COMPAQ
Integration Note

Contents

Implementing Microsoft Windows 2000 with Service Pack 3 on Industry-Standard Servers

Abstract: This integration note provides information on installing, implementing, and troubleshooting Microsoft Windows 2000 Server and Windows 2000 Advanced Server on ProLiant and Prosignia servers for network administrators and field service engineers. It contains information on Windows 2000 implementations with Microsoft Service Pack 3 (SP3) applied.

This document provides information on supported hardware, a step-by-step installation, features, and a troubleshooting section. The appendices include a discussion of previous issues and a list of web resources for additional information.

Testing Microsoft Windows 2000 Server and Advanced Server with industry-standard servers have continued since the operating system was released in the year 2000. To obtain the latest information, visit www.compaq.com/partners/microsoft/windows2000 and www.compaq.com/partners/microsoft/index.html.

Additional documents offering solutions for upgrading and migrating to Windows 2000 on Industry-standard Server Products are available on the Microsoft Frontline Partnership website at www.compaq.com/partners/microsoft/windows2000/ whitepapers.html.

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Notice

Implementing Microsoft Windows 2000 with Service Pack 3 on Industry-Standard Servers
Integration Note prepared by ISS Technology Communications

Overview

The development of a new operating system requires an extraordinary relationship between the developer and hardware supplier. As a Joint Development Partner for Microsoft Windows 2000, Compaq engineered and tested its hardware and support software on this revolutionary network operating system from its inception. In fact, the majority of Windows 2000 code was developed on Compaq products and all deployment program events were run on industry-standard servers.

In developing implementation information for this document, we used the ProLiant Essentials Foundation Pack software listed below.

- SmartStart Release 5.40

- Management CD Release 5.40

- Support Paq for Microsoft Windows 2000 Version 5.40A (Support Paq)

The SmartStart CD ships standard with most ProLiant servers. To obtain SmartStart CD Release 5.40 through our subscription service, visit www.compaq.com/products/servers/SmartStart/ss_subscription.html.

Management Agents, Insight Manager, and Support Paqs can be downloaded at www.compaq.com/support/files/server/us/ free of charge.

Planning Considerations

When implementing a network operating system release, careful planning makes the difference between success and failure. Take time with each step of the process to make sure you cover all the bases.

First, understand your current network configuration including an examination of your structure, domains, security needs, and Internet usage. Then, verify that your current applications can operate in a Microsoft Windows 2000 environment or if an upgrade or replacement must be found. Finally, evaluate your hardware to determine which hardware migrates, which upgrades, and which must be replaced.

Establish functional teams with experts in directory services, administration and management, core OS, networking, applications, and hardware compatibility. Have these teams evaluate Windows 2000 and your hardware. Take the time to correctly plan your strategy. Make clear assignments and verify progress along the way.

Your strategy should include checking the www.compaq.com/partners/microsoft/about/index.html for new information on a regular basis. Compaq Services can help you plan your Windows 2000 implementation; check their website, www.compaq.com/services/windows2000/index.html.

Installation Considerations

Microsoft ships Windows 2000 Server and Windows 2000 Advanced Server with and without Microsoft Service Pack 3 (SP3). SP3 contains a comprehensively tested collection of updates that addresses customer-reported concerns with the Windows 2000 operating system. SP3 enhances the overall reliability of Windows 2000 and features easier and more robust mechanisms for applying Service Packs to Windows 2000.

Your options include installing the standalone version and then applying SP3 or installing the integrated version. Before installing the integrated version of Windows 2000, make certain that your software applications support SP3.

IMPORTANT: If you install the integrated version of Windows 2000 and SP3, you cannot uninstall SP3.

Our testing for this document used SmartStart Release 5.40, Management CD Release 5.40, and Compaq Support Paq for Microsoft Windows 2000 Version 5.03A. These releases, and later releases, support Microsoft Windows 2000 Server and Windows 2000 Advanced Server as well as Microsoft Service Pack 3.

Upgrade/Migration Considerations

Many customers implement Microsoft Windows 2000 in stages requiring new installation on some hardware while upgrading or migrating older hardware to Windows 2000. We recommend that you review the white papers *Upgrading to Windows 2000 on Compaq Server Products* and *Migrating to Windows 2000 on Compaq Server Products* available in our Windows 2000 Server Reference Library at
wwss1pro.compaq.com/support/reference_library/viewreferencelibrary.asp?countrycode=1000&catid=773&famid=1978&prodid=2010|Microsoft%20Windows%202000%20Server.

These documents specifically address the issues relevant to upgrading to Windows 2000 and migrating server hardware while performing an upgrade.

Supported Server Platforms

Microsoft Windows 2000 Server and Windows 2000 Advanced Server is supported on the following ProLiant and Prosignia servers listed in Tables 1A and 1B. Table 1A lists the minimum and latest available ROMPaq Revisions for the ProLiant and Prosignia platforms supported during the initial release of Windows 2000.

Table 1A. Supported System Platforms for Windows 2000

Server Platform	ROM Family	Minimum ROMPaq Revision	Version	Latest Available ROMPaq Revision	Version
ProSignia 200	P05 and P01	4.02A	12-30-98	4.04A	06-21-00
Prosignia Server 720	D01/F01	4.00A	12-02-98	4.06A	06-21-00
Prosignia Server 740	S01	4.01A	04-21-99	4.09A	12-08-00
ProLiant 400	D01/F01	4.01A	12-02-98	4.01A	06-24-99
ProLiant 800	P02 and P18	4.02A	12-30-98	4.08A	07-31-99
	P14	4.04A	04-21-99	4.15A	04-09-02
ProLiant 850R	P04	4.04A	12-30-98	4.08A	06-21-00
ProLiant 1200	E35	4.03A	03-02-99	4.04A	07-31-99
ProLiant 1500	E12 and E27	4.01A	08-17-98	4.03A	07-31-99

continued

Table 1A. Supported System Platforms for Windows 2000 *(continued)*

Server Platform	ROM Family	Minimum ROMPaq Revision	Version	Latest Available ROMPaq Revision	Version
ProLiant 1600	E34	4.03A	03-02-99	4.08A	06-21-00
	P08	4.04A	04-21-99	4.14A	12-08-00
ProLiant 1850R	P07	4.04A	04-21-99	4.15A	04-09-02
ProLiant 2500	E24	4.02A	12-30-98	4.08A	06-21-00
	E50	4.03A	01-14-99	4.14A	12-08-00
ProLiant 3000	P09	4.04A	04-21-99	4.15A	09-02-99
	E39	4.03A	03-02-99	4.08A	06-21-00
ProLiant 4500	E14	4.01A	08-17-98	4.03A	07-31-99
ProLiant 5000	E16	4.01A	08-17-98	4.03A	07-31-99
ProLiant 5500	E39	4.03A	03-02-99	4.08A	06-21-00
ProLiant 5500 Xeon	P12	4.04A	04-02-99	4.15A	04-09-02
ProLiant 6000	E20	4.03A	12-30-98	4.08A	04-12-00
ProLiant 6000 Xeon	P40	4.04A	02-26-99	4.08A	04-12-00
	P43	4.04A	02-26-99	4.08A	04-12-00
ProLiant 6400R	P11	4.04A	03-04-99	4.14A	12-08-00
ProLiant 6500	E25	4.03A	12-30-98	4.08A	04-12-00
ProLiant 6500 Xeon	P11	4.04A	03-04-99	4.14A	12-08-00
ProLiant 7000	E40	4.03A	12-30-98	4.08A	04-12-00
ProLiant 7000 Xeon	P40	4.04A	02-26-99	4.08A	04-12-00
	P43	4.04A	02-26-99	4.08A	04-12-00
ProLiant 8000	P41	4.04A	02-26-99	4.05A	01-03-02
ProLiant 8500	P42	4.04A	02-26-99	4.05A	01-03-02

Note 1: Many of these devices have firmware upgrades available through the Options ROMPaq. The latest version of the Options ROMPaq is on the Compaq website at www.compaq.com/support/files/server/ROMPAQ/index.html.

Table 1B lists the latest ROMPaq version for the remainder of the ProLiant servers family as of the time of publication.

Table 1B. Additional System Platforms for Windows 2000

Server Platform	ROM Family	ROMPaq Version	ROM Date
ProLiant BL10e	I03	N/A	01/04/02
ProLiant CL1850	P07	4.14A	07/20/01
ProLiant CL380	P17	4.07A	08/04/01
ProLiant DL320	D05	4.03A	09/10/01
ProLiant DL320 (with server feature board)	F05	4.03A	09/10/01
ProLiant DL360	P21	4.09A	08/03/01
ProLiant DL360 G2	P26	N/A	N/A
ProLiant DL380 (667-1000 MHz)	P17	4.08A	08/04/01

continued

Table 1B. AdditionalSystem Platforms for Windows 2000 *(continued)*

Server Platform	ROM Family	ROMPaq Version	ROM Date
ProLiant DL380 G2 (1133 MHz and greater)	P24	4.00A	08/28/01
ProLiant DL580	P20	4.05A	04/05/01
ProLiant DL580 G2	P22	N/A	N/A
ProLiant DL760	P46	4.00A	02/16/01
ProLiant ML330 G2	D10	N/A	10/23/01
ProLiant ML330	D03	4.06A	05/21/01
ProLiant ML330 (with server feature board)	F03	4.06A	05/21/01
ProLiant ML330e	D06	4.01A	08/03/01
ProLiant ML350 (1 GHz)	D04	4.09A	08/04/01
ProLiant ML350 (1 GHz with server feature board)	F04	4.09A	08/04/01
ProLiant ML350 (600, 733, 800, 866, 933 MHz)	D02	4.08A	05/21/01
ProLiant ML350 (600, 733, 800, 866, 933 MHz with server feature board)	F02	4.08A	05/21/01
ProLiant ML350 G2 (1133 MHz and greater)	D11	4.00A	10/23/01
ProLiant ML370 (667-1000 MHz)	P17	4.09A	08/04/01
ProLiant ML370 G2 (1133 MHz and greater)	P25	4.00A	08/28/01
ProLiant ML530	P19	4.08A	08/04/01
ProLiant ML570	P20	4.05A	04/05/01
ProLiant ML750	P45	4.00A	10/23/01

The latest version of the Options ROMPaq can be obtained on our website at www.compaq.com/support/files/server/us/index.html. For further details concerning ROMPaqs, refer to our website at www.compaq.com/support/files/server/us/locOsCat/20_16.html.

Supported Software

Table 1 lists supported utilities and the version needed for Microsoft Windows 2000.

Table 1. Supported Utilities for Windows 2000

Utility	Version	Location
Array Configuration Utility	2.58 A	www.compaq.com/support/files/server/us/download/10880.html
Insight Manager 7 SP 1	3.1 A	www.compaq.com/support/files/server/us/download/14530.html
Insight Manager XE	2.1C	www.compaq.com/support/files/server/us/download/10914.html
Server Diagnostics	S11.01 A	www.compaq.com/support/files/server/us/download/14413.html
System Configuration Utility	2.58A	www.compaq.com/support/files/server/us/locate/1950.html

continued

Table 1. Supported Utilities for Windows 2000 *(continued)*

Utility	Version	Location
Survey Utility	2.42.26.0	www.compaq.com/support/files/server/us/download/13635.html
Remote Monitor Service	5.0.2.0	Support Paq 5.40
Integrated Management Display Utility	5.0.2.0	Support Paq 5.40
Enhanced Integrated Management Display Service	5.0.2.0	Support Paq 5.40
Integrated Management Log Viewer	5.0.5.0	Support Paq 5.40
Power Supply Viewer	5.0.2.0	Support Paq 5.40
Power Down Manager	5.0.2.0	Support Paq 5.40
Array Redundancy Software	5.0.2.0	Support Paq 5.40
Rack Infrastructure Interface Service	1.6.2195.0	Support Paq 5.40
Legacy Port Configuration Component	1.5.2195.3	Support Paq 5.40
Remote Insight Diskette Image Utility	1.00 A	www.compaq.com/support/files/server/us/download/7720.html
Remote Insight Lights-Out Edition Group Administration Utility	1.21 A	www.compaq.com/support/files/server/us/download/10838.html
Version Control Repository Manager -- Promotional Version	1.0.1288.1	www.compaq.com/support/files/server/us/download/9958.html

Supported Management Options and Agents

Table 2 lists supported management options and driver revisions needed to interface with Microsoft Windows 2000.

Table 2. Supported Management Options for Windows 2000

Option	Driver	Location
Integrated System Management Controller Driver	CPQCSM.SYS, SYSMGMT.SYS	Support Paq 5.40
System Management Controller Driver	CPQSS.SYS, SYSMGMT.SYS	Support Paq 5.40
Remote Insight Board Driver	CPQRIB.SYS	Support Paq 5.40
Remote Insight Lights-Out II Board Driver	CPQRIB2.SYS	Support Paq 5.40
iLO Advanced System Management Controller Driver	CPQASM2. SYS, SYSMGMT.SYS	Support Paq 5.40
Advanced System Management Controller Driver	CPQASM. SYS, SYSMGMT.SYS	Support Paq 5.40
Integrated Lights-Out Management Interface Driver	CPQCIDRV.SYS	Support Paq 5.40

Table 3 lists supported management agents provided with Microsoft Windows 2000.

Table 3. Supported Utilities for Windows 2000

Agent	Version	Location
Foundation Agent	5.40.0.0	www.compaq.com/support/files/server/us/index.html
Storage Agent	5.40.0.0	www.compaq.com/support/files/server/us/index.html

continued

Table 3. Supported Utilities for Windows 2000 *(continued)*

Agent	Version	Location
NIC Agent	5.40.0.0	www.compaq.com/support/files/server/us/index.html
Server Agent	5.40.0.0	www.compaq.com/support/files/server/us/index.html
Version Control Agent	1.0.2050.1	www.compaq.com/support/files/server/us/download/13697.html

Supported Storage Options

Table 4 lists supported storage options and driver revisions needed to interface with Windows 2000.

Table 4. Supported Storage Options for Windows 2000

Option	Driver	Location
4.3 – 36-GB Hard Disk Drives	N/A	No driver required
4/8-GB SLR Tape Drive	*TANDQIC.SYS*	Included on Windows 2000 CD
4x-32x CD-ROM Drives		Included on Windows 2000 CD
DDS2 4/16-GB Autoloader		Included on Windows 2000 CD
DDS3 12/24-GB DAT Autoloader		Included on Windows 2000 CD
DAT Tape Drives		Included on Windows 2000 CD
DLT Autoloader M35/70		Included on Windows 2000 CD
DLT Library 7000		Included on Windows 2000 CD
DLT Tape Array		Included on Windows 2000 CD
StorageWorks Fibre Channel Support	*CPQFCAC.SYS*	Support Paq 5.40
Fibre Channel Host Controller /E	*CPQFCALM.SYS*	Support Paq 5.40
Fibre Channel Host Controller /P	*CPQFCALM.SYS*	Support Paq 5.40
Fibre Channel Filter Driver	*CPQFCFTR.SYS*	Support Paq 5.40
Fibre Channel Array	No driver supplied; base functionality only; version 1.22 minimum firmware required	
ProLiant Storage System	No driver supplied; base functionality only	
Smart Array 4200, Smart Array 4250ES, and Integrated Smart Array Controllers	*CPQARRY2.SYS*	Support Paq 5.40
SMART SCSI, SMART-2, Smart Array 221 RAID, Smart Array 3100ES RAID and SMART Array 3200 RAID Controllers	*CPQARRAY.SYS*	Support Paq 5.40; see Notes 2 and 3
32-bit Fast-Wide SCSI-2 Controller /E	*CPQ32FS2.SYS*	CPQFWS2E driver included on Windows 2000 CD
32-bit Fast-Wide SCSI-2 Controller /P	*CPQ32FS2.SYS*	Support Paq 5.40; Symbios driver included on Windows 2000 CD
64-bit Fast Ultra-2 SCSI Controller	*CPQ32FS2.SYS*	Support Paq 5.40; Symbios driver included on Windows 2000 CD
Dual Channel Wide-Ultra SCSI-3 Controller	*CPQ32FS2.SYS*	Support Paq 5.40, Symbios driver included on Windows 2000 CD
Wide-Ultra SCSI-2 Controller	*CPQ32FS2.SYS*	Support Paq 5.40; Symbios driver included on Windows 2000 CD

continued

Table 4. Supported Storage Options for Windows 2000 *(continued)*

Option	Driver	Location
CMD 0649 IDE Ultra DMA Controller Driver	*CMDIDE.SYS*	Support Paq 5.40
64-Bit/66-Mhz Dual Channel Wide Ultra3 SCSI Controller Driver	*ADPU160M.SYS*	Support Paq 5.40
ProLiant Storage System Driver	*PRLNTSS.SYS*	Support Paq 5.40
Integrated Ultra ATA-100 Dual Channel Driver	*MEGAIDE.SYS*	Support Paq 5.40
PCI Hot Plug Controller Driver	*CPQPHP.SYS*	Support Paq 5.40
Smart Array 5x Controller Driver	*CPQCISSE.SYS, CPQCISSM.SYS*	Support Paq 5.40
Drive Array Notification	*CPQDAEN.SYS*	Support Paq 5.40

Note 1: Many of these devices have firmware upgrades available through the Options ROMPaq. The latest version of the Options ROMPaq can be obtained on the Compaq website at http://www.compaq.com/support/files/server/us/index.html.

Note 2: *CPQARRAY.SYS* is included on the Windows 2000 CD. After installing Windows 2000, update the driver with the *CPQARRAY.SYS* included on SP10633 to ensure the highest level of service and reliability.

Note 3: A special version of *CPQARRAY.SYS* is necessary for PCI Hot Plug functionality. For more information on obtaining this driver and other Windows 2000 hot-plug information from Compaq, the section "FYI: Moving to Windows 2000."

Supported Network Adapters

Table 5 lists supported network adapters, including the minimum firmware and driver revisions needed to interface with Windows 2000.

Table 5. Supported Compaq Network Adapters for Windows 2000

NIC	Driver	Location
NetFlex-3/E	*NETFLX3.SYS*	Support Paq 5.40
NetFlex-3/P	*NETFLX3.SYS*	Support Paq 5.40
NetFlex-3 Embedded	*NETFLX3.SYS*	Support Paq 5.40
Netelligent 10T/2 TX Embedded UTP/Coax	*NETFLX3.SYS*	Support Paq 5.40
Netelligent 10/100 TX Embedded UTP/AUI	*NETFLX3.SYS*	Support Paq 5.40
Netelligent 10/100 TX Embedded UTP	*NETFLX3.SYS*	Support Paq 5.40
Netelligent 10 TX PCI UTP Controller	*NETFLX3.SYS*	Support Paq 5.40
Netelligent 10/100TX PCI UTP Controller	*NETFLX3.SYS*	Support Paq 5.40
Netelligent Dual 10/100TX PCI UTP Controller	*NETFLX3.SYS*	Support Paq 5.40
Netelligent 10/100 TX	*NETFLX3.SYS*	Support Paq 5.40
Netelligent 10 T/2 PCI UTP Coax Controller	*NETFLX3.SYS*	Support Paq 5.40
Netelligent 10/100 TX WOL PCI UTP - Intel	*N100NT5.SYS*	Included on Windows 2000 CD
Compaq NC1120 Ethernet NIC	*N100NT5.SYS*	Included on Windows 2000 CD

continued

Table 5. Supported Compaq Network Adapters for Windows 2000 *(continued)*

NIC	Driver	Location
Compaq NC3120 Fast Ethernet NIC	*N100NT5.SYS*	Included on Windows 2000 CD
Compaq NC3121 Fast Ethernet NIC	*N100NT5.SYS*	Included on Windows 2000 CD
Compaq NC3122 Fast Ethernet NIC	*N100NT5.SYS*	Included on Windows 2000 CD
Compaq NC3123 Fast Ethernet NIC	*N100NT5.SYS*	Included on Windows 2000 CD
Compaq NC3131 Fast Ethernet NIC	*N100NT5.SYS*	Included on Windows 2000 CD
Compaq NC3132 Fast Ethernet Upgrade Module	*N100NT5.SYS*	Included on Windows 2000 CD
Compaq NC3133 Fast Ethernet Upgrade Module	*N100NT5.SYS*	Included on Windows 2000 CD
Compaq NC3160 Fast Ethernet NIC (Embedded)	*N100NT5.SYS*	Included on Windows 2000 CD
Compaq NC3161 Fast Ethernet NIC (Embedded)	*N100NT5.SYS*	Included on Windows 2000 CD
Compaq NC3162 Fast Ethernet NIC (Embedded)	*N100NT5.SYS*	Included on Windows 2000 CD
Compaq NC3163 Fast Ethernet NIC (Embedded)	*N100NT5.SYS*	Included on Windows 2000 CD
Compaq NC6132 Gigabit Module	*N1000NT5.SYS*	Included on Windows 2000 CD
Compaq NC6133 Gigabit Module	*N1000NT5.SYS*	Included on Windows 2000 CD
Compaq NC6134 Gigabit NIC	*N1000NT5.SYS*	Included on Windows 2000 CD
Compaq NC4621 Token Ring NIC	*CPQTRND5.SYS*	Included on Windows 2000 CD
Netelligent 4/16 TR PCI UTP/STP Controller	*CPQTRND4.SYS*	Included on Windows 2000 CD
IBM 16/4 TOKEN RING PCI SPECIAL	*IBMTRP.SYS*	Included on Windows 2000 CD
Netelligent 16/4 PCI IBM UTP/STP Controller	*IBMTRP.SYS*	Included on Windows 2000 CD
Compaq 32-Bit DualSpeed Token Ring Controller	*NETFLX.SYS*	Included on Windows 2000 CD
Compaq NetFlex-2 TR Controller	*NETFLX.SYS*	Included on Windows 2000 CD
Compaq NetFlex/NetFlex-2 ENET/TR Controller	*NETFLX.SYS*	Included on Windows 2000 CD
Compaq NetFlex-2 DualPort ENET Controller	*NETFLX.SYS*	Included on Windows 2000 CD
Compaq NetFlex-2 DualPort TR Controller	*NETFLX.SYS*	Included on Windows 2000 CD
Compaq 100 FDDI PCI DAS Fiber-SC Controller	*SKFPWIN.SYS*	Included on Windows 2000 CD
Compaq 100 FDDI PCI SAS Fiber-SC Controller	*SKFPWIN.SYS*	Included on Windows 2000 CD
Compaq 100 FDDI PCI DAS UTP Controller	*SKFPWIN.SYS*	Included on Windows 2000 CD
Compaq 100 FDDI PCI SAS UTP Controller	*SKFPWIN.SYS*	Included on Windows 2000 CD
Compaq 100 FDDI PCI SAS Fiber-MIC Controller	*SKFPWIN.SYS*	Included on Windows 2000 CD

continued

Table 5. Supported Compaq Network Adapters for Windows 2000 *(continued)*

NIC	Driver	Location
Compaq NC67xx/NC77xx Gigabit Ethernet NIC Driver	*Q57W2K.SYS*	Support Paq 5.40
Compaq Network Teaming and Configuration	*CPQDGD.SYS, CPQGBDD.SYS, CPQKDDP.SYS, FAD.SYS*	Support Paq 5.40
Note: *NETFLX3.SYS* is available on the Windows 2000 CD. However, after installing Windows 2000, update the driver to the version on SP10633 to ensure the highest level of service and reliability.		

The latest ROMPaq versions support Microsoft Windows 2000 Server and Windows 2000 Advanced Server. Use the latest ROMPaq for your server and options available through www.compaq.com/support/files/server/us/index.html.

Documents are available at our website to assist in determining the ROM version and family of your ProLiant and ProSignia server products. You can determine your system ROM family code, family table and version through our website at www.compaq.com/support/files/server/us/romtabl.htm.

Support Video

Table 6 lists supported video controllers needed to interface with Windows 2000.

Table 6. Supported video controllers

Compaq Video Controller	Driver	Location
Compaq ATI RAGE IIC Video Controller Driver	*ATI2MPAH.SYS*	Support Paq 5.40

Hardware System Requirements

The minimum requirements listed here pertain to the Microsoft Windows 2000 network operating system only and do not include the requirements for software applications running on your system. Please check your application requirements to make certain your system can run both the operating system and your software. Most software vendors have this information posted on their website.

Note: Windows 2000 Professional Edition is not supported for use on ProLiant and ProSignia servers.

To use Microsoft Windows 2000 Server, your equipment must meet the requirements described in Table 7 and Table 8.

Table 7. Microsoft Windows 2000 Server hardware requirements

Feature	Minimum Configuration	Recommended Configuration
Processor (supports up to 4 processors)	133-MHz Pentium compatible	Pentium II or better 233 MHz or greater
RAM	128 MB	256 MB to 4 GB
Monitor	VGA	SVGA
Disk space	2 GB with minimum of 1 GB available	4 GB available space

Requirements for Microsoft Windows 2000 Advanced Server appear in Table 8.

Table 8. Microsoft Windows 2000 Server hardware requirements

Feature	Minimum Configuration	Recommended Configuration
Processor (supports up to 8 processors)	133-MHz Pentium compatible	Pentium II or better 233 MHz or greater
RAM	128 MB	256 MB to 8 GB
Monitor	VGA	SVGA
Disk space	2 GB with minimum of 1 GB available	4 GB available space

Note: Available disk space refers to free disk space on the partition to contain the system files. Additional space is required if you copy the Windows 2000 CD contents to the hard disk during installation and for a network installation.

Cluster Configurations

The following cluster solutions are supported for use with Windows 2000 Server and Advanced Server:

- ProLiant CL380

- ProLiant CL1850

- ProLiant DL380 Packaged Cluster

- ProLiant Cluster HA/F100

- ProLiant Cluster HA/F200

- ProLiant Cluster HA/F500, HA/F500 Enhanced, and HA/F500 DT

For details concerning these Compaq cluster configurations, refer to our website, www.compaq.com/solutions/enterprise/highavailability-win2k.html.

System ROMs and Option ROMs for Microsoft Windows 2000

The latest Windows 2000-compatible firmware for your ProLiant server can be located through our website at www.compaq.com/support/files/. This site provides special firmware upgrades for ProLiant servers and server options including both System and Option ROMPaqs. The latest SmartStart for Servers Support Software CD also contains ROMPaqs to take advantage of Windows 2000 enhancements.

Update your system according to the instructions included with the firmware before installing the operating system. To determine the correct ROM for your server, check the website at www.compaq.com/support/files/server/us/romhowto.html.

Server Setup

Newer model ProLiant servers contain a ROM-Based Setup Utility (RBSU) embedded in the server ROM. RBSU takes the place of the System Configuration Utility (SCU). To find these features by ProLiant server, refer to Table 9.

Storage Array Configuration

The Option ROM Configuration for Arrays (ORCA) utility embedded in the server ROM configures the latest storage arrays. ORCA replaces the Array Configuration Utility (ACU) for servers with the following controllers:

- Smart Array 5312

- Smart Array 5304

- Smart Array 5302

- Smart Array 4250ES

- Smart Array 532

- Smart Array 431

- Smart Array 5i Plus

- Smart Array 5i

- Integrated Smart Array

Additional information is available at our website at
www.compaq.com/products/servers/proliantstorage/arraycontrollers/index.html

Additional Components

Other components, such as storage and 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 components benefit from the enhanced drivers available in Support Paq for Microsoft Windows 2000 (Support Paq) on the Server Support Software Center website at www.compaq.com/support/files/server/us/locate/1989.html.

Running the Support Paq software after the installation of Microsoft Windows 2000 replaces the drivers installed from the Windows 2000 CD.

If you install drivers after installing Service Pack 3 (SP3) and later uninstall SP3, you might have to reinstall the drivers. As with all Microsoft Service Pack uninstall procedures, registry changes can remove drivers or cause them to behave erratically.

Support Software

These software packages facilitate your installation, optimize your performance, and manage your Windows 2000 environment:

- Management Agents

- Server Diagnostics

- Support Paq for Windows 2000

Older model Prosignia and ProLiant systems sold prior to development of ROM-based setup tools (RBSU) used the following CD-based utilities to configure the server prior to OS installation:

- System Configuration Utility

- Array Configuration Utility

If you install Microsoft Windows 2000 to a separate partition on a server that already runs Windows NT 4.0, also obtain the latest Support Paq for Windows NT 4.0 and install it.

The latest versions of this software for your industry standard server are available through our website, www.compaq.com/support/files/ or on the SmartStart CD.

Installation

This section provides detailed instructions for installing Microsoft Windows 2000 either 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.

Be aware that 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.

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 during the installation process. During the installation, Windows 2000 converts all NTFS partitions to NTFS5 partitions automatically. Windows NT 4.0 can read these partitions with the Microsoft Service Pack 4 or later installed; Windows NT 3.51 cannot read these partitions.

Before You Begin

Make certain you have enough space to create a partition large enough to install Windows 2000, Support Paq for Microsoft Windows 2000, and your applications. 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 www.microsoft.com/ntserver/downloads/default.asp. Also, install the latest Support Software for Microsoft Windows NT available through the Server Software Download Center website at www.compaq.com/support/files.

Next, obtain the SmartStart CD or download the Support Paq for Microsoft Windows 2000 from http://www.compaq.com/support/files/server/us/locate/1989.html. Support Paq for Microsoft Windows 2000 replaces the 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 Windows 2000 installation, copy the Support Paq files directly to the partition you plan to use for the installation.

For systems sold before the advent of ROM-based setup utilities (RBSU, ORCA), the following utilities are available as Support Software containing diskette image files:

- Array Configuration Utility (www.compaq.com/support/files/server/us/locate/2012.html)

- System Configuration Utility (www.compaq.com/support/files/server/us/locate/1950.html)

These utilities are not required for servers with RBSU/ORCA.

SmartStart Configuration

If you are performing a fresh installation to an empty hard drive, it is recommended that you use SmartStart to configure your server. Smart Start provides Assisted, Manual, and Replicated installation approaches to setting up your pre-OS installation and installing the necessary software

after OS installation. Smart Start is included in the ProLiant Essentials Foundation Pack included with every ProLiant server. Updates are available on the Smart Start website at www.compaq.com/smartstart.

The SmartStart Scripting Toolkit, also included in the ProLiant Essentials Foundation Pack, offers scripting tools for high volume server deployment and enables unattended automated installation. To learn more about this product and review its best practices guide, check the website, www.compaq.com/manage/toolkit.html. A white paper on this tool entitled *Compaq Delivers the Next Generation Server Deployment Tools: SmartStart Scripting Toolkit* can be found at ftp.compaq.com/pub/products/servers/management/ssstk_WP.pdf.

Included with every ProLiant BL10e server, and recommended for large numbers of ProLiant ML/DL servers, is the ProLiant Essentials Rapid Deployment Pack. Integrating the Altiris eXpress Deployment Server and the SmartStart Scripting Toolkit, the Rapid Deployment Pack provides a simplified point-and-click solution for deploying and maintaining standard server software configurations. For additional information on this advanced deployment tool, visit http://www.compaq.com/products/servers/management/rapiddeploy.html.

Installation Steps

Complete the following steps to install Microsoft Windows 2000 on your server.

1. Prepare your pre-boot environment prior to booting the Windows 2000 OS. This involves the following steps:

   a. Update the System and Option ROMs as necessary for your hardware.

   b. Setup the system and boot partition if necessary.

   c. Configure your storage arrays.

   It is highly recommended that you utilize SmartStart to facilitate all of these steps and follow the steps provided in the SmartStart documentation. In addition to providing a step-by-step approach to complete system software installation, SmartStart also intelligently guides the system setup based on the availability of ROM-based server setup and storage array configuration tools.

   IMPORTANT: Existing NTFS partitions automatically upgrade to NTFS 5 partitions. 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.

2. Boot from the Microsoft Windows 2000 CD to install the operating system. You need your product key code and licensing information. When prompted, create a new partition with at least 1 GB of free space. Detailed instructions for installing Windows 2000 can be found in the Help files on the Windows 2000 CD.

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

3. Run *SETUP.EXE* to launch the Support Paq for Microsoft Windows 2000 after the base operating system installs. This installation utility analyzes the system configuration and installs all necessary Compaq device drivers. The *Compaq Support Paqs (CSP) Deployment Utilities User Guide* provides instructions on how to pre-configure and deploy smart components within the CSP.

Note: Some devices produced by Compaq are hidden from Windows 2000 until you install the appropriate driver for the device. To install drivers for hardware discovered after the Windows 2000 installation, use the manual installation option.

The opening screen lists all the drivers but only those drivers necessary for your system are installed. Readme and Help files are available with the software. Figure 1 shows the opening screen for the Support Paq for Windows 2000.
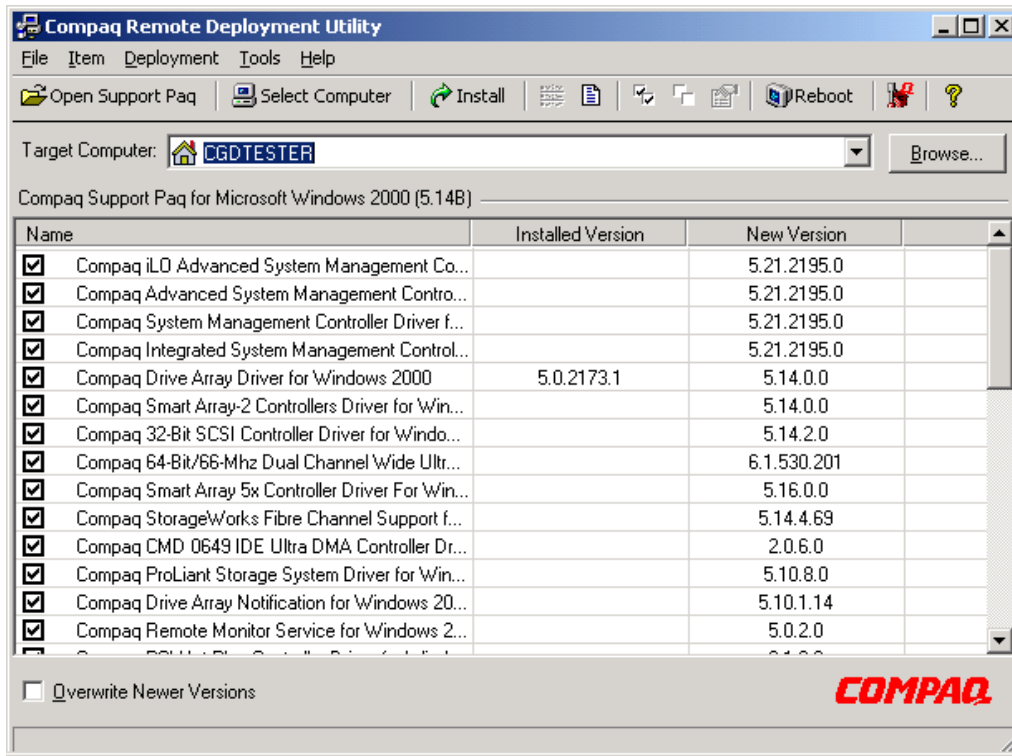

Figure 1. Opening screen for the Support Paq for Microsoft Windows 2000

4. Restart the server to complete the driver installation.

5. Install Microsoft Service Pack 3 by inserting the CD and selecting **Click Here to Install**.

Features

Several system tools and utilities transfer without change to Microsoft Windows 2000. These tools and utilities now use the Installation Wizard screen. After the initial screen, most utilize the same GUI as seen in Windows NT including the Array Configuration Utility, Integrated Management Log Viewer, Power Down Manager, and Power Supply Viewer.

Some HP features change in Microsoft Windows 2000 and SP3. You might have to reconfigure the Integrated Management Display Utility after installing Microsoft Windows 2000 but the GUI will be familiar. Other feature changes include Compaq Management Agents for Windows 2000, PCI Hot Plug implementation, NIC teaming, and mixed processor steppings.

Management Agents

The Management Agents, by default, are installed with the Support Paq for Microsoft Windows 2000. In Windows 2000, the default security setting for SNMP communities is *READ ONLY*. Because the 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 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*.

Management agents are included in the Support Paq and on the SmartStart and Management CDs. The latest versions are also available through our website at www.compaq.com/support/files/.

- Foundation Agents

- NIC Agents

- Server Agents

- Storage Agents

Once you install the Management Agents, you can use Insight Manager or Insight Manager 7 over a network connection to manage your Windows 2000 servers. Insight Manager Console currently runs under Microsoft Windows 95, Microsoft Windows 98, Microsoft Windows NT 4.0, and Microsoft Windows 2000. Insight Manager 7 runs under Microsoft Windows NT 4.0 and Windows 2000.

Note: Read the accompanying Help files available with the software, as they contain valuable information needed for proper installation.

Remote Insight Lights-Out Edition Management

Remote Insight Lights-Out Edition (RILOE) may be used to deploy a 'headless' server running Microsoft Windows 2000 that does not require a monitor, keyboard, or a mouse. Remote Insight Lights-Out Edition provides the ability for virtual presence and control to geographically dispersed servers. IT managers can use the RILOE to perform most of the in-front-of-the-server operations remotely using a standard Web browser. The hardware-based virtual graphical console and virtual floppy can be used to install, configure, monitor, update reboot, and troubleshoot ProLiant servers located in the data center or remote sites.

Integrated Lights-Out Remote Management

Integrated Lights-Out (iLO) is the next generation of Lights-Out technology integrated on the system board. The basic Lights-Out management features of iLO such as virtual power button, diagnostics, status and logs are provided as standard components of the server, free of charge. The standard features of iLO are referred as iLO Standard. Advanced functionality of the iLO, referred as iLO Advanced, can be licensed with the optional ProLiant Essentials Integrated Lights-Out Advanced Pack. With the iLO Advanced Pack, the user has full functionality including virtual graphical console and virtual floppy. This functionality ships standard with RILOE. RILOE is not a supported option for iLO-based systems.

Using virtual floppy, the user can designate a virtual floppy image, power on the server, and complete a network-based installation. This technology can be used for deployment of Windows

2000 when integrated with the SmartStart Scripting Toolkit (boot floppy method), or any other network based installation. For more information on how to use RILOE or iLO or for information on purchasing the iLO Advanced Pack, go to www.compaq.com/manage.

ProLiant servers offering iLO capability (at time of publication) are listed in Appendix A.

ProLiant Essentials Workload Management Pack

Developed exclusively for Windows 2000, Compaq ProLiant Essentials Workload Management Pack featuring Resource Partitioning Manager (RPM) increases the stability and availability of applications under Windows 2000 to allow customers to confidently deploy multiple applications on a single server. RPM builds upon the embedded job object technology in Windows 2000 to provide a quick and easy way to manage processor and memory resources dynamically. For more information, please consult http://wwss1pro.compaq.com/support/reference_library/viewdocument.asp?countrycode=1000&prodid=2010|Microsoft%20Windows%202000%20Server&source=TC020401BP%20.xml&dt=21.

Advanced Memory Protection

Businesses' dependence on industry-standard servers to run memory-intensive applications with Windows 2000 is pushing the memory capacity of servers to new levels. As server memory capacities increase, so does the likelihood of memory errors that can corrupt data and cause servers to crash. Advanced Memory Protection, employing the same familiar principles used to protect data stored on disks, provides increased fault tolerance for applications that require higher levels of availability. Advanced Memory Protection is comprised of the following technologies:

Online Spare Memory

Online Spare Memory is a spare bank of DIMMs for system memory failover. When a DIMM in system memory reaches a defined threshold of single-bit errors, the system will failover to the spare bank without intervention or server interruption. Online Spare Memory benefits customers with sites that cannot afford unscheduled downtime from memory errors, yet can wait until scheduled downtime to replace failed DIMMs.

Hot-Plug Mirrored Memory

A redundant memory board mirrors system memory, which provides protection against correctable (single-bit) and previously uncorrectable (full 8-bit multi-bit error) memory errors. It also allows the user to hot plug suspect or failed memory without shutting down the server. Hot Plug Mirrored Memory is a more fault-tolerant option for sites that cannot afford downtime from memory errors and do not want to wait until scheduled downtime to replace failed DIMMs.

Hot-Plug RAID Memory

Much like with RAID disk technology, Hot-Plug RAID Memory provides the highest level of fault tolerance with a minimum of spare DIMMS.

ProLiant servers offering Advanced Memory Protection are listed in Table 9. For more information on Compaq Advanced Memory Protection, see www.compaq.com/products/servers/technology/memoryprotection.html.

Wake on LAN (WOL)

A system that supports Wake on LAN can remain available to a systems administrator during its normal downtime. Once the machine is awakened, the systems administrator can remotely control, audit, debug or manage the machine. ProLiant servers supporting WOL (at time of publication) are listed in Table 9.

Pre-boot eXecution Environment (PXE)

PXE allows a new or existing system to boot over the network and download software, including Windows 2000, which is stored on a management or deployment server at another location on the network. PXE automates setting up and configuring new systems, enables decentralized software distribution, and remote troubleshooting and repairs.

PXE can be used to deploy Windows 2000 on any server. For information on PXE requirements and setting up a PXE server, view the white paper at ftp://ftp.compaq.com/pub/products/servers/management/pxe_wp.pdf. Additional information on PXE can be obtained on the Intel website at ftp://download.intel.com/labs/manage/wfm/download/pxespec.pdf. ProLiant servers supporting PXE (at time of publication) are listed in Table 9.

PCI Hot Plug

For Windows 2000, the implementation of PCI Hot Plug functionality enables hot adds, hot replace, and hot remove in all PCI Hot Plug-capable slots.

IMPORTANT: To properly implement PCI hot plug with Service Pack 3, use SmartStart Release 4.90 or SoftPaq 13158. Locate the SoftPaq through our website at www.compaq.com/support/files/server/US/download/8773.html.

Avoid surprise-style hot removal operations by powering down the device before removing it from the PCI Hot Plug slot. This can be done with the PCI Hot Plug Unplug/Eject icon, through the Eject/Remove applet of Windows 2000, or through the Compaq PCI Slot Server Request button on servers so equipped.

The interface screen for PCI Hot Plug in Windows 2000 looks different from the one in Windows NT as shown in Figure 2.
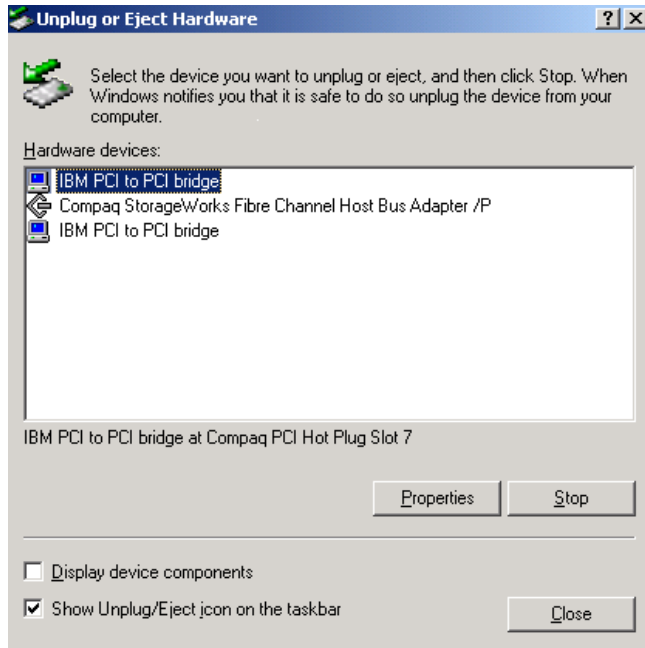
Figure 2. PCI Hot Plug interface screen

In addition, the PCI Hot Plug Unplug/Eject icon appears as shown in the system tray of the task bar in Figure 3.

Figure 3. PCI Hot Plug Unplug/Eject icon

Compaq Storage Agents support the hot add and hot remove of storage controllers with Release 4.61 of the Compaq Storage Agents and later releases (Release 5.40, used in our testing, includes the proper drivers for this support).

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 www.compaq.com/support/techpubs/whitepapers/ECG0710399.html.

Teamed NICs

HP engineers developed a new driver to team NICs and better utilize them in a Windows 2000 environment. After completing the installation, the NICs show as a broken connection on the lower right-hand corner of your task bar as shown in Figure 4.

Figure 4. Task bar showing broken NIC connections

- Load the appropriate drivers for your NICs through Device Manager.

- Check the box titled Install One of the Other Drivers when you see the screen in Figure 5. Driver files search results screen."
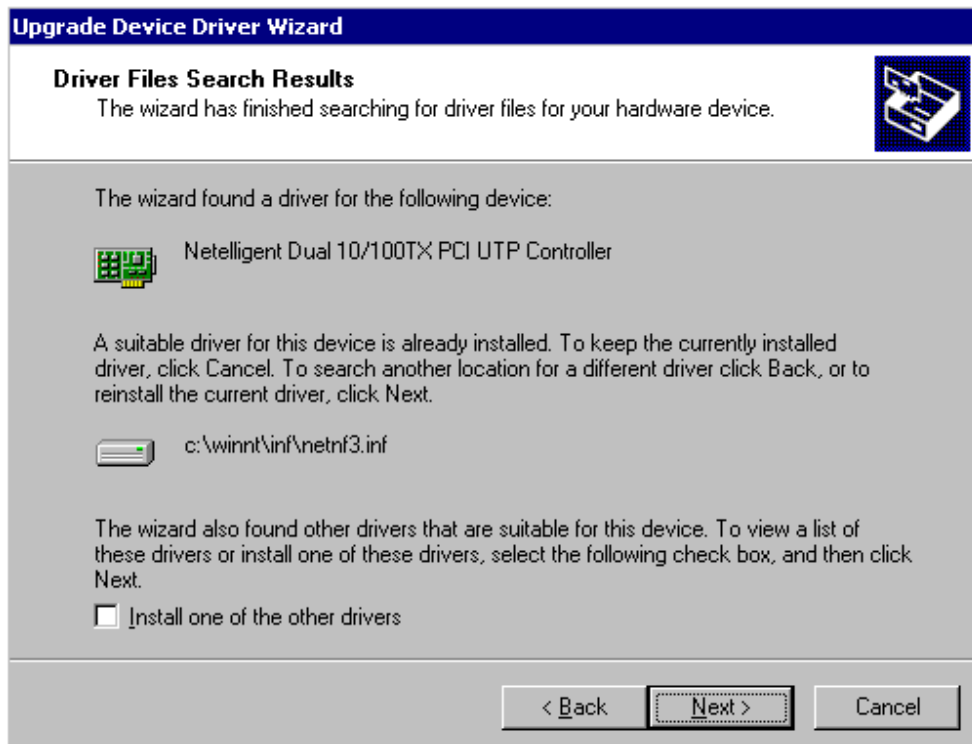
Figure 5. Driver files search results screen

- Install the NIC teaming driver from Support Paq for Windows 2000 Version 5.16A or later by following the instructions provided with the Support Paq.

Troubleshooting

This section provides information on issues reported in testing of Microsoft Windows 2000 and SP3. It includes solutions for installation issues with options and drivers and implementation of many ProLiant value-add features. We also cover adding an EISA controller after the installation of Windows 2000 and the manual installation of the System Management Driver.

Installation Issues and Solutions for Microsoft Windows 2000

The following section provides information on installation-related topics to help you successfully implement Windows 2000.

The ProLiant Storage System hardware device (SCSI Backplane) needs the Compaq driver to display in Device Manager

The ProLiant Storage System device displays correctly if the Compaq 32-bit SCSI Controller Driver (available on Compaq Support Paq for Microsoft Windows 2000) is loaded and the system restarted.

Solution: Use *cpq32fs2.sys* (the Compaq 32-bit SCSI Controller driver).

Accessing Custom Configuration during Unattended Install

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

Solution: To access Custom Configuration, wait until the installation sequence prompts for the domain. Select the **Back** button to access dialog boxes used to configure the network, and the network controller devices.

Multi-monitor Display Configuration ATI Controller requires Slot 1 to function properly

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 not in the first slot.

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

Compaq driver updates after Windows 2000 installation

When you install a new device, 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 uses that temporary directory rather than using the path to the existing driver.

Solution: 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, and then Select **Install** for the remaining selected driver, disregarding the driver install log, reporting it up-to-date. Running the installation will update the driver for the new device(s) added.

When you select Rescan Disks 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, Selecting **Rescan Disks** might result in Microsoft 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…"

Solution: Select Rescan Disks a second time to correct this problem; Windows 2000 then sees the drive properly.

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.

Solution: 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 "Adding an EISA Fibre Channel Controller."

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

Solution: 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 being 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 cannot detect and change the resource settings for an EISA controller. Windows 2000 expects 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 connector in Device Manager

Solution: Some Compaq servers display a yellow exclamation mark in the Windows 2000 Device Manager. This is expected behavior. These Compaq servers were not designed to implement the USB functionality and no problem actually exists.

CPQARRAY.SYS AND CPQARRY2.SYS cause timeout error messages in the event log at startup

Solution: At startup, *CPQARRAY.SYS* and *CPQARRY2.SYS* cause timeout error messages in the event log. You may see a message in the event log that read:

> *CPQARRY2 - device\SCSI\CPQARRY21 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 Windows 2000 expects. Despite the timeout messages, the drivers do install and the controllers function correctly.

Using the F6 key to install Compaq drivers

You can press the **F6** key to interrupt the text mode setup and install OEM-supplied drivers at the prompt:

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

However, Compaq drivers loaded through this procedure will be replaced with the drivers on the Windows 2000 CD during installation.

Solution: Unless otherwise instructed, it is recommended that you continue 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. The manufacturer should address third-party hardware drivers and their installation.

Special installation procedures for Compaq Storage drivers

After the system has been rebooted following the initial installation of the Support Paq for Microsoft Windows 2000 , event notification drivers for storage devices are installed by rerunning the Compaq Support Paq installation.

Check your hardware documentation to determine which driver is required for operation of your controller.

The ProLiant Storage System Plug and Play device (for SCSI event reporting), the Drive Array Event Notification device (for array event reporting), and the Compaq Smart Array 5x Notification device are not visible under Device Manager until all Compaq SCSI and RAID (miniport) drivers are installed. The first pass installs the Compaq drivers *CPQ32FS2.SYS* or ADPU160M.SYS (for SCSI), *CPQARRAY*.SYS (for older array controllers) or *CPQARRY2.SYS* or CPQCISSM.SYS (for newer array controllers).

To install completely, you must run the Compaq Support Paq a second time, during which the drivers *PRLNTSS.SYS* , *CPQDAEN.SYS, and CPQCISSE.SYS* will be properly loaded, completing the installation.

Feature Implementation

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

COM 3 Might Display as a Not Supported Device

After installing Windows 2000 on a server with the Compaq 56K Netelligent ISA internal modem installed, COM 3 might be displayed as an unsupported device in Device Manager. The Device Status message says

> *This device cannot start. (Code 10)*

Solution: This also shows up as a problem device under the Computer Management snap-in, under System Information | Components | Problem Devices.

The modem functions, when set to Plug and Play Mode, even if Windows 2000 displays COM 3 as unsupported.

Device Manager Shows Error for the VGA and VGASave Devices On a ProSignia 200 Server

Under Device Manager | Show Hidden Devices, the VGASave device displays with a yellow bang and the VGA device is grayed out. Both show the same message under Device Status on the Properties screen:

> *This device is not present, is not working properly, or does not have all its drivers installed. (Code 24).*

Solution: However, the device functions correctly. HP is working with Microsoft to resolve the erroneous message.

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.

Solution: If the Display Properties screen appears, ensure the settings are correct for your configuration and Select **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

After installation completes and the system has restarted, the Compaq V70 monitor can be selected and the driver installed through the Control Panel or the desktop.

Solution: From the Desktop, right click and Select **Properties** | **Advanced** | **Monitor** | **Properties**. The V70 monitor will install from the Windows 2000 media. HP is working with Microsoft to correct this problem.

Hibernation not supported on ProSignia Server 720 & ProLiant 400 Server

Solution: Hibernation is not supported for the ProSignia Server 720 or the ProLiant 400 Server with current ROM revisions.

Hot Plug Status Indicator not updated when Fiber Optic Cable removed

Solution: In Microsoft 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

Solution: Microsoft 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.

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

With the server down, and power removed from the system, install the controller in the server.

1. Run the System Configuration Utility to add the controller and configure changes to system BIOS.

2. Restart the system.

3. Start the hardware wizard by right clicking on **My Computer** | **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. Select **Next | Finish**.

10. Restart the system.

Loading the Driver

After the restart completes, the Found New Hardware wizard will display.

This process resolves the device listed as Unknown Device under the Device Manager tree. This Unknown Device, the Compaq Fibre Channel Controller /E, requires the *CPQFCALM.SYS* driver.

Note: The device Compaq Fibre Channel Host Controller (non PnP), displayed under Device Manager with a yellow exclamation point, can now be removed from the Device Manager tree.

Ensure that the latest version of *CPQFCALM.SYS* is readily available.

1. Select **Next | Display**.

   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.

2. Select **SCSI and RAID Controllers** | **Have Disk**.

3. Browse to the latest Compaq version of *CPQFCALM.INF* and double-click the file.

4. Select **Compaq StorageWorks Fibre Channel Host Bus Controller/E** | **Next**.

5. Browse to the latest Compaq version of *CPQFCALM.SYS* and select the file.

6. Select **Next**.

7. Select **Yes** at the Digital Signature Not Found screen. Select **Finish**.

Appendix A - ProLiant Server Features

Table 9 illustrates features by ProLiant server.

Table 9. ProLiant server features.

Servers	ROM Setup	RBSU	iLO	Online Spare Memory	Hot-Plug Mirrored Memory	WOL	PXE
Prosignia 720	⬛						
ProLiant 400	⬛						
ProLiant BL10e			⬛				
ProLiant DL320		⬛				⬛	⬛
ProLiant DL360						⬛	⬛
ProLiant DL360 G2			⬛			⬛	⬛
ProLiant DL380		⬛				⬛	
ProLiant DL380 G2		⬛		⬛		⬛	
ProLiant DL580							⬛
ProLiant DL580 G2			⬛	⬛	⬛		⬛
ProLiant DL760		⬛					
ProLiant ML330						⬛	
ProLiant ML330e		⬛				⬛	⬛
ProLiant ML330 G2		⬛					⬛
ProLiant ML350	⬛						
ProLiant ML350 1 GHz		⬛				⬛	
ProLiant ML350 G2		⬛				⬛	⬛
ProLiant ML370		⬛					
ProLiant ML370 G2		⬛		⬛		⬛	⬛
ProLiant ML530						⬛	
ProLiant ML530 G2				⬛	⬛	⬛	
ProLiant ML570						⬛	⬛
ProLiant ML750		⬛					

Appendix B - Web Resources

In addition to hardware and software products, we provide information enabling you to stay current on the latest developments and assisting you in making deployment decisions. Table 10 lists resources on Compaq.com.

Table 10. Web resources on Compaq.com

Item	Web Location
ActiveAnswers gives you the benefit of our experience to help manage your system and reduce the time, risks, and complexity associated with deploying solutions.	www.compaq.com/activeanswers
ActiveUpdate offers proactive notification and delivery of the latest software updates. Subscribe to ActiveUpdate for automatic delivery of software updates.	www.compaq.com/activeupdate
Insight Manager 7 leverages the power of the Internet to provide web-based systems management for ProLiant servers, and any HTTP, SNMP MIB2, or DMI v2.0 compliant device.	www.compaq.com/manage
SmartStart provides everything you need to get your servers up and running with full support.	www.compaq.com/smartstart
System ROMPaqs are available ROM families for ProLiant server products.	www.compaq.com/support/files/server/us/index.html
Customer Advisories inform you of any known problems and workarounds because of a Service Pack release.	wwss1pro.compaq.com/support/home/selectproduct.asp?destination=reflib
Press releases and Communiqués announce the availability of new products and versions.	www.compaq.com/newsroom/pr
Server Software Download Center allows downloading of the latest support software, drivers, utilities, and agents and provides information about software enhancements and fixes.	www.compaq.com/support/files/server/us/index.html
Survey Utility gathers critical hardware and software information to give comprehensive server configuration information. It allows resolution of problems and streamlines the service process without taking the server off-line.	www.compaq.com/support/files/server/us/index.html
White Papers (complete listing) inform you of ways to optimize your environment and obtain the maximum benefit from software enhancements.	wwss1pro.compaq.com/support/home/selectproduct.asp?destination=reflib

Microsoft also supplies information on their website. Table 11 details some of the pages specific to Windows 2000.

Table 11. Microsoft web resources

Item	Web Location
Microsoft Business Home provides solutions and information for growing businesses.	www.microsoft.com/business/
Deployment Planning Guide contains resources to help you evaluate and deploy Windows 2000 operating system.	www.microsoft.com/windows2000/techinfo/planning/default.asp
Hardware Compatibility List gives you tools and resources to assess the readiness of your system to make sure your hardware and software will run on Windows 2000.	www.microsoft.com/windows2000/server/howtobuy/upgrading/compat/default.asp
Help Files, Windows 2000 Server • To install the Help Files for Windows 2000 Server, select your language from the drop-down list and then click **Go**. • When the File Download dialog box appears, select **Save this program to disk**. • Choose a location on your computer to save the Help files, and then click **Save**.	www.microsoft.com/windows2000/downloads/helpfiles/download.asp
Help Files, Windows 2000 Advanced Server • To install the Help Files for Windows 2000 Advanced Server, select your language from the drop-down list and then click **Go**. • When the File Download dialog box appears, select **Save this program to disk**. • Choose a location on your computer to save the Help files, and then click **Save**.	www.microsoft.com/windows2000/downloads/helpfiles/download.asp
Security Issues provides information and details on security related issues.	www.microsoft.com/security/default.asp
Technologies in Depth presents technical information sorted by technology types.	www.microsoft.com/windows2000/technologies/default.asp
Windows 2000 Newsgroups are available to help you interact with other users of Windows 2000.	www.microsoft.com/ntserver/support/newsgroups/Win2000.asp
Windows 2000 Professional gives you lots of useful information about Windows 2000 Professional edition.	www.microsoft.com/windows2000/professional/default.asp
Windows 2000 Server presents information on management, reliability, and scalability features.	www.microsoft.com/windows2000/server/default.asp