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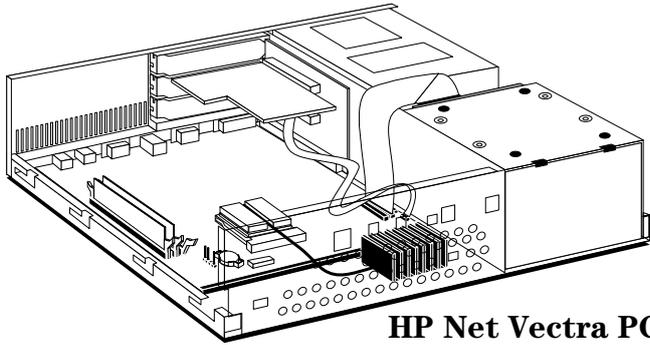
Familiarization Guide

HP Net Vectra PC

HP Net Vectra PC

This guide is for experienced technicians who have already completed the HP Vectra PC family training course. It is a self-paced training guide designed to train you to repair the PC. It contains information specific only to the repair of these PCs. For information on the installation of accessories, see the User's Guide and the Online documents that are supplied with the PC.

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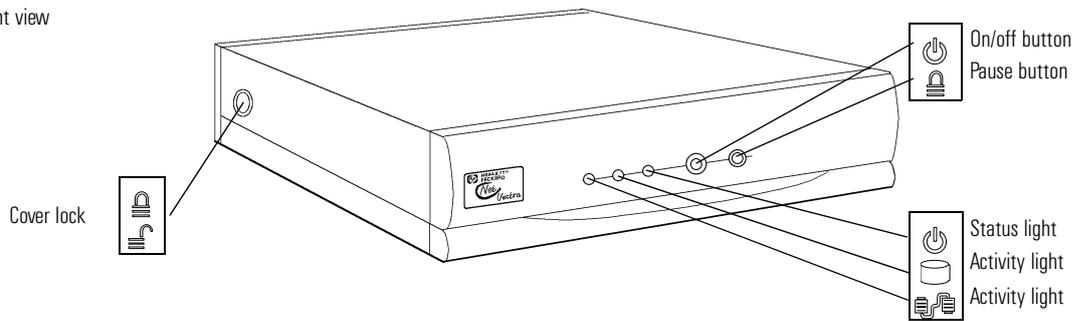Commercial Desktop Computing Division
38053 Grenoble Cedex 9
France

Vectra Product Overview

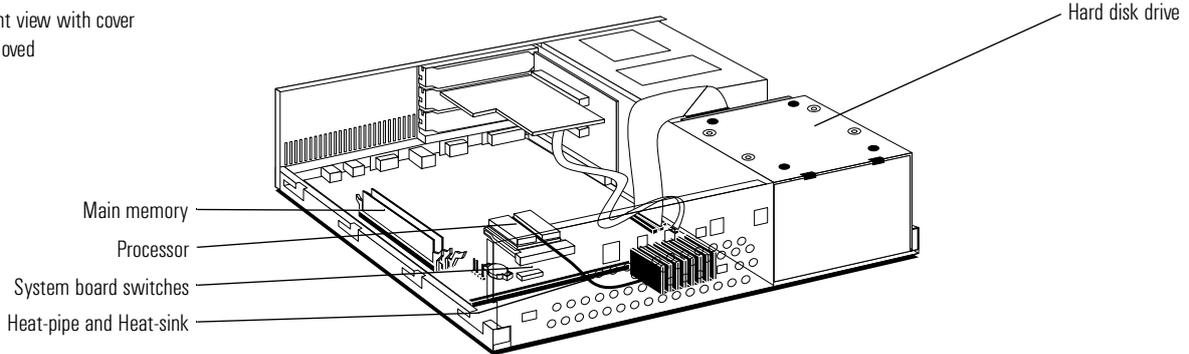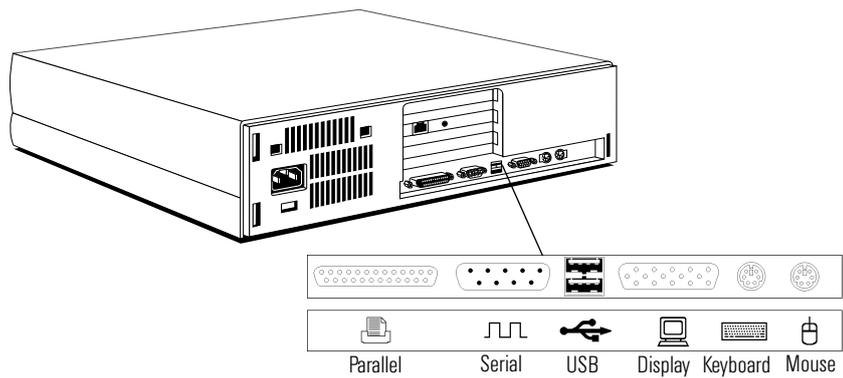| Component	HP Net Vectra PC
Microprocessor	Pentium processor, 166 MHz or 200 MHz, 256 KB of level-2 cache memory **integrated** on system board
VRM	Voltage regulator **integrated** on the system board
Cooling	**Heat pipe** to conduct heat from the processor Fan cooling on the power supply
Main memory	32 MB or 16 MB (standard), 192 MB (maximum). 60 ns **SDRAM** (Synchronous DRAM). Three DIMM sockets.
Graphics controller	S3 Trio 64 V2 integrated on the system board, with 2 MB video memory not upgradeable
Communications ports	**2 USB (Universal Serial Bus) connectors with ACPI support (Advanced Configuration and Power Interface)**, and legacy I/O ports (1 serial port, parallel port, keyboard, mouse)
Mass storage	**Ultra DMA/33** IDE controller to support the 1.6 GB **Ultra ATA/33** IDE drive on some models and the standard 1.0 GB EIDE on other models 2 internal shelves for hard disk drives, no front access shelves
Accessory board slots	2 PCI slots
CD-ROM drive	**none!**
Flexible disk drive	**none!**
Operating system	Windows NT 4.0 WS
Power supply	Switch selectable 120/230 VAC, 100 W input, **80 W output, (with ACPI support)**

New Package and Front Panel

Front view

Cover lock

On/off button
Pause button

Status light
Activity light
Activity light

Front view with cover
removed

Hard disk drive

Main memory
Processor
System board switches
Heat-pipe and Heat-sink

Rear view

Parallel	Serial	USB	Display	Keyboard	Mouse

(All icons shown here are for information, and do not necessarily appear on the PC).
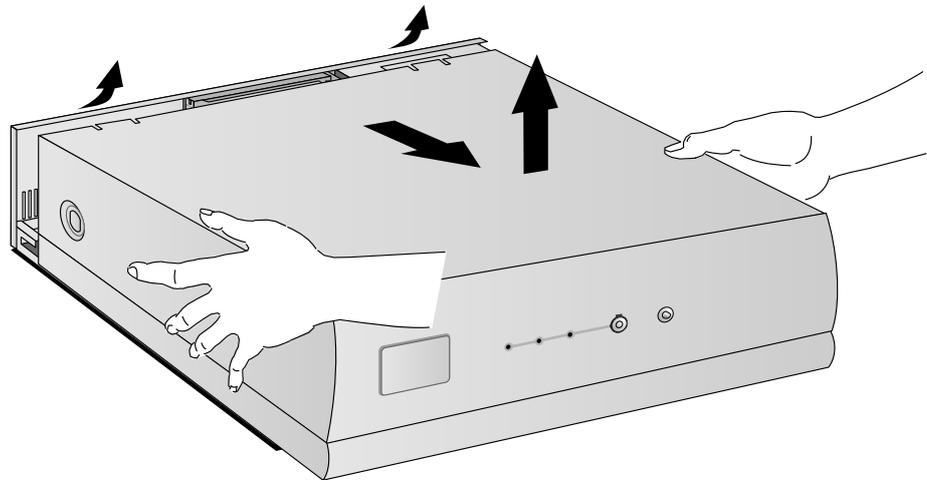
Removing and Replacing the Cover

WARNING   For your safety, never remove the PC's cover without first removing the power cord from the power outlet, and any connection to a telecommunications network. After switching off the PC, please leave enough time for the heatsink to cool down before opening the case. Always replace the cover on the PC before switching it on again.

Removing the Cover

1   Switch off the display and computer.
2   Disconnect all power cables and any telecommunications cables.
3   If necessary, unlock the cover using the key on the side panel.
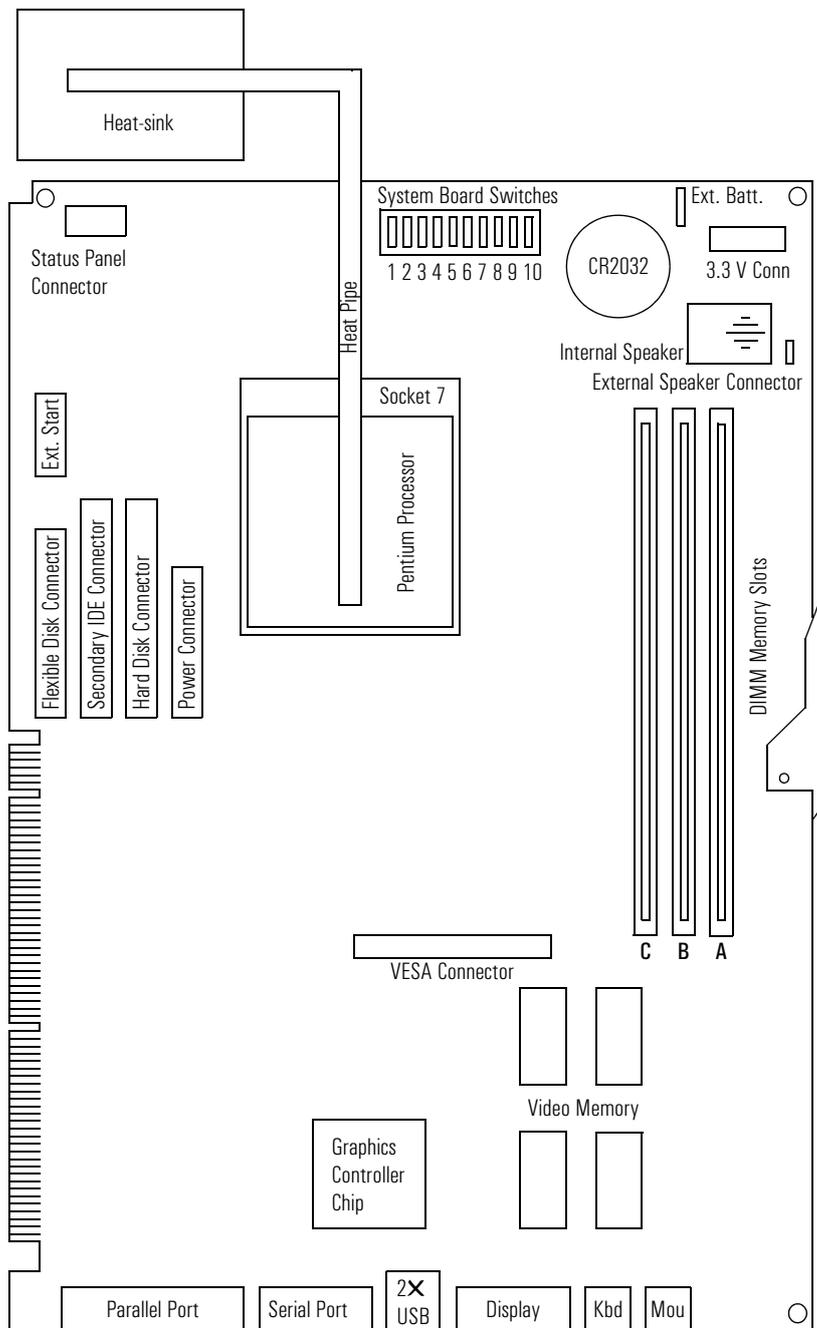4   Lift the two latches on the rear of the computer upwards. Slide the cover forwards and off the computer.

Replacing the Cover after Installing Accessories

1   Ensure that you have installed all your accessories and that all internal cables are properly connected and safely routed.
2   Slide the cover onto the computer, making sure that the two guides at the bottom of the case slide into the two rails at the base of the computer. Firmly slide the cover backwards into position.
3   If required, lock the cover using the key provided.
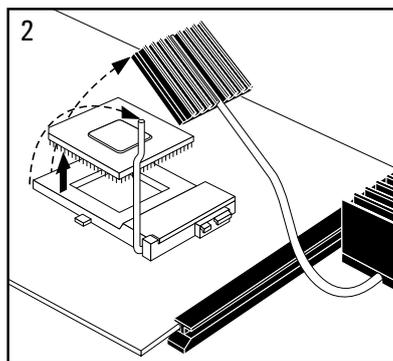4   Reconnect all the power cables.

System Board

Heat-sink

Status Panel
Connector

System Board Switches

1 2 3 4 5 6 7 8 9 10

CR2032

Ext. Batt.

3.3 V Conn

Heat Pipe

Internal Speaker

External Speaker Connector

Ext. Start

Socket 7

Pentium Processor

Flexible Disk Connector

Secondary IDE Connector

Hard Disk Connector

Power Connector

DIMM Memory Slots

C   B   A

VESA Connector

Video Memory

Graphics
Controller
Chip

Parallel Port

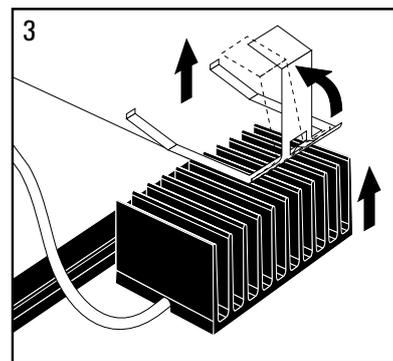Serial Port
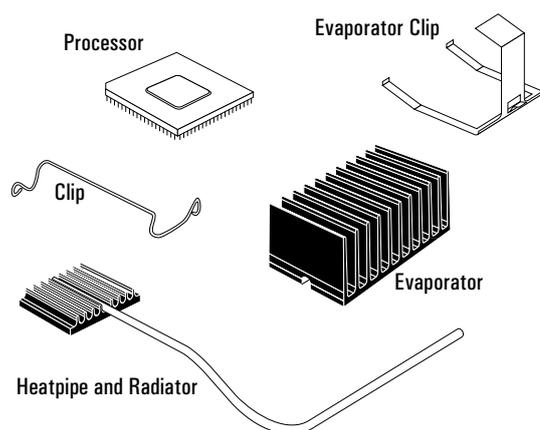
2✖
USB

Display

Kbd

Mou

Removing the Processor and Cooling Components

1 Remove the clip

2 3
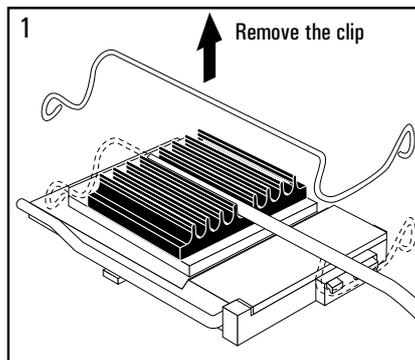
Lift lever to release processor.
Lift out processor and slide off the heatsink.

Open evaporator clip and remove the heat pipe and the evaporator.

Processor

Evaporator Clip

Clip

Evaporator

Heatpipe and Radiator

Removing the Hard Disk Drive

1 Switch off the display and computer, and disconnect the power supply cables and any telecommunications cables.

2 Unlock the computer cover, then remove it.

3 Disconnect the power and data cables at the rear of the drive.
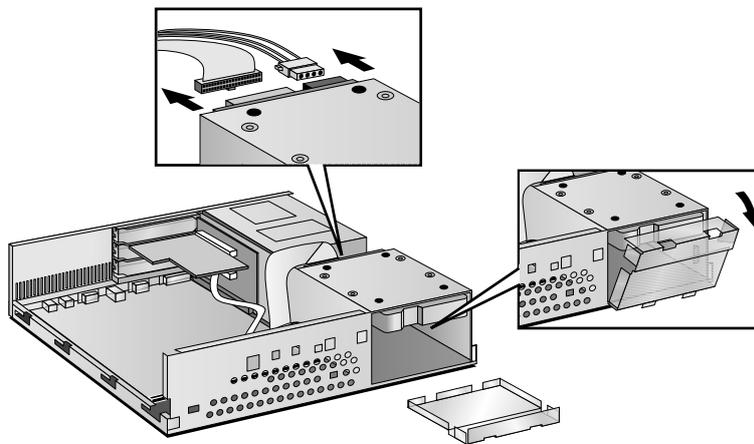
4 Remove the metal filler plate from the hard disk drive shelf.

5 Unscrew the screws securing the hard disk drive to the shelf, then place the screws in safe place for future use.
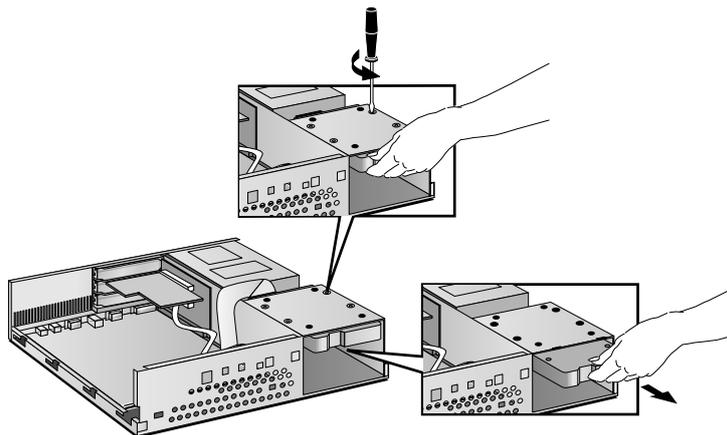
6 Carefully remove the hard disk drive from the computer.

System Board Switches

System
Board
Switches

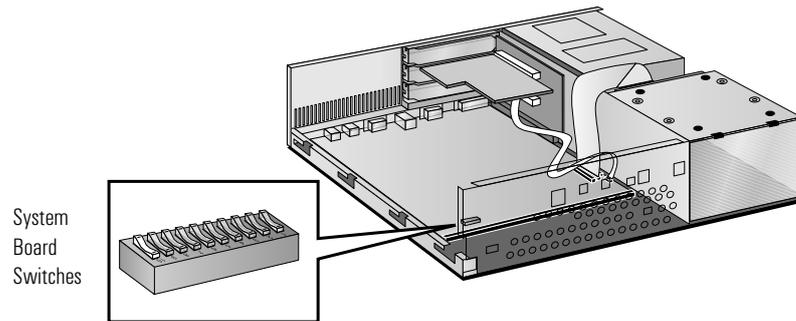| Switch	Name	166 MHz	200 MHz	233 MHz	266 MHz	300 MHz	Serigraphy
1	CPU clock 60/66 MHz	Closed	Closed	Closed	Closed	Closed	RESERVED
2	CPU clock 68/75 MHz	Open	Open	Open	Open	Open	RESERVED
3	Core bus ratio	Closed	Open	Open	Closed	Closed	CPU speed table
4	Core bus ratio	Closed	Closed	Open	Open	Closed	CPU speed table
5	Core bus ratio	Open	Open	Open	Closed	Closed	RESERVED

Switch	Name	Open	Closed	Serigraphy
6	Reserved			RESERVED
7	Clear Password	Normal Operation	Clear Password	CLEAR PASSWORD
8	Clear Config	Normal Operation	Clear Config	CLEAR CMOS
9	Keyboard Power ON	Disabled	Enabled	KBD POWER ON
10	Reserved	Normal Operation		RESERVED

Backplane Board
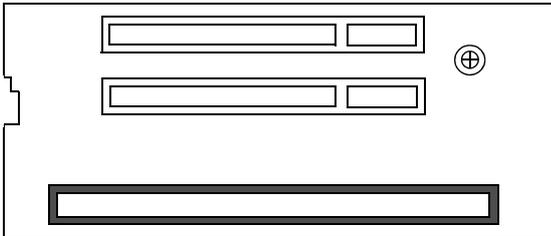
1 system board and 2 PCI accessory slots slot for use by the manufacturer.

Hard Disk

The three Ultra ATA/33 modes (also known as Ultra DMA/33) support the following transfer rates:

Ultra ATA/33 Mode	0	1	2
Transfer rate (MB/s)	13.9	26.7	33.3

Reduced Total Cost of Ownership (TCO)

Remote management of the PC over the local area network, for more efficient back-up, configuration, installation, and virus checking services by a central administrator, without user intervention.

Preloaded software on the hard disk, for fewer user-installation steps in the set-up procedure. The Windows NT 5.0 WS operating system is dedicated for networking, from a remote file-server, to the PC on the user's desk. Until this is available, the Windows NT 4.0 WS operating system is preloaded on this PC.

No flexible disk drive or CD-ROM drive, so fewer electromechanical parts to fail, and entry points for the installation of unauthorized software. For test purposes, it is possible to connect a flexible disk drive (note that the flexible disk drive, data cable, and power cable are NOT supplied with this PC). The flexible disk drive is recognized by the system BIOS by pressing the [Esc] key when the "Vectra" logo is being displayed at start-up. The removal of the flexible disk drive is recognized automatically when the PC restarts.

Reduced rating power supply, and heat-pipe cooling on the processor, again leading to fewer electromechanical parts to fail. The processor is cooled by two heat-sinks: one on the processor (as normal), the other beside the system board. Surplus heat is carried from the first to the second by a heat pipe. Since it involves no moving mechanical parts, it is unlikely to fail, and so involves no new support strategy.

The Management Information Services (MIS) of the user's organization has the key to remove the cover of the PC. The user is unable to install unauthorized accessories, or change the configuration of the PC.

Universal Serial Bus   Users can connect USB accessories to the PC without any need to remove the cover or restart the operating system, reducing support costs. Note that USB is not supported by all operating systems.

Advanced Configuration and Power Interface   ACPI is an open standard for enabling the operating system to control power management in a PC. It enables a PC to switch on instantly when the user needs it and remain available for remote management when switched off.
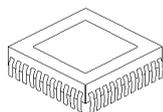
Flashing the Latest Version of the System BIOS

The latest BIOS and flashing utilities can be obtained from HP World Wide Web site (http://www.hp.com/go/vectrasupport). Since the PC does not have a flexible disk drive, the file is downloaded to the system administrator's PC or server and then to the target PC. The **PHLASH32.EXE** file is then executed from within the Windows NT operating system on the target PC.

Using the NT Flasher

1　Create a directory and copy PHLASH32.EXE to it, together with the BIOS binary file.

2　Optionally, rename the BIOS file to BIOS.ROM (e.g. HE0100.FUL to BIOS.ROM).

3　Run the PHLASH32 application:

❐ by double-clicking on PHLASH32
(by default, PHLASH32 will look for BIOS.ROM)
or,
❐ from the START menu choose RUN and start PHLASH32 HE0100.FUL to specify the BIOS name.

4　A DOS box will now be opened in which you can follow the flash process. The new BIOS will only become active after a reboot.

NOTE　Note that a hard (very cold!) reset of the system must take place or the system will hang during the restart. This is caused by the transition from shadow RAM to the new ROM.

Using a 1.44 MB DOS Diskette

1　Connect a standard 1.44 MB flexible disk drive to the HP Net Vectra. Note that the flexible disk drive data and power cables are not supplied with the HP Net Vectra.
　a　Connect the data cable to the flexible disk drive.
　b　Remove the cover of the Net Vectra and connect the flexible disk drive data cable to the flexible disk drive connector on the motherboard.
　c　Connect the power cable to the flexible disk drive.

2 Create a bootable flexible disk and copy PHLASH.EXE, FLASH.BAT, AUTOEXEC.BAT and PFMHHxxx.BIN from the PHLASH directory. Copy the BIOS binary file "HExxxx.FUL" to the flexible disk.

3 Power-on the PC and press the ⌷Esc⌷ key to force the PC to boot from the flexible disk. When the PC starts from the flexible disk, type: flash HExxxx.ful to update your BIOS.

Crisis Recovery

Although the BIOS flash process is very well protected, there is always a possibility of a failure (for example, due to a power failure during the BIOS flash). To avoid replacing the motherboard due to corrupted EEPROM, a crisis recovery function has been created to restore the contents.

1 **Create a bootable flexible disk and copy phlash.exe , pfmhh105.bin and your bios image file (HExxxx.FUL).**

2 Create a new autoexec.bat with the following line in it:

phlash /V /mode=3 /b=pfmhh105.bin /exit qhe0021.rom

3 Toggle motherboard switch 7 and 8 to the CLOSED position.

4 Insert the flexible disk.

5 Power on the system and hear it flash (no image is shown!). The last long beep indicates the end of the flashing.

6 Power off the system.

7 Toggle back switch 7 and 8 to the OPEN position, then remove the flexible disk. The BIOS is now recovered and updated.

NOTE
- The power button is not protected in bootblock flashing mode. However, since /pf=b option is not used, we don't flash the bootblock, thus shutting down during the phlash update is not critical.

- Flashing in boot block mode is blind (no video), except if you plug an external ISA video card.

Complete the Questionnaire to Check Your Understanding

Draw a circle around each letter that corresponds with a correct answer. (There may be more than one correct answer to each question).

1 **What do you do to upgrade the system BIOS?**

    a It cannot be upgraded because the Net Vectra is a closed system.

    b Use the BIOS flasher within the Windows NT operating system.

    c Download the BIOS to a bootable flexible diskette, and flash it directly on the PC.

    d Flash the BIOS remotely from another PC on the local area network using the OpenView, TopTools utility.

2 **How can you recover from the corruption of your operating system?**

    a Set SW-7 and SW-8 together to the `closed` position.

    b Connect across to the remote server, and use the dynamic host configuration protocol (DHCP) to restore the user's profile of the operating system.

    c Run the Windows NT Setup program from the i386 masters directory.

3 **Which of the following security options are amongst the many available?**

    a The user can set passwords independently of the system administrator.

    b The system administrator can protect the hard disk drive from being used by locking it in the *Setup* program.

    c The user can set the user password to prevent people from changing data on the hard disk.

    d The user can add a lockable terminator to the parallel and serial ports.

4   The client wishes to install the following five accessories (a PCI board, an ISA board, a second hard disk, a CD-ROM drive and an extra main memory module). Put a cross in the boxes in the following table that correspond to a correct comment (a to f).

		PCI Board Accessory	ISA Board Accessory	2nd Hard Disk Drive	CD-ROM Drive	Main Memory
a	The user should install it					
b	The client's MIS team should install it					
c	An authorized HP dealer should install it					
d	An authorized HP dealer can advise the user					
e	This accessory can only be installed at the time of sale					
f	There is no provision for this accessory					

Answers and Explanations

1   **What do you do to upgrade the system BIOS?**

   b   Use the BIOS flasher within the Windows NT operating system.

   c   Download the BIOS to a bootable flexible diskette, and flash it directly on the PC.

   d   Flash the BIOS remotely from another PC on the local area network using the OpenView, TopTools utility.

   Response (c) requires you first to connect an external flexible disk drive to the system board, and to press ⎡Esc⎤ whilst the initial "Vectra" logo is being displayed during the restart process.

2   **How can you recover from the corruption of your operating system?**

   b   Connect across to the remote server, and use the dynamic host configuration protocol (DHCP) to restore the user's profile of the operating system.

   c   Run the Windows NT Setup program from the i386 masters directory.

   Setting the two system board switches together is for recovery from a BIOS upgrade failure, not for recovery from a corrupted operating system.

3   **Which of the following security options are amongst the many available?**

   a   The user can set passwords independently of the system administrator.

   b   The system administrator can protect the hard disk drive from being used by locking it in the *Setup* program.

   c   The user can set the user password to prevent people from changing data on the hard disk.

   The user password can only be set if the system administrator password is set, but only prevents unauthorized starting of the PC. It can always be over-ridden by the system administrator, and cannot prevent the disk from being written to. Refer to the *User's Guide* that was supplied with the PC for further information on security issues.

4   **The client wishes to install the following five accessories. Put a cross in the boxes in the following table that correspond to a correct comment.**

		PCI Board Accessory	ISA Board Accessory	2nd Hard Disk Drive	CD-ROM Drive	Main Memory
a	The user should install it					
b	The client's MIS team should install it	X				X
c	An authorized HP dealer should install it	X				X
d	An authorized HP dealer can advise the user	X				X
e	This accessory can only be installed at the time of sale					
f	There is no provision for this accessory		X	X	X	

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