
Installing a Device in the NEC Modular Bay Slot

Use the following steps to install a device in the NEC Modular Bay slot.

1. Use the Phoenix BaySwap utility or power off the system.
2. Remove the Modular Bay device or weight-saving module from the Modular Bay slot.
3. Align the device in the NEC Modular Bay slot and push it in until it fits securely into the bay. Make sure the latch secures the device.
4. Press the Power button to power on or resume operation.

Removing a Device from the NEC VersaBay IV Slot

Use the following steps to remove a device from the NEC VersaBay IV slot.

1. Use the Phoenix BaySwap utility or power off the system.
2. Close the LCD panel and turn the system over.
3. Locate the NEC VersaBay IV release latch (see the following figure).

Locating the NEC VersaBay IV release latch



A – NEC VersaBay IV Release Latch

B – NEC VersaBay IV Device

4. Slide the latch toward the back of the system and hold it.

-
5. Grasp the edge of the NEC VersaBay IV device and pull the device out of the system.

Removing a device from the VersaBay IV slot



⚠ CAUTION Always install the weight-saving module that ships with your system in the VersaBay IV slot if no VersaBay IV device is installed in the slot. See “Installing a Device in the NEC VersaBay IV Slot” for instructions on installing the module.

Installing a Device in the NEC VersaBay IV Slot

Use the following steps to install a device in the NEC VersaBay IV slot.

1. Use the Phoenix BaySwap utility or power off the system.
2. Remove the VersaBay IV device or weight-saving module from VersaBay IV slot.
3. Align the device in the NEC VersaBay IV slot and push it in until it fits securely into the bay.

Inserting a device into the NEC VersaBay IV slot



4. Turn the system over and open the LCD panel.
5. Press the Power button to power on or resume operation.

Variable-Speed CD-ROM Drive

Your NEC Versa notebook might ship with a 24X maximum/12X minimum variable-speed CD-ROM drive. The CD-ROM drive is assigned an available drive letter. Use the CD-ROM drive to load and start programs from a compact disc (CD) or to play your audio CDs. The CD-ROM drive is fully compatible with Kodak™ multisession Photo CD™ discs and standard audio CDs.

The CD-ROM drive operates at different speeds depending on whether the CD you are using contains data or music. This allows you to get your data faster and to see smoother animation and video. Note that data is read at a variable transfer rate depending on its location. For example, the maximum rated speed is generally achieved only when reading the outermost track on a completely filled CD.

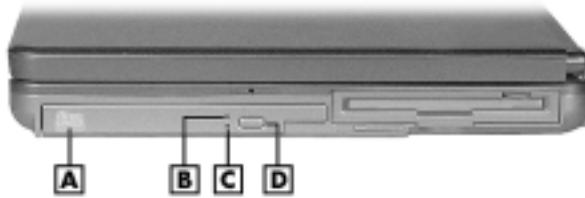
The CD-ROM drive offers the following features (see the following figure).

- **Status LED** — Lights during data read operations. Do not eject the CD or turn off the NEC Versa notebook when the indicator is lit.
- **Emergency Eject Hole** — Allows you to manually remove a disc from the CD-ROM drive if the eject function is disabled by software or a power failure.

To remove a disc, insert the end of a paper clip into the eject hole, and push in until you hear a click. Manually open the drawer.

- **Eject Button** — Ejects the CD tray. Press this button when power is on to insert a CD into or remove a CD from the drive.

CD-ROM drive features



A – CD-ROM Drive

B – CD-ROM Drive Status LED

C – Emergency Eject Hole

D – Disc Eject Button

CD Loading

To insert a CD into the CD-ROM drive, follow these steps.

1. With system power on, press the Eject button. The CD tray emerges a short way out of the drive door.
2. Gently pull the tray out until you can easily position a disc in the tray.
3. Put your CD, printed side up, into the circular impression in the tray.
4. Push the CD tray in until it clicks shut.

Note Some CDs vibrate when playing. This does not affect the CD-ROM drive.

CD Care

When handling CDs, keep the following guidelines in mind.

- Always pick up the disc by its edges.
- Avoid scratching or soiling either side of the disc.
- Do not write on or apply labels to the data side of the disc.
- Keep the disc away from direct sunlight or high temperatures.
- Clean fingerprints or dust from the disc by wiping it with a soft cloth. Gently brush the cloth from the center of the disc toward the edge.



CAUTION Avoid using benzene, paint thinner, record cleaner, static repellent, or any other chemical on the disc. Chemicals and cleaners can damage the disc.

Changing the Auto Play Setting

Your system's shipping configuration may not allow a CD to automatically play upon insertion. Although this feature makes using your CDs very convenient, it may interfere with the system's power management function.

Follow these instructions to enable or disable the Auto play feature.

1. Press the Start button, select Settings and Control Panel.
2. In the Control Panel, highlight and double-click the System icon.
3. Select the Device Manager tab.
4. Locate and open the CD-ROM folder.
5. Highlight the appropriate CD-ROM line.
6. Press the Properties button at the bottom of the window and select the Settings tab.
7. Proceed as follows:
 - To enable Auto Play, click to add a check mark next to the line "Auto insert notification."
 - To disable Auto Play, click to remove the check mark next to the line "Auto insert notification."
8. Select OK twice to accept the settings in the Settings tab and exit the Properties window.
9. To activate the new setting, reboot the system when prompted.

Variable-Speed CD-RW Drive

Your NEC Versa notebook might ship with a CD-RW drive and Adaptec® Easy CD Creator™ software. Use the CD-RW drive to load and start programs from a compact disc (CD) or to play your audio CDs. The C-RW drive is fully compatible with Kodak Photo CDs and standard audio CDs.

In addition, the Easy CD Creator application allows you to write information to a CD and backup information from your hard disk drive to a CD. For detailed information about using the CD-RW drive and installing the Easy CD Creator, refer to the accessory sheet that ships with the drive.

Note Software and drivers for the CD-RW drive are provided separately on a CD. Printed installation instructions are packaged with the CD.

Variable-Speed DVD-ROM Drive

The 8X maximum/2X minimum variable-speed DVD-ROM drive, which might ship with your Versa notebook, offers many improvements over the standard CD-ROM technology, including superior video and audio playback, faster data access, and greater storage capacities. The drive reads from DVD discs as well as standard audio and video CDs.

In addition, some DVD-ROM drives ship with the NEC SoftDVD Player that allows you to play movies in DVD format. For detailed information about using the DVD-ROM drive and installing the NEC SoftDVD Player, refer to the accessory sheet that ships with your drive.

The DVD-ROM drive offers the following features.

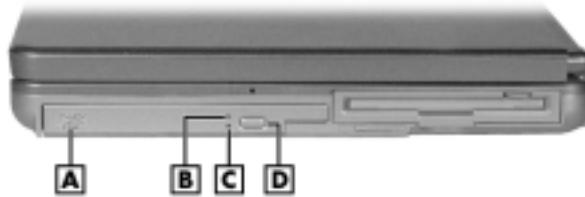
- Status LED — Lights during data read operations. Do not eject the DVD or turn off the NEC Versa notebook when the indicator is lit.
- Emergency Eject Hole — Allows you to manually remove a disc from the DVD-ROM drive if the eject function is disabled by software or a power failure.

To remove a disc, insert the end of a paper clip into the eject hole, and push in until you hear a click. Manually open the drawer.

- Eject Button — Ejects the DVD tray. Press this button when power is on to insert a DVD into or remove a DVD from the drive.

Note Software and drivers for the DVD-ROM drive are provided separately on a CD. Printed installation instructions are packaged with the CD.

DVD-ROM drive features



A – DVD-ROM Drive

B – DVD-ROM Drive Status LED

C – Emergency Eject Hole

D – Disc Eject Button

Combination CD-RW and DVD-ROM Drive

Your system might come with a combination CD-RW and DVD-ROM drive. Use the drive to load and start programs from a compact disc (CD) or to play your audio CDs, write information to a CD, or play digital video discs (DVDs).

The CD-RW/DVD-ROM combination drive offers the following features (see the following figure).

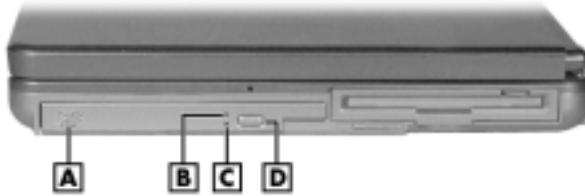
- Status LED — Lights during data read operations. Do not eject the disc or turn off the NEC Versa notebook when the indicator is lit.
- Emergency Eject Hole — Allows you to manually remove a disc from the CD-RW/DVD-ROM drive if the eject function is disabled by software or a power failure.

To remove a disc, insert the end of a paper clip into the eject hole, and push in until you hear a click. Manually open the drawer.

- Eject Button — Ejects the tray. Press this button when power is on to insert a disc into or remove a disc from the drive.

Note CD-RW media must be formatted before you use it. Systems with CD-RW drives ship with an NEC CD-RW Software CD. Install the software on your system from this CD (see “NEC CD-RW CD” in Chapter 4.)

Combination CD-RW and DVD-ROM drive features



A – Combo CD-RW/DVD-ROM Drive
B – Combo Drive Status LED

C – Emergency Eject Hole
D – Disc Eject Button

Note Software and drivers for the combination CD-RW and DVD-ROM drive are provided separately on a CD. Printed installation instructions are packaged with the CD.

Memory Modules

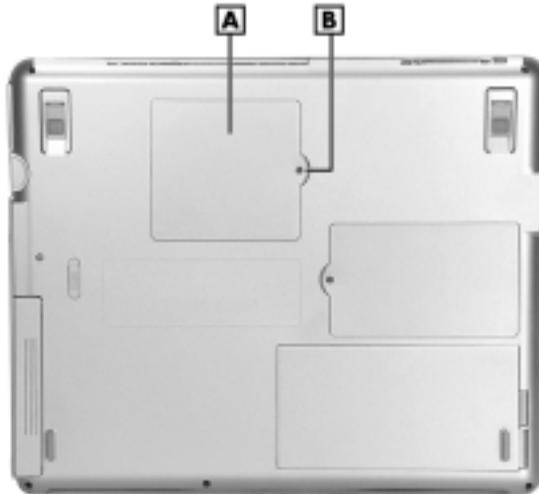
The notebook computer offers two 64-bit memory slots using 144-pin SO-DIMMs (Small Outline Dual Inline Memory Modules). Each slot supports a 128-MB, 256-MB, or 512-MB (when available) SDRAM module. The memory slot supports a single SO-DIMM. The memory slots are located on the underside of your computer inside the memory bay.

Follow these steps to upgrade the system memory.

1. Power off the system and disconnect any peripheral devices.

-
2. Turn the system over and locate the screw on the memory bay cover.

Memory bay cover and screw



A – Memory Bay Cover

B – Screw

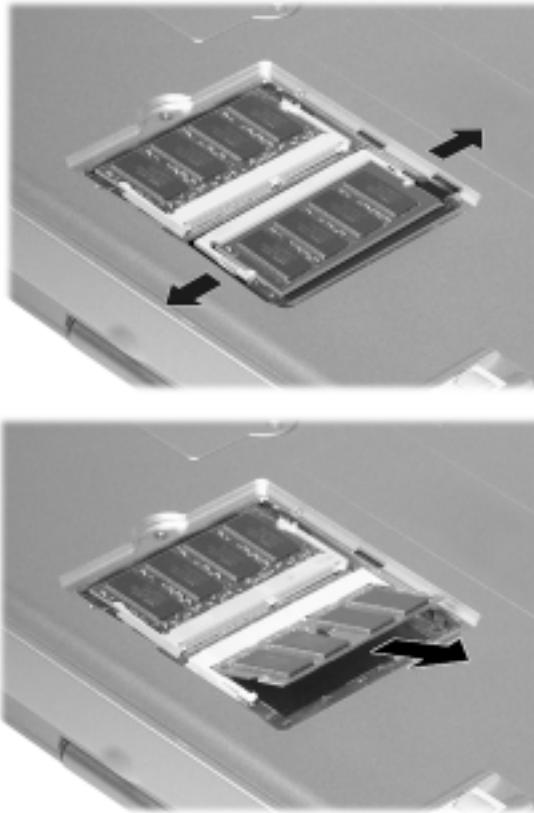
3. Remove the screw and lift off the memory bay cover.
4. If you need to remove a module for the upgrade, remove it as follows (see the following figure).



CAUTION Before handling any internal components, discharge static electricity from yourself and your clothing by touching a nearby unpainted metal surface.

- Press the locking tabs away from the sides of the module until the module pops up at an angle.
- Pull the memory module out of the slot along the angle.

Removing the memory module



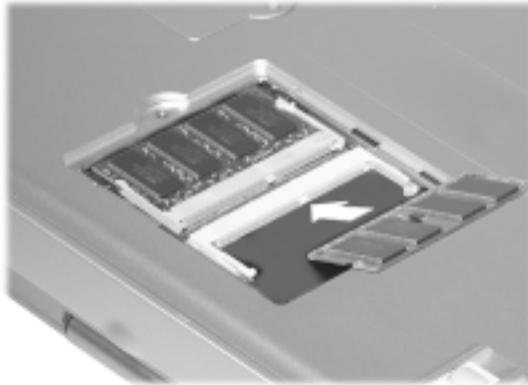
5. Locate the alignment notch on the upgrade module.
6. Locate the memory module slot.
7. Align the notch on the module with the notch in the slot connector and install the module as follows (see the following figure):



CAUTION Before handling any internal components, discharge static electricity from yourself and your clothing by touching a nearby unpainted metal surface.

- Hold the memory module at a 60-degree angle and align its connector with the slot in the system. Push the memory module into the slot.
- Press down on the edge of the memory module until the locking tabs on the sides snap into place, securing the module.

Installing the memory module



8. Reassemble the NEC Versa L320 components as follows.
 - Replace the memory bay cover.
 - Replace the screw.
 - Turn the system over.

6

Communicating with Your NEC Versa

- MDC Modem
- Mini PCI LAN
- PC Cards
- Internet Connections
- IR Port
- Mini PCI Wireless LAN

MDC Modem

Some models of the NEC Versa L320 come equipped with a 56K capable fax/data modem that allows you to communicate with others via fax or e-mail, or to connect to an online service or bulletin board.

Note Due to FCC regulations in effect at the time that this document was printed, the 56K modem transmits at a maximum speed of 52K.

The speed of data transmission is dependent on the quality of telephone lines. Digitally terminated lines improve the speed of data transmission. Contact your service provider for more information.

Connecting the Modem

The fax/data modem provides one standard phone connector. NEC provides one analog cable for your convenience.



CAUTION Use only 26AWG phone line when connecting the modem.

Use the following steps to connect the analog phone cable to your modem.

Note When using a modem outside the U.S. and Canada, you might need an international telephone adapter, available at most electronics supply stores.

1. Locate the analog phone cable that ships with the NEC Versa L320. Each end of the cable has a RJ-11 connector that plugs into a standard wall outlet.
 2. Connect one end of the cable into a standard telephone wall outlet.
 3. Connect the other end of the cable into the computer's modem port on the left side of the system (see "Around the Left Side of the System" in Chapter 1).
-

Note Depending on your operational requirements, you may need to disable the modem in order to enable the IR port for wireless data transfer.

Mini PCI LAN

Some NEC Versa L320 systems ship with Mini PCI LAN, a 10/100Base-TX interface that allows connection of your system to a local area network and supports both Wake-on-LAN and Network Boot functions.

To take advantage of the interface, simply connect an RJ-45 cable to the LAN port on the left side of the system (see “Around the Left Side of the System” in Chapter 1).

PC Cards

PC Cards are all approximately the same size and vary only in thickness. All have a standard 68-pin connector. Your NEC Versa supports the installation of the PC Cards described next.

Type II Cards

Type II cards have a thickness of 5.0 millimeters (mm). Type II cards are often storage or communications devices such as battery backed Static Random Access Memory (SRAM), Read Only Memory (ROM), Flash Memory, LAN, and Small Computer System Interface (SCSI). Typical Type II cards include input/output (I/O) features such as modems and LANs.

Type II Extended Cards

Many PC Cards are Type II extended cards. The extended card has an additional physical component that protrudes beyond the traditional card size. The extension can be as large as 40 mm deep by 9.65 mm high. This extension provides room for additional electronics as well as a location for external connectors.

Type III Cards

Type III cards are thicker (10.5 mm) than Type II cards and allow no extensions. Type III card uses include advanced function I/O cards with additional features such as wireless modems, multimode cards (cards with more than one function such as a combined modem and LAN card), and small hard drive storage.

Communication Cards

You can use fax/modem and network PC Cards with your NEC Versa. Here are some suggestions to help you get the best system performance.

Note If you are using this unit outside the United States or Canada, contact a local NEC dealer for availability information.

- Network Cards — You can use a network card with your system to gain access to a local area network (LAN).

You can insert a network card in either slot.

- Fax/Modem Cards — You can use a PC Card modem with your system to communicate with others via fax, e-mail, or connect to an online service or bulletin board.

You can insert a fax/modem card in either slot.

Note Outside the U.S. and Canada, you might need a modem and telephone adapter approved for the local telephone system. Check with your local dealer for details about purchasing this equipment.

Always insert the fax/modem card before using your fax/modem software application. If you start the application before inserting the fax/modem card, the application typically does not find the card.

Storage Cards

When you insert a memory or storage card in an NEC notebook computer, it appears as a unique drive as long as the system has an available interrupt for the card.

Interface Cards

You can connect most standard Small Computer System Interface (SCSI) devices using the optional NEC PC Card-SCSI card.

Other Cards

Many other kinds of PC Cards are available for notebook computers. They include the following cards:

- Global Positioning System (GPS) — Enables the tracking of remote units (for example, delivery trucks)
- Serial — Adds an extra serial communications port
- Multimedia — Combines animation and sound
- Audio — Enables the use of sound (for example, in voice mail).

PC Card Slots

Your NEC Versa L320 has two Cardbus slots for inserting two PC or Cardbus cards. The slots support two Type II cards or one Type III PC Card.

Using the system's PC Card slots, you can add optional PC Cards and connect external devices to your NEC Versa L320. These devices include devices, such as modems, LAN cards, and storage cards.

Inserting a PC Card

Follow these steps to insert a PC Card in your system.



CAUTION Some PC Cards require additional system resources. Before inserting a PC Card you might need to disable either the IR port, USB port, or internal modem. Check the Windows device manager to ensure that one of these devices is disabled before inserting a PC Card.

For information about enabling and disabling devices on your NEC Versa L320, see "Enabling and Disabling Devices," later in this chapter.

1. Align the card so that the 68-pin connector points towards the slot and the arrow on the PC Card faces up (see the following figure).

Note Use the PC Card software preinstalled on your system to check PC Card slot availability. For example, look for the PC Card icon in the Windows Control panel. It shows which slot contains a PC Card and which is empty.

-
2. Slide the card into either slot (Type III cards can only be inserted in the bottom slot).

A low tone followed by a high tone lets you know that the card is fully inserted and recognized. (If you turn off the sound, no sound is emitted.)

! **CAUTION** Other two-tone sequences such as high, then low tones indicate that the card is inserted, but the card type is unknown.

Inserting a PC Card



Removing a Card

Follow these steps to remove a PC Card in Windows 98.

1. Double click My Computer, double click Control Panel, and double click the PC Card icon or simply double click the PC Card icon from the taskbar.
2. Select the PC Card to remove, and select Stop.

The Windows operating system alerts you if any applications are still using the card. If all applications using the card are closed, services for that card are shut down. You receive a message saying that it is safe to remove the card.

3. Press the button on the side of the PC Card in the slot twice.

Internet Connections

Your NEC Versa L320 system is equipped with the Windows operating system to provide a fully-integrated Internet experience. Use the Internet Connection Wizard on your desktop to configure your system for e-mail and Internet access. Sign up for a new account or configure your system to use an existing account.

Before using the Internet Connection wizard, to transfer an existing account for e-mail and Internet access, you need an Internet service provider (ISP) account and some or all of the following configuration information:

- the dial-up telephone number
- TCP/IP settings
- port settings
- a user name/logon and password
- your e-mail address
- the name of a POP3, IMAP, or HTTP server (for incoming mail)
- the name of an SMTP server (for outgoing mail).

Internet Connection Wizard in Windows 98/2000

Access the Internet Connection Wizard in Windows 98/2000 through its desktop icon. The Windows 98/2000 Internet Connection Wizard offers the following choices:

- Sign-up for a new Internet account. Take advantage of the Microsoft Internet Referral Service.
- Transfer an existing Internet account.
- Manually configure an Internet account or connect through a local area network (LAN).

Launch the connection wizard and follow the on-screen prompts to configure your system for Internet access.

Accessing the Internet

Your NEC Versa L320 system is equipped with an Internet shortcut button, located just above the keyboard. The first time that you press the Internet shortcut button, the Internet Connection Wizard launches, allowing you to configure your system for Internet access.

Once your Internet connection is configured, pressing the Internet shortcut button launches your associated dial-up network connection, allowing you to enter your logon name and password. In addition, Microsoft Internet Explorer launches, providing quick access to your favorite Internet sites.

Sending and Receiving E-mail

Your NEC Versa L320 system is equipped with an E-mail shortcut button, located just above the keyboard. The first time that you press the E-mail shortcut button, the Internet Connection Wizard launches, allowing you to configure your system for e-mail access. Once your Internet connection is configured, pressing the E-mail shortcut button launches your associated dial-up network connection, allowing you to enter your logon name and password. In addition, Outlook Express launches, providing quick access to your e-mail functions.

Modifying the Internet and E-mail Shortcut Buttons

The Internet and E-mail shortcut buttons are configured (default setting) to launch your Internet browser and e-mail applications, respectively. You can modify the default application settings with the One-Touch Start Button Settings utility which comes on the Application and Driver CD. See “One-Touch Start Button Settings Utility” in Chapter 4 for information about running this utility.

IR Port

The IR port on the front of your system lets your NEC Versa L320 communicate with other devices that also use infrared technology. To locate the IR port, see “Front Features” in Chapter 1.

The IR port is Infrared Data Association (IrDA) compatible. You can easily transfer files between your NEC Versa L320 and an IR-equipped desktop, or print to an IR-equipped printer without using cables.

IR transfer speed ranges from 2.4 Kbit/sec to 4.0 Mbit/sec. You can limit the IR transfer speed through the Infrared icon in the Windows control panel. Double click the icon and select the options to access the speed parameter.

Your NEC Versa transfers data at the speed compatible with the receiving device.

 **CAUTION** Your NEC Versa ships with the IR port disabled. Before using the IR port for the first time, you must enable the device. For Windows 98 operating systems, also enable infrared communications in the Windows Control Panel. See the following sections to enable the IR port and infrared communications.

Enabling the IR Port

Follow these steps to enable the IR port.

Note Once you enable the IR port in the BIOS Setup utility, the transfer speed defaults to the Fast IR (FIR) 4.0-Mbit/sec speed.

1. Access the BIOS Setup utility at power-on. Just press **F2** when the prompt, “Press <F2> to enter Setup,” appears.

The BIOS Setup main menu appears.

2. Using the arrow keys, select the Advanced menu and I/O Device Configuration parameter.
3. Press **Enter** to select the I/O Device Configuration menu.
4. Using the arrow keys, select “Infrared port.” Press **Enter** and select “Auto.”
5. Press **Enter** to select the change.
6. Select the Exit menu. Select “Exit Saving Changes.” Press **Enter**. Select “Yes” to confirm changes and to exit the utility.

Enabling Infrared Communications

If you have a system running the Windows 98 SE operating system, enable infrared communications as follows.

1. From the Windows Start menu, select Settings and Control Panel.
2. Double click the Infrared icon.
3. Select the Options tab.
4. Check the box to “Enable infrared communication.”
5. Click Apply and clickOK.

Using the IR Port

Follow these guidelines when using the IR port to communicate with another infrared device.

- Position the NEC Versa L320 no more than three feet away from the IR peripheral device you are using.
- Make sure that there is no greater than a 30° angle between the computer and the device.

Note If you have a hardware conflict using the IR port to communicate with an external device when a PC Card is installed, use the Windows device manager to disable either the USB port or the internal modem (available on some models). Ensure that the IR port has been enabled through the Setup utility. If you are running the Windows 98 operating system, be sure that infrared communications is enabled.

In the Windows 2000 environment, the default setting for infrared communications is FIR (Fast Infrared). If you need to change an SIR (Serial Infrared) setting to FIR, follow these steps.

1. From the Windows Start menu, select Settings and Control Panel.
2. Double click the System icon, select the hardware tab, and click the Device Manager button.
3. Click Infrared devices and double click Built-in Infrared Devices.
4. Select the Driver tab and click the Update Driver button.
5. Click Next when the Update Device Driver Wizard appears.
6. Select 'Display a list of the known drivers for this device so that I can choose a specific driver,' and click Next.
7. Select 'Show all hardware of this device class.'
8. Use the scroll bar in the Manufacturer's window to view and select 'SMC.'
9. Select 'SMC IrCC-Fast Infrared Port under the Infrared Devices window and click Next.
10. Click Yes when the Update Driver warning appears.
11. Click Next to initiate the update.
12. Click Finish, then click to close the System window.
13. Click Yes when prompted to restart your system.

Mini PCI Wireless LAN

Some NEC Versa L320 notebook computers come with built-in wireless LAN capabilities featuring the Wi-Fi™ (wireless fidelity) IEEE 802.11b High Rate (HR) standard for business users. Wireless LAN eliminates the need for connecting cables between your computer and your local area network, facilitating mobility, minimizing downtime, and improving your productivity.

The Wi-Fi compliant radio technology provides high-speed (11 Mbps) wireless networking with the performance capabilities of a wired 10BaseT LAN connection.

NEC Versa L320 wireless LAN configurations come with Client Manager and driver software installed and basic parameters set.

See the following sections for information about using the wireless LAN solution in the NEC Versa L320 notebook computer.

Enabling Wireless LAN in BIOS Setup

Before you can use the built-in wireless LAN, you must enable wireless LAN in the BIOS Setup utility. Use the following steps to enable wireless LAN:

1. Power on the NEC Versa L320 system. Press **F2** at the BIOS Setup prompt. The Main Setup menu appears.
2. Using the arrow keys, select the Advanced menu and the Wireless LAN menu item.
3. Press **Enter** to bring up the Wireless LAN settings.
4. Using the arrow keys, select “Enabled.” Press **Enter** to select the change.
5. Select the Exit menu. Select “Exit Saving Changes.” Press **Enter**. Select “Yes” to confirm changes and to exit the utility.

Checking Your Wireless Connection

Use the Client Manager software on your system to:

- verify the quality of your wireless connection to the network
- view/modify the wireless LAN configuration settings.

The Client Manager software starts automatically when you power on the NEC Versa L320 system. The Client Manager icon (stepped vertical bars) in the Windows system tray indicates that your system is running the Client Manager program.

The default profile scans for any access points in the area. The Client Manager icon indicates the signal strength from your system to the access point. An icon with green showing in all bars indicates an excellent radio connection.

If the Client Manager icon shows clear with a red box and a black jagged horizontal line, you have no radio connection. Check that you have enabled the Wireless LAN parameter in BIOS Setup (see the previous section). This icon status can also indicate that you are out of range from your network.

The radio signal depends upon:

- an access point in the area
- default profile.

See the following table for a summary of Client Manager status.

Client Manager Status

Icon Color	Radio Signal
Green	Excellent radio connection.
Yellow	Marginal radio connection. The radio connection is weak. Move closer to an access point.
Red	Poor radio connection. The radio signal is very weak. Save your files and move closer to an access point.
Red with jagged horizontal line	No radio connection. Looking for initial connection or you have moved out of range of the network. Need to set up a profile or move closer to an access point.
Blank	Peer-to-Peer network connection.

Note The default profile configuration might require modification for your network. See your system administrator for appropriate settings.

Viewing/Changing Configuration Settings

Use the Client Manager software to view or change your profile configuration. See your system administrator for help in setting the appropriate profile for your network.

For Client Manager options:

- Left-click the Client Manager icon to bring up a detailed status overview.
- Right-click the Client Manager icon to display a menu with more options.

The Client Manager main window displays the status of your active configuration profile and the quality of your connection. Menu items are available to add/edit your profile and to select advanced Client Manager options.

From the main Client Manager window, select Actions in the menu bar. Select the Add/Edit Configuration Profile option to activate a wireless profile from the pull-down menu or to add, edit, or delete a user-defined wireless profile.

Client Manager provides options in the configuration process to:

- describe your profile (for example, my office)
- identify your network (ID name of access point)
- set security/encryption
- set power management (default is power consumption high performance)
- set TCP/IP behavior (requires an IP address from your system administrator).

7

Traveling Tips

- Preparing for Travel
 - Packing for Travel
 - Using Power Connections
 - Getting Through Customs
 - Connecting to the Internet
-

Preparing for Travel

The NEC Versa computer makes a natural traveling companion. With a little preparation you can use the computer practically anywhere you go, to prepare your business documents, confirm your travel plans, surf the Internet, or simply stay in touch with those back home!

Here is what you should do before you leave home:

Note Speed the trip through airport security by carrying a charged system. Inspectors may want to see the screen display a message. The boot message is usually sufficient.

If your system is fully charged, the inspection only takes a minute or so. Otherwise, be prepared to attach the AC adapter and power cable. And if you don't have these, the inspection might include a disassembly of the system.

- Back up your NEC Versa's hard disk.
- Insert a fully charged battery to make sure your system is ready to quickly boot up at the airport security check.
- Fully charge all your batteries.
- Tape your business card to your NEC Versa, AC adapter, and batteries.
- If you run your system with battery power, maximize battery life by using power-saving features whenever possible.
- Take along any application or data files that you might need on diskettes or CDs.
- Check that you have everything you need before you leave on a trip.

Packing for Travel

The following are what you should take with you when you travel with your NEC Versa.

- Extra fully charged batteries
- Single-outlet surge protector
- Appropriate AC plug adapter for international voltage requirements
- Extra phone cord to access hard to reach wall jacks
- Copy of proof of purchase for your computer and other equipment or customs registration form for customs check

-
- Customer support phone numbers for your software (domestic and international)
 - *NEC Versa Quick Reference* card
 - AC extension cord.

Using Power Connections

With the right accessories, you can run your NEC Versa almost anywhere! Your system self-adjusts to various power sources. The United States, Canada, and most of Central and South America use 120-volt alternating current (AC). Most other countries of the world use 240-volt AC. The NEC Versa adapts to voltages ranging from 100 to 240 volts, 50 or 60-Hz.

There are a few countries with areas that use direct current (DC) as their main power source. You need a DC-to-AC converter in particular areas of Argentina, Brazil, India, Madeira, and South Africa.

To use your system overseas, you need an adapter plug. There are several different plugs available worldwide. You can buy these at an electronics supply store.

Getting Through Customs

With so many countries in the world, you can be sure that there are a variety of customs regulations. Plan wisely to get your NEC Versa notebook computer through customs by carrying the appropriate documentation to assure the customs agent that your system is not a recent purchase.

Travelers are often asked, when returning to their home country, whether or not they purchased the computer while outside of the country. Sometimes, the proof of purchase such as a bill of sale, insurance policy, or purchase receipt is sufficient. Taking along the purchase receipt for your notebook computer may sound practical, but may not always suffice, particularly when the purchaser of the computer is your company and the original receipt is not available to you.

Another alternative to a proof of purchase document is a Certificate of Registration, a document that is issued when you register your notebook computer with the Customs Service prior to departure. The certificate of registration contains a brief description of your computer and lists appropriate serial numbers for identification. The document is available from the customs web site at <http://www.customs.ustreas.gov/>.

To avoid hassle when moving your system through customs, you may want to obtain a certificate of registration and carry it whenever you travel out of the country with your NEC Versa notebook computer.

Connecting to the Internet

Whether you are on a business trip or vacation, connecting to the Internet while you travel can be expensive and frustrating unless you are prepared. Here are some tips on how to avoid frustration and expense while on the road.

Connecting Using a Modem

If you have access to a standard telephone jack while you are traveling, you can probably use your modem for dial-up access to your favorite sites. Follow these guidelines for connecting and configuring your system.

1. Before leaving home, check with your Internet Service Provider to see if it has:
 - A local access number at your point of destination.
 - A toll-free number that can also save you money.
 - In the absence of a local ISP access number or toll-free number, charging the call to your home phone can be less expensive than charging the call to your hotel room.
2. Prepare your system for phone line access in another country.
 - Line access outside of a hotel may require the addition of a “9” preceding the phone number string.
 - To circumvent unusual dial tone sounds sometimes encountered in hotels, you may have to modify a system configuration setting to “ignore the dial tone.”
3. Always check the phone line to determine whether or not it is digital vs. analog. *NEVER* use your modem with a digital phone line. Doing so can destroy your modem!

Connecting Using a LAN

Many hotels and convention centers now offer direct Internet access for a nominal fee. If your hotel provides this service, follow these guidelines for connecting and configuring your system.

- Many hotels can provide a LAN cable by prearrangement, so you can travel with a minimum of accessories.
- Plug the LAN cable into your system and the LAN connector in the room or hall where you want to access the Internet.
- After connecting the LAN cable, connect your system to an AC power outlet (if desired) and power on your system.

-
- Try launching your browser (Microsoft Internet Explorer, or Netscape Communicator, for example):
 - If your TCP/IP network settings are already configured to “Use DHCP for WINS Resolution” you should be able to access the Internet.
 - If your TCP/IP network settings are not set to use DHCP, a help screen may appear, or you may be directed to call the LAN provider for assistance configuring your system.

Follow the instructions that are provided to you completely, so your settings work effectively with the provider’s system.
 - If you have problems, the hotel or convention center may be able to direct you to a support technician.

8

Using External Devices

- Keyboard/Mouse
- USB Devices
- Serial Devices
- NEC Cable PortBar
- Monitor
- S-Video Supported Devices
- IEEE 1394 Devices
- Parallel Devices
- Audio Options

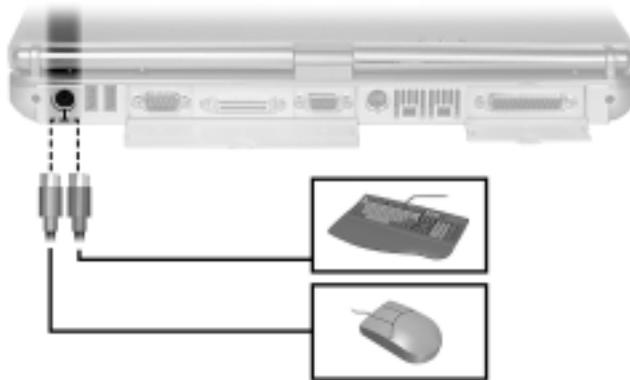
Keyboard/Mouse

You can add a full-size PS/2-style keyboard or PS/2-style mouse to your NEC Versa using the Plug and Play feature. The PS/2-style keyboard and the PS/2-style mouse are warm insertable, allowing you to connect the devices while the NEC Versa is powered on. You can continue to use the system keyboard and VersaGlide touchpad while an external keyboard or mouse is connected.

Note For information about disabling the VersaGlide while an external mouse is connected, see “Advanced Menu” in Chapter 3. The PS/2 Mouse parameter in the Advanced menu lets you enable or disable the VersaGlide touchpad.

To connect an external keyboard or mouse simply put the system into a suspended state, connect the device to the keyboard/mouse port, then resume the system when the connection is secure. You are now ready to use your external keyboard or mouse.

Connecting an external keyboard/mouse



USB Device

Your NEC Versa L320 system is equipped with two USB ports that increase your connectivity choices. The USB ports on the back of your system each allow you to connect up to 127 USB equipped peripheral devices to your NEC Versa notebook computer. These peripherals may include a digital camera, scanner, printer, CD-ROM drive, modem, mouse, keyboard, telephone, or game device.

USB devices called USB hubs can serve as connection ports for other USB peripherals. Only one device needs to be plugged into your NEC Versa. Additional peripherals can be connected in a daisy chain configuration where one device is connected to another in a series. Up to 127 devices can be connected together in this way.

Connect an external USB device to your system as follows.

1. Locate the two USB ports on the back of your system.
2. Plug the USB device into one of the two USB ports. Another USB device can be plugged into the other port.

Connecting a USB device



Serial Devices

To install a serial device such as a printer or an external modem, you need a cable with a female 9-pin connector.

Note When you connect a printer or modem, be sure to install the appropriate driver through the Windows Control Panel.

Follow these steps to connect a serial device to your NEC Versa.

1. Check that power to both the NEC Versa and the device is off.
2. Align and connect the 9-pin connector with the serial port on the system. Secure the connection with the screws provided.
3. Align and connect the other end of the cable to the appropriate port on the device. Secure the connections with the screws provided.

Connecting a serial device



4. Connect the power cable to the device and a properly grounded wall outlet.
5. Turn on power to the system and the device.

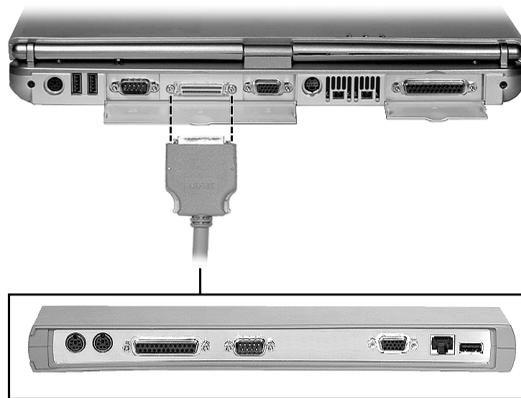
Note Make sure your device is online before trying to print. See the device-specific guide for instructions.

NEC Cable PortBar

Use the following steps to connect the NEC Versa L320 to the optional NEC Cable PortBar.

1. Disconnect the devices from the back of the NEC Versa that you want to connect to the PortBar.
2. Align the PortBar connector with the port on the back of the system.
3. Squeeze the sides of the PortBar connector together. Insert the connector in the port on the back of the system.
4. Connect the devices to the PortBar (see Chapter 1 for port identification.)

Connecting the PortBar



⚠ CAUTION Press the releases on the sides of the PortBar connector together while pulling the connector out. The cable connector and the connector on the system can be damaged if the releases are not pressed.

Disconnecting the PortBar



Monitor

You can add a standard external monitor to your NEC Versa L320. You need a display signal cable (usually provided with the monitor). One end of the cable must have a 15-pin connector for the system.

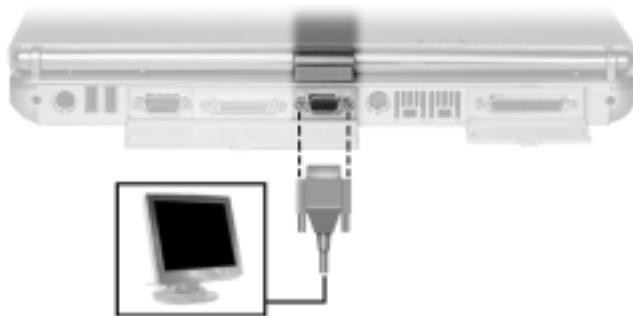
Follow these steps to connect an external monitor to your NEC Versa L320.

1. Check that the NEC Versa L320 is powered off and the monitor Power switch is turned off.

Note The NEC Versa L320 must be powered off or suspended while the monitor is being connected.

2. Attach the 15-pin cable connector to the monitor port on the system. Secure the cable connection with the cable connector screws.

Connecting a monitor



3. Connect the monitor power cable and plug it into a properly grounded wall outlet.
4. Follow any setup instructions in the monitor user's guide.
5. Turn on power to the system and device.
6. Press **Fn-F3** to toggle through the video modes.

S-Video Supported Device

You can add an S-Video supported device such as a camcorder, VCR, or game machine to the S-Video connector on the back of your NEC Versa L320 notebook computer.

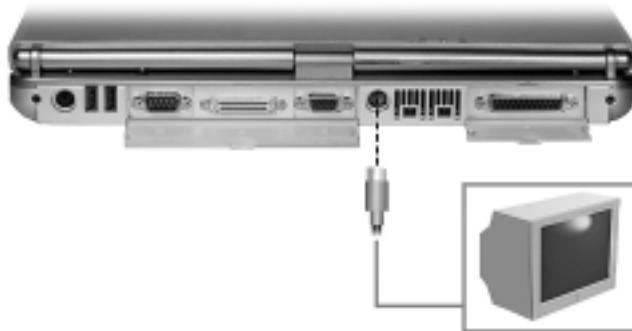
Follow these steps to connect an S-Video supported device to your NEC Versa L320.

1. Check that the NEC Versa L320 is turned off and the device power switch is turned off.

Note The NEC Versa L320 must be powered off or suspended while the S-Video device is being connected.

2. Attach the S-Video cable to the S-Video connector on the back of the system.

Connecting an S-Video supported device



3. Connect the S-Video supported device to an AC power source if necessary.
4. Follow any setup instructions in the device user's guide.
5. Turn on power to the system and device.

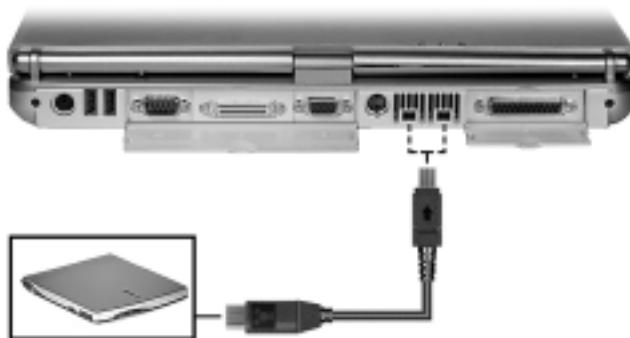
IEEE 1394 Devices

Your NEC Versa L320 system is equipped with two IEEE 1394 ports that increase your connectivity choices. The IEEE 1394 ports on the back of your system each allow you to daisy chain up to 63 IEEE 1394 devices to your system. IEEE 1394 devices support Plug and Play connectivity for transfer rates of up to 400 Mbps. These peripherals may include a digital camera, scanner, printer, or other device.

Connect IEEE 1394 devices to your system as follows.

1. If you are running Windows 98 SE or Windows 2000, install the drivers for your device.
2. Locate the IEEE 1394 ports on the back of your system.
3. Plug the IEEE 1394 device into either IEEE 1394 port.

Connecting an IEEE 1394 device



Parallel Devices

To install a parallel device such as a printer, you need a cable with a male 25-pin connector for the system and, for most parallel printers, a Centronics®-compatible 36-pin connector.

Note When you connect a printer, be sure to install the appropriate printer driver through the Windows control panel.

Connect a parallel device to your NEC Versa as follows.

1. Check that power to both the NEC Versa and the device is off.
2. Align and connect the 25-pin parallel cable connector to the parallel port on the system. Secure the cable with the screws provided.
3. Align and connect the other end of the cable to the parallel port on the device. Lock the connector clips.

Connecting a parallel printer



4. Connect the power cable to the device and a properly grounded wall outlet.
5. Turn on power to the system and the device.

Note Check that the device is online before you try to use it. See the instructions that came with the device for more information.

Audio Options

The NEC Versa comes equipped with built-in audio ports that let you record and play sound.

Connect an external microphone or headphones to the microphone in or headphone in port on the front of the NEC Versa system. See “Front Features” in Chapter 1 for port locations.

Note If you are using an external microphone and experience sound distortion or feedback, lower the speaker volume.

9

Using Multimedia

- Audio
- Video
- Multimedia Applications

With its fast processor and enhanced audio and video capabilities, you can perform fantastic multimedia feats with your NEC Versa L320! This section describes the NEC Versa L320's multimedia features and how you can use them to create high-quality, powerful presentations.

Multimedia combines audio, text, animation, photo images, and video sources into one presentation.

Audio

The NEC Versa L320 provides entertainment-level sound quality through the stereo speakers. It handles musical instrument digital interface (MIDI) files and digital audio files. The NEC Versa L320 recognizes .WAV, .MID, and .AVI files. The system also provides PC99 compliant audio.

Recording

All information on a computer must be stored in digital form. Analog audio signals from sources such as tape cassettes or music CDs must be digitized before being recorded and stored on disk.

Note The built-in microphone is muted by default. Enable the microphone before attempting to use it.

You can make recordings at the microphone level.

Note When using the built-in microphone, make sure the speaker volume is turned down or feedback may occur.

The following procedure describes how to use the Sound Recorder in the Microsoft Windows Accessories group to record sound into a file on the NEC Versa L320. (For details, see the online help that is available when you open the Sound Recorder.)

1. Locate the Sound Recorder by sliding the cursor over Start, Programs, Accessories, Entertainment (Windows 98/2000) or Multimedia (Windows NT), and the Sound Recorder line. Release your finger from the VersaGlide to open the recorder. (You may have to press the left selector button on the VersaGlide.)
2. Use the VersaGlide to press the Record button on the screen. The Record button has a red circle in the middle.
3. Speak into the microphone to create a sound file.

-
4. When you finish recording, press the Stop button. Be careful when recording; audio files can become quite large.

CD-ROM/DVD-ROM Input

You can record music and sound effects from a CD (compact disc) and store them on your hard disk. The audio signal from the CD-ROM or DVD-ROM drive connects directly to your NEC Versa L320. Simply follow the instructions in “Recording” to record sound from your CD player.

Microphone

You can capture and record sounds through the internal microphone on the NEC Versa L320 or through an external microphone that connects to the system through the microphone port. You can record voice-overs for narration, reminders, or special instructions.

See “Recording” earlier in this chapter, for details about recording sound with the microphone.

Playing Back

You can play back your recorded soundtrack through stereo headphones, the internal NEC Versa L320 stereo speakers, or external stereo speakers. You can play .WAV and MIDI files as well as CD audio. Adjust the volume through the software (a volume control feature can be found in Accessories or on the system tray in the Toolbar) or with the volume control knob on the front of the system.

Play audio from files or audio devices as follows. (This example shows how to use the Media player option in Accessories. You can also play audio by opening a file through the Sound Recorder and pressing the Play button.)

1. Go to Programs, Accessories, Entertainment (Windows 98/2000) or Multimedia (Windows NT), and open the Media Player.
2. Select your audio source as follows:
 - If playing a file, use the File menu to specify the file name.
 - If playing from a device, use the Device menu to select your audio source. Once your file is open or your source specified, press the Play button.
3. Press the square Stop button to stop playing the audio.

Using Headphones

The NEC Versa L320 headphone port delivers sound at half a watt. Stereo headphones plug in through the headphone jack located on the front of the NEC Versa L320. Use the audio software that comes on your system to adjust the volume.

Note Using headphones disables the internal speakers.

Using the Built-In Speakers

The NEC Versa L320 has built-in stereo speakers. Adjust the volume through the software or with the volume control knob located on the front of the system.

Using External Stereo Speakers

For full stereo sound impact, you can plug a pair of stereo speakers into the headphones jack located on the front of the system. Adjust the volume through software, with the controls on the external speakers (if equipped with controls), or with the volume control knob on the NEC Versa L320. When using external speakers the internal speakers are disabled.

Video

Depending on the model, the NEC Versa L320 features a TFT panel with XGA or SXGA-Plus resolution. This enables color display for sharp effective visuals right on the system or projected onto an external CRT monitor.

Use your NEC Versa L320 to run full motion, full-screen MPEG video. In Windows 98, the Active Movie Control gives you MPEG capabilities. In Windows NT, you must install Internet Explorer to use the Active Movie Control function.

Access the Active Movie Control as follows:

1. Go to Start, Programs, Accessories, Entertainment, and select Active Movie Control.

An Open dialog box displays.

2. Locate your CD-ROM drive and double click on the appropriate drive to display its contents.
3. Open your file and press the Play button. (To play full screen MPEG video, you may need to press the Window maximize button to bring your video to full size.)

Using Digital Video Files

With commercial video capture hardware and application software, you can plug any video device, including VCRs, televisions, camcorders, and laser disc players into your NEC Versa L320 and record motion graphics to your hard drive.

Use a video frame grabber and store a stream of grabbed stills on your hard disk.

Using Animation Files

You can create a dynamic presentation using an animation application. Animation can illustrate a concept, drive home an important point, or command attention. Graphics animation can add punch to a presentation with an animated illustration, a flashing arrow, or a flying logo.

Multimedia Applications

A growing number of multimedia applications are available for PC/notebook users. These multimedia software packages include graphics packages, animation software, and presentation authoring systems as follows:

- Animation software allows you to create 3-D effects and 3-D titles and add interest to an otherwise static presentation.
- Authoring packages let you pull all the elements of your design into an exciting, interactive multimedia presentation.

10

Solving System Problems

- Problem Checklist
- Startup Problems
- If You Need Assistance

Once in a while you may encounter a problem with your NEC Versa L320. If the screen is blank, the instructions don't help, or no error message appears, use the information here to determine and fix the problem. You still may be able to solve the problem yourself!

Problem Checklist

First check the items in the following list. If these items don't help, see the table that follows the list.

- Power is on to the computer.
- The electrical outlet to which your AC adapter is connected is working. Test the outlet by plugging in a lamp or other electrical device.
- All cables are tightly connected.
- The display setting is configured correctly.
- The display's brightness control is adjusted properly.
- If using battery power, check that the battery pack is properly inserted and fully charged.

Troubleshooting

Problem	What to Do
The system does not power on.	If you are operating the system with battery power, check that the battery pack is correctly inserted. Attach the AC adapter to recharge the battery. If you have the AC adapter attached, check that the electrical outlet you are using works.
LCD screen is dark and blank.	Power-saving mode has shut off the backlight. So try to recover by pressing any keyboard key. The built-in LCD may not be selected. Press Fn-F3 once or twice. Screen brightness needs adjustment. Adjust the control (Fn-F8 and Fn-F9). The system entered Standby mode (Windows 98/2000) due to low battery power. Plug in the AC adapter before resuming operation.

Troubleshooting

Problem	What to Do
Battery power does not last long.	Use power-saving modes. Fully charge and fully discharge the battery several times to recondition it. Use the Battery Refresh function in the Exit Menu of the BIOS Setup utility (see “Exit Menu” in Chapter 3). Replace the battery.
Information on the LCD screen is difficult to see.	Adjust the brightness and contrast using the brightness and contrast controls.
The Suspend/Resume function does not work.	If the system does not suspend, a disk drive might be busy. Wait until the disk drive stops and try again. If system does not resume, it may have auto suspended on a low battery. Attach the AC adapter and try again. If the system still does not suspend, check that Auto Play is disabled for the CD-ROM drive.
An optional component does not work.	Make sure the component is securely installed or connected. Verify that the system parameter for the I/O port configuration is set correctly in Setup.

Startup Problems

The system displays an invalid configuration error message at power on when there are the following conditions:

- the current configuration information doesn't match configuration information stored in Setup, such as when an internal option is added.
- the system loses configuration information.

If either condition is true, the system displays an invalid configuration information message.

To continue start-up procedures, press **F2** and run the Setup utility to set current system parameters.

If an error message appears before the operating system starts, look up the error message in the following table. Follow the instructions. If you see other error messages, the hardware might need repair.

If the system frequently loses the setup configuration data, the internal CMOS battery may need to be replaced at an authorized NEC repair center.

POST Error Messages

The NEC Versa L320 has a built-in checking program that automatically tests its components when you turn the system power on. This diagnostic test is called the Power-On Self-Test (POST). If the system finds a problem during POST, the system displays an error message. If this happens, follow the instructions in the POST error message table.

POST Error Messages

Error Message	Explanation
Diskette drive A error	Drive A: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup.
Extended RAM Failed at offset: <i>nnnn</i>	Extended memory not working or not configured properly at offset <i>nnnn</i> .
Failing Bits: <i>nnnn</i>	The hex number <i>nnnn</i> is a map of the bits at the RAM address (in System, Extended, or Shadow memory) which failed the memory test. Each 1 (one) in the map indicates a failed bit.
Fixed Disk 0/1/Disk Controller Failure	Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup to make sure the fixed-disk type is correctly identified.
Incorrect Drive A type – run SETUP	Type of floppy drive A: not correctly identified in Setup.
Keyboard Controller error	The keyboard controller failed test. You may have to replace keyboard or controller.
Keyboard Error – Keyboard not working	Keyboard error <i>nn</i> BIOS discovered a stuck key and displays the scan code <i>nn</i> for the stuck key.
Operating system not found	Operating system cannot be located on either drive A: or drive C:. Enter Setup and see if fixed disk and drive A: are properly identified.
Parity Check 1 – Parity error found in the system bus	BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays ????.
Parity Check 2 – Parity error found in the I/O bus	BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays ????.

POST Error Messages

Error Message	Explanation
Previous POST did not complete successfully.	POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with wait states, improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the wait-state configuration is correct. This error is cleared the next time the system is booted.
Real time clock error	Real-time clock fails BIOS test. It may require board repair.
Shadow Ram Failed at offset: <i>nnnn</i>	Shadow RAM failed at offset <i>nnnn</i> of the 64k block at which the error was detected.
System battery is dead – Replace and run SETUP	The CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.
System cache error – Cache disabled	RAM cache failed the BIOS test. BIOS disabled the cache.
System CMOS checksum bad – run SETUP	CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. Run Setup and reconfigure the system either using the Default Values and/or making your own selections.
System RAM Failed at offset: <i>nnnn</i>	System RAM failed at offset <i>nnnn</i> of the 64k block at which the error was detected.
System timer error	The timer test failed. Requires repair of system board.

If You Need Assistance

If you have a problem with your computer, first review the checklist and troubleshooting table in the previous section.

If you still have a problem, see Chapter 11, “Getting Service and Support,” for details about contacting NEC.

Note If you purchased and are using this product outside the U.S. or Canada, please contact the local NEC office or their dealers for the support and service available in your country.

Getting Service and Support

- Service and Support Contact Information
 - Web Site
 - Support Services
 - E-mail to Support Services
-

Service and Support Contact Information

Service	Contact Information
NEC Computers Inc. Web Site	www.neccomp.com
Support Services Web Site	support.neccomp.com
Support Services (U.S. and Canada customers only).	1-800-632-4525
E-mail to Support Services through a commercial online service or the Internet.	Internet e-mail address: tech-support@nec-computers.com

Note If you purchased your computer outside the U.S. or Canada, please contact the local NEC office or their dealers for support and service.

If you have access to a telephone, a modem, and/or a LAN Internet connection, you can use these services to obtain information about your system at any time, day or night, seven days a week.

Not only do these services provide information about your NEC system, they can also be used to answer your questions and help solve any problems you may have with your system, should that ever be necessary.

Web Site

If you have a modem or are connected to a network, you can access the NEC Computers Web site. You can do this through a commercial online service or through your Internet account. The web site contains general information about NEC Computers and its products, press releases, reviews, a reseller locator, and service and support information.

Look in the Service and Support area for the following:

- technical documentation, including Frequently Asked Questions, reference manuals, and warranty information
- BIOS updates, drivers, and Setup Disk files to download
- contact information, including telephone numbers for Technical Support and links to vendor web sites
- an automated e-mail form for your technical support questions
- a password-accessible area for resellers.

To access The NEC Computers Home Page, enter the following Internet Uniform Resource Locator (URL) in your browser:

<http://www.neccomp.com/>

To access The NEC Computers Support Page, enter the following Internet Uniform Resource Locator (URL) in your browser:

<http://support.neccomp.com/>

Support Services

NEC Computers also offers direct technical support through Support Services. (NEC Computers Support Services is for U.S. and Canadian customers only; international customers should contact the local NEC office or dealer for the support and service available in their country.)

Direct assistance is available 24 hours a day, 7 days a week. Call NEC Computers Support Services, toll free, at **1-800-632-4525** (U.S. and Canada only) for system hardware support and to find out about the extended service programs available for purchase. Toll-free phone support is limited to the length of the three-year limited warranty.

Please have your system accessible while calling for technical support to ensure that NEC Computers support personnel can successfully troubleshoot your system.

For outside the U.S. or Canada, please contact your local NEC office or dealer for the support and service available in your country.

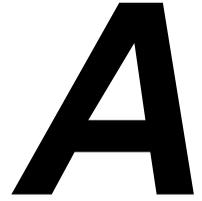
E-mail to Support Services

The NEC Computers Support Services offers technical support by e-mail if you have Internet access. The e-mail address is:

`tech-support@nec-computers.com`

When using the e-mail support service, you should include the word “Notebook” in the subject field for prompt response from the appropriate technical person.

You should provide as much specific information about your questions as possible. You will receive a response to your questions, usually within one business day.



Setting Up a Healthy Work Environment

- Making Your Computer Work for You
- Arrange Your Equipment
- Adjust Your Chair
- Adjust Your Input Devices
- Adjust Your Screen or Monitor
- Vary Your Workday
- Pre-existing Conditions and Psychosocial Factors

Making Your Computer Work for You

Computers are everywhere. More and more people sit at computers for longer periods of time. This appendix explains how to set up your computer to fit your physical needs. This information is based on ergonomics — the science of making the workplace fit the needs of the worker.

Some nerve, tendon, and muscle disorders (*musculoskeletal disorders*) may be associated with repetitive activities, improper work environments, and incorrect work habits. Examples of musculoskeletal disorders that may be associated with certain forms of repetitive activities include: carpal tunnel syndrome, tendinitis, tenosynovitis, de Quervain's tenosynovitis, and trigger finger, as well as other nerve, tendon, and muscle disorders.

Note Prolonged or improper use of a computer workstation may pose a risk of serious injury. To reduce your risk of injury, set up and use your computer in the manner described in this appendix.

Although some studies have shown an association between increasing hours of keyboard use and the development of some musculoskeletal disorders, it is still unclear whether working at a computer causes such disorders. Some doctors believe that using the keyboard and mouse may aggravate existing musculoskeletal disorders.

Note Contact a doctor if you experience pain, tenderness, swelling, burning, cramping, stiffness, throbbing, weakness, soreness, tingling and/or numbness in the hands, wrists, arms, shoulders, neck, back, and/or legs.

Some people are more susceptible to developing these disorders due to pre-existing conditions or psychosocial factors (see “Pre-existing Conditions and Psychosocial Factors” later in the appendix).

To reduce your risk of developing these disorders, follow the instructions in this appendix. If you experience discomfort while working at your computer or afterwards, even at night, contact a doctor as soon as possible. Signs of discomfort might include pain, tenderness, swelling, burning, cramping, stiffness, throbbing, weakness, soreness, tingling and/or numbness in the hands, wrists, arms, shoulders, neck, back, and/or legs.

Note To increase your comfort and safety when using your notebook computer as your primary computer system at your home or office, note the following recommendations:

Use a separate, external keyboard attached to your notebook computer.

Use a separate, external monitor attached to your notebook computer.

Arrange Your Equipment

Arrange your equipment so that you can work in a natural and relaxed position. Place items that you use frequently within easy reach. Adjust your workstation setup to the proper height (as described in this appendix) by lowering the table or stand that holds your computer equipment or raising the seat height of your chair. Position your notebook computer directly in front of you for increased safety and comfort.

Adjust Your Chair

Your chair should be adjustable and stable. Vary your posture throughout the day.

Check the following:

- Keep your body in a relaxed yet upright position. The backrest of your chair should support the inward curve of your back.
- Use the entire seat and backrest to support your body. Tilt the backrest slightly backwards. The angle formed by your thighs and back should be 90° or more.
- Your seat depth should allow your lower back to comfortably contact the backrest. Make sure that the backs of your lower legs do not press against the front of the chair.
- Extend your lower legs slightly so that the angle between your thighs and lower legs is 90° or more.
- Place your feet flat on the floor. Only use a footrest when attempts to adjust your chair and workstation fail to keep your feet flat.
- Be sure that you have adequate clearance between the top of your thighs and the underside of your workstation.
- Use armrests or forearm supports to support your forearms. If adjustable, the armrests or forearm supports should initially be lowered while all the other adjustments discussed in this appendix are made. Once all these adjustments are completed, raise the armrests or adjust the forearm supports until they touch the forearms and allow the shoulder muscles to relax.

Adjust Your Input Devices

Note the following points when positioning your notebook computer or any external input devices.

- Position your keyboard directly in front of you. Avoid reaching when using your keyboard or mouse.
- If you use a mouse, position it at the same height as the keyboard and next to the keyboard. Keep your wrists straight and use your entire arm when moving a mouse. Do not grasp the mouse tightly. Grasp the mouse lightly and loosely.
- Adjust the keyboard height so that your elbows are near your body and your forearms are parallel to the floor, with your forearms resting on either armrests or forearm supports, in the manner described previously. If you do not have armrests or forearm supports, your upper arms should hang comfortably at your sides.
- Adjust the keyboard slope so that your wrists are straight while you are typing.
- Type with your hands and wrists floating above the keyboard. Use a wrist pad only to rest your wrists between typing. Avoid resting your wrists on sharp edges.
- Type with your wrists straight. Instead of twisting your wrists sideways to press hard-to-reach keys, move your whole arm. Keep from bending your wrists, hands, or fingers sideways.
- Press the keys gently; do not bang them. Keep your shoulders, arms, hands, and fingers relaxed.

Adjust Your Screen or Monitor

Correct placement and adjustment of the screen or external monitor can reduce eye, shoulder, and neck fatigue. Check the following when you position the screen or external monitor.

- Adjust the height of your screen or external monitor so that the top of the screen is at or slightly below eye level. Your eyes should look slightly downward when viewing the middle of the screen or external monitor.
- Position your screen or external monitor no closer than 12 inches and no further away than 28 inches from your eyes. The optimal distance is between 14 and 18 inches.
- Rest your eyes periodically by focusing on an object at least 20 feet away. Blink often.
- Position the screen or external monitor at a 90° angle to windows and other light sources to minimize glare and reflections. Adjust the monitor tilt so that ceiling lights do not reflect on your screen or external monitor.

-
- If reflected light makes it hard for you to see your screen or external monitor, use an anti-glare filter.
 - Clean your screen or external monitor regularly. Use a lint-free, non-abrasive cloth and a non-alcohol, neutral, non-abrasive cleaning solution or glass cleaner to minimize dust.
 - Adjust the screen or external monitor's brightness and contrast controls to enhance readability.
 - Use a document holder placed close to the screen or external monitor.
 - Position whatever you are looking at most of the time (the screen or reference material) directly in front of you to minimize turning your head while you are typing.
 - Get regular eye check-ups.

Vary Your Workday

If you use your computer for prolonged periods, follow these instructions.

- Vary your tasks throughout the day.
- Take frequent short breaks that involve walking, standing, and stretching. During these breaks, stretch muscles and joints that were in one position for an extended period of time. Relax muscles and joints that were active.
- Use a timer or reminder software to remind you to take breaks.
- To enhance blood circulation, alter your sitting posture periodically and keep your hands and wrists warm.

Note For more information on workstation setup, see the American National Standard for Human Factors Engineering of Visual Display Terminals, ANSI/HFS Standard No. 100-1988. The Human Factors Society, Inc., P.O. Box 1369, Santa Monica, California 90406.

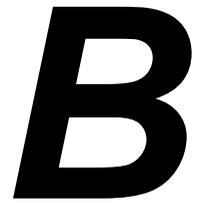
Pre-existing Conditions and Psychosocial Factors

Pre-existing conditions that may cause or make some people more susceptible to musculoskeletal disorders include the following: hereditary factors, vascular disorders, obesity, nutritional deficiencies (e.g., Vitamin B deficiency), endocrine disorders (e.g., diabetes), hormonal imbalances, connective tissue disorders (e.g., arthritis), prior trauma (to the hands, wrists, arms, shoulders, neck, back, or legs), prior musculoskeletal disorders, aging, fluid retention due to pregnancy, poor physical conditioning and dietary habits, and other conditions.

Psychosocial factors associated with these disorders include: workplace stress, poor job satisfaction, lack of support by management, and/or lack of control over one's work.

Contact a doctor if you experience pain, tenderness, swelling, burning, cramping, stiffness, throbbing, weakness, soreness, tingling and/or numbness in the hands, wrists, arms, shoulders, neck, back, and/or legs.

This appendix was prepared in consultation with Dr. David Rempel of the University of California/San Francisco Ergonomics Program and Mr. M.F. Schneider of HUMANTECH, Inc., Ann Arbor, Michigan.



Specifications

- System Components
- Interrupt Controllers
- Memory Map

System Components

Note Components may vary. The specifications provided in this section are similar, but not necessarily identical to those in your system.

System Processor

- Mobile Intel Pentium III Processor-M featuring Intel SpeedStep™ technology — 933 MHz, 1 GHz, 1.13 GHz or higher
- 133-MHz Front-Side Bus (FSB)

Random Access Memory (RAM)

- Standard Main Memory — 1x256 MB high-speed interleaved access; supports PC133 memory
- Optional Expansion — 1 SO-DIMM slot
 - Requires PC133 memory
 - Expandable in 128-MB, 256-MB, or 512 MB (when available) increments
 - Maximum 1GB total

Note If upgrading after initial purchase, the memory module provided with the system may have to be replaced with an optional larger memory module in order to achieve the maximum capacity.

- Video RAM — 16.0 MB
- Cache RAM — 512-KB L2 cache

Read-Only Memory (ROM)

512-KB flash ROM

Calendar Clock

Year/month/day/hour/minute/second maintained by internal back-up battery

Input/Output (I/O) Facilities

Integrated industry-standard interfaces

- Modem Port — 1 port, RJ-11 jack on some models
- LAN Port — 1 port, RJ-45 jack on some models
- S-Video Out — 1 port, supports RCA with exchange cable

-
- IEEE 1394 — 2 ports, 1394 standard bus
 - DC In — 1 port for AC adapter cable
 - PS/2 Port — 1 port, PS/2, 6-pin MiniDin
 - Parallel — 1 port, 25-pin D-sub
 - USB Ports — 2 ports, base connector
 - Expansion — 1 port for NEC Cable PortBar
 - Serial — 1 port, 9-pin D-sub
 - VGA — 1 port, 15-pin high-density D-sub
 - Infrared — 1 port
 - Microphone — 1 port, 3-pin, Mini-Pin jack
 - Headphones — 1 port, 3-pin, Mini-Pin jack
 - Bluetooth support — for Bluetooth module, and Bluetooth-compliant devices when available

Primary Battery

Lithium ion (Li-Ion), eight cell, 14.4V

Secondary Battery

- Housed in Modular Bay
- Swappable
- Lithium ion (Li-Ion), 8-cell, 14.4V

AC Adapter

- Input Voltage — 100 to 240 volts (V) AC, 50 watt (max.)
- Output Voltage — 19 volts DC, 3.16A

Card Slots

Two 32-bit card slots for two Type II or one Type III PC Card

LCD

Extended Graphics Array (XGA) or Super XGA+ (SXGA+) LCD panel

- XGA LCD panel is a 14- or 15-inch high-resolution active-matrix Thin Film Transistor (TFT) color display

Resolution — 1024 × 768 max

Colors — up to 16.8 million

- SXGA+ LCD panel is 15-inch color active-matrix TFT color display; high-contrast ratio; low power consumption

Resolution — 1400 × 1050 max

Colors — up to 262,144

Keyboard

Membrane-type, with standard QWERTY-key layout (International keyboards are country specific)

- Function keys — 12 keys
- Personal Code keys (on some systems)
- Internet and Email keys
- Cursor Control keys — 8 keys; including 4 arrow keys arranged in inverted T layout
- Numeric keypad — embedded
- Special Windows 95 keyset
- Fn key — function key for ROM-based key functions

External Bays

- NEC VersaBay IV — houses CD-ROM, DVD-ROM, CD-RW, or DVD-ROM/CD-RW drive (one comes with system); optional hard drive in a cradle; or weight-saving module)
- NEC Modular Bay — houses diskette drive, optional secondary battery, or weight-saving module)

Diskette Drive

Standard 1.44 MB in Modular Bay

- Size — 3.5 inch
- Capacity — 1.44 MB (formatted), 2 MB (unformatted)

Note When referring to storage capacity, MB stands for one million bytes. Some utilities may indicate varying storage capacities. Total user-accessible capacity may vary depending on operating environments.

Hard Disk Drives

- Internal, 2.5 inch, IDE
- Can be placed in optional cradle for use in NEC VersaBay slot
- Capacity (depending on the model) 15-GB, 20-GB, 30-GB or larger hard disk drive

Note When referring to storage capacity, GB stands for one billion bytes. Some utilities may indicate varying storage capacities. Total user-accessible capacity may vary depending on operating environments.

CD-ROM Drive

- Housed in NEC VersaBay IV slot
- Thin-type CD-ROM pack
- Access Time — up to 24X maximum/12x minimum variable speed
- Interface — IDE (ATAPI)
- Photo CD Compatibility — Multisession Photo CD, Single Session Photo CD, Video CD, CS-I, CD-I Ready, CD-G and CD-Plus

DVD-ROM Drive

- Housed in NEC VersaBay IV slot
- Burst Transfer Rate — 16.67 MB/sec, PIO/Multiword DMA
- Spin Up Time, 2.5s (DVD), 2.0s (CD)
- Read Rate
 - CD, 10.3X – 24X, approximately 5,100 rpm
 - DVD, 4X – 7.5X, approximately 1,200 – 2,000 rpm

-
- Access Time
 - Average random access, 100 ms (DVD), 95 ms (CD 24X)
 - Average random seek, 95 ms (DVD), 90 ms (CD 24X)
 - Full stroke, 160 ms (DVD), 160 ms (CD 24X)
 - Data Buffer — 128 KB
 - Interface — IDE (ATAPI)
 - CD Compatibility — CD-DA, CD+G, CD MIDI, CD-TEXT, CD-ROM, CD-ROM XA, CD-I Bridge (Photo-CD, Video CD), CD-I, Multisession CD (Photo-CD, CD-Extra, CD-RW, CD-R), CD-R (read), CD-RW (read)
 - DVD Compatibility — DVD-5, DVD-9, DVD-10, DVD-18, DVD-R (read, single border)

CD-RW Drive

- Housed in NEC VersaBay IV slot
- Speed
 - Read, up to 20x maximum variable speed
 - CD-RW, up to 14x maximum variable speed
- Read Transfer Rate
 - 150 KB/s, normal speed
 - 3000 KB/s, 20X, maximum speed
- Write Transfer Rate
 - 150 KB/s, normal speed
 - 300 KB/s, 2X speed
 - 600 KB/s, 4X speed
- Audio Out — 0.8 +/-0.25 Vrms
- Operating Conditions
 - Shock, 1G (11ms)/read, 0.5G (11ms)/write
 - Vibration, 0.2G/read, 0.1G/write

DVD-ROM and CD-RW Combination Drive

- Housed in NEC VersaBay IV slot
- Data capacity
 - DVD, 2,048 bytes/block
 - CD, 2048 bytes/block (mode 1), 2,336 bytes/block (mode 2)
- Rotational speed
 - DVD, 3,792 (2.5 – 6X CAV)
 - DVD-Video, 1,377-2,222 rpm (1.6X – 2.4X PCAV)
 - CD, 5,100 rpm (10.3 – 24X CAV)
 - CD-RW, 1,200 – 2000 rpm (4 – 5.7X PCAV)
 - Video-CD, 1,200 – 2000 rpm (4 – 5.7X PCAV)
 - CD-R/CD-RW (Write), 850 – 1,980 rpm (4X CLV)
420 – 990 rpm (2X CLV)
- Sustained data transfer rate
 - DVD, 3,357 – 8,112 kbytes/sec (2.5 – 6X CAV)
 - DVD-Video, 2,163 – 3,245 kbytes/sec (1.6X – 2.4X PCAV)
 - CD, 1,552 – 3,600 kbytes/sec, mode 1 (10.3X – 24X CAV)
1,769 – 4,104 kbytes/sec, mode 2 (10.3X – 24X CAV)
- Access time (typical)
 - Average random access, 120 ms (DVD), 110 ms (CD)
 - Average random seek, 115 ms (DVD), 105 ms (CD)
 - Average full stroke, 180 ms (DVD), 170 ms (CD)
- Spin up, 2.5s (DVD), 2.0s (CD)
- Data buffer, 2 MB
- Power Supply, +5V
- Dimensions (W x H x D)
 - 5.04 x .5 x 4.96 in.
 - 128 x 12.7 x 126.1 mm

MDC Modem (built-in)

- K56flex™ compatible
- V.34 extended rate protocol
- V.90 compliant
- Enhanced AT command set
- Class 1 and 2 Fax protocols
- Built-in speaker with software controllable volume

Mini PCI LAN

- 10Base-T and 100Base-TX
- Resume-on-LAN support
- Full duplex support
- Software support for management server

Wireless Mini PCI LAN (built-in)

- IEEE 802.11b High Rate standard for wireless LANs (DSSS)
- Wi-Fi certified by WECA
- Transmit rate — 11-Mbps high speed
- R-F frequency band — 2.4 GHz, data rate
- Range of up to 1200 feet.
- 128-bit RC4 encryption
- Integrated antenna

Security

- Kensington lock slot
- Hard Disk Drive security for internal drive
- Personal code access available on some systems

Dimensions

System

- Width — 12.8 in (327 mm) max
- Depth — 10.4 in. (268 mm) max
- Height — 1.5 in. to 1.6 in. (39.2 mm to 40.5 mm)

Weight

- Minimum 7.1 lbs. (3.2kg)

Recommended Environment

Operation

- Temperature — 41°F to 95°F (5°C to 35°C)
- Relative Humidity — 20% to 80% (Noncondensing)

Storage

- Temperature — -4°F to 104°F (-20°C to 40°C)
- Relative Humidity — 20% to 80% (Noncondensing)

Interrupt Controllers

The following table shows default interrupt level assignments 0 through 15.

Note These resources may change after this user's guide goes to print. Please refer to the *NEC Versa L320 Release Notes* that came with your NEC Versa L320.

Interrupts

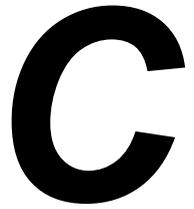
IRQ#	Device
IRQ00	Internal Timer
IRQ01	Keyboard
IRQ02	PIC
IRQ03	IR
IRQ04	Serial Port
IRQ05	CardBus/Mini-PCI/AC Link/Firewire
IRQ06	Diskette Drive
IRQ07	Parallel Port
IRQ08	Real-time Clock
IRQ09	USB (2) / SCI (only ACPI)
IRQ10	CardBus/Mini-PCI/AC Link/Video/Firewire
IRQ11	Available
IRQ12	Mouse
IRQ13	Coprocessor
IRQ14	Hard Disk Controller
IRQ15	Available

Memory Map

The system supports system and video shadowing, both controlled through complementary metal oxide semiconductor (CMOS). The system supports BIOS as a cacheable area with write protection. The following table shows the system's memory map.

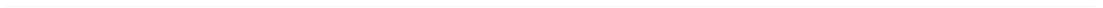
System Memory Map

Memory Space	Size	Function
00000000h-0009FFFFh	640 KB	System Memory
000A0000h-000BFFFFh	128 KB	Video Memory
000C0000h-000DFFFFh	128 KB	
000E0000h-000FFFFFFh	128 KB	System and Video BIOS
01000000h-01FFFFFFh	32 MB	Extended Memory
02000000h-03FFFFFFh	32 MB	Extended Memory
04000000h-0FFFFFFFh	Up to 256 MB	Extended Memory



Frequently Asked Questions

- External Mouse
- Display
- PC Cards
- Diskette Drive
- Booting
- Power Management
- Miscellaneous



External Mouse



How can a mouse and an external keyboard be connected to the notebook at the same time?



The NEC Versa L320 is equipped with two USB ports that allow you to connect any combination of two USB devices, at the same time. If you purchase a USB mouse and a USB keyboard, simply plug each device into any of the USB ports on your system.

Display



What is the maximum resolution I can run in simultaneous mode?



The maximum resolution in simultaneous mode is 1400 x 1050 for SXGA+ TFT or 1024 x 768 for XGA TFT panels, depending on the capabilities of the external monitor. You can obtain higher resolutions if you connect a higher-resolution external monitor and switch to CRT-only mode.



How can I change my video drivers?



Go to Start, Settings, Control Panel, and double click the Display icon. Click the Settings tab, click Advanced Properties, and click Change. Click Show all devices from the Select Device screen. Find the video driver you need, or insert a diskette or CD into the appropriate drive. Click on Have Disk and follow the on-screen instructions to install a new video driver.

PC Cards



In which slots do my PC Cards go?



Your PC Cards can go into either slot if they are NEC-approved cards. Other software may not support the use of both slots. Type III cards only fit in the bottom slot (slot 0).



Is there any instance when a modem or network card is only supported in one slot?



This could be true in cases where the PC Card firmware is being upgraded. Read the release notes that accompany the upgrade.



Can I run two of the same type cards simultaneously?



Yes, Windows configures each card. If they are both modems, configure each for a different Com port and different available interrupts under the Device Manager in Windows. Click Start, Settings, Control Panel, System, Hardware (Windows 2000 only), Device Manager.



Why do certain PC Cards cause my battery life to drop noticeably?



Certain hard disk cards and wireless radio cards consume more power than others and can impact battery life. When not using any PC Card, close all applications using the card and pop it part of the way out of the slot to save power.



In Setup, I disabled or reconfigured peripheral devices (like the ports or sound), yet I am unable to use the freed IRQs or I/O address resources with my PC Cards?



To provide a stable platform free of conflicts, NEC Computers excluded some resources from PC Card use.

Diskette Drive



Why can't I boot from the diskette drive?



To boot from the diskette drive, be sure that you have a diskette in the drive containing operating system files. Be sure to check the Boot menu parameters in the BIOS Setup Utility to determine the designated sequence of boot devices. See Chapter 3, "Using the BIOS Setup Utility."

See your operating system documentation for information about creating system diskettes.



What happens if I leave a diskette in my diskette drive?



Shutting down your system with a diskette in the drive can damage the data on your diskette and your drive. Remove the diskette before powering off.



How do I format a diskette?



Double click on the My Computer icon and then right click (click the right-hand mouse button) on the diskette drive icon. Select Format and choose the format process that best suits your needs.

To format high density 1.44-MB* diskettes in DOS, type format a: and press Enter. If you want a bootable diskette, type format a:/s and press Enter.



What type of diskette do I use in my diskette drive?



Your NEC Versa L320 ships with a 1.44-MB* diskette drive that uses 3.5-inch high density (HD) diskettes. These diskettes are also called double-sided, high-density (DSHD) diskettes. You can store 1.44 MB* of information on these diskettes.

Your diskette drive can also use 3.5-inch double-sided, double-density (DSDD) diskettes. These diskettes only hold 720 kilobytes of data – about half the amount of data that 1.44-MB* diskettes hold.



Why does the amount of available storage displayed for the diskette drive vary between utilities?



Some utilities may indicate varying storage capacities. Total user-accessible capacity may vary depending on operating environments.

Booting



How do I warm boot my computer?



In Windows 2000 or Windows 98 SE, press **Ctrl**, **Alt**, and **Del** twice to restart the system or go to Start, Shut Down, Restart the computer. In DOS mode, press **Ctrl**, **Alt**, and **Del** to warm boot the system.



How do I cold boot my computer?



Press the system's Power button to perform a cold boot or go to Start, Shut Down, to shut down the computer. Wait at least five seconds, and then turn the power on.



What is the difference between a warm boot and a cold boot?



A warm boot restarts the system while system power is on. A warm boot is also a software reset. A warm boot clears volatile system memory and reloads the operating system.

A cold boot is a system start with power off. A cold boot also resets the hardware. It checks the hardware and reloads the operating system.

Power Management



Does my system come with power management features enabled?



Your system's default settings are configured with power management features enabled when on DC (battery) power and disabled when on AC power. Use the BIOS Setup Utility to modify the default settings, if desired.

If you do not use the keyboard, mouse, or drives for the preset length of inactive time, your screen goes blank and your system goes into a power saving mode of operation. This is known as an LCD timeout.

When your screen goes blank, before the system goes into Standby mode (power status LED blinks), just press the space bar or move your mouse to reactivate your system.



What is the purpose of Suspend to RAM (Standby)?



You can initiate full Suspend-to-RAM by accessing Start, Shut Down, Standby. This places the system in a deeper state of "sleep" and requires that you press the Power button to resume operation.

Putting your system into Standby initiates the Standby power-saving mode and is a convenient way of conserving energy when you are going to be away from your system for a short period of time.



What is the function of Suspend-to-File (Hibernation)?



Suspend-to-File (Hibernation) provides the greatest power savings by putting the system into a maximum power shutdown. When the system goes into STF mode, it saves data and system status and then shuts off power to all components. STF mode lets you save power without first saving your work.

Resuming from STF mode requires less time than performing a cold boot.

Your system must be configured for STF/Hibernation. In Windows Power Management Properties, check the box labeled “enable hibernate support,” under the Hibernate tab. In the BIOS Power Management Setup, enable the “Auto save-to-file” parameter and set the “Suspend Option” to STF.



How do I bring my system out of Standby mode?



Pressing the Power button brings the system out of Standby mode.



What is a timeout?



A timeout is the amount of time your system or a particular component is inactive.



What can I do to conserve battery power?



There are several ways to conserve battery power, and this is an important activity, particularly if you frequently use your system in situations when you can't operate your system on AC power.

Try using your system with a lower screen illumination to conserve battery.

Run your system on battery power with Intel SpeedStep2 technology enabled. This allows the processor to run at a lower speed during non-intensive processor operations, and consequently conserves your battery.

There are also activities that draw larger amounts of battery power. If possible, operate your system on AC power in these circumstances to conserve your battery. For example, NEC Computers recommends running the system on AC power while using external devices such as a printer or a USB drive, when connected to a network, or while playing DVD movies.

Miscellaneous



How do I set the time and date?



You can change the time and date in Windows 2000/98 by double clicking the time in the lower right corner of the screen. Change the date and time as needed.



How do I speed up my application?



If the application you are using runs really slow, close any other applications you are not using — this should speed things up.

If your application still runs slow, you might consider installing additional memory. See “Memory Modules” in Chapter 5. (If upgrading after initial purchase, the memory module provided with the system may have to be replaced with an optional larger memory module in order to achieve the maximum capacity.)

Also, refer to your operating system’s documentation for tips on optimizing system performance.



Why do I get a message “Insufficient memory” when I run some games?



The “Insufficient memory” refers to the 640 kilobytes of (DOS) base memory. Since there are drivers being loaded at power on, the amount of memory can be lower than the game requires.

Contact the game manufacturer and request advice to create a boot disk. This loads only the drivers necessary to run the game.



How do I find help in a Windows application?



If you need help in a Windows application, click on a Help button or Help menu item. Most applications provide online help. If the application doesn’t provide these, try pressing **F1**.



How do I save a file?



You save a file by selecting File, then Save, from the drop down menu. If the file was not previously named, you will be prompted for a file name. In Windows 2000/98, you can use up to 255 characters to name a file.

*When referring to storage capacity, MB stands for one million bytes. Some utilities may indicate varying storage capacities. Total user-accessible capacity may vary depending on operating environments.

Glossary

A

AC adapter

A device that connects an NEC Versa notebook computer and an AC wall outlet to provide AC power for running the system and recharging the battery.

A/D conversion

The process of converting an analog signal into a digital signal.

AGP

Advanced Graphics Port is an interface specification designed for the throughput demands of 3D graphics. AGP introduces a point-to-point channel allowing the graphics controller direct access to main memory, increases bandwidth to 266-MBps, and supports throughputs of 533-MBps and 1.07-GBps.

animation

The art of making things appear to move in two-dimensional (2D) or three-dimensional (3D) space and making events happen over time.

applications programs

Software designed to perform specific functions, like solving business or mathematical problems.

audio

The range of acoustic, mechanical, or electrical frequencies that humans hear.

B

base RAM

Area of system memory between 0 and 640 kilobytes available to the user for the operating system and application programs.

BIOS

Basic Input Output System. A collection of computer routines, usually burnt into ROM, that controls the real-time clock, keyboard, disk drives, video display, and other peripheral devices.

bit

Binary digit. The smallest unit of computer data.

bits per second

(bps) A unit of transmission. Also called baud rate.

Bluetooth

Wireless protocol that allows wireless connectivity from a Bluetooth module in your computer to a wireless communication device.

board

Printed circuit board (PCB). Board on which computer components are soldered and thin wires are printed to connect the components.

boot

To start up a computer. See cold boot and warm boot.

bus

An electronic circuit within a computer used for transmitting data or electrical power from one device to another.

byte

Group of eight contiguous bits.

C**CardBus**

A 32-bit high-performance bus defined by the PC Card Standard and released by the PCMCIA standards body and trade associations. CardBus offers wider and faster 32-bit bus and bus mastering operation for improved adapter performance and can operate at speeds up to 32-MHz.

CD

Compact disc. A polished metal platter capable of storing digital information. The most prevalent types of compact discs or those used by the music industry to store digital recordings and CDs used to store computer data. Both types are read-only, which means that once the data is recorded onto them, they can only be read or played.

CD audio

Also called digital audio, uses the same format as conventional music CDs. CD audio sounds have been digitized at a high sampling rate.

CD-ROM drive

Compact Disc Read-Only Memory. A computer-controlled device that reads high-capacity optical discs and sends the output to the computer.

CD-RW drive

Compact Disc Read/Write. A computer controlled device that reads from and writes to high capacity optical discs.

clock

Electronic timer used to synchronize computer operations.

CMOS

Complementary Metal Oxide Semiconductor. A chip that contains nonvolatile memory in the Versa notebook. CMOS is backed up by an internal battery that preserves clock/calendar data and system configuration parameters stored in CMOS.

cold boot

Process of starting up the computer by turning on the power. If power is already on, the process means to turn off the computer and turn it on again. A cold boot reinitializes all devices.

CRT

Cathode-Ray Tube. A type of display screen used in desktop monitors. It forms the screen image using tiny dots called, pixels. See also LCD.

cursor

A movable image on the display screen that indicates where the next entered data appears.

D**default**

A value, option, or setting that the computer automatically selects until you direct it otherwise.

digital audio

Recorded sounds such as speech and sound effects. These are played back by the audio circuit's Digital-to-Analog Converter (DAC).

digital sound

A description of a sound wave that consists of binary numbers.

digitizing

The process of converting an analog signal into a digital representation.

diskette

A thin flexible platter coated with a magnetic material for storing information.

diskette drive

A magnetic drive that writes on and retrieves data from a diskette.

DVD

Originally *digital versatile disc* but now *digital video disc*, this new type of disc can hold up to seven times the data of a compact disc.

E**enhanced VGA**

A video interface that offers more colors or higher resolution than VGA.

extended RAM

The area of RAM above the first megabyte of memory in the system available for enhancing system performance.

F**FIR**

Fast Infrared, an infrared technology that sends data at 4.0 Mbit/second (4 million bits per second).

FM synthesis

A technique for synthesizing sound that uses a combination of modulated sine waves to produce different waveforms.

function key

The set of keys on the keyboard (usually F1 through F12) that let you get help and error message information or quickly select frequently used commands.

H**hard disk**

A rigid magnetic storage device that provides fast access to stored data.

hardware

The electrical and mechanical parts from which a computer is made.

hertz

(Hz) A unit of frequency equal to one cycle per second.

hot key

Combination of two or three keys that you press simultaneously for a particular function.

IEEE 1394 Standard

IEEE 1394 devices support Plug and Play connectivity for transfer rates of up to 400 Mbps. Use this port to daisy chain up to 63 IEEE 1394 devices to your system.

input/output

(I/O) The process of transferring data between the computer and external devices.

IDE

Intelligent Drive Electronics. A hard disk drive type that has controller electronics built into the drive and delivers high throughput.

infrared

Technology that uses infrared waves to communicate data between the IR-equipped devices without the use of cables. The IR port on the NEC Versa notebook is Infrared Data Association (IrDA) compatible.

interface

A connection that enables two devices to communicate.

interrupt

A special control signal from an I/O device that diverts the attention of the microprocessor from the program to a special address.

K**kilobyte**

(KB) 1024 bytes.

L**LAN**

Local Area Network.

LCD

Liquid Crystal Display. An LCD consists of a thin sandwich of two glass plates with sealed edges, containing nematic liquid-crystal material that forms the screen image. Versa displays are LCD type.

load

To copy a program into the computer's memory from a storage device.

M

megabyte

(MB) 1,048,576 bytes.

memory

Electronic storage area in a computer that retains information and programs. A computer has two types of memory — read-only memory (ROM) and random access memory (RAM).

menu

A video display of programs or options.

microprocessor

A semiconductor central processing unit that is the principal component of a microcomputer. Usually contained on a single chip that includes an arithmetic logic unit, control logic, and control-memory unit.

MIDI

Musical Instrument Digital Interface. A standard serial bus, digital interface designed to connect electronic musical devices. MIDI has no innate sound of its own.

MIR

Medium Infrared, an infrared technology that sends data at 1.152 Mbit/second (1,152,000 bits per second).

mode

A method of operation; for example, the NEC Versa notebook operates in either normal or power-saving modes.

modem

MOdulator-DEModulator. A device that links computers over a telephone line.

MPEG

The MPEG (Moving Pictures Experts Group) standard is used to encode motion images. The MPEG player program in Windows lets you play back MPEG files.

multimedia

Integrated forms of media such as sound, text, graphics, and video.

N

nonvolatile memory

Storage media that retains its data when system power is turned off. Nonvolatile memory in the Versa notebook is a complementary metal oxide semiconductor (CMOS) chip that is backed up by an internal battery. The backup battery preserves the clock/calendar data and system configuration parameters stored in CMOS. See volatile memory.

O

operating system

Set of programs that manage the overall operation of the computer.

overwrite

Storing information at a location where information is already stored, thus destroying the original information.

P

page

A type of message transmission in which a message is sent or received via modem to a paging device from a computer (with paging communications software) or telephone.

parallel interface

Interface that communicates multiple data bits at a time.

parallel printer

A printer with a parallel interface.

parameter

A characteristic of a device or system.

partition

Process of dividing mass storage (hard disk drive) into isolated or separate sections. Partitioning a hard drive creates additional logical drives, e.g., a 5.1-GB hard drive partitioned into three logical drives creates drives C, D, and E. Partitioning facilitates file management by allowing you to isolate the computer's operating system to drive C while storing applications and data files on separate drives D and E (also referred to as partitions).

password

A string of characters that the user must enter before the system allows access or system privileges.

PC Card

A credit-card-sized peripheral interface standard for portable devices. Types of PC cards (also known as PCMCIA cards) currently offered by major vendors include fax/modems, LAN, storage cards, and wireless communications devices.

peripheral

Input or output device not under direct computer control. A printer is a peripheral device.

pixels

Picture elements. Tiny dots that make up a screen image.

port

Provides the means for an interface between the microprocessor and external devices. A cable connector is usually plugged into the port to attach the device to the computer.

processor

In a computer, a functional unit that interprets and executes instructions.

prompt

A special symbol indicating the beginning of an input line. Also a message that appears on the screen indicating that the user must take a certain action.

Q**QWERTY**

The QWERTY keyboard, designed in the 1800s for mechanical typewriters, refers to the first six keys (QWERTY) on the top row of letters on the standard keyboard.

R**RAM**

Random Access Memory. A storage device into which data is entered and from which data is retrieved in a nonsequential manner.

read

To extract data from a storage device such as a diskette.

ROM

Read-Only Memory. Memory in which stored data cannot be modified by the user except under special conditions.

reset

The process of returning a device to zero or to an initial or arbitrarily selected condition.

resolution

The degree of screen image clarity. Video display resolution is determined by the number of pixels on the screen. Resolution is usually specified in pixels by scan lines, for example, 800x600. See pixels.

RS-232C

Standard interface for serial devices. This port is sometimes referred to as the serial port.

S**scanner**

An optical device that reads printed material and converts it to a computer screen image.

serial interface

An interface that communicates information one bit at a time.

serial printer

A printer with a serial interface.

SIR

Serial Infrared, an infrared technology that sends data at 2.4 Mbit/second (2,400,000 bits per second).

SO-DIMM

Small Outline Dual-Inline Memory Module. A small circuit board that holds memory chips. A dual in-line memory module (DIMM) has a 64-bit path.

software

Programs that run on a computer such as operating systems, word processors, and spreadsheets.

SpeedStep technology

Intel SpeedStep technology provided with some Pentium III processors lets you customize high-performance computing on your notebook computer. When powered by a battery, the processor drops its computing speed to lower power consumption and conserve battery life.

S/PDIF

Sony and Philips Digital Interconnect Format. S/PDIF enables a computer system to produce digital audio output through the use of an optical output cable to an optical disk device.

Standby mode

A state of power management that puts the system to “sleep.” Standby mode shuts down all devices in the system while retaining data and system status.

SVGA

Super Video Graphics Array. Graphics technology that supports up to 256 or more colors and a graphics resolution of 800x600 pixels.

system board

The main printed circuit board inside the system unit into which other boards and major chip components, such as the system microprocessor, are connected.

s-video

Short for *super-video*, a technology for transmitting video signals over a cable by dividing the video information into two separate signals: one for color, and the other for brightness. When sent to a television, s-video produces sharper images and superior color definition.

T**TFT**

Thin Film Transistor. A type of LCD color screen that supports up to 16.8-million colors.

U**USB**

Universal Serial Bus. This new external bus standard supports the connection of up to 127 peripheral devices, such as mice, modems, and keyboards. USB supports plug-and-play installation on some systems.

V**VersaGlide touchpad**

A small, touch-sensitive pad used as a pointing device on your NEC Versa notebook computer. With the VersaGlide, you can move your finger along the pad to move the cursor or simulate a mouse click by tapping the pad.

VGA

Video Graphics Array. Graphics technology that supports up to 256 colors and a graphics resolution of 640x480 pixels.

volatile memory

Storage media that loses its data when system power is turned off. Standard memory and memory that you add to the Versa notebook are volatile memory. See nonvolatile memory.

W**warm boot**

Process of resetting the computer without turning off the power through keyboard input (pressing Ctrl, Alt, and Del keys simultaneously). The system returns to an initial or arbitrarily selected condition.

warm swap

Process of swapping devices in and out of a computer system without turning off the power. The system must be in a sleep state before removing or inserting a device.

waveform

A graphic representation of a sound wave as displayed on an oscilloscope, which converts sound waves into electronic signals.

write

To record or store information to a storage device.

X**XGA**

Extended Graphics Array. This high-resolution graphics standard supports 1024x768 pixels and 16 million simultaneous colors. XGA also supports non-interlaced monitors.

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Wireless LAN device, 1-9, 1-15, 3-8, B-8

Wireless radio technology, 1-18

Regulatory Statements

The following regulatory statements include the Federal Communications Commission (FCC) Radio Frequency Interference Statement, compliance statements for Canada and Europe, battery disposal and replacement information, and the Declaration of Conformity.

FCC Statement for United States Only



WARNING Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from the one to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Canadian Department of Communications Compliance Statement

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations (pursuant to ICES-003 Issue 2, Revision 1).

Avis de conformité aux normes du ministère des communications du Canada

Cet équipement ne dépasse pas les limites de Classe B d'émission de bruits radioélectriques pour les appareils numériques, telles que prescrites par le Règlement sur le brouillage radioélectrique émis par le ministère des Communications du Canada.

European Community Directive Conformance Statement

This product is in conformity with the protection requirements of EC Council Directive 89/336/EEC on the approximation of laws of the Member States relating to electro-magnetic compatibility. This product satisfied the Class B limits of EN 55022.

Battery Replacement

A lithium battery in some computers maintains system configuration information. In the event that the battery fails to maintain system configuration information, NEC Computers recommends that you replace the battery. For battery replacement information, call your NEC Computers dealer or NEC Computers Support Services.

 **WARNING** There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

 **AVERTISSEMENT** Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

Battery Disposal

The main battery may be made of Lithium Ion (Li-Ion) and the CMOS clock battery is made of Lithium.

Do not place used batteries in your regular trash. The batteries must be collected, recycled, or disposed of in an environmentally approved manner.

Contact your local waste management officials for other information regarding the environmentally sound collection, recycling, and disposal of the batteries.

LCD Panel Disposal

The LCD lamp in your computer's LCD panel contains mercury.

Do not place a used LCD panel in your regular trash. The panel must be collected, recycled, or disposed of in an environmentally approved manner.

Contact your local waste management officials for other information regarding the environmentally sound collection, recycling, and disposal of the LCD panel.

Mini PCI FCC Registration Numbers

If your system has a built-in Mini PCI modem, the FCC registration number of your system is FJE USA-40066-ME-E REN 0.0A.

NEC Computers Inc.

DECLARATION OF CONFORMITY

We, the Responsible Party

NEC Computers Inc.
15 Business Park Way
Sacramento, CA 95828

declare that the product

NEC Versa L320

is in conformity with part 15 of the FCC Rules. Operation of this product is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.