DIGITAL Personal Workstation

Upgrade Guide

Part Number: EK–DPWST–UP. A01

August 1998

August 1998

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Preface

Welcome

This guide describes how to upgrade your DIGITAL Personal Workstation with the latest hardware enhancements by replacing the fan pipe, main logic board (MLB) and riser card.

Audience

Field service and other persons wishing to upgrade a DIGITAL Personal Workstation will find the information in this document helpful.

Organization of the Information

This guide contains information on upgrading DIGITAL Personal Workstation. The following topics (see the Table of Contents for a detailed listing) are covered:

- *The Upgrade* provides step-by-step instructions for replacing the main logic board (MLB) riser card and performing the upgrade.

- *Appendix A - Operating Considerations* provides additional information related to the OpenVMS, UNIX and Windows NT operating systems.

Reference Document

This upgrade document will refer to illustrations in your *DIGITAL Personal Workstation User Guide* (part number EK-ALMIG-SI). Please have it available for reference.

Conventions

This guide uses the following conventions:

Example	Description
`c:\windows`	Monospaced text indicates file names, path names, directories, or screen text. Each operating system has its own specific syntax.
[Enter]	Square brackets surrounding text represent a key on the keyboard.
[Ctrl]+[R]	A plus sign indicates that you press both the keys shown at the same time.
☞	A pointing hand indicates a reference to additional information.

Abbreviations

This guide uses the following abbreviations:

Abbreviation	Meaning
CD	Compact disc.
CD-ROM	Compact disc read-only memory.
CPU	Central processing unit.
DIMM	Dual inline memory module.
DMA	Direct memory access.
DRAM	Dynamic random access memory.
DROM	Diagnostic read only memory.
EIDE	Enhanced integrated drive electronics.
FDC	Floppy disk controller.
flashROM	Electrically erasable, rewriteable, nonvolatile memory.
GB	A GB suffix to a numerical value indicates size in *gigabytes* (for example, 1 GB). A gigabyte equals 1,073,741,824 bytes.
IRQ	Interrupt request.
ISA	Industry-standard architecture.

Abbreviations (continued)

Abbreviation	Meaning
Kb	A Kb suffix to a numerical value indicates size in *kilobits* (for example, 512 Kb). A kilobit equals 1024 bits.
KB	A KB suffix to a numerical value indicates size in *kilobytes* (for example, 640 KB). A kilobyte equals 1024 bytes.
LED	Light-emitting diode.
MAU	Media adapter unit.
Mb	An Mb suffix to a numerical value indicates size in *megabits* (for example, 10 Mb). A megabit equals 1,048,576 bits.
MB	A MB suffix to a numerical value indicates size in megabytes (for example, 550 MB). A megabyte equals 1,048,576 bytes.
MHz	Megahertz.
MII	Media independent interface.
MLB	Main logic board.
ns	Nanoseconds.
NVRAM	Nonvolatile random access memory.
PCI	Peripheral component interconnect.
RISC	Reduced instruction set computing.
ROM	Read only memory.
SCSI	Small computer system interface.
SDRAM	Synchronous dynamic random access memory.
ZIF	Zero Insertion Force

Special Notices

This guide uses four kinds of notices to emphasize specific information.

WARNING: A WARNING indicates the presence of a hazard that can cause personal injury.

CAUTION: A CAUTION indicates the presence of a hazard that can damage hardware or corrupt software.

NOTE: A NOTE gives general information, such as compatibility with other products or pointers to other information.

HINT: A HINT includes suggestions to make your computing tasks easier.

Additional Information Resources

You may wish to consult the following information resources on your DIGITAL Personal Workstation which were included in your original your DIGITAL Personal Workstation documentation kit:

- *DIGITAL Personal Workstation User Set Up & Installation Guide* (order number EK-ALMIG-SI. A01) provides detailed user information for the installation, operation, and maintenance of your DIGITAL Personal Workstation.

For other product-related information, we suggest that you consult our Web site at *http://www.workstation.digital.com/.* Your distributor or DIGITAL representative also can provide you with information on products and services.

Feedback

Our readers' opinions about this guide or any other DIGITAL manual is important to us. If you have any comments, we'd appreciate your taking the time to send us electronic mail at *reader_comments@eng.pko.dec.com*.

Please reference order number EK-DPWST-UP. A01 in your correspondence about this manual.

1
The Upgrade

Overview

This manual describes the upgrade of your DIGITAL Personal Workstation with the latest hardware enhancements.

Kit Components

Table 1-1 list the parts included in the SN-PBXBB Upgrade Kit for the AA, AB and CA variations.

For further information, see the DIGITAL Systems and Options Catalog (SOC).

Table 1-1 SN-PBXBB Kit List

Description	Part Number	Used on Model Variation
Main Logic Board 500 MHz EV56	54-25222-02	-AA
Main Logic Board 600 MHz EV56	54-25222-03	-BA
Main Logic Board w/o CPU	54-25222-04	-CA
Speed button 500a	74-51176-39	-AA
Speed button 500au	74-51176-50	-AA
Speed button 600a	74-51176-55	-BA
Speed button 600au	74-51176-56	-BA
PC164 Riser	54-25166-01	-AA, -BA, -CA
Fan pipe 600 MHz	74-52419-01	-AA, -BA, -CA

The Upgrade

Table 1-1 SN-PBXBB Kit List (continued)

Description	Part Number	Used on Model Variation
Wrist grounding strap	12-36175-01	-AA, -BA, -CA
DIGITAL Personal Workstation Upgrade Guide (this document)	EK-DPWST-UP	-AA, -BA, -CA
DIGITAL Personal Workstation User Set Up & Installation Guide	EK-ALMIG-SI	-AA, -BA, -CA
DPWS A Series Backup Software	75-00413-02	-AA, -BA, -CA
Alpha Workstation NTA SRL/RX23 ("HAL" Floppy)	QB-4FAAB-SA	-AA, -BA, -CA
Supplemental WNT Lic/RX23 PKG (Service Pack 3)	QB-5VRAA-WA	-AA, -BA, -CA
Washers, Flat Sticky	90-40324-01	-AA, -BA, -CA
Screw, Sems 6-32 Pan Hd	90-09984-00	-AA, -BA, -CA
ATAPI Driver Floppy	AK-RC1YA-CA	-AA, -BA, -CA

Upgrade Procedures

You will perform the following general steps to upgrade your system.

- Backup all applications and data

- Update the HAL Code (Windows NT systems only)

- Shut down the system

- Remove the present Main Logic Board (MLB)

- Remove Option Cards

- Remove Riser Card

- Remove the present fan pipe

- Attach new fan pipe

- Install the new riser

- Move old CPU chip (-CA Variation only)

- Install the new MLB

- Replace the speed button (-AA and -AB variations only)

- Power on the system and make O/S changes

Installation

_____ **CAUTION** _____

Do not touch any electronic component unless you are safely grounded. Wear the grounded wrist strap provided, or touch an exposed metal part of the system unit chassis. A static discharge from your fingers can result in permanent damage to electronic components.

_____

Prior to Installation

Before upgrading your DIGITAL Personal Workstation, it is important that you follow these procedures:

1. Backup all applications and data.

_____**Important - Windows NT Systems** _____

For Windows NT systems only: *At this point, you **must** install a new version of "HAL" code before performing this upgrade.*

Turn now to Appendix A, page A-1, and follow the procedure to update the HAL code.

_____

2. Shut down your system and all peripheral devices.

3. Unplug the power cord.

_____ **WARNING** _____

Allow at least 15 seconds for the power supply capacitors to discharge safely.

_____

4. Remove the system lock, if necessary.

Begin the Installation

1. Locate and loosen the three thumb screws ❶ that fasten the system cover to the rear panel (see Figure 1-1). Place your thumbs on the upper corners of the system cover, pull back on the cover, and slide the cover back and away from the system enclosure. Then lift the cover up and away from the system.
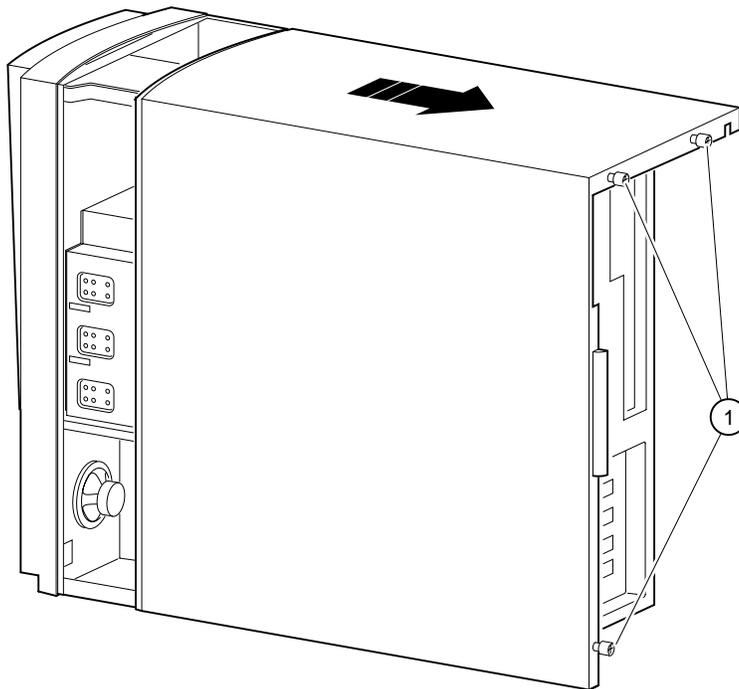
MLO-013575

Figure 1-1 Unlocking and Removing the System Cover

_____ **CAUTION** _____

To avoid static discharge damage to sensitive components, wear the wrist grounding strap provided in your kit.
_____

2. Remove the keyboard, mouse, and any other external cables attached to the MLB, and release the two MLB-retaining clips on top of the MLB. (See Figure 1-2.)

3. Hold onto either end of the MLB as you slide it up and out of the system chassis.

4. Carefully place the MLB onto a static-free, flat surface.

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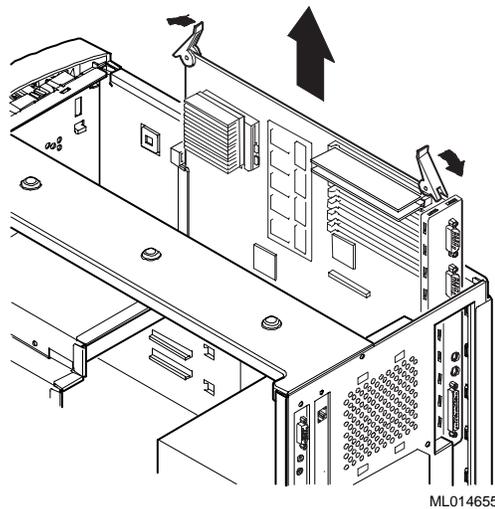
Figure 1-2 Removing the MLB

Removing the Riser Card

5. Unplug all cables and option cards.

   Because the new riser card comes with an integrated Ultra SCSI controller, the plug-in disk controller from the old system will be unused.

   This extra disk controller may be used for future external storage expansion or the controller may be discarded.

6. Remove the six screws.

7. Remove riser card.

   HINT: Refer to your *DIGITAL Personal WorkStation User Guide*, EK-ALMIG-SI, Chapter 4, for illustrations of cable locations and removal.

Remove old fan pipe

8. Remove old fan pipe by separating it from the fan assembly. Refer to Figure 1-3. There is no need to remove the fan.
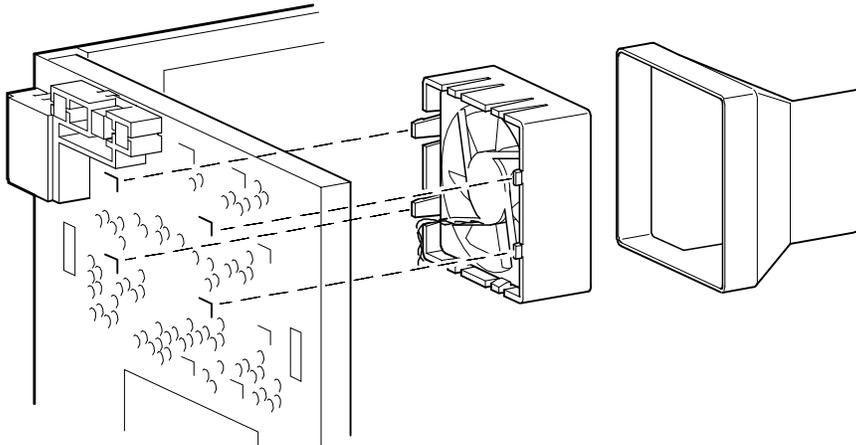
ML014652

Figure 1-3 Removing Old Fan Pipe

Install new fan pipe

9. Slide the new fan pipe into place on the fan assembly. Refer to Figure 1-4.
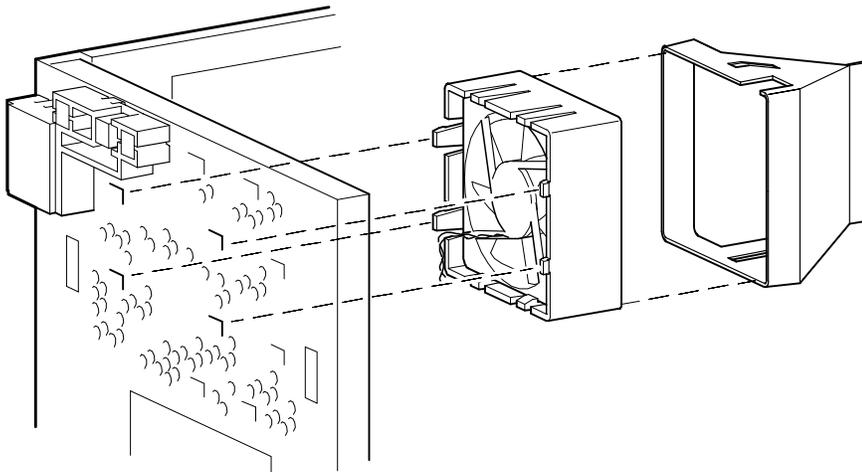
ML014653

Figure 1-4 Installing the new Fan Pipe

Reinstall Fan Assembly

10. With the new fan pipe in place, re-install the fan assembly into the enclosure using the snap fits. Position in the orientation shown in Figure 1-5. Run the fan cable to the riser card and connect the cable to the fan connector.
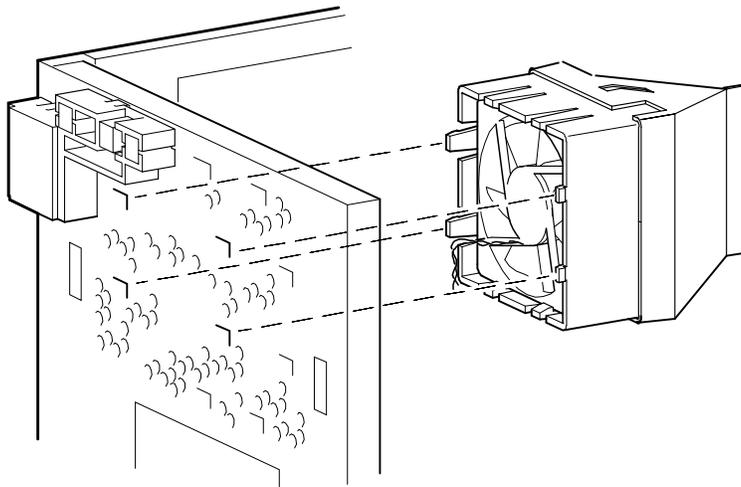
ML014654

Figure 1-5 Installing Fan Assembly

11. Carefully remove the new MLB from its ESD-protected bag and place it onto a static-free, flat surface.

12. Move memory and Bcache option

    a) Install new MLB -AA/-BA Speed Upgrade

    b) Move CPU Chip from "old" MLB to "new" MLB. (For -CA option only)

    c) Place both modules on a static free flat surface.

    d) To remove the CPU and heat sink assembly from the old MLB, unlatch ZIF handle by depressing down and slightly away from ZIF socket.

    e) Raise the ZIF handle to a vertical position.

    f) Remove CPU and heat sink, and note the orientation for re-installation.

    g) Open ZIF socket on new MLB by unlatching and raising handle as in Step D.

    h) Install CPU and heat sink in the new MLB with the same orientation as the old MLB.

    i) Push the handle down until it latches on the side of the ZIF socket.

_____ **Note** _____

*Move the DIMMs and Bcache option module onto the new MLB **BEFORE** moving CPU chip.*
_____

13. Move Memory from old MLB to new MLB.

14. Move Bcache option from old MLB to new MLB.

Install new Riser and cables

It will be helpful during the installation to refer to your *DIGITAL Personal WorkStation User Guide*, EK-ALMIG-SI, Chapter 4, for illustrations of cable locations and connections.

15. Move the plastic module guides from the old riser to the new riser card.

16. Install the six sticky washers on the etch side of new riser card.

17. Install new riser card with new 3/8 inch long screws.

18. Re-connect power, audio, network and storage cables.

19. Install option cards

_____ **Note** _____

Because the new riser card comes with an integrated Ultra SCSI controller, the plug-in disk controller from the old system will be unused.

This extra disk controller may be used for future external storage expansion or the controller may be discarded.

_____

20. To add memory modules (DIMMs), refer to Figure 1-6 as you perform the following steps:

    a) Install the DIMM ❷ straight into the socket. Position the DIMM so that both the retaining clips ❶ at the socket ends engage. Pay close attention to the keying on the DIMM and the socket.

    b) Repeat for the remaining module.

The Upgrade

J6
J5
J4
J3
J2
J1

2

1

MLO-013643
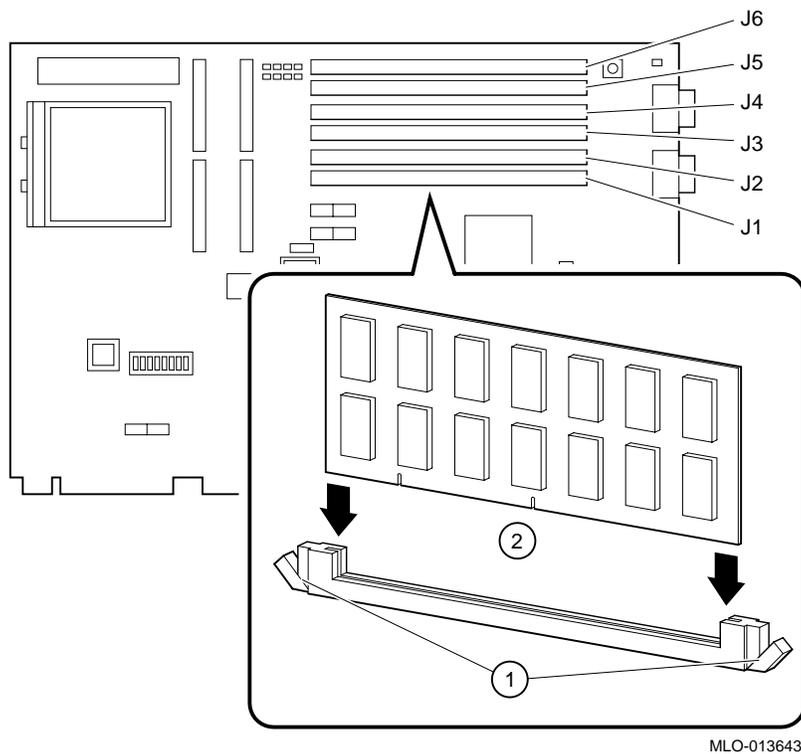
Figure 1-6 Installing the Memory

21. Hold onto either end of the new MLB as you slide it down into the system chassis. (See Figure 1-7.)

22. Carefully seat the new MLB onto the connectors inside the system chassis.

23. Lock the MLB-retaining clips over the MLB to secure it.

24. Reconnect the keyboard, mouse, and any other external cables you removed to the new MLB.

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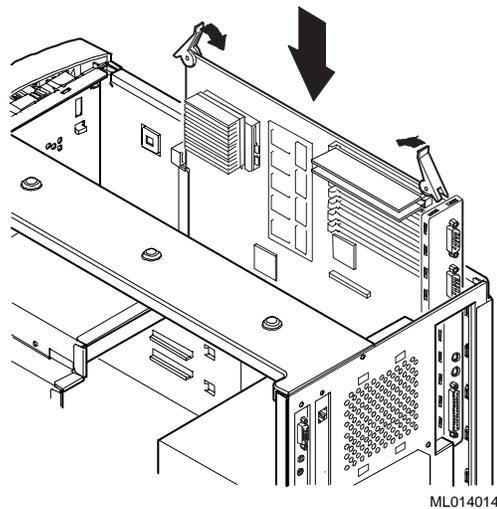
Figure 1-7 Installing the New MLB

25. To replace the speed button for a speed upgrade, you must first remove the front bezel. Refer to Figure 1-8 and follow these steps:

   a) From the top of the workstation, looking down toward the bottom of the front of the chassis, view the two tabs from the front bezel that hold the bezel in place and secure it to the chassis. Find both tabs (one on the left and one on the right).

   b) Push both tabs toward the center of the workstation to release the top of the bezel.

   c) Gently pull the top of the bezel approximately 1 inch away from the top of the chassis.

   d) Gently, but firmly, pull up on the bezel to unhook the bottom bezel mounts.

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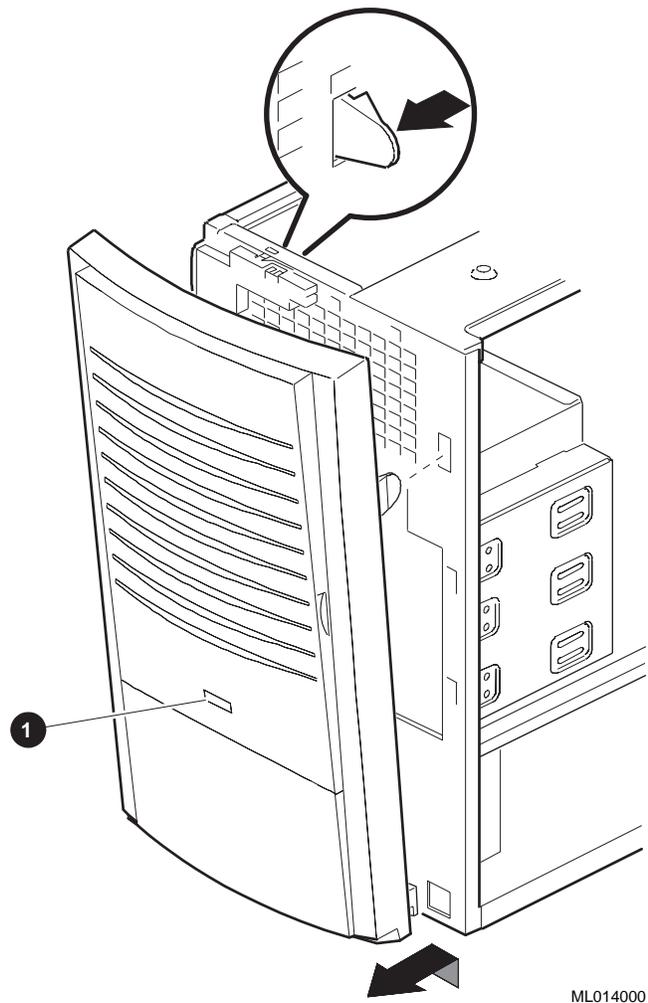
Figure 1-8 Replacing the Speed Button

e) From the inside of the bezel, compress the tabs on the speed button ❶ and slide it through the bezel to the front.

f) To install the new speed button, reverse the procedure above.

26. Line up the flanges on the inside of the bottom-left portion of the cover so that they overlap the edge of the chassis body. (See Figure 1-9.)

27. Slide the cover forward to secure it into place. Fasten the system cover with the three thumbscrews ❶ provided.
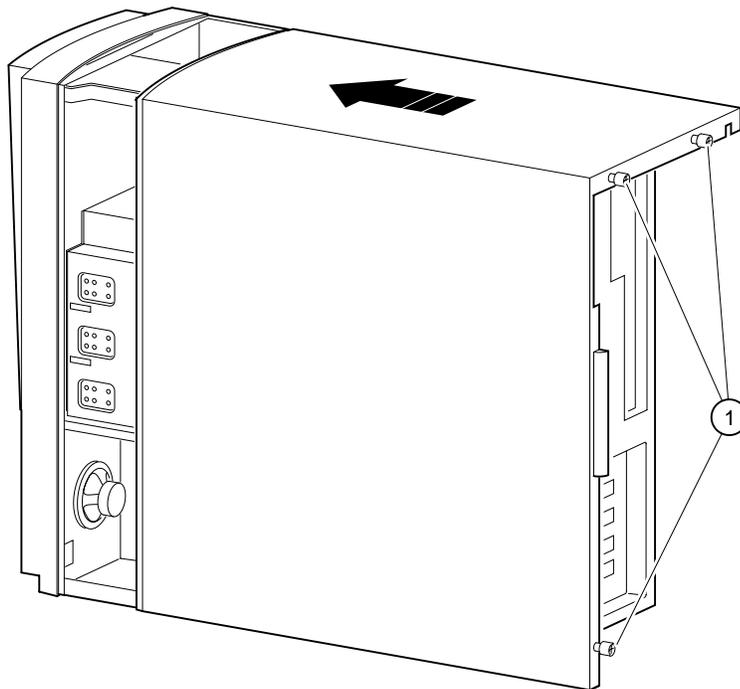
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Figure 1-9 Replacing the Cover

28. Plug in the power cord.

29. Power on the system.

See section A-1 for specific operating system considerations.

A
Operating System Considerations

Introduction

The information in this Appendix provides specific details about the minimum operating system version required to support this new hardware upgrade. Additionally, the procedure to upgrade the HAL code on Windows NT systems (required action prior to upgrade).

Table A–1 Minimum Required Firmware and Software Versions

Operating System	Software Version	Firmware Version
OVMS	7.1-1H2 Open 3D Rev 4.7	AlphaBIOS V5.65
UNIX	4.0D Open 3D Rev 4.7	SRM V6.8-20
NT	4.0 with Service Pack 3	P.O.S.T V5.90

   Note: Your MLB will come with the Firmware Versions listed or greater.

OpenVMS

No changes to Version 7.1-1H1 or 7.1-1H2 are required.

UNIX

If you are running less than version 4.0D, you must install a new copy of 4.0D plus any layered applications.

Windows NT

Important steps to perform before upgrading - HAL Code

You must update the "HAL" code prior to performing this upgrade of your Windows NT system

To Update the Hall Code :

1. Open NT Explorer

2. Open OS folder

3. Open WINN40 folder

4. Rename the file, HAL.DLL , to OLDHAL.DLL , in case the old HAL file is needed later.

5. Insert your *Hardware Support Disk;* part number AK-RISH*-CA, into the floppy drive.

6. Open the contents of the hardware support floppy.

7. Copy the file HALMIATA.DLL from the hardware support disk to the WINN40 folder.

8. Rename HALMIATA.DLL to HAL.DLL

9. Shut the system down.

Important steps after upgrading - Device Drivers

After the upgrade is completed, you must

- Change CD-ROM device drivers

- Upgrade other device drivers as needed.

Procedure to change the CD-ROM device drivers

To change the CD-ROM device drivers:

1. Open the Control Panel.

2. Double click on "Devices"

3. Select device "CSA4XX" - (This is the old CD-ROM device driver.)

4. Click on "Startup..."

5. Click on "Startup Type" ; "Disabled"

6. Click on "OK"

7. Select device "ATAPI"   (This is the new CD-ROM device driver.)

8. Click on "Startup..."

9. Click on "Startup Type" ; "Boot"

10. Click on "OK"

11. Click on "Close"

12. System will reboot.

_____ **Note** _____

It is recommended the following device drivers be updated, using the backup CD provided, part number QC-06LAA-H8.
_____

- QLogic SCSI

- Graphics

- Sound

- Ethernet (See Caution)

_____**Caution** _____

Do not use the default setting "Autosense" in the media type selection menu. You must select the appropriate media type manually, in this menu.
_____

_____ **Note** _____

Because of a minor problem with the ATAPI Driver, you will see error log entries in the system log:
   "Event ID 22, Source: ATAPI, Type: Error
    A conflict has been detected between two drives which claimed overlapping
    ID Port Regions. . . "
This error entry can be ignored.
_____