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Implementing Microsoft Windows 2000 on Compaq x86 Server Products

Abstract: This document provides information on installing, implementing, and troubleshooting Microsoft Windows 2000 Server and Windows 2000 Advanced Server on Compaq ProLiant and Prosignia servers for network administrators and field service engineers. This document contains information on implementations which include Microsoft Service Pack 1 (SP1).

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

Compaq continues to test Microsoft Windows 2000 Server and Advanced Server with its products. To obtain the latest information, check <http://www.compaq.com/partners/microsoft/windows2000> and <http://www.microsoft.com/enterprise/alliances/compaq.htm>.

Other documents from Compaq offer solutions for upgrading and migrating to Windows 2000 on Compaq x86 Server Products. They are available on the Compaq Windows 2000 website, <http://www.compaq.com/partners/microsoft/windows2000/whitepapers.html> or from the Compaq white papers site, http://www.compaq.com/support/techpubs/whitepapers/WhitePapers_Operating_Systems.html.

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Implementing Microsoft Windows 2000 on Compaq x86 Server Products
Integration Note prepared by OS Integration

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Overview

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

In developing information for this document, we used the following Compaq software:

- Compaq SmartStart Release 4.80
- Compaq Management CD Release 4.80
- Compaq Support Paq for Microsoft Windows 2000 Version 5.03A (Compaq Support Paq)

The Compaq SmartStart and Support Software CD ships with your Compaq server or you can obtain the Compaq SmartStart and Support Software CD Release 4.80 through our subscription service, http://www.compaq.com/products/servers/SmartStart/ss_subscription.html. The Compaq Management CD and Support Paq can be downloaded through http://www.compaq.com/support/files/Compaq_ProLiant_Servers.html at no 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 Windows 2000 environment, or if an upgrade or replacement must be found. Finally, evaluate your hardware to determine which hardware migrates, which upgrades, and which must be replaced.

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

Your strategy should include checking the [Compaq Windows 2000 website](http://www.compaq.com/services/windows2000/index.html) for new information on a regular basis. Compaq Global Services can help you plan your Windows 2000 implementation; check their website, <http://www.compaq.com/services/windows2000/index.html>.

Installation Considerations

Microsoft ships Windows 2000 Server and Windows 2000 Advanced Server with and without Microsoft Service Pack 1 (SP1). SP1 contains a comprehensively tested collection of updates that addresses customer-reported concerns with the Windows 2000 operating system. SP1 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 SP1 or installing the integrated version. Before installing the integrated version of Windows 2000, make certain that your software applications support SP1.

IMPORTANT: If you install the integrated version of Windows 2000 and SP1, you cannot uninstall SP1.

Our testing for this document used SmartStart Release 4.80, Compaq Management CD Release 4.80, and Compaq Support Paq for Microsoft Windows 2000 Version 5.03A. These releases, and later, support both Microsoft Windows 2000 Server and Windows 2000 Advanced Server as well as Microsoft Service Pack 1.

Compaq testers found the following improvements in Compaq configurations running Windows 2000 after installing Microsoft SP1:

- SNMP traps show in the All Events windows and update in the Notices Table when using Compaq Insight Manager XE.
- PCI hot plug implementation is smoother.

IMPORTANT: To properly implement PCI hot plug with Service Pack 1, use SmartStart Release 4.90 or SoftPaq 13158. Locate the SoftPaq through our website, <http://www.compaq.com/support/files/server/US/download/8773.html>.

- Clustered systems showed more stability and better performance.
- Installations on partitions greater than or equal to 6 GB can be supported on those systems using boot devices supported by the *CPQARRAY.SYS* driver.

Upgrade/Migration Considerations

Many customers implement Windows 2000 in stages requiring new installation on some hardware and upgrading or migrating older hardware to Windows 2000. We recommend that you review the Compaq white papers *Upgrading to Windows 2000 on Compaq Server Products* and *Migrating to Windows 2000 on Compaq Server Products* available on the Compaq website, http://www.compaq.com/support/techpubs/whitepapers/WhitePapers_Operating_Systems.html.

These documents specifically address the issues relevant to upgrading to Windows 2000 and migrating Compaq hardware while performing an upgrade. These documents now include updated testing with SP1.

Supported Hardware

Compaq supports Windows 2000 Server and Windows 2000 Advanced Server on the following ProLiant and Prosignia servers:

- ProLiant 400
- ProLiant 800
- ProLiant 850R
- ProLiant 1200
- ProLiant 1500
- ProLiant 1600
- ProLiant 1850R
- ProLiant 2500
- ProLiant 3000
- ProLiant 4500
- ProLiant 5000
- ProLiant 5500
- ProLiant 5500 Xeon
- ProLiant 6000
- ProLiant 6000 Xeon
- ProLiant 6400R
- ProLiant 6500
- ProLiant 6500R
- ProLiant 7000
- ProLiant 7000 Xeon
- ProLiant 8000
- ProLiant 8500
- ProLiant CL380
- ProLiant CL1850
- ProLiant DL360
- ProLiant DL380
- ProLiant DL580
- ProLiant ML330
- ProLiant ML350

- ProLiant ML370
- ProLiant ML530
- ProLiant ML570
- ProSignia 200 Server
- Prosignia Server 720
- Prosignia Server 740

Use the latest ROMPaq for your server and options available through <http://www.compaq.com/support/files/server/us/index.html>. The latest ROMPaq versions support Microsoft Windows 2000 Server and Windows 2000 Advanced Server. Documents are available on the Compaq website to assist in determining the ROM version and family of your Compaq server products. You can determine your system ROM family code, family table and version through our website, <http://www.compaq.com/support/files/server/us/romtabl.htm>.

Hardware System Requirements

Compaq does not support use of Windows 2000 Professional Edition on Compaq server platforms.

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

To use Microsoft Windows 2000 Server, your equipment must meet the requirements described in Table 1.

Table 1. Microsoft Windows 2000 Server hardware requirements

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

Requirements for Microsoft Windows 2000 Advanced Server appear in Table 2.

Table 2. Microsoft Windows 2000 Advanced Server hardware requirements

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

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

Cluster Configurations

Compaq supports Windows 2000 Server and Advanced Server on the following cluster solutions:

- ProLiant CL380
- ProLiant CL1850
- ProLiant Cluster HA/F100
- ProLiant Cluster HA/F200
- ProLiant Cluster HA/F500

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

System ROMs and Option ROMs for Windows 2000

The latest Windows 2000-compatible firmware for your Compaq server can be located through our website at <http://www.compaq.com/support/files/>. This site provides special firmware upgrades for Compaq x86 servers and server options including both System and Option ROMPaqs. The latest Compaq SmartStart and Support Software CD also contains ROMPaqs to take advantage of Windows 2000 enhancements.

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

Other Compaq Components

Other Compaq 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 Compaq components benefit from the enhanced drivers available in Compaq Support Paq for Microsoft Windows 2000 (Compaq Support Paq) on the Compaq website, <http://www.compaq.com/support/files/>.

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

If you install Compaq drivers after installing Service Pack 1 (SP1) and later uninstall SP1, you might have to reinstall the Compaq drivers. As with all Microsoft Service Pack uninstall procedures, registry changes can remove drivers or cause them to behave erratically.

Support Software

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

- Compaq Array Configuration Utility
- Compaq Insight Management Agents
- Compaq Server Diagnostics
- Compaq System Configuration Utility
- Compaq Support Paq for Windows 2000

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

The latest versions of this software for your Compaq server are available through our website, <http://www.compaq.com/support/files/> or on the Compaq SmartStart and Support Software CD.

Installation

This section provides detailed instructions for installing 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.

Compaq strongly recommends that you read the complete document carefully before you start. Be aware that you cannot install Windows 2000 on the same partition as Windows NT and have a stable platform. Neither Windows NT nor Windows 2000 will operate correctly if installed in the same system partition.

To retain an existing Windows NT 4.0 (NTFS or FAT) or Windows NT 3.51 installation on your server, you must install Windows 2000 to a separate logical partition. Windows 2000 allows you to choose NTFS or FAT during the installation process. During the installation, Windows 2000 converts all NTFS partitions to NTFS5 partitions automatically. Windows NT 4.0 can read these partitions with the Microsoft Service Pack 4 or later installed; Windows NT 3.51 cannot read these partitions.

Before You Begin

Make certain you have enough space to create a partition large enough to install Windows 2000, Compaq Support Paq for Microsoft Windows 2000, and your applications. If you install to a partition in a server operating under Windows NT 4.0, apply the latest Microsoft Service Pack for Windows NT 4.0. If you do not include this step in your preparation, the Windows NT 4.0 partition might not be able to read your data after the installation of Windows 2000. The Microsoft Service Pack is available through the Microsoft website at <http://www.microsoft.com/NTServer/all/downloads.asp>. Also, install the latest Compaq Support Software for Microsoft Windows NT through the Compaq website, <http://www.compaq.com/support/files>.

Obtain the latest Compaq SmartStart and Support Software CD or download the Compaq Support Paq for Microsoft Windows 2000 from <http://www.compaq.com/support/files/>. Compaq Support Paq for Microsoft Windows 2000 replaces the Compaq Server Support diskettes for Windows NT (Compaq SSD for Windows NT). It requires more than 9.2 MB of disk space and does not create diskettes. Before beginning the Windows 2000 installation, copy the Support Paq files directly to the partition you plan to use for installation.

The following utilities are available as Compaq Support Software containing diskette image files from the Compaq website at <http://www.compaq.com/support/files/>:

- Compaq Array Configuration Utility
- Compaq System Configuration Utility

SmartStart Configuration

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

For high volume server deployment, check the SmartStart Scripting Toolkit. It delivers unattended automated installation to simplify high volume deployments. It offers the following key features:

- SmartStart technology
- Replication utilities
- Configuration files
- Scripting

Benefits include unattended installation, scaling, and the ability to deliver consistent server configurations. To learn more about this product and review its best practices guide, check the Compaq website, <http://www.compaq.com/manage/toolkit.html>. A white paper on this tool entitled *Compaq Delivers the Next Generation Server Deployment Tools: SmartStart Scripting Toolkit* can be found at ftp://ftp.compaq.com/pub/products/servers/management/ssstk_WP.pdf.

Installation Steps

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

1. Update the System and Option ROMs as necessary for your hardware.
2. Initiate the System Configuration Utility to verify that all system configuration options conform to the platform you have chosen.

Note: The Prosignia Server 720 and ProLiant 400 do not need the Compaq System Configuration Utility because they have a ROM-based setup. Therefore, you do not need to specify the operating system on these servers. For these servers, go to Step 4.

3. Change the operating system selection to *Windows 2000* in the supported Configuration Utility.
 - Select Primary Operating System → Microsoft → Windows 2000 → **Enter**.
4. Execute the Compaq Array Configuration Utility if you intend to use Compaq Array controllers in your Windows 2000 environment.

IMPORTANT: After completing Step 5, 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.

5. Boot from the Microsoft Windows 2000 CD to install the operating system. You need your product key code and licensing information. When prompted, either choose a partition with at least 1GB of free space that **does not** contain your existing Windows NT 4.0 installation, or create a new partition with at least 1GB of free space. Detailed instructions for installing Windows 2000 can be found in Help files on the Windows 2000 CD.

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

6. Run *SETUP.EXE* to launch the Compaq Support Paq for Microsoft Windows 2000 after the base operating system installs. This installation utility analyzes the system configuration and installs all necessary Compaq device drivers. For more detailed information, refer to the Readme file.

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

The interface for the Compaq Support Paq appears somewhat different from the standard Compaq Support Software (SSD) for Windows NT. 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 Compaq Support Paq for Windows 2000.

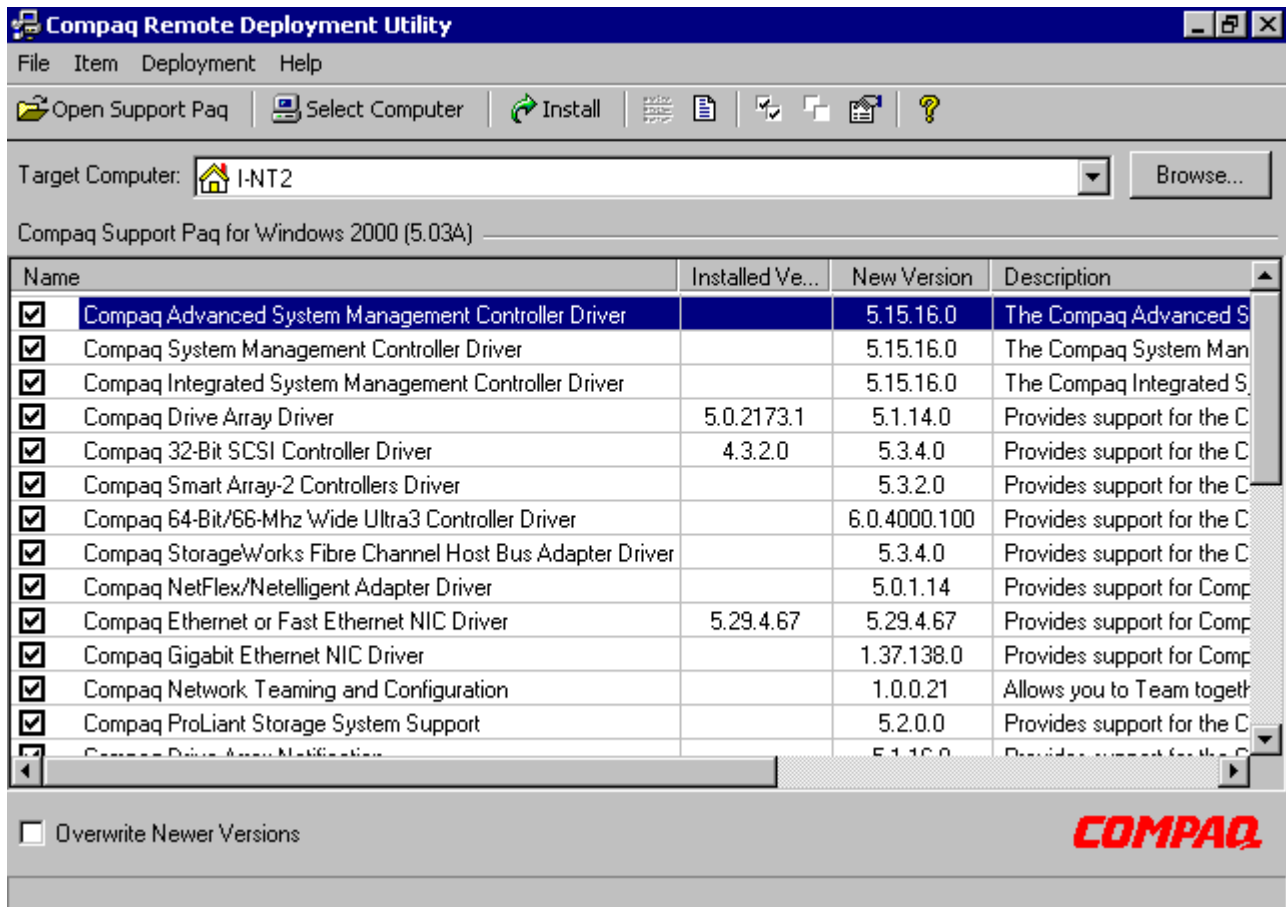


Figure 1. Opening screen for the Compaq Support Paq for Microsoft Windows 2000

7. Restart the server to complete the driver installation.
8. Install Microsoft Service Pack 1 by inserting the CD and selecting Click Here to Install.

Compaq Features

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

Some Compaq features change in Microsoft Windows 2000 and SP1. You might have to reconfigure the Integrated Management Display Utility after installing Microsoft Windows 2000 but the GUI will be familiar. Other feature changes include Compaq Management Agents for Windows 2000, PCI Hot Plug implementation, NIC teaming, and mixed processor steppings.

Compaq Management Agents

The Compaq Management Agents, by default, are installed with the Compaq Support Paq for Microsoft Windows 2000. In Windows 2000, the default security setting for SNMP communities is *READ ONLY*. Because the Compaq Management Agents require read-write access to the community, the default Windows 2000 security setting must be changed after the creation of the SNMP community.

When creating new SNMP communities, verify that 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*.

These agents can also be obtained from the Compaq Management CD. The latest versions are available through the Compaq website at <http://www.compaq.com/support/files/>.

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

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

PCI Hot Plug

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

IMPORTANT: To properly implement PCI hot plug with Service Pack 1, use SmartStart Release 4.90 or SoftPaq 13158. Locate the SoftPaq through our website, <http://www.compaq.com/support/files/server/US/download/8773.html>.

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

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

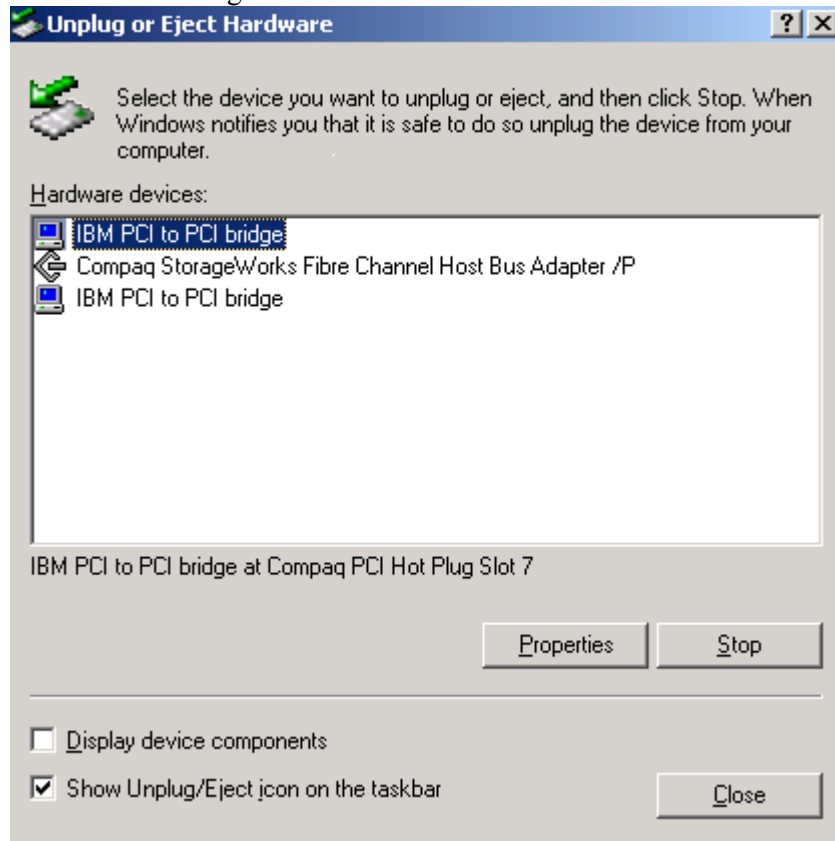


Figure 2. PCI Hot Plug interface screen

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



Figure 3. PCI Hot Plug Unplug/Eject icon

Compaq Storage Agents support the hot add and hot remove of storage controllers with Release 4.61 of the Compaq Storage Agents and later releases (Release 4.80, used in our testing, includes the proper drivers for this support).

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

Teamed NICs

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



Figure 4. Task bar showing broken NIC connections

- Load the appropriate drivers for your NICs through Device Manager.
- Check the box titled Install One of the Other Drivers when you see the screen in Figure 5.

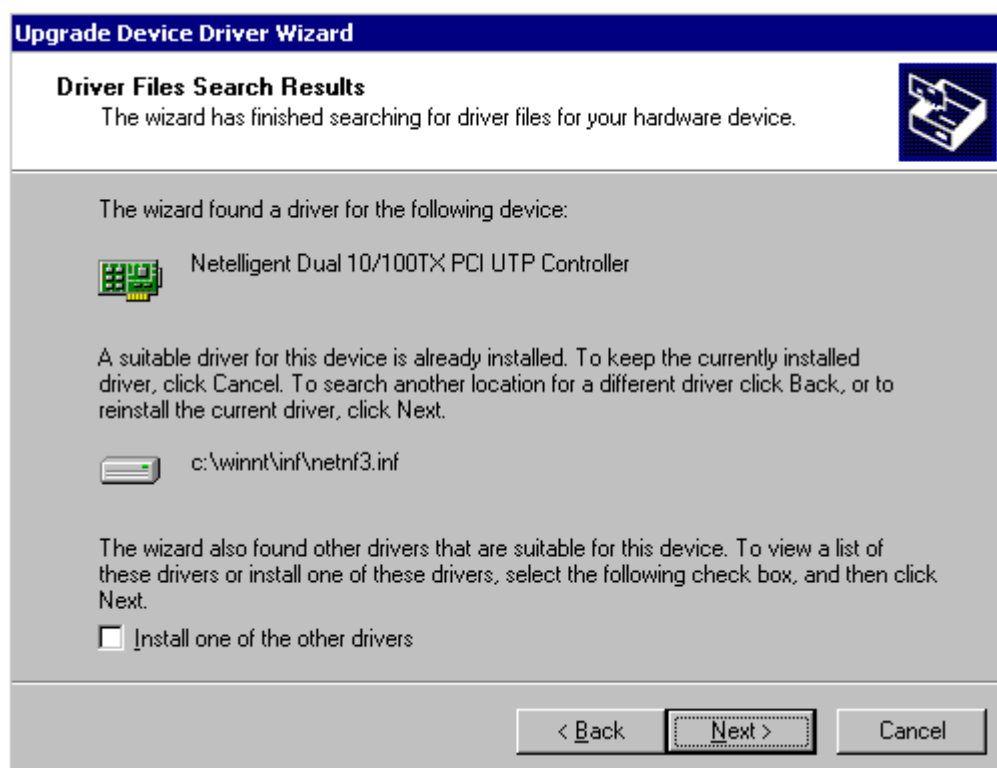


Figure 5. Driver files search results screen

- Install the NIC teaming driver from the Compaq Support Paq for Windows 2000 Release 5.03A or later by following the instructions provided with the Support Paq.

Mixed Processor Steppings

Compaq supports mixing processors with different cache sizes for Windows 2000, although Intel, Microsoft, and other hardware vendors do not. See the white paper, *Support for Mixing Intel P6 Processors in Compaq Industry-Standard Servers*, <http://www.compaq.com/support/techpubs/whitepapers/tc000703tb.html>.

IMPORTANT: Detailed information and warnings are available through our website at <http://www.compaq.com/products/servers/processor-mixing/>. Please review this information carefully before upgrading to Windows 2000.

Troubleshooting

This section provides information on issues reported in testing of Windows 2000 and SP1. It includes solutions for installation issues, Compaq options and drivers, and implementation of some Compaq features. We also cover adding an EISA controller after the installation of Windows 2000 and the manual installation of the Compaq System Management Driver.

Installation Issues and Workarounds for Windows 2000

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

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

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

Accessing Custom Configuration during Unattended Install

Custom Configuration is not directly accessible during the dialog box sequence of a SmartStart unattended install. To access Custom Configuration, wait until the installation sequence prompts for the domain. Select the **Back** button to access dialog boxes used to configure the network, and the network controller devices.

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

When multiple monitors and video controllers are connected to a Compaq server, the ATI driver cannot locate the video controller if the ATI Rage IIC video controller is not in the first slot. With the ATI Rage IIC as the first video device, and a non-ATI video controller as the second device, all video drivers function appropriately. For multiple monitor installations, the ATI video controller should be in slot 1.

Compaq driver updates after Windows 2000 installation

When you install a new device, Windows 2000 boots and finds new hardware. The following message box appears:

"The following file is missing: xxxx"

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

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

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

After hot plugging a hard drive in a storage drive bay, Selecting **Rescan Disks** might result in 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...

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

Compaq Options and Drivers

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

Anomalies associated with adding EISA/ISA bus options

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

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

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

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

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

Some Compaq server USB hardware displays as unsupported USB connector in Device Manager

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

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

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

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

or

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

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

Using the F6 key to install Compaq drivers

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

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

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

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

Special installation procedures for Compaq Storage drivers

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

The Compaq ProLiant Storage System Plug and Play device (for SCSI event reporting) and the Compaq Drive Array Notification device (for array event reporting) are not visible under Device Manager until all drivers are installed. The first pass installs the Compaq drivers *CPQ32FS2.SYS* (for SCSI) or *CPQARRAY.SYS* (for older array controllers) or *CPQARRAY2.SYS* (for newer array controllers) are installed.

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

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

Unsigned drivers detected

A few drivers might display an error message that states that an unsigned driver has been installed and the system requires a restart. The drivers provided by Compaq have been thoroughly tested and are more functionally complete than the versions on the Windows 2000 OS media. When installing the drivers from Compaq Support Paq for Microsoft Windows 2000 or from any other Compaq Support Software, you may safely ignore any warning message about digital signatures.

Use the drivers supplied in Compaq Support Paq for Microsoft Windows 2000 and restart the system to complete the installation.

Feature Implementation

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

COM 3 Might Display as a *Not Supported Device*

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

This device cannot start. (Code 10)

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

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

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

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

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

However, the device functions correctly. Compaq is working with Microsoft to resolve the erroneous message.

Default video resolution not retained by Windows 2000 after installation

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

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

V70 Monitor driver does not install during Windows 2000 installation

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

Hibernation not supported on ProSignia Server 720 & ProLiant 400 Server

Compaq does not support hibernation for the ProSignia Server 720 or the ProLiant 400 Server with current ROM revisions.

Hot Plug Status Indicator not updated when Fiber Optic Cable removed

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

Upgrading and downgrading ACPI

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

Adding an EISA Fibre Channel Controller

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

Installing the Controller

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

1. Run the Compaq System Configuration Utility to add the controller and configure changes to system BIOS.
2. Restart the system.
3. Start the hardware wizard by right clicking on My Computer → Properties → Hardware.
4. Select Add/Troubleshoot a Device. No devices will be found.
5. Select Add New Device from the Choose Hardware Device screen.
6. Select No, I want to select hardware from a list.
7. Select SCSI and RAID Controllers
8. Select Compaq and Compaq Fibre Channel Host Controller (non PnP).
9. Select **Next** → **Finish**.
10. Restart the system.

Loading the Driver

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

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

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

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

1. Select **Next** → Display.

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

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

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

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

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

6. Select **Next**.

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

8. Select **Finish**.

Manual Installation of the Compaq System Management Driver

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

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

If you have a Compaq server with CSM ASIC and have experienced a system hang while installing Compaq Support Paq for Microsoft Windows 2000, cycle the system power, allow the operating system to load, and open the Support Paq. In the Compaq Support Paq for Windows 2000–Bundle window Deselect the System Management Driver, and Select the **Install** button to rerun the Support Paq installer. To perform a manual installation of the Compaq System Management driver on the systems listed above:

1. Execute the Component Package for the System Management Driver.
2. Select the **Extract** button to allow the driver files to be extracted to the hard disk.
3. Create a temporary directory on the local hard disk by Selecting the **New Folder** button.
4. Select the new folder that was created in the above step and Select the **OK** button.

A message box appears, displaying:

The package was extracted successfully

5. Select the **OK** button.
6. Select the **Close** button to close the Component Package installer.
7. Select the **Start** button on the Windows 2000 taskbar.
8. Select Settings → Control Panel → Add/Remove Hardware → **Next**.
9. Select Add/Troubleshoot a Device → Add a New Device → **Next**.
10. Select No, I Want to Select the Hardware from a List → **Next**.
11. Select System Devices → **Next**.
12. Select the **Have Disk** button.
13. Select your share with the drivers → **OK**.
14. Select Compaq Integrated System Management Controller → **Next**.
15. Select the **Finish** button.
16. Restart the system.

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

Appendix A, Prior Issues

For those who have been following the implementation process through the beta, release candidate, and initial versions of Windows 2000, this section provides information on issues found in those versions of the product.

The issues listed below have been resolved with the most current versions of Windows 2000 and Microsoft Service Pack 1.

Table 3 updates installation issues, Table 4 addresses driver issues, and Table 5 cites management agent issues. Tables 6 and 7 review option and storage issues, respectively.

Table 3. Installation issues

Issue	Comments
Access to Custom Configuration	Refer to "Installation Issues and Workarounds for Windows 2000"
ACPI upgrades and downgrades	Refer to "Feature Implementation"
Compaq driver updates after Windows 2000 installation	Refer to "Installation Issues and Workarounds for Windows 2000"
ProLiant 6500 Xeon hangs after rebooting Windows 2000	Resolved with 12/8/99 ROM
System locks during Support Paq installation	Refer to "Manual Installation of the System Management Driver"

Table 4. Driver issues

Issue	Comments
Compaq driver updates after Windows 2000 installation	Refer to "Installation Issues and Workarounds for Windows 2000"
Compaq Storage Driver installation	Refer to "Compaq Options and Drivers"
CPQARRAY.SYS and CPQARRAY2.SYS cause timeout messages in event log	Refer to "Compaq Options and Drivers"
System Management driver disable feature	Resolved
Using the F6 key to install Compaq drivers	Refer to "Compaq Options and Drivers"
Unsigned drivers	Refer to "Compaq Options and Drivers"

Table 5. Management Agent issues

Issue	Comments
Compaq Management Agents require SNMP setting change	Refer to "Compaq Management Agents"
CPU fans not reported	Resolved
SNMP traps not received by Compaq Insight Manger XE	Resolved with Microsoft SP1
<i>Unsafe Removal of Device</i> error when hot plugging drive	Refer to "Installation Issues and Workarounds for Windows 2000"

Table 6. Option issues

Issue	Comments
Compaq 56K Netelligent ISA internal modem shows <i>Not Supported Device</i> error	Refer to "Feature Implementation"
Default video resolution not retained	Refer to "Feature Implementation"
EISA/ISA bus option addition anomalies	Refer to "Compaq Options and Drivers"
Hibernation on Prosignia Server 720 and ProLiant 400 Server	Refer to "Feature Implementation"
Hot plug status indicator not updated after removal of fiber optic cable	Refer to "Feature Implementation"
IRQ changes to EISA devices not detected	Refer to "Compaq Options and Drivers"
Multi-monitor displays requires ATI Controller in Slot 1	Refer to "Installation Issues and Workarounds for Windows 2000"
VGA and VGASave devices on ProSignia 200 server produce error messages	Refer to "Feature Implementation"
USB hardware displays as unsupported	Refer to "Compaq Options and Drivers"
V70 monitor driver	Refer to "Feature Implementation"

Table 7. Storage Issues

Issues	Comments
Compaq Storage Driver installation	Refer to "Compaq Options and Drivers"
ProLiant Storage System needs Compaq driver to display in Device Manager	Refer to "Installation Issues and Workarounds for Windows 2000"
Rescan Disks inappropriately displays <i>Unsafe Removal of Device</i>	Refer to "Installation Issues and Workarounds for Windows 2000"

Appendix B, Web Resources

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

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

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

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

Compaq ActiveUpdate offers proactive notification and delivery of the latest software updates. Don't waste time searching the web. Subscribe to Compaq ActiveUpdate for automatic delivery of software updates for your Compaq servers, desktops, workstations, and portables.

If you require more timely access to information products, Compaq provides a service called Compaq Info Messenger, which can be accessed through the Compaq website. If you submit a profile to Compaq Info Messenger, telling it what platforms and operating systems you are interested in, the service tracks your areas of interest and advises you when related information products are released.

Customer Advisories inform you of any known problems and workarounds because of a Service Pack release.

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

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

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

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

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

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

Table 8 lists Compaq resources on the web.

Table 8. Compaq web resources

Item	Web Location
Windows 2000 on Compaq	http://www.compaq.com/partners/Microsoft/Windows2000/index.html
<i>Windows 2000 Advantage</i> online magazine	http://www.windows2000advantage.com
Compaq <i>ActiveAnswers</i>	http://www.compaq.com/activeanswers
Compaq ActiveUpdate	http://www.compaq.com/products/servers/management/activeupdate/index.html
Compaq Info Messenger	http://www.compaq.com/infomessenger
Compaq Insight Manager	http://www.compaq.com/sysmanage
Compaq Management CD	http://www.compaq.com/support/files/server/MGMTSQL/index.html
Compaq Option ROMPaq	http://www.compaq.com/support/files/server/us/index.html
Compaq Resource Paq for Microsoft Windows 2000 and Windows NT	http://www.compaq.com/partners/microsoft/resourcepaq.html
Compaq SmartStart Subscription Service	http://www.compaq.com/support/paqfax/1233.html
Compaq System ROMPaq	http://www.compaq.com/support/files/server/us/index.html
Customer Advisories	http://www.compaq.com/support/techpubs/Customer_advisories/index.html
Microsoft Frontline Partnership	http://www.compaq.com/partners/Microsoft
Press releases	http://www.compaq.com/newsroom/pr
Support software (complete listing)	http://www.compaq.com/support/files/server/us/index.html
Compaq Support Software for Windows 2000	http://www.compaq.com/partners/Microsoft/Windows2000/support/servers.html
Compaq SSD for Windows NT	http://www.compaq.com/support/files/server/us/index.html
Compaq Survey Utility	http://www.compaq.com/support/files/server/us/index.html
White Papers and technical documents	http://www.compaq.com/support/techpubs/whitepapers/index.html

Microsoft also supplies information through its website. Table 9 details some of the pages specific to Windows 2000.

Table 9. Microsoft web resources

Item	Web Location
Business Customer Support	http://www.microsoft.com/support/customer/enterprise.htm
Compaq Frontline Partnership	http://www.microsoft.com/enterprise/alliances/compaq.htm
Customer Solution Stories	http://www.microsoft.com/customers/home.asp
Deployment Planning Guide	http://www.microsoft.com/windows2000/library/resources/reskit/dpg/default.asp
Hardware Compatibility List	http://www.microsoft.com/windows2000/upgrade/compat/search/devices.asp
Help Files, Windows 2000 Server	http://www.microsoft.com/windows2000/en/server/help/
Help Files, Windows 2000 Advanced Server	http://www.microsoft.com/windows2000/en/advanced/help/
Security Issues	http://www.microsoft.com/security/default.asp
Technologies in Depth	http://www.microsoft.com/windows2000/library/technologies/default.asp
Windows 2000 Newsgroups	http://www.microsoft.com/ntserver/support/newsgroups/Win2000.asp
Windows 2000 Professional	http://www.microsoft.com/windows2000/guide/professional/overview/default.asp
Windows 2000 Server	http://www.microsoft.com/windows2000/guide/server/overview/default.asp