

NetVista™



N22001 Thin Client for Linux Reference March 2001

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Note

Before using this information and the product that it supports, be sure to read "Safety notices" on page v and "Notices" on page 45.

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Safety notices

Safety notices contain information that is related to using the IBM® NetVista thin client in a safe manner. These notices can be in the form of a danger, caution, or attention notice.

Danger notices

The following danger notices call attention to situations that are potentially lethal or extremely hazardous. These notices pertain throughout this book.

DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)

DANGER

To prevent a possible electrical shock when installing the system, ensure that the power cords for all devices are unplugged before installing signal cables. (RSFTD202)

DANGER

To prevent a possible electrical shock when adding the device to a system, disconnect all power cords, if possible, from the existing system before connecting the signal cable to that device. (RSFTD205)

DANGER

To prevent a possible electrical shock, disconnect the power cord from the electrical outlet before opening the unit. (RSFTD215)

DANGER

To reduce the risk of electrical shock use only AC power sources approved by IBM. (RSFTD216)

Caution notices

A caution notice applies to a situation that is potentially hazardous to people because of some existing condition.

Handling static-sensitive devices

When you handle components, take these precautions to avoid static electricity damage:

- Do *not* open static-protective packages until you are ready to install their contents.
- Limit your movements to avoid static electricity build-up around you.
- Handle components carefully, and never touch exposed circuitry.
- Prevent others from touching components.
- Place components on static-protective packages while performing hardware removal and installation procedures.
- Do not place components on metal surfaces.

About this book

IBM NetVista N2200l Thin Client for Linux Reference (SA23-2810) provides information for the Type 8363 (Model Lxx) IBM NetVista N2200l Thin Client (hereafter referred to as N220l thin client or workstation).

This publication contains information on hardware setup, software configuration and update, hardware problem resolution, hardware upgrade options, parts replacement, and ordering.

Who should read this book

The following should find the information in this publication helpful:

- The person who administers the workstation
- The hardware service, and the support organizations for the workstation

Information available on the World Wide Web

You can obtain the latest version of this information at the following uniform resource locator (URL):

<http://www.ibm.com/nc/pubs>

This is the same URL that is printed on the cover of this document.

Related information

The following publications ship with your hardware. Refer to these publications for information that relates to your workstation.

- *IBM NetVista Quick Setup for N2200l Thin Client, Type 8363 (Model Lxx)* (SA23-2809) pamphlet for quick hardware setup information and brief software configuration information.
- *IBM License Agreement For Machine Code (Z125-5468)* before using the workstation.
- *IBM NetVista Thin Client Safety Information (SA41-4143)* for important safety notices.
- *IBM NetVista Thin Client Hardware Warranty - Type 8363 and Type 8364* (SA23-2802) for important hardware warranty information.

Refer to *IBM NetVista Thin Client Manager Operations Utility (SA23-2813)* for information about how you can manage your thin client from a server. This information is available at the following URL:

<http://www.ibm.com/nc/pubs>

How to send your comments

Your feedback helps us to provide the most accurate and high-quality information. You can submit comments about this, or other IBM information by mailing the readers' comment form, located at the end of this information.

- If you are mailing comments from a country other than the United States, you can give the form to the local IBM branch office or IBM representative for postage-paid mailing.
- If you prefer to send comments by FAX, use either of the following telephone numbers:
 - United States and Canada: 1-800-937-3430
 - Other countries: 1-507-253-5192
- If you prefer to send comments electronically, use the following network identification:
 - IBMMAIL, to IBMMAIL(USIB56RZ)
 - RCHCLERK@us.ibm.com

Be sure to include the following:

- The title, and order number of the information
- The page number or topic to which your comment applies

Understanding your NetVista thin client

The IBM NetVista N2200l Thin Client offers a fast and simple way to access applications, such as:

- Independent Computing Architecture (ICA) client or ICA Remote Application Manager to access:
 - Windows NT[®] Server 4.0
 - Windows[®] Terminal Server Edition 4.0
 - Windows NT Workstation 4.0
 - Windows 2000 Server
 - Windows 2000 Professional
 - Windows 2000 Advanced Server
- Netscape 4.7 Navigator browser
- 3270 emulator to access S/390[®] hosts

The N2200l thin client provides the usual thin-client benefits, such as a reduced total cost of ownership and the fast, flexible deployment of applications. Because it does not require a boot server, this solution also provides a quick start-up time.

The N2200l thin client also includes the following:

- A setup utility which provides a streamlined configuration process
- Local boot capabilities from a CompactFlash card
- An Independent Computing Architecture (ICA) client and ICA Remote Application Manager
- A Netscape Navigator 4.7 browser
- 3270 and VTxxx emulators
- A desktop with a Start button, or a selected full-screen application
- Separate utility programs for flash update service and operations management

The IBM NetVista Thin Client Manager Operations Utility is a management utility that you can use to manage your workstations. This utility runs on Windows 2000, Windows NT, Turbo Linux and Red Hat servers, and is available to you free of charge. You can either download this utility from a compact disc (CD) or from the World Wide Web. For more information, refer to *IBM NetVista Thin Client Manager Operations Utility (SA23-2813)*. This information is available on the World Wide Web at the following URL:

<http://www.ibm.com/nc/pubs>

Learning about the hardware

This section provides detailed hardware information about the N22001 thin client — Hardware Type 8363 (Model Lxx), hereafter referred to as N22001 thin client.

Standard hardware

The standard N22001 thin client hardware includes the following:

- 32 MB of permanent memory, which includes 3 MB dedicated to video memory
- 64 MB of memory on a Dual Inline Memory Module (DIMM)
- Integrated Ethernet communication
- 16-bit internal and external sound
- One 32 MB CompactFlash card with preloaded software
- 2 USB ports for a keyboard and other USB devices

Hardware connectors

Your N22001 thin client hardware includes standard connectors, standard pin, signal, and signal direction configurations. See “Appendix F. Connector pin information” on page 43 for details.

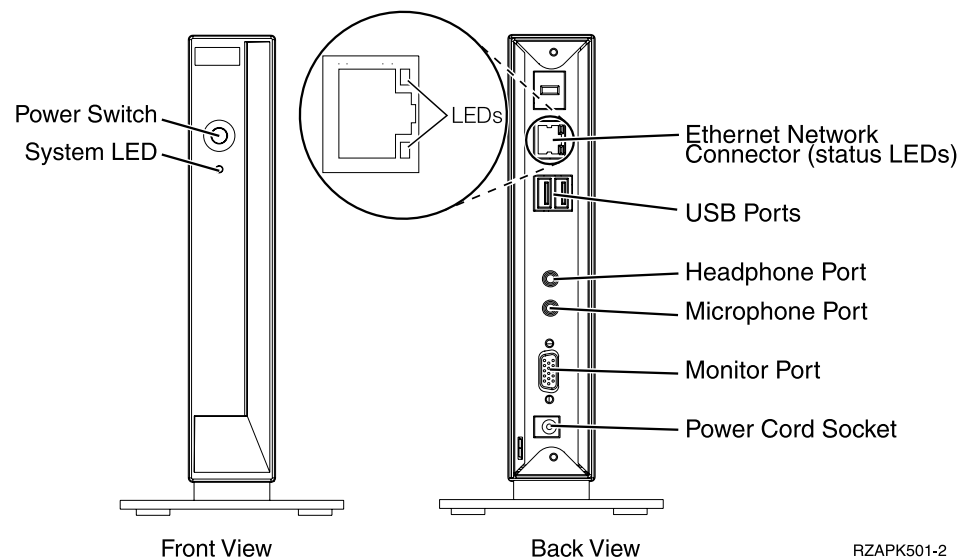


Figure 1. Hardware connectors

Communication hardware

Your N22001 thin client includes an integrated Ethernet connection.

For a 10 Megabit (Mb) line speed operation, you need a category 3 or higher Unshielded Twisted Pair (UTP) type of cable. For a 100 Mb line speed operation, you need a category 5 UTP type of cable.

Refer to “Appendix F. Connector pin information” on page 43 for communication cable specifications.

Monitor specifications

The N2200l thin client functions with a basic video graphics adapter (VGA) class monitor that meets the Video Electronics Standards Association (VESA) standards of refresh rate and resolution.

Refer to “Appendix E. Monitor specifications” on page 41 for a list of resolutions and refresh rates that the N2200l thin client can support. Your monitor may not support all resolutions and refresh rates.

Power consumption

The normal power consumption for a N2200l thin client is approximately 14 watts while running applications. You may see power consumption of up to 18 watts in some applications or configurations. For more information, contact an IBM account representative.

Upgrading hardware features

You can perform the following hardware procedures:

- Connect USB devices:

If you plan to use peripheral USB devices with your N2200l thin client, refer to the documentation for your peripheral USB devices for information.

- Upgrade your memory:

The N2200l thin client has one random access memory (RAM) slot that accepts Synchronous Dynamic Random Access Memory (SDRAM) DIMMs. The N2200l thin client includes 32 MB of permanent RAM on the system board, and has a 64 MB DIMM installed, for a total of 96 MB of RAM. The DIMM size can be increased to 128 or 256 MB. “Appendix B. Upgrading memory” on page 33 provides information on how to upgrade your memory. Refer to “Replacing additional parts” on page 29 for detailed memory specifications and N2200l thin client parts you can order.

Setting up the hardware

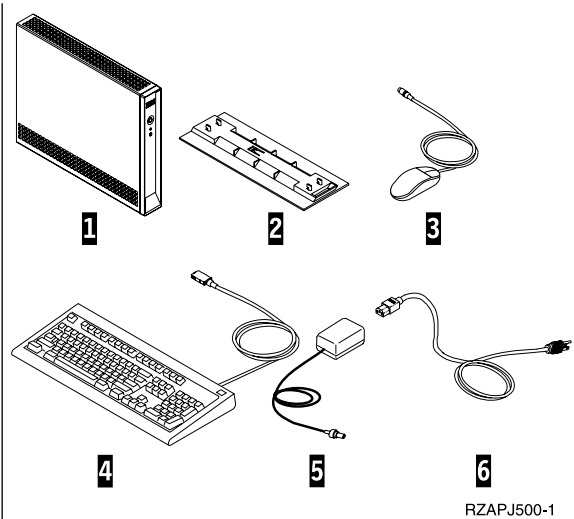
The *IBM NetVista Quick Setup for NetVista N22001 (SA23-2809)* pamphlet, which ships with your hardware, provides the following information. This section goes into more detail for your convenience.

Read "Safety notices" on page v before you continue with these instructions.

Unpacking the hardware

Unpack the hardware. Contact your reseller, or IBM, if you do not have these standard parts:

- 1 Logic unit
- 2 Base
- 3 Mouse
- 4 USB Keyboard
- 5 Power supply
- 6 Power cable



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Option: If you would like to restrict access to the logic unit, you can thread a security cable through tab **A**.

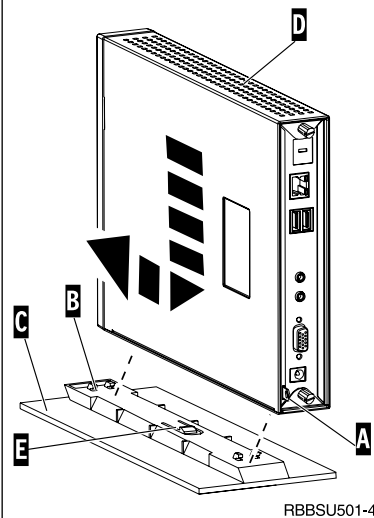
Installing the support base

Read "Safety notices" on page v before you continue with these instructions.

IBM recommends that you install the hardware in a vertical position.

1. Align the notches **B** on the support base **C** with the holes on the bottom of the logic unit **D**.
2. Slide the support base **C** onto the bottom of the logic unit **D**.

To remove the support base **C**, lift the latch **E** on the support base and slide the support base off the logic unit **D**.



Connecting the hardware

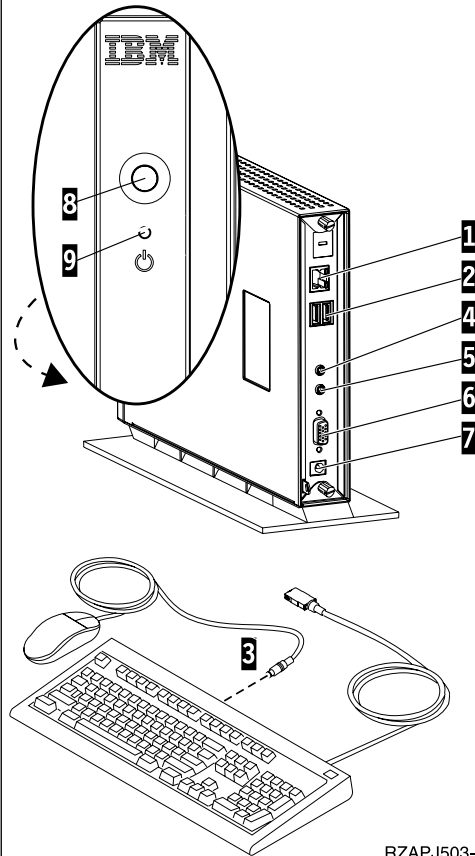
Read “Safety notices” on page v before you continue with these instructions.

1. Connect the devices listed below to the appropriate ports:
 - 1 Network cable
 - 2 USB keyboard and other USB devices (can be attached to either USB port)
 - 3 Mouse (connects to keyboard)
 - 4 Headphones
 - 5 Microphone
 - 6 Monitor
 - 7 Power supply and power cable
2. Ensure that the monitor cable is securely connected to the thin client.
3. Plug any power cables into properly grounded working electrical outlets.

Powering on the hardware

1. Power on the monitor and other devices that are attached to the thin client.
2. Press the white power button **8** to power on the thin client.

The thin client performs its startup sequence. See “Startup sequence” on page 7 for more information.
3. If this is the first time that you are powering on the thin client, proceed to “Configuring the N2200l thin client” on page 9. If this is not the first time that you are powering on the thin client, see the following sections for more information:
 - “Configuring the N2200l thin client” on page 9
 - “Managing your thin client remotely” on page 11



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Startup sequence

This is a typical startup sequence of events for the N2200l thin client. If any of these events do not occur, see “Resolving hardware problems” on page 19.

1. The following devices show light-emitting diode (LED) indications:
 - Logic unit (system LED and network status LED)
 - Power supply
 - Keyboard
 - Monitor¹
 - Any USB devices²
2. The following internal hardware components initialize by the NS Boot firmware:
 - Memory
 - L1 cache
 - Video memory
 - Keyboard controller
3. The N2200l thin client detects the CompactFlash card and loads the operating system into memory.
4. The IBM NetVista thin client screen appears on the monitor, showing one of the following:
 - The thin client Setup Utility. The Setup Utility appears in either of the following situations:
 - You start the NetVista thin client for the first time.
 - You previously reset the NetVista thin client to the factory-default property settings.

Refer to “Configuring the N2200l thin client” on page 9 for more information about working with the Setup Utility.

- The interface that you specified with the Setup Utility appears. The interface can be either of the following:
 - An application you specify
 - A Start button with one or more applications

Refer to the following sections for more information about configuring your N2200l thin client:

- “Configuring the N2200l thin client” on page 9
- “Managing your thin client remotely” on page 11

1. Refer to the documentation for your monitor if there is no LED indication.

2. Refer to the documentation for your USB devices if there are no LED indications.

Configuring the N2200I thin client

Before you can use the N2200I thin client (also referred to as *workstation*) to access server applications, you need to configure your workstation. You can use the Setup Utility to configure workstations.

Note: You do not need access to an external server to set up and configure the workstation.

Using the Setup Utility to configure the workstation

The Setup Utility allows you to perform the following tasks:

- Specify your keyboard language settings
- Configure your Internet Protocol (IP) settings
- Set the resolution and frequency of your display

The first time you start the workstation, you must use the initial Setup Utility to configure the workstation.

The Setup Utility allows you to configure the following applications on your workstation:

- Independent Computing Architecture (ICA) Client
- ICA Remote Application Manager
- Netscape 4.7 Navigator browser
- 3270 emulator to S/390 hosts
- VT emulator
- Custom applications of your choice

The Setup Utility provides two Workstation Mode user interfaces:

1. A single application that starts automatically when you power on the workstation.
2. A Start button with one or more applications. These applications can start automatically, if desired.

Administrators can restrict access to the Setup Utility and NS Boot firmware by using the Setup Utility to create a hardware password.

To access the Setup Utility anytime after the initial configuration, press and hold the following keys on the left side of the keyboard: **Shift + Ctrl + Alt**. Hold the keys down for several seconds until the Setup Utility starts.

Note: For information on using the NS Boot Firmware to update CompactFlash cards, see “Using the NS Boot Firmware to recover the flash image of a workstation” on page 16.

Managing your thin client remotely

You can use the IBM NetVista Thin Client Manager Operations Utility (hereafter referred to as Operations Utility) to manage your N2200l thin client remotely. It can manage both N2200l thin client individuals and groups. Before you can use the Operations Utility to perform a task on a workstation, you need to install it on your server. For installation instructions, and general information on using the Operations Utility, see *IBM NetVista Thin Client Manager Operations Utility* (SA23-2813). This information is available on the World Wide Web at the following URL:

<http://www.ibm.com/nc/pubs>

For specific information on using the Operations Utility, refer to the product help by clicking **Help**—>**Help Topics** from the Operations Utility window.

Altering the flash image

IBM provides a default flash image for the N2200l thin client. Customers can create their own flash images, adding and removing files from their flash image or images. The Image Description File (IDF) Builder and Software Description File (SDF) Creator Utility is used to modify the files in flash images.

The IDF Builder and SDF Creator Utility require that a NetVista workstation be booted from a server (network booted, not flash booted). The server must have the IBM NetVista Thin Client for Linux Product (or equivalent tool kit) installed.

Notes:

1. The IBM NetVista Thin Client for Linux Product is available at the following URL:
<http://www.ibm.com/pc/support>
2. Once you install it, the IDF Builder and SDF Creator Utility will also be installed on your server.

To start the IDF Builder, follow these steps:

1. From a network booted workstation, enter the Setup Utility:
 - Press and hold the following keys on the left side of the keyboard: **Shift + Ctrl + Alt**.
 - Hold the keys down for several seconds until the Setup Utility starts.
2. If this workstation has a hardware password, enter it when requested.
3. From the Setup Utility, click **Management / IDF Builder**

The default N2200l IDF file is:

`TurboLinux607_2200_Navigator_ICA6_3270.idf`

IBM also provides other default IDF files. You can modify this IDF file or create a new IDF file. Each IDF file contains a list of SDFs. You can add or remove SDFs from an IDF.

Notes:

1. Each SDF contains the list of files in the SDF (there is an SDF for the Base OS, an SDF for Navigator browser, and SDF for ICA 6.0, and so on).
2. You can start the SDF Creator from the IDF Builder.
3. The SDF Creator can modify an SDF or create a new SDF.
4. The SDF Creator determines the files within the SDF.
5. If an SDF is modified, each IDF using the modified SDF should be resaved.

For additional information on using the IDF Builder and the SDF Creator Utility, refer to the product help.

Altering the flash image of a workstation

There are two methods that you can use to alter the flash image of a workstation:

- “Performing a software update on a workstation” on page 14.
- “Recovering the flash image of a workstation” on page 15.

Notes:

1. When you perform a software *update* to the flash image of a workstation, you are only updating the software files. During the software flash update process, the workstation saves any configuration settings that you have made.
2. When you *recover* the flash image of a workstation, the recovery server reformats the CompactFlash card of the workstation, copying the recovery flash image to the workstation. Any configurations that you have made to the workstation are removed.

Performing a software update on a workstation

You should perform software updates on workstations only when a newer version of the software flash image exists or you want to add files to the flash card. Files which contain configuration information are not rewritten by the workstation when you perform a software update on a workstation. Configuration files can include Internet Protocol (IP) configuration settings, Netscape bookmarks, and Independent Computing Architecture (ICA) Client sessions that you have added.

You can perform a software update on a workstation using the following methods:

- “Using the Thin Client Manager Operations Utility to perform a software update on a workstation”
- “Using the Setup Utility to perform a software update on a workstation”

Performing a software update requires access to a server with the IBM NetVista Thin Client for Linux Product (or equivalent tool kit) installed.

Using the Setup Utility to perform a software update on a workstation

You can use the Setup Utility to perform a software update on a workstation. Using the Setup Utility requires you to be at the workstation that you are updating. To use the Setup Utility to perform a software update on a workstation, follow these steps:

1. From the workstation that you want to update, enter the Setup Utility:
 - a. Press and hold the following keys on the left side of the keyboard: **Shift + Ctrl + Alt**.
 - b. Hold the keys down for several seconds until the Setup Utility starts.
2. From the Setup Utility, click **Management / Software Update**.
3. Specify the IP address of the server with the IBM NetVista Thin Client for Linux Product (or equivalent tool kit) installed.
4. Click **Continue**.
5. Select a mount point on the server and click **Continue**.
6. Select an IDF file to provide the software update and click **Continue**.
7. When a confirmation box appears, click **Continue**.

Attention: After you click **Continue**, the server might take as long as 10 minutes to update the CompactFlash card. Do **not** power off the workstation while it reboots.

Using the Thin Client Manager Operations Utility to perform a software update on a workstation

You can use the Thin Client Manager Operations Utility to perform a remote software update on a workstation. To find out how to perform this and other

workstation management tasks, refer to the Operations Utility product help. Click **Help**—>**Help Topics** from the Operations Utility window.

Recovering the flash image of a workstation

You can recover the flash image of a workstation that has a damaged flash image. This process is also known as reflashing the workstation. When you recover the flash image of a workstation, the recovery server reformats the CompactFlash card, and copies the recovery flash image to the workstation. Any configurations that you have made to the workstation are removed.

Note: You should only perform flash recovery when you have a workstation with a corrupt flash image or you need to remove software files from the CompactFlash card.

You can recover the flash image of a workstation by using one of the following methods:

- “Using the Setup Utility to recover the flash image of a workstation” on page 15
- “Using the NS Boot Firmware to recover the flash image of a workstation” on page 16
- “Using the Thin Client Manager Operations Utility to recover the flash image of a workstation” on page 17

You need to specify the IDF flash file that you want to use in the process, regardless of the method that you choose.

Performing a flash recovery requires access to a server with the IBM NetVista Thin Client for Linux Product (or equivalent tool kit) installed.

Using the Setup Utility to recover the flash image of a workstation

You can use the Setup Utility to recover the CompactFlash image of a workstation.

Perform the following steps:

1. From the workstation that you want to recover, enter the Setup Utility:
 - a. Press and hold the following keys on the left side of the keyboard: **Shift + Ctrl + Alt**.
 - b. Hold the keys down for several seconds until the Setup Utility starts.
2. From the Setup Utility, click **Management / Flash Recovery**.
3. Specify the IP address of the server with the IBM NetVista Thin Client for Linux Product (or equivalent tool kit) installed.
4. Click **Continue**.
5. Select a mount point on the server and click **Continue**.
6. Select an IDF file to provide the recovery and click **Continue**.
7. When a confirmation box appears, click **Continue**.

Attention: After you click **Continue**, the server might take as long as 10 minutes to recover the flash image. Do **not** power off the workstation while it reboots.

Using the NS Boot Firmware to recover the flash image of a workstation

You can use the NS Boot Firmware to perform a flash recovery on a workstation. Using the NS Boot Firmware requires you to be at the workstation that you are recovering. To use the NS Boot Firmware to perform a flash recovery on a workstation, follow these steps:

1. Power on the workstation whose flash image you want to recover.
2. Press **Esc** immediately after the following message disappears:
Hardware testing in progress . . .
3. Press any key to continue (if you specified a hardware password for this workstation, enter it as the administrator password).
4. Follow the on-screen directions until you see the **Advanced Configuration** menu (MENU03).

Note: You may need to specify a NS Boot Firmware keyboard language and monitor resolution before pressing F5 twice to go to the Advanced Configuration menu. The NS Boot Firmware change language only effects NS Boot Firmware.

5. Select **Configure Network Settings**.
6. Press **Enter** to continue.
7. Under **Network Priority**, specify the following:
 - Set **DHCP** to Disabled.
 - Set **BOOTP** to Disabled.
 - Set **Local (NVRAM)** to First.
8. Set **Boot file source** to Network.
9. Verify that the following values are correct for your IP configuration:
 - Workstation IP Address
 - Gateway IP Address
 - Subnet Mask
10. Press **Enter** to continue.
11. Under **Boot file server IP address**, specify the IP address of the server with the IBM NetVista Thin Client for Linux Product (or equivalent tool kit) installed as the **First** option.
12. Under **Boot file server directory and file name**, specify this directory and file name as the **First** option:
/nstation/linux/kernel.2200
13. Under **Boot file server protocol**, set **NFS** to First.
14. Press **F3** to save your settings and return to the **Advanced Configuration** menu.
15. Select **Service aids**.
16. Press **Enter** to continue.
17. Select **Linux Flash Recovery**.
18. Press **Enter** to continue.
19. Enable flash recovery (press the Page Down key).
20. Press **Enter** to continue.
21. Press **F10** to reboot the workstation.
22. Specify the flash recovery bootserver, mount point, IDF file to use to recover the CompactFlash. Delta update is n, Partition is y, and reboot to Flash is y.

Attention: Recovering the flash image of a workstation can take as long as 10 minutes. Do **not** power off the workstation until the flash recovery process is complete.

After the recovered workstation reboots, the Setup Utility appears on the display.

Using the Thin Client Manager Operations Utility to recover the flash image of a workstation

You can use the Thin Client Manager Operations Utility to recover the flash image of a workstation remotely. To find out how to perform this and other workstation management tasks, refer to the Operations Utility product help. Click **Help—>Help Topics** from the Operations Utility window. For an overview, refer to *IBM NetVista Thin Client Manager Operations Utility (SA23-2813)* available at the following URL:

<http://www.ibm.com/nc/pubs>

Resolving hardware problems

This section provides information on verifying and resolving hardware problems.

If you cannot identify a hardware problem, you can request technical service and support by contacting IBM. You need to provide the machine type, model, and serial number of your N2200l thin client.

You can obtain additional service and support information at the following URL:

<http://www.ibm.com/pc/support>

Notes:

1. If your N2200l thin client is under warranty or a maintenance contract, contact IBM Service and Support to obtain a customer-replaceable unit (CRU). Refer to *IBM Network Station™ Hardware Warranty - Type 8363 and Type 8364 (SA23-2802)* for more information.
2. To resolve software errors, follow the instructions on the error message. For more information, contact IBM Service and Support.
3. Refer to the documentation for your monitor and USB devices for detailed information on resolving hardware problems that are associated with these devices.

Verifying hardware problems

Table 1 identifies possible hardware problem indications that can occur with the N2200l thin client during its startup sequence (see “Startup sequence” on page 7), or during normal operation.

Table 1. Hardware problem indications

Startup Checkpoints	Visible hardware failure	LED indications (system LED)	Audio beep sequences	Error codes and text messages (NSBxxxx)
Power on	X	X	X	
Monitor initialization	X			X
Keyboard initialization	X			X
Welcome screen	X			X

If you experience any hardware problem indications, first verify that an easily avoidable problem is not causing the hardware problem indication. Record any hardware problem indications and a description of the problem, and then proceed with the instructions below.

These instructions ensure that you start resolving any hardware problems by resetting the power to your hardware.

To determine the cause of NetVista thin client hardware problems, follow these steps to reset the power to your hardware:

- ___ 1. Power off the N2200l thin client.

- __ 2. Unplug the power supply from the electrical outlet.
- __ 3. Ensure that you properly connected all devices to the N2200l thin client. See “Connecting your hardware” on page 6 for more information.
- __ 4. Plug the N2200l thin client power supply into a properly grounded, working electrical outlet.
- __ 5. Ensure attached devices are powered on.
- __ 6. Power on the N2200l thin client.
- __ 7. Wait for the IBM NetVista thin client screen to appear on your monitor.
 - If the IBM NetVista thin client screen appeared, and the NetVista thin client did not indicate any hardware problems during power-on, you do not have a hardware problem.
 - If the NetVista thin client indicates a hardware problem, record any problem indications and a description of the problem. Consult Table 2 with your hardware problem information.

Table 2. Hardware problem resolution information

Hardware problem indications	Where to find information
Visible hardware failure	“Visible hardware failure”
Audio beep sequences	“Audio beep sequences” on page 22
LED indications	“LED indications” on page 23
Error codes and text messages	“Error codes and text messages” on page 25

Visible hardware failure

You experience visible hardware failure during normal operation when a device that is attached to your logic unit fails to function properly. Visible hardware failure includes the following:

- A device that is attached to your logic unit fails to function at all.
For example:
 - Your mouse cursor stops moving.
 - Your monitor displays a blank screen.
 - Characters do not display on your monitor when you type.
- A device that is attached to your logic unit does not function properly.
For example:
 - Your monitor displays unreadable screens.
 - Your mouse cursor does not move smoothly.
 - Some keys on your keyboard do not respond correctly.

If your NetVista thin client hardware has a visible hardware failure, consult Table 3. Contact your technical support if these steps do not resolve the problem.

Table 3. Visible hardware failure

Symptom	What you should do
Logic Unit	

Table 3. Visible hardware failure (continued)

Symptom	What you should do
<p>The system LED does not light up when you press the white power button to power on the NetVista thin client.</p>	<ol style="list-style-type: none"> 1. Verify that you plugged the power supply into a working electrical outlet. 2. Verify that the power supply LED indicates a solid green color. 3. Reset power to the NetVista thin client by pressing the white power button. 4. If the system LED does not work, any of the following devices may be defective: <ul style="list-style-type: none"> • Power supply Verify that the power supply LED indicates a solid green color. • Power cable <p>Substitute a properly working device for a defective device. Repeat the previous steps. See “Replacing additional parts” on page 29 for more information on replacing a defective power cable.</p> 5. If the system LED still does not work, you may need to replace the NetVista thin client logic unit. Contact your reseller, or IBM, and refer to “Appendix A. Replacing hardware parts” on page 29 for more information.
Monitor	
<ul style="list-style-type: none"> • The monitor displays a blank screen. • The monitor displays unreadable screens. 	<p>If the problem persists after you have verified the monitor cable connections, or after you have substituted a properly working monitor, refer to the documentation for your monitor for troubleshooting information.</p>
Keyboard	
<ul style="list-style-type: none"> • The arrow keys do not respond when you press them. • Characters do not display on the monitor when you type. 	<ol style="list-style-type: none"> 1. Verify that you connected the keyboard cable properly to the NetVista thin client. 2. If the problem persists, the keyboard may be defective. <ul style="list-style-type: none"> • Substitute a properly working keyboard, and repeat the previous steps. • Contact your reseller, or IBM, to request a replacement part (see “Replacing additional parts” on page 29). 3. If the keyboard still does not work, you may need to replace the NetVista thin client logic unit. Contact your reseller, or IBM, and refer to “Appendix A. Replacing hardware parts” on page 29 for more information.
Mouse	

Table 3. Visible hardware failure (continued)

Symptom	What you should do
<ul style="list-style-type: none"> • The mouse cursor stops moving; the mouse does not function at all. • The mouse cursor does not move smoothly. 	<ol style="list-style-type: none"> 1. Verify that you connected the mouse cable properly to the NetVista thin client keyboard. 2. If the mouse does not work, any of the following devices may be defective: <ul style="list-style-type: none"> • Mouse • Keyboard <p>Substitute a properly working device for a defective device. Repeat the previous steps. Contact your reseller, or IBM, to request a replacement part (see “Replacing additional parts” on page 29).</p> 3. If the mouse still does not work, you may need to replace the NetVista thin client logic unit. Contact your reseller, or IBM, and refer to “Appendix A. Replacing hardware parts” on page 29 for more information.

Audio beep sequences

The NetVista thin client hardware utilizes both audio and visual alerts when reporting hardware problems. In the event of a hardware problem, the NetVista thin client emits audio beeps before your monitor initializes. After your monitor initializes, error codes and text messages appear on the screen (see “Error codes and text messages” on page 25).

Audio beep sequences can include short beeps, long beeps, and brief silent periods. Table 4 on page 23 defines the possible audio beep sequences that can occur when a hardware problem exists.

To verify that a NetVista thin client hardware problem exists, ensure that you complete the instructions in “Verifying hardware problems” on page 19.

If the NetVista thin client is not functioning properly, and it is emitting audio beep sequences, consult Table 4 on page 23. Contact your technical support if these steps do not resolve the problem.

Notes:

1. These beep sequences are in a numeric format which indicates the sequence of the audio output.
2. Audio beep sequences do not occur after the monitor initializes.

Table 4. Audio beep sequences

Symptom	What you should do
The NetVista thin client emits a 1-3-1 beep sequence, and the system LED is flashing amber.	<p>Memory error</p> <ol style="list-style-type: none"> 1. Check or replace the memory card. Refer to “Appendix B. Upgrading memory” on page 33 for instructions. 2. Verify that you properly connected the network cable to the NetVista thin client network connector. 3. Power on the NetVista thin client. 4. If the problem persists, you may need to replace the NetVista thin client logic unit. Contact your reseller, or IBM, and refer to “Appendix A. Replacing hardware parts” on page 29 for information.
The NetVista thin client emits a 2-3-2 beep sequence, and the system LED is flashing amber.	<p>Video memory error</p> <ol style="list-style-type: none"> 1. Verify that you properly connected the network cable to the NetVista thin client network port. 2. Power on the NetVista thin client. 3. If the problem persists, you may need to replace the NetVista thin client logic unit. Contact your reseller, or IBM, and refer to “Appendix A. Replacing hardware parts” on page 29 for information.

LED indications

The LED indicators of the following devices maintain a solid green color during normal operation:

- Logic unit (system LED and network status LED)
- Power supply
- Monitor
- Keyboard

The network status LED indicates a solid amber color during normal operation.

The network status LED indicates a flashing green color during network activity.

The system LED quickly flashes from amber to green during a normal power-on. The system LED indicates hardware problems in the following ways:

- The flashing green indications
- The flashing amber indications
- Steady amber indications
- Failure to function

To verify that a NetVista thin client hardware problem exists, ensure that you complete the instructions in “Verifying hardware problems” on page 19.

If the NetVista thin client is not functioning properly, and the LED indicators show anything other than a solid green color, consult Table 5 on page 24. Contact your technical support if these steps do not resolve the problem.

Table 5. LED indications

Symptom	What you should do
System LED	
<p>The system LED fails to function after power on.</p>	<ol style="list-style-type: none"> 1. Verify that you plugged the power supply into a working electrical outlet. 2. Verify that the power supply LED indicates a solid green color. 3. Press the white power button to reset power to the NetVista thin client. 4. If the system LED does not work, any of the following devices may be defective: <ul style="list-style-type: none"> • Power supply Verify that the power supply LED indicates a solid green color. • Power cable <p>Substitute a properly working device for a defective device. Repeat the previous steps. Contact your reseller, or IBM, to request a replacement part (see “Replacing additional parts” on page 29).</p> 5. If the system LED still does not work, you may need to replace the NetVista thin client logic unit. Contact your reseller, or IBM, to request a replacement part (see “Appendix A. Replacing hardware parts” on page 29).
<p>A power interruption during a software update occurs. When you power on the NetVista thin client, the system LED shows a solid green color, or a flashing amber color, and the monitor does not display any screens.</p>	<p>The software on the NetVista thin client may be damaged. Contact IBM Service and Support, and refer to “Appendix D. Recovering the boot block image” on page 37 for information on recovering the software on the NetVista thin client.</p>
<p>The system LED shows a solid amber color, or a flashing amber color.</p>	<ol style="list-style-type: none"> 1. Press the white power button to reset power to the NetVista thin client. 2. If the system LED still shows a solid amber color, or a flashing amber color, you may need to replace the NetVista thin client logic unit. Contact your reseller, or IBM, and refer to “Appendix A. Replacing hardware parts” on page 29 for more information.
<p>The system LED flashes amber once shortly after power off.</p>	<p>The NetVista thin client hardware automatically enables Wake-On-LAN (WOL). This is not an indication of a hardware problem.</p>
Power Supply LED	

Table 5. LED indications (continued)

Symptom	What you should do
The power supply LED fails to function after power on.	<ol style="list-style-type: none"> 1. Verify that you connected the power supply to the NetVista thin client. 2. Verify that you plugged the power supply into a working electrical outlet. 3. If the power supply LED does not indicate a solid green color, any of the following devices may be defective: <ul style="list-style-type: none"> • Power supply • Power cable <p>Substitute a properly working device for a defective device. Repeat the previous steps. Contact your reseller, or IBM, and refer to “Replacing additional parts” on page 29 for more information.</p>
Monitor LED	
The monitor LED fails to function after power on.	If the problem still persists after you verified the monitor cable connections, or after you substituted a properly working monitor, refer to the documentation for your monitor for more information.
The monitor LED shows a solid amber color, or a flashing amber color.	If the problem still persists after you verified the monitor cable connections, or after you substituted a properly working monitor, refer to the documentation for your monitor for more information.

Error codes and text messages

Error codes and text messages can appear on the bottom of your screen during the startup sequence of the NetVista thin client. **NSBxxxx** error codes and text messages indicate only hardware problems.

To verify that a NetVista thin client hardware problem exists, ensure that you complete the instructions in “Verifying hardware problems” on page 19.

If the NetVista thin client is not functioning properly, and an error code or text message appears on your screen, consult Table 6. Contact your technical support, reseller, or IBM, if these steps do not resolve the problem.

Table 6. Error codes and text messages

Symptom	What you should do
An error code or text message appears on the screen.	<ol style="list-style-type: none"> 1. Record any error messages, audio beep sequences, or LED indications, and a description of the problem. 2. Perform any actions indicated within the error message. 3. Contact your technical support.
A boot interruption screen appears.	Press F10 to reboot the NetVista thin client.

Table 7 on page 26 defines the error messages that can appear when you power on the NetVista thin client. This table provides information that you must only follow

under the direction of the IBM Service and Support team.

Table 7. NSBxxxx error codes and text messages

Error code	Error message	What you should do
General messages (NSB0xxxx)		
NSB00020	Press a key to continue.	<ol style="list-style-type: none"> 1. Power off the NetVista thin client. 2. Ensure that the CompactFlash card is installed properly (see “Appendix C. CompactFlash card” on page 35). 3. Power on the NetVista thin client. 4. If the hardware problem persists, you may need to replace the NetVista thin client logic unit. Contact your reseller, or IBM and refer to “Appendix A. Replacing hardware parts” on page 29 for more information.
NSB00030	Canceled by user.	<ol style="list-style-type: none"> 1. Power off the NetVista thin client. 2. Ensure that the CompactFlash card is installed properly (see “Appendix C. CompactFlash card” on page 35). 3. Power on the NetVista thin client. 4. If the hardware problem persists, you may need to replace the NetVista thin client logic unit. Contact your reseller, or IBM, and refer to “Appendix A. Replacing hardware parts” on page 29 for more information.
Main memory messages (NSB10xxx)		
NSB11500	On board memory failure.	Ensure that the memory is installed properly. If the failure still occurs, contact your reseller, or IBM, and refer to “Installing a memory card” on page 33 for more information.
NSB11510	Slot %d memory failure.	Ensure that the memory is installed properly. If the failure still occurs, contact your reseller, or IBM, and refer to “Installing a memory card” on page 33 for more information.
Non-volatile memory messages (NVRAM) (NSB11xxx)		
NSB12500	Checksum failure for nonvolatile memory.	No action required.
NSB12510	Not able to access nonvolatile memory.	You may need to replace the NetVista thin client logic unit. Contact your reseller, or IBM, and refer to “Appendix A. Replacing hardware parts” on page 29.
NSB12520	Setting nonvolatile memory to manufacturing defaults.	No action required.
NSB12530	Detected reset jumper.	No action required.
NSB12540	New nonvolatile memory structure detected.	No action required.
Audio messages (NSB21xxx)		

Table 7. NSBxxxx error codes and text messages (continued)

Error code	Error message	What you should do
NSB21500	Audio failure.	You may need to replace the NetVista thin client logic unit. Contact your reseller, or IBM, and refer to “Appendix A. Replacing hardware parts” on page 29.
Input messages (NSB3xxxx)		
Keyboard and mouse messages (NSB3xxxx, NSB31xxx, and NSB32xxx)		
NSB30500	No input device detected. NS Boot will continue in 10 seconds.	Check the keyboard and mouse cable connections.
NSB31500	Keyboard did not respond.	Check the keyboard cable connection.
NSB31510	Keyboard controller did not respond.	Check the keyboard cable connection. If the failure still occurs, contact your reseller, or IBM, and refer to “Appendix A. Replacing hardware parts” on page 29 to replace the NetVista thin client logic unit.
NSB31520	Keyboard was not recognized.	Check the keyboard cable connection.
NSB32500	Mouse did not respond.	Check the mouse cable connection.
USB messages (NSB4xxxx)		
NSB40500	USB failure.	Disconnect any USB devices from the NetVista thin client and restart the system. If the failure still occurs, contact your reseller, or IBM, and refer to “Appendix A. Replacing hardware parts” on page 29 to replace the NetVista thin client logic unit.
NSB40510	USB initialization failure.	Disconnect any USB devices from the NetVista thin client and restart the system. If the failure still occurs, contact your reseller, or IBM, and refer to “Appendix A. Replacing hardware parts” on page 29 to replace the NetVista thin client logic unit.
CompactFlash card messages (NSB51xxx)		
NSB51500	File not found on flash card.	<ol style="list-style-type: none"> 1. Power off the NetVista thin client. 2. Ensure that the CompactFlash card is installed properly (see “Appendix C. CompactFlash card” on page 35). 3. Power on the NetVista thin client. 4. If the hardware problem persists, contact your reseller, or IBM, and refer to “Appendix A. Replacing hardware parts” on page 29 to replace the NetVista thin client logic unit.

Table 7. NSBxxxx error codes and text messages (continued)

Error code	Error message	What you should do
NSB51510	Cannot close file on flash card.	<ol style="list-style-type: none"> 1. Power off the NetVista thin client. 2. Ensure that the CompactFlash card is installed properly (see “Appendix C. CompactFlash card” on page 35). 3. Power on the NetVista thin client. 4. If the hardware problem persists, contact your reseller, or IBM, and refer to “Appendix A. Replacing hardware parts” on page 29 to replace the NetVista thin client logic unit.
Ethernet messages (NSB62xxx)		
NSB62500	Line speed automatic negotiation failed.	Verify that you connected the network cable to the NetVista thin client correctly.
NSB62510	No network device found.	Contact your reseller, or IBM, and refer to “Appendix A. Replacing hardware parts” on page 29 to replace the NetVista thin client logic unit.
Failure to boot message (NSB83xxx)		
NSB83589	Failed to boot after 3 attempts.	<ol style="list-style-type: none"> 1. Power off the NetVista thin client. 2. Ensure that the CompactFlash card is installed properly (see “Appendix C. CompactFlash card” on page 35). 3. Power on the NetVista thin client. 4. If the hardware problem persists, contact your reseller, or IBM, and refer to “Appendix A. Replacing hardware parts” on page 29 to replace the NetVista thin client logic unit.

Appendix A. Replacing hardware parts

You can order IBM replacement parts for the thin client. Contact IBM or your reseller to order warranty parts and non-warranty parts. IBM provides warranty service without charge for parts during the warranty period on an exchange basis only.

If you need to return a part, refer to “Returning hardware parts” on page 32 for more information.

Replacing the logic unit

IBM replaces a defective logic unit as a complete assembly. To replace a logic unit, the customer must transfer features, such as a memory DIMM, to the replacement unit. If customers do not transfer their features, the replacement units cannot operate properly. See “Safety notices” on page v for information about handling Customer Replaceable Unit (CRU) parts.

IBM delivers CRUs to the customers for exchange, and customers return defective parts to IBM under the basic service offering. Customers should return all defective logic units with the cover assembly, and without the support base or memory DIMMs. For upgraded service offerings, a service representative delivers replacement parts, transfers features, and returns defective parts to IBM.

See “Resolving hardware problems” on page 19 to determine whether or not it is necessary to replace the thin client logic unit or any other parts. If you need to replace the logic unit, you can find the correct part number on the right side of the thin client, near the back. The identification format is as follows, where ##X#### indicates the field replaceable unit (FRU) part number:

FRU P/N ##X####

If you cannot locate the part number for the logic unit, refer to Table 8 to determine the correct number. Warranty service terms and conditions by country apply.

Table 8. Thin client logic units

Description	Model	Part number
Logic unit and associated parts		
Base Logic Unit	Model Lxx — Ethernet Logic Unit with pre-loaded Compact Flash Note: No memory is installed in this replacement unit, the memory DIMM from the defective logic unit must be transferred to the new unit.	22P0792

Replacing additional parts

Use the following tables to determine the correct part to replace. Warranty service terms and conditions by country apply.

Contact IBM or your reseller to order warranty parts and non-warranty parts. IBM provides warranty service without charge for parts during the warranty period on an exchange basis only.

If you need to return a part, refer to “Returning hardware parts” on page 32 for more information.



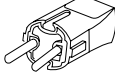

















Table 9. Type 8363 thin client replacement parts

Description	Country	Part number
Base (mounting stand)	All Countries	03N2725
Slotted thumbscrews	All Countries	03N3882
Memory		
Note: This thin client accepts 168 pin, 3.3 V, gold tab, unbuffered, non-parity, and 100MHz SDRAM DIMM memory.		
Memory (64 MB SDRAM DIMM)	All Countries	01K1147
Memory (128 MB SDRAM DIMM)	All Countries	01K1148
Memory (256 MB SDRAM DIMM)	All Countries	01K1149
Power supply		
Power Supply (detachable power cable not included)	All Countries	03N2662
Mouse		
Mouse (two button)	All Countries	10L6149
Keyboards (USB)		
Keyboard	Belgian UK	37L2651
Keyboard	Canadian French	37L2646
Keyboard	Danish	37L2654
Keyboard	French	37L2656
Keyboard	Finnish	37L2671
Keyboard	German	37L2657
Keyboard	Italian	37L2662
Keyboard	Norwegian	37L2663
Keyboard	Portuguese	37L2665
Keyboard	Spanish	37L2670
Keyboard	Swedish	37L2671
Keyboard	Swiss (French and German)	37L2672
Keyboard	UK English	37L2675
Keyboard	US English ISO9995	37L2677
Keyboard	US English	37L2644

Table 10. Detachable power cables

Plug	Receptacle	Country	Part number
Detachable power cables			

Table 10. Detachable power cables (continued)

Plug	Receptacle	Country	Part number
		Argentina, Australia, New Zealand	13F9940
		Abu Dhabi, Austria, Belgium, Bulgaria, Botswana, Egypt, Finland, France, Germany, Greece, Iceland, Indonesia, Korea (South), Lebanon, Luxembourg, Netherlands, Norway, Portugal, Saudi Arabia, Spain, Sudan, Sweden, Turkey, Yugoslavia	13F9978
		Bahamas, Barbados, Bolivia, Brazil, Canada, Costa Rica, Dominican Republic, El Salvador, Ecuador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Netherlands Antilles, Panama, Peru, Philippines, Taiwan, Thailand, Trinidad, Tobago, U.S.A. (except Chicago), Venezuela	1838574
		Bahamas, Barbados, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Korea (South), Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Puerto Rico, Saudi Arabia, Suriname, Trinidad, Taiwan, U.S.A	6952301
		Bahrain, Bermuda, Brunei, Channel Islands, Cyprus, Ghana, Hong Kong, India, Iraq, Ireland, Jordan, Kenya, Kuwait, Malawi, Malaysia, Nigeria, Oman, People's Republic of China, Qatar, Singapore, Tanzania, Uganda, United Arab Emirates (Dubai), United Kingdom, Zambia	14F0032
		Bangladesh, Burma, Pakistan, South Africa, Sri Lanka	14F0014
		Denmark	13F9996
		Israel	14F0086
		Chile, Ethiopia, Italy	14F0068
		Liechtenstein, Switzerland	14F0050

Returning hardware parts

You may not need to return all defective items to IBM. Always check the replacement part packaging for any instructions regarding the return of defective parts.

To return a defective part to IBM, pack the defective part in the packaging container of the replacement part.

Note: Customers must not ship features, such as memory DIMMs, with defective logic units that they are returning to IBM. It is not possible for IBM to return these features back to customers. The DIMM should be transferred from the defective logic unit to the new logic unit.

If customers do not follow IBM shipping instructions, they may get charges for any damage to a defective part. IBM covers shipping costs on all warranted hardware and maintenance agreement hardware. Replacement parts become the customer's property in exchange for the defective parts, which become the property of IBM.

For information on ordering thin client parts, refer to "Replacing additional parts" on page 29.

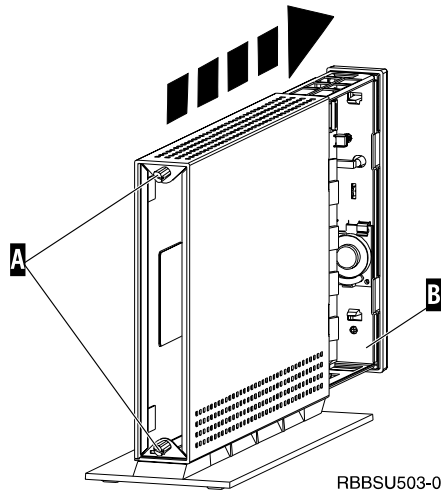
Appendix B. Upgrading memory

See “Resolving hardware problems” on page 19 to determine whether or not it is necessary to replace the logic unit, or any other parts. For information on ordering thin client hardware parts, refer to “Replacing additional parts” on page 29.

Removing the logic unit

Read “Safety notices” on page v before you continue with these instructions.

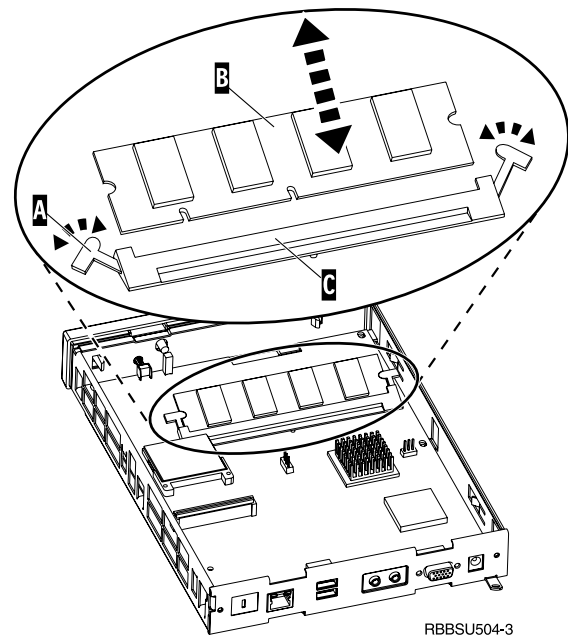
1. Power off the thin client, and disconnect all cables to the thin client.
2. Remove the two thumbscrews **A** at the back of the logic unit.
3. Push the logic unit **B** out of the cover.
4. Lay the logic unit on a flat surface.
5. Continue with “Installing a memory card” to install a memory card.



Installing a memory card

Complete the instructions in “Removing the logic unit”, and read “Safety notices” on page v before you continue with these instructions.

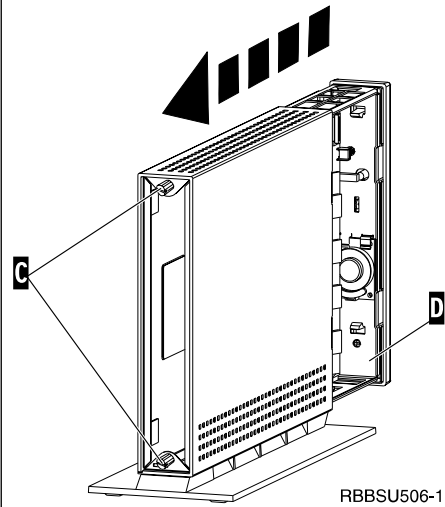
1. To remove a previously installed memory card, press the tabs **A**, that are located at each end of the memory card **B**, out until the memory card **B** comes out of the memory socket **C**.
2. To install a memory card, align the notches on the bottom of the memory card **B** with the matching notches on the memory socket **C**.
3. Press the memory card down into the memory socket **C**. The tabs **A** should swing in, holding the memory card in place.
4. Continue with “Reassembling the thin client” on page 34.



Reassembling the thin client

Read “Safety notices” on page v before you continue with these instructions.

1. To reassemble the thin client, carefully slide the logic unit **D** back into the cover, connectors first.
2. Install and tighten the two thumbscrews **C** at the back of the thin client.
3. Continue with “Installing the support base” on page 5 and “Connecting your hardware” on page 6.

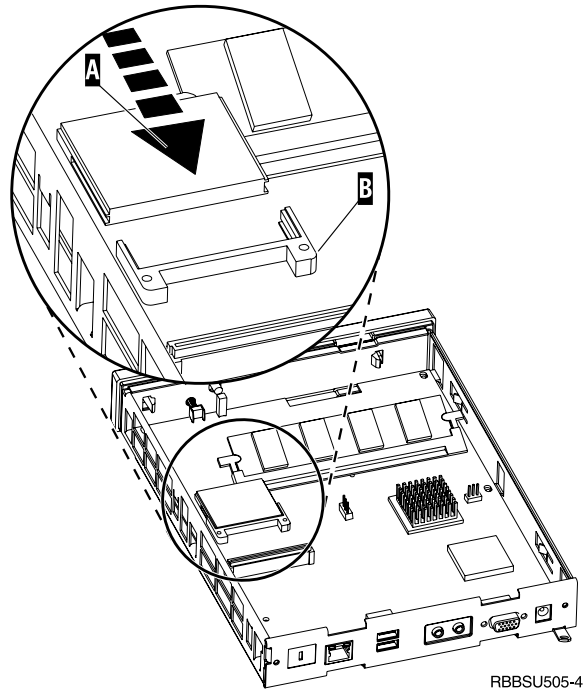


Appendix C. CompactFlash card

Follow these steps to verify if the CompactFlash card is installed properly.

Read “Safety notices” on page v before you continue with these instructions.

1. Perform Steps 1 to 4 in “Removing the logic unit” on page 33.
2. Align the grooves on the sides of the CompactFlash card **A** to the grooves of the flash card slot **B**. Make sure to align the grooves properly, as you can insert the CompactFlash card only one way.
3. Carefully press the CompactFlash card into the flash card slot. To avoid hardware damage, do not force the card into the flash card slot.
4. Perform “Reassembling the thin client” on page 34.



RBBSU505-4

Appendix D. Recovering the boot block image

This section provides instructions that should be followed only under the direction of the IBM Service and Support team. Use these instructions only if you encountered a power interruption during a software update.

Creating the boot block recovery CompactFlash card

Refer to the appropriate diagrams (Diagram 1 or Diagram 2) that matches your NetVista system

Read “Safety notices” on page v before you continue with these instructions.

Perform the steps below **from a properly working thin client**.

Note: A blank CompactFlash card is required to perform this procedure.

1. Perform Steps 1 to 4 in “Removing the logic unit” on page 33.
2. If a CompactFlash card is already installed, remove it by carefully pulling out of the flash card slot. If a CompactFlash card is not installed, go to step 3.
3. Carefully insert a blank CompactFlash card into the flash card slot. This CompactFlash card is your recovery CompactFlash card.

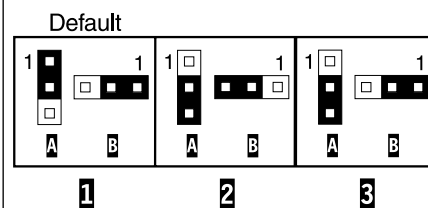
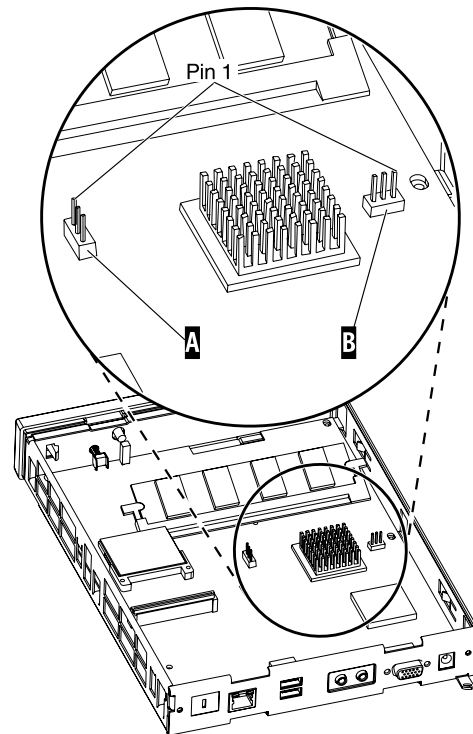
For more information on CompactFlash cards, see “Appendix C. CompactFlash card” on page 35.

4. Move the jumpers on headers **A** and **B** into configuration **2**.
5. Reconnect the power cable to the logic unit.
6. Power on the thin client, and wait for the system LED to flash green.

If the system LED flashes amber, the image was not created. Repeat the procedure with another CompactFlash card.

7. Power off the thin client.
8. Remove the recovery CompactFlash card.
9. Move the jumpers back into the default configuration **1**.
10. If you removed an original CompactFlash card in step 2, reinsert it into the flash card slot. If you did not remove an original CompactFlash card in step 2, go to step 11.
11. Perform “Reassembling the thin client” on page 34.
12. Continue with “Reflashing the boot block from the recovery CompactFlash card” on page 39.

Diagram 1



RZAPJ505-2

Creating the boot block recovery CompactFlash card

Read “Safety notices” on page v before you continue with these instructions.

Perform the steps below **from a properly working thin client**.

Note: A blank CompactFlash card is required to perform this procedure.

1. Perform Steps 1 to 4 in “Removing the logic unit” on page 33.
2. If a CompactFlash card is already installed, remove it by carefully pulling out of the flash card slot. If a CompactFlash card is not installed, go to step 3.
3. Carefully insert a blank CompactFlash card into the flash card slot. This CompactFlash card is your recovery CompactFlash card.

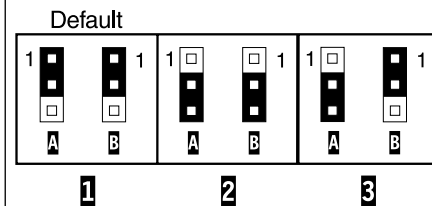
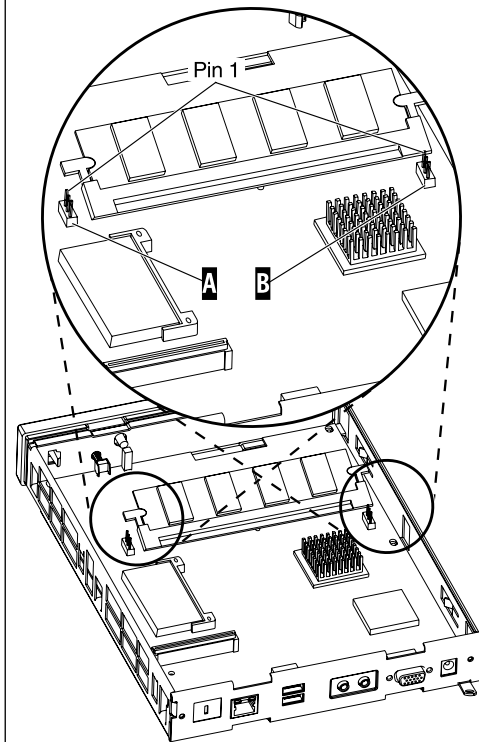
For more information on CompactFlash cards, see “Appendix C. CompactFlash card” on page 35.

4. Move the jumpers on headers **A** and **B** into configuration **2**.
5. Reconnect the power cable to the logic unit.
6. Power on the thin client, and wait for the system LED to flash green.

If the system LED flashes amber, the image was not created. Repeat the procedure with another CompactFlash card.

7. Power off the thin client.
8. Remove the recovery CompactFlash card.
9. Move the jumpers back into the default configuration **1**.
10. If you removed an original CompactFlash card in step 2, reinsert it into the flash card slot. If you did not remove an original CompactFlash card in step 2, go to step 11.
11. Perform “Reassembling the thin client” on page 34.
12. Continue with “Reflashing the boot block from the recovery CompactFlash card” on page 39.

Diagram 2



RZAPJ506-0

Recovering the boot block from the recovery CompactFlash card

Refer to the appropriate diagrams (Diagram 1 or Diagram 2) that matches your NetVista system

Read “Safety notices” on page v before you continue with these instructions.

Perform these instructions **using the thin client that requires the new boot block**:

1. Perform Steps 1 to 4 in “Removing the logic unit” on page 33.
2. If a CompactFlash card is already installed, remove it by carefully pulling out of the flash card slot. If a CompactFlash card is not installed, go to step 3.
3. Carefully insert the recovery CompactFlash card into the flash card slot.

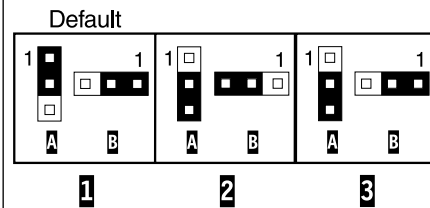
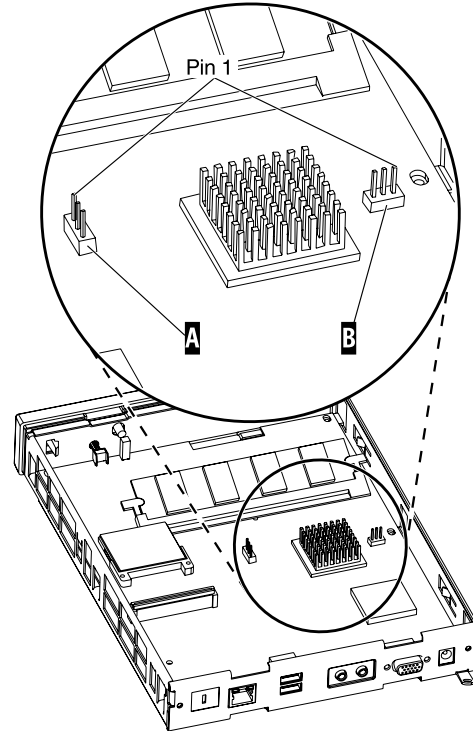
For more information on CompactFlash cards, see “Appendix C. CompactFlash card” on page 35.

4. Move the jumpers on headers **A** and **B** into configuration **3**.
5. Reconnect the power cable to the logic unit.
6. Power on the thin client, and wait for the system LED to flash green.

If the system LED flashes amber, the image was not copied correctly. Replace the logic unit (see “Appendix A. Replacing hardware parts” on page 29).

7. Power off the thin client.
8. Remove the recovery CompactFlash card.
9. Move the jumpers back into the default configuration **1**.
10. If you removed an original CompactFlash card in step 2, reinsert it into the flash card slot. If you did not remove an original CompactFlash card in step 2, go to step 11.
11. Perform “Reassembling the thin client” on page 34.

Diagram 1



RZAPJ505-2

Recovering the boot block from the recovery CompactFlash card

Read “Safety notices” on page v before you continue with these instructions.

Perform these instructions **using the thin client that requires the new boot block:**

1. Perform Steps 1 to 4 in “Removing the logic unit” on page 33.
2. If a CompactFlash card is already installed, remove it by carefully pulling out of the flash card slot. If a CompactFlash card is not installed, go to step 3.
3. Carefully insert the recovery CompactFlash card into the flash card slot.

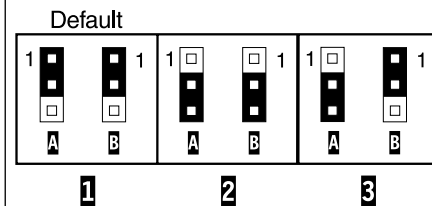
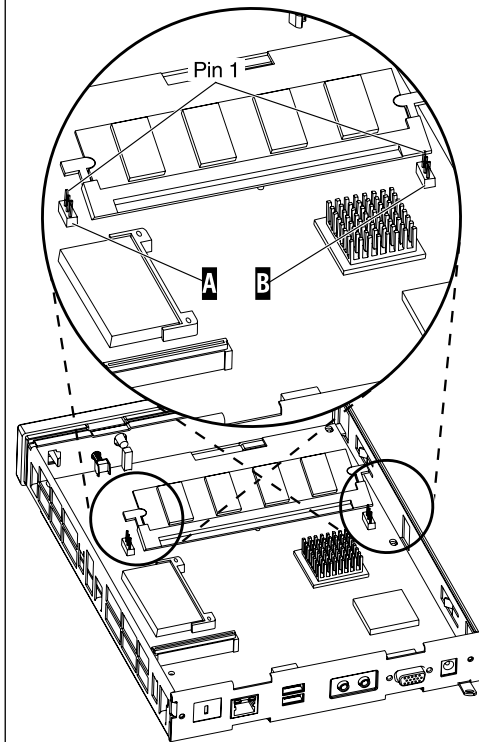
For more information on CompactFlash cards, see “Appendix C. CompactFlash card” on page 35.

4. Move the jumpers on headers **A** and **B** into configuration **3**.
5. Reconnect the power cable to the logic unit.
6. Power on the thin client, and wait for the system LED to flash green.

If the system LED flashes amber, the image was not copied correctly. Replace the logic unit (see “Appendix A. Replacing hardware parts” on page 29).

7. Power off the thin client.
8. Remove the recovery CompactFlash card.
9. Move the jumpers back into the default configuration **1**.
10. If you removed an original CompactFlash card in step 2, reinsert it into the flash card slot. If you did not remove an original CompactFlash card in step 2, go to step 11.
11. Perform “Reassembling the thin client” on page 34.

Diagram 2



RZAPJ506-0

Appendix E. Monitor specifications

The N22001 thin client functions with a basic video graphics adapter (VGA) class monitor that meets the VESA standards of refresh rate and resolution. The thin client supports VESA Display Power Management Signaling (DPMS) and VESA Display Data Channel (DDC2B). A monitor that is attached to the thin client does not require either standard. In each case, configure the resolution at the client operating system (OS) level.

Your monitor may not support all resolutions and refresh rates.

Table 11. Monitor support

High color (16 bit) and 256 color (8 bit)	
Resolution (pixels)	Refresh Rate (Hz)
640x480	60, 72, 75
800x600	60, 72, 75
1024x768	60, 75
256 color (8 bit)	
640x480	60, 72, 75
800x600	60, 72, 75
1024x768	60, 75
1280x1024	60

Appendix F. Connector pin information

The following tables define the connector pins that are used with the thin client.

Table 12. Monitor Connector

Pin	Signal	Signal Direction
1	Red Video	Out
2	Green Video	Out
3	Blue Video	Out
4	Monitor Detect 2	In
5	Ground	---
6	Red Video Ground	---
7	Green Video Ground	---
8	Blue Video Ground	---
9	Not connected	---
10	Ground	---
11	Monitor Detect 0	In
12	Monitor Detect 1 / DDCSDA	In / Out
13	Horizontal Sync	Out
14	Vertical Sync	Out
15	Monitor Detect 3 / DDCSCL	In / Out
Connector shell	Protective Ground	---

Table 13. RJ-45 Twisted Pair Connector

Pin	Name	Function
1	TPOP	Transmit +
2	TPON	Transmit -
3	TPIP	Receive +
4/5	Not used	---
6	TPIN	Receive -
7/8	Not used	---

Table 14. USB connector

Pin #	Direction	Description
1	Power	Power (5V) for USB0
2	Bidir	Data positive for USB0
3	Bidir	Data negative for USB0
4	Power	Ground for USB0
5	Power	Power (5V) for USB1
6	Bidir	Data positive for USB1
7	Bidir	Data negative for USB1
8	Power	Ground for USB1

Table 15. Power supply connector

Pin #	Voltage+12V dc input
1	+12V dc
2	Ground
3	Ground

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- Reduction in manufacturing wastes
- Increased product energy efficiency

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Glossary of abbreviations

A

AC. Alternating Current

B

BOOTP. Bootstrap Protocol

C

CD. Compact Disc

CRU. Customer-Replaceable Unit

D

DBCS. Double Byte Character Set

DDC. Display Data Channel

DDC2B. Display Data Channel (version 2B)

DHCP. Dynamic Host Configuration Protocol

DIMM. Dual In-line Memory Module

DPMS. Display Power Management Signaling

F

FAX. Facsimile

FCC. Federal Communications Commission

FTP. File Transfer Protocol

FRU. Field Replaceable Unit

H

HTTP. Hypertext Transfer Protocol

Hz. Hertz or cycles per second

I

IBM. International Business Machines

ICA. Independent Computing Architecture

ISO. International Organization for Standardization

ID. Identification

IDF. Image Description File

IP. Internet Protocol

L

LAN. Local Area Network

LED. Light Emitting Diode

LLC. Logical Link Control

M

MAC. Medium Access Control

Mb. Megabit

MB. Megabyte

MHz. Megahertz

MTU. Maximum Transmission Unit

N

N2200L. IBM NetVista Thin Client for Linux

NFS. Network File Server

NS. Network Station

NSB. Network Station Boot

NSBXXXXX. Network Station Boot message with identification number (XXXXXX)

NVRAM. Nonvolatile Random Access Memory (also referred to as local settings)

O

OS. Operating System

R

RAM. Random Access Memory

S

SDF. Software Description File

SDRAM. Synchronous Dynamic Random Access Memory

T

TCM. Thin Client Manager

TCP/IP. Transmission Control Protocol / Internet Protocol

TSE. Windows Terminal Server Edition

U

UK. United Kingdom

URL. Uniform Resource Locator

US. United States

USA. United States of America

USB. Universal Serial Bus

UTP. Unshielded Twisted Pair

V

V. Volts

VESA. Video Electronics Standards Association

VGA. Video Graphics Array

VT. Virtual Terminal

W

WOL. Wake On LAN

WWW. World Wide Web

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