number:** 319-369-3515 (14.4 Kbps modem)
319-369-3516 (28.8 Kbps modem)
- **Protocol:** Full duplex, ANSI or ANSI-BBS; 300 to 28,800 bps; v.32bis; 8 bits, no parity, 1 stop bit. *For high-speed modems, disable XON/XOFF and enable RTS/CTS.*

If signing on for the first time, type “new” and follow the instructions. The BBS takes you through a new user sign-up procedure.

- “ **NOTE:** *The Customer Support BBS File Libraries, including Hot Tips and Product Awareness Bulletins, are available on the Internet to authorized BBS users. Contact Customer Support for a current URL address.*

Intermec Web Site

Use the following URL to access the Intermec Technologies Corporation Web Site on the Internet:

<http://www.intermec.com>

A PDF online version of this manual will be available via the following URL:

<http://www.intermec.com/manuals/english>

Section 2

Toolkit for the 6620 Computer

This section deals with how software, drivers, and tools are created, supported, and packaged for the 6620 Computer.

The file complement in the Toolkit for the 6620 Computer differs from one release to the next. For an accurate list of Toolkit files, refer to the RELNOTES.TXT file, included in the Toolkit distribution package.

The Toolkit contains Windows resources for configuration, power management, communications, and peripherals.

Toolkits are available, as follows:

Part Number (PN)	Description
215-907-001	6620 Windows Toolkit, <i>with</i> manual*
215-903-001	6620 Windows Toolkit, <i>without</i> manual
230-055-001	6620 Windows Toolkit CD (media)**

* The “manual” refers to the *6620 Hand-Held Computer Technical Reference* P/N: 977-054-007

** The manual is provided on the CD in PDF format. There is no hardcopy manual in this kit.

The files and documentation in the Toolkit are available to purchasers of the 6620 Computer, who holds a Windows 95 license through Intermec Technologies Corporation.

The 6620 Computer, as shipped from the factory, has pre-loaded the boot media with Windows 95. In the case of a

hard drive system, this also includes all Windows 95 installation files typically shipped on a Windows 95 CD. In the case of 40 or 85 MB ATA flash drives, only a stripped down version of Windows 95 is loaded.

The Toolkit does not include application software. Obtain such software from Norand Mobile Systems Division, from third-party suppliers, or design your own.

6620 Toolkit Set Up

The Toolkit contains the following drivers and utilities that are installed on the 6620 Computer prior to shipping. Most components are optional (and marked as such) and can be installed via the toolkit utility found on the CD-ROM and are part of the default hard drive load.

- **Video Drivers**

The OPTI video drivers are installed to the C:\Windows\System directory. You must ensure that Windows is actually using these files for their current video settings.

- **Pen and Handwriting Drivers**

The PEN drivers are installed in the C:\6620Utilities directory. The “Microsoft Pen Extensions for Windows” are also installed.

- **GPS Drivers (Optional)**

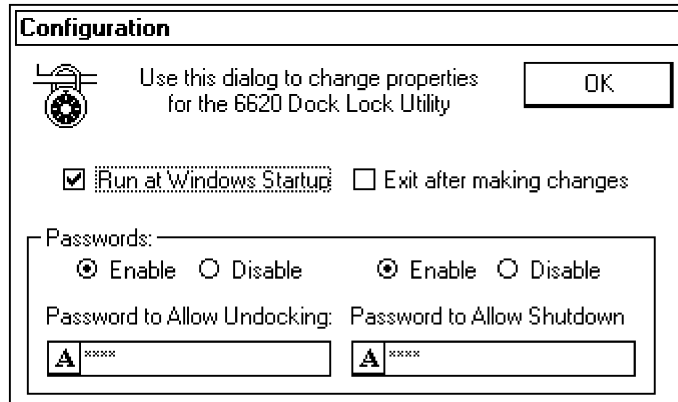
GPSHOOK.VXD is installed in the C:\Windows\System directory and hooked in the Registry.

GPSOFF.COM, GPSON.COM, and JUPITER95.EXE (and support files) are installed into the C:\6620Utilities\gps directory. Icons are made for these programs. More information in Section 4.

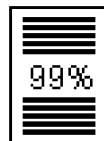
- **General Utilities (Optional)**
The “Disk Tools,” such as CMOS.EXE, FLASH.EXE, and PARTUTIL.EXE, are installed into the C:\6620Utilities\disk directory and directly added to your path.
- **PCMCIA Support**
NPCCARD.VXD is installed into the C:\Windows\System directory and hooked into the Registry.
- **Advanced Power Management**
VNPOWERD.VXD is installed into the C:\Windows\System directory and hooked into the Registry.
- **Ericsson M2100 Series Wireless PC Card (Optional)**
See Section 6 for more information.
- **Tethered Scanner Driver (Optional)**
W95TSCAN.DRV (NORAND Tethered Scanner Driver) files are installed into the C:\Windows\System directory.
- **MS Windows 95 Infrared Support 2.0 (Optional)**
The “MS Windows 95 Infrared Support 2.0” setup files are currently installed into the C:\6620Utilities\MSIr20 directory. You will be prompted to start the “Microsoft IR Hardware Wizard.” You can elect to start the Microsoft setup to install IR support, and can uninstall the setup files when they are done. Information about the IR support is found in Section 7.
- **TDK 2814C Modem Support (Optional)**
The TDK setup is factory-installed.



- **Dock Lock Utility (Optional)**
Files are installed to the C:\Windows\System directory. A **Configure Dock Lock** icon is on the Windows desktop so that you can run SYSTRAY2.EXE to access the “Configuration” window to configure password protection.



- **Battery Meter (Optional)**
Files are installed to the C:\6620Utilities directory. A **Battery Meter** icon is on the Windows desktop so you can access the following monitor that measures the total battery power available on the 6620 Computer.



- **RAM Radio Support (Optional)**
RAM.VXD is installed into the C:\Windows\System directory and hooked into the registry. This driver requires that the PC Card support already be installed.

- **CDPD Radio Support** *(Optional)*
CDPD (Cellular Digital Packet Data) Radio drivers (CDPD.VXD and NPCCARD.VXD) are installed into the C:\Windows\System directory and assists in power-managing the modem device.
- **CDPD Radio Diskettes** *(Optional)*
The contents of the CDPD Radio disks can be copied to four floppy disks (clean disks as the A:\ drive is not formatted) or to a subdirectory of your choice. These files will install the “Sierra Wireless Expert” and “Watcher” applications onto your 6620 Computer. See Section 9 for more information.
- **Internal Scanner Driver** *(Optional)*
PODSCAN.DRV (internal scanner driver) files are installed into the C:\Windows\System directory. See page 1-7 for information about initializing the internal scanner before use.

6620 Support Files

- **662NVPRM.EXE**
Serial number, Ethernet EEPROM, nonvolatile data programmer.
Usage:
662NVPRM (no parameters)
Comments:
User is prompted for necessary information.
- **ATACOPY.EXE**
ATA duplication utility.
Usage:
ATACOPY (no parameters)
Comments:
The SOURCE ATA must be booted from slot 0. The TARGET ATA must be in slot 1.

- " **CMOS.EXE**
CMOS Editor, V1.01. Displays or modifies CMOS values.
Usage:
CMOS {address[=value] | address-address}
Comments:
CMOS.EXE can read the value at an address or range of addresses. It can also write a value at a single address. The CMOS checksum is updated automatically if any values are written.
- " **CRC32.EXE**
File Integrity Verification Utility
Usage:
CRC32 [@][filename | pathname] [/s]
where:
 - " *filename* is the filename on which the CRC is calculated. One or more files or directories can be processed at one time.
 - " *pathname* is the location of the file to be processed. Wildcard processing is not allowed (in the pathname specified after the "@" symbol, nor any of the pathnames within the argument file).
 - " */s* indicates all subdirectories should be searched for matching file names.
 - " *@* is (optionally) included in front of the filename to indicate it is an argument file, which contains names of files to be checked by CRC32.EXE.**Comments:**
Refer to the Toolkit RELNOTES.TXT file for the CRC values for each module used on the 6620 Computer.

- **EEPROG.EXE**
Dock EEPROM programmer.
Usage:
EEPROG (no parameters)
Comments:
Restores the factory defaults to the dock EEPROM.
- **FLASH.EXE**
BIOS flash update program.
Usage:
FLASH {/w [/fFILENAME.EXT]}
 - /w write to flash
 - /fFILENAME.EXT File which contains the flash BIOS. If the BIOS to flash is added to FLASH.EXE, this parameter is unnecessary. If there is a BIOS added to FLASH.EXE, the file size of FLASH.EXE is greater than 300K.
- **GPSOFF.COM** and **GPSON.COM**
Control GPS power.
Usage:
GPSON, GPSOFF
Comments:
To conserve power, the GPS module has dynamic power control. This can be controlled automatically by the GPSHOOK.VXD driver, or manually through these two programs.

- **MKBUF.EXE**
Keypad test utility.
Usage:
MKBUF (no parameters)
Comments:
The screen displays an image of the keypad layout. Pressing a key results in highlighting that key on the display. As the <Susp> key is *not* attached to the keyboard controller, it cannot be tested by this program. The program exits when one of the following events occur:
 - The 60-second timer expires.
 - The user presses each keypad key five times.
 - The user presses <ESC> on the keyboard.

• **NOTE:** *The MKBUF.EXE program does not function under Windows 95, and must be run from a DOS prompt.*

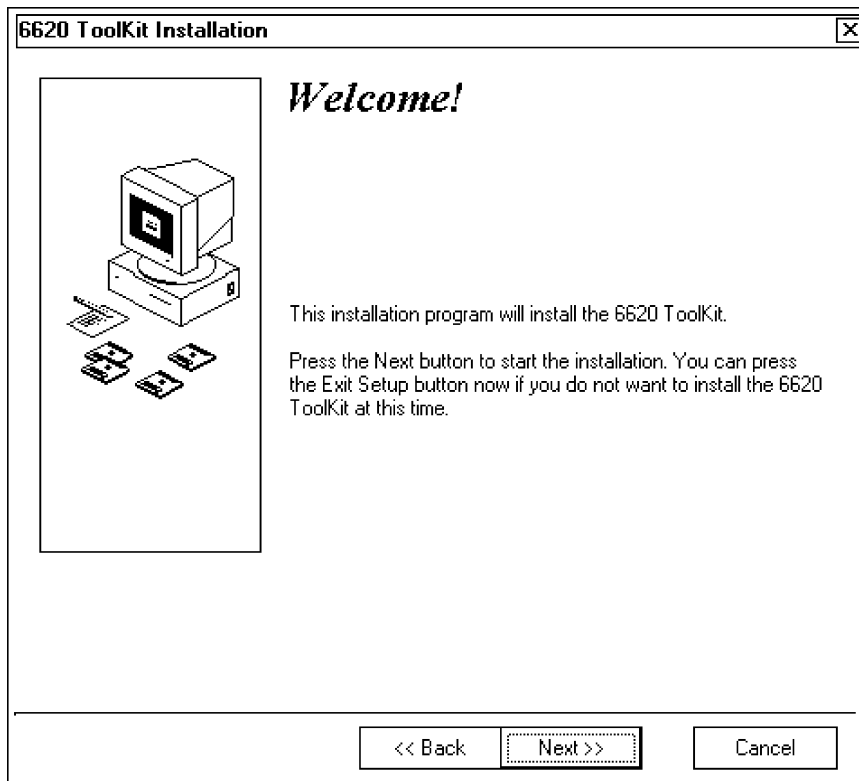
- **PARTUTIL.EXE**
HDD Partition Creation utility.
Usage:
PARTUTIL /? (lists parameters)
Comments:
Used during the recovery process. It is *not* for use by the end-user. See “Partition Utility” on page 3-27 for more details.

- **PHDISK.EXE**
Phoenix Suspend-to-Disk Partition Utility.
Usage:
PHDISK
{/CREATE [size] | /REFORMAT | /DELETE | /INFO}
 - */CREATE [size]* Create a partition on the disk starting from the end of the disk. If size parameter is omitted, PHDISK creates a partition with a size based on the currently available memory.
 - */REFORMAT* Reformat an existing partition.
 - */DELETE* Delete an existing partition.
 - */INFO* Display information on the partition.**Comments:**
Used during the recovery process. It is **not** for use by the end-user.
- **READIMG.EXE and WRITEIMG.EXE**
Disk volume imaging tools.
Usage:
READIMG drive filename.ext
WRITEIMG filename.ext drive
 - *drive* Drive to read or write
 - *filename.ext* Name of image file
- **SWAPMON.EXE**
Monitors usage inside the Windows 95 swap file to optimize swap file usage on minimum card loads.
Usage:
SWAPMON
- **WIPECMOS.COM**
CMOS maintenance utility.
Usage:
WIPECMOS (no parameters)
Comments:
This program clears the CMOS and erases the CMOS backup stored in the FLASH parameter storage area.

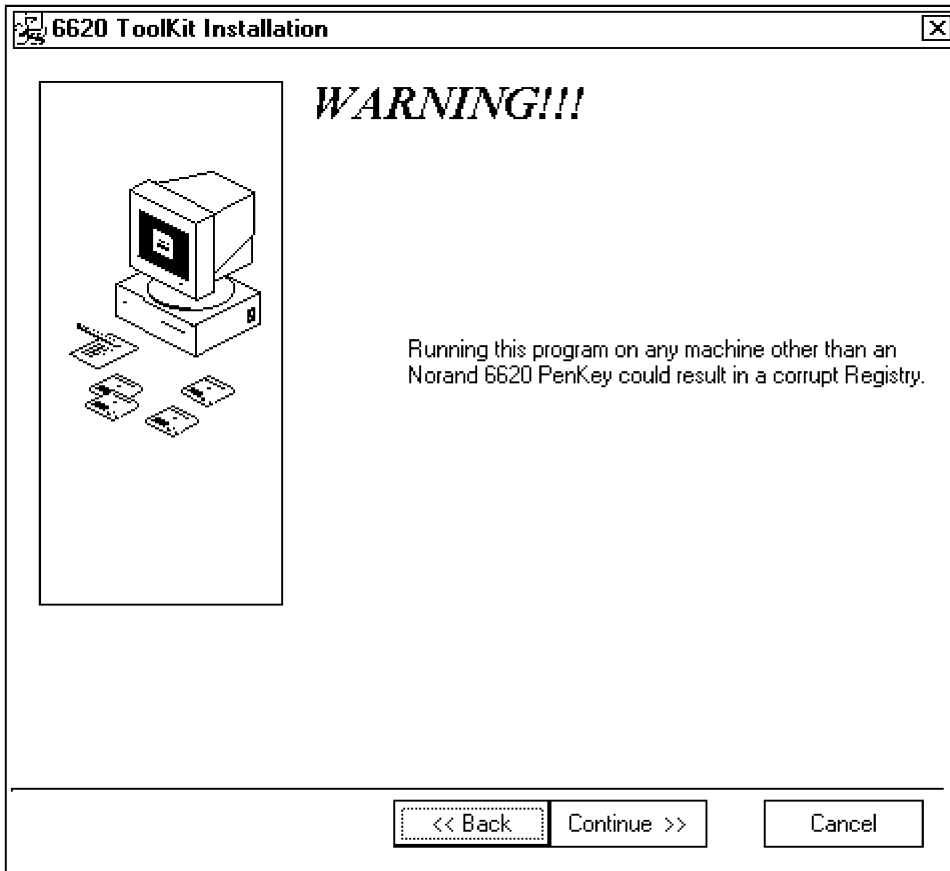
Installing Toolkit Components

The 6620 Toolkit is on the CD-ROM. You can elect to do a full or partial load from the CD-ROM via the “Wize Installation Wizard” application. Do the following to load the 6620 Toolkit onto your 6620 Computer:

1. Double-click the **My Computer** icon to access the source directory.
2. Double-click the source directory, such as the C: drive.
3. Double-click the **Drvsetup** folder.
4. Double-click the **Drvsetup** icon (shown left) to access the “6620 ToolKit Installation” window.

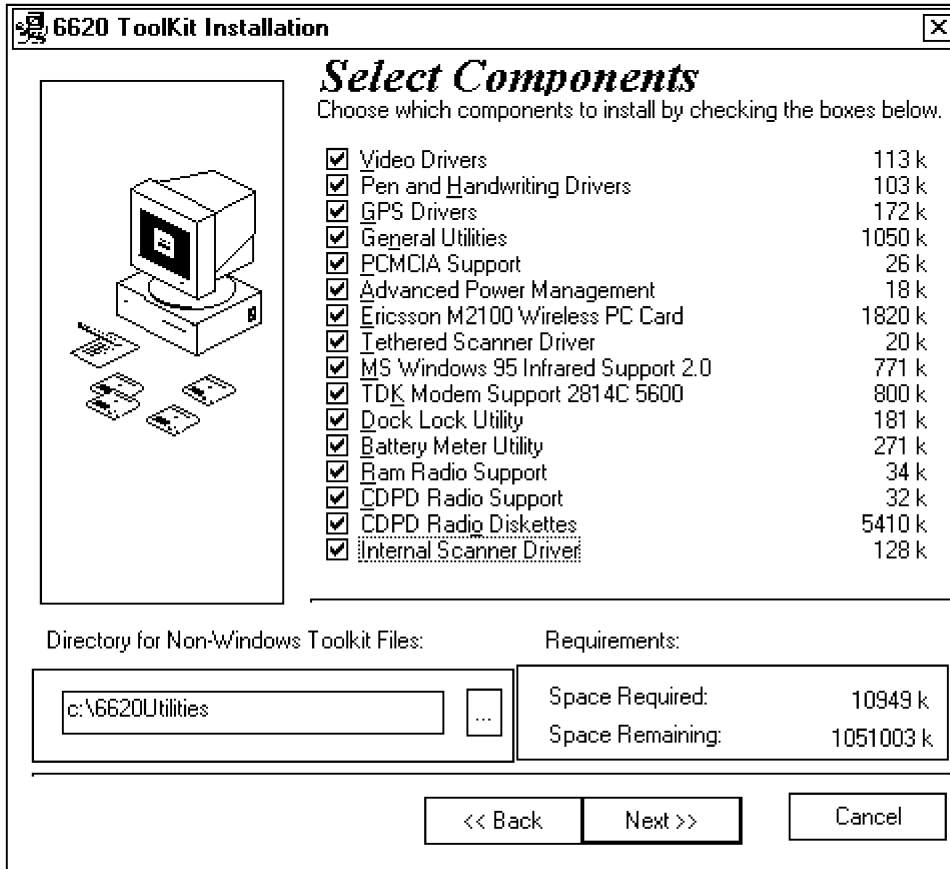


5. A warning screen appears, click the **Continue** button to move to the components page.



Loading the Components

1. Use the “Select Components” window to select which components are to load onto your 6620 Computer, then click the **Next** button to continue. See next page for executables and pages with additional information about these components.

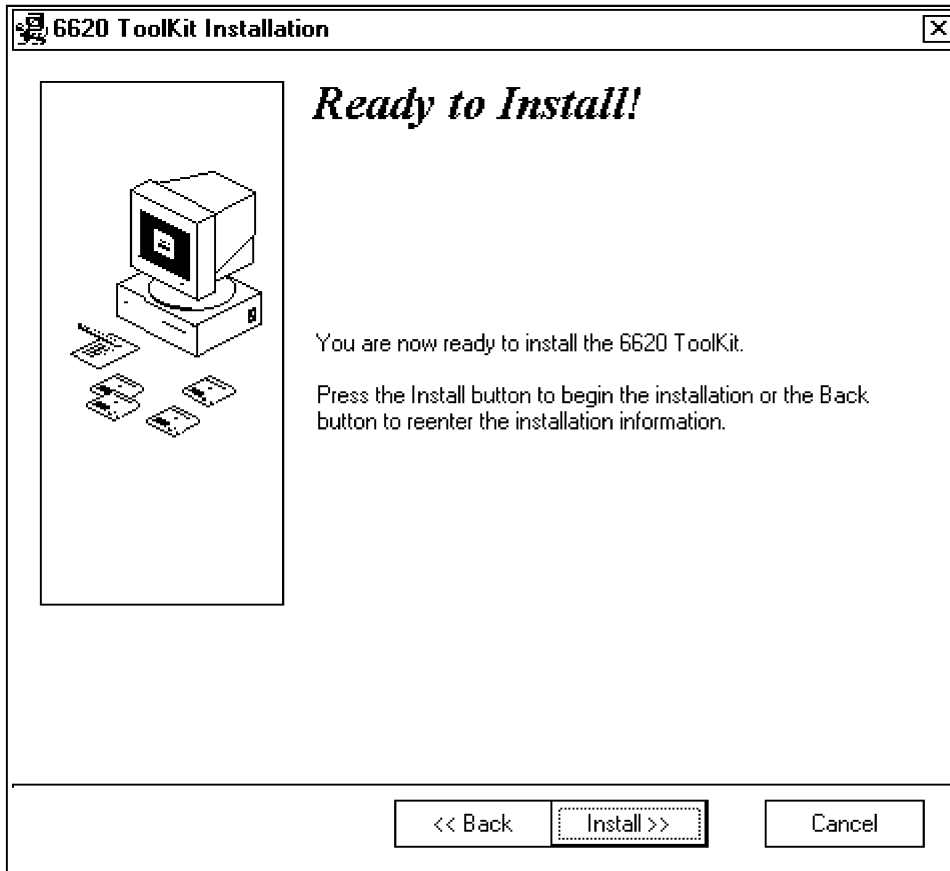


Below is a list of executables that go with each of the components listed in the “Select Components” window. Brief information about these components start on the pages given in the “On Page” column.

*Table 2-1
Component Executables*

Component	Executable	On Page
Video Drivers	VIDEO.EXE	2-2
Pen and Handwriting Drivers	PEN.EXE	2-2
GPS Drivers	GPS.EXE	2-2
General Utilities	GENUTILS.EXE	2-3
PCMCIA Support	PCMCIA.EXE	2-3
Advanced Power Management	APM.EXE	2-3
Ericsson M2100 Wireless PC Card	ERICMWPC.EXE	2-3
Tethered Scanner Driver	TSCAN.EXE	2-3
MS Windows 95 Infrared Support 2.0	MSIRDA.EXE	2-3
TDK Modem Support 281 4C 5600	TDKMSUPP.EXE	2-3
Dock Lock Utility	DOCKLOCK.EXE	2-4
Battery Meter Utility	BATTMTR.EXE	2-4
Ram Radio Support	RAMSUPP.EXE	2-4
CDPD Radio Support	CDPDSUPP.EXE	2-5
CDPD Radio Diskettes	CDPDDISK.EXE	2-5
Internal Scanner Driver	ISCAN.EXE	2-5

2. Click the **Install** button in the “Ready to Install!” window to begin the installations.



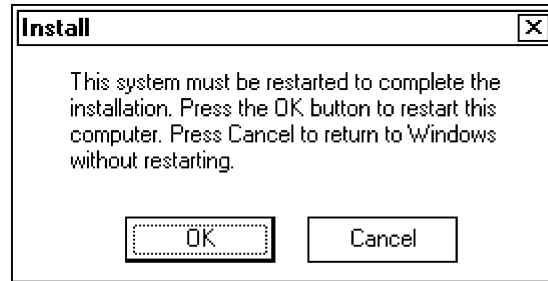
Each of the components selected from the “Select Components” screen (page 2-12) is loaded separately. Before each component is loaded, a confirmation window appears to ensure that you do want that component installed. Below is a sample confirmation window with the component being loaded listed in the center:



Click the **Continue Installation** button to continue loading that component onto the 6620 Computer. If you decide not to load a component, click the **Abort Installation** button to move to the next component or to the end of the installation.

If you click the **Continue Installation** button, an “Installing” window appears with two status bars, one for the current file and one for all files related to the component being loaded.

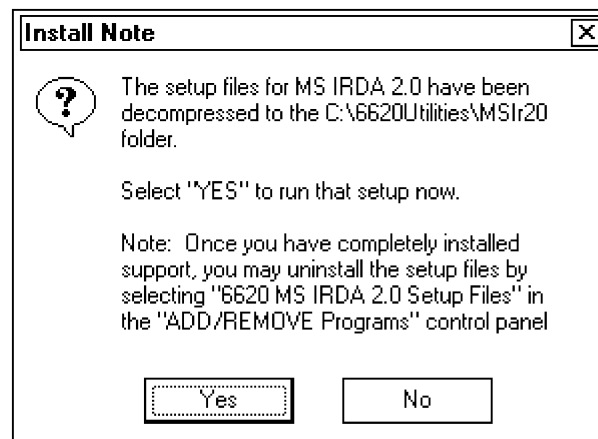
When the component is finished loading onto the 6620 Computer, an “Install” window appears (next page) to give you the option to either reboot the computer to update its system or continue to load the next component or to finish the installation.



Click the **OK** to reboot the system or click the **Cancel** to load the next component.

Loading Infrared Support

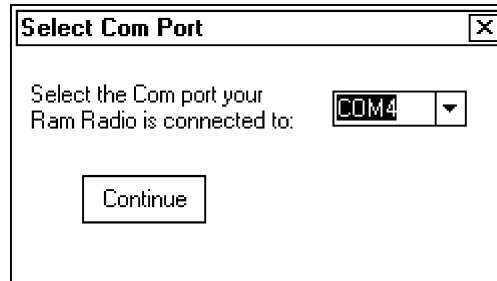
If you had selected the “MS Windows 95 Infrared Support 2.0” component to be loaded, an “Install Note” window appears after the confirmation window for the “Infrared Support” component:



Click the **Yes** button to activate the “Add Infrared Device Wizard” but wait for the other components to load and for the installation to finish. The rest of the infrared device installation can be done when you return to the desktop. Steps are detailed starting on page 2-21.

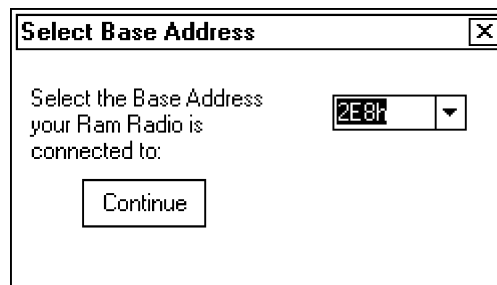
Loading Ram Radio Support

If you select to load the “Ram Radio Support” component, you will be able to set up the COM port and the base address. The “Select Com Port” window appears after several files are copied into the 6620 Computer.



Click the scroll-down button to select from COM3, COM4 (*default*), COM5, or COM6, to which port the Ram Radio is to connect, then click the **Continue** button.

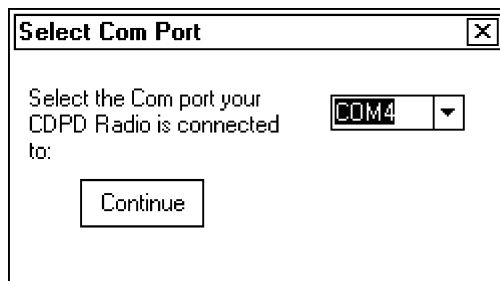
Several more files are installed before the “Select Base Address” window appears:



Click the scroll-down button to select from 3E8h, 2E8h (*default*), 308h, or Other, to which base address the Ram Radio is to connect, then click the **Continue** button to load the next component or to finish the installation.

Loading CDPD Radio Support

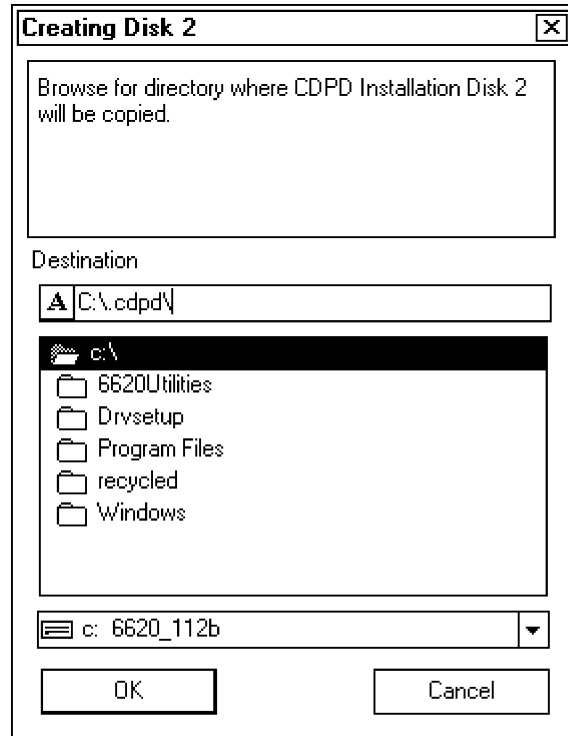
If you select to load the “CDPD Radio Support” component, you will be able to set up the COM port. The “Select Com Port” window appears after several files are copied into the 6620 Computer.



Click the scroll-down button to select from COM3, COM4 (*default*), COM5, or COM6, to which port the CDPD Radio is to connect, then click the **Continue** button to load the next component or to finish the installation.

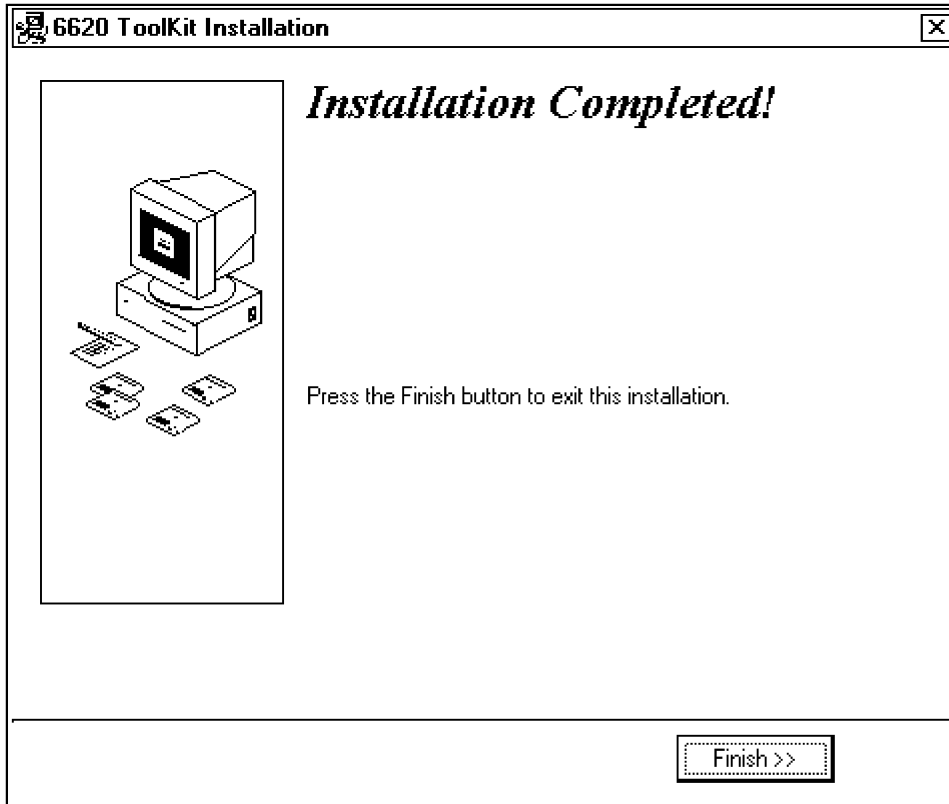
Loading CDPD Radio Diskettes

The “CDPD Radio Diskettes” component consists of installation and executable files for the CDPD radio. If you select to load this component, you will be able to dictate to where the CDPD files are to be copied, such as a subdirectory or to four floppy disks. Note, no formatting is done on the A:\drive, thus use empty disks for saving the CDPD files. Information about installing and setting up the CDPD files start on page 2-26.



Finishing the Toolkit Installation

When all of the selected components have been loaded onto the 6620 Computer, the final installation screen appears. Click the **Finish** button to return to the desktop.

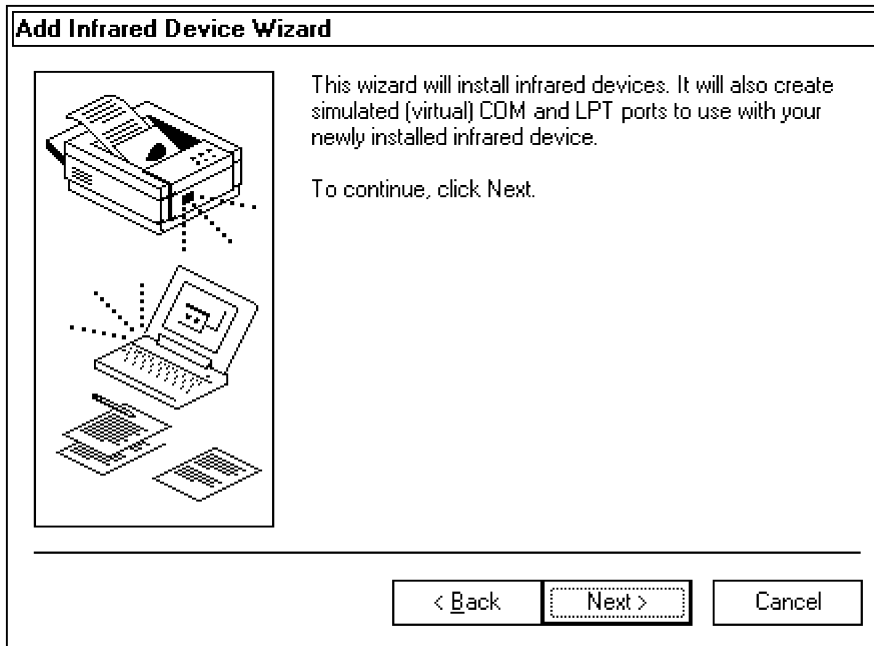


NOTE: *If you do not have any additional component configuration screens on the desktop, we recommend that you reboot the 6620 Computer for the new components to reset the computer system. If you do have additional component configurations (such as the MS Infrared Support component), complete those configurations, then reboot the 6620 Computer.*

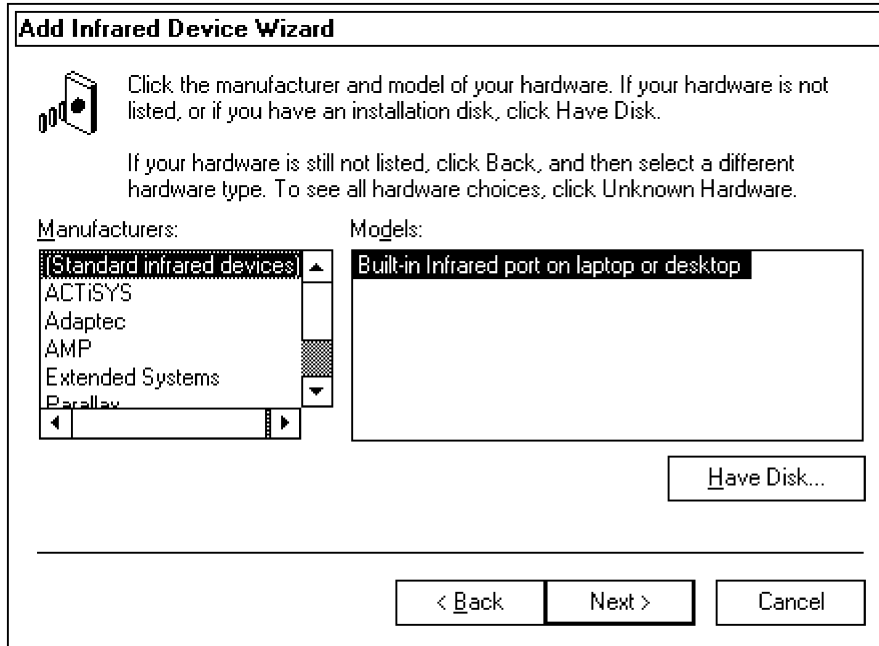
Installing MS Infrared Support

If you had clicked the **Yes** button from the “Install Note” window (page 2-16) for the MS Windows 95 Infrared Support 2.0 component, continue the infrared support installation with the following steps:

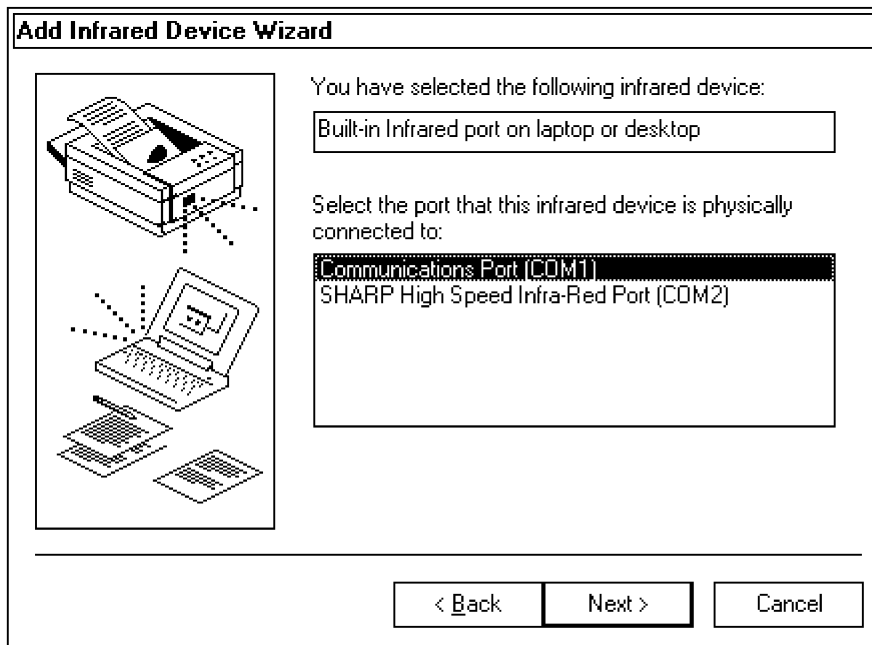
1. When you return to the desktop after clicking the **Finish** button on the last toolkit installation page (previous page), you will see this wizard on the desktop. Click the **Next** button to continue installing the infrared support:



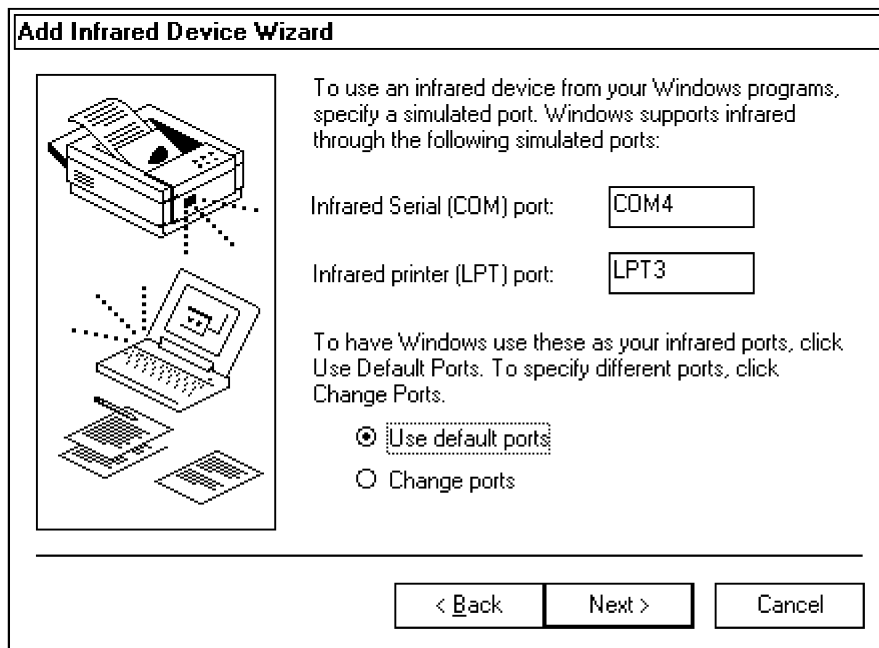
2. The manufacturer and model window appears with the default manufacturer and related model highlighted. Click the **Next** button to accept the highlighted items and continue.



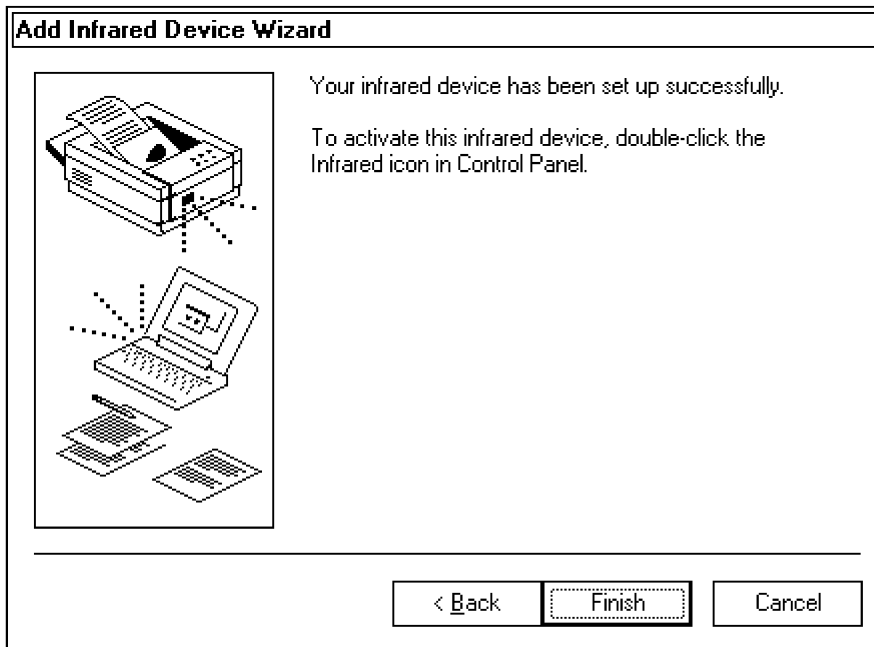
- The next window responds with acknowledging the chosen infrared device and prompts for the port to which the infrared device is physically connected. The default port is highlighted, thus click the **Next** button to continue.



4. This window appears with the default simulated ports. Click the **Next** button to have Windows accept the default ports given and continue. The system provides messages as it installed the infrared device.



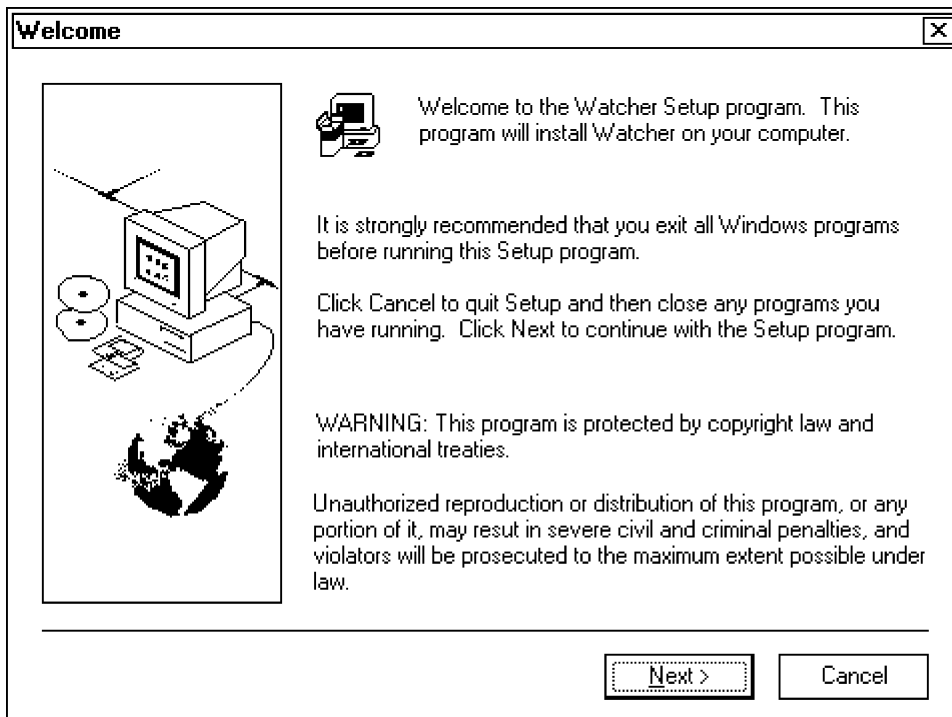
5. When done, the final installation window appears. Click the **Finish** button to activate the infrared device and return to the desktop.



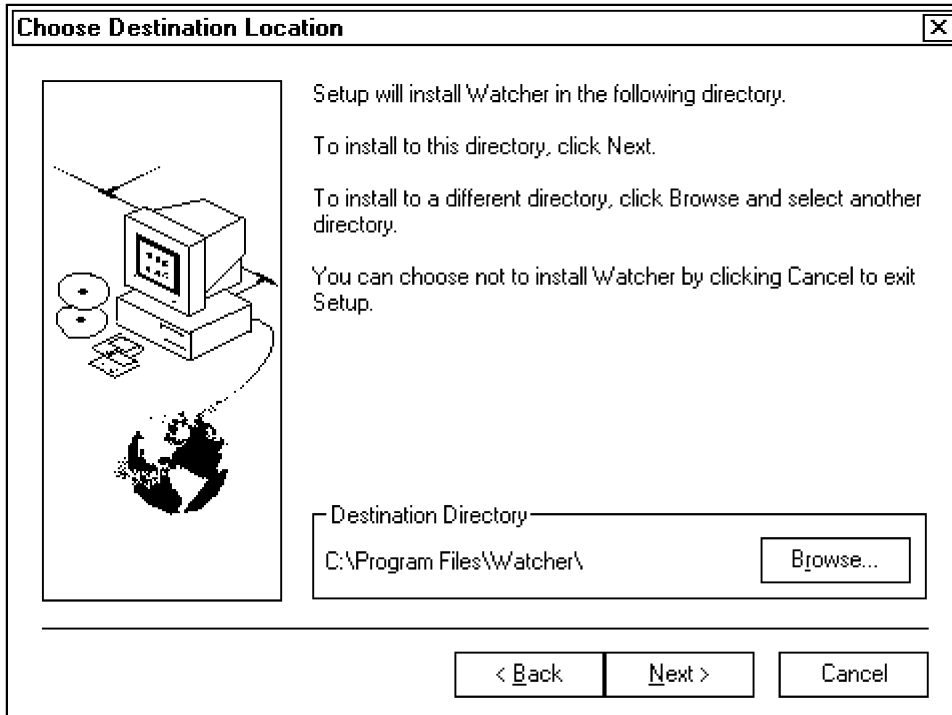
Installing CDPD Radio

If you had selected the “CDPD Radio Diskettes” component to load installation and executable files onto the 6620 Computer, you can do the following to install the “Watcher” application from Sierra Wireless, Inc.

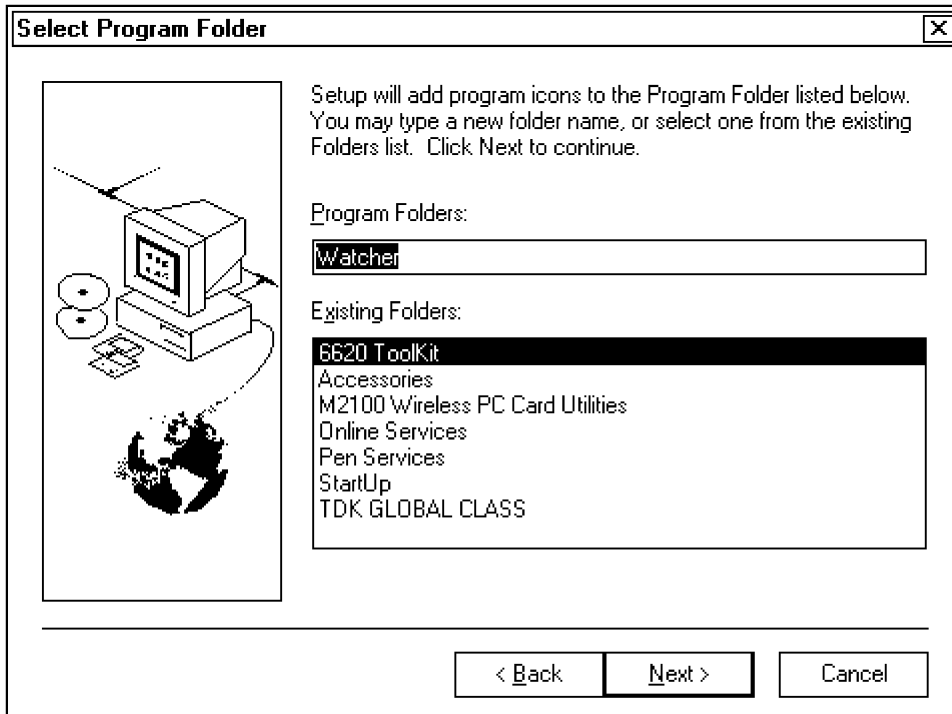
1. If you had the CDPD files copied onto four disks, insert the first disk in the floppy drive.
2. From the Windows desktop, double-click the **My Computer** icon and either go to the floppy drive or to the subdirectory where you had the CDPD files copied.
3. Double-click the **setup** icon to install the “Watcher Setup” application from Sierra Wireless, Inc. Click the **Next** button to continue.



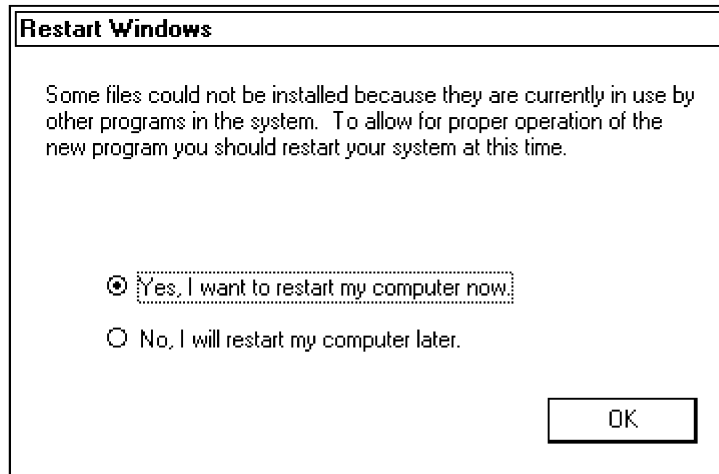
- The standard location to store the “Watcher” application files is a “Watchers” folder within the C:\Program Files directory. You can change the directory path by clicking the **Browse** button for a “Browse” window. Click the **Next** button to accept the directory path and continue.



5. Use this page to customize the folder name that will contain the “Watcher” application program icons. You can change the folder name via the **Program Folder(s)** field. Click the **Next** button to accept the folder name and continue.



6. After all of the “Watcher” application files and program icons are installed, you have the option to restart the 6620 Computer to update the system properties. If you elect to restart the computer, select **Yes**, then click the **OK** button to restart the computer. If you want to restart the computer at another time, select **No**, then click the **OK** button to return to the desktop.



If you want shortcut icons on the Windows desktop for the “Watcher” and “Sierra Wireless Expert” applications, do the following:

1. Go to the Windows desktop, then right-click your mouse button for a pop-up menu.
2. Select **New Shortcut** from the pop-up menu to open the “Create Shortcut” window.
3. Enter the following path in the **Command line** field for the applicable icon:
 - “ For the “Watcher” application:
C: \Program Files\Watcher\watcher.exe
 - “ For the “Sierra Wireless Expert” application:
C: \Program Files\Watcher\Swi Expert.exethen click the **Next** button for the “Select a Title for the Program” page.
4. Either rename the icon from the executable filename in the **Select a name for the shortcut** field, or click the **Finish** button to create the shortcut.

Go to Section 9 for information about the contents of the CDPD Radio applications.

Section 3

6620 Recovery Procedures

Successful 6620 System Recovery can be achieved by following the exact procedures described here based on the type of recovery you are attempting. Normal "Main Data" partition recovery and comprehensive "Complete System" recovery are available. The components required for disk floppy and Netcard recovery are:

- A 6620 Toolkit CD-ROM
- A 6620 Docking Station
- An industry standard PS/2-style keyboard
- Certificate of Authenticity from Microsoft for the 6620 Computer to be recovered

and these two for floppy disk recovery:

- A 6620 Parallel Floppy Drive unit, or
- Recovery disk (which can be made on any industry Desktop PC containing a CD-ROM drive or a network drive and a 3.5" disk drive)

or these two for Netcard recovery:

- A 40 MB or greater ATA Card
- An empty PC Card slot

Many of the procedures documented in this manual require the use of floppy disks to properly set up a 6620 Computer for various tasks. Newer versions of "Recovery Windows" include this functionality on the hard drive.

This can be accessed by booting directly to the recovery partition, and using the menu to choose to:

- Image the “Main Data Partition”
- Set up a MASTER mode system (system duplication)
- Set up a SLAVE mode system (system duplication)

Booting to the recovery partition can be done by using the PARTUTIL.EXE executable with the /S parameter (see page 3-27 for Partition Utility information).

Because of this new functionality, use of the floppy disks to perform system imaging is interrupted by a menu during the boot of the recovery partition. Choose option 5 (exit) and follow the instructions for the appropriate section.

Complete System Recovery

The first step involves partitioning, formatting (thus erasing all data on the hard drive), imaging, and activating “Recovery Windows.” The second step, in “Recovery Windows,” recovers the “Main Data” partition (or complete system).

Restoring Recovery Windows

This process restores “Recovery Windows” from an image stored on the 6620 Recovery CD-ROM.

Using Another PC

This process restores from the CD-ROM shared with another PC on the network:

On the Remote Machine

1. Insert the 6620 Toolkit CD into the drive. If the “6620 Recovery Utility” is launched, close the utility.
2. Ensure the CD-ROM drive is shared and note its Share name.

" **NOTE:** *To successfully share the CD-ROM drive, you must have the following network components installed:*

- " *Client for Microsoft Networks*
- " *IPX/SPX compatible protocol*
- " *File and printer sharing for Microsoft Networks*

Also, the IPX Frame Type must be set to "Ethernet II".

" **NOTE:** *Apply Novell patch #TID 2939192 if Client 32 Version 2.50 is installed on your client. For information on this patch, either contact Customer Server at 800-755-5505 (U.S.A. or Canada) or 425-356-1799 or visit the Novell web site at:
www.support.novell.com*

On the 6620 Computer to be Recovered

1. Boot with the Network Emergency Recovery Floppy.
2. Select option 1 "Re-image the Recovery Partition" from the prompt list. The partitions are formatted and files necessary for network support are copied onto the main partition. Eventually, you will be prompted to disconnect the floppy drive or eject the floppy disk.
3. Either disconnect the floppy drive or eject the floppy disk. A prompt appears to reboot the computer.
4. Press **<Enter>** to reboot the computer. The C:\ prompt returns with a request for your user name and password.
5. Enter the user name and the password.
6. Press "N" to skip creating a password-list file. Multiple passwords increase the chance of unauthorized access.

Once the imaging process is finished, the system reboots into the "Recovery Windows" window. After entering your name (and optionally, your company name), and accepting the license agreement, Windows prompts you for your Certificate of Authenticity from Microsoft as it starts. You need this information to continue the recovery.

Using a Parallel CD-ROM Drive

It is possible to use a parallel CD-ROM to restore Recovery Windows as long as you have real mode (DOS) support drivers as well as 32-bit (Windows) drivers that support long filenames.

Create a CD-ROM Emergency Recovery Floppy using the procedure described on page 3-11. Modify the CDSUPP.BAT and CDCONF.SYS files on the floppy; these become AUTOEXEC.BAT and CONFIG.SYS respectively during the recovery process to support your specific CD-ROM drive. You also must modify CDSUPP.BAT to copy your own driver files to the hard disk.

Recovering "Main Data" Partition

See the following "Main Data Recovery" section for detailed instructions on this procedure.

Main Data Recovery

These methods recover the "Main Data" partition:

- Recovering from Network Drive (if network available)
- Recovering from parallel CD-ROM
- Recovering from PC Card (if a slot is available in the 6620 to be recovered)

" NOTE:

It is possible to network two different 6620 Computers in docks with a network hub to allow for rapid reimaging or image-to-image copying. For more information on "Image-to-Image" copying, see page 3-20.

Activating the Recovery Windows Partition

NOTE:

*Steps 1–3 are **not** needed if you are in the middle of a Complete System Recovery with "Recovery Windows" already activated.*

1. Boot the 6620 Computer with the 6620 Emergency Recovery Disk. The computer should be docked with the parallel disk drive connected. Let the "Automation Utility" start.
2. Press "2" to activate "Recovery Windows."
3. When prompted, eject the disk to boot to the recovery partition. The computer boots from the hard drive.

Actual Recovery of the Main Data Partition

Recovering from Network Drive

NOTE:

Preparing a network share and ensuring the network transports and drivers are installed properly on the remote system is beyond the scope of this document.

On the Remote Machine

Insert the 6620 Toolkit CD. Ensure that the CD drive is shared and note the Share name.

On the 6620 Computer to be Recovered

Ensure that the Ethernet card is enabled in the BIOS Set-up, advanced options, integrated peripherals.

1. Restart "Recovery Windows" and log in.
2. On newer systems, double-click a "Recover" icon (shown left) from the Windows desktop. If there is a prompt mentioning an existing drive, press "Y" for yes, then press **[Enter]**.

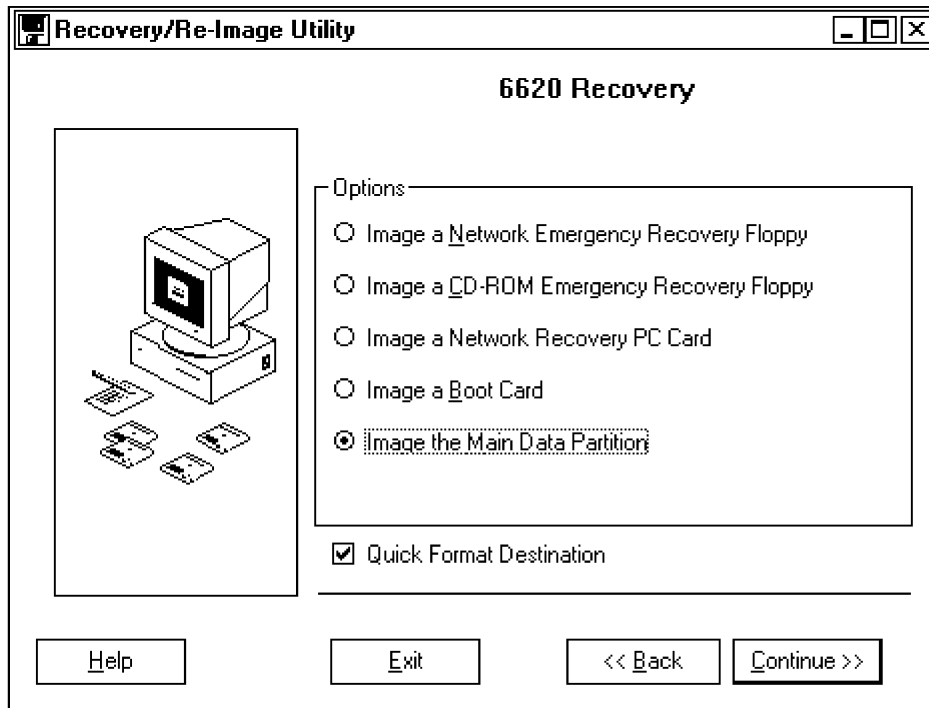


Recover

If your system does not have this icon, find the remote share and mount it as drive Z.

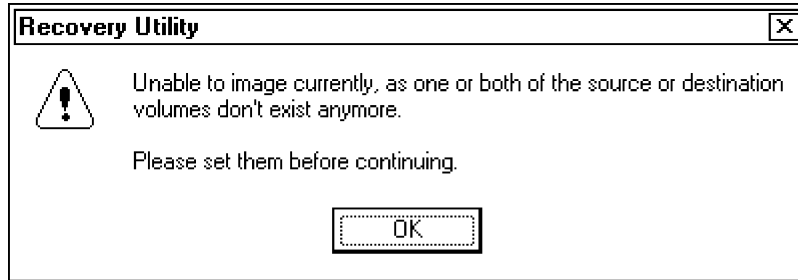
When the network drive is mapped, the “6620 Recovery Utilities” may AutoPlay. If AutoPlay fails, do the following to manually start the recovery procedures:

- a. Use “Windows Explorer” to find the CD.
- b. Double-click the RUNME.BAT file to access the “Recovery/Re-Image Utility” window:



3. Select **Image the Main Data Partition**, then click the **Continue** button to image the main load.

- " **NOTE:** *The following warning may appear if either the **Source** drive or the **Destination** drive could not be located.*

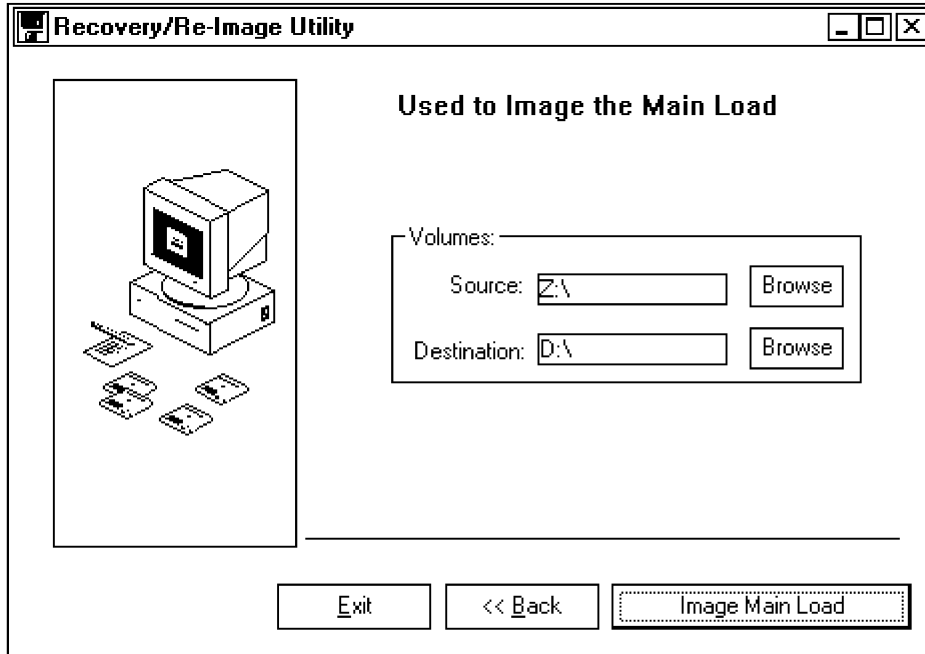


*Click the **OK** button to continue to the "Image" page. If either the **Source** or the **Destination** fields are blank or contain the "Set Me" text, like the following sample, click the applicable **Browse** button to assign the correct drive.*

Volumes:

Source:	<input type="text" value="SetMe"/>	<input type="button" value="Browse"/>
Destination:	<input type="text" value="SetMe"/>	<input type="button" value="Browse"/>

4. Use the applicable **Browse** buttons to ensure that the network drive for the shared device (**Source** volume) is selected, and that the **Destination** volume is the drive assigned to the “Main Data” partition via the “Image the Main Load” page:



5. Click the **Image Main Load** button. The drive is formatted and the Full Windows 95 Load is loaded.
6. When done, select the **Finish** button to exit the “Recovery Utility” and exit Windows. The “Main Data” partition restores the 6620 Computer to normal.

After entering your name (and optionally, your company name), and accepting the license agreement, Windows prompts you for your Certificate of Authenticity from Microsoft as it starts. This is necessary to continue the recovery.

Recovering from Parallel CD-ROM

Load “Recovery Windows,” then eject and reinsert the 6620 Recovery CD-ROM. If the CD-ROM fails to AutoPlay, do the following to manually start the recovery procedures:

- a. Use “Windows Explorer” to find the CD.
 - b. Click the right mouse button on the CD and click the **AutoPlay** button. The “Recovery/Re-Image Utility” window appears (page 3-6).
1. Select **Image the Main Data Partition**, then click the **Continue** button to continue.
 2. Click the **OK** button on the “Recovery Utility” warning, if it is displayed (page 3-7), to continue. Use the applicable **Browse** buttons to ensure the correct CD-ROM drive (**Source** volume) is selected, and the **Destination** volume is the drive assigned to the “Main Data” partition via the “Image the Main Load” page (page 3-8).
 3. Click the **Image Main Load** button to continue. The drive will be formatted and loaded with a “Full Load” of Windows 95.
 4. When done, click the **Finish** button to exit the “Recovery Utility” window, then exit Windows. The “Main Data” partition restores the 6620 Computer to normal.

After entering your name (and optionally, your company name), and accepting the license agreement, Windows prompts you for your Certificate of Authenticity from Microsoft as it starts. This is necessary to continue the recovery.

Recovering from PC Card – Method 1

See “Preparing a 6620 Boot Card (Network Recovery)” on page 3-18 for creating the Network Recovery PC Card.

1. Set the Boot Device of the 6620 Computer to scan PCMCIA slots (see Section 8 for CMOS Setup).
2. Insert the Emergency Recovery PC Card into a PC Card slot. If there are other bootable PC Cards (such as hard drives) in the system, remove them.
3. Boot the 6620 Computer. Select option 2: “Recovery Mode” from the two menu options.
4. Another menu appears with three options. Select option 1: “Re-image the main partition.”
5. On newer systems, double-click a “Recover” icon on the desktop and go to step 7.



If your system does not have this icon, find the remote share and mount it as drive Z.

6. If there is a prompt mentioning an existing drive, press “Y” for yes, then press **[Enter]**. Proceed to step 4 on page 3-6 under the *Actual Recovery of the Main Data Partition* section.

Once the system is finished and reboots, you can remove the PC Card and boot off the newly imaged hard drive.

Recovering from PC Card – Method 2

To prepare this recovery PC Card, you need a working system with CD support as well as support for PC Cards.

1. Copy the files in the 6620 Recovery CD root directory and the “Image” and “Util” directories (and subdirectories) onto the root directory of the card. Ensure there is approximately 200 MB on the card for these files.

NOTE:

A “6620 Boot Card” contains just the Minimal Load of Windows 95 designed for systems without spinning media. This type of card contains no recovery utilities. It is **not** possible to use a “6620 Boot Card” in place of the above step.

2. Insert the card containing all the files from the CD-ROM into the 6620 Computer to be recovered. The card should AutoPlay. If AutoPlay fails to run, do the following to manually start the recovery procedures:
 - a. Use Windows Explorer to find the card.
 - b. Double-click on the RUNME.BAT file. The “Recovery/Re-Image Utility” window appears (page 3-6).
3. Select **Image the Main Data Partition**, then click the **Continue** button to image the main partition.
4. Click the **OK** button on the “Recovery Utility” warning, if it is displayed (page 3-7), to continue. Use the applicable **Browse** buttons to ensure the correct card with all the CD-ROM files is selected for the **Source** volume, and that the **Destination** volume is the drive assigned to the “Main Data” partition via the “Image the Main Load” page (page 3-8).
5. Click the **Image Main Load** button to continue. The drive will be formatted and loaded with a Full Load.
6. When done, eject the card, click the **Finish** button to exit the “Recovery Utility” window and exit Windows.

After entering your name (and optionally, your company name), and accepting the license agreement, Windows prompts you for your Certificate of Authenticity from Microsoft as it starts. This is necessary to continue the recovery.

Preparing the Recovery Floppy Disk

To prepare the recovery floppy disk for either the network (page 3-12) or CD-ROM (page 3-14) recovery methods, insert the 6620 Recovery CD-ROM into any desktop PC with CD-ROM support running any version of Windows 95.

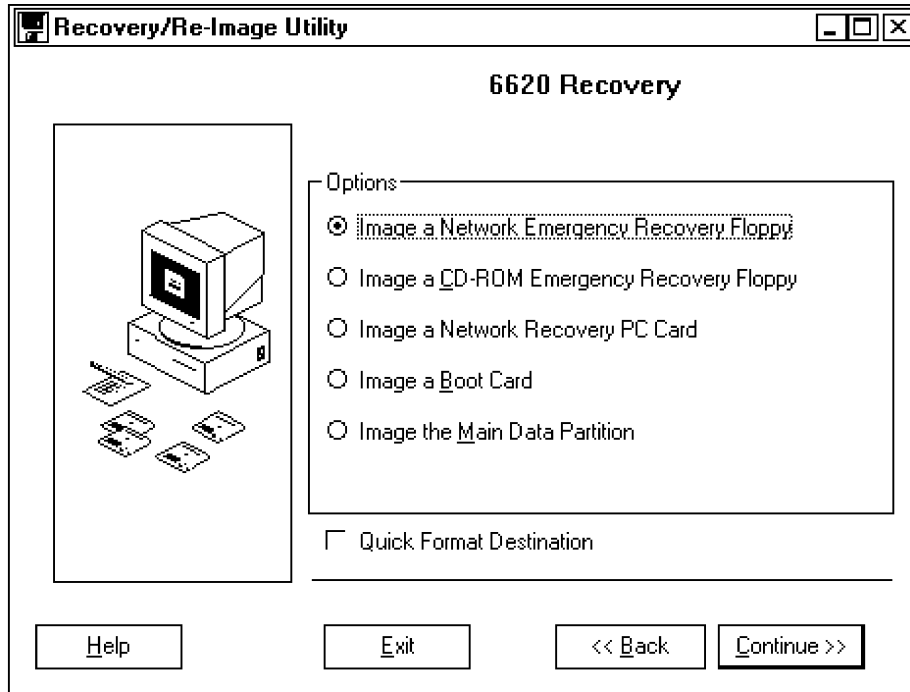
The “Recovery Utility” should AutoPlay. If not, do the following to manually start the recovery procedures:

1. Use “Windows Explorer” to find the CD.

2. Click the right mouse button on the CD and click the **AutoPlay** button.

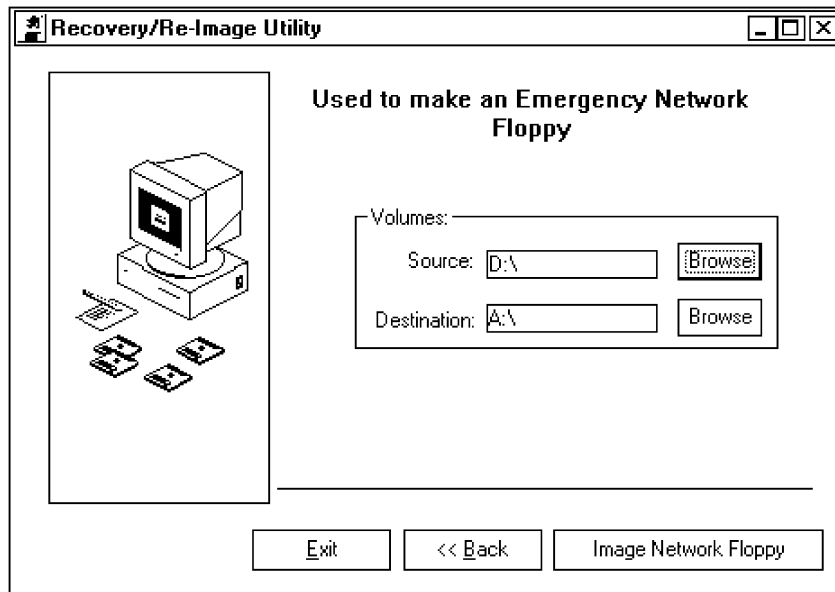
Network Emergency Recovery Floppy

The “Recovery/Re-Image Utility” window appears for the network emergency recovery floppy method:



1. Select **Image a Network Emergency Recovery Floppy** radio button, then click the **Continue** button
2. Click the **OK** button on the “Recovery Utility” warning, if it is displayed (page 3-7), to continue.

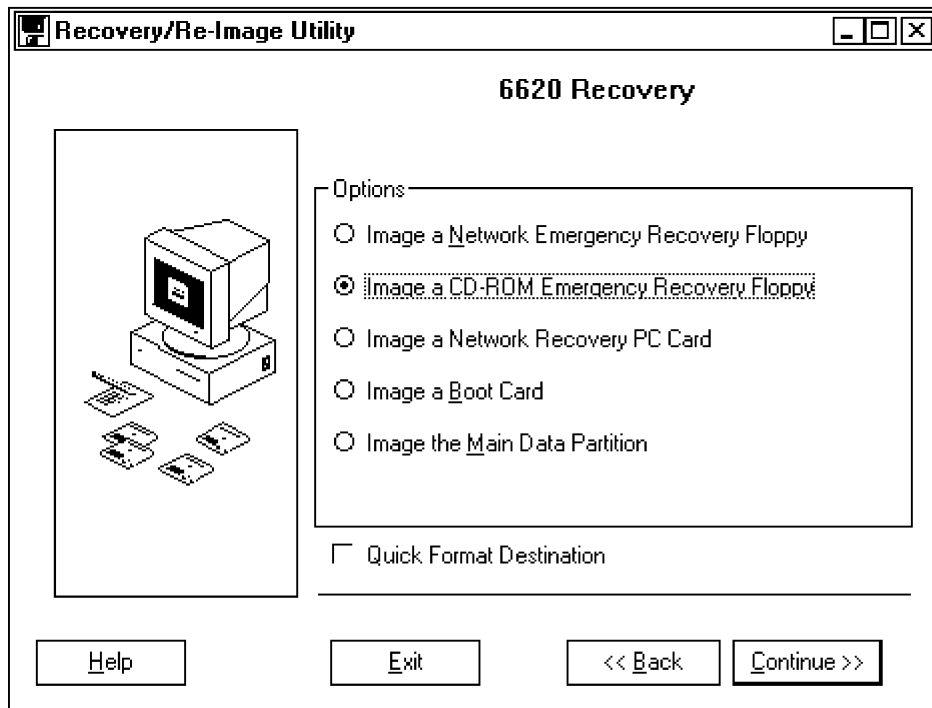
- Use the applicable **Browse** buttons to ensure that the source volume is correct and that the destination is the disk drive via the “Emergency Network Floppy” window. Click the **Image Network Floppy** button to continue. The disk will be formatted.



NOTE: *The version of Windows running on the desktop PC used to prepare the disk is unimportant as all files necessary to make a bootable system on the disk are maintained on the Recovery CD-ROM.*

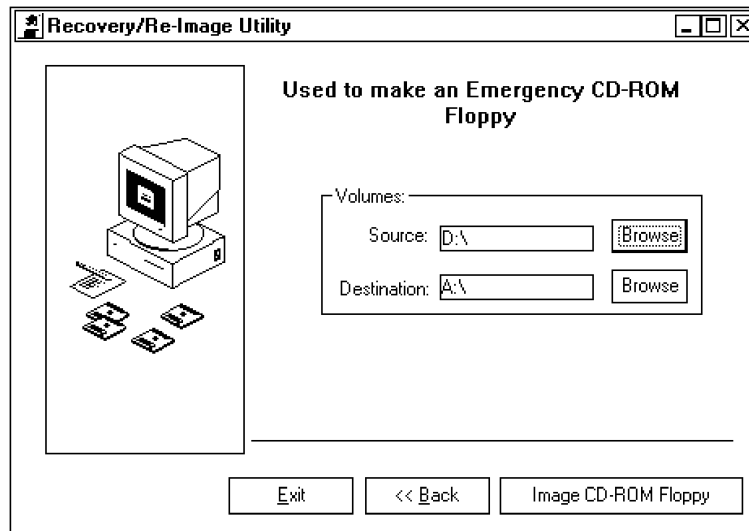
CD-ROM Emergency Recovery Floppy

The “Recovery/Re-Image Utility” window appears for the CD-ROM emergency recovery floppy method:



1. Select **Image a CD-ROM Emergency Recovery Floppy**, then click the **Continue** button
2. Click the **OK** button on the “Recovery Utility” warning, if it is displayed (page 3-7), to continue.

3. Use the applicable **Browse** buttons to ensure the source volume is correct and the destination is the disk drive via the “Emergency CD-ROM Floppy” window. Click the **Image CD-ROM Floppy** button to continue. The disk will be formatted.



NOTE:

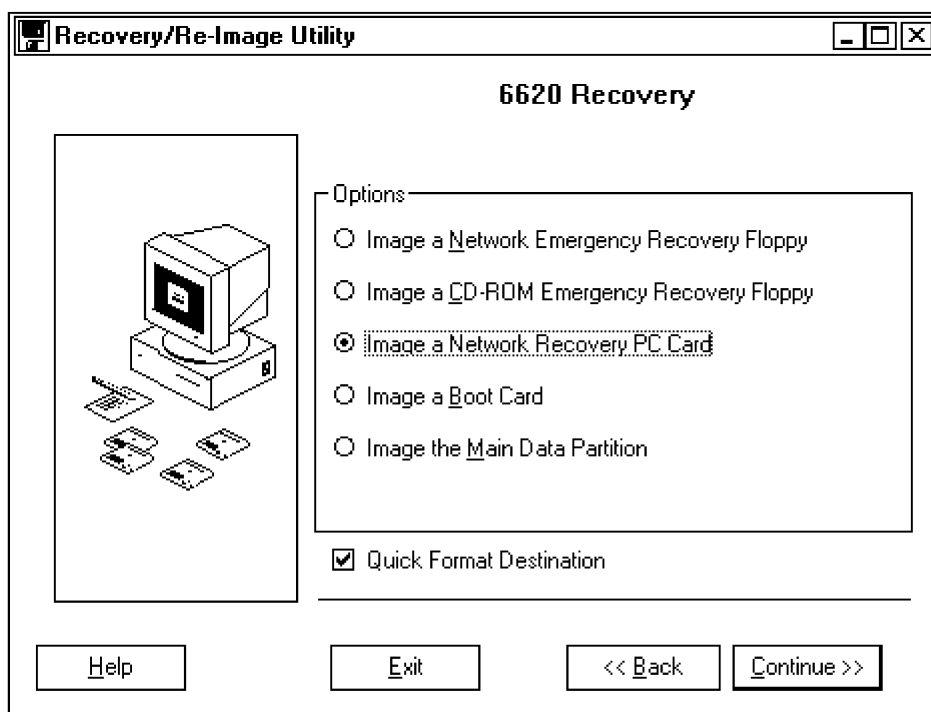
The version of Windows running on the desktop PC used to prepare the disk is unimportant as all files necessary to make a bootable system on the disk are maintained on the Recovery CD-ROM.

Preparing the Network Recovery PC Card

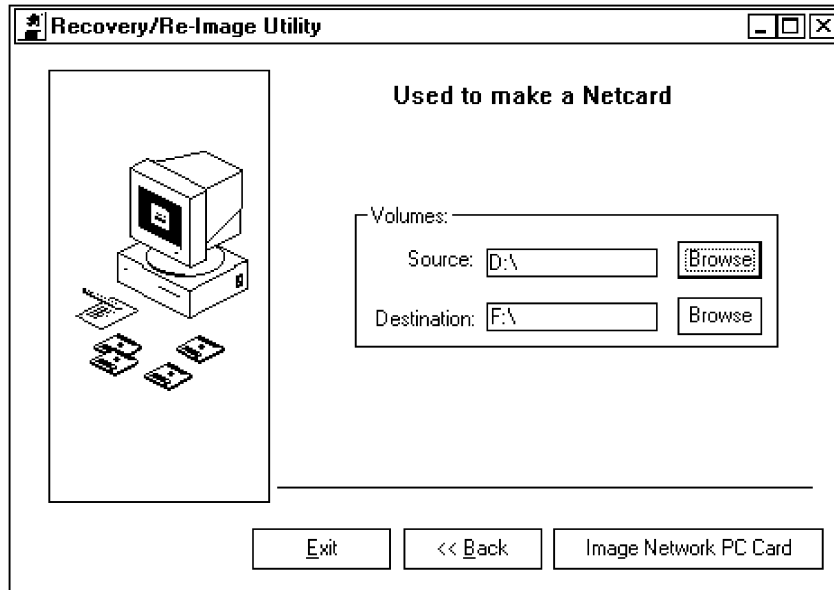
To prepare the recovery PC Card for the network recovery method, do the following:

1. Insert the 6620 Recovery CD-ROM into any desktop PC with CD-ROM support running any version of Windows 95. The “Recovery Utility” should AutoPlay. If not, do the following to manually start the recovery procedures:
 - a. Use Windows Explorer to find the CD.
 - b. Click the right mouse button on the CD and click the **AutoPlay** button.

The “Recovery/Re-Image Utility” window appears for the network recovery PC Card method:



2. Select **Image a Network Recovery PC Card**, then click the **Continue** button
3. Click the **OK** button on the “Recovery Utility” warning, if it is displayed (page 3-7), to continue.
4. Use the applicable **Browse** buttons to ensure the source volume is correct and the destination is the PC Card slot via the “Netcard” window. Click the **Image Network PC Card** button to continue. The PC Card will be formatted.

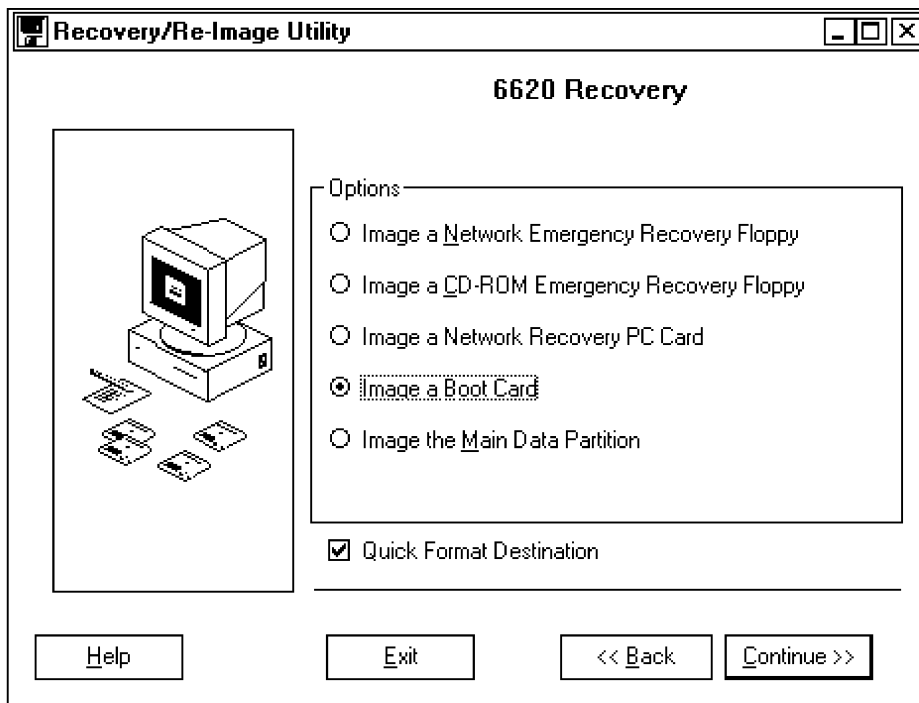


NOTE: *The version of Windows running on the desktop PC used to prepare the disk is unimportant as all files necessary to make a bootable system on the disk are maintained on the Recovery CD-ROM.*

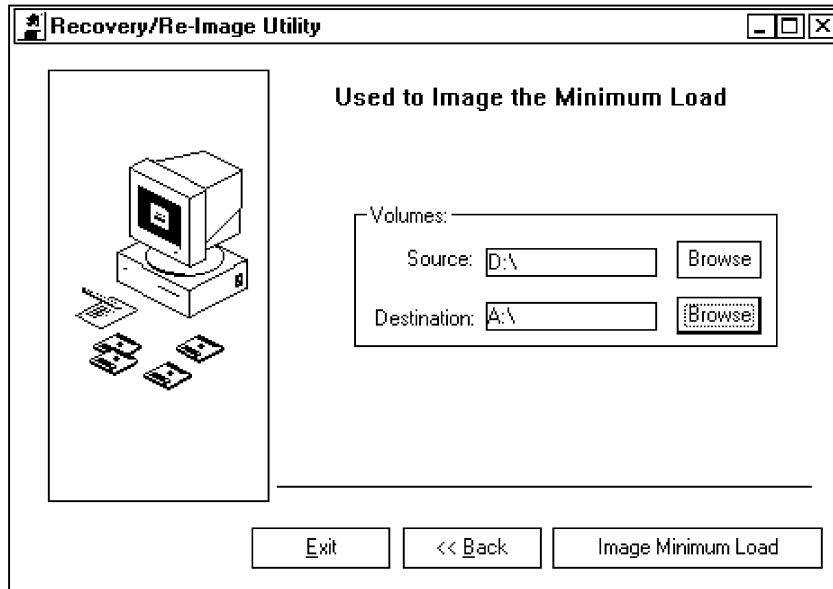
Preparing a 6620 Boot Card

" **NOTE:** This pertains to a minimum load and does **not** work on Windows NT.

1. Insert the 6620 Recovery CD-ROM into any desktop PC that has CD-ROM support running any version of Windows 95 and a PC Card Dock, such as a laptop computer with a CD-ROM drive. The "Recovery Utility" should AutoPlay. If not, do the following to manually start the recovery procedures:
 - a. Use Windows Explorer to find the CD.
 - b. Click the right mouse button on the CD and click the **AutoPlay** button.
2. Select **Image a Boot Card** via the "Recovery/Re-image Utility" window, then click **Continue**.



3. Click the **OK** button on the “Recovery Utility” warning, if it is displayed (page 3-7), to continue.
4. Use the applicable **Browse** buttons to ensure the source volume is the CD-ROM and that the destination is your card to be imaged via the “Image to Minimum Load” window. Click the **Image Minimum Load** button to continue. The card will be formatted.



5. Press “Y” for “Yes” to format the PC Card and copy all “Minimal Load” files.

Using this process, you may format any size ATA Flash disk, with a minimum of 40 MB for storage. The drive geometry does not matter when preparing an image as long as the card can contain the Boot Card Load.

Image-to-Image Copying

This process is for those who installed the application on a “Master 6620” unit and wish to duplicate this master image on one or more hand-held computers.

This process assumes that you have a 6620 Desktop Dock, a network hub, and two network cables to network either a desktop PC (containing a full 6620 image) or another 6620 (in another single dock) to be cloned directly. Also, either a floppy drive or access to a free PC Card slot is required.

Restoring Operation of the Source 6620 Computer (MASTER)

1. Shut down Windows and the 6620 Computer.
2. Boot the system with the Peer Networking disk.
3. Press “3” to restore normal operation, then press **[Enter]**. Once the configuration is complete, you will be prompted to eject the floppy disk.
4. Eject the floppy disk, then press any key to boot the system into Windows.

If the network recovery PC card is used, shut down the system and reboot without the PC Card.

Configuring a Source 6620 Computer (MASTER)

Do these steps on the source 6620 Computer. This computer is considered the “master”:

1. Prepare the Main Data Partition *exactly* as you want it set up.
2. Boot the system with the special Peer Networking diskette or PC Card created using the Toolkit CD-ROM.

3. Choose the appropriate menu item to set up the system as the master, then press **[Enter]**. Depending on your current configuration, the system may reboot once without intervention. You will be prompted for a computer name.
4. Enter a computer name that is *unique on the network*, then press **[Enter]**. If no entry is made within five seconds, the default (MASTER) name is used.

" **NOTE:**

Remember this name for the Destination (SLAVE) computer.

5. If the floppy method is used, you will be prompted to eject the disk. The system will boot into recovery windows in the Master mode.
6. The network window appears. Select option 2 "Peer Imaging Master Mode".
7. Click the **OK** button to activate the network.

The master system should remain in this state while you are duplicating the "slave" systems.

Configuring the Destination 6620 Computer (SLAVE)

Do these steps on the destination 6620 Computer. This computer is considered the "slave:"

1. Boot the system with the special Peer Networking diskette or PC Card created using the Toolkit CD-ROM.
2. Press "1" to set up the system as a slave, then press **[Enter]**. Depending on your current configuration, the system may reboot once without intervention. You will be prompted to enter a computer name.
3. Enter a computer name that is *unique on the network*, then press **[Enter]**. If no entry is made within five seconds, the default "Slave" name is used.
4. If the floppy method is used, you are prompted to eject the disk. The system boots into recovery windows in the Slave mode. The network window may appear.

5. If this window does appear, click the **OK** button to activate the network.

" **NOTE:**

This window may not appear on the slave system, particularly when first set up. Either way, go on to the next step.

6. Double-click the **Image** icon on the Windows desktop to start the recovery process. You are prompted to enter the name of the MASTER system.
7. Enter the name of the MASTER system, if the default name (Master) was not used. *This prompt times out after five seconds and will default to "Master".*

The duplication process copies all the files from the source drive to the destination drive. The progress indicator will not move or give a time-remaining estimate, as the installation engine does not know the size of your image. This is normal.

8. When the duplication process is complete, click the **Finished** button.

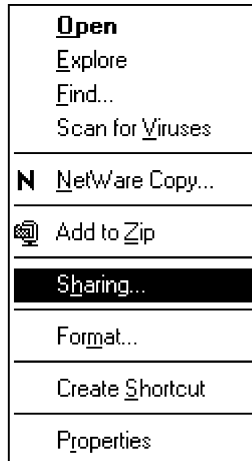
The partitions are restored and the system restarts.

Configuring a Source Desktop PC (MASTER)

1. Prepare the directory tree *exactly* as you want it set up on the "Main Data" Partition.
2. Set up networking on the PC. Ensure that the "File and Print Sharing" function is enabled. See page 3-30 for instructions on how to ensure this function is enabled.
3. When the system reboots, log on to Windows or networking will not activate.

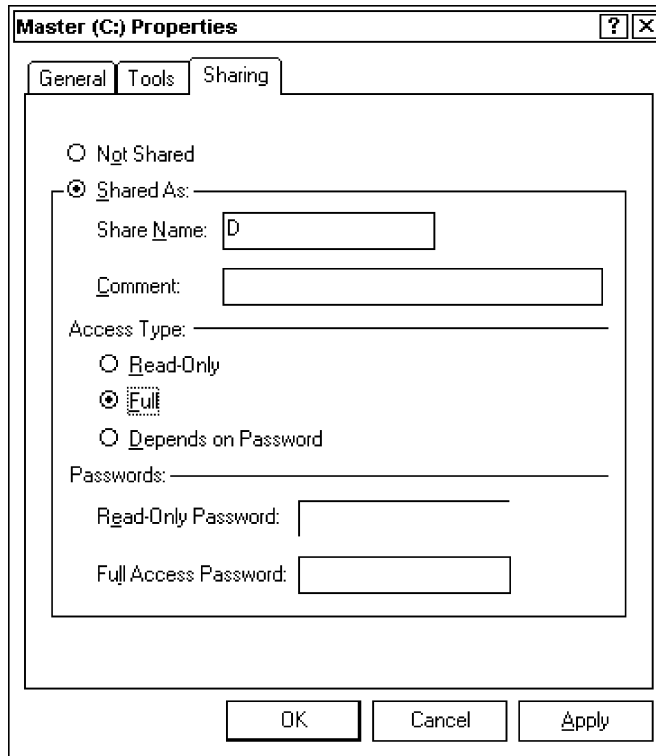
Do the following to share the (MASTER) directory, containing the complete directory tree, with the (SLAVE). This directory must be structured the same as the root of the data partition, such as having "Windows" as an immediate sub-directory:

1. From the Windows desktop, double-click the **My Computer** icon for the “My Computer” window.
2. Right-click the (MASTER) directory (with the complete tree) icon for the pop-up menu:



3. Select **Sharing** from the pop-up menu to access the “Properties” window for the Master directory.

4. The “Properties” window opens with the “Sharing” page on top. Click **Shared As**, then type “D” in the **Share Name** field to enable directory sharing.

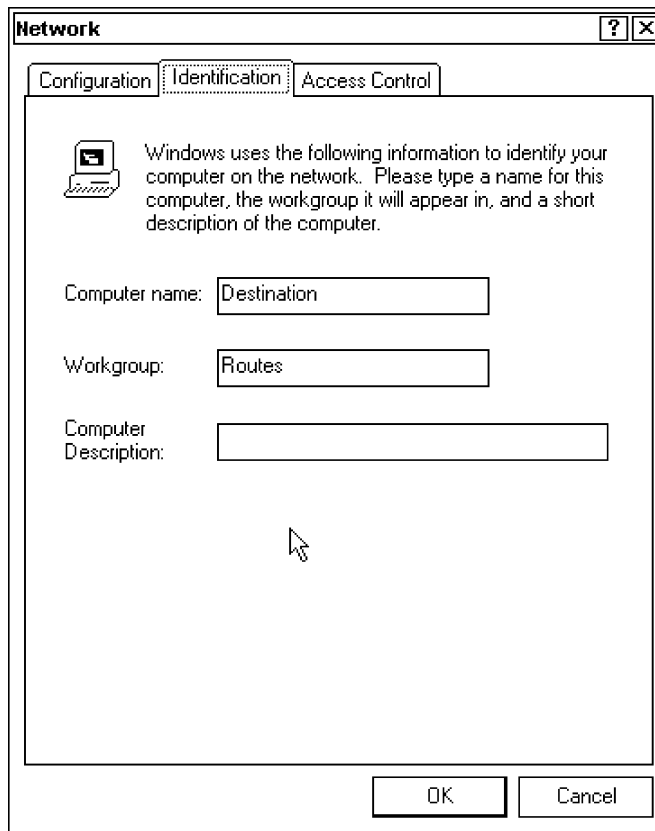


5. Click **Full** under “Access Type,” then click **Apply**.
6. Click the **Ok** button to exit the “Properties” window and return to the Windows desktop.

Do the following to assign a name to the (SLAVE) computer:

1. From the Windows desktop, right-click the **Network Neighborhood** icon, then select **Properties** from the pop-up menu to access the “Network” window.
2. Click the **Identification** tab for that page. Enter a *unique* name in the **Computer name** field, such as “Destination,” then click the **OK** button.

" **NOTE:** Remember this name for the (SLAVE) computer.



3. If changes are required, a prompt window appears. Click the **Yes** button to restart the system. After the restart and logon, sharing is activated.

The master system should remain in this state while you are duplicating the "slave" systems.

Tips

The following tips can help you do the preceding configurations more efficiently:

- Any non-Windows files that have system attributes or hidden attributes are not copied from the master. To override this rule:
 - a. “ATTRIB” these files on the master.
 - b. Do the copies.
 - c. “ATTRIB” them back onto the master.
 - d. Attribute them manually on the destination computer.

This does not apply to most applications.

- The progress indicator does not move or give a “time remaining” estimate, as the installation engine does not know the size of your image.
- The entire registry of the source computer is copied to the destination, so all Windows settings are preserved.
- When using TCP/IP, you may wish to remove key networking components, such as IP address, when preparing the master computer. This prevents conflicts with the destination computer during the initial boot-up.
- When entering the name of the master system, any spaces must be replaced with the underscore (_) character.

BIOS Recovery

While it is rare, it is possible for the 6620 BIOS to become corrupted. If this occurs, a loss of power while performing a BIOS version update is the most likely cause. The 6620 Computer implements a BIOS Boot Block which allows the system to recover from BIOS corruption in most cases.

To recover the BIOS, insert an Emergency BIOS Recovery Floppy (provided by Intermec Technologies Corporation), and power on the system. If the Boot Block is not corrupted, but the rest of the BIOS is, the system sounds one long beep and two short beeps. At this point, the system scans the floppy drive for the recovery floppy. Once found, the disk is read into memory. About a minute after disk access stops, the system powers down. BIOS should now be recovered.

Partition Utility

The 6620 Partition Utility replaces FDISK, Norton Disk Editor, and PHDISK as a complete solution to create all partitions necessary on a 6620 Computer for normal operation. Use it with the Automate Utility during the 6620 Recovery procedures. It is an MS-DOS application and must be run in MS-DOS mode as low-level disk changes fail when Windows 95 is running.

Installation

From the 6620 Toolkit installation, select the checkbox for the Disk Tools. This copies the files necessary for the operation of the Partition Utility.

Operations

These are the various program options in the PARTUTIL.EXE file and how and why to use them. You can view the source code by typing "**partutil /?**" from the DOS prompt. The general syntax for command line parameters is **partutil.exe drive /arg1 /arg2 /arg3**

" **NOTE:** *All command processing is done from left to right.*

Drive: (as seen by INT13 services) **80, 81, etc.** (Defaults to 80 or C:\)

EXAMPLE: Partutil 81 /I D:\ = 81 thus use "81" *not* "D:\"

Options

/Q Silent mode (no prompts or additional text)
/X Create the main data partition
/J Delete the main data partition
/U Create the extended partition
/O Delete the extended partition
/T [!] [sectors] Create recovery partition, optional # sectors
/Y Delete the recovery partition
/C <size> Create the suspend-to-disk partition (size is in megabytes, see example).

EXAMPLE: Partutil /C 35 creates 35 MB suspend to disk partition.

" **NOTE:** *If you have a 48 MB RAM 6620 Computer, use a 52 MB partition. The general recovery process creates a 52 MB partition.*

/G Delete the suspend-to-disk partition
/Z Get INT13 drive information for specified device
/I Display partition information
/E Manually edit the partition information
/R Reboot system

Advanced Options

" **NOTE:** *Checks are in place to alert you to ill-advised activity, such as making the last active partition inactive, etc.*

Use the following commands to create backups and later fix critical system areas changed by this application:

/WB [A:B:R] [val] Wipe Boot Records All (/WBA),
Extended only (/WBE), or Root only (/WBR),
optional value

/WD [val] Wipe entire disk, optional value

/PN Force Normal Mode

/PE Force Emergency Mode

/PU Make recovery partition visible

/FFilename Read a snapshot file and write to disk
(the entire boot sector)

/LFilename Read disk and write a snapshot file
(the entire boot sector)

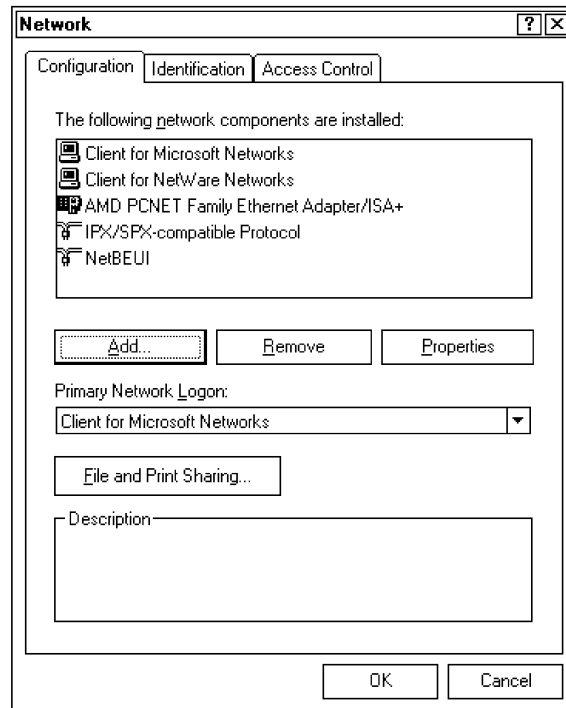
Uninstall

Erase the PARTUTIL.EXE file from the hard drive; or, run the uninstall for the entire disk tools set as part of the 6620 toolkit.

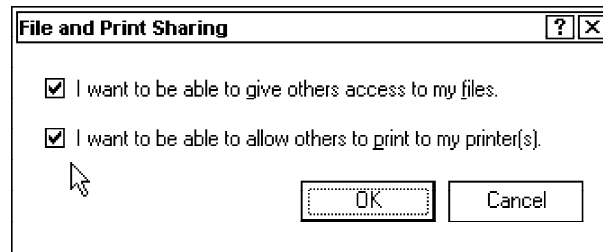
File and Printer Sharing

The following steps show how to check if the “File and Printer Sharing” function is enabled:

1. From the Windows desktop, double-click the **My Computer** icon for the “My Computer” window.
2. Double-click the **Control Panel** icon for the “Control Panel” window.
3. Double-click the **Network** icon to access the “Network” window with the “Configuration” page:



4. Click the **File and Print Sharing** button to access the “File and Print Sharing” window. Ensure that both boxes are checked. If not, check both boxes, then click the **OK** button to save and return to the “Network” window.



Section 4

GPS Drivers

A Global Positioning System (GPS) radio communicates with various satellites to determine the latitude and longitude of your location.

Installing the GPS Drivers from the DRVSETUP program will install both GPSHOOK.VXD and the GPS test program.

GPSHOOK.VXD

This driver is required to power on and off the GPS radio automatically when the COM port assigned to the radio is opened and closed, respectively.

GPS Test Program



This program verifies the functionality of the GPS radio. Double-click the **GPS Test Program** icon on the Windows desktop to access the application.

The “Jupiter 95” window appears:

The screenshot shows a window titled "Jupiter95" with the following elements:

- Lat**: Input field for latitude.
- Lon**: Input field for longitude.
- INIT**: Button to initialize the radio.
- GPS Module Info**: Two stacked input fields for satellite information.
- Head**: Input field for heading.
- Speed**: Input field for speed.
- Log to file**: checkbox.
- GPS Off**: checkbox.
- UTC**: Input field for UTC time.
- Date**: Input field for date.
- Status**: Input field for status.
- Timer**: Input field with "10" and a **CLR** button.
- Nav Data**: A large empty text area.
- Sats**: A large empty text area.
- PDOP**: Input field for PDOP.
- HDOP**: Input field for HDOP.
- VDOP**: Input field for VDOP.
- v3.1**: Version number in the bottom right corner.

- **Lat** (Latitude)
The global latitude position of this radio via the satellite.
- **Lon** (Longitude)
The global longitude position of this radio via the satellite.
- **INIT**
Click this button to reset the radio.
- **GPS Module Info**
These two boxes provide information about the satellite from which you are scanning.
- **Head**
Indicates the current heading (in degrees) of the user.
- **Speed**
Indicates the current speed (miles per hour).

- **UTC (Universal Coordinated Time)**
Also known as Greenwich Mean Time (GMT).
- **Date**
Current date read from the satellites.
- **Log to file**
Check this box if the satellite information is to be saved to a file.
- **GPS Off**
Check this box if the satellite information is to be disconnected.
- **Status**
This field displays status information about the satellite.
- **Timer**
This field measures the amount of time (in seconds) that “Jupiter 95” is open.
- **CLR**
Click this button to restart the Timer.
- **Nav Data**
This field displays the navigational data given by the satellite.
- **Sats**
Status of each of the twelve receive channels, including channel number, tracking information, satellite number, and satellite C/N.
- **PDOP, HDOP, VDOP**
Dilution Of Precision metrics.

Section 5

Entering Text

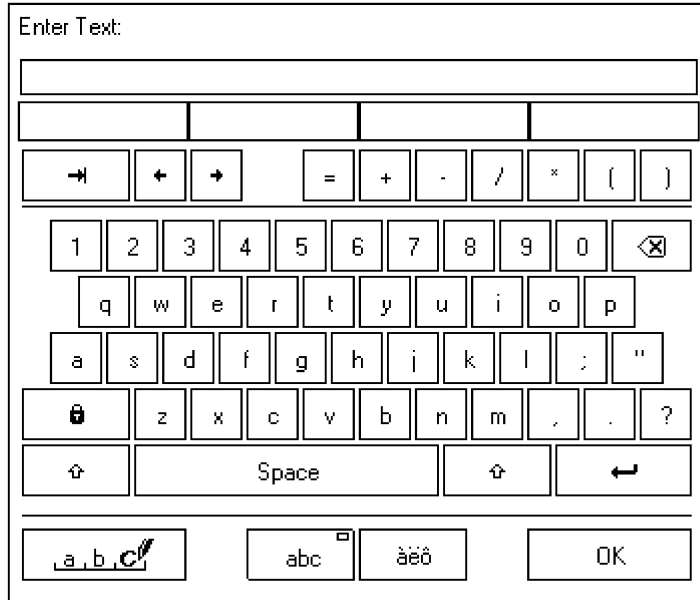
The 6620 Computer has two methods of entering text via the stylus pen or your finger tip. One method is a screen keyboard which simulates the physical keyboard; the other method is a screen palette which permits you to hand-write your entries on the screen.



In some applications, such as the "Infrared Monitor" (see Section 7), fields may include a text button (shown left) with which you can access either the screen keyboard or the screen palette.

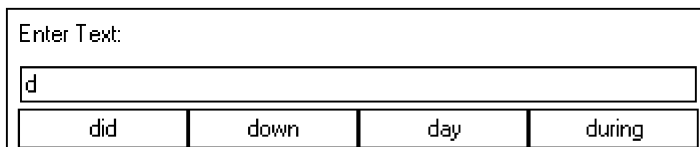
Using the Screen Keyboard

If your 6620 unit is configured to access the electronic keyboard, the following appears:



This keyboard is much like the physical keyboard that attaches to the computer. One unique feature on this keyboard is the ability to provide four common words that start with a letter you select.

For example, if you select the letter “d”, four words appear beneath the text line:



If any of the four words apply, select that word. The chosen word appears on the text line, along with a space or continue typing.

Below are some of the feature keys on the keyboard:



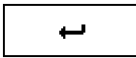
- **Shift**
Select this key to an uppercase letter or a punctuation mark on a number key.



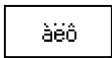
- **Backwards Delete**
Select this key to erase the previous character.



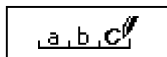
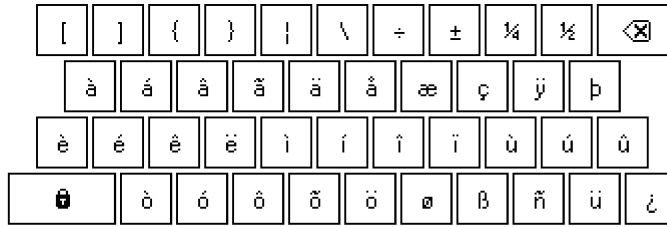
- **Shift Lock**
Select this key to lock the keyboard into the uppercase letters. Select this again to return to the lowercase letters.



- **Hard Return**
Select this key to force a return into the text.



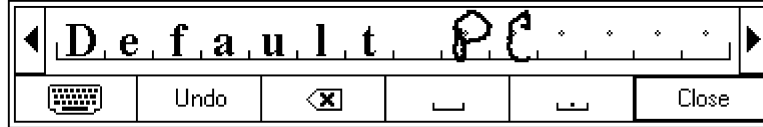
- **Alternate Keyboard**
Select this key to switch to an alternate keyboard. Using the shift keys, these letters also switch to uppercase:



- **Palette Access**
Select this key to switch to the screen palette, on which you use either your fingertip or your stylus pen to write your text.






Using the Screen Palette

If your 6620 unit is configured to access the screen palette, the following appears:



This palette “translates” your writing into text, which is then entered in the zodiac95 fields.

Below are some of the feature keys on the palette:

- 
" **Undo**
Select this key to erase the contents of the palette.
- 
" **Backwards Delete**
Select this key to erase the previous character.
- 
" **Space**
Select this key to enter a space.
- 
" **Period**
Select this key to enter a period.
- 
" **Keyboard Access**
Select this key to switch to the screen keyboard, on which you use your fingertip or your stylus pen to type out your text.

Section 6

Ericsson M2100 Series Wireless Modem

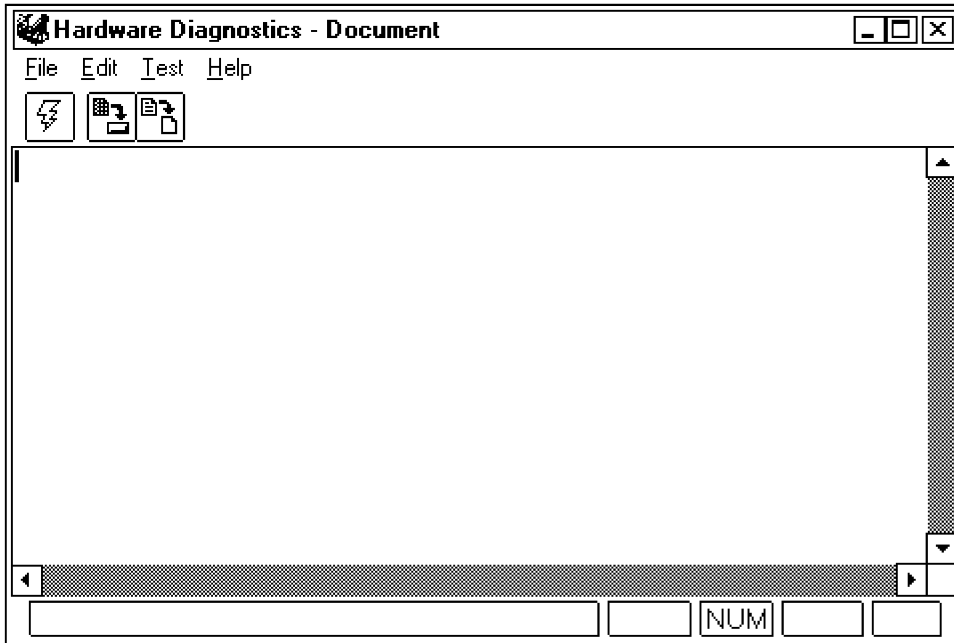
The 6620 Computer is set up to work with the Ericsson M2100 Series Wireless Modem. A support panel is available to provide status and error information.

You can install this application from the 6620 Toolkit. The use of this application requires an M2100 Series Wireless Modem PC Card.

Hardware Diagnostics



From the Windows desktop, select **Start → Programs → M2100 Wireless PC Card Utilities → Hardware Diagnostics**, or double-click the **Hardware Diagnostics** icon (shown left) to access the “Hardware Diagnostics” window.



Use the “Hardware Diagnostics” window to view information about the wireless PC Card. Data concerning the PC card configuration in the PC is shown, together with information collected from the Wireless PC Card.

Consult the online Help information via **Start → Programs → M2100 Wireless PC Card Utilities → Hardware Diagnostics Help** from the Windows desktop for information on using this application.

Setup



Setup

From the Windows desktop, select **Start** → **Programs** → **M2100 Wireless PC Card Utilities** → **Setup**, or double-click the **Setup** icon (shown left) to access the “Setup” window.

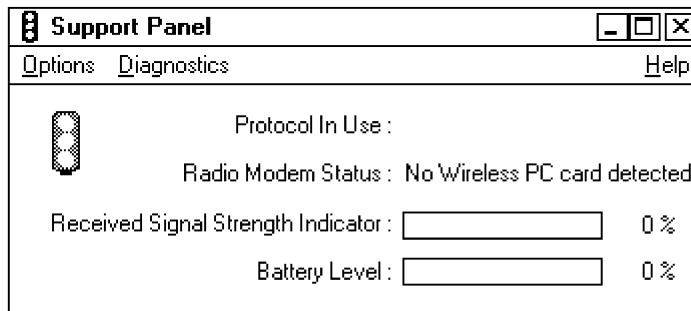
Support Panel

General information about the support panel for the M2100 Series Wireless Modem is provided in this section. Select **Help** → **View Help File** in the “Support Panel” application to consult the online help for more specific information.



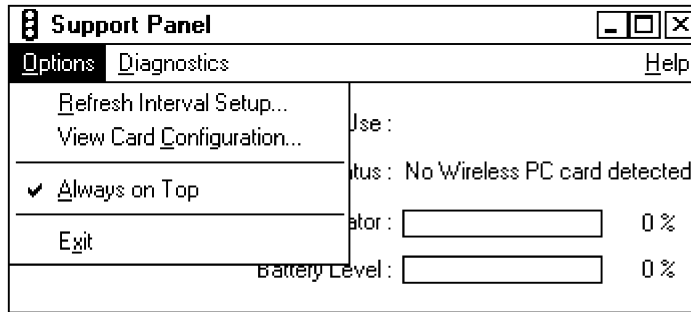
Support Panel

From the Windows desktop, select **Start** → **Programs** → **M2100 Wireless PC Card Utilities** → **Support Panel**, or double-click the **Support Panel** icon to access the “Support Panel” window, which provides statistics about the protocol in use. It names the radio modem in used, the signal strength received, and how much battery power is available.



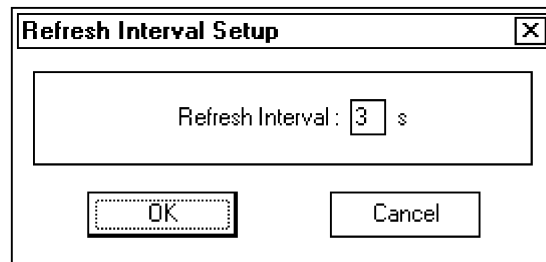
Adjusting Options

Under the **Options** menu, you can either refresh the interval setup, or view the card configuration; you can also elect to keep the support panel open and on top of any other applications running on the 6620 Computer.



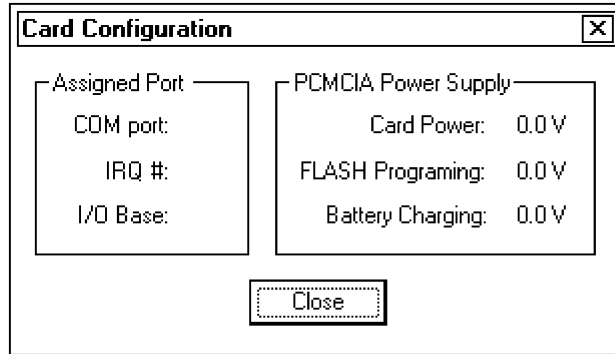
Adjusting the Refresh Interval

Select **Options** → **Refresh Interval Setup** to access the “Refresh Interval Setup” window. Use this window to dictate the number of seconds (0–99) the 6620 Computer is to wait before scanning for signal strength and battery power information. Click the **OK** button to exit and save your changes, click the **Cancel** button to exit without saving your entry.



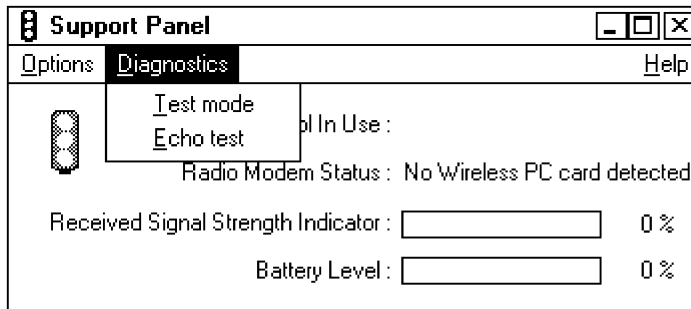
Viewing Card Configuration

Select **Options** → **View Card Configuration** to access the “Card Configuration” window, which provides you information about the assigned port and the PCMCIA (PC Card) power supply. Click the **Close** button to exit this window.



Doing Diagnostics

The **Diagnostics** menu allows you to test the modem card (**Test mode**) for any errors and to repeat that test if necessary (**Echo test**).



Section 7

Infrared Communications Support 2.0

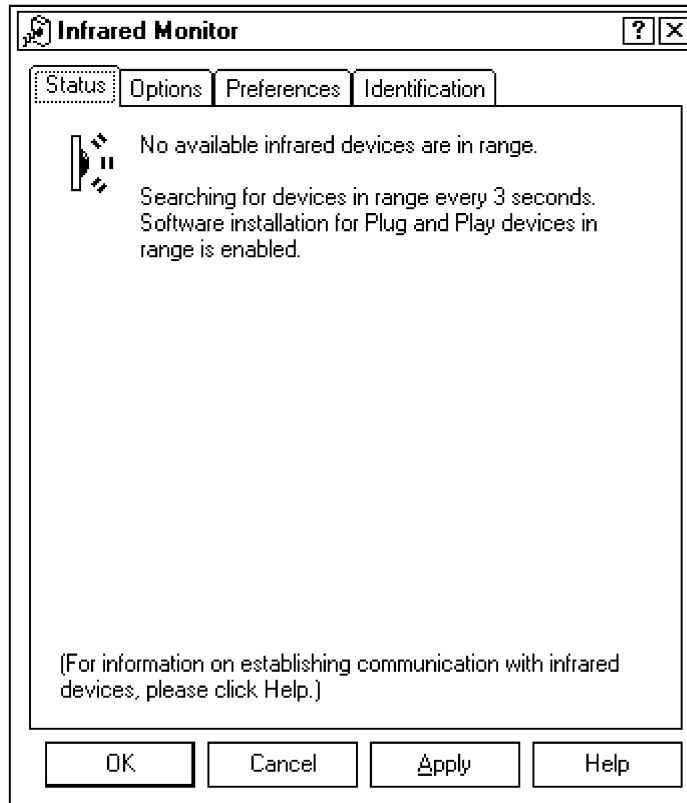
The “Microsoft Infrared Communications” driver is an optional component of Windows 95 that you may have installed from the 6620 Toolkit. A support application is available on the 6620 Computer and can be set up via the Windows “Control Panel.”

This section provides general information about setting up Infrared Support on your 6620 Computer. More specific information can be found in the online release notes, “Relnotes”, found in the C:\6620Utilities\MSIr20 directory.

Setting Up the Infrared Monitor



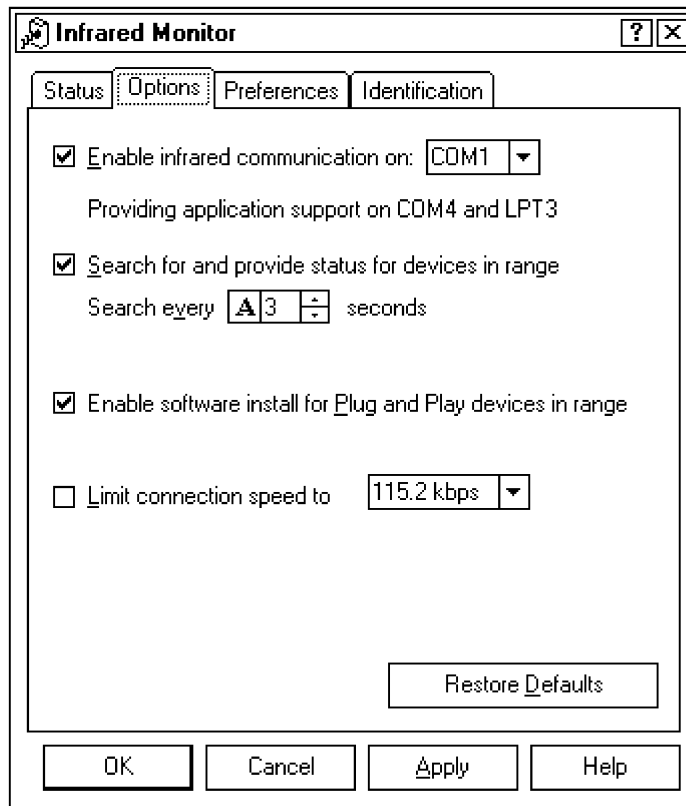
To set up the “Infrared Monitor,” access the Windows “Control Panel” and double-click the **Infrared** icon. The “Infrared Monitor” window appears with the “Status” page:



This page, based on configurations, monitors for infrared devices every three seconds. The search components can be changed via the subsequent pages.

NOTE: Click the **Apply** button to save all changes or click the **Cancel** button to exit “Infrared Monitor” without saving changes to the Infrared Support application.

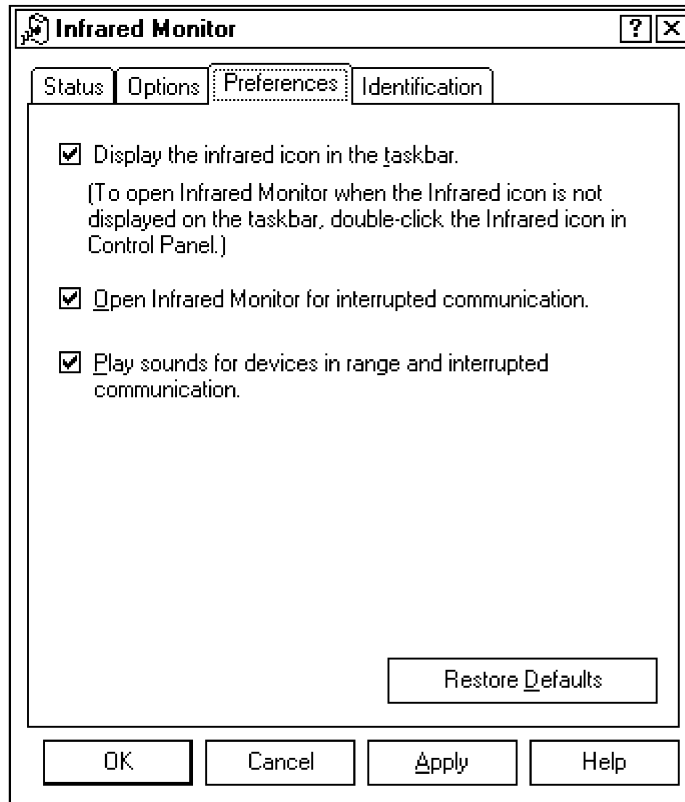
Enabling Options



The “Options” page lets you configure the search frequency, enable software installation for plug and play devices within range, limit connection speed, and select a COM port on which to enable infrared communication.

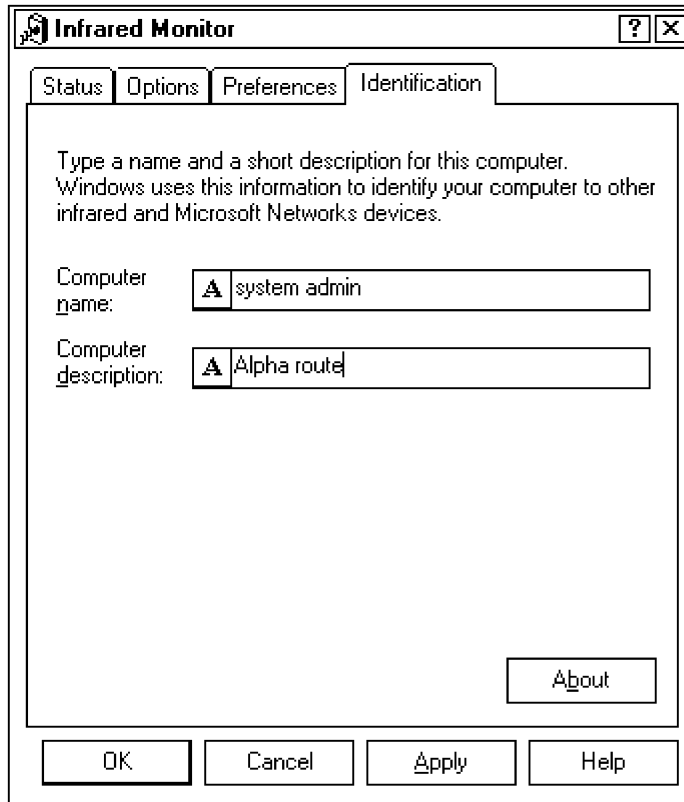
The default COM port on which infrared communications is enabled is COM1, which means a COM port wired to IRQ 4 and I/O address range 0x3F8 to 0x3FF. The 6620 Computer can also enable COM2 wired to IRQ 3 with a range of 0x2F8–0x2FF.

Choosing Preferences



The “Preferences” page lets you customize the Infrared Monitor to display the “Infrared Monitor” icon (shown left) in the task bar next to the clock, open the monitor when communications are interrupted, or play sounds when devices are found within range or communications are interrupted.

Identifying the 6620 Computer



Use the “Identification” page to enter a name and a short description for this 6620 Computer. Type the computer name and description where necessary. If you do not have a physical keyboard attached to your 6620 Computer, click the text button (represented by the capital letter “A” shown left) on either field to bring up a screen keyboard or palette. Make your entries using the stylus pen or your fingertip.

Click the **About** button to learn about the Infrared Monitor.

Section 8

CMOS Setup

As described on page 1-12, press the <**F2**> key to access the “CMOS Setup” window. Use this window to configure adapters, integrated peripherals, passwords, and power management.

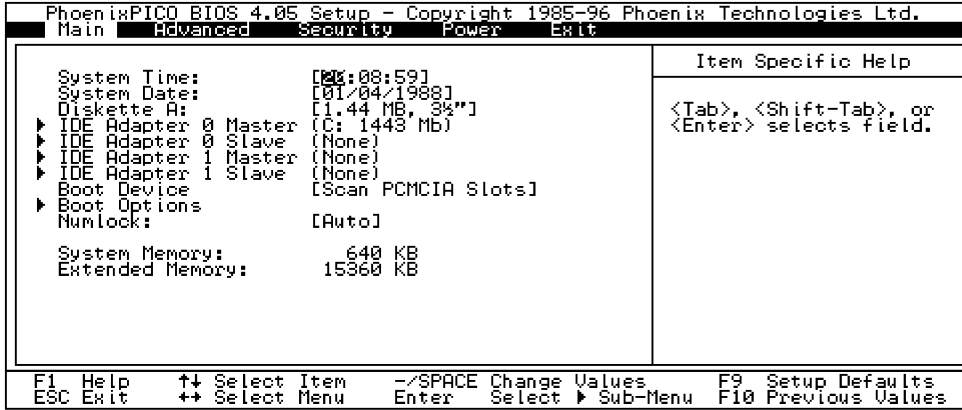
This section defines each of the parameters within the CMOS Setup window.

Observe these rules within the “CMOS Setup” window:

- Press the ← or → key to move between pages.
- Press the ↑ or ↓ key to move between features.
- Press the space bar to increment a value.
- Press the hyphen [-] key to decrement a value.
- Press **[Enter]** to accept the value chosen.
- If an feature is preceded with an " " arrow, press **[Enter]** to access its submenu.
- If you are in a submenu, press the **[Esc]** key to return to the original menu.

Main

The Main menu of the CMOS window configures the system time and date, adapters, booting, and memory.



- **System Time:**
Set the system time in the HH:MM:SS format.
- **System Date:**
Set the system date in the MM/DD/YYYY format.
- **Diskette A:**
Selects the floppy drive type. Currently, the 6620 Computer only supports a 1.44 MB floppy.

- **IDE Adapter 0 Master:**
(Submenu — press **[Enter]** to access the submenu)
Configures the primary master IDE adapter. This is the systems boot drive. **Press the [Esc] key to return to the Main menu.**

PhoenixPICO BIOS 4.05 Setup - Copyright 1985-96 Phoenix Technologies Ltd.			
Main			
IDE Adapter 0 Master (C: 1443 Mb)		Item Specific Help	
Autotype Fixed Disk:	[Press Enter]	Attempts to automatically detect the drive type for drives that comply with ANSI specifications.	
Type:	[Auto] 1443 Mb		
Cylinders:	2796		
Heads:	16		
Sectors/Track:	63		
Write Precomp:	0		
LBA Mode Control:	Enabled		
Transfer Mode:	Fast PIO 3		
F1 Help	↑↓ Select Item	~/SPACE Change Values	F9 Setup Defaults
ESC Exit	↔ Select Menu	Enter Execute Command	F10 Previous Values

- **IDE Adapter 0 Slave:**
(Submenu — press **[Enter]** to access the submenu)
Configures the primary slave IDE adapter. Set this to "None" on the 6620 Computer. **Press the [Esc] key to return to the Main menu.**

PhoenixPICO BIOS 4.05 Setup - Copyright 1985-96 Phoenix Technologies Ltd.			
Main			
IDE Adapter 0 Slave (None)		Item Specific Help	
Autotype Fixed Disk:	[Press Enter]	Attempts to automatically detect the drive type for drives that comply with ANSI specifications.	
Type:	[None]		
Cylinders:			
Heads:			
Sectors/Track:			
Write Precomp:			
LBA Mode Control:	[Disabled]		
Transfer Mode:	[Standard]		
F1 Help	↑↓ Select Item	~/SPACE Change Values	F9 Setup Defaults
ESC Exit	↔ Select Menu	Enter Execute Command	F10 Previous Values

- **IDE Adapter 1 Master:**
 (Submenu — press **[Enter]** to access the submenu)
 Configures the secondary master IDE adapter. Typically the hard drive or an ATA card. **Press [Esc] to return to the Main menu.**

PhoenixPICO BIOS 4.05 Setup - Copyright 1985-96 Phoenix Technologies Ltd.			
Main			
IDE Adapter 1 Master (None)		Item Specific Help	
Autotype Fixed Disk:	[press Enter]	Attempts to automatically detect the drive type for drives that comply with ANSI specifications.	
Type:	[Auto]		
Cylinders:			
Heads:			
Sectors/Track:			
Write Precomp:			
LBA Mode Control:	Disabled		
Transfer Mode:	Standard		
F1 Help	↑↓ Select Item	-/SPACE Change Values	F9 Setup Defaults
ESC Exit	++ Select Menu	Enter Execute Command	F10 Previous Values

- **IDE Adapter 1 Slave:**
 (Submenu — press **[Enter]** to access the submenu)
 Configures the secondary slave IDE adapter. Set this to “None” on the 6620 Computer. **Press the [Esc] key to return to the Main menu.**

PhoenixPICO BIOS 4.05 Setup - Copyright 1985-96 Phoenix Technologies Ltd.			
Main			
IDE Adapter 1 Slave (None)		Item Specific Help	
Autotype Fixed Disk:	[press Enter]	Attempts to automatically detect the drive type for drives that comply with ANSI specifications.	
Type:	[None]		
Cylinders:			
Heads:			
Sectors/Track:			
Write Precomp:			
LBA Mode Control:	[Disabled]		
Transfer Mode:	[Standard]		
F1 Help	↑↓ Select Item	-/SPACE Change Values	F9 Setup Defaults
ESC Exit	++ Select Menu	Enter Execute Command	F10 Previous Values

- **Boot Device:**
Sets the order in which to search for a bootable drive:
 - Scan PC Card slots (*default*)
 - Embedded Flash Drive (EFD)
 - Floppy Drive
 - Hard Drive
 - PC Card Slot-0 Drive
 - PC Card Slot-1 Drive
 - PC Card Slot-2 Drive

See page 8-13 to learn about the 6620 Drive Mapping.

- **Boot Options:**
(Submenu — press **[Enter]** to access the submenu)
 - **Floppy check:**
Controls the search for an attached floppy drive during POST. Leaving this disabled allows for hot-swapping the floppy drive. **Press the [Esc] key to return to the Main menu.**

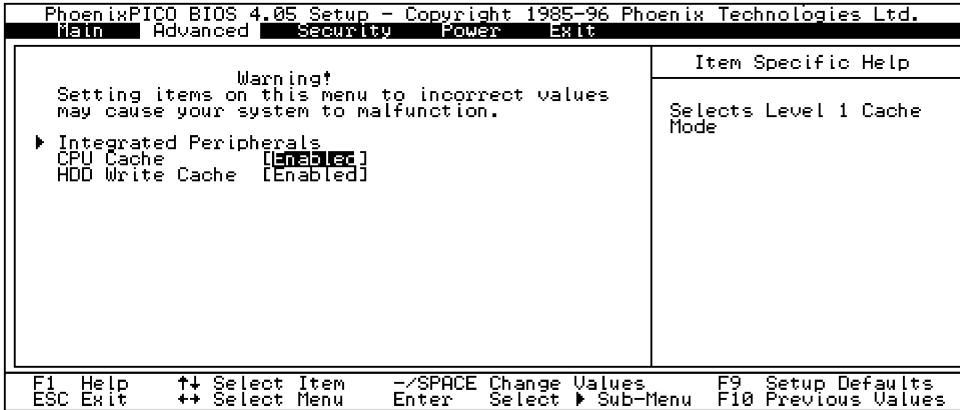
PhoenixPICO BIOS 4.05 Setup - Copyright 1985-96 Phoenix Technologies Ltd.	
Main	
Boot Options	Item Specific Help
Floppy check: [Disabled]	Enabled verifies floppy type on boot, disabled speeds boot
F1 Help ↑↓ Select Item -/SPACE Change Values F9 Setup Defaults ESC Exit ++ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values	

- **Numlock:**
Selects the Power-on state for the **[Num Lock]** key — Auto (*default*), On, or Off.
- **System Memory:**
(*Read-Only*) Displays system memory.

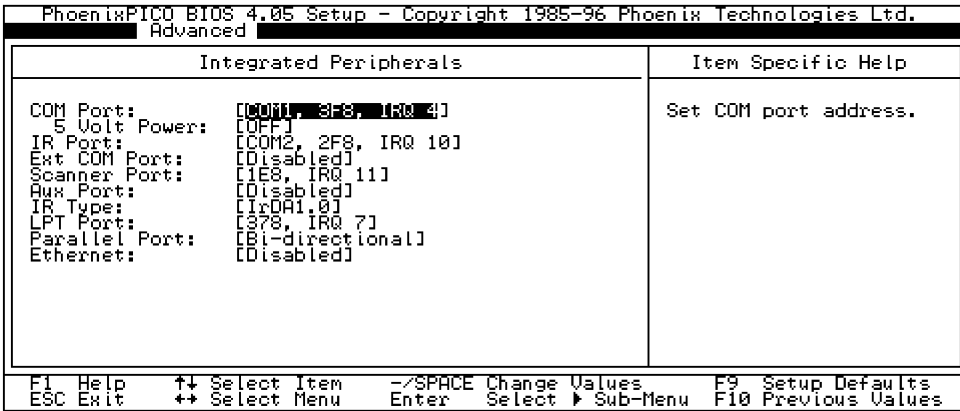
- **Extended Memory:**
(Read-Only) Displays extended memory.

Advanced

The “Advanced” page lets you modify integrated peripherals (such as ports, volt power, IR type, etc.) and caches.



- **Integrated Peripherals:**
(Submenu — press **[Enter]** to access the submenu)



- **COM Port:**
Sets one of the following addresses or disables the primary COM port:
 - COM1, 3F8, IRQ 4 (*default*)
 - COM3, 338, IRQ 4
 - COM3, 3E8, IRQ 4
 - COM3, 2E8, IRQ 4
 - COM3, 220, IRQ 4
 - Disabled
- **5 Volt Power:**
Enabled, this provides 5 volts power out of pin 9 of the primary COM port. Typically used for tethered scanners — ON or OFF (*default*).

• **NOTE:** *The IR Port and the Ext COM Port cannot share COM2.*

- **IR Port:**
Sets the COM1, 2F8, IRQ 10 address (*default*); or disables the IR Port.
- **Ext COM Port:**
Sets either the COM2, 2F8, IRQ 3 or COM4, 2E8, IRQ 3 address; or disables the external COM port (*default*).
- **Scanner Port:**
(*Read-Only*) Displays the address for the internal scanner port.
- **Aux Port:**
Sets the 308, IRQ 5 address; or disables the Auxiliary port (*default*). In the 6620 Computer, this port is attached to the optional internal GPS radio module. (See Section 4 about the GPS drivers.)
- **IR Type:**
Sets the IrDA type — IrDA1.0 (*default*), IrDA1.1, or ASK.

- **LPT Port:**
Sets the 378 IRQ 7 (*default*), 278 IRQ 7, or 3BC IRQ 7 address; Auto (automates the port); or Disabled (disables the parallel port).
- **Parallel Port:**
Sets the port type of the parallel port — Bidirectional (*default*), EPP 1.7, EPP 1.9, ECP, FDD, or Disabled.

" **NOTE:** *When the external floppy is attached, this port type is ignored. Once the floppy drive is removed, this type is reset.*

- **Ethernet:**
Enables the on-board ethernet device — Disabled (*default*) or Enabled.

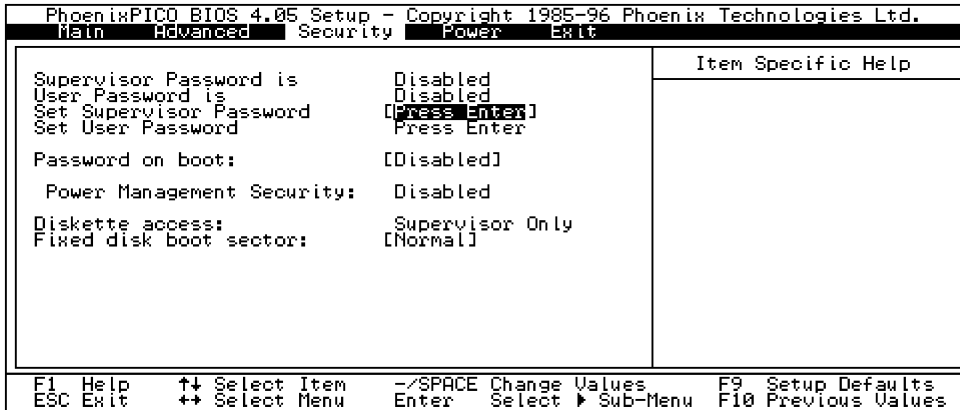
" **NOTE:** *To connect to another computer, a dock or port expander is required.*

Press the [Esc] key to return to the Advanced menu.

- **CPU Cache**
Enables (*default*) or disables the level 1 cache mode.
- **HDD Write Cache**
Enables (*default*) or disables the hard drive cache.

Security

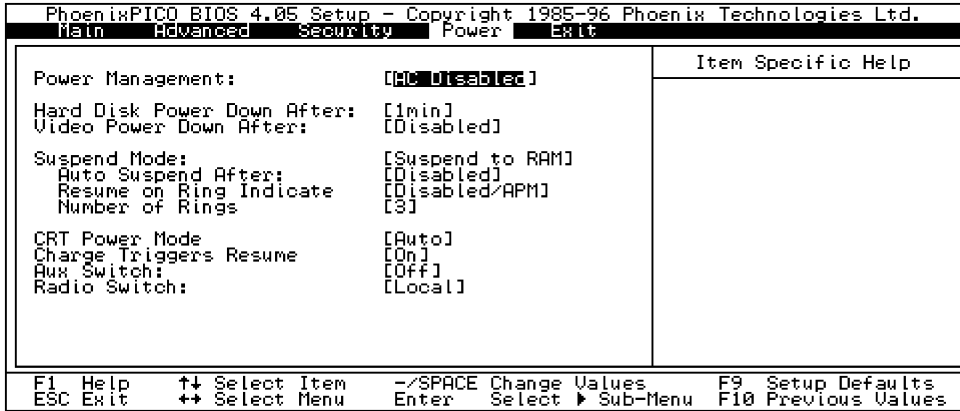
This menu configures passwords and security functions.



- **Supervisor Password is**
(Read-Only) Displays whether the supervisor password is enabled, giving full access to setup menus.
- **User Password is**
(Read-Only) Displays whether the user password is enabled, giving restricted access to setup menus.
- **Password on boot:**
When enabled, enter a User or Supervisor password at the end of the post or the system is disabled (*default*).
- **Power Management Security:**
(Read-Only) Enabling this feature requires a password during the resume process.
- **Diskette access:**
(Read-Only) Denotes if both the User and the Supervisor can use the floppy drive, or just the Supervisor.
- **Fixed disk boot sector:**
Allows the boot sector to write-protect the hard drive from viruses — Normal (*default*) or Write-protect.

Power

The Power menu configures power-down methods, suspend mode, and switches.

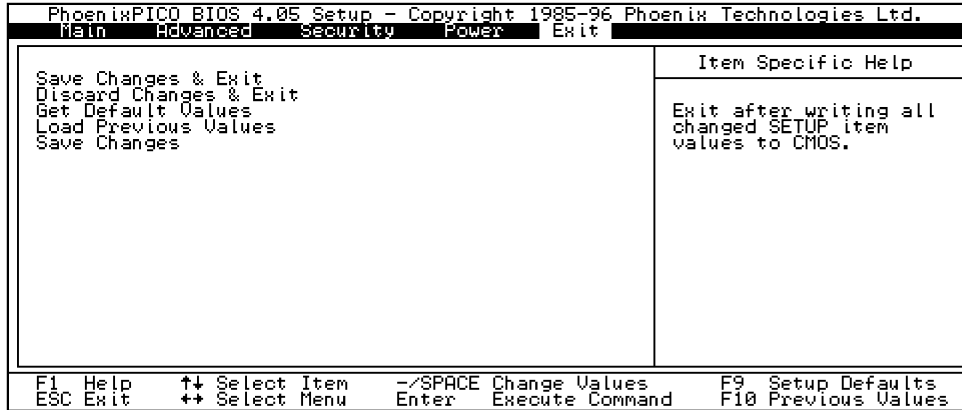


- **Power Management:**
Enables or disables BIOS-based power management. This setting also allows BIOS-based power management to be enabled only if external power is *not* present — AC Disabled (*default*), Enabled, or Disabled.
- **Hard Disk Power Down After:**
Amount of time the disk must be inactive to automatically spin down (turned off) — Disabled, or 1–15 minutes. *Default is 1 minute*
- **Video Power Down After:**
This option is disabled in the BIOS, and is to be controlled through standard Windows 95 power management via screen saver controls.
- **Suspend Mode:**
Sets the type of suspend performed during user-initiated suspend — Suspend to RAM (*default* — save state but remain in low power mode) or Suspend to Disk (save state to disk and power off).

- **Auto Suspend After:**
Period of inactivity (standby) which results in the system entering the suspend state — Disabled (*default*), 1, 2, 4, 6, 10, 14, 20, or 30 minutes.
- **Resume on Ring Indicate**
Allows Ring Indicate (RI) to trigger a resume. If ENABLED, RI causes a resume. If set to DISABLED/APM (*default*), RI is controlled by Windows 95 and only causes a resume if the feature is activated by an APM 1.2 power driver.
- **Number of Rings**
Whether RI is enabled, above, or enabled by an APM 1.2 power driver, this option sets the number of rings necessary to cause a resume (wake the system) — 1, 3 (*default*), 5, or 7.
- **CRT Power Mode**
Controls whether an external CRT is enabled. This can be set to Auto (*default*), On, or Off, which bases CRT power on the docking state.
- **Charge Triggers Resume**
Allows the system to wake up when external power is applied — On (*default*) or Off.
- **Aux Switch:**
Auxiliary radio switch. “Auto” switches on when the 6620 Computer is docked; off when the 6620 Computer is undocked — On or Off (*default*).
- **Radio Switch:**
Main radio switch. This allows the system to switch between a local and remote antenna for LAN, WAN, or GPS radios — Local (*default*), Remote, or Auto. “Auto” dictates that the local antenna be used when the 6620 Computer is undocked; and the remote antenna be used when the 6620 Computer is docked.

Exit

Use this page to dictate how the system is to exit the CMOS setup window.



- **Save Changes & Exit**
Saves all CMOS settings and exist the Setup engine.
- **Discard Changes & Exit**
Exits the setup engine without saving changes.
- **Get Default Values**
Loads default values into CMOS.
- **Load Previous Values**
Loads the CMOS values which were set before changes were made while in the setup engine.
- **Saves Changes**
Saves all CMOS settings.

6620 Drive Mappings

This section explains where various drives go depending on the setting of the Boot Device feature (defined on page 8-5).

Table 8-1 defines the probable drive mapping for devices available when a 6620 is booted into Windows 95 OSR2. The device mapping table includes entries with the following format: “drive letter(w)” — for example: D:(w)

The (w) indicates that the drive letter is managed by Windows 95. The drives in the Windows 95 table with the (w) are assumed to be inserted at boot.

If two drives are removed, then replaced in reverse order, at boot time, their drive letters are altered to reflect the drives availability to the system. The following example highlights the behavior, *note the drive letters **in bold***:

EXAMPLE:

Original Configuration

Hard Drive Present = C:
PC Card 0 = **D**:(w) 40MB SanDisk
PC Card 1 = **E**:(w) 340MB Epson

*** Remove both PC Card drives. ***

Install 340MB Epson in PC Card 1
Install 40MB SanDisk in PC Card 0

New Configuration

Hard Drive Present = C:
PC Card 0 = **E**:(w) 40MB SanDisk
PC Card 1 = **D**:(w) 340MB Epson

Table 8-1
6620 Drive Mappings

Boot Device Selection	Device is present. Windows 95				
	EFD	PC Card 0	PC Card 1	PC Card 2	Hard Disk
EFD (Embedded Flash Drive)	C:	D:(w)	E:(w)	G:(w) *	
	C:		D:(w)	E:(w)	
	C:			D:(w)	
	C:	E:(w)	F:(w)	G:(w) *	D:
	C:		E:(w)	F:(w)	D:
	C:			E:	D:
	C:				D:
		E:(w)	F:(w)	G:(w) *	C:
			D:(w)	E:(w)	C:
				D:(w)	C:
PC Card 0	D:	C:	E:(w)	F:(w)	
		C:	E:(w)	F:(w)	D:
	E:	C:	F:(w)	G:(w)	D:
	D:		E:(w)	F:(w)	C:
	D:			E:(w)	C:
	D:				C:
			D:(w)	E:(w)	C:
				D:(w)	C:
					C:
					C:

* Indicates that the third drive may not always be available through Windows. Blank fields indicate that the device is not applicable.

Table 8-1 (Continued)
6620 Drive Mappings

Boot Device Selection	EFD	PC Card 0	PC Card 1	PC Card 2	Hard Disk
PC Card 1	D:	E:(w)	C:	F:(w)	
		E:(w)	C:	F:(w)	D:
	E:	F:(w)	C:	G:(w)	D:
	D:	E:(w)		F:(w)	C:
	D:			E:(w)	C:
		D:(w)		E:(w)	C:
				D:(w)	C:
					C:
PC Card 2	D:				
		E:(w)	C:	F:(w)	D:
	E:	F:(w)	G:(w)	C:	D:
	D:				C:
	D:	E:(w)	F:(w)		C:
	D:		E:(w)		C:
		D:(w)	E:(w)		C:
			D:(w)		C:
PC Card Scan	E:	C:	F:(w)	G:(w)	D:
	D:	C:	E:(w)	F:(w)	
	E:		C:	F:(w)	D:
	D:		C:	E:(w)	
	E:			C:	D:
	D:			C:	
	D:				C:

* Indicates that the third drive may not always be available through Windows.
Blank fields indicate that the device is not applicable.

Table 8-1 (Continued)
6620 Drive Mappings

Boot Device Selection	EFD	PC Card 0	PC Card 1	PC Card 2	Hard Disk
Hard Disk	D:	E:(w)	F:(w)	G:(w)	C:
	D:		E:(w)	F:(w)	C:
	D:			E:(w)	C:
	D:				C:
	C:	D:(w)	E:(w)	F:(w)	
	C:		D:(w)	E:(w)	
	C:			D:(w)	

* Indicates that the third drive may not always be available through Windows.
Blank fields indicate that the device is not applicable.

Section 9

CDPD Radio

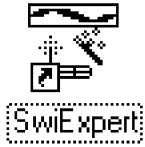
Applications for the Cellular Digital Packet Data (CDPD) Radio are provided by Sierra Wireless, Inc. and are included as an optional component in the 6620 Computer Toolkit. If you had selected "CDPD Radio Diskettes" as a component to be loaded onto your 6620 Computer and installed the applications from that component (instructions start on page 2-26), this section provides a brief view of two applications from Sierra Wireless, Inc.

From the Windows desktop, select **Start** → **Programs** → **Watcher**. You will find a README.TXT file and two online Help files. Read the contents of the README.TXT file for information about the various applications.

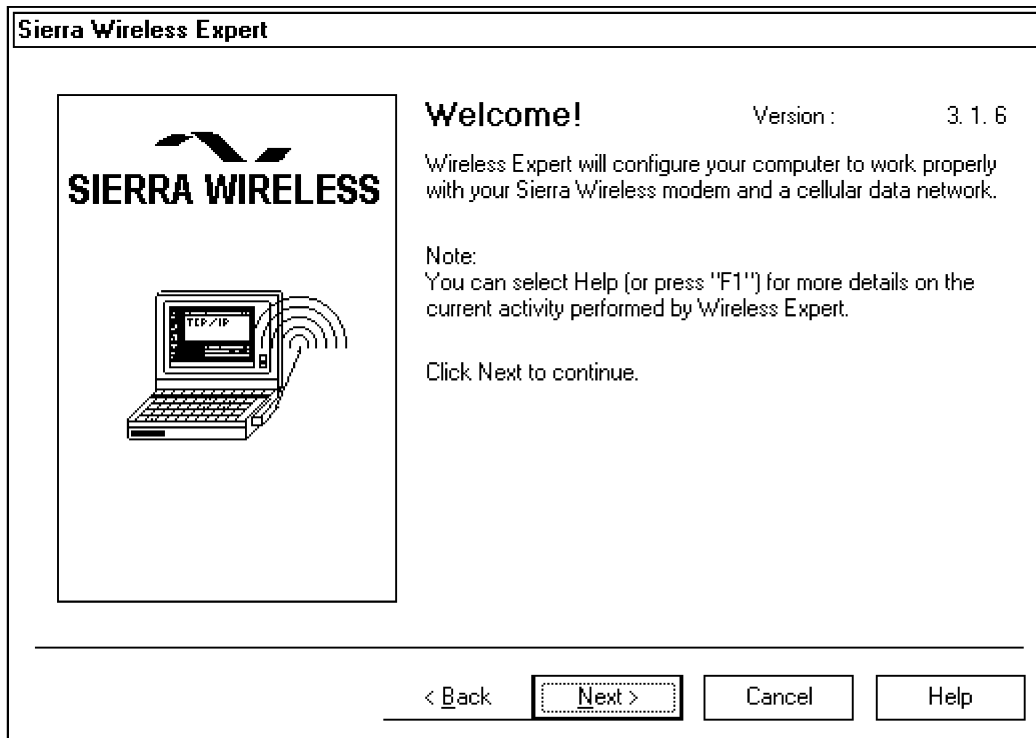
As the CDPD radio components are from Sierra Wireless, Inc. contact them for assistance and for troubleshooting information by calling 604-231-1100 or by visiting their web site at: www.sierrawireless.com

Sierra Wireless Expert

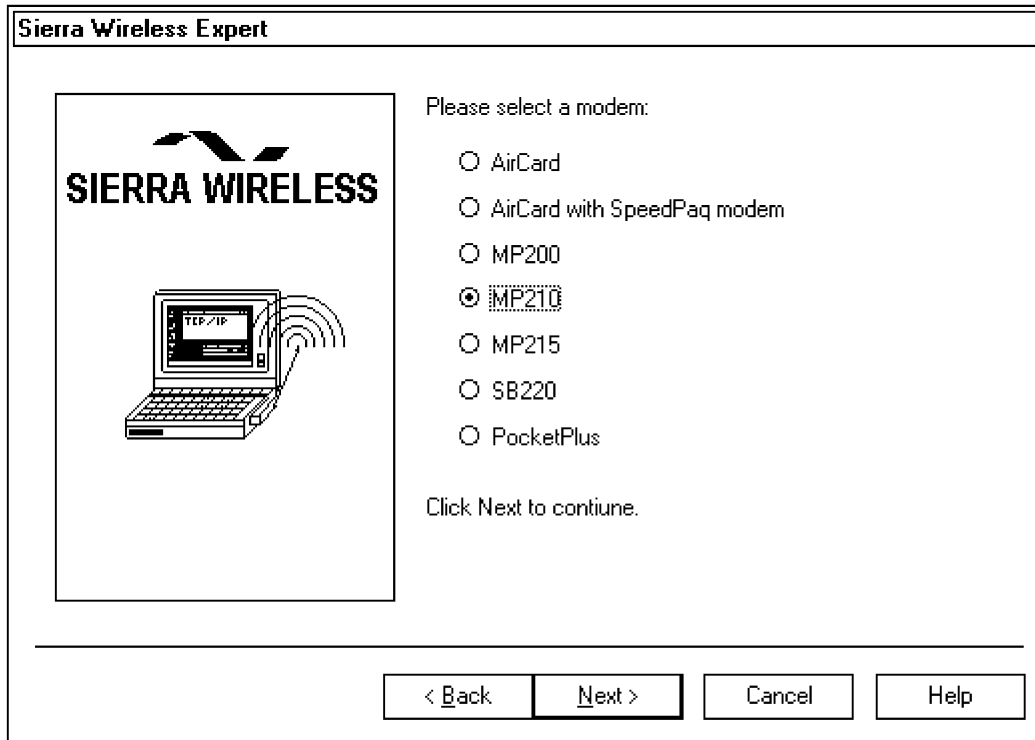
The “Sierra Wireless Expert” is a wizard that configures and troubleshoots the CDPD radio for the 6620 Computer. Note that you should have previously activated your cellular modem for this wizard to work.



From the Windows desktop, select **Start** → **Programs** → **Watcher** → **Sierra Wireless Expert**, or double-click the **SwiExpert** icon (shown left). The wizard opens with the following “Welcome” screen. Click the **Next** button to begin the configuration.



The “Sierra Wireless Expert” works with the modems listed in the following screen, select the correct modem that is installed in your 6620 Computer, then click the **Next** button for location validation.



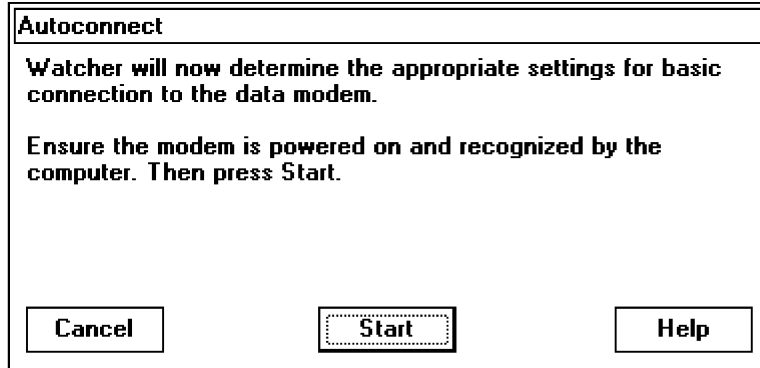
If a modem is located, the “Sierra Wireless Expert” moves on to configure the proper COM port and baud rates for the modem. If the “Sierra Wireless Expert” was unable to locate the selected modem in your 6620 Computer, consult the online Help for troubleshooting information. Access the information by clicking the **Help** button or from the Windows desktop, selecting **Start** → **Programs** → **Watcher** → **Sierra Wireless Expert Help**.

Watcher

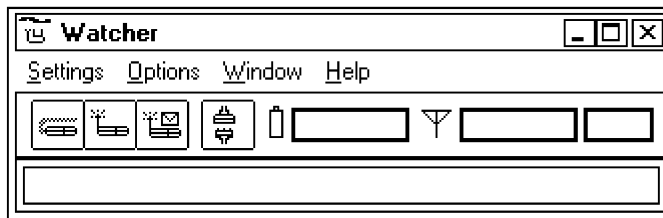


From the Windows desktop, select **Start** → **Programs** → **Watcher** → **Watcher**, or double-click the **Watcher** icon (shown left).

The “Watcher” application initiates a search for settings for a basic data modem via an “Autoconnect” screen. As instructed, make sure your modem is connected and recognized by the 6620 Computer, then press the **Start** button.



If successful, the “Watcher” application appears. Use this application to configure the Sierra Wireless modem and monitor various modem parameters.



Consult the online Help documentation for information. Access this information by clicking the **Help** button or menu option, or from the Windows desktop, selecting **Start** → **Programs** → **Watcher** → **Watcher Help**.

Section 10

Minimal Windows 95 Load

Norand Mobile Systems Division of Intermecc Technologies Corporation provides a “minimal” Windows 95 operating system configuration for you if you want to reduce the size of the storage footprint required by the system. The minimal Windows 95 load contains all of the necessary files to boot and bring up the Windows 95 operating system, including IrDA support, which is typically used in a mobile computing environment.

It is possible that files needed by some applications may not be present in the minimal load. Most of the excluded files are files located in the Windows System directory. For example, many DLLs (Dynamic Link Libraries) in any full windows load may not be in the minimal load. By using utilities in the toolkit, you should be able to determine which files are needed by the application being developed.

The required files can then be added to the minimal load. Also, many of the unused Microsoft Windows 95 components can be uninstalled from the Windows configuration, if not needed by your application. Then, the associated files can be deleted from the minimal load to further reduce the storage requirements.

A successful application integration into the minimal Windows 95 configuration involves the following steps:

1. **Use an Appropriate Development Environment for the Application.**

This development environment should create a small application footprint to reduce storage size requirements. Avoid development environments that produce larger than necessary Windows applications. Also use static linking when creating an application. This produces an executable that does not require any additional DLL files that may not be included in the minimal Windows 95 load.

Creating a stand-alone application eases integration into the minimal Windows 95 load. You may run an installation utility to install the necessary files to support the application on the minimal load, but the utility cannot run on the minimal load without all of the DLL files that come on the full Win95 load. If necessary, copy these installation files to the minimal load, then delete these files after the installation is complete.

2. **Assess the Application's RAM Requirements.**

During the application development process, determine how much RAM is required for the application to run. Ask yourself the following questions:

- Can the application run in 8, 16, or 32 MB of RAM without virtual memory enabled?
- If virtual memory is required, how much disk space needs to be available to accommodate the virtual memory swap space?
- Should Windows manage the virtual memory swap file size, or do I fix the amount of disk space available?

All of these help determine whether an application can be successfully integrated with the minimal Windows 95 load *and* fit on any sized SanDisk card.

" **NOTE:**

You **must** leave sufficient disk space for virtual memory management or disable virtual memory.

Many applications use significant amounts of RAM and cannot function properly without enabled Windows memory management. Some applications may execute without enabled memory management, while others will require it.

3. **Install NORAND and OEM drivers.**

The NORAND Toolkit provides a software installation program to install all of the particular drivers required for the configuration. These are NORAND and OEM software which interfaces the hand-held computer with external or internal accessory devices, such as printer drivers, handwriting recognition, GPS radio, scanners, IrDA communications, CDPD radios, and so forth.

4. **Integrate the Software Application.**

Once a custom base is created and the correct software drivers are installed, install the application software onto the system. As mentioned earlier, using statically linked code for the development process results in the application not requiring any additional DLL files.

If static linking is not used, the NORAND Tool Kit provides an analysis utility, which tracks all file accesses made while an application is running on a full Windows 95 load. The utility then generates a script file showing all files opened during a given execution period.

5. Using FILEMON and FILCHK.

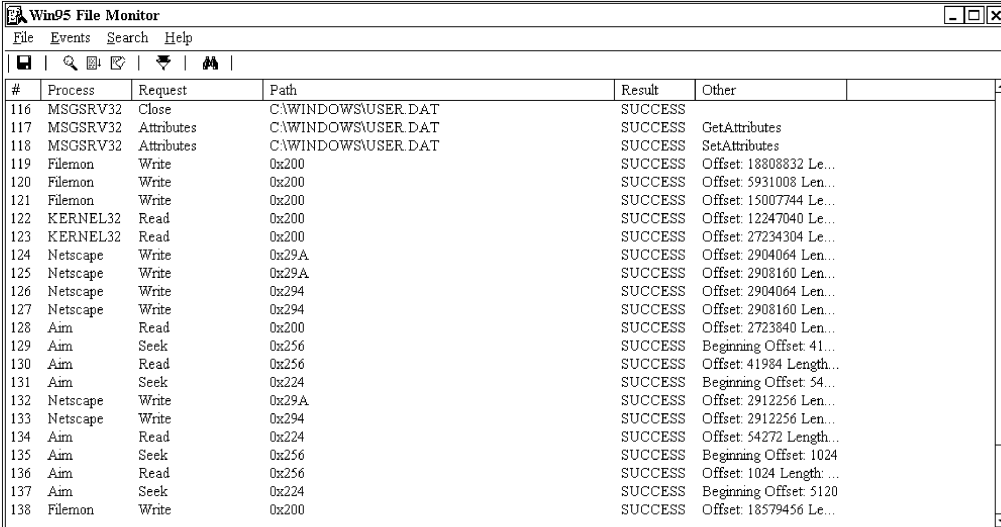
The target application is installed or copied onto the 6620 Computer running a minimal Windows 95 load, and the FILEMON utility monitors all unsuccessful file access attempts when starting or running the application. The FILCHK program then parses the output of FILEMON, to create a list of possible missing files. The 6620 minimal load flash card is then placed in a PC Card slot on a desktop PC or laptop PC. Then the missing files, specified in OUTLIST.W95, can be manually copied from the full Windows 95 image on the 6620 Toolkit CD.

Below is a step-by-step procedure for running FILEMON to monitor an application on the 6620 Computer.

- a. Image a Boot Card using the 6620 Toolkit.
- b. Install and copy the target application to the minimal load flash card.
- c. Obtain the FILEMON utility from the Systems Internals web site at:
<http://www.sysinternals.com/filemon.htm>
(it consists of two files: FILEMON.EXE and FILEVXD.VXD).
- d. Copy the FILEMON and FILEVXD files to the \windows\desktop folder of the minimal load.
- e. Remove the PC Card from the development PC, place it in the 6620 Computer, and boot from it.
- f. Once booted, start the FILEMON utility from the desktop on the 6620 Computer (it will begin logging right away).
- g. Immediately start the target application, and continue running the target application until a failure occurs or the application is terminated.
- h. Stop the FILEMON utility (click on magnifying glass so an X is across it).

- i. In FILEMON, select **File** → **Save** and name the file FILEMON.FIL. Save the file to the C:\6620Utilities directory.
- j. Shut down Windows 95 on the 6620 Computer.
- k. Remove the flash card from the 6620 Computer, and place it back into the PC Card slot on the development PC.
- l. Double-click on the FILCHK utility or run FILCHK from a DOS window in the C:\6620Utilities directory. This creates the OUTLIST.W95 file.
- m. Use a text editor to examine OUTLIST.W95, which contains a list of suggested files to copy to the minimal load. Then manually copy those files from the 6620 Toolkit CD full Windows 95 load at \Image.

EXAMPLE: Below is a sample FILEMON screen:



#	Process	Request	Path	Result	Other
116	MSGSRV32	Close	C:\WINDOWS\USER.DAT	SUCCESS	
117	MSGSRV32	Attributes	C:\WINDOWS\USER.DAT	SUCCESS	GetAttributes
118	MSGSRV32	Attributes	C:\WINDOWS\USER.DAT	SUCCESS	SetAttributes
119	Filemon	Write	0x200	SUCCESS	Offset: 1880832 Le...
120	Filemon	Write	0x200	SUCCESS	Offset: 5931008 Len...
121	Filemon	Write	0x200	SUCCESS	Offset: 15007744 Le...
122	KERNEL32	Read	0x200	SUCCESS	Offset: 12247040 Le...
123	KERNEL32	Read	0x200	SUCCESS	Offset: 27234304 Le...
124	Netscape	Write	0x29A	SUCCESS	Offset: 2904064 Len...
125	Netscape	Write	0x29A	SUCCESS	Offset: 2908160 Len...
126	Netscape	Write	0x29A	SUCCESS	Offset: 2904064 Len...
127	Netscape	Write	0x29A	SUCCESS	Offset: 2908160 Len...
128	Aim	Read	0x200	SUCCESS	Offset: 2723840 Len...
129	Aim	Seek	0x256	SUCCESS	Beginning Offset: 41...
130	Aim	Read	0x256	SUCCESS	Offset: 41984 Length...
131	Aim	Seek	0x224	SUCCESS	Beginning Offset: 54...
132	Netscape	Write	0x29A	SUCCESS	Offset: 2912256 Len...
133	Netscape	Write	0x29A	SUCCESS	Offset: 2912256 Len...
134	Aim	Read	0x224	SUCCESS	Offset: 54272 Length...
135	Aim	Seek	0x256	SUCCESS	Beginning Offset: 1024
136	Aim	Read	0x256	SUCCESS	Offset: 1024 Length...
137	Aim	Seek	0x224	SUCCESS	Beginning Offset: 5120
138	Filemon	Write	0x200	SUCCESS	Offset: 18579456 Le...

The FILCHK utility parses the FILEMON.FIL file, and produces an OUTLIST.W95 output file, as in the example given on the next page:

EXAMPLE: The following files were sought by Windows, but were never found while Filemon was running its trace:

NETDET. INI
WRKGRP. INI
MSTCP. DLL
DESKTOP. INI
WINHLP32. EXE

Of those files listed above, the following are files which are contained in the full Windows 95 load:

\WINDOWS\NETDET. INI
\WINDOWS\SYSTEM\MSTCP. DLL
\WINDOWS\WINHLP32. EXE

INDEX

NOTE:

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