Integrating Microsoft Windows Server 2003 R2 on HP ProLiant servers

integration note

Abstract

This integration note describes the level of support available for Microsoft® Windows® Server 2003 R2 on HP ProLiant servers:

- Supported configurations of ProLiant servers
- Recommended system configuration and server platforms
- Supported software, storage options, and network adapters
- Procedures for new installations
- Known issues with workarounds

This paper describes the level of support available for Standard and Enterprise Editions for both the X86 and X64 architectures of the Windows Server 2003 R2 family.

NOTE
This paper does not include information about the following operating systems since they are not supported on HP ProLiant servers: Microsoft Windows Server 2003 Datacenter Edition, Microsoft Windows Server 2003 Datacenter X64 Edition, and Microsoft Windows Server 2003 for Itanium-based systems.

This document and others pertaining to Windows Server 2003 R2 can be found on the HP Windows Server 2003 R2 website at www.hp.com/go/windows.

Introduction to Windows Server 2003 R2

Microsoft Windows Server 2003 R2 builds upon Windows Server 2003 with Service Pack 1 (SP1) and provides a scalable, secure Web application platform and enables new scenarios including simplified branch server management, improved identity and access management, and more efficient storage management.

Windows Server 2003 R2 ships as a 2-CD set. CD-1 contains Windows Server 2003 with SP1. CD-2 provides updated features and functionality in three primary areas:

- Simplified Branch Server Management
- Identity Management
- Efficient Storage Management

Administrators have the flexibility to install R2 features, as desired, from CD-2.

Microsoft provides Windows Server 2003 R2 in both X86 and X64 editions. This paper covers both editions of Windows Server 2003 R2 running on HP ProLiant servers.

Simplified Branch Server Management

Simplified Branch Server Management or Branch Office is new in Windows Server 2003 R2. The Branch Office framework allows for the deployment of key server functionality to server locations through the following technologies:

- Distributed File System Replication (DFS-R) – Provides robust multi-master file replication services that are scalable and efficient. DFS-R allows for multiple replication topologies and increases Wide Area Network (WAN) efficiency via Remote Differential Compression (RDC) that allows data to be stored should a WAN connection fail. Once the connection is restored, the data is forwarded across the WAN.
- Advanced Compression Technologies – Remote Differential Compression (RDC) is capable of replicating only the changes needed to ensure global file consistency, reducing the time it takes to send updates across the WAN.
- Enhanced Management Tools – Microsoft updated the Microsoft Management Console (MMC) 2.1 to allow for enterprise-wide administration of file and print services. In addition, the Print Management Console feature gives the administrator an enhanced view of the network's printer topology. It also allows the branch server to function as a print server. Finally, Distributed File System Namespaces (DFS-N) allows easier management of file system roots within the network, presenting shared folders to users as a grouping called "Namespace".
- Centralized Data Stores – The Centralized Data Stores feature allows for one site to be the data center that distributes all necessary changes to other sites, minimizing the amount of bandwidth required to distribute changes.
- Increased End-User Productivity – The branch office server functions as the local server for end users to access data and applications. The user is sent to the central server when the local server becomes unresponsive.

Identity Management

Web Services have become a vital part of an organization's infrastructure. Companies today need the ability to collaborate with their partners, suppliers and customers to help increase revenue growth, reduce operational costs and improve end-user satisfaction. Windows Server 2003 R2 offers the following Identity Management applications to help achieve these goals:

- Active Directory Federation Services (ADFS) – Extends Active Directory to assist collaboration with partners, and suppliers. ADFS makes it possible for organizations to share a user's identity information securely via federation trusts.
- Active Directory Application Mode (ADAM) – Provides Enhancements to ADAM that was introduced with Windows Server 2003. ADAM provides Directory Services for applications.
- UNIX Identity Management – Integration of Windows and UNIX-based Network Information Service (NIS) via password synchronization.

Efficient Storage Management

Microsoft introduces two new features for Storage Management with Windows Server 2003 R2:

- File Server Resource Manager (FSRM) – Provides storage management tools that allow administrators to manage, report, screen files, and enforce quotas to volumes and folders stored on the server.
- Storage Manager for SANs – Enables customers to provision storage for one or more subsystems on a Storage Area Network (SAN). Administrators are able to provision Fibre Channel and Internet SCSI (iSCSI) storage subsystems using the Microsoft Virtual Disk Technology (VDS).

Windows Server 2003 R2 offers a set of features intended to improve efficiency in the management of server hardware. Utilizing the Intelligent Platform Management Interface (IPMI) in conjunction with the WS-Management protocol, Microsoft addresses the concerns of customers with regard to the high Total Cost of Ownership (TCO) associated with managing multiple disparate systems.

IPMI and WS-Management

Microsoft WS-Management is an extensible web-based standard management protocol for monitoring system hardware. The following are key terms an administrator should be familiar with when working with WS-Management:

- **Intelligent Platform Management Interface (IPMI)** – A set of common interfaces to computer hardware that is used to monitor and manage system health.
- **Baseboard Management Controller (BMC)** – A micro-controller that monitors the system and allows for intelligent platform management.
- **IPMI Drive**r – The driver that enables communication between the BMC device and the operating system.
- **IPMI Provider** – As defined by Microsoft, it is a user-mode COM DLL that implements a high-level abstraction of the IPMI data using the standard IPMI CIM profile.

IPMI and WS-Management for the HP ProLiant 100 Series Servers

The HP ProLiant 100 Series Servers listed in Table 1 contain a Baseboard Management Controller (BMC).

Table 1. Supported ProLiant 100 Series Servers with Baseboard Management Controller

Server platform	ROM family	ROM date (minimum)
ProLiant DL140 G2	DL140G2	10/27/05
ProLiant DL140 G3	DL140G3	06/18/06
ProLiant DL145 G2	DL145G2	05/05/05
ProLiant ML110 G3	ML110G3	10/05/05
ProLiant ML110 G4	ML110G4	06/05/06
ProLiant ML150 G2	ML150G2	10/28/05
ProLiant ML150 G3	ML150G3	05/30/06

Instructions for installing IPMI and WS-Management and creating the SMBIOS IPMI device for the HP ProLiant 100 Series Servers are located in the section entitled “Part 2: Install Windows Server 2003 R2 CD-2 (optional).”

HP IPMI Provider for HP BladeSystem Servers and ProLiant 300 and 500 Series Servers

For HP BladeSystem Servers and ProLiant 300 and 500 Series Servers that do not contain IPMI hardware, the IPMI Provider is required for IPMI functionality. The HP IPMI Provider emulates the Microsoft IPMI Provider by collecting IPMI data from the HP System Management Controller Driver and making it available through the "root\hardware" WMI namespace.

ProLiant 300 and 500 Series Servers Generation 4 and older require the IPMI Provider Bundle, which is included in Version 7.50 (or later) of the ProLiant Support Pack (PSP) for Microsoft Windows Server 2003, to support the R2 Hardware Management feature.

Supported configurations

Windows Server 2003 R2 should load and run on any ProLiant server that meets the recommended hardware configuration established by Microsoft.

Carefully review this document for the recommended system configuration and possible issues you might encounter. Do not use this paper as your sole source of information. In addition to the websites mentioned throughout this paper, you might also want to visit the Windows Server 2003 R2 support page at www.hp.com/go/windows and the Microsoft website at www.microsoft.com.

Recommended system configuration

Table 2 lists the recommended minimum system configuration established by Microsoft for Windows Server 2003 R2. The recommendations listed here pertain to the Windows Server 2003 R2 operating system only and do not include the requirements for software applications that run 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 to their website.

Table 2. Recommended minimum system configuration

Parameter	Web Edition	Standard Edition	Enterprise Edition
Processor	550 MHz	550 MHz	733 MHz
RAM per processor	256 MB	256 MB	256 MB
Monitor	VGA or higher resolution	VGA or higher resolution	VGA or higher resolution
Available disk space[1]	1.5 GB	1.5 GB	1.5 GB for x86-based computers

Note 1: 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 Server 2003 R2 CD contents to the hard disk during installation.

Note 2: For the latest system requirements for each of the four editions of the Windows Server 2003 R2 family, visit www.microsoft.com/windowsserver2003/default.mspx.

Supported hardware

ProLiant servers and storage and network options

Refer to Table 8 of the appendix for a list of supported ProLiant servers and associated ROM version and dates, which is current as of this publication. For the latest ROM information, refer to the following resources on the HP website to determine the ROM version and family of each supported ProLiant server:

- System ROM family code and version: http://h18007.www1.hp.com/support/files/server/us/romhowto.html
- Latest ROMPaq downloads: http://h18023.www1.hp.com/support/files/server/us/romtabl.html
- Software and drivers: http://h18007.www1.hp.com/support/files/server/us/index.html
- Windows on ProLiant support matrix: http://h10018.www1.hp.com/wwsolutions/windows/index.html

HP offers a wide range of storage options for ProLiant servers including hard drives, Smart Array Controllers, Host Bus Adapters, racks and rack options, power protection, and tape storage. Table 9 lists supported ProLiant storage options and recommended driver revisions needed to interface with Windows Server 2003 R2.

HP also provides support for Fast Ethernet, Gigabit, and Token Ring network interface controllers (NICs). Table 10 lists supported NICs and driver revisions supported by Windows Server 2003 R2.

ProLiant cluster support

The HP Adaptive Enterprise offers customers the ability to reduce exposure to unplanned downtime through automated software and hardware tools that predict, diagnose, and respond immediately to potential fault conditions. HP delivers intelligent fault resilience with its High Availability Clustering product solutions and kits built on Windows Server 2003 R2, Enterprise Edition, industry standard ProLiant servers, Smart Array Cluster Storage, or StorageWorks platforms integrated with HP management tools.

The ProLiant DL380 G4 Packaged Cluster, ProLiant DL380 G3 Packaged Cluster, ProLiant DL380 G2 Packaged Cluster, ProLiant CL380 Packaged cluster, and the ProLiant Cluster Kits HA/F500 for Enterprise Virtual Array, HA/F500 for MA8000, and HA/F100 & F200 for MSA1000 support Windows Server 2003 R2, Enterprise Edition.

PCI Hot Plug support

PCI Hot Plug is the ability to physically insert, remove, or replace PCI adapters while a ProLiant server is powered on. PCI Hot Plug operations may be performed under Windows Server 2003 R2 on supported ProLiant servers with the PCI Hot Plug Filter Driver installed. ProLiant storage options and network interface controllers are supported for PCI Hot Plug operations.

ProLiant servers that are capable of PCI Hot Plug include:

Table 3. ProLiant servers with PCI Hot Plug support

ProLiant DL servers	ProLiant ML servers	Compaq ProLiant servers
ProLiant DL380 G2	ProLiant ML370 G2	ProLiant 6400R
ProLiant DL380 G3	ProLiant ML530 G2	ProLiant 6500 Xeon
ProLiant DL380 G4	ProLiant ML570	ProLiant 7000 Xeon
ProLiant DL580	ProLiant ML570 G2	ProLiant 8000
ProLiant DL580 G2	ProLiant ML750	ProLiant 8500
ProLiant DL580 G3		
ProLiant DL740		
ProLiant DL760 G2		

Higher availability on HP and Microsoft solutions is achieved through the deployment of Hot Plug RAID Memory, the most robust memory-protection solution in the HP Advanced Memory Protection strategy. With the introduction of industry-leading ProLiant 8-way platforms, the ProLiant DL760 G2 and ProLiant DL740, HP is the first and only vendor to offer Hot Plug RAID Memory in an industry-standard platform. With the introduction of these two new platforms based on the HP F8 chipset, customers will be able to, for the first time, deploy mainframe levels of availability in their industry-standard IT environments, without the high cost of mainframe technology. With the HP/Microsoft solution, customers can dynamically hot-add memory capacity without powering down the server which delivers true resource scalability and maximum uptime for enterprise customers. The Hot Add Memory feature in the specified 4-way and 8-way ProLiant servers is only supported in Windows Server 2003 R2.

The following Hot Plug RAID Memory driver and utility are included in Version 7.50A and later of the ProLiant Support Pack for Microsoft Windows Server 2003 R2:

- HP ProLiant Hot-Plug Memory Configuration Utility for Windows Server 2003 R2
- HP ProLiant Hot Plug Memory Driver for Windows Server 2003 R2

Lights-Out management support

Lights-Out management products, such as Integrated Lights-Out 2 (iLO 2), Integrated Lights-Out (iLO), and Remote Insight Lights-Out Edition II (RILOE II), remain an important part of the ProLiant solution adding new support for the Windows Server 2003 R2 operating system. Drivers for these products are included in the ProLiant Support Pack for Microsoft Windows Server 2003 R2. Refer to the QuickSpecs for supported remote management features and functionality on Windows Server 2003 R2: www.hp.com/servers/lights-out.

NOTE
At this time, WS-Management Out of Band in iLO 2 is not supported on HP ProLiant 300 and 500 Series Servers. Future firmware versions may support this feature.

Supported software

Table 4 lists supported ProLiant utilities, drivers, and other value-add software and their corresponding version needed for Windows Server 2003 R2.

Table 4. Supported ProLiant value-add software

Utility	Minimum version	Location
ProLiant Support Pack (PSP) for Microsoft Windows Server 2003[3]	7.50	http://h18023.www1.hp.com/support/files/server/us/locate/3376.html
System Configuration Utility	2.58	http://h18023.www1.hp.com/support/files/server/us/locate/1950.html

Note 3: For IPMI and WS-Management to work correctly on systems using the HP ProLiant Advanced or Advanced and Enhanced System Management Controller Driver, the HP IPMI Provider, which is included in PSP 7.50 (or later), must be installed. The ProLiant 100 Series Servers and some newer systems that use the HP ProLiant iLO2 Management Controller Driver do not need this provider because they have the necessary IPMI hardware. For ProLiant servers without an IPMI BMC device, the HP IPMI Provider emulates the Microsoft IPMI Provider by collecting IPMI data from the HP System Management Controller Driver and making it available through the "root\hardware" WMI namespace.

Installing Microsoft Windows Sever 2003 R2

This section guides an administrator through the installation process from purchasing the OS to a having a fully installed ProLiant server.

How to buy the OS from HP

Windows Server 2003 R2 is available for purchase with HP ProLiant servers either factory installed or shipped on CD with the server. Select the OS when you configure your ProLiant server. Visit http://h18004.www1.hp.com/products/servers/software/microsoft/OS/Windows2003_buy.html, for details.

SmartStart installation paths

Server deployment of Microsoft Windows Server 2003 R2 is consistent and easy every time with ROM-based utilities, whether you choose a SmartStart assisted installation or a manual operating system installation.

To fully optimize the performance of your hardware platform, a SmartStart assisted installation walks you through the entire operating system installation process. Using an assisted installation, SmartStart prepares the server for installation, allows you to install the operating system using the vendor-supplied CDs, and provides automated installation of server support software using ProLiant Support Packs (PSPs).

NOTE
When using the SmartStart assisted installation feature in SmartStart 7.40 to deploy Windows Server 2003 R2 and PSP 7.40, use the Microsoft Windows Server 2003 SP1 operating system selection. Beginning with SmartStart 7.50, use the Microsoft Windows Server 2003 R2 selection.

For a manual installation of the operating system, you can take advantage of the ROM-based utilities and vendor-supplied operating system media before manually installing server support software from the SmartStart CD.

For more information on SmartStart, go to the SmartStart website at www.hp.com/servers/smartstart. The installation guide, available on this website, walks you through both SmartStart installation paths.

Pre-installation tasks

To prepare for installation, gather the supported software detailed below.

- Obtain ProLiant Support Pack (PSP) for Microsoft Windows Server 2003 Version 7.50A (or later) at http://h18023.www1.hp.com/support/files/server/us/locate/3376.html or from the SmartStart 7.50 CD. This PSP contains device drivers, management agents, and utilities supported under Windows Server 2003 R2.

NOTE
Once the ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A (or later) is installed, you can use HP Systems Insight Manager available at www.hp.com/go/hpsim to manage your Windows Server 2003 R2 servers.

- For the ProLiant servers listed in Table 5, obtain System Configuration Utility Version 2.58 (or later) at http://h18023.www1.hp.com/support/files/server/us/locate/1950.html and create the associated bootable diskette set. Run the utility and verify that all system configuration options conform to those listed for the chosen platform.

IMPORTANT
Create the bootable diskette set if you plan to use the SmartStart Assisted Installation Path.

Table 5. ProLiant servers with System Configuration Utility support

Compaq ProLiant servers	HP ProLiant DL servers	HP ProLiant ML servers
ProLiant CL380	ProLiant DL360	ProLiant ML150
ProLiant 3000	ProLiant DL380	ProLiant ML150 G2
ProLiant 5500		ProLiant ML330
ProLiant 6000		ProLiant ML350
ProLiant 6400R		ProLiant ML370
ProLiant 6500		ProLiant ML530
ProLiant 7000		ProLiant ML570
ProLiant 8000		
ProLiant 8500		

Other ProLiant servers use the ROM-Based Setup Utility (RBSU). This utility can be used in place of the System Configuration Utility and must be used to specify the operating system on the server if you are using the SmartStart Assisted Installation Path.

Procedures for performing a new installation

This section outlines the proper procedures to follow when performing a new (clean) installation of the Windows Server 2003 R2 operating system on ProLiant servers.

To complete a Windows Server 2003 R2 installation fully supported by HP, follow these steps when setting up the system. Read the following sequence completely before you begin.

Part 1: Choose one of the available methods for installing Windows Server 2003 R2 CD-1

HP BladeSystem installation

The ProLiant Essentials Rapid Deployment Pack is a server deployment product that facilitates the installation, configuration, and deployment of high-volumes of servers via a GUI-based console using either scripting or imaging technology.

Especially designed for HP BladeSystem servers, but supporting all ProLiant servers, the Rapid Deployment Pack has advanced features that can detect and display server blades based on their physical rack, enclosure, and bay location. You can set the deployment console to automatically install or redeploy a previous computer's configuration to a new blade when replaced.

To install Windows Server 2003 R2 on HP BladeSystem servers, HP recommends using Rapid Deployment Pack Version 1.40 (or later).

All blade enclosures ship with a Foundation Pack which includes the Rapid Deployment Pack CD. The Rapid Deployment Pack CD contains all of the drivers, agents, and support software that the blade needs. Use the Rapid Deployment Pack CD with any deployment method chosen to install software on HP BladeSystem servers.

For additional product information and usage instructions for Rapid Deployment Pack, visit www.hp.com/servers/rdp.

Details about other deployment options can be found at the following locations:

- For HP BladeSystem c-Class: http://h71028.www7.hp.com/enterprise/cache/316735-0-0-0-121.html
- For HP BladeSystem p-Class: http://h18004.www1.hp.com/products/servers/proliant-bl/p-class/documentation.html
- For ProLiant BL e-Class (retired): http://h18004.www1.hp.com/products/servers/proliant-bl/e-class/deployment.html

Manual install

To perform a manual installation:

1. Choose a supported system platform from Table 8.
2. Inspect the system to confirm that it conforms to the platform-specific configuration listed in Table 8. If necessary, update the system ROMs as specified in this table.
3. Use the System Configuration Utility to configure the hardware for the server. See Table 5 to determine if this step is necessary for the server.
4. If any of the controllers listed in Table 6 are installed as the boot controller in the server, configure the arrays by accessing the Option ROM Configuration for Arrays utility through the F8 key during boot. Once the configuration is complete, exit the utility to continue the boot process.

Table 6. Smart Array Controllers requiring additional configuration when used as the boot controller

Serial controllers	Parallel SCSI controllers	Retired controllers
Smart Array P600	Smart Array 6404	Integrated Smart Array Controller
Smart Array P400	Smart Array 6402	Smart Array 5i
Smart Array P400i	Smart Array 642	Smart Array 532
	Smart Array 641	Smart Array 5300
	Smart Array 6i	Smart Array 5312

NOTE
Alternatively, you may set your array controller as the secondary controller and install the OS to a SCSI controller. Once the OS is installed, configure the array through the Array Configuration Utility (ACU) using the PSP for Microsoft Windows Server 2003 R2 Version 7.50A.

5. Insert the Windows Server 2003 R2 CD into CD-ROM drive to begin installation.
6. After Windows Server 2003 R2 has been installed, install the Simple Network Management Protocol (SNMP), if you want to use the functionality of the ProLiant Management Agents.
   a. Select the **Control Panel** from the Start menu.
   b. Select **Add/Remove Programs**.
   c. Click **Add/Remove Windows Components**.
   d. Select **Management and Monitoring Tools** from the list of components.
   e. Click **Details**.
   f. Select **Simple Network Management Protocol** so that a checkmark is displayed in the checkbox.
   g. Click **OK** and then **Next**.
   h. Click **Finish**.

7. Install Version 7.50A (or later) of the ProLiant Support Pack (PSP) for Microsoft Windows Server 2003 R2, which is available at http://h18023.www1.hp.com/support/files/server/us/locate/3376.html. The PSP contains numerous files. For the PSP to be installed properly, all files must be present in the same directory as the SETUP.EXE program.

    a. Primary installation method
        i. Run the SETUP.EXE program included with the PSP. By default, all software components are selected forinstallation. In most circumstances, this default selection should not be altered.
        ii. Click Install to proceed with the installation. Although all software components are selected for installation by default, only those required by the server will install. After the installation is complete, the utility will display successfully installed components, non-applicable components, and any component installation failures.

    b. Command prompt installation
        i. Use the SETUPC.EXE to install the PSP from a command line prompt without user interaction. This utility is designed as a tool that can be scripted. As with the SETUP.EXE program, all components appropriate for the target server will be installed.
        ii. For additional usage information, refer to the BPXXXXXX.TXT file included with the downloaded files and the ProLiant Support Pack and Deployment Utilities User Guide posted on the download Web page for the PSP.

Unattended install

For detailed procedures on unattended installs, refer to Microsoft documentation. When using an UNATTEND.TXT file, follow these additional procedures.

1. Add the following line in the unattend section if the UNATTEND.TXT file has the OEMPreinstall flag set.

```
[UNATTEND]
DisableVirtualOemDevices=Yes
```

2. Ensure that any special hardware-specific drivers appropriate for your ProLiant server are available in the specified OEMFilesPath. The drivers for the supported devices may not be included on the base media.

NOTE
These changes are only necessary when using an UNATTEND.TXT file with the OEMPreinstall flag set. Failure to set this flag could cause installs to abort with the following message: "File [filename] could not be loaded. Error code is 18. Setup cannot continue."

Part 2: Install Windows Server 2003 R2 CD-2 (optional)

Once the base operating system has been installed on the server, the administrator will be asked to insert CD-2 in to the CD-ROM drive, upon a reboot of the server. This action prompts the operating system to display a list of R2 specific components that may be installed on the server. To install the components mentioned in the "Introduction to Windows Server 2003 R2" section of this paper, the administrator must choose to install the selected components.

NOTE
An administrator may choose which components to install on the server; it is not required to install every component.

Installing IPMI and WS-Management on HP ProLiant 100 Series Servers

To install IPMI and WS-Management:

1. Insert CD-2 on a ProLiant 100 Series Server with Windows Server 2003 SP1 installed.
2. Select the Management and Monitoring Tools section of the Add/Remove Windows Components Wizard.
3. Press Details and select Hardware Management.

Please refer to the white paper entitled Hardware Management in Microsoft Windows Server 2003 "R2" Beta 2 for complete installation instructions: www.microsoft.com/whdc/system/pnppwr/wsm.mspx.

Creating the SMBIOS IPMI device on HP ProLiant 100 Series Servers

If your system does not automatically detect IPMI through Plug and Play and install the driver, but a IPMI BMC device was detected during the setup process, the IPMI BMC device must be manually created using a command prompt.

To create the IPMI BMC Device, execute the following command from a command prompt:

```
Rundll32 ipmisetp.dll, AddTheDevice
```

After this command is executed, the IPMI device will be created and can be seen under the Device Manager as Microsoft SMBIOS Generic IPMI Compliant Device. The device will be removed when the Hardware Management component is uninstalled.

Known issues and workarounds

This section details the known issues with installing Windows Server 2003 R2 on ProLiant servers and provides information about resolving them. Refer to Table 7.

NOTE
Issues for Microsoft Windows Server 2003 with SP1 may also apply to Windows Server 2003 R2. Refer to the Implementing Microsoft Windows Server 2003 with Service Pack 1 with ProLiant servers integration note for details.

Table 7. Known issues

Issue 1	**The Microsoft IPMI driver will not install on HP ProLiant servers.**	
	Description	The Microsoft IPMI driver fails to load on HP ProLiant servers. For additional information and a link to the hotfix that resolves this issue, refer to Microsoft Knowledge Base Article 912134 (http://support.microsoft.com/?kbid=912134).
	Solution	Download and install the hotfix from Microsoft, as instructed in Microsoft Knowledge Base Article 912134.
Issue 2	**SYSTEM ROM UPGRADE REQUIRED on ProLiant servers with Intel Xeon, Xeon DP, or Xeon MP processors to correct timing marginality in the Instruction Decoder.**	
	Description	Intel Corp. has identified a timing marginality in a small percentage of Intel Xeon, Intel Xeon DP and Intel Xeon MP Processors that can cause erratic system behavior after prolonged usage. Based on Erratum P72 in the Intel Xeon Processor Specification Update and Erratum O69 in the Intel Xeon MP Processor Specification Update dated July 2004, the timing marginality in the instruction decoder unit may cause unpredictable application or system behavior. For additional details, refer to the customer advisory located at http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=PSD_EL040709_CW01.
	Solution	This timing marginality in Intel Xeon, Intel Xeon DP and Intel Xeon MP Processors is corrected in the June 2004 System ROMs. However, separate Intel errata (Erratum P76 and Erratum O73 - A Timing Marginality in the Arithmetic Logic Unit May Cause Indeterminate Behavior) has been corrected in System ROMs dated September 2004. System ROMs dated September 2004 include the microcode required to correct BOTH errata P72 and P76 in the Xeon Processor and errata O69 and O73 in the Xeon MP Processor. HP strongly recommends downloading and applying the System ROMPaq Upgrade Diskette (dated September 2004 or later) to upgrade the ProLiant System ROM to the appropriate date.

Table 7. Known issues (continued)

Issue 3	**HP ProLiant servers running HP Insight Server Agents for Windows may experience high CPU utilization.**	
	Description	An HP ProLiant server operating in a Microsoft Windows environment and loading the HP Insight Management Agents for Windows Version 7.40 may experience high CPU utilization, resulting in degraded system performance. CPU utilization may reach 50 to100 percent and remain high on multiprocessor systems. Systems with a single CPU may reach 100 percent. A call responsible for the memory code initialization process from the Server Agents in PSP 7.40 to the Windows Health driver becomes trapped in an endless loop, causing the processor utilization to rise. For additional details, refer to the customer advisory located at http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?locale=en_US&objectID=c00568181.
	Solution	To prevent high CPU utilization from occurring, upgrade the HP Insight Management Agents and System Management drivers to the following versions as appropriate for the specific ProLiant server: **CP005816** – HP ProLiant Advanced System Management Controller Driver for Windows 2000/Server 2003 Version 5.36.0.0 (or later) http://h18007.www1.hp.com/support/files/server/us/locate/8832.html **CP005817** – HP ProLiant iLO Advanced and Enhanced System Management Controller Driver for Windows 2000/Server 2003 Version 5.39.0.0 (or later) http://h18007.www1.hp.com/support/files/server/us/locate/8818.html **CP005818** – HP ProLiant iLO Advanced and Enhanced System Management Controller Driver for Windows Server 2003 X64 Editions Version 5.39.0.0 (or later) http://h18007.www1.hp.com/support/files/server/us/locate/8609.html **CP006033** – HP Insight Management Agents for Windows 2000/Windows Server 2003 Version 7.41 (or later) http://h18007.www1.hp.com/support/files/server/us/locate/7258.html **CP006034** – HP Insight Management Agents for Windows Server 2003 X64 Editions Version 7.41 (or later) http://h18007.www1.hp.com/support/files/server/us/locate/8627.html
Issue 4	**Installation of Spanish Version of Microsoft Windows Server 2003 R2 on ProLiant DL385 and ProLiant DL585 servers stops responding during beginning of GUI portion of installation.**	
	Description	When installing the Spanish version of Microsoft Windows Server 2003 R2 (any edition) by booting from the Microsoft base media CD-ROM, a pop-up message appears indicating that there was a problem reading the CD-ROM drive. Clicking Retry only causes the pop-up message to return. This occurs when reading the internal CD-ROM drive during the beginning of the GUI portion of the installation. This issue only occurs on ProLiant DL385 and ProLiant DL585 servers installing the Spanish version of Microsoft Windows Server 2003 R2 (any edition) when booting from the base media on the internal CD-ROM drive.
	Solution	To install the operating system, perform either of the following: • Use the SmartStart Assisted Installation. **OR** • Use a USB CD-ROM drive.

Appendix: Supported hardware list

Table 8. Supported ProLiant server platforms

Server platform	ROM family	ROM date (minimum)
ProLiant BL10e[4]	I03	02/17/03
ProLiant BL10e G2[4]	I07	08/12/03
ProLiant BL20p[4]	I01	01/31/03
ProLiant BL20p G2[4]	I04	09/16/04
ProLiant BL20p G3[4]	I08	03/02/05
ProLiant BL20p G4[4]	I13	06/14/06
ProLiant BL25p[4]	A02	04/14/05
ProLiant BL30p[4, 5]	I10	09/16/04
ProLiant BL35p[4]	A03	03/09/05
ProLiant BL40p[4, 5]	I02	09/15/04
ProLiant BL45p	A02	03/09/05
ProLiant BL460c	I15	06/16/06
ProLiant BL480c	I14	06/21/06
ProLiant CL380	P17	12/18/02
ProLiant DL140	DL140	11/25/04
ProLiant DL140 G2	DL140G2	08/15/05
ProLiant DL140 G3	DL140G3	06/18/06
ProLiant DL145	DL145	03/22/05
ProLiant DL145 G2	DL145G2	05/05/05
ProLiant DL320	D05	11/15/02
ProLiant DL320 G2[4, 5]	D13	09/15/04
ProLiant DL320 G3[4]	D18	03/04/05
ProLiant DL360	P21	11/15/02
ProLiant DL360 G2[4]	P26	02/07/03
ProLiant DL360 G3[4, 5]	P31	09/15/04
ProLiant DL360 G4[4]	P52	12/02/04
ProLiant DL360 G4p[4]	P54	01/12/05
ProLiant DL360 G5	P58	06/13/06
ProLiant DL380 (667-1000 MHz)	P17	12/18/02

Table 8. Supported ProLiant server platforms

Server platform	ROM family	ROM date (minimum)
ProLiant DL380 G2 (1133 MHz and greater)	P24	11/15/02
ProLiant DL380 G3[4, 5]	P29	09/15/04
ProLiant DL380 G4[4]	P51	12/02/04
ProLiant DL380 G4 Packaged Cluster[4]	P51	12/02/04
ProLiant DL380 G5[4]	P56	06/13/06
ProLiant DL385 Packaged Cluster with MSA500 G2	A05	04/29/05
ProLiant DL385	A05	04/29/05
ProLiant DL560[4, 5]	P30	09/15/04
ProLiant DL580	P20	12/17/02
ProLiant DL580 G2[4, 5]	P27	09/15/04
ProLiant DL580 G4	P59	06/01/06
ProLiant DL585[4]	A01	03/09/05
ProLiant DL740[4, 5]	P47	09/15/04
ProLiant DL760[4]	P46	12/15/02
ProLiant DL760 G2[4, 5]	P44	09/15/04
ProLiant ML110	ML110	07/16/04
ProLiant ML110 G2	ML110G2	08/11/05
ProLiant ML110 G3	ML110G3	10/05/05
ProLiant ML150	AMI	05/26/04
ProLiant ML150 G2	ML150G2	01/28/05
ProLiant ML150 G3	ML150G3	05/30/06
ProLiant ML310[4, 5]	D12	09/15/04
ProLiant ML310 G2	W01	02/15/05
ProLiant ML310 G3	W02	09/20/05
ProLiant ML330	D03	11/15/02
ProLiant ML330 G2[4]	D10	02/17/03
ProLiant ML330 G3	D15	03/25/03
ProLiant ML330e	D06	11/15/02

Table 8. Supported ProLiant server platforms

Server platform	ROM family	ROM date (minimum)
ProLiant ML350 (1 GHz)	D04	11/15/02
ProLiant ML350 (600, 733, 800, 866, 933 MHz)	D02	11/15/02
ProLiant ML350 G2 (1133 MHz and greater)[4]	D11	02/17/03
ProLiant ML350 G3[4, 5]	D14	09/15/04
ProLiant ML350 G4[4]	D17	12/02/04
ProLiant ML350 G4p[4]	D19	02/21/05
ProLiant ML350 G5	D21	06/16/06
ProLiant ML370 (667-1000 MHz)	P17	12/18/02
ProLiant ML370 G2 (1133 MHz and greater)	P25	11/15/02
ProLiant ML370 G3[4,5]	P28	09/15/04
ProLiant ML370 G4[4]	P50	12/02/04
ProLiant ML370 G5[4]	P57	06/13/06
ProLiant ML530	P19	12/18/02
ProLiant ML530 G2[4, 5]	P22	09/15/04
ProLiant ML570	P20	12/17/02
ProLiant ML570 G2[4, 5]	P32	09/15/04
ProLiant ML570 G3[4]	P37	02/28/05
ProLiant ML570 G4[4]	P60	06/01/06
ProLiant ML750	P45	12/15/02
ProLiant 3000 (Pentium III Processor)	P09	11/08/00
ProLiant 5500 (Pentium III Xeon Processor)	P12	11/08/00
ProLiant 6000 (Pentium III Xeon Processor)	P40	12/27/99
ProLiant 6400R (Pentium III Xeon Processor)	P11	11/08/00
ProLiant 6500 (Pentium III Xeon Processor)	P11	11/08/00

Table 8. Supported ProLiant server platforms

Server platform	ROM family	ROM date (minimum)
ProLiant 7000 (Pentium III Xeon Processor)	P40	12/27/99
ProLiant 8000	P41	12/15/02
ProLiant 8500	P42	12/15/02

Note 4: The ROM for this ProLiant server supports the Microsoft Emergency Management Service console feature in Windows Server 2003 R2.

Note 5: This System ROM upgrade is considered a critical fix and is required to correct Issue 2 in the "Known issues and workarounds" section of this paper. HP strongly recommends immediate application of required critical fixes. Neglecting to perform the required action could leave the server in an unstable condition, which could potentially result in sub-optimal server performance, server lockups or failures, ungraceful server shutdowns, hardware damage, or data corruption or loss. By disregarding this notification, the customer accepts the risk of incurring future related events.

Table 9. Supported ProLiant storage options

Option	Driver	Location	Digital signature
HP 36 GB Hard Disk Drives	DISK.SYS	Windows Server 2003 R2 CD 1	Yes
HP 72 GB Hard Disk Drives	DISK.SYS	Windows Server 2003 R2 CD 1	Yes
HP 144 GB Hard Disk Drives	DISK.SYS	Windows Server 2003 R2 CD 1	Yes
36.4 GB 10,000 rpm Hard Disk Drives	DISK.SYS	Windows Server 2003 R2 CD 1	Yes
72.8 GB 10,000 rpm Hard Disk Drives	DISK.SYS	Windows Server 2003 R2 CD 1	Yes
146.8 GB 10,000 rpm Hard Disk Drives	DISK.SYS	Windows Server 2003 R2 CD 1	Yes
18.2 GB 15,000 rpm Hard Disk Drives	DISK.SYS	Windows Server 2003 R2 CD 1	Yes
36.4 GB 15,000 rpm Hard Disk Drives	DISK.SYS	Windows Server 2003 R2 CD 1	Yes
72.8 GB 15,000 rpm Hard Disk Drives	DISK.SYS	Windows Server 2003 R2 CD 1	Yes
60 GB 5,200 rpm 2.5" SATA Hard Disk Drives	DISK.SYS	Windows Server 2003 R2 CD 1	Yes
80 GB 7,200 rpm 3.5" SATA Hard Disk Drives	DISK.SYS	Windows Server 2003 R2 CD 1	Yes

Table 9. Supported ProLiant storage options

Option	Driver	Location	Digital signature
160 GB 7,200 rpm 3.5" SATA Hard Disk Drives	DISK.SYS	Windows Server 2003 R2 CD 1	Yes
250 GB 7,200 rpm 3.5" SATA Hard Disk Drives	DISK.SYS	Windows Server 2003 R2 CD 1	Yes
500 GB 7,200 rpm 3.5" SATA Hard Disk Drives	DISK.SYS	Windows Server 2003 R2 CD 1	Yes
36 GB 10,000 rpm 2.5" SAS SFF Hard Disk Drives	DISK.SYS	Windows Server 2003 R2 CD 1	Yes
72 GB 10,000 rpm 2.5" SAS SFF Hard Disk Drives	DISK.SYS	Windows Server 2003 R2 CD 1	Yes
36 GB 15,000 rpm 3.5" SAS FF Hard Disk Drives	DISK.SYS	Windows Server 2003 R2 CD 1	Yes
72 GB 15,000 rpm 3.5" SAS FF Hard Disk Drives	DISK.SYS	Windows Server 2003 R2 CD 1	Yes
146 GB 15,000 rpm 3.5" SAS FF Hard Disk Drives	DISK.SYS	Windows Server 2003 R2 CD 1	Yes
Compaq 4x-32x CD-ROM Drives	CDROM.SYS	Windows Server 2003 R2 CD 1	Yes
HP DDS2/3/4 Tape Drives	4MMDAT.SYS	Windows Server 2003 R2 CD 1	Yes
HP DAT Tape Drive (all models)	HPDAT.SYS	For 32-bit: SP21969 For 64-bit: SP21970	Yes
LTO Ultrium-1 Tape Drives (all models)	LTOTAPE.SYS	Windows Server 2003 R2 CD 1	Yes
LTO Ultrium-1/2/3 Tape Drive (all models)	HPLTO.SYS	For 32-bit: SP21966 For 64-bit: SP21967	Yes
HP SureStore VS80/VS160	DLTTAPE.SY	Windows Server 2003 R2 CD 1	Yes
HP DDS4 6 Cassette Autoloader	DDSMC.SYS	Windows Server 2003 R2 CD 1	Yes
HP DAT 72 * 6 Autoloader	HPDATCHG.SYS	Web download	Yes
HP DAT 72 * 10 Autoloader	HPDATCHG.SYS	Web download	Yes
StorageWorks 8/16 Cartridge DLT Autoloader	ADICSC.SYS	Windows Server 2003 R2 CD 1	Yes
StorageWorks SSL1016 Autoloader	HP116N32.SYS	For 32-bit: SP21971	Yes
Compaq DLT 15 Cartridge Library Model 15/30	HPMC.SYS	Windows Server 2003 R2 CD 1	Yes

Table 9. Supported ProLiant storage options

Option	Driver	Location	Digital signature
Compaq DLT 15 Cartridge Library Model 20/40	HPMC.SYS	Windows Server 2003 R2 CD 1	Yes
Compaq DLT 15 Cartridge Library Model 35/70	HPMC.SYS	Windows Server 2003 R2 CD 1	Yes
Compaq DLT Tape Drives	DLTTAPE.SYS	Windows Server 2003 R2 CD 1	Yes
StorageWorks MSL5000 Series Mini-Libraries	LIBXPRMC.SYS	Windows Server 2003 R2 CD 1	Yes
StorageWorks SSL2020 AIT Mini-Library	LIBXPRMC.SYS	Windows Server 2003 R2 CD 1	Yes
StorageWorks TL881 DLT Mini-Library	LIBXPRMC.SYS	Windows Server 2003 R2 CD 1	Yes
StorageWorks TL891 DLT Mini-Library	LIBXPRMC.SYS	Windows Server 2003 R2 CD 1	Yes
Drive Array Notification[6]	CPQDAEN.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes
Smart Array 5xxx Notification Driver[6]	CPQCISSE.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes
Smart Array 5i Controller[6, 7]	CPQCISSM.SYS	Windows Server 2003 R2 CD-1	Yes
Smart Array 5i Controller Plus[6, 7]	CPQCISSM.SYS	Windows Server 2003 R2 CD-1	Yes
Smart Array 5300 Controller[6, 7]	CPQCISSM.SYS	Windows Server 2003 R2 CD-1	Yes
Smart Array 5302 Controller[6, 7]	CPQCISSM.SYS	Windows Server 2003 R2 CD-1	Yes
Smart Array 5304 Controller[6, 7]	CPQCISSM.SYS	Windows Server 2003 R2 CD-1	Yes
Smart Array 5312 Controller[6, 7]	CPQCISSM.SYS	Windows Server 2003 R2 CD-1	Yes
Smart Array 532 Controller[6, 7]	CPQCISSM.SYS	Windows Server 2003 R2 CD-1	Yes
Smart Array 6i Controller[6, 7]	CPQCISSM.SYS	Windows Server 2003 R2 CD-1	Yes
Smart Array 6402 Controller[6, 7]	CPQCISSM.SYS	Windows Server 2003 R2 CD-1	Yes
Smart Array 6404 Controller[6, 7]	CPQCISSM.SYS	Windows Server 2003 R2 CD-1	Yes

Table 9. Supported ProLiant storage options

Option	Driver	Location	Digital signature
Smart Array 641 Controller[6, 7]	CPQCISSM.SYS	Windows Server 2003 R2 CD-1	Yes
Smart Array 642 Controller[6, 7]	CPQCISSM.SYS	Windows Server 2003 R2 CD-1	Yes
Smart Array P400 Controller	HPCISSS2.SYS	Windows Server 2003 R2 CD-1	Yes
Smart Array P600 Controller	HPCISSS2.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes
HP Smart Array SAS/SATA Controller Driver for Microsoft Windows Server 2003[7]	HPCISSS2.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes
Fibre Channel Host Controller/P (32-bit/33-MHz Fibre Channel Host Adapter)[6]	CPQFCALM.SYS	Windows Server 2003 R2 CD-1	Yes
Fibre Channel Host Controller/P (64-bit/66-MHz Fibre Channel Host Adapter)[6]	CPQFCALM.SYS	Windows Server 2003 R2 CD-1	Yes
Fibre Channel Filter Driver[6]	CPQFCFTR.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes
HP StorageWorks Fibre Channel Array Notification Driver for Windows 2000/Server 2003[6, 7]	CPQFCAC.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes
Smart Array 431, 4200, Smart Array 4250ES, and Integrated Smart Array Controllers[6, 7]	CPQARRY2.SYS	Windows Server 2003 R2 CD-1	No
Integrated Dual Channel Wide Ultra2 SCSI Adapter[6]	SYM_HI.SYS	Windows Server 2003 R2 CD-1	Yes
Integrated Wide Ultra2 SCSI Adapter[6]	SYM_HI.SYS	Windows Server 2003 R2 CD-1	Yes
Integrated Ultra2 SCSI Adapter[6]	SYMC8XX.SYS	Windows Server 2003 R2 CD-1	Yes
64-Bit Dual Channel Wide Ultra2 SCSI Adapter[6]	SYM_HI.SYS	Windows Server 2003 R2 CD-1	Yes
64-bit/66MHz Dual Channel Wide Ultra 3 SCSI Adapter[6]	ADPU160M.SYS	Windows Server 2003 R2 CD-1	Yes

Table 9. Supported ProLiant storage options

Option	Driver	Location	Digital signature
64-bit/66MHz Single Channel Wide Ultra 3 SCSI Adapter[6]	ADPU160M.SYS	Windows Server 2003 R2 CD-1	Yes
ProLiant Storage System[6]	PRLNTSS.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes
Integrated Dual Channel Ultra320 SCSI Controller	SYMMPI.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes
HP 64-bit/13MHz Dual Channel Ultra320 SCSI Host Bus Adapter	SYMMPI.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes
HP 64-bit/13MHz Single Channel Ultra320 SCSI Host Bus Adapter	SYMMPI.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes

Note 6: Driver upgrades for many of the listed devices are included in Version 7.50A of the ProLiant Support Pack for Microsoft Windows Server 2003 R2. After installing Windows Server 2003 R2, update those drivers to enhance their reliability and functionality.

Note 7: Many of these devices have firmware upgrades available through variations of the Options ROMPaq. The latest version of each Options ROMPaq is available on the software and drivers website at http://h18007.www1.hp.com/support/files/server/us/index.html.

Unless otherwise noted, the driver listed will work for both Windows Server 2003 R2 X86 and X64 editions.

Table 10. Supported ProLiant Network Interface Controllers

NIC	Driver	Location	Digital signature (Y/N)
NC3120 Fast Ethernet	N100325.SYS	Windows Server 2003 R2 CD-1	Yes
HP NC3122 Fast Ethernet	N100325.SYS	Windows Server 2003 R2 CD-1	Yes
HP NC3123 Fast Ethernet	N100325.SYS	Windows Server 2003 R2 CD-1	Yes
HP NC3131 Fast Ethernet	N100325.SYS	Windows Server 2003 R2 CD-1	Yes
HP NC3132 Fast Ethernet Upgrade Module	N100325.SYS	Windows Server 2003 R2 CD-1	Yes
HP NC3133 Fast Ethernet Upgrade Module	N100325.SYS	Windows Server 2003 R2 CD-1	Yes
HP NC3134 Fast Ethernet	N100325.SYS	Windows Server 2003 R2 CD-1	Yes
NC3135 Fast Ethernet Upgrade Module	N100325.SYS	Windows Server 2003 R2 CD-1	Yes

Table 10. Supported ProLiant Network Interface Controllers

NIC	Driver	Location	Digital signature (Y/N)
HP NC3162 Fast Ethernet (Embedded)	N100325.SYS	Windows Server 2003 R2 CD-1	Yes
HP NC3163 Fast Ethernet (Embedded)	N100325.SYS	Windows Server 2003 R2 CD-1	Yes
HP NC4621 Token Ring NIC	CPQTRND5.SYS	Windows Server 2003 R2 CD-1	Yes
HP NC6132 Gigabit Module	N1000NT5.SYS	Windows Server 2003 R2 CD-1	Yes
HP NC6133 Gigabit Module	N1000NT5.SYS	Windows Server 2003 R2 CD-1	Yes
HP NC6134 Gigabit	N1000NT5.SYS	Windows Server 2003 R2 CD-1	Yes
HP NC6136 Gigabit	N1000NT5.SYS	Windows Server 2003 R2 CD-1	Yes
HP NC6170 Gigabit Server Adapter	N1000325.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes
HP NC6170 Gigabit Server Adapter – X64 Edition	E1G5132E.SYS	Windows Server 2003 R2 X64 Editions CD-1	Yes
HP NC7131 Gigabit	N1000NT5.SYS	Windows Server 2003 R2 CD-1	Yes
HP NC7132 Gigabit Module	N1000NT5.SYS	Windows Server 2003 R2 CD-1	Yes
HP NC7170 Gigabit Server Adapter	N1000325.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes
HP NC7170 Gigabit Server Adapter – X64 Edition	E1G5132E.SYS	Windows Server 2003 R2 X64 Editions CD-1	Yes
HP NC7760 PCI-X Gigabit Server LAN on the Motherboard (LOM)	Q57XP32.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes
HP NC7761 Gigabit Server Adapter	Q57XP32.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes
HP NC7761 Gigabit Server Adapter – X64 Edition	B57AMD64.SYS	Windows Server 2003 R2 X64 Editions CD-1	Yes
HP NC7770 Gigabit	Q57XP32.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes

Table 10. Supported ProLiant Network Interface Controllers

NIC	Driver	Location	Digital signature (Y/N)
HP NC7771 Gigabit Server Adapter	Q57XP32.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes
HP NC7771 Gigabit Server Adapter – X64 Edition	B57AMD64.SYS	Windows Server 2003 R2 X64 Editions CD-1	Yes
HP NC7780 PCI Gigabit Server LOM	Q57XP32.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes
HP NC7781 PCI-X Gigabit Server LOM	Q57XP32.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes
HP NC7781 PCI-X Gigabit Server Adapter – X64 Edition	B57AMD64.SYS	Windows Server 2003 R2 X64 Editions CD-1	Yes
HP NC7782 PCI-X Gigabit Server Adapter	Q57XP32.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes
HP NC7782 PCI-X Gigabit Server Adapter – X64 Edition	B57AMD64.SYS	Windows Server 2003 R2 X64 Editions CD-1	Yes
IBM 16/4 TOKEN RING PCI SPECIAL	IBMTRP.SYS	Windows Server 2003 R2 CD-1	Yes
Netelligent 16/4 PCI IBM UTP/STP Controller	IBMTRP.SYS	Windows Server 2003 R2 CD-1	Yes
HP NC7761 Gigabit Server Adapter	Q57XP32.SYS	ProLiant Support Pack for Microsoft Windows Server 2003 Version 7.50A	Yes

IMPORTANT: The drivers for the network interface controllers reside on the Windows Server 2003 R2 CD-1 and have undergone testing by Microsoft and HP.

Network Interface Controller Drivers for X64 are listed separately.

For more information

For additional information, refer to the resources listed below.

HP and Microsoft Frontline Partnership website - www.hp.com/go/microsoft

Microsoft website - www.microsoft.com

Call to action

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