Implementing Microsoft Windows 2000 with Service Pack 4 on ProLiant servers

integration note, 5th Edition

Abstract

This integration note provides information on installing, implementing, and troubleshooting Microsoft Windows 2000 Server and Windows 2000 Advanced Server on ProLiant servers for network administrators and field service engineers. It contains information on Windows 2000 implementations with Microsoft Service Pack 4 (SP4) applied.

This document provides information on supported hardware, step-by-step installation, features, and troubleshooting.

Testing Microsoft Windows 2000 Server and Advanced Server with industry-standard servers has continued since the operating system was released in the year 2000. To obtain the latest information, visit http://h18001.www1.hp.com/partners/microsoft/windows2000/ and www.hp.com/partners/microsoft.

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 http://h18001.www1.hp.com/partners/microsoft/windows2000/whitepapers.html.

Introduction

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, HP 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 HP 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 6.30 and 6.40
- Management CD Release 6.30 and 6.40
- ProLiant Support Pack (PSP) for Microsoft Windows 2000 Version 6.30A and 6.40A

The SmartStart CD ships standard with most ProLiant servers. To obtain SmartStart CD Release 6.30 or 6.40 through our subscription service, visit www.hp.com/servers/smartstart.

Management Agents, Insight Manager, and ProLiant Support Packs can be downloaded at http://h18023.www1.hp.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 www.hp.com/partners/microsoft for new information on a regular basis. HP Services can help you plan your Windows 2000 implementation; check their website, www.hp.com/hps/os/os_windows.html.

Installation considerations

Microsoft ships Windows 2000 Server and Windows 2000 Advanced Server with and without Microsoft Service Pack 4 (SP4). SP4 contains a comprehensively tested collection of updates that addresses customer-reported concerns with the Windows 2000 operating system. SP4 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 SP4 or installing the integrated version. Before installing the integrated version of Windows 2000, make certain that your software applications support SP4.

Important
If you install the integrated version of Windows 2000 and SP4, you cannot uninstall SP4.

Our testing for this document used SmartStart Release 6.30 and 6.40, Management CD Release 6.30 and 6.40, and ProLiant Support Pack for Microsoft Windows 2000 Version 6.30A and 6.40A. These releases, and later releases, support Microsoft Windows 2000 Server and Windows 2000 Advanced Server as well as Microsoft Service Pack 4.

Upgrade/migration considerations

Many customers implement Microsoft Windows 2000 in stages, some hardware may require a new installation while upgrading or migrating older hardware to Windows 2000. HP recommends that you review the white papers "Upgrading to Windows 2000 on HP Server Products" and "Migrating to Windows 2000 on HP Server Products" available in our Windows 2000 Server Reference Library. 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 are supported on the ProLiant and Prosignia servers listed in the following two tables.

Table 1 lists the minimum and latest available ROMPaq Revisions for the ProLiant and Prosignia platforms supported during the initial release of Windows 2000.

Table 1. 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	06-21-00

Server platform	ROM family	Minimum ROMPaq revision	Version	Latest available ROMPaq revision	Version
ProLiant 800	P02 and P18	4.02A	12-30-98	4.08A	06-21-00
	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	4.08A	06-21-00
ProLiant 1500	E12 and E27	4.01A	08-17-98	4.03A	07-31-99
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	04-09-02
	E39	4.03A	03-02-99	4.08A	06-21-00
ProLiant 4500	E14	4.01A	08-17-98	4.03A	05-12-99
ProLiant 5000	E16	4.01A	08-17-98	4.03A	05-12–99
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	4.07	05-05-03
ProLiant 8500	P42	4.04A	02-26-99	4.07	05-05-03

Many of these devices have firmware upgrades available through the Options ROMPaq. The latest version of the Options ROMPaq is on the HP website at
http://h18023.www1.hp.com/support/files/server/us/index.html

Table 2 lists the latest ROMPaq version for the remainder of the ProLiant server family at the time of this publication. For the latest information, visit
http://h18023.www1.hp.com/support/files/server/us/romtabl.html.

Table 2. Additional system platforms for Windows 2000

Server platform	ROM family	ROMPaq version	ROM date
ProLiant BL10e	I03	4.05	02/17/03
ProLiant BL20p	I01	4.01	01/31/03
ProLiant BL20p G2	I04	4.02	04/16/03
ProLiant BL40p	I02	4.01	05/06/03
ProLiant CL1850	P07	4.15A	04/09/02
ProLiant CL380	P17	4.07A	08/04/01
ProLiant DL320	D05	4.06A	11/15/02
ProLiant DL320 (with server feature board)	F05	4.03A	09/10/01
ProLiant DL320 G2	D13	4.04	06/03/03
ProLiant DL360	P21	4.11	11/15/02
ProLiant DL360 G2	P26	4.07	05/14/03
ProLiant DL380 (667-1000 MHz)	P17	4.11	12/18/02
ProLiant DL380 G2 (1133 MHz and greater)	P24	4.04	11/15/02
ProLiant DL380 G3	P29	4.04	06/19/03
ProLiant DL560	P30	4.00	01/21/03
ProLiant DL580	P20	4.11	12/17/02
ProLiant DL580 G2	P27	4.03	02/04/03
ProLiant DL740	P47	4.00	01/28/03
ProLiant DL760	P46	4.04	05/05/03
ProLiant DL760 G2	P44	4.01	02/18/03
ProLiant ML310	D12	4.04	05/02/03
ProLiant ML330 G2	D10	4.03	02/17/03
ProLiant ML330	D03	4.07	11/15/02
ProLiant ML330 (with server feature board)	F03	4.06A	05/21/01
ProLiant ML330e	D06	4.04	11/15/02
ProLiant ML350 (1 GHz)	D04	4.13	06/13/03
ProLiant ML350 (1 GHz with server feature board)	F04	4.09A	08/04/01
ProLiant ML350 (600, 733, 800, 866, 933 MHz)	D02	4.13	05/30/03
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	4.03	02/17/03
ProLiant ML350 G3	D14	4.04	05/29/03
ProLiant ML370 G2 (1133 MHz and greater)	P25	4.05	11/15/02

Server platform	ROM family	ROMPaq version	ROM date
ProLiant ML370 G3	P28	4.04	06/19/03
ProLiant ML530	P19	4.10	12/18/02
ProLiant ML530 G2	P27	NA	shipping
ProLiant ML570	P20	4.11	12/17/02
ProLiant ML570 G2	P32	4.02	02/04/03
ProLiant ML750	P45	4.03	05/05/03

Supported software

Table 3 below lists supported utilities and the version needed for Microsoft Windows 2000.

Table 3. Supported utilities for Windows 2000

Utility	Version	Location
Array Configuration Utility	2.90.65.0	http://h18023.www1.hp.com/support/files/server/us/download/14185.html
Insight Manager 7 SP 2	3.1 A	http://h18004.www1.hp.com/products/servers/management/cim7-description.html
Server Diagnostics	S11.01 A	http://h18023.www1.hp.com/support/files/server/us/download/14413.html
System Configuration Utility	2.58A	http://h18023.www1.hp.com/support/files/server/us/download/13227.html
Survey Utility	2.42.26.0	http://h18023.www1.hp.com/support/files/server/us/download/13635.html
Remote Monitor Service	5.0.2.0	ProLiant Support Pack 6.30A
Integrated Management Display Utility	5.0.2.0	ProLiant Support Pack 6.30A
Enhanced Integrated Management Display Service	5.0.2.0	ProLiant Support Pack 6.30A
Integrated Management Log Viewer	5.0.5.0	ProLiant Support Pack 6.30A
Power Supply Viewer	5.0.2.0	ProLiant Support Pack 6.30A
Power Down Manager	5.0.2.0	ProLiant Support Pack 6.30A
Array Redundancy Software	5.0.2.0	ProLiant Support Pack 6.30A
Rack Infrastructure Interface Service	1.6.2195.0	ProLiant Support Pack 6.30A

Utility	Version	Location
Legacy Port Configuration Component	1.5.2195.3	ProLiant Support Pack 6.30A
Remote Insight Diskette Image Utility	1.00 A	http://h18023.www1.hp.com/support/files/server/us/download/7720.html
Remote Insight Lights-Out Edition Group Administration Utility	1.21 A	http://h18023.www1.hp.com/support/files/server/us/download/10838.html
Version Control Repository Manager – Promotional Version	1.0.1288.1	http://h18023.www1.hp.com/support/files/server/us/download/9958.html

Supported management options and agents

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

Table 4. Supported management options for Windows 2000

Option	Driver	Location
Integrated System Management Controller Driver	CPQCSM.SYS, SYSMGMT.SYS	ProLiant Support Pack 6.30A
System Management Controller Driver	CPQSS.SYS, SYSMGMT.SYS	ProLiant Support Pack 6.30A
Remote Insight Board Driver	CPQRIB.SYS	ProLiant Support Pack 6.30A
Remote Insight Lights-Out II Board Driver	CPQRIB2.SYS	ProLiant Support Pack 6.30A
iLO Advanced System Management Controller Driver	CPQASM2. SYS, SYSMGMT.SYS	ProLiant Support Pack 6.30A
Advanced System Management Controller Driver	CPQASM. SYS, SYSMGMT.SYS	ProLiant Support Pack 6.30A
Integrated Lights-Out Management Interface Driver	CPQCIDRV.SYS	ProLiant Support Pack 6.30A

Table 5 lists supported management agents provided with Microsoft Windows 2000.

Table 5. Supported agents for Windows 2000

Agent	Version	Location
Foundation Agent	6.20.0.0	http://h18000.www1.hp.com/support/files/server/us/download/17047.html
Storage Agent	6.20.0.0	http://h18000.www1.hp.com/support/files/server/us/download/17047.html
NIC Agent	6.20.0.0	http://h18000.www1.hp.com/support/files/server/us/download/17047.html
Server Agent	6.20.0.0	http://h18000.www1.hp.com/support/files/server/us/download/17047.html
Version Control Agent	1.0.3085.0	http://h18023.www1.hp.com/support/files/server/us/download/17220.html

Supported storage options

Table 6 below lists supported storage options and driver revisions needed to interface with Windows 2000.

Table 6. 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	ProLiant Support Pack 6.30A
Fibre Channel Host Controller /E	CPQFCALM.SYS	ProLiant Support Pack 6.30A
Fibre Channel Host Controller /P	CPQFCALM.SYS	ProLiant Support Pack 6.30A
Fibre Channel Filter Driver	CPQFCFTR.SYS	ProLiant Support Pack 6.30A
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	ProLiant Support Pack 6.30A
SMART SCSI, SMART-2, Smart Array 221 RAID, Smart Array 3100ES RAID and SMART Array 3200 RAID Controllers	CPQARRAY.SYS	ProLiant Support Pack 6.30A; 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	ProLiant Support Pack 6.30A; Symbios driver included on Windows 2000 CD
64-bit Fast Ultra-2 SCSI Controller	CPQ32FS2.SYS	ProLiant Support Pack 6.30A; Symbios driver included on Windows 2000 CD
Dual Channel Wide-Ultra SCSI-3 Controller	CPQ32FS2.SYS	ProLiant Support Pack 6.30A, Symbios driver included on Windows 2000 CD
Wide-Ultra SCSI-2 Controller	CPQ32FS2.SYS	ProLiant Support Pack 6.30A; Symbios driver included on Windows 2000 CD

Option	Driver	Location
CMD 0649 IDE Ultra DMA Controller Driver	CMDIDE.SYS	ProLiant Support Pack 6.30A
64-Bit/66-Mhz Dual Channel Wide Ultra3 SCSI Controller Driver	ADPU160M.SYS	ProLiant Support Pack 6.30A
ProLiant Storage System Driver	PRLNTSS.SYS	ProLiant Support Pack 6.30A
Integrated Ultra ATA-100 Dual Channel Driver	MEGAIDE.SYS	ProLiant Support Pack 6.30A
PCI Hot Plug Controller Driver	CPQPHP.SYS	ProLiant Support Pack 6.30A
Smart Array 5x Controller Driver	CPQCISSE.SYS, CPQCISSM.SYS	ProLiant Support Pack 6.30A
Drive Array Notification	CPQDAEN.SYS	ProLiant Support Pack 6.30A

Note 1: Many of these devices have firmware upgrades available through the Options ROMPaq. The latest version of the Options ROMPaq can be downloaded from http://h18023.www1.hp.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.

Supported network adapters

Table 7 lists supported network adapters, including the minimum firmware and driver revisions needed to interface with Windows 2000.

Table 7. Supported HP network adapters for Windows 2000

NIC	Driver	Location
NetFlex-3/E	NETFLX3.SYS	ProLiant Support Pack 6.30A
NetFlex-3/P	NETFLX3.SYS	ProLiant Support Pack 6.30A
NetFlex-3 Embedded	NETFLX3.SYS	ProLiant Support Pack 6.30A
Netelligent 10T/2 TX Embedded UTP/Coax	NETFLX3.SYS	ProLiant Support Pack 6.30A
Netelligent 10/100 TX Embedded UTP/AUI	NETFLX3.SYS	ProLiant Support Pack 6.30A
Netelligent 10/100 TX Embedded UTP	NETFLX3.SYS	ProLiant Support Pack 6.30A
Netelligent 10 TX PCI UTP Controller	NETFLX3.SYS	ProLiant Support Pack 6.30A
Netelligent 10/100TX PCI UTP Controller	NETFLX3.SYS	ProLiant Support Pack 6.30A
Netelligent Dual 10/100TX PCI UTP Controller	NETFLX3.SYS	ProLiant Support Pack 6.30A
Netelligent 10/100 TX	NETFLX3.SYS	ProLiant Support Pack 6.30A
Netelligent 10 T/2 PCI UTP Coax Controller	NETFLX3.SYS	ProLiant Support Pack 6.30A
Netelligent 10/100 TX WOL PCI UTP - Intel	N100NT5.SYS	Included on Windows 2000 CD
HP NC1120 Ethernet NIC	N100NT5.SYS	Included on Windows 2000 CD
HP NC3120 Fast Ethernet NIC	N100NT5.SYS	Included on Windows 2000 CD
HP NC3121 Fast Ethernet NIC	N100NT5.SYS	Included on Windows 2000 CD
HP NC3122 Fast Ethernet NIC	N100NT5.SYS	Included on Windows 2000 CD
HP NC3123 Fast Ethernet NIC	N100NT5.SYS	Included on Windows 2000 CD

NIC	Driver	Location
HP NC3131 Fast Ethernet NIC	N100NT5.SYS	Included on Windows 2000 CD
HP NC3132 Fast Ethernet Upgrade Module	N100NT5.SYS	Included on Windows 2000 CD
HP NC3133 Fast Ethernet Upgrade Module	N100NT5.SYS	Included on Windows 2000 CD
HP NC3160 Fast Ethernet NIC (Embedded)	N100NT5.SYS	Included on Windows 2000 CD
HP NC3161 Fast Ethernet NIC (Embedded)	N100NT5.SYS	Included on Windows 2000 CD
HP NC3162 Fast Ethernet NIC (Embedded)	N100NT5.SYS	Included on Windows 2000 CD
HP NC3163 Fast Ethernet NIC (Embedded)	N100NT5.SYS	Included on Windows 2000 CD
HP NC6132 Gigabit Module	N1000NT5.SYS	Included on Windows 2000 CD
HP NC6133 Gigabit Module	N1000NT5.SYS	Included on Windows 2000 CD
HP NC6134 Gigabit NIC	N1000NT5.SYS	Included on Windows 2000 CD
HP 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
HP 32-Bit DualSpeed Token Ring Controller	NETFLX.SYS	Included on Windows 2000 CD
HP NetFlex-2 TR Controller	NETFLX.SYS	Included on Windows 2000 CD
HP NetFlex/NetFlex-2 ENET/TR Controller	NETFLX.SYS	Included on Windows 2000 CD
HP NetFlex-2 DualPort ENET Controller	NETFLX.SYS	Included on Windows 2000 CD
HP NetFlex-2 DualPort TR Controller	NETFLX.SYS	Included on Windows 2000 CD
HP 100 FDDI PCI DAS Fiber-SC Controller	SKFPWIN.SYS	Included on Windows 2000 CD
HP 100 FDDI PCI SAS Fiber-SC Controller	SKFPWIN.SYS	Included on Windows 2000 CD
HP 100 FDDI PCI DAS UTP Controller	SKFPWIN.SYS	Included on Windows 2000 CD
HP 100 FDDI PCI SAS UTP Controller	SKFPWIN.SYS	Included on Windows 2000 CD
HP 100 FDDI PCI SAS Fiber-MIC Controller	SKFPWIN.SYS	Included on Windows 2000 CD
HP NC67xx/NC77xx Gigabit Ethernet NIC Driver	Q57W2K.SYS	ProLiant Support Pack 6.30A
HP Network Teaming and Configuration	CPQDGD.SYS, CPQGBDD.SYS, CPQKDDP.SYS, FAD.SYS	ProLiant Support Pack 6.30A

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 http://h18023.www1.hp.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 http://h18023.www1.hp.com/support/files/server/us/romtabl.html

Support video

To be able interface properly with Windows 2000 Server, the HP ATI RAGE IIC Video Controller Driver (ATI2MPAH.SYS) included on ProLiant Support Pack 6.30A (or later) must be loaded.

Hardware system requirements

The minimum requirements listed in this section pertain to the Microsoft Windows 2000 network operating system only, not to 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 8.

Table 8. Microsoft Windows 2000 Server hardware requirements

Feature	Minimum configuration	Recommended configuration
Processor (support for 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

To use Microsoft Windows 2000 Advanced Server, your equipment must meet the requirements described in Table 9.

Table 9. Microsoft Windows 2000 Server hardware requirements

Feature	Minimum configuration	Recommended configuration
Processor (support for 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, CL380 G2, and CL380 G3
- 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 HP cluster configurations, refer to our website, http://h18000.www1.hp.com/solutions/enterprise/highavailability/microsoft/index.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 http://h18007.www1.hp.com/support/files/server/us/index.html. This site provides special firmware upgrades for ProLiant servers and server options including both System and Option ROMPaqs. The latest SmartStart 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 http://h18023.www1.hp.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) and to find supported features for a specific ProLiant server, refer to Appendix a.

Storage array configuration

The Option ROM Configuration for Arrays (ORCA) utility embedded in the server ROM configures the storage arrays 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 http://h18000.www1.hp.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 ProLiant Support Pack for Microsoft Windows 2000 (PSP) on the HP software and drivers website at http://h18023.www1.hp.com/support/files/server/us/download/17037.html

Running the ProLiant Support Pack 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 4 (SP4) and later uninstall SP4, 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 system performance, and manage your Windows 2000 environment:

- Management Agents
- Server Diagnostics
- ProLiant Support Pack for Windows 2000

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 ProLiant Support Pack for Windows NT 4.0 and install it. The latest versions of this software for your industry standard server are available through our website, http://h18023.www1.hp.com/support/files/server/us/SmartStartinfo630.html.

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 both are 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, ProLiant Support Pack 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 HP software and drivers website at http://h18007.www1.hp.com/support/files/server/us/index.html.

Next, obtain the SmartStart CD or download the ProLiant Support Pack for Microsoft Windows 2000 from http://h18007.www1.hp.com/support/files/server/us/.

ProLiant Support Pack for Microsoft Windows 2000 replaces the Server Support diskettes for Windows NT (HP 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 ProLiant Support Pack 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
  (http://h18023.www1.hp.com/support/files/server/us/download/14185.html)
- System Configuration Utility
  (http://h18023.www1.hp.com/support/files/server/us/download/13227.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, HP recommends that you use SmartStart to configure your server. SmartStart provides assisted, manual, and replicated installation approaches to setting up your pre-OS installation and installing the necessary software after the OS installation. SmartStart is provided in the ProLiant Essentials Foundation Pack included with every ProLiant server. Updates are available on the SmartStart website at www.hp.com/servers/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 at www.hp.com/servers/sstoolkit.

A white paper on this tool entitled "HP Delivers the Next Generation Server Deployment Tools: SmartStart Scripting Toolkit" can be found at ftp://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 www.hp.com/servers/rdp.

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. Set up the system and boot partition if necessary.
   c. Configure your storage arrays.

   It is highly recommended that you use 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. After the base operating system installs, run SETUP.EXE to launch the ProLiant Support Pack for Microsoft Windows 2000. This installation utility analyzes the system configuration and installs all necessary HP device drivers. The ProLiant Support Packs (PSP) Deployment Utilities User Guide provides instructions on how to pre-configure and deploy smart components within the CSP.

Note

Some devices produced by HP 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 ProLiant Support Pack for Windows 2000.

Figure 1. Opening screen for the ProLiant Support Pack for Microsoft Windows 2000
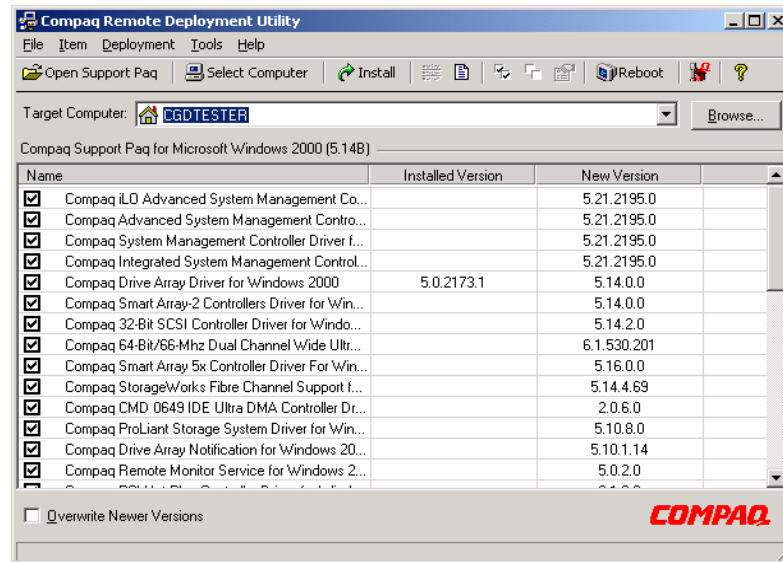
4. Restart the server to complete the driver installation.

5. Install Microsoft Service Pack 4 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 use 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 tools and utilities have changed in Microsoft Windows 2000 and SP4. 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 HP 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 ProLiant Support Pack 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.

Foundation Agents, NIC Agents, Server Agents, and Storage Agents are all included in the ProLiant Support Pack and on the SmartStart and Management CDs. The latest versions are also available on the HP website at http://h18007.www1.hp.com/support/files/server/us/index.html.

Once you install the 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 to 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.hp.com/servers/ilo.

ProLiant servers offering iLO capability are listed in Appendix a and updated regularly at ftp://ftp.compaq.com/pub/products/servers/os-support-matrix-310.pdf.

ProLiant Essentials Workload Management Pack

Developed exclusively for Windows 2000, 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 www.hp.com/servers/proliantessentials.

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. HP Advanced Memory Protection provides increased fault tolerance for applications that require higher levels of availability. HP ProLiant 300, 500, and 700 Series servers feature one or more Advanced Memory Protection technologies: Online Spare Memory, Hot Plug Mirrored Memory, and Hot Plug RAID Memory.

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 Appendix a. For more information on HP Advanced Memory Protection, see http://h18004.www1.hp.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 Appendix a.

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 Appendix a.

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 4, use SmartStart Release 6.30 or SoftPaq13158. Download the SoftPaq from http://h18023.www1.hp.com/support/files/server/US/download/8773. html.

Power down the device before removing a device from a PCI Hot Plug slot. This can be done using the PCI Hot Plug Unplug/Eject icon, the Eject/Remove applet of Windows 2000, or the HP PCI Slot Server Request button on servers so equipped.

Figure 2 shows an example of the interface screen for PCI Hot Plug in Windows 2000.

Figure 2. PCI Hot Plug Unplug/Eject screen
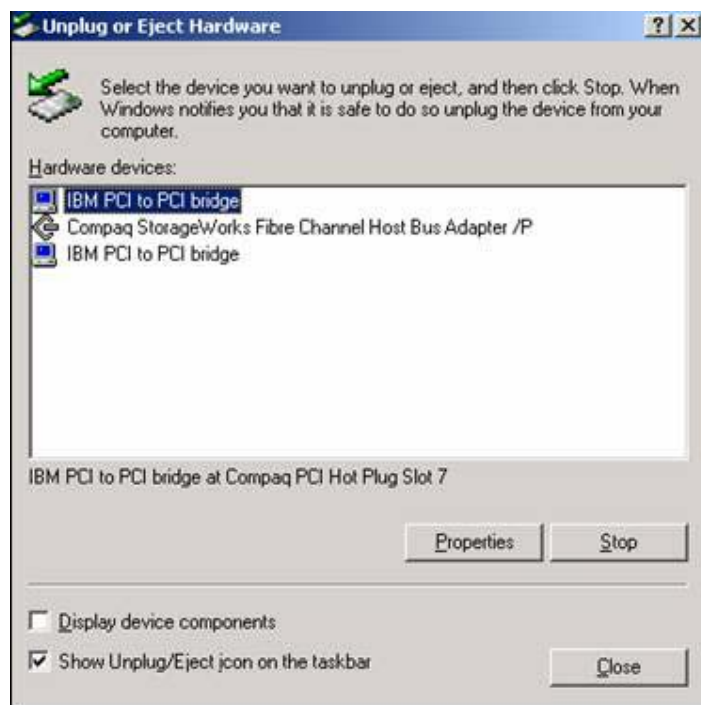
HP Storage Agents Release 4.60 and later support the hot add and hot remove of storage controllers. A detailed discussion of PCI Hot Plug Technology in the Windows 2000 environment can be found in the white paper "PCI Hot Plug Technology with Microsoft Windows Architecture" at ftp://ftp.compaq.com/pub/supportinformation/papers/ECG0710399.pdf.

Teamed NICs

HP engineers developed a new driver to team NICs and better utilize them in a Windows 2000 Server environment. Following the installation, any broken NICs connections are displayed in the lower right-hand corner of your task bar as shown in Figure 3.
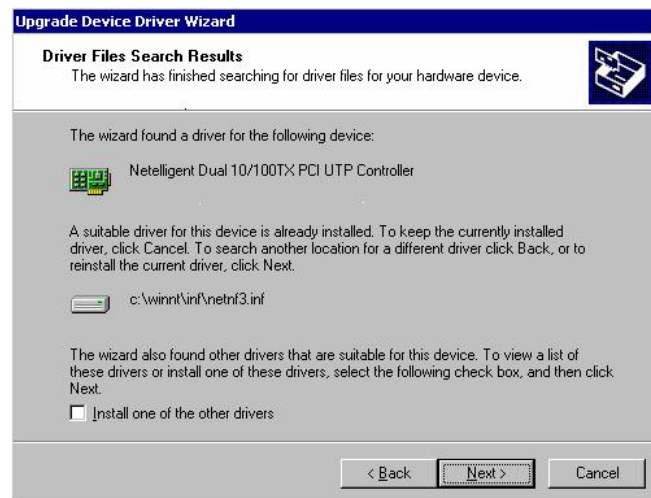
Figure 3. Task bar showing broken NIC connections

To resolve teaming issues:

1. Use Device Manager in Windows 2000 Server to update, load or modify NIC drivers installed on the server. When you see the screen in Figure 4, check the box titled Install One of the Other Drivers.

Figure 4. Driver Files Search Results screen

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

3. Figure 5 displays the PCI Hot Plug Unplug/Eject icon in the lower right-hand corner. Select the icon to add or remove any PCI Hot Plug devices.

Figure 5. PCI Hot Plug Unplug/Eject icon

Troubleshooting

This section provides information on issues reported in testing of Microsoft Windows 2000 and SP4. It includes solutions for installation issues with options and drivers and implementation of many ProLiant value-add features. It also covers 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

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

Table 10. Microsoft Windows 2000 Server installation issues

Issue 1 New	**SP4 (and MS QFE Q817566 for SP3) renders storage components invisible in ACU-XE and Insight Manager on ProLiant servers with > 6 GB memory**	
	Description	On certain ProLiant systems with > 6 GB memory, either Windows 2000 Service Pack 4 or Microsoft QFE# Q817566 for Windows 2000 Service Pack 3 causes certain storage devices not to be visible or configurable in Array Configuration Utility (ACU) XE and HP Insight Management Agents/Insight Manager. The storage itself is still usable – only the management utilities mentioned are affected. [As a matter of course, in order for systems to see > 4 GB, the /pae option has to be included in the boot.ini file. Testing has shown that the problem only occurs with memory greater than 6 GB (/maxmem=6000 in boot.ini)].
		The following SCSI array controllers are affected. The controllers and the storage associated with them will not be visible in ACU or Insight Manager.
		• SMART-2/P or SMART-2DH Array Controller
		• SMART-2SL Array Controller
		• Smart Array 3200 Controller
		• Smart Array 3100ES Controller
		• Smart Array 221 Controller
		• EISA Smart Array Controller
		• Compaq Integrated Smart Array Controller – cpqarry2.sys
		• Compaq RAID LC2 Controller – cpqarry2.sys
		• Compaq Smart Array 4200 Controller – cpqarry2.sys
		• Compaq Smart Array 4250ES Controller – cpqarry2.sys
		• Compaq Smart Array 431 Controller – cpqarry2.sys
		<u>Fibre Channel storage</u>
		The Fibre Channel Host Bus Adapter and the following external storage components are also rendered invisible under these conditions:
		• RA4000
		• RA4100
		• MSA1000
		<u>Servers</u>
		The following servers (now retired) are directly affected by virtue of having the Integrated Smart Array Controller or by having the Smart Array 4250ES Controller bundled in the server. Other servers may be affected in which customers have installed one of the previously-mentioned Smart Array controllers or have connected to one of the fibre channel-based external storage systems listed previously.
		Integrated Smart Array Controller
		• ProLiant DL580 (G1)
		• ProLiant DL760 (G1)
		• ProLiant 8500
		• ProLiant 8000
		Smart Array 4250ES Controller (included with server)
		• ProLiant ML750

	Solution	Currently there are two known methods of dealing with this issue:
		1. Limit the Windows 2000 addressable memory to 6 GB (for example, by setting /maxmem=6000 in the boot.ini file).
		2. Do not install SP4, or uninstall SP4 if it is already installed.
		HP is working with Microsoft on a resolution of this issue.
Issue 2	**The ProLiant Storage System hardware device (SCSI backplane) needs the HP driver to display in Device Manager**	
	Description	The ProLiant Storage System device displays correctly if the HP 32-bit SCSI Controller Driver (available on ProLiant Support Pack for Microsoft Windows 2000) is loaded and the system restarted.
	Solution	Use cpq32fs2.sys (the HP 32-bit SCSI Controller driver).
Issue 3	**Accessing Custom Configuration during unattended install**	
	Description	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.
Issue 4	**Multi-monitor Display Configuration ATI Controller requires Slot 1 to function properly**	
	Description	When multiple monitors and video controllers are connected to a HP 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.
Issue 5	**HP driver updates after Windows 2000 installation**	
	Description	When you install a new device, Windows 2000 boots and finds new hardware. The following message box appears:
		"The following file is missing: xxxx"
		ProLiant Support Pack 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 manually perform the individual driver installation using ProLiant Support Pack. You can deselect all other drivers, and then select Install for the remaining selected driver.
		Disregard the driver install log that reportsthe driver as up to date. Running the installation will update the driver for the new device(s) added.
Issue 6	**When you select Rescan Disks after hot-plugging a hard drive, Windows 2000 might inappropriately display an Unsafe Removal of Device prompt**	
	Description	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.

Issue 7	Anomalies associated with adding EISA/ISA bus options	
	Description	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" issue number19 on page 25 of this document.

Issue 8	Windows 2000 does not detect changes to the IRQ of EISA devices	
	Description	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. On the new SMART 2/E Array Controller, all resources must be set the same 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.

Issue 9	Some HP server USB hardware displays as unsupported USB connector in Device Manager	
	Description	Some HP server USB hardware displays as unsupported USB connector in Device Manager.
	Solution	Some HP servers display a yellow exclamation mark in the Windows 2000 Device Manager. This is expected behavior. These HP servers were not designed to implement the USB functionality and no problem actually exists.

Issue 10	CPQARRAY.SYS and CPQARRY2.SYS cause timeout error messages in the event log at startup	
	Description	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 reads:
		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.

Issue 11	Using the F6 key to install HP drivers	
	Description	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, HP 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 upgrade to the latest HP drivers supplied on ProLiant Support Pack for Microsoft Windows 2000. The manufacturer should address third-party hardware drivers and their installation.

Issue 12	Special installation procedures for HP storage drivers	
	Description	After the system has been rebooted following the initial installation of the ProLiant Support Pack for Microsoft Windows 2000, event notification drivers for storage devices are installed by rerunning the Support Pack installation.
	Solution	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 HP Smart Array 5x Notification device are not visible under Device Manager until all HP SCSI and RAID (miniport) drivers are installed. The first pass installs the HP 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 complete the install, you must run the ProLiant Support Pack a second time, during which the drivers PRLNTSS.SYS, CPQDAEN.SYS, and CPQCISSE.SYS will be properly loaded,.

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 than they were under Windows NT 4.0.

Table 11. Microsoft Windows 2000 feature implementation issues

Issue 13	COM 3 might display as a not supported device	
	Description	After Windows 2000 is installed on a server with the HP 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.
Issue 14	Device Manager shows error for the VGA and VGASave devices on a ProSignia 200 Server	
	Description	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.
Issue 15	Default video resolution not retained by Windows 2000 after installation	
	Description	After 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**.
Issue 16	V70 Monitor driver does not install during Windows 2000 installation	
	Description	After installation completes and the system has restarted, the HP 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.
Issue 17	**No Hibernation support for some servers**	
	Description	Hibernation not supported on the ProSignia Server 720 and the ProLiant 400 server.
	Solution	Hibernation is not supported for the ProSignia Server 720 or the ProLiant 400 server with current ROM revisions.
Issue 18	**Hot plug status indicator not updated**	
	Description	Hot plug status indicator not updated when fiber optic cable isremoved.
	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 HP Remote Console Monitor service does not include this feature and the status indicator does not update.
Issue 19	**Upgrading and downgrading ACPI**	
	Description	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.
	Solution	Changing ACPI settings after installation requires reinstalling the operating system.
Issue 20	**Adding an EISA fibre channel controller**	
	Description	With the server shut down and power removed from the server, install the EISA fibre channel controller in the server by following the procedures detailed below in the "Solution."
	Solution	**To install the controller:**

To install the controller:

1. Run the System Configuration Utility to add the controller and configure changes to system BIOS.
2. Restart the server.
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 **HP and HP Fibre Channel Host Controller (non PnP)**.
9. Click **Next | Finish**.
10. Restart the server.

To load 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 HP Fibre Channel Controller /E, requires the CPQFCALM.SYS driver.

Note: The device HP 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 HP version of CPQFCALM.INF and double-click the file.

4. Select **HP StorageWorks Fibre Channel Host Bus Controller/E**, and click **Next**.

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

6. Click **Next**.

7. Click **Yes** at the Digital Signature Not Found screen, and click **Finish**.

Conclusion

In this integration note detailed information has been provided on installing, implementing, and troubleshooting Microsoft Windows 2000 Server with SP4 and Windows 2000 Advanced Server with SP4 on ProLiant servers.

Appendix a - ProLiant server features

Servers	ROM Setup	RBSU	iLO	Online Spare Memory	Hot-Plug Mirrored Memory	WOL	PXE
Prosignia 720	✓						
ProLiant BL10e		✓	✓				
ProLiant BL20p		✓	✓				
ProLiant BL20p G2		✓	✓				
ProLiant BL40p		✓	✓				
ProLiant DL320		✓				✓	✓
ProLiant DL320 G2		✓				✓	✓
ProLiant DL360 G2			✓			✓	✓
ProLiant DL360 G3			✓			✓	
ProLiant DL380 G2		✓	✓	✓		✓	✓
ProLiant DL380 G3		✓	✓	✓		✓	✓
ProLiant DL560							✓
ProLiant DL580 G2			✓	✓	✓		✓
ProLiant DL740			✓		✓		
ProLiant DL760		✓					
ProLiant DL760 G2		✓					
ProLiant ML310							
ProLiant ML330						✓	
ProLiant ML330 G2		✓					✓
ProLiant ML330 G3							
ProLiant ML350 G2		✓				✓	✓
ProLiant ML370 G3		✓	✓	✓		✓	✓
ProLiant ML530 G2				✓	✓	✓	
ProLiant ML570 G2		✓					

For more information

http://h18001.www1.hp.com/partners/microsoft/windows2000/index.html

Windows Server 2000 support page

www.microsoft.com

Microsoft website

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