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Implementing Microsoft Windows 2000 on Compaq Server Products

Abstract: Compaq has participated in the Microsoft 2000 Deployment Project since March 1996. Working hand in hand, Compaq and Microsoft have designed, tested, and challenged the boundaries of Windows 2000. In fact, the majority of Windows 2000 code has been developed on Compaq products, and all Deployment Program events run on Compaq equipment.

This document discusses supported Compaq ProLiant and Prosignia server configurations, the hardware and software requirements for Windows 2000, supported storage options and network interface controllers (NICs), installation procedures, Windows 2000 implementation considerations, and Compaq value-added features on these server platforms.

As we continue to test Microsoft Windows 2000, we will share this experience and knowledge with our customers. Just check the following websites for the most current information:

<http://www.compaq.com/partners/microsoft/index.html> and
<http://www.microsoft.com/enterprise/alliances/compaq.htm>

Note: This document does not include information on Alpha platforms.

Another source of information regarding Microsoft Windows 2000 and Compaq products is the Compaq Resource Paq 6.5 for Microsoft Windows 2000 and Windows NT. It contains white papers, ROMPaqs, support software, and other valuable information. The Resource Paq is available through our website at
<http://www.compaq.com/partners/microsoft/resourcepaq.html>.

Help us improve our technical communication. Let us know what you think about the technical information in this document. Your feedback is valuable and will help us structure future communications. Please send your comments to: CompaqNT@compaq.com

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Implementing Microsoft Windows 2000 on Compaq Server Products
Integration Note prepared by OS Integration Group

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Introduction

As a Joint Development Partner for Microsoft Windows 2000, Compaq has engineered and tested its hardware and support software on this revolutionary operating system, from its inception to its final release. This Integration Note can assist you to quickly reap the benefits of Windows 2000. This document primarily discusses requirements, supported hardware, and implementation considerations when running Microsoft Windows 2000 on a Compaq platform, including installation solutions and workarounds.

This document should not be your sole source of information. Compaq has developed several other white papers that support the different aspects of a Windows 2000 implementation. We recommend that you review the following documents:

- *Compaq Tips for Evaluating, Planning, Preparing and Piloting a Microsoft Windows 2000 Environment* at <http://www.compaq.com/support/techpubs/whitepapers/index.html>.

This document provides details on strategic planning of enterprise computing environments based on Compaq's own Windows 2000 implementation.

- *Migrating to Windows 2000 on Compaq ProLiant Servers* at <http://www.compaq.com/support/techpubs/whitepapers/index.html>.

This document provides hardware migration information on ProLiant servers.

- *Upgrading to Windows 2000 on Compaq ProLiant Servers* at <http://www.compaq.com/support/techpubs/whitepapers/index.html>.

This document provides detailed Windows NT to Windows 2000 upgrade scenarios on Compaq ProLiant servers.

IMPORTANT: Review this entire document before you begin installing Windows 2000 on your Compaq server products.

For important support information in this document, refer to:

- “Appendix A, Installation Issues and Workarounds,” provides both new installation and upgrade solutions and workarounds.
- “Appendix B, Compaq Storage Options,” provides a list of supported storage options and recommended drivers.
- “Appendix C, Supported Compaq Network Controllers,” provides a list of supported network controllers and recommended drivers.
- “Appendix D, Adding an EISA Fibre Channel Controller,” explains how to add an EISA Fibre Channel controller to a server.
- “Appendix E, Manual Installation of the Compaq System Management Driver,” explains how to manually install the Compaq Systems Management Driver on a Compaq server.
- “Appendix F, Compaq Information Products,” provides links to other web resources that might prove useful in your implementation of the Windows 2000 operating system.

To ensure that you have the latest information relative to Windows 2000 and Windows 2000 running on Compaq hardware, refer to the following websites:

- Compaq and Microsoft Frontline Partnership site at <http://www.compaq.com/partners/microsoft/Windows2000/index.html>, for additional information and updates concerning Windows 2000 on Compaq platforms.
- Compaq Info Messenger, a free service at <http://www.compaq.com/infomessenger>, for automated notification about newly released information regarding Windows 2000. (Simply sign up and complete a profile!)
- Microsoft Windows 2000 website at <http://www.microsoft.com/windows/server>, in addition to the Compaq websites mentioned.

Supported Configurations

Microsoft Windows 2000 should load and run with virtually any Compaq server meeting the hardware requirements for Windows 2000 established by Microsoft. Carefully review the system requirements for installing Windows 2000 found in this section.

Hardware System Requirements

Tables 1 and 2 supply hardware system requirements for Windows 2000 Server Edition and Advanced Server Edition as specified by Microsoft. Compaq has not tested Windows 2000 Professional Edition on its server products.

Table 1. Hardware system requirements for Windows 2000 Server Edition

Parameter	Minimum	Recommended
Processor	166-MHz Pentium Pro (or greater)	Pentium II or better—233 MHz or greater (Supports up to 4 processors on one machine—see Note 1, below, on multiprocessors)
RAM	64 MB	256 MB
Monitor	VGA	SVGA
Available Disk Space ²	1 GB (or greater)	at least 4 GB

Table 2. Hardware System requirements for Windows 2000 Advanced Server Edition

Parameter	Minimum	Recommended
Processor	166-MHz Pentium Pro (or greater)	Pentium II or better—233 MHz or greater (Supports up to 8 processors on one machine—see Note 1, below, on multiprocessors)
RAM	128 MB	256 MB
Monitor	VGA	SVGA
Available Disk Space ²	1 GB (or greater)	at least 4 GB

Maximum partition size for both Server Edition and Advanced Server Edition is 4 GB.

Note 1: Microsoft Windows 2000 addresses Slot 1 as the BootStrap Processor. If you are installing to a multiprocessor system without programmable slot ordering, refer to the section “Mixed Processor Steppings Under Windows 2000” for complete information.

Note 2: Available disk space refers to free disk space on the partition to contain the system files (approximately 450 MB of additional space is required if you copy the Windows 2000 CD contents to the hard disk during installation).

Cluster Configurations

Compaq supports the ProLiant Cluster HA/F100, a single fiber channel loop 2-node cluster utilizing ProLiant Servers and the StorageWorks RA4000/4100 storage subsystem. This support is for cluster configurations of matching server models and includes all currently-shipping ProLiant server products.

For details concerning Compaq cluster configurations, refer to these Compaq documents:

- *What's New in Microsoft Windows 2000 Cluster Server* (11TQ-0200A-WWEN)
- *Windows 2000 Migration for ProLiant Clusters* (11TR-0200A-WWEN)

available on the Compaq website at

<http://www.compaq.com/support/techpubs/whitepapers/index.html>.

System ROMs and Option ROMs for Windows 2000

To implement some of the features of Windows 2000, Compaq has updated System ROMs and Option ROMs for many of the server platforms. To obtain the maximum benefit of Windows 2000 with minimal difficulties, Compaq recommends that customers update System ROMs and Option ROMs to the latest versions before installing the new operating systems. The ROM revisions contain enhancements and changes that avoid potential system lockups during or after installation.

- To obtain the latest System ROM for your server and Windows 2000, check <http://www.compaq.com/support/files/server/us/index.html>.
- Compaq SmartStart and Support Software CD Release 4.60 contains Option ROMPaqs to take advantage of Windows 2000 enhancements. You can also obtain the Option ROMPaq for your particular server at no charge from <http://www.compaq.com/support/files/server/us/index.html>.

To assist you in determining the correct ROM Family of your Compaq server products, refer to the following information on the Compaq website:

- *Determining System ROM Family Code and Version*
<http://www.compaq.com/support/files/server/us/romhowto.html>.
- *System ROM Family Table*
<http://www.compaq.com/support/files/server/us/romtabl.html>.

Table 3 lists Compaq servers and minimum ROMPaq revisions Compaq supports running Windows 2000. The latest ROM updates are always available on the Compaq website at <http://www.compaq.com/support/files/server/us/index.html>.

Table 3. Compaq supported system platforms and ROM Families for Windows 2000¹

Server Platform	ROM Family	Minimum ROMPaq Revision	ROM Date
ProSignia 200	P01	4.02A	12/30/98
	P05	4.03A	6/28/99
Prosignia Server 720	D01/F01	N/A	12/2/99
Prosignia Server 740	S01	4.04A	12/8/99
ProLiant 400	D01/F01	N/A	12/2/99
ProLiant 800	P02	4.02A	12/30/98
	P14	4.08A	12/8/99
	P18	4.08A	12/7/99
ProLiant 850R	P04	4.02A	12/30/98
ProLiant 1200	E35	4.05A	9/10/99
ProLiant 1500	E12/E27	4.01A	8/17/98
ProLiant 1600	E34	4.04A	6/28/99
	P08	4.08A	12/7/99
ProLiant 1850R	P07	4.08A	12/7/99
ProLiant 2500	E24	4.04A	6/28/99
	E50	4.05A	6/28/99
ProLiant 3000	P09	4.08A	12/7/99
	E39	4.06A	12/7/99
ProLiant 4500	E14	4.01A	8/17/98
ProLiant 5000	E16	4.03A	4/30/99
ProLiant 5500	E39	4.06A	12/7/99
ProLiant 5500 Xeon	P12	4.08A	12/8/99
ProLiant 6000	E20	4.03A	4/30/99
ProLiant 6000 Xeon	P40/P43	4.04A	12/1/99
ProLiant 6400R	P11	4.08A	12/7/99
ProLiant 6500	E25	4.03A	4/30/99
ProLiant 6500 Xeon	P11 ²	4.09A	12/8/99
ProLiant 7000	E40	4.03A	4/30/99
ProLiant 7000 Xeon	P40/P43	4.04A	12/7/99
ProLiant 8000	P41	4.01	12/7/99
ProLiant 8500	P42	4.01	12/7/99

Note 1: Many of these server platforms also have Option ROM upgrades available through the Options ROMPaq, which can be obtained through the Compaq website at <http://www.compaq.com/support/files/server/us/index.html>.

Note 2: The ProLiant 6500 Xeon requires P11 System ROM (12/08/1999 ROM date), obtained through the Compaq website at <http://www.compaq.com/support/files/server/us/index.html>.

Storage Options

Compaq storage options have been extensively deployed throughout the development and testing of Windows 2000. The Microsoft Windows 2000 CD contains many of the recommended drivers. However, some Compaq storage options benefit from the enhanced drivers available in Compaq Support Paq for Microsoft Windows 2000 (Compaq Support Paq) on the Compaq website at <http://www.compaq.com/partners/microsoft/windows2000/support/servers.html>.

Compaq Support Paq software runs during a Compaq supported installation of Microsoft Windows 2000 and automatically makes the required replacement of drivers installed from the Windows 2000 CD.

“Appendix B, Compaq Storage Options” provides detailed lists of supported storage options for Windows 2000 and specifies the correct drivers and their locations.

Network Interface Controllers

Compaq network interface controllers (NICs) have been extensively deployed throughout the development and testing of Windows 2000. The Microsoft Windows 2000 CD contains many of the recommended drivers. However, some of the Compaq NICs benefit from enhanced drivers available in Compaq Support Paq for Microsoft Windows 2000 (Compaq Support Paq) at <http://www.compaq.com/support/files/server/us/index.html>.

Compaq Support Paq runs during a Compaq supported installation of Microsoft Windows 2000 and automatically makes the recommended replacements of drivers installed from the Windows 2000 CD.

“Appendix C, Compaq Network Controllers” provides a detailed list of supported NICs for Windows 2000 and specifies the correct drivers and their locations.

Support Software

Assemble the following software packages to facilitate your installation, optimize performance, and manage your Windows 2000 environment.

Table 4 includes the minimum versions of Compaq utilities and other software needed to operate with Windows 2000; these versions can be found on the Compaq SmartStart and Support Software CD Release 4.60.

Table 4. Compaq Supported Utilities for Windows 2000

Utility	Version	Website Location
Compaq Array Configuration Utility	2.40 A	http://www.compaq.com/support/files/server/us/download/7074.html
Compaq Insight Manager	4.60 A	http://www.compaq.com/support/files/server/us/download/7040.html
Compaq Server Diagnostics	10.28 A	http://www.compaq.com/support/files/server/us/download/7054.html
Compaq System Configuration Utility	2.49 A	http://www.compaq.com/support/files/server/us/download/7053.html

Table 5 lists the component packages of Compaq Support Paq for Microsoft Windows 2000 and their numeric filenames for version 5.00A. Check for the latest versions on the Compaq website at <http://www.compaq.com/support/files/server/us/index.html>.

Table 5. Component packages of Compaq Support Paq for Microsoft Windows 2000, version 5.00A

Component	Filename
Compaq Array Driver	CP000028
Compaq Array-2 Driver	CP000029
Compaq SCSI Driver	CP000030
Compaq Fibre Channel Support	CP000031
ProLiant Storage System Driver	CP000032
Drive Array Event Notification Driver	CP000033
TLAN-based 10/100 NIC Driver	CP000034
Intel-based 10/100 NIC Driver	CP000035
Intel-based Gigabit NIC Driver	CP000036
System Management Drivers	CP000037
Compaq PCI Hot Plug Support	CP000038
Integrated Management Display Utility	CP000039
Integrated Management Log Utility	CP000040
Power Supply Viewer	CP000041
Power Down Manager	CP000042
Enhanced Integrated Management Display Service	CP000043
Remote Monitor Service	CP000044
Array Configuration Utility	CP000045
Adaptec Ultra 3 SCSI Driver	CP000046
Compaq ATI Rage II C Video Controller Support	CP000047

Installation Procedure

Compaq recommends you backup all data and document your system, storage, and network configuration settings before attempting any installation of the operating system software.

This section provides detailed instructions for installing Windows 2000 as a fresh installation or as a dual-booting system on a server that currently has Windows NT 4.0 or Windows NT 3.51 installed.

For upgrading Windows NT 4.0 or Windows NT 3.51 to Windows 2000, see the Compaq white paper *Upgrading to Windows 2000 on Compaq Server Products* <http://www.compaq.com/support/techpubs/whitepapers/index.html>, available on the Compaq website.

To retain an existing Windows NT 4.0 (NTFS or FAT) or Windows NT 3.51 installation on your server, you must install Windows 2000 to a separate logical partition. Windows 2000 allows you to choose NTFS or FAT.

Compaq Supported Installation

IMPORTANT:

Compaq recommends you read this entire document before attempting an installation of Windows 2000.

Compaq strongly recommends that you read the complete installation sequence carefully before you start. Follow the steps below to produce a Windows 2000 installation supported by Compaq. Be aware, you cannot install Windows 2000 on the same partition as Windows NT and have a stable platform. Neither Windows NT nor Windows 2000 will operate correctly if installed in the same system partition.

Before You Begin

Verify that you selected a supported configuration by referring to the information presented in the “Supported Configurations” section of this document, above.

Make certain you have enough space to create a partition large enough to install Windows 2000, Compaq Support Paq for Microsoft Windows 2000, and the applications you want to test.

Note: Fibre Channel Storage Controllers cannot be used as boot devices at this time. Do not use fiber channel devices as boot devices.

If you install to a partition in a server operating under Windows NT 4.0, apply the latest Microsoft Service Pack for Windows NT 4.0. If you do not include this step in your preparation, the Windows NT 4.0 partition might not be able to read your data after the installation of Windows 2000. The Microsoft Service Pack is available through the Microsoft website at <http://www.microsoft.com/ntserver/nts/downloads/recommended/sp6/default.asp>.

Obtain the Compaq SmartStart and Support Software CD Release 4.60 or later, or download Compaq Support Paq for Microsoft Windows 2000 and the components listed in Table 5 from the Compaq website to obtain the latest release:

- Compaq Support Paq for Microsoft Windows 2000
<http://www.compaq.com/support/files/server/us/index.html>

Compaq Support Paq for Microsoft Windows 2000 replaces the Compaq Server Support diskettes for Windows NT (Compaq SSD for Windows NT). It requires more than 9.2 MB of disk space and does not create diskettes.

Before beginning the installation, copy the Support Paq files directly to the partition you plan to use for installation of Windows 2000.

The following utilities are available as Compaq Support Software from the Compaq website at <http://www.compaq.com/support/files/server/us/index.html>.

- Compaq Array Configuration Utility
- Compaq System Configuration Utility

If you are performing a fresh installation to an empty hard drive you can use SmartStart to configure your partitions.

Installation Steps

1. Update the System and Option ROMs as necessary (refer to Table 3, which lists Compaq servers and minimum ROMPaq revisions Compaq supports running Windows 2000).
2. Initiate the System Configuration Utility to verify that all system configuration options conform to the platform you have chosen.

Note: The Prosignia Server 720 and ProLiant 400 do not need the Compaq System Configuration Utility because they have a ROM-based setup. There is no option nor need to specify the operating system on these servers. For these servers, go to Step 4.

3. In the supported Configuration Utility, change the operating system selection to *Windows 2000*.
 - Select Primary Operating System → Microsoft → Windows 2000
 - Press **Enter**.
 4. If you intend to use Compaq Array controllers in your Windows 2000 environment, execute the Compaq Array Configuration Utility.
-

IMPORTANT: After completing Step 5, NTFS partitions automatically upgrade to NT File System 5 (NTFS 5). Refer to “NTFS Formatted Partitions Automatically Upgrade to NTFS 5” in the section “Implementation Considerations and Features for Windows 2000” of this document. Windows NT 3.51 systems on the same server cannot access NTFS 5 partitions; Windows NT 4.0 on the same server cannot read NTFS 5 partitions unless you have installed Microsoft Service Pack 4 or later.

5. Boot from the Microsoft Windows 2000 CD to install the operating system. You will need your product key code and your licensing information. When prompted, either choose a

Help files for Windows 2000 Server Edition can also be found at <http://www.microsoft.com/windows2000/en/server/help/>; for Windows 2000 Advanced Server Edition, the Help files can be found at <http://www.microsoft.com/windows2000/en/advanced/help/>.

partition with at least 1GB of free space that **does not** contain your existing Windows NT 4.0 installation, or create a new partition with at least 1GB of free space. Detailed instructions for installing Windows 2000 can be found in Help files on the Windows 2000 CD.

6. After the base operating system installation completes, run *SETUP.EXE* to launch Compaq Support Paq for Microsoft Windows 2000. On the Compaq SmartStart and Support Software CD Release 4.60, the path is *drivepath\CPQSUPSW\NTCSP\SETUP.EXE*. This installation utility analyzes the system configuration and installs all

necessary Compaq device drivers. For more detailed information, refer to the file *BP000002.TXT*, available in Compaq Support Paq for Microsoft Windows 2000, version 5.00 A, <http://www.compaq.com/support/files/server/us/index.html>.

Note: Some Compaq devices are hidden from Windows 2000 until a Compaq driver is installed. To install drivers for hardware discovered after Windows 2000 is installed, use the manual installation option. Refer to the section “Special Installation Procedures for Compaq Storage Drivers.”

7. To complete the installation of the Compaq device drivers, reboot the server.

Compaq Management Agents

The Compaq Management Agents are by default installed with the Compaq Support Paq for Microsoft Windows 2000.

When installing SNMP communities in Windows 2000, the default security setting is *READ ONLY*. Because the Compaq Management Agents require read-write access to the community, the default Windows 2000 security setting must be changed after the creation of the SNMP community. When creating new SNMP communities, verify that the community rights are set to *READ WRITE*. Verify that any SNMP communities already created (such as the default *public* community) are set to *READ WRITE*.

For detailed instructions refer to the section “Compaq Management Agents require SNMP Community Security default setting changed to *READ WRITE*.”

These agents can also be obtained from the Compaq Management CD Release 4.60 or later. The latest versions are available through the Compaq website

<http://www.compaq.com/partners/Microsoft/Windows2000/support/servers.html>.

- Compaq Foundation Agents
- Compaq Server Agents
- Compaq Storage Agents
- Compaq NIC Agents

Once you install the Compaq Management Agents, you can use Compaq Insight Manager or Compaq Insight Manager XE over a network connection to manage your Windows 2000 servers. Compaq Insight Manager Console currently runs under Microsoft Windows 95, Microsoft Windows 98, Microsoft Windows NT 4.0, and Microsoft Windows 2000. Compaq Insight Manager runs under Microsoft Windows NT 4.0 and Microsoft Windows 2000. Read the accompanying Help files available with the software, as they contain information needed for proper installation.

Compaq Supported Upgrade

The installation procedure described in this document enables you to easily produce

- A new installation of Windows 2000 to an empty hard drive
- A dual-booting system with Windows 2000 in a partition separate from any Windows NT operating system

This document does not include the steps necessary for a Microsoft Windows NT to Windows 2000 upgrade. If you decide to upgrade an existing Windows NT operating system to Windows 2000, please read the Compaq Integration Note *Upgrading to Windows 2000 on Compaq ProLiant Servers* available at <http://www.compaq.com/support/techpubs/whitepapers/index.html>.

Implementation Considerations and Features for Windows 2000

Windows 2000 was built on Windows NT technology. However, new features such as Active Directory make Windows 2000 a revolutionary operating system, not an evolutionary development to Windows NT. Consequently, many Compaq value-added features designed for Microsoft Windows NT have changed with the implementation of Windows 2000. The discussions in this section should help you in your newly installed Windows 2000 environment.

The development of a new operating system such as Windows 2000 requires an extraordinary relationship between the developer and hardware supplier. As a Joint Development Partner for Windows 2000, Compaq made the commitment to provide the definitive platforms for this powerful network enterprise operating system. Windows 2000 was both developed and tested on Compaq server platforms. However, the advanced capabilities of Windows 2000 require adaptive change. This section discusses adaptations you will want to be aware of when deploying Windows 2000 on Compaq server platforms.

This section also includes a Compaq value-added feature comparison between Windows NT 4.0 and how these features are implemented in Windows 2000.

General Implementation Considerations

The information in this section expands on fundamental concepts to keep in mind about Compaq server products and Microsoft Windows 2000.

Compaq PCI Hot Plug functionality changes

PCI Hot Plug functionality is implemented differently in Windows 2000. The Compaq implementation for Windows 2000 now enables hot add, hot remove, hot replace, and hot upgrade in all PCI Hot Plug slots. PCI Hot Plug drivers are installed through Compaq Support Paq for Microsoft Windows 2000.

Note: Hot-plug functionality for the Compaq Remote Insight Board or Remote Insight Lights Out Edition is not a supported feature.

You must avoid *surprise-style* hot removal operations, especially on older servers without Compaq PCI Slot Service Request buttons. You can remove a device by using either:

- 1) Add New Hardware wizard of Windows 2000 or
- 2) Compaq PCI Slot Service Request button.

The Compaq Storage Agents do not support the hot add or hot remove of storage controllers at this time. Stop the agents before a hot-plug operation. After you complete all hot adds or hot removes, restart the agents.

- To stop the agents, type the following at a command prompt: `Net Stop SNMP /y`
- To restart the agents, type the following at a command prompt: `Net Start CpqWebMgmt`

Failure to stop the agents before a hot-plug operation could result in a system hang and require removing power from the server.

Note: Before attempting to shut down a storage controller, you must first shut down any device running off that controller. If you do not first shut down the devices running off the controller, any attempts to remove the controller, whether through the Slot Service Request button, system tray, or any other method, will fail.

A detailed discussion of PCI Hot Plug Technology in the Windows 2000 environment can be found in the white paper *PCI Hot Plug Technology with Microsoft Windows Architecture* at <http://www.compaq.com/support/techpubs/whitepapers/ECG0710399.html>.

Mixed processor steppings under Windows 2000

Compaq servers have historically supported mixed processor steppings under Windows NT. The first processor slot is the Bootstrap Processor (BSP). If the BSP is not the lowest stepping processor in the mix, problems can result as Windows 2000 initializes the processors. At startup, Windows 2000 writes an information message in the event log regarding mixed processors then runs with the processor in the first slot as the BSP.

Some mixed processor configurations can cause the system to hang during installation of Windows 2000. This issue does not apply to systems with programmable slot ordering. For legacy systems without programmable slot ordering, locate the lowest stepping processor and place it in the first processor slot.

For additional information, please see the document on the Compaq website entitled *Support for Mixing Intel P6 Processors in Compaq Servers Running Windows NT or Windows 2000*, available at

http://www.compaq.com/support/techpubs/whitepapers/WhitePapers_Compac_Technology.html.

Compaq Fibre Channel Storage Controllers cannot boot

By design, you should not use fiber channel devices as boot devices. A blue-screen error condition arises when attempting to boot from fiber channel devices.

NTFS-formatted partitions automatically upgrade to NTFS 5

Any partition(s) formatted with NTFS (NT File System) from Windows NT 4.0 and earlier converts to NTFS 5 without warning during the upgrade/installation process. Windows NT 4.0 systems on the server cannot access or use NTFS 5 partitions unless you replace the *NTFS.SYS* Windows 2000 driver with the version included on Service Pack 4 for Windows NT 4.0 or later. Windows NT 3.51 systems on the server cannot access NTFS 5 partitions.

Any data required by down-level systems and clients, should be stored on a separate partition not accessible by the installation of Windows 2000.

WARNING: Any attempt to reload a down-level operating system on a system disk formatted with NTFS 5 renders that disk unbootable.

To reset your system to Windows NT 3.51, you will need to reinstall Windows NT 3.51 and, during the setup process, delete any system partition converted to NTFS 5.

TCP/IP Protocol Stack required to login to Windows 2000

Login to a Windows 2000 system requires the TCP/IP protocol stack. Many components of Windows 2000, including the Active Directory used to authenticate logins, require the TCP/IP protocol stack.

If TCP/IP is uninstalled during a custom network configuration, you do not have the option to reinstall it during setup. Unlike Windows NT (3.51 and 4.0), the TCP/IP protocol stack is integral and necessary for the correct loading and functioning of Windows 2000, as it is used by Active Directory to interface machines with the Domain (instead of NTLM). If the TCP/IP installation is blocked (or if it is de-installed), the resulting installation would be unusable anyway. Reinstallation of Windows 2000 will be necessary.

Domain Names when installing TCP/IP on Windows 2000 systems

There are many references to domains when installing network support for Windows 2000. Incorrectly identifying your network domain can result in unpredictable network behavior. Read the Microsoft documentation carefully before installing Windows 2000 and become familiar with the differences in the Windows NT domain concept, the Active Directory domain, and the Domain Naming Service (DNS) domain. Read each prompt carefully and make sure you know what is being requested. When asked for Active Directory domain or DNS domain, use the Fully Qualified Domain Name (FQDN). For example, an Active Directory domain name of *vancouver* would have a FQDN of *vancouver.nwtraders.mfst* for the Active Directory root domain *nwtraders.mfst*.

Compaq Options and Drivers

This section discusses legacy bus options and procedural details involving Compaq drivers.

Anomalies associated with adding EISA/ISA bus options

When you add controllers after installing the operating system, non-Plug and Play devices (EISA and ISA bus options) might show up as *Unknown Device* in Device Manager. You may safely ignore these unknown device messages. The functionality of the controllers is not affected.

You can correct this manually through the Add New Hardware Wizard by selecting non-Plug and Play. Two devices display, one with a yellow exclamation mark. Delete the driver marked with the yellow exclamation mark. For a detailed example see “Appendix D, Adding an EISA Fibre Channel Controller.”

Windows 2000 does not detect changes to the IRQ of EISA devices

Changing the interrupt associated with the SMART 2/E Array Controller as the booting device is not supported. Please check the resource settings in system configuration before exchanging a faulty controller. All resources must be set the same on the new SMART 2/E Array Controller as they were on the SMART 2/E Array Controller that is replaced.

The SMART 2/E Array Controller is an Extended Industry Standard Architecture (EISA) controller and not a Plug and Play (PnP) architecture controller. Windows 2000 uses PnP, which will not detect and change the resource settings for an EISA controller. Windows 2000 will expect to find the SMART 2/E Array Controller at the memory address and Interrupt Request (IRQ) number specified when the original SMART 2/E Array controller was installed.

Some Compaq Server USB hardware displays as unsupported USB connectors in Windows 2000 Device Manager

Some Compaq servers with Universal Serial Bus (USB) hardware mounted on the system board (but not fully implemented in the server) display a yellow exclamation mark in the Windows 2000 Device Manager. This is expected behavior. Some Compaq servers contain USB hardware but do not have USB connectors. Windows 2000 detects the USB hardware and reports it in Device Manager. Since these Compaq servers were not designed to implement the USB functionality, no problem actually exists.

CPQARRAY.SYS AND CPQARRAY2.SYS cause timeout error messages in the event log at startup

At startup, *CPQARRAY.SYS* and *CPQARRAY2.SYS* cause timeout error messages in the event log. You may see a message in the event log such as

CPQARRAY2 - device\SCSI\CPQARRAY21 is not ready for access.

or

The device, \Device\Scsi\Cpqarray2, did not respond within the timeout period.

You may safely ignore the messages; loading the drivers and initializing all attached devices takes more time than expected in Windows 2000. Despite the timeout messages, the drivers do install and the controllers function correctly.

Using the F6 key to install Compaq drivers

It is possible to press the **F6** key at the initial blue Windows Setup screen with the prompt:

Press F6 if you need to install a third party SCSI or RAID driver

to interrupt the text mode setup and install OEM-supplied drivers when booting from the Windows 2000 CD. However, Compaq drivers loaded through this procedure might be replaced with the drivers on the Windows 2000 CD during installation.

Unless otherwise instructed, Compaq recommends using the driver versions on the Windows 2000 CD during the setup process, then upgrading to the latest Compaq drivers supplied on Compaq Support Paq for Microsoft Windows 2000. Third-party hardware drivers and their installation should be addressed by the manufacturer.

Special installation procedures for Compaq Storage drivers

After the initial installation of Compaq Support Paq for Microsoft Windows 2000 and the required reboot, new drivers for storage devices are installed by re-running the manual installation of Compaq Support Paq. Re-run the setup program if devices, such as the ProLiant Storage System, do not show up after the first pass.

The following devices:

- Compaq ProLiant Storage System Plug and Play device (for SCSI event reporting)
- Compaq Drive Array Notification device (for array event reporting)

are not visible under Device Manager until the Compaq drivers:

- *CPQ32FS2.SYS* (for SCSI)
- *CPQARRAY.SYS* (for array) or *CPQARRAY2.SYS* (for array)

are installed.

To install these drivers properly, you must run the Compaq Support Paq twice.

The first installation run installs the SCSI and/or array drivers and enables Windows 2000 (after the reboot) to detect the devices under the system branch of the Device Manager tree. Run the Compaq Support Paq a second time, during which the drivers *CPQPRLNTSS.SYS* and *CPQDAEN.SYS* will be properly loaded, completing the installation.

Windows 2000 detects unsigned drivers and requires a server reboot

The drivers provided by Compaq, though unsigned, have been thoroughly tested and are more functionally complete than the versions on the Windows 2000 OS media. When installing the drivers from Compaq Support Paq for Microsoft Windows 2000 or from any other Compaq Support Software, you may safely ignore the warning message about digital signatures.

When replacing a digitally signed driver with an unsigned driver, the operating system displays a popup message stating that an unsigned driver has been installed and requires a reboot. Use the drivers supplied in Compaq Support Paq for Microsoft Windows 2000 and reboot the system.

Installation Considerations for Compaq Value-Added Features

A few system configurations may require additional user action to complete the installation. Some Compaq value-added features are implemented differently under Windows 2000 from how they were first developed for Windows NT 4.0. Refer to Table 6, Compaq features for Windows NT 4.0 in Windows 2000.

Default video resolution not retained by Windows 2000 after installation

After performing an upgrade to Windows 2000, the default video resolution might not be retained.

If the Display Properties screen appears, ensure the settings are correct for your configuration and click **Apply**. Otherwise, reset the video settings after installing Windows 2000 by right clicking the background and selecting *Properties* → *Settings* → *Display Type* → *Detect*.

V70 Monitor driver does not install during Windows 2000 installation

Windows 2000 does not detect or install the Compaq V70 monitor driver during installation.

After installation is complete and the system has been restarted, the Compaq V70 monitor can be selected and the driver installed through the Control Panel or the desktop. From the Desktop, right click and select *Properties* → *Advanced* → *Monitor* → *Properties*; the V70 monitor will install from the Windows 2000 media. Compaq is working with Microsoft to correct this problem.

Redundant NIC Teaming and Windows 2000

Redundant NIC teaming is not supported by SmartStart Release 4.60. Compaq engineers are actively working to include the Redundant NIC Teaming feature in upcoming releases of Compaq Support Paq for Windows 2000.

Hibernation not supported on ProSignia Server 720 & ProLiant 400 Server

Due to technical issues, Compaq is not supporting hibernation for the ProSignia Server 720 nor the ProLiant 400 Server with current ROM revisions.

Hot Plug Status Indicator not updated when Fiber Optic Cable removed

In Windows NT 4.0, the PCI Hot Plug status indicator (not the power indicator) updates when you remove the fiber optic cable from a controller. However, in Windows 2000 the Compaq Remote Console Monitor service does not include this feature and the status indicator does not update.

Upgrading and downgrading ACPI

Windows 2000 loads specific drivers to the operating system when it discovers ACPI-capable servers during installation. However, it does not install the proper settings of ACPI if they are not discovered at installation. Changing ACPI settings after installation requires reinstalling the operating system.

Compaq Value-Added Feature Comparison between Windows NT and Windows 2000

Table 6 lists some of the Compaq value-added features developed for Windows NT 4.0 and describes how these features are implemented in Windows 2000. In some instances, the features will be supported in a different manner.

Table 6. Compaq features for Windows NT 4.0 in Windows 2000

Compaq Feature in Windows NT 4.0	Windows 2000 Implementation
Advanced Network Control Utility (NIC redundancy)	Redundant NIC functionality for Windows 2000 will be implemented as NIC teaming; ANCU will not be supported.
Compaq SSD for Windows NT	Compaq Support Paq for Microsoft Windows 2000 provides enhanced functionality.
Integrated Management Log Viewer	Compaq Support Paq for Microsoft Windows 2000 includes this feature.
Integrated Management Display	Compaq Support Paq for Microsoft Windows 2000 includes this feature.
Integrated Remote Console	This feature is in development for Windows 2000.
Power Manager (for Compaq Uninterruptible Power Supplies)	This feature is not planned for Windows 2000.
Power Down Manager	Windows 2000 provides its own power management on servers that are ACPI compliant, so this utility is not supported on those servers. This utility will continue to be supported on servers that are not ACPI ready. See the <i>BP000002.TXT</i> file in Compaq Support Paq for Microsoft Windows 2000.
Remote Monitor Service	Compaq Support Paq for Microsoft Windows 2000 includes this feature.
Remote Insight Board	This feature is in development for Windows 2000.
Recovery Server Options (Standby Recovery Server, On-line Recovery Server, and Online Storage Controller Recovery Option)	A new feature is slated for future development; the Online Storage Controller Recovery Option functionality will not be retained.
ServerNet adapter	This feature is in development for Windows 2000.
SmartStart	SmartStart is supported beginning with Release 4.60

Appendix A, Installation Issues and Workarounds

Compaq servers are the predominant hardware development platform at Microsoft and no other servers have been deployed as extensively running Windows 2000. Compaq continues to test qualified server configurations with Windows 2000 and actively works to fix or resolve every issue discovered during development of this advanced operating system.

This appendix provides known issues that you might encounter at the release of Windows 2000. It also includes workarounds and solutions for each issue addressed. As noted below, many issues reported in Windows 2000 have been resolved. New issues and workarounds, should they arise, are communicated through Customer Advisories on the Compaq website http://www.compaq.com/support/techpubs/customer_advisories/Customer_Advisories_Windows_2000.html.

IMPORTANT: Review and understand the Help files available on Compaq Support Paq for Microsoft Windows 2000. In addition, if you plan to use Compaq Insight Manager, review the Help files accompanying the Support Software, or on the Compaq Management CD Release 4.60 or greater. Help files concerning specific operating system instructions and related issues are available on the Microsoft Windows 2000 CD.

Issues Resolved Since the Release of Windows 2000 RC3

If you have been tracking the issues discussed in the Integration Note *Microsoft Windows 2000 Release Candidate 3 with Compaq Server Products*, Table 7 provides the location of current information.

Table 7. Issues resolved since Release Candidate 3

Issue	Comments
1. COM 3 Displays as a <i>Not Supported Device</i> if the Compaq 56K Netelligent ISA internal Modem is installed in a Compaq Server	Refer to "Installation Issues and Workarounds for Windows 2000"
2. On a ProSignia 200 Server, Windows 2000 Device Manager Shows an Error for the VGA and VGASave Devices	Refer to "Installation Issues and Workarounds for Windows 2000"
3. Multi-monitor Display Fails if ATI Controller is Not in Slot 1	Refer to "Installation Issues and Workarounds for Windows 2000"
4. SYMC875.SYS Error in Event Viewer/Application Log	Resolved
5. WinMgmt Error in Event Viewer/Application Log	Resolved
6. Windows 2000 Event Log is Filled to Capacity with Events from Logical Drive During System Stress	Resolved
7. Windows 2000 Gives Unsafe Removal of Device Prompt When Hot-Plugging Drive	Refer to "Installation Issues and Workarounds for Windows 2000"
8. Server Shutdown During Boot Up when Hot Plug Filter Driver Installed	Resolved
9. Unable to Power Down Hot Plug Expansion Slot for Fibre Channel Storage Controller	Resolved
10. File Missing Error Occurs During Array Installation	Resolved
11. CPQARRY2.SYS Causes Timeout Error Messages in Event Log	Refer to "Implementation Considerations and Features for Windows 2000"
12. SNMP Traps not received by Compaq Insight Manager XE	Refer to "Installation Issues and Workarounds for Windows 2000"

Installation Issues and Workarounds for Windows 2000

Compaq and Microsoft are working together to resolve outstanding issues in Windows 2000 on Compaq servers. The following section provides information on installation-related topics that require a workaround, at this time, to successfully implement Windows 2000.

ProLiant 6500 Xeon hangs during the *Applying Computer Settings* screen after rebooting Windows 2000

The ProLiant 6500 Xeon requires a ROM update to P11 (12/08/99) to fix a problem with the (12/07/99) system ROM. If this ROM is not installed, on the reboot after the installation, the system may hang at the *Applying Computer Settings* screen.

This ROM update is available from the Compaq website and is required. Download Compaq Support Software with the appropriate ROMPaq, and perform the ROM update; run SmartStart and proceed with the assisted install.

Compaq Support Software can be obtained through the Compaq website at <http://www.compaq.com/support/files/server/us/index.html>.

The ProLiant Storage System hardware device (SCSI Backplane) does not appear in Device Manager

The ProLiant Storage System hardware device (SCSI backplane) does not appear with the Windows 2000 SymbIOS driver loaded.

This ProLiant Storage System device will display if the Compaq *32-bit SCSI Controller Driver* (available on Compaq Support Paq for Microsoft Windows 2000) is loaded and the system rebooted.

Unable to access Custom Configuration during Unattended Install

Custom Configuration is not directly accessible during the dialog box sequence of a SmartStart unattended install.

During the unattended install, you will enter the network setup on the second dialog box for unattended install. The default value for network setup is *Typical*. You can set up your network with Custom Configuration. When the installation sequence prompts for the domain, click the **Back** button to access dialog boxes used to configure the network, and the network controller devices.

Windows 2000 does set up the network controller devices. By default, Windows 2000 uses the Typical Configuration, which installs DHCP to configure TCP/IP.

Multi-monitor Display Configuration ATI Controller fails if not in Slot 1

When multiple monitors and video controllers are connected to a Compaq server, the ATI driver cannot locate the video controller if the ATI Rage IIC video controller is in the second slot.

If the ATI Rage IIC is the first video device, and a non-ATI video controller is the second device, all video drivers function appropriately. For multiple monitor installations, the ATI video controller should be in slot 1.

Compaq driver updates once Windows 2000 is installed

After installing a new device, when Windows 2000 boots and finds new hardware, the following message box appears:

"The following file is missing: xxxx"

Compaq Support Paq for Microsoft Windows 2000 installed drivers for the device from a temporary directory. Windows is using that path rather than using the path to the existing driver.

To complete the device addition, close the message box and perform the individual driver installation manually using Compaq Support Paq. You can deselect all other drivers, then click **Install** for the remaining selected driver, disregarding the driver install log which reports that it is up-to-date. Running the installation will update the driver for the new device(s) added.

When Rescan Disks is selected after hot-plugging a hard drive, Windows 2000 might inappropriately display an *Unsafe Removal of Device* prompt

After hot plugging a hard drive in a storage drive bay, clicking **Rescan Disks** might result in Windows 2000 failing to identify the drive and displaying this error message:

Unsafe Removal of Device: You have unplugged or ejected a device without stopping it. Unplugging or ejecting a device without first stopping them can often cause your computer to crash or lose valuable data. To safely unplug or eject any of the following devices, first use the Hardware Wizard in the Control Panel to stop the device...

Click Rescan Disks a second time to correct this problem; Windows 2000 then detects the drive properly.

No Disable feature is available for the System Management driver once the driver is installed

Do not disable the Compaq System Management driver. It is not a supported function. Doing so will cause applications which use the System Management driver, such as the Array Configuration Utility, to hang at system reboot.

Without the System Management driver, agents will not perform correctly. Any clients that depend on the System Management driver will hang indefinitely or cause Windows 2000 to blue screen at reboot. If you have disabled the System Management driver, you should reboot and use the spacebar to invoke the Last Known Good configuration.

However, Uninstall of the System Management driver is supported. After rebooting to the Last Known Good configuration, uninstall the System Management driver as well as removing and disabling it.

System locks up during Support Paq installation on servers with Compaq System Management Application-Specific Integrated Circuit (CSM ASIC)

Compaq servers that contain the Compaq System Management Application-Specific Integrated Circuit (CSM ASIC) require manual installation of the System Management driver contained on Compaq Support Paq for Microsoft Windows 2000. These servers include:

- Compaq Prosignia 200 (P05 System ROM)
- Compaq ProLiant 800 (P02 System ROM)
- Compaq ProLiant 850R (P04 System ROM)

- Compaq ProLiant 1200 (E35 System ROM)
- Compaq ProLiant 1500 (E27 System ROM)
- Compaq ProLiant 1600 (E34 System ROM)
- Compaq ProLiant 2500 (E24 and E50 System ROM)
- Compaq ProLiant 3000 (E39 System ROM)
- Compaq ProLiant 5500 (E39 System ROM)
- Compaq ProLiant 4500 (E14 System ROM)
- Compaq ProLiant 5000 (E16 System ROM)

If you have a Compaq server with CSM ASIC and have experienced a system hang while installing Compaq Support Paq for Microsoft Windows 2000, cycle the system power, allow the operating system to load, and open the Support Paq. In the Compaq Support Paq for Windows 2000 - Bundle window deselect the *System Management driver*, and click the **Install** button to re-run the Support Paq installer. After the installer completes, follow the procedures listed in “Appendix E, Manual Installation of the Compaq System Management Driver.”

For Servers with Compaq System Management Application-Specific Integrated Circuit (CSM ASIC), Compaq Insight Agents do not report CPU Fans, but do correctly report any fan failure events

On Compaq servers that contain the Compaq System Management Application-Specific Integrated Circuit (CSM ASIC, see list in “Appendix E, Manual Installation of the Compaq System Management Driver”), Insight Agents do not report the CPU fans. Despite the fact that the fans do not get reported, any failure of the fan’s normal operation is reported by Compaq Insight Manager.

Compaq Management Agents require SNMP Community Security default setting changed to *READ WRITE*

When installing SNMP communities in Windows 2000, the default security setting is *READ ONLY*. Because the Compaq Management Agents require read-write access to the community, the default security setting must be changed after the creation of the SNMP community. When creating new SNMP communities, verify that the community rights are set to *READ WRITE*. Verify that any SNMP communities already created (such as the default *public* community) are set to *READ WRITE*.

Follow this procedure to set the SNMP Community rights to *READ WRITE*:

1. Select *Start* → *Programs* → *Administrative Tools* → *Component Services*.
2. Locate and right click on *SNMP Service*.
3. Select the *Security* tab.
4. Select the community name you wish to change, then click the **Edit...** button to alter the selected community (or click the **Add...** button to create a new one).
5. Access the *Community rights* selector dropdown menu, and select *READ WRITE*.
6. Click the **OK** button to accept the new setting.
7. Click the **Apply** button to activate the security settings.
8. Close the dialog box.

Appendix B, Compaq Storage Options

Appendix B lists Compaq Storage Options, including recommended drivers and their locations. Where duplicates exist, the Compaq recommended driver is indicated by the bold check (✓).

CD-ROM, DVD-ROM, and Hard Drives

Table 8 includes CD-ROM drives, DVD-ROM drives, and hard drives supported by Compaq under Windows 2000.

Table 8. Compaq supported drives for Windows 2000

Device	Driver	Windows 2000 CD	Compaq Support Paq for Windows 2000
Compaq CD-ROM Drives (all)	<i>CDROM.SYS</i>	✓	
Compaq 8x DVD-ROM			
Compaq Hard Drives (all)	<i>DISK.SYS</i>	✓	

RAID Storage Systems

Table 9 includes the RAID storage systems supported by Compaq for Windows 2000.

Table 9. Compaq supported RAID storage systems for Windows 2000

Storage Product	Driver	Windows 2000 CD	Compaq Support Paq for Windows 2000
Compaq StorageWorks RA 4000 (Compaq Fibre Channel Storage System)	<i>CPQFCAC.SYS</i>		✓
Compaq ProLiant Storage Systems	<i>PRLNTSS.SYS</i>		✓

Storage Controllers

Table 10 includes the storage controllers supported by Compaq for Windows 2000.

Table 10. Compaq supported storage controllers for Windows 2000

Controller	Driver	Windows 2000 CD	Compaq Support Paq for Windows 2000
Compaq 32-Bit Fast-Wide SCSI-2/E Controller	<i>CPQ32FS2.SYS</i>		✓
Compaq 32-Bit Fast-Wide SCSI-2/P Controller			
Compaq 32-Bit Fast SCSI 2 Controller			
Compaq 64-Bit Dual Channel Wide Ultra 2 Controller			
Compaq Dual Channel Wide-Ultra SCSI-3 Controller			
Compaq Fibre Channel Host Controller/E	<i>CPQFCALM.SYS</i>	✓	✓
Compaq Fibre Channel Host Controller/P			
Compaq Integrated 32-Bit Fast-Wide SCSI-2/E Controller	<i>CPQ32FS2.SYS</i>	✓	✓

continued

Table 10. Compaq supported storage controllers for Windows 2000 (continued)

Controller	Driver	Windows 2000 CD	Compaq Support Paq for Windows 2000
Compaq SMART 2/DH Array Controller	CPQARRAY.SYS	✓	✓
Compaq SMART 2/E Array Controller			
Compaq SMART 2/P Array Controller			
Compaq SMART 2SL Array Controller			
Compaq Smart Array 221 Controller			
Compaq Smart Array 3100ES Controller			
Compaq Smart Array 3200 Controller			
Compaq SMART Array Controller			
Compaq Integrated SMART Array Controller	CPQARRAY2.SYS	✓	✓
Compaq Smart Array 4200 Controller			
Compaq Smart Array 4250ES Controller			
Compaq StorageWorks Differential Dual Channel Wide-Ultra Library Host Controller	CPQ32FS2.SYS		✓
Compaq Wide-Ultra SCSI-3 Controller			

Tape Options

Table 11 includes a list of the tape options supported by Compaq for Windows 2000.

Table 11. Compaq supported tape options for Windows 2000

Tape Option	Driver	Windows 2000 CD	Compaq Support Paq for Windows 2000
Compaq 10/20 GB DLT Tape Drive	DLTTAPE.SYS	✓	
Compaq 15/30 GB DLT Library Ready Drive			
Compaq 15/30 GB DLT Tape Drive			
Compaq 2/4 GB SLR Drive (DEC TZK11)	TANDQIC.SYS	✓	
Compaq 20/40 GB DLT Library Ready Drive	DLTTAPE.SYS	✓	
Compaq 20/40 GB DLT Tape Drive			
Compaq 20/40 GB DLT Tape Drive (DEC TZ88)			
Compaq 35/70 GB DLT Library Ready Drive			
Compaq 35/70 GB DLT Tape Drive			
Compaq 35/70 GB DLT Tape Drive (DEC TZ89)			
Compaq 4/8 GB SLR Drive	TANDQIC.SYS	✓	
Compaq AIT 25 GB Drive (DEC TZS20)	SONYAIT.SYS	✓	
Compaq AIT 35 GB Drive			
Compaq DDS1 2/4 GB DAT Drive	4MMDAT.SYS	✓	
Compaq DDS1 2/8 GB DAT Drive			
Compaq DDS2 4/16 GB Autoloader	DDSMC.SYS	✓	

continued

Table 11. Compaq supported tape options for Windows 2000 (continued)

Tape Option	Driver	Windows 2000 CD	Compaq Support Paq for Windows 2000
Compaq DDS2 4/16 GB DAT Drive	4MMDAT.SYS	✓	
Compaq 4/8 GB SLR Drive	TANDQIC.SYS	✓	
Compaq AIT 25 GB Drive (DEC TZS20)	SONYAIT.SYS	✓	
Compaq AIT 35 GB Drive			
Compaq DDS1 2/4 GB DAT Drive	4MMDAT.SYS	✓	
Compaq DDS1 2/8 GB DAT Drive			
Compaq DDS2 4/16 GB Autoloader	DDSMC.SYS	✓	
Compaq DDS2 4/16 GB DAT Drive	4MMDAT.SYS	✓	
Compaq DDS2 4/8 GB Autoloader (DEC TLZ9)	DDSMC.SYS	✓	
Compaq DDS2 4/8 GB DAT Drive	4MMDAT.SYS	✓	
Compaq DDS2 4/8 GB DAT Drive (DEC TLZ09)			
Compaq DDS2 4/8 GB DAT Drive (DEC TLZ9)			
Compaq DDS3 12/24 GB 6 Cassette Autoloader	DDSMC.SYS	✓	
Compaq DDS3 12/24 GB 8 Cassette Autoloader			
Compaq DDS3 12/24 GB Autoloader (Drive)	4MMDAT.SYS	✓	
Compaq DDS3 12/24 GB DAT Drive			
Compaq DDS3 12/24 GB DAT Drive (DEC TLZ10)			
Compaq DDS4 20/40 GB DAT Drive			
Compaq DLT 15 Cartridge 15/30 Library	HPMC.SYS	✓	
Compaq DLT 15 Cartridge 20/40Library			
Compaq DLT 15 Cartridge 35/70Library			
Compaq StorageWorks TL895 DLT Library	ATLMC.SYS	✓	
Compaq Tape Array II	DLTTAPE.SYS	✓	
Compaq TL894 DLT Library	ATLMC.SYS	✓	
DEC DLT 2000 DLT Tape Drive	DLTTAPE.SYS	✓	
DEC DLT 2500 Mini Library Drive			
DEC DLT 2700 Mini Library Drive			
DEC DLT 4500 Mini Library Drive			
DEC DLT 4700 Mini Library Drive			
DEC THZ02 DLT Tape Drive			
DEC TL810 DLT Library	ATLMC.SYS	✓	
DEC TL812 DLT Library			

continued

Table 11. Compaq supported tape options for Windows 2000 (continued)

Tape Option	Driver	Windows 2000 CD	Compaq Support Paq for Windows 2000
DEC TLZ06 DAT Tape Drive	<i>4MMDAT.SYS</i>	✓	
DEC TLZ07 DAT Tape Drive			
DEC TLZ1 DAT Tape Drive			
DEC TLZ1 DDS3 12/24 GB 8 Cassette Autoloader	<i>DDSMC.SYS</i>	✓	
DEC TLZ6 DAT Tape Drive	<i>4MMDAT.SYS</i>	✓	
DEC TLZ7 DAT Tape Drive			
DEC TZ Media Changer	<i>QNTMMC.SYS</i>	✓	
DEC TZ86 DLT Tape Drive	<i>DLTTAPE.SYS</i>	✓	
DEC TZ87 DLT Tape Drive			
DEC TZ875 5 DLT Loader			
DEC TZ877 7 DLT Loader			
DEC TZ885 5 DLT Loader			
DEC TZK10 Tape Drive	<i>TANDQIC.SYS</i>	✓	
DEC TZK10 Tape Drive			
DEC TZK12 Tape Drive			
DEC TZK12 Tape Drive			
DEC TZK20 SCSI Mini Cartridge Drive			
DEC TZK20 SCSI Mini Cartridge Drive			

Appendix C, Compaq Network Controllers

Table 12 contains supported Compaq network controllers and driver revisions needed to interface with Windows 2000. Drivers in Compaq Support Paq for Microsoft Windows 2000 replace the versions installed from the Windows 2000 CD. Where duplicates exist, the Compaq recommended driver is indicated by the bold check (✓).

Table 12. Supported Compaq Network Controllers for Windows 2000

Compaq Network Controllers	Driver	Windows 2000 CD	Compaq Support Paq for Windows 2000
Compaq 32-Bit DualSpeed Token Ring Controller	<i>NETFLX.SYS</i>	✓	
Compaq 100 FDDI PCI DAS Fibre-SC Controller	<i>SKFPWIN.SYS</i>	✓	
Compaq 100 FDDI PCI DAS UTP Controller			
Compaq 100 FDDI PCI SAS Fibre-SC Controller			
Compaq 100 FDDI PCI SAS Fibre-MIC Controller			
Compaq 100 FDDI PCI SAS UTP Controller			

continued

Table 12. Supported Compaq Network Controllers for Windows 2000 (continued)

Compaq Network Controllers	Driver	Windows 2000 CD	Compaq Support Paq for Windows 2000
Compaq NC1120 Ethernet	<i>N100NT5.SYS</i>	✓	✓
Compaq NC3120 Fast Ethernet			
Compaq NC3121 Fast Ethernet			
Compaq NC3122 Fast Ethernet			
Compaq NC3123 Fast Ethernet			
Compaq NC3131 Fast Ethernet			
Compaq NC3132 Fast Ethernet Upgrade Module			
Compaq NC3133 Fast Ethernet Upgrade Module			
Compaq NC3160 Fast Ethernet (Embedded)			
Compaq NC3161 Fast Ethernet (Embedded)			
Compaq NC3162 Fast Ethernet (Embedded)			
Compaq NC3163 Fast Ethernet (Embedded)			
Compaq NC4621 Token Ring NIC	<i>CPQTRND5.SYS</i>	✓	
Compaq NC6132 Gigabit Module	<i>N1000NT5.SYS</i>	✓	✓
Compaq NC6133 Gigabit Module			
Compaq NC6134 Gigabit NIC			
Compaq NetFlex/NetFlex-2 ENET/TR Controller	<i>NETFLX.SYS</i>	✓	
Compaq NetFlex-2 DualPort ENET Controller			
Compaq NetFlex-2 DualPort TR Controller			
Compaq NetFlex-2 TR Controller			
IBM 16/4 TOKEN RING PCI SPECIAL	<i>IBMTRP.SYS</i>	✓	
Netelligent 10/100 TX	<i>NETFLX3.SYS</i>	✓	✓
Netelligent 10/100 TX Embedded UTP			
Netelligent 10/100 TX Embedded UTP/AUI			
Netelligent 10/100 TX Embedded UTP/Coax			
Netelligent 10/100 TX PCI Dual UTP	<i>NETFLX3.SYS</i>	✓	✓
Netelligent 10/100 TX PCI UTP			
Netelligent 10/100 TX UTP			
Netelligent 10/100 TX WOL PCI UTP – Intel	<i>N100NT5.SYS</i>	✓	✓
Netelligent 10 T/2 PCI UTP Coax Controller	<i>NETFLX3.SYS</i>	✓	✓
Netelligent 16/4 PCI IBM UTP/STP Controller	<i>IBMTRP.SYS</i>	✓	
Netelligent 4/16 TR PCI UTP/STP Controller	<i>CPQTRND4.SYS</i>	✓	
NetFlex-3/E	<i>NETFLX3.SYS</i>	✓	✓
NetFlex-3/P			
NetFlex-3 Embedded			

Appendix D, Adding an EISA Fibre Channel Controller

The following steps explain how to add an EISA Fibre Channel controller to a system. These steps can be used as a reference to properly add an EISA controller:

Installing the Controller

1. With the server down, and power removed from the system, install the controller in the server.
2. Run the Compaq System Configuration Utility to add the controller and configure changes to system BIOS.
3. Reboot the system. Once the OS is running, start the hardware wizard by right clicking on *My Computer*, then selecting *Properties* → *Hardware*.
4. Select *Add/Troubleshoot a Device*. No devices will be found.
5. Select *Add New Device* from the *Choose Hardware Device* screen.
6. Select *No, I want to select hardware from a list*.
7. Select *SCSI and RAID Controllers*
8. Select *Compaq* and *Compaq Fibre Channel Host Controller (non PnP)*.
9. Click **Next**, then **Finish**.
10. Reboot the system.

Loading the Driver

1. After the reboot has completed, the *Found New Hardware* wizard will display.

This step resolves the device listed as *Unknown Device* under the Device Manager tree. This *Unknown Device* is the actual Compaq Fibre Channel Controller/E that now requires the *CPQFCALM.SYS* driver.

Note: The device Compaq Fibre Channel Host Controller (non PnP), displayed under Device Manager with a yellow exclamation point, is no longer valid. This device can now be removed from the Device Manager tree.

2. Ensure that the latest version of *CPQFCALM.SYS* is readily available.
3. Click **Next** to start the *Found New Hardware* wizard.
4. Select *Display a list of known drivers for this device so that I can select a specific driver*.

IMPORTANT: Do not select *Search for a suitable driver for my device*. Using this method will result in the OS not allowing the user to load *CPQFCALM.SYS* for the Fibre Channel controller.

5. Select *SCSI and RAID Controllers*.
6. Click **Have Disk...**
7. Browse to the latest Compaq version of *CPQFCALM.INF* and double click the file
8. Select *Compaq StorageWorks Fibre Channel Host Bus Controller/E*.
9. Click **Next**.

10. Browse to the latest Compaq version of *CPQFCALM.SYS*. and select the file.
11. Click **Next**.
12. Click **Yes** at the Digital Signature Not Found screen.
13. Click **Finish**.

Appendix E, Manual Installation of the Compaq System Management Driver

The following server platforms require manual installation of the Compaq System Management driver:

- Compaq Prosignia 200 (P05 System ROM)
- Compaq ProLiant 800 (P02 System ROM)
- Compaq ProLiant 850R (P04 System ROM)
- Compaq ProLiant 1200 (E35 System ROM)
- Compaq ProLiant 1500 (E27 System ROM)
- Compaq ProLiant 1600 (E34 System ROM)
- Compaq ProLiant 2500 (E24 and E50 System ROM)
- Compaq ProLiant 3000 (E39 System ROM)
- Compaq ProLiant 5500 (E39 System ROM)
- Compaq ProLiant 4500 (E14 System ROM)
- Compaq ProLiant 5000 (E16 System ROM)

To perform a manual installation of the Compaq System Management driver on the systems listed above:

1. Run the Component Package for the System Management Driver (for example, from Compaq SmartStart and Support Software CD Release 4.60, run `drivepath\CPQSUPSW\NTCSP\CP000037.EXE`).
2. Click the **Extract** button to allow the driver files to be extracted to the hard disk.
3. Create a temporary directory on the local hard disk by clicking the **New Folder** button.
4. Select the new folder that was created in the above step and click the **OK** button.
5. A message box appears, displaying:
The package was extracted successfully
click the **OK** button.
6. Click the **Close** button to close the Component Package installer.
7. Click the **Start** button on the Windows 2000 taskbar.
8. Select *Settings* → *Control Panel* → *Add/Remove Hardware*.
9. Click the **Next** button.

10. Click *Add/Troubleshoot a Device* → *Add a New Device*.
11. Click the **Next** button.
12. Select *No, I Want to Select the Hardware from a List*.
13. Click the **Next** button.
14. Select *System Devices*.
15. Click the **Next** button.
16. Click the **Have Disk** button.
17. Select your share with the drivers and click **OK**.
18. Select *Compaq Integrated System Management Controller*.
19. Click the **Next** button.
20. Click the **Finish** button.
21. Reboot the system.

After the reboot, Device Manager should display the Compaq Integrated System Management Controller device; any future upgrades to the driver can be performed by running the Compaq Support Paq for Microsoft Windows 2000.

Appendix F, Compaq Information Products

In addition to hardware and software products, Compaq also provides information enabling you to stay current on the latest developments and assisting you in making deployment decisions.

The Compaq Windows 2000 website provides the latest information available on upgrading and testing Microsoft Windows 2000 on your Compaq products.

Windows 2000 Advantage is a free online magazine designed to be your primary source of timely, useful information for planning and implementing Microsoft Windows NT on Compaq hardware.

Compaq *ActiveAnswers*[™] gives you the benefit of our experience to help manage your system and reduce the time, risks, and complexity associated with deploying solutions.

Compaq ActiveUpdate automatically delivers software updates for your Compaq servers, desktops, workstations, and portables.

Compaq Info Messenger, which can be accessed through the Compaq website, tracks your areas of interest and advises you when related information products are released.

Customer Advisories inform you of any known problems and workarounds.

Communiqués and press releases announce the availability of new products and versions.

Service Advisories notify Compaq resellers and retailers of any known service-related matters and provide them with the information they need to effectively support their customers.

Solution Stories describe how Compaq customers have addressed their business needs through the combination of Compaq products and third-party software products.

TechNotes and Tech Briefs update customers on the latest developments in Compaq products.

White papers inform you of ways to optimize your environment and obtain the maximum benefit from software enhancements.

These information products range from those with no specific OS focus to those that address specific OS matters and answers. Information products specific to Microsoft are also collected and distributed as part of the Compaq Resource Paq produced twice a year.

Table 13 lists valuable Compaq reference resources on the web.

Table 13. Compaq resources on the World Wide Web

Item	Web Location
Windows 2000 on Compaq	http://www.compaq.com/partners/Microsoft/Windows2000/index.html
<i>Windows 2000 Advantage</i> online magazine	http://www.windows2000advantage.com
Compaq <i>ActiveAnswers</i>	http://www.compaq.com/activeanswers
Compaq ActiveUpdate	http://www.compaq.com/products/servers/management/activeupdate
Compaq Info Messenger	http://www.compaq.com/infomessenger
Compaq Insight Manager	http://www.compaq.com/sysmanage
Compaq Management CD	http://www.compaq.com/support/files/server/MGMTSOL/index.html
Compaq Option ROMPaq	http://www.compaq.com/support/files/server/us/index.html
Compaq Resource Paq for Microsoft Windows 2000 and Windows NT	http://www.compaq.com/partners/microsoft/resourcepaq.html
Compaq SmartStart Subscription Service	http://www.compaq.com/support/files/server/us/index.html
Compaq System ROMPaq	http://www.compaq.com/support/files/server/us/index.html
Customer Advisories	http://www.compaq.com/support/techpubs/customer_advisories/Customer_Advisories_Windows2000.html
Microsoft Frontline Partnership	http://www.compaq.com/partners/Microsoft
Press releases	http://www.compaq.com/newsroom/pr
Compaq Support Software (complete listing)	http://www.compaq.com/support/files/server/us/index.html
Compaq Support Paq for Windows 2000	http://www.compaq.com/support/files/server/us/index.html
Compaq SSD for Windows NT	http://www.compaq.com/support/files/server/us/index.html
Compaq Survey Utility	http://www.compaq.com/support/files/server/us/index.html
White Papers and other technical document (complete listing)	http://www.compaq.com/support/techpubs/whitepapers/index.html