

Chapter  
2

# INSTALLATION

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**Objectives:**

You will learn:

- C Windows 2000 system requirements.
- C Hardware and software compatibility issues.
- C Upgrading versus performing a new installation.
- C Type of installation and choosing among running setup directly from the network or a CD-ROM, automating the process, or using remote installation functionality.
- C Running Setup.
- C Upgrading to the Windows 2000 File System - NTFS.
- C Networking settings.
- C Joining a domain/workgroup.
- C Starting and logging on to Windows 2000 for the first-time.
- C Plan for an unattended install with Setup Manager.
- C The Windows 2000 Server setup routine and the steps required to successfully migrate your network.

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## 1 System Requirements

A computer must meet the following minimum hardware requirements, in order to install Windows 2000 Professional:

C	166 MHZ Pentium or higher microprocessor (P5 or equivalent compatible microprocessor).
C	32 megabytes (MB) of RAM (64 MB recommended; 4 gigabytes [GB] maximum).
C	2-GB hard disk with a minimum of 650 MB of free space.
C	VGA or higher resolution monitor.
C	Keyboard.
C	Microsoft Mouse or compatible pointing device (optional).

### CD ROM Installation

For a CD-ROM installation:

- C A CD-ROM drive (12x or faster recommended).
- C High-density 3.5-inch disk drive, unless the CD-ROM drive is bootable and supports starting the Setup program from a CD.

### Network Installation

For a network installation:

- C Windows 2000-compatible network adapter card and related cable.
- C Access to the network share that contains the Setup files.

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## 2 Preparing to Install

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### 2.1 Hardware and Software Compatibility Issues

The Windows 2000 Setup automatically checks the hardware and software and reports any potential conflicts. To ensure a successful installation, however, the computer hardware should be checked for compatibility with Windows 2000.

The Hardware Compatibility List (H.L.) can be checked by opening the Hcl.txt file in the Support folder on the Windows 2000 Professional CD. If a hardware component isn't listed, Setup may not be successful.

The latest HCL can be accessed at:

<http://www.microsoft.com/hwtest/hcl>

If a hardware component isn't in H.L., the hardware manufacturer should be contacted for a Windows 2000 driver for the component.

If a program uses 16-bit drivers, 32-bit drivers should be obtained from the software vendor to ensure that the program functions properly after the upgrade.

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### 2.2 Backing Up Files

If the computer is being upgraded from a previous version of Windows, the current files should be backed up. Files can be backed up on disks, tapes, or another computer on the network.

The back up procedure is specific to the current operating system.

- C If the current operating system is Windows 95 or Windows 98, the Windows Backup program may need to be installed.
- C If the current operating system is Windows NT 3.51 or Windows NT 4.0, Windows Backup is installed by default. The system must have a tape drive installed to use the Backup tool in Windows NT.

### 3 Upgrading vs. Performing a New Installation

An upgrade to Windows 2000 Professional can be performed from the following operating systems:

- C All releases of Windows 95 and Windows 98.
- C Windows NT 3.51 Workstation.
- C Windows NT 4.0 Workstation (including service packs).

During an upgrade, Setup replaces existing Windows files but preserves the existing settings and applications. Some applications may not be compatible with Windows 2000 and therefore may not function properly in Windows 2000 after an upgrade.

During a new installation, Setup installs Windows 2000 in a new folder. If the current operating system is an unsupported operating system, such as, Microsoft Windows 3.1 or OS/2, a new installation is the only choice. All applications must be reinstalled and preferences be reset when a new installation is performed.

Perform an upgrade installation if:	Perform a new installation when:
A previous version of Windows that supports upgrading is already installed.	The hard drive is blank.
The objective is to replace your previous Windows operating system with Windows 2000.	The current operating system doesn't support an upgrade to Windows 2000.
The objective is to replace existing files and preferences.	An operating system is already being used, but there is no need to keep the existing files and preferences.
	There are two partitions and the objective is to create a dual-boot configuration with Windows 2000 and the current operating system.

Dual-boot configuration can be used to run both Windows 2000 and another compatible operating system, such as Windows 98, on a computer. Windows 2000 should be installed on a different partition than existing current operating system.

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## 4 Single Machine Installation vs. Deploying Large Sites

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### 4.1 Single Machine Installation

The simplest way to install Windows 2000 on a single system is to put the CD-ROM directly into the system's CD drive.

- C If a Windows operating system is already installed on the computer, inserting the CD should bring up a prompt to upgrade the system.
- C If the setup process is to be started manually, execute winnt32.exe when using Windows 95, Windows 98, or Windows NT 4.0.
- C From any other operating system, run winnt.exe.

If this is the first operating system to be installed on the computer, it will be necessary to boot from either the CD-ROM or the floppy disks. Many new computers allow booting directly from the CD-ROM, which provides a quick upgrade path. Alternatively, the first of the four setup floppy disks can be inserted and the instructions for installing the operating system can then be followed.

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### 4.2 Deploying Large Sites

When installing fewer than 20 systems, manual installation is efficient. However, for larger networks, it is worth the administrator's time to automate as much of the setup as possible.

There are two methods available with Windows 2000 Server:

C Answer file	C Remote Installation Service
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#### Upgrade Paths

The following operating systems upgrade directly to Windows 2000:

• Windows 95	• Windows NT 3.51
• Windows 98	• Windows NT 4.0

Older operating systems, such as Windows NT 3.1, Windows NT 3.51, and Windows for Workgroups, will require either an upgrade to one of the systems on the previous list or a brand-new installation.

Whether creating a new installation or upgrading an existing system, the same installation options apply.

The software can be loaded from a network file server, local CD-ROM, or by using the remote installation features.

## 5 Installation Command Syntax

### 5.1 Winnt

The Winnt.exe command performs an installation of or upgrade to Windows 2000.

Run winnt.exe from the command prompt to start the Windows 2000 setup routine from an MS-DOS, Windows 3.1, or Windows for Workgroups 3.11 system.

Syntax:

```
winnt [/s:sourcepath] [/t:tempdrive] [/u:answer file][/udf:id [,UDB_file]]
[/r:folder][/rx:folder][/e:command][/a]
```

#### Parameters

Option	Description
/s:sourcepath	Specifies the source location of the Windows 2000 files. The location must be a full path of the form x:\[path] or \\server\share[path].
/t:tempdrive	Directs Setup to place temporary files on the specified drive and to install Windows 2000 on that drive. If you do not specify a location, Setup attempts to locate a drive for you.
/u:answer file	Performs an unattended Setup using an answer file. The answer file provides answers to some or all of the prompts that the end user normally responds to during Setup. You must also use /s.
/udf:id [,UDB_file]	Indicates an identifier (id) that Setup uses to specify how a Uniqueness Database (UDB) file modifies an answer file (see /u). The /udf parameter overrides values in the answer file, and the identifier determines which values in the UDB file are used. If no UDB_file is specified, Setup prompts you to insert a disk that contains the \$Unique\$.udb file.
/r:folder	Specifies an optional folder to be installed. The folder remains after Setup finishes.
/rx:folder	Specifies an optional folder to be copied. The folder is deleted after Setup finishes.
/e:command	Specifies a command to be executed at the end of GUI-mode Setup.
/a	Enables accessibility options.

## 5.2 Winnt32

The winnt32.exe command is used for starting the Windows 2000 setup routine from a Windows 95, Windows 98, Windows NT 3.51, or Windows NT 4.0 command prompt.

Syntax:

```
winnt32 [/s:sourcepath] [/tempdrive:drive_letter] [/unattend[num]:[answer_file]]
[/copydir:folder_name] [/copysource:folder_name] [/cmd:command_line][/debug[level]:[filename]]
[/udf:id[,UDF_file]] [/syspart:drive_letter] [/checkupgradeonly] [/cmdcons] [/m:folder_name]
[makelocalsource] [/noreboot]
```

### Parameters

Option	Description
/s:sourcepath	Specifies the source location of the Windows 2000 files. To simultaneously copy files from multiple servers, specify multiple /s sources. If multiple /s switches are used, the first specified server must be available or Setup will fail.
/tempdrive:drive_letter	Directs Setup to place temporary files on the specified partition and to install Windows 2000 on that partition.
/unattend	Upgrades a previous version of Windows 2000, Windows NT 4.0, Windows 3.51, Windows 95, or Windows 98 in unattended Setup mode. All user settings are taken from the previous installation, so no user intervention is required during Setup.
/unattend[num]:[answer_file]	Performs a fresh installation in unattended Setup mode. The answer file provides Setup with custom specifications. Num is the number of seconds between the time that Setup finishes copying the files and when it restarts your computer. num can be used on any computer running Windows NT or Windows 2000. Answer_file is the name of the answer file.
/copydir:folder_name	Creates an additional folder within the folder in which the Windows 2000 files are installed.
/copysource:folder_name	Creates a temporary additional folder within the folder in which the Windows 2000 files are installed.
/cmd:command_line	Instructs Setup to carry out a specific command before the final phase of Setup. This will occur after the computer has restarted twice and after Setup has collected the necessary configuration information, but before Setup is complete.
/debug[level]:[filename]	Creates a debug log at the level specified, for example, /debug4:C:\Win2000.log. The default log file is C:\%Windir%\Winnt32.log, with the debug level set to 2. The log levels are as follows: 0-severe errors, 1-errors, 2-warnings, 3-information, and 4-detailed information for debugging. Each level includes the levels below it.

## Parameters

Option	Description
/udf:id[,UDB_file]	Indicates an identifier (id) that Setup uses to specify how a Uniqueness Database (UDB) file modifies an answer file. The /udf parameter overrides values in the answer file, and the identifier determines which values in the UDB file are used.
/syspart:drive_letter	Specifies that Setup startup files can be copied to a hard disk, mark the disk as active, and then install the disk into another computer. When starting that computer, it automatically starts with the next phase of the Setup. The /tempdrive parameter must always be used with the /syspart parameter.
/checkupgradeonly	Checks the computer for upgrade compatibility with Windows 2000. For Windows 95 or Windows 98 upgrades, Setup creates a report named Upgrade.txt in the Windows installation folder. For Windows NT 3.51 or 4.0 upgrades, it saves the report to the Winnt32.log in the installation folder.
/cmdcons	Adds to the operating system selection screen a Recovery Console option for repairing a failed installation. It is only used post-Setup.
/m:folder_name	Specifies that Setup copies replacement files from an alternate location. Instructs Setup to look in the alternate location first and if files are present, use them instead of the files from the default location.
/makelocalsource	Instructs Setup to copy all installation source files to your local hard disk. Use /makelocalsource when installing from a CD to provide installation files when the CD is not available later in the installation.
/noreboot	Instructs Setup to not restart the computer after the file copy phase of winnt32 is completed so that you can execute another command.

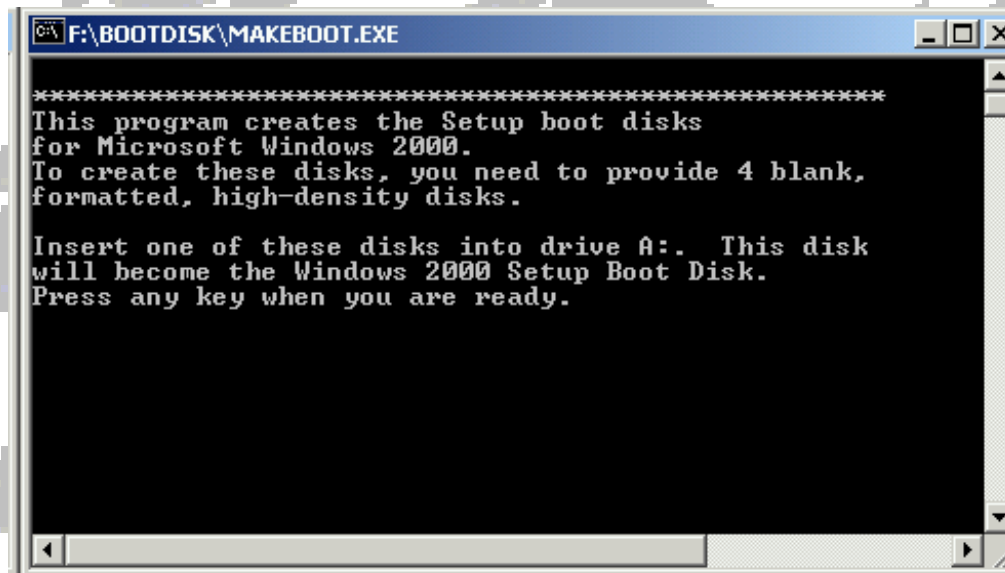
## 6 Creating Setup Startup Disks

The startup disks are used to start Setup if Setup cannot be started from the hard drive.

Setup startup disks contain different information than the Emergency Repair Disk.

To create setup startup disks:

1. Insert a blank, formatted disk into the floppy disk drive, and insert the Windows 2000 Professional CD into the CD-ROM drive.  
  
Four blank, 1.44 MB formatted 3.5-inch disks will be needed. Label them "Setup Disk 1," "Setup Disk 2," and so on.
2. Click Start, and then click Run.
3. At the prompt, type the following command, replacing d with the letter of your CD-ROM drive and a with the letter of your floppy drive.  
  
d:\bootdisk\makeboot.bat a:
4. Follow the instructions that appear.



```
F:\BOOTDISK\MAKEBOOT.EXE
*****
This program creates the Setup boot disks
for Microsoft Windows 2000.
To create these disks, you need to provide 4 blank,
formatted, high-density disks.

Insert one of these disks into drive A:.. This disk
will become the Windows 2000 Setup Boot Disk.
Press any key when you are ready.
```

---

## 7 Running Setup

After the Setup program is started, the Setup wizard gathers information, including regional settings, names, and passwords. Setup then copies the appropriate files to the hard disk, checks the hardware, and configures the installation. The computer restarts several times during Setup.

How the Setup is started depends on:

C	Whether the computer is being upgraded or a new installation is being performed.
C	If the computer has a bootable CD-ROM.
C	If the installation is being done over the network.

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### 7.1 New Installation

If a computer has a blank hard disk or the current operating system isn't supported, it needs to be started using one of the following:

- C The Setup startup disks.
- C The Windows 2000 Professional CD, if the CD-ROM drive is bootable. Some newer CD-ROM drives can boot from the CD and automatically launch Setup.

To perform a new installation using the setup startup disks:

1. With the computer turned off, insert the Windows 2000 Setup startup Disk 1 into floppy disk drive.
2. Start your computer.  
Setup starts automatically.
3. Follow the instructions that appear.

To perform a new installation from the CD:

1. Start the computer by running the current operating system, and then insert the Windows 2000 Professional CD into your CD-ROM drive.

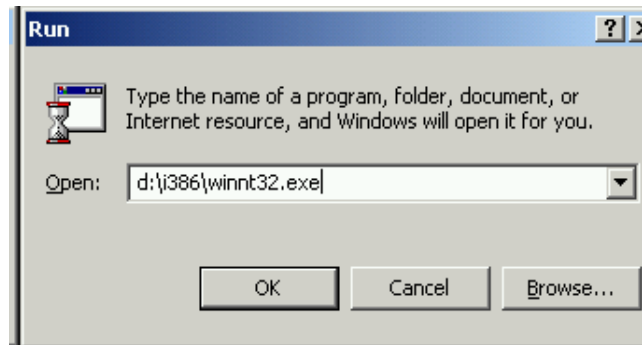
If Windows automatically detects the CD, click Install Windows 2000. Setup starts.



2. If Windows doesn't automatically detect the CD, start Setup from the Run command.
  - C In Windows 95, Windows 98, or Windows NT 4.0, click Start, and then click Run.
  - C In Windows NT 3.51 or Windows 3.1, in Program Manager, click File, and then click Run.

3. At the prompt, type the following command, replacing d with the letter of your CD-ROM drive:

d:\i386\winnt32.exe



If you're using Windows 3.1, type the following command at the prompt, replacing d with the letter of your CD-ROM drive:

d:\i386\winnt.exe

4. Press ENTER.
5. Follow the instructions that appear.

To start a new installation from a network connection:

1. Using the existing operating system, establish connection to the shared network folder that contains the Setup files. An MS-DOS or network installation disk can be used to connect to the network server-if the disk contains network client software.
2. If the computer is currently running Windows 95, Windows 98, or a previous version of Windows NT, at the command prompt, type the path to the file winnt32.exe.

If your computer isn't running one of the above versions of Windows, at the command prompt, type the path to the file winnt.exe.

3. Press ENTER.
4. Follow the instructions that appear.

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## 7.2 Upgrading

With the upgrade process, the Setup wizard detects and installs the appropriate drivers, or it creates a report on devices that couldn't be upgraded.

- C Before upgrading a Windows 95 or Windows 98 computer that is connected to a domain, the computer's workgroup must be set to the domain they participate in.

The domain name can be verified/changed by choosing Start...Settings...Control Panel and then double-clicking Network. The identification tab contains the workgroup information.

- C A computer account for this computer must exist on the domain server.

The computer must have access to the domain during Setup. If the domain is not available during Setup, the user's preferences are placed in a local user account on the computer and the user has to manually copy the local user profile to the domain profile after they join the domain.

- C The volumes compressed with DriveSpace or DoubleSpace must be uncompressed before upgrading to Windows 2000.

### Upgrading Windows 95, Windows 98, or Windows NT 4.0 from the CD

To upgrade Windows 95, Windows 98, or Windows NT 4.0 from the CD:

1. Start your computer by running your current operating system, and then insert the Windows 2000 Professional CD into your CD-ROM drive.
2. If Windows automatically detects the CD and asks if you would like to upgrade your computer to Windows 2000 Professional, click Yes.

Otherwise, click Start, and then click Run. At the prompt, type the following command, replacing d with the letter assigned to your CD-ROM drive:

```
d:\i386\winnt32.exe
```

3. Press ENTER.
4. Follow the instructions that appear.

**Upgrading Windows NT 3.51 from the CD**

To upgrade Windows NT 3.51 from the CD:

1. Start your computer by running your current operating system, and then insert the Windows 2000 Professional CD into your CD-ROM drive.
2. In Program Manager, click File, and then click Run. At the prompt, type the following command, replacing d with the letter of your CD-ROM drive:

```
d:\i386\winnt32.exe
```

3. Press ENTER.
4. Follow the instructions that appear.

**Upgrading from a Network Connection**

To upgrade from a network connection:

1. Using your current operating system, establish a connection to the shared network folder that contains the Setup files.  
  
If you have an MS-DOS or network installation disk that contains network client software, you can use that disk to connect to the shared folder.
2. If your computer is currently running Windows 95, Windows 98, or a previous version of Windows NT, at the command prompt, type the path to the file winnt32.exe.
3. Press ENTER.
4. When you're asked if you would like to upgrade your computer to Windows 2000 Professional, click Yes.
5. Follow the instructions that appear.

## 8 Collecting User and Computer Information

The Windows 2000 Setup wizard goes through the process of gathering information about the user and the computer.

Although much of this installation process is automatic, the installer may need to provide information or select settings in the following screens, depending on current configuration of the computer:

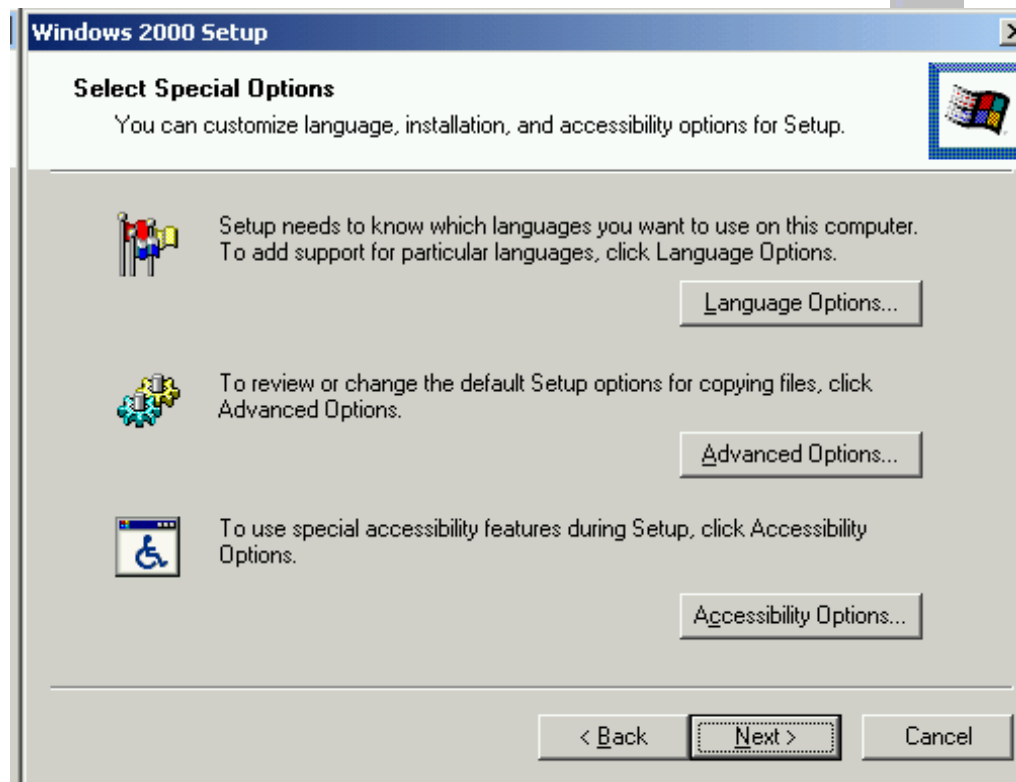
### 8.1 Licensing Agreement

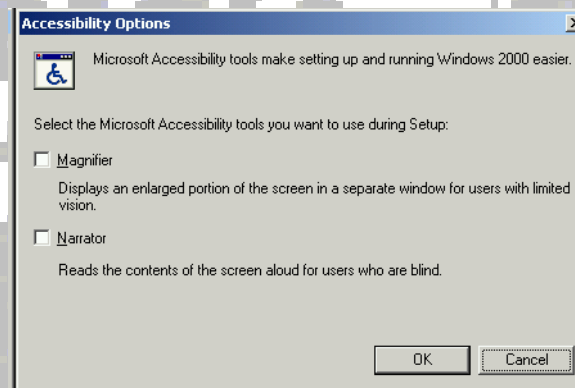
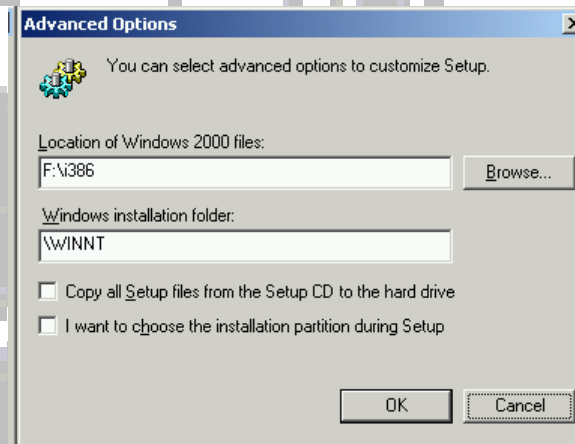
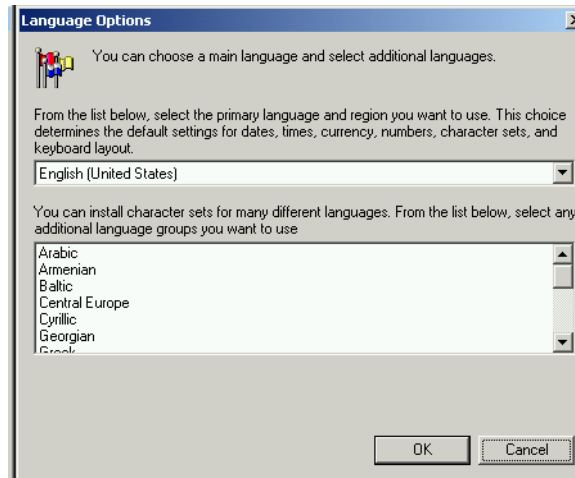
If you agree with the terms, select I accept this agreement to continue with Setup.



## 8.2 Select Special Options

The Windows 2000 Setup can be customized to language and accessibility settings for new installations. Windows 2000 can be set to use multiple languages and regional settings.

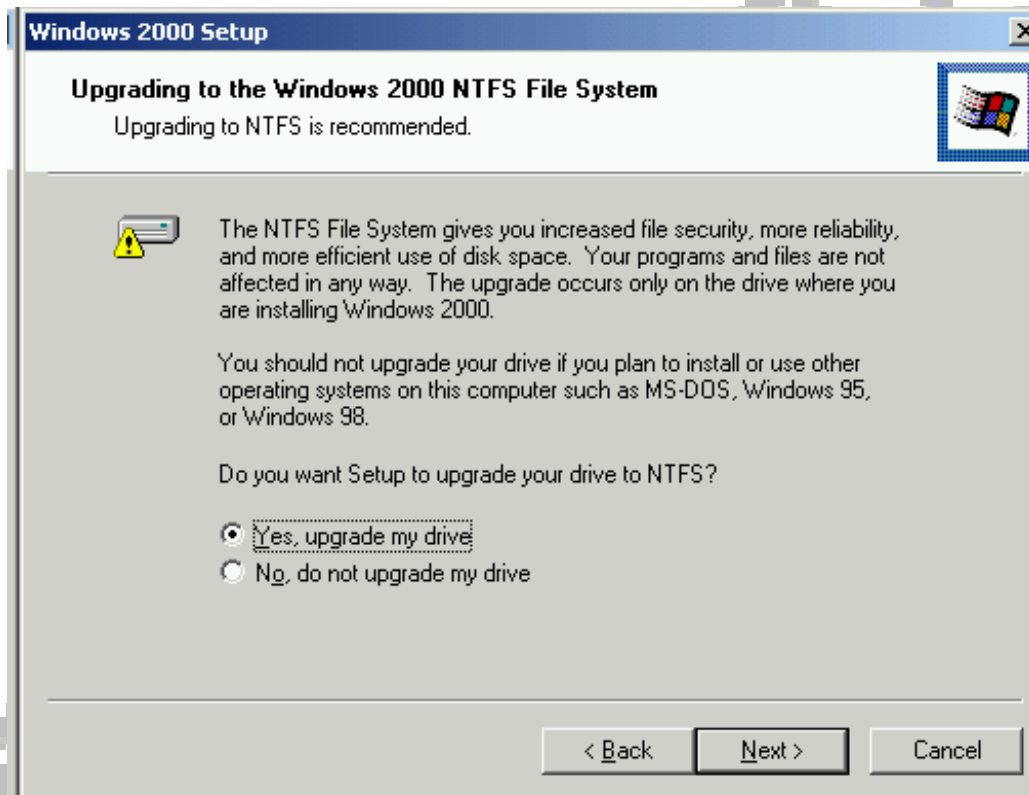




### 8.3 Upgrading to the Windows 2000 File System - NTFS

Windows 2000 can automatically convert partitions on the hard disk to NTFS, or you can keep your existing file systems.

If you're upgrading, Setup uses your current file system; however, you can change to NTFS, the recommended file system for Windows 2000.



### 8.4 Regional Settings

Change the system and user locale settings for different regions and languages.

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## 8.5 Personalize the Software

Enter the full name of the person and, optionally, the organization to whom this copy of Windows 2000 is licensed.

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## 8.6 Computer Name and Administrator Password

Enter a unique computer name that differs from other computer, workgroup, or domain names on the network. Setup suggests a computer name, but this name can be changed.

Setup automatically creates an Administrator account during the installation. This account has the full rights over the computer's settings and can be used to create user accounts on the computer.

Logging on as an Administrator after you install Windows 2000 gives administrative privileges that is needed to log on and manage the computer. Specify a password for the Administrator account.

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## 8.7 Date and Time Settings

This screen is used to verify the date and time for selected region, selecting the appropriate time zone, and select whether Windows 2000 should automatically adjust for daylight savings time.

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## 8.8 Networking Settings

On this screen Typical settings option can be selected for the network configuration.

The Custom settings option is used to manually configure:

<input type="checkbox"/>	Services.
<input type="checkbox"/>	Protocols.
<input type="checkbox"/>	Workgroup or Computer Domain; the computer must join either a workgroup or a domain.

---

## 8.9 Provide Upgrade Packs

If an upgrade is performed from Windows 95 or Windows 98, during Setup there will be the option of providing upgrade packs that modify your existing software.

Upgrade packs are available from the appropriate software vendors. Setup prompts for the upgrade disks at the appropriate time.

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## 9 Providing Networking Information

During or after Setup, the computer needs to join either a workgroup or a domain.

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### 9.1 Joining a Workgroup

A workgroup is one or more computers with the same workgroup name. Any user can join a workgroup. If the computer will be used as a stand alone system it should join a workgroup.

To join a workgroup, an existing or new workgroup name must be provided, or the name suggested by Windows 2000 during Setup can be accepted.

---

### 9.2 Joining a Domain

A computer account identifies the computer to the domain, while the user account identifies the user to the computer.

A domain is a collection of computers defined by a network administrator for security and administrative purposes.

Joining a domain during Setup requires a computer account in the domain.

- C If upgrading from Windows NT, Setup uses the existing computer account.
- C Otherwise, it will ask for a new computer account.

The network administrator should create a computer account before Setup is started.

Or if the installer has the appropriate privileges, he/she can create the account during Setup and join the domain. To join a domain during Setup, the user name and password need to be provided.

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### 9.3 Service Packs and Hot Fixes

Service packs are used to distribute updates that should be applied to the operating system. When installing the Windows 2000 operating system, the latest service pack should also be installed.

Hot fixes are used to patch specific operating system problems.

Current service packs and hot fixes for Windows 2000 can be found at the Microsoft website at <http://www.microsoft.com/Windows>.

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## 10 Starting Windows 2000

After gathering information, the Setup wizard completes the installation. The computer restarts several times, and then the logon prompt for Windows 2000 appears.

After the log on step:

- C Windows 2000 can be registered.
- C User accounts can be created.
- C Any settings that have been entered in Setup be reconfigured.

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### 10.1 Logging on to Windows 2000

When the computer restarts after installation, the installer/user logs on to Windows 2000 for the first time. If the system has been upgraded from a previous version of Windows and has existing user accounts already existed, log on using can be performed using that account and password.

If a user account is not available, log on can be done using the Administrator account and the password selected during Setup.

Then user accounts can be created.

To log on to windows 2000 using the administrator account:

1. In the Log on to Windows 2000 dialog box, type the Administrator password that you created during Setup.
2. Press ENTER.

Windows 2000 starts, and the Welcome screen appears.

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## 10.2 Creating a User Account

The user account identifies:

C	the user name and password.
C	the groups the user is a member of.
C	which network resources the user has access to.
C	the users personal files and settings.

The user account is identified by a user name and a password, both of which the user types when logging on to the computer. Individual user accounts can be created after logging on to the computer as Administrator.

To create the user account:

1. Click the Start button, point to Settings, and then click Control Panel.
2. Double-click Users and Passwords.
3. Click Add.  
The Add New User wizard appears.
4. Follow the instructions that appear.

After you've added the user account, you're ready to log off as Administrator and log on using your user account.

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## 11 Dual-Boot Configuration

A multiboot configuration can be set up with more than two operating systems on one computer.

If a computer is set with for dual-boot configuration, the user can choose between operating systems (or between versions of the same operating system) every time the computer is started.

Windows 2000 supports dual boot with the following operating systems:

C	Windows NT 3.51 / Windows NT 4.0.
C	Windows 95 / Windows 98
C	Windows 3.1 / Windows for Workgroups 3.11
C	MS-DOS
C	OS/2

To set up a dual-boot configuration, a separate partition must be used for each operating system. During Windows 2000 Setup, the Advanced Setup option can be used to select a folder on an unused partition.

It's recommended that an Emergency Repair Disk be created before another operating system is installed on a computer.

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### 11.1 Preliminary Steps: Setting Up a Dual Boot System

To set up a dual-boot configuration to have Windows 2000 Professional and another operating system, such as MS-DOS or Windows 98, available on a computer, it is recommended that the following guidelines be adhered to:

- C Each operating system should be installed on a separate drive or disk partition.
- C Any programs-such as word processing or e-mail software must be re-installed after Setup is complete.
- C FAT file system must be used for dual-boot configurations. Although using NTFS in a dual boot is supported, such a configuration introduces additional complexity into the choice of file systems.
- C To set up a dual-boot configuration between MS-DOS or Windows 95 and Windows 2000, Windows 2000 should be installed last. Otherwise, important files needed to start Windows 2000 could be overwritten.

For a dual boot between Windows 98 and Windows 2000, it isn't necessary to install the operating systems in a particular order.

- C For a dual boot of Windows 2000 with Windows 95 or MS-DOS, the primary partition must be formatted as FAT; for a dual boot with Windows 95 OSR2 or Windows 98, the primary partition must be formatted as FAT or FAT32, not NTFS.
- C If upgrading a dual-boot computer, access is not available to NTFS partitions from any operating system other than Windows NT 4.0 with Service Pack 4 (SP4).
- C Windows 2000 must not be installed on a compressed drive unless the drive was compressed with the NTFS file system compression utility.  
  
It isn't necessary to uncompress DriveSpace or DoubleSpace when dual booting with Windows 95 or Windows 98; however, the compressed volume won't be available from Windows 2000.
- C Windows 95 or Windows 98 might reconfigure hardware settings the first time they are used, which can cause problems if dual booting is performed with Windows 2000.
- C If a program needs to be run on both operating systems on a dual-boot computer, they need to be installed from within each operating system. Programs cannot be shared across operating systems.

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## 11.2 Dual Booting with Windows NT

If a dual-boot configuration needs to be done with Windows NT and Windows 2000, the following precautions must be exercised:

- C If the dual-boot computer is part of a Windows NT or Windows 2000 domain, each installation must have a different computer name.
- C If the hard disk is formatted with only NTFS partitions, it's not recommended that dual boot be configured between Windows 2000 with Windows NT.
- C If an NTFS system is set up to dual boot between Windows 2000 and Windows NT, Windows NT must be upgraded with Service Pack 4 or later before continuing with the Windows 2000 installation.

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## 12 Customizing Setup

Windows 2000 Setup derives its list of files and some of its more important setup parameters from the DOSNET.INF which is packaged with Windows 2000.

DOSNET.INF is a text file and can be edited with any conventional text editor. Some of the options in DOSNET.INF can be edited to suit an administrator's installation requirements.

The DOSNET.INF file can only be modified when an installation is being performed from a boot disk set or from a file set that has had its DOSNET.INF file modified.

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### 12.1 Changing Disk Space Requirements

If Windows 2000 is being installed along with other software, the administrator can modify the DOSNET.INF file in order to ensure that sufficient space exists for all the files.

By changing a parameter in the DOSNET.INF file, the amount of space that Windows NT checks for on the target drive will be modified.

When Windows 2000 is going to be installed with a minimal amount of components, this will be a useful option to modify.

To change the minimum space requirements for Windows 2000:

1. Determine how much more or less space Windows 2000 will require.
2. Using a plain-text editor find and open the following section:

```
[DiskSpaceRequirements]
FreeSysPartDiskSpace = 1024
UpgradeFreeSysPartDiskSpace = 1024
```

3. Change the NTDrive number to the exact amount of space, in bytes, that will be needed.
4. Save the DOSNET.INF file. Install Windows 2000 normally.

The Windows 2000 Setup is not able to check this revised number. When changing the values in the DOSNET.INF file, be sure that they will work before deploying them.

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## 13 Setup in Unattended Mode

An answer file can be used to perform a new installation in unattended mode.

In unattended mode, no user intervention is required during Setup because the answer file contains all of the information that Setup requires, including acceptance of the license agreement, computer name, and network adapter.

Answer files will help to facilitate the installation of Windows 2000 on multiple computers.

A sample answer file, Unattend.txt, is included in the I386 folder on the Windows 2000 CD. This file can be used as a template to create a custom answer file to customize Setup. The Setup Manager wizard can be also used to help in creating the answer file.

To run unattended Setup in Windows 95, Windows 98, Windows NT 3.51, or Windows NT 4.0, start Winnt32.exe, with either the:

- C the /unattend[num]:[answer\_file] parameter
- C the /unattend parameter.

## 13.1 Setupmgr.exe

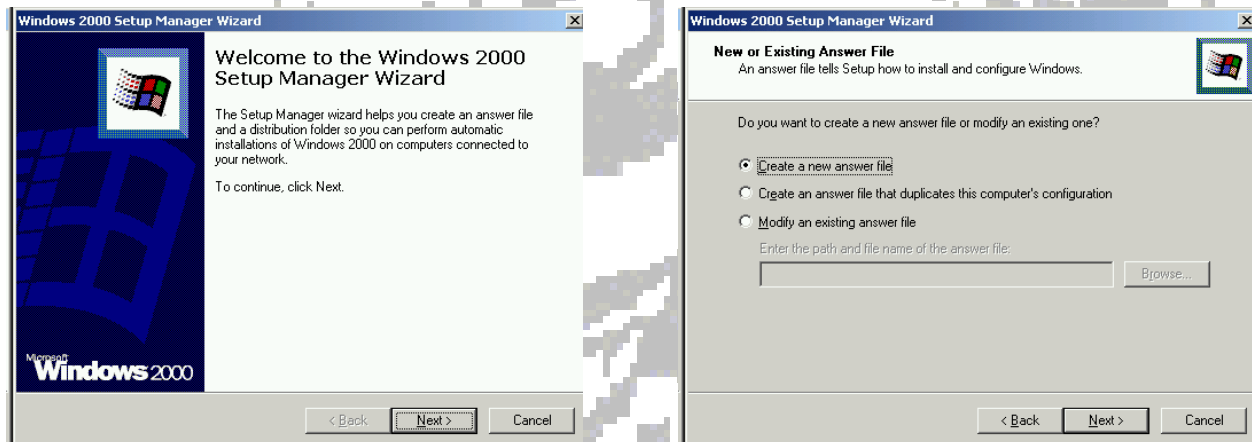
The setupmgr.exe file is located in the \support\reskit\deploy.cab folder of the Windows 2000 Professional distribution CD. This program can be used to create the answer file required for installing the operating system in unattended mode.

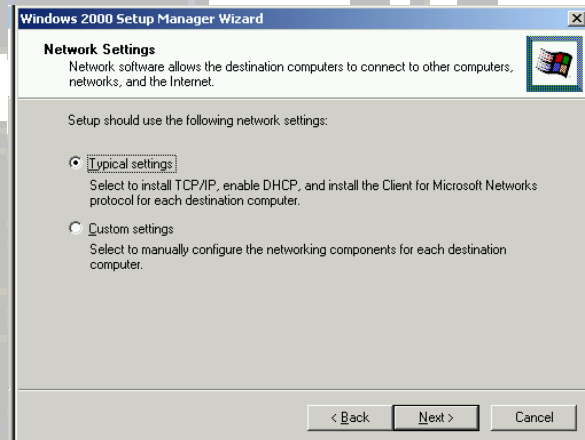
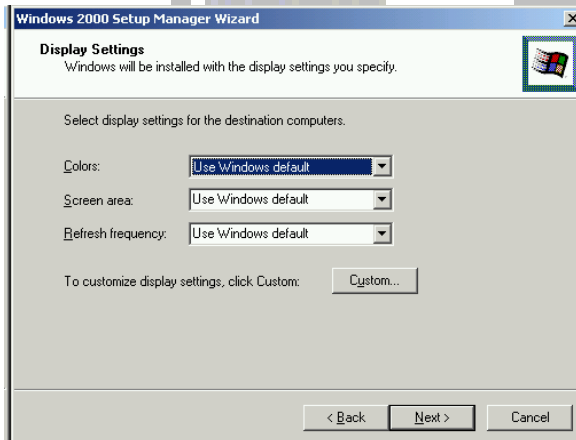
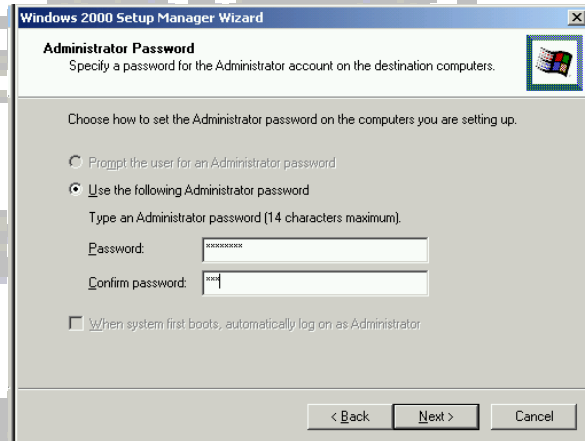
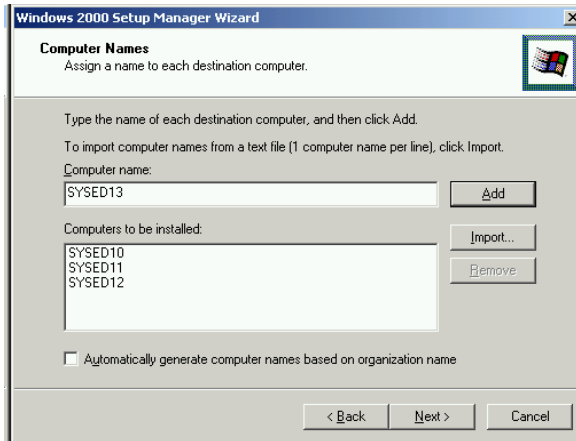
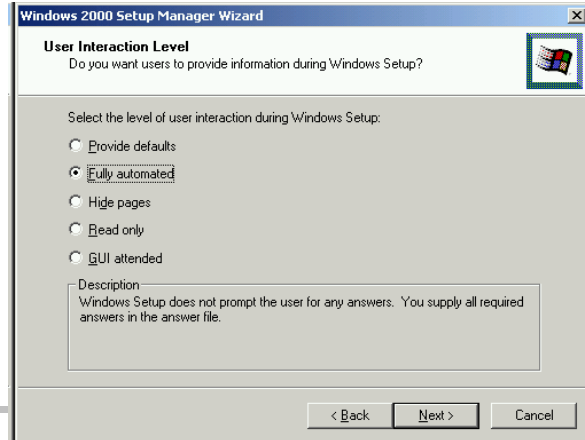
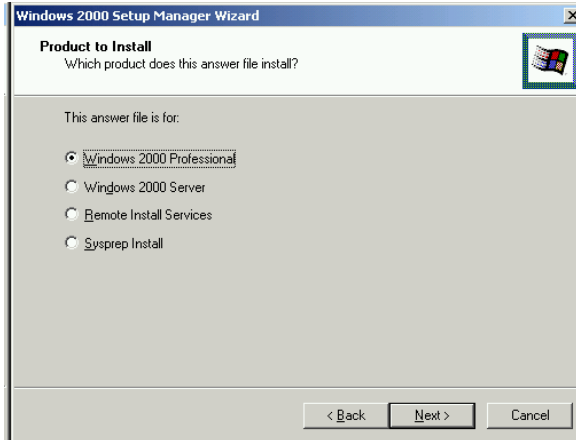
In order to use this utility, the Windows 2000 Resource Kit must be installed on the machine.

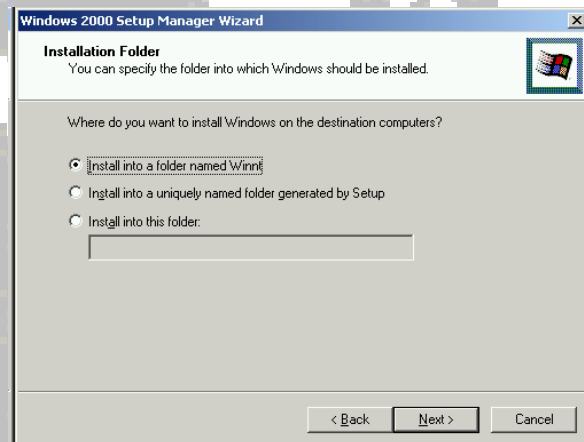
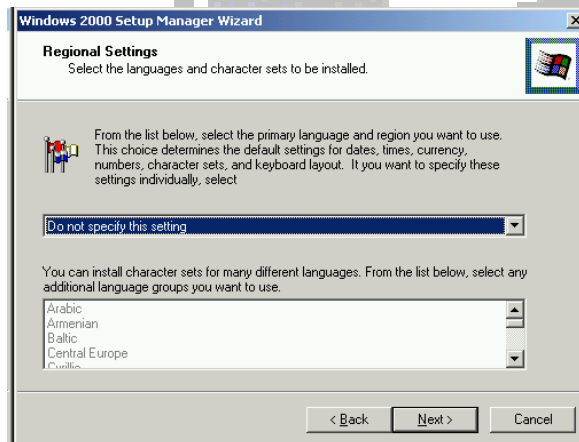
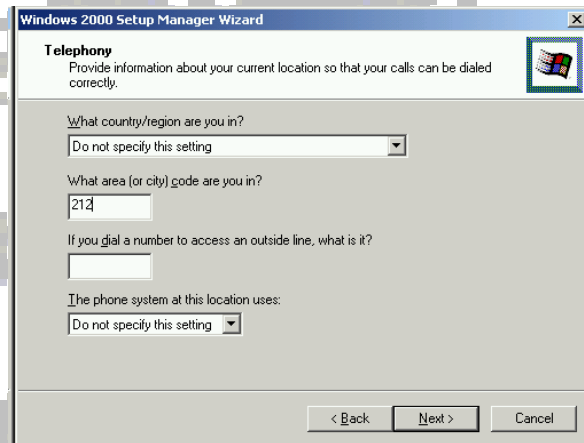
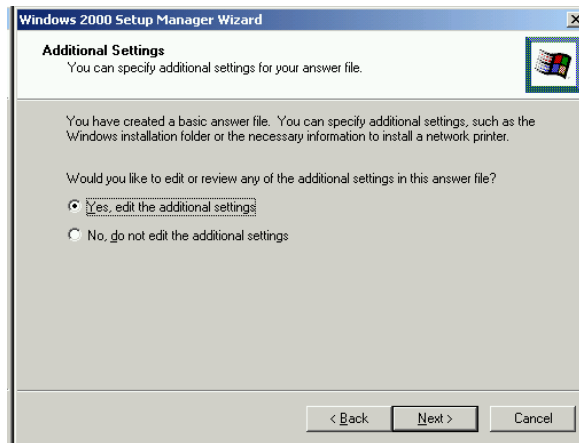
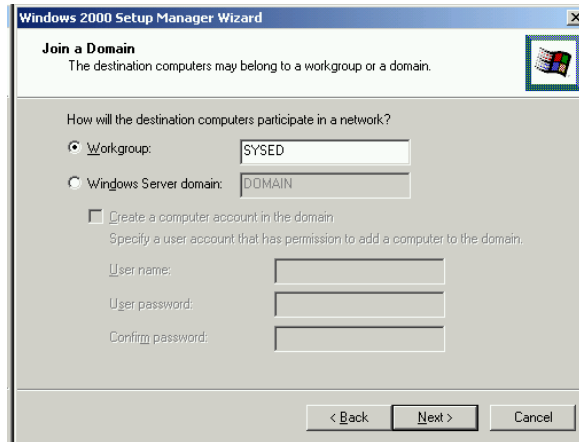
To create an answer file:

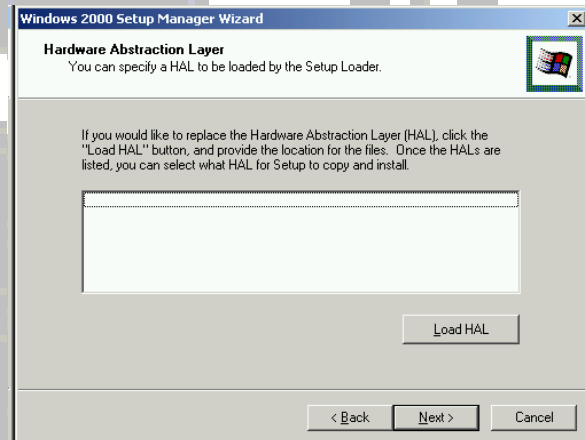
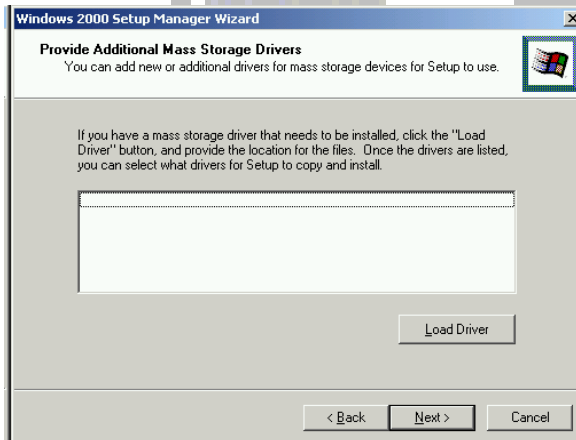
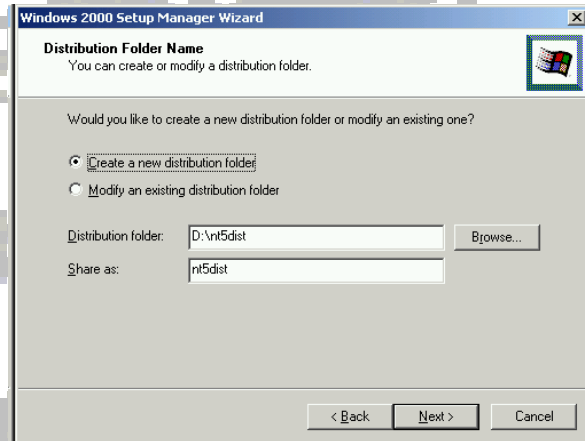
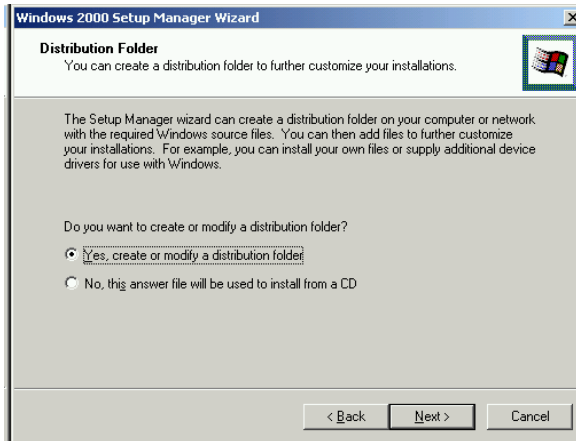
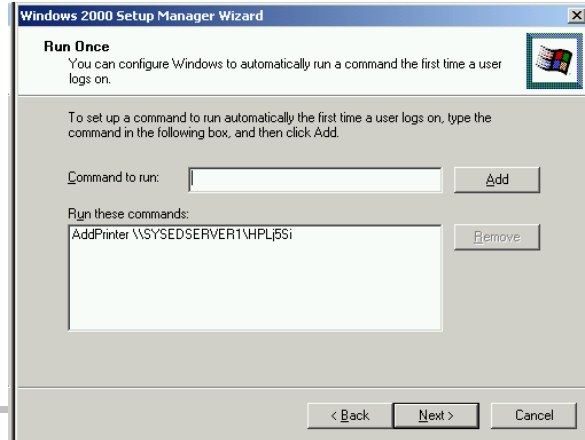
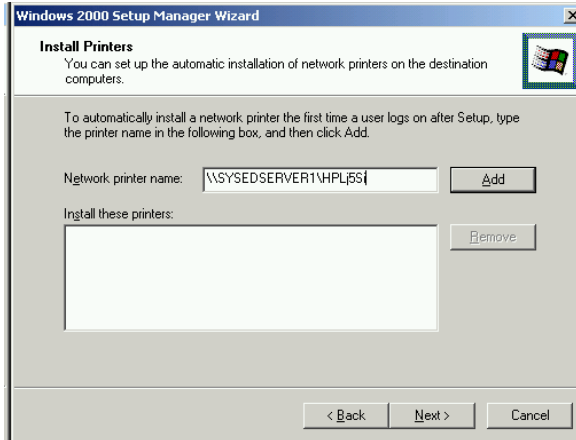
1. Choose Run...Programs...Resource Kit...Tools Management Console.
2. From the Tools Management Console, double click setupmgr from the Deployment Tools category.

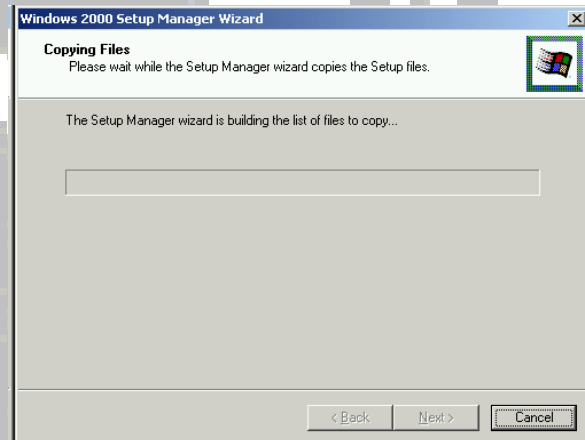
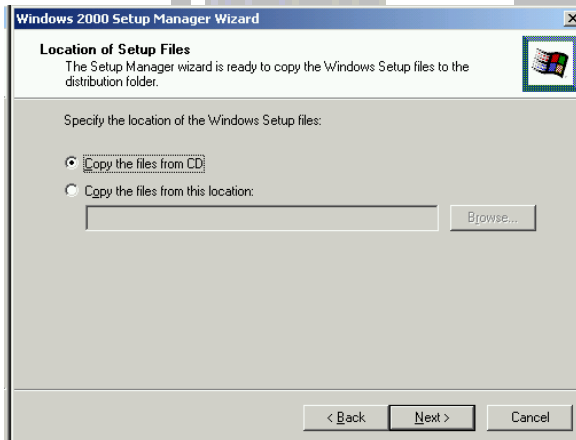
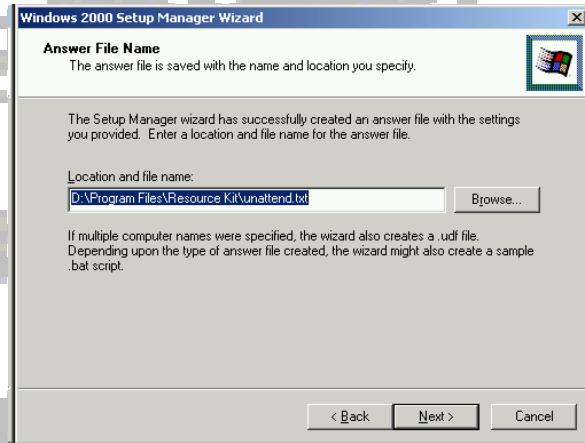
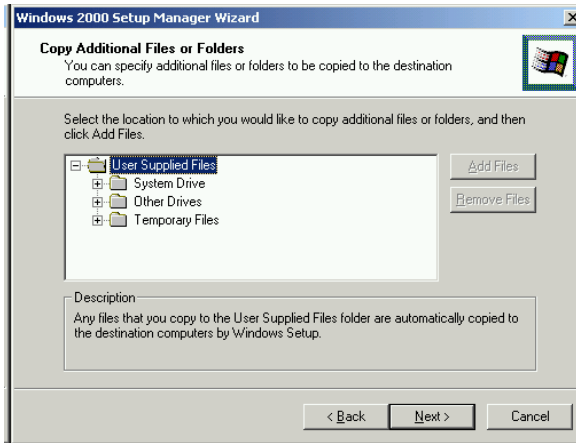
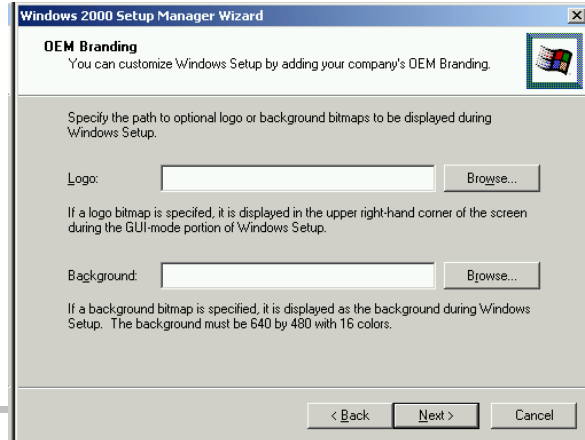
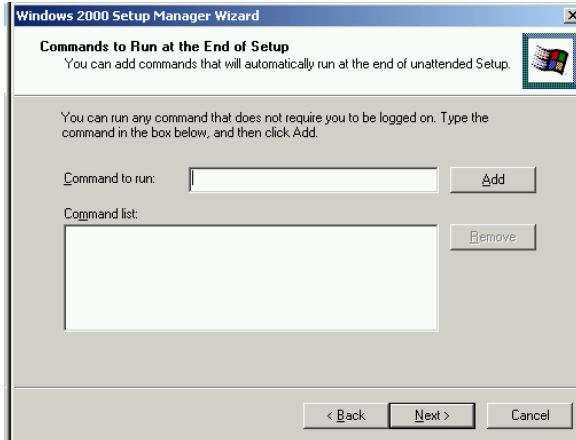
This invokes the Windows 2000 Setup Manager wizard.











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## 14 Microsoft's Recommendations for Migrating to Windows 2000 Server

Most major Windows 2000 deployments will be upgrades from previous Windows operating systems.

Microsoft considers the migration process to consist of six phases.

Phase One	Streamlining	Reduces the complexity of the network by cleaning up resources.
Phase Two	Updating	Improves the chances of a successful migration by upgrading current operating systems and applications to the latest versions.
Phase Three	Planning	A detailed plan for the remaining phases.
Phase Four	Testing	Validates the system architecture and flushes out any problems before they cause downtime.
Phase Five	Deploying	The actual installation of Windows 2000.
Phase Six	Assessment	Determination of the success or failure.

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### 14.1 Streamlining

Make the migration as simple as possible by cleaning up your existing network and servers.

Audit the user account database to ensure there are no duplicate or unused accounts. Clean unnecessary files off every server and desktop system, and make sure that all systems have plenty of free space.

Perform the necessary hardware upgrades. Windows 2000 Server is more demanding of hardware than Windows NT Server 4.0 is.

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### 14.2 Updating

Windows 2000 Server is a major update from Windows NT Server 4.0, but many of the new features have been released as add-ons. The migration can be made smoother by implementing the updated components on all of the servers before planning the upgrade.

In particular, make sure Windows NT Server 4.0 Option Pack with Microsoft Internet Information Server 4.0 and Microsoft Transaction Server and Windows NT 4.0 Service Pack 4 are installed.

The system's architecture might need to be revised. If any network protocols besides TCP/IP are being used, they should be removed.

Utilize the full range of TCP/IP services included with Windows NT Server 4.0.

- C WINS servers with the clients configured to use them.
- C DHCP servers for delegation/management of IP addresses.

Implement a DNS structure and configure all client machines to use DNS.

- C If UNIX is being used for DNS services, migrate the servers to Windows NT for tighter integration with Active Directory.
- C If all the DNS servers can not be migrated, create a separate subdomain that can be handled exclusively by Windows NT servers.

Having a separate subdomain fits into the Active Directory architecture very well and limits the damage if problems occur during migration.

Windows 2000 networks do not require NetBIOS networking. To ease the transition from NetBIOS, make sure that all systems have a primary host name that matches their computer name.

For example, if a server has the computer name M01 and a fully qualified domain name (FQDN) of www.sysed.com, give it an alias in the DNS database as m01.company.com.

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### 14.3 Planning

Several important tasks must be completed before a system is to be updated.

The tasks are:

- Map out a system architecture.
- Determine a budget.
- Create a detailed task list.
- Specify a timeline.
- Identify human resource needs.

#### Creating a System Architecture

Windows 2000 has different architectural requirements than Windows NT 4.0.

The new architecture might not require multiple domains and therefore fewer domain controllers. Alternatively, it might be necessary to add a DNS infrastructure, which would require purchasing additional hardware.

Be sure each Windows 2000 systems meets these specifications:

- 166 MHz or higher Pentium-compatible microprocessor or Alpha CPU.
- 32 MB RAM for Windows 2000 Professional; 64 MB RAM for Windows 2000 Server.
- 2-GB hard disk with a minimum of 500 MB of free space.
- VGA monitor and video card.
- Keyboard and mouse.
- A network card or CD-ROM to retrieve the setup files.

### Determining a Budget

Migrating all the systems on a network is a major undertaking.

Several factors will contribute to the overall cost:

Hardware Upgrades	Any system that does not meet the hardware requirements for the new operating system must be upgraded. Be sure to include the cost of labor in the estimate.
New hardware	If the new system architecture requires that additional hardware to be purchased, include the costs of the hardware and set-up in the budget.
Software upgrades	This will vary depending on the licensing scheme.
Overtime	In most organizations, employees have a full schedule simply performing day-to-day tasks. Planning and executing a major upgrade will consume additional time that will cost the company money if it pays overtime.

### Creating a Task List

Create a detailed list of discrete tasks that must be accomplished during the migration.

For example, upgrading a Windows NT 4.0 domain to Windows 2000 Server and Active Directory. The first task would be to upgrade the primary domain controller for the domain.

The system would require a processor upgrade to run Windows 2000 Server effectively.

A task might look like this:

1.	Verify that a processor upgrade kit and Windows 2000 Server software are available.
2.	Perform a full backup of SERVER-PDC.
3.	Inform users that SERVER-PDC will be taken offline.
4.	Synchronize all domain controllers.
5.	Promote SERVER-BDC to primary domain controller.
6.	Add the additional processor to SERVER-PDC.
7.	Synchronize all domain controllers.
8.	Promote SERVER-PDC back to the primary domain controller.
9.	Upgrade SERVER-PDC to Windows 2000 Server.
10.	Verify that everything is functioning correctly. If SERVER-PDC is not working correctly, remove the additional processor and restore from backup.
11.	Inform users that SERVER-PDC is back online.

Make sure several people in the organization review the task list to verify that no steps have been omitted. For large networks, start by creating a higher-level task list and dividing the list among different administrators.

Always have a rollback plan.

### Specifying a Timeline

Once a task list has been created, a timeline needs to be established. Determine how many hours of work are required for each task.

Depending on the size of the network, migrating to Windows 2000 Server can take several months.

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## 14.4 Testing

While planning, allocate time for software testing. Set aside a system, and install Windows 2000 Server on it.

Then layer on the network applications to be used and verify that each of them continues to work exactly as it did with Windows NT 4.0. Connect to the server with a variety of clients, and verify that the clients and the applications still function.

After resolving the problems revealed by the testing process, implementation can be started.

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## **14.5 Deploying**

Small organizations with less than 50 clients and servers should migrate all systems at once.

It is not practical to upgrade medium to large organizations in a single phase. Instead, start by migrating primary domain controllers to Windows 2000 Server. Leave a full week after the first systems have been upgraded before migrating the backup domain controllers.

By migrating servers in small numbers and allowing the updated servers to function in a production environment; this in effect will be a final stage of testing. After all the servers have been upgraded, user systems can be migrated one department at a time.

This should serve to limit the worst-case scenario to partial downtime rather than total downtime.

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## **14.6 Determining Success or Failure**

After each phase of the migration is complete, it will be necessary to perform a series of tests to validate functionality. Even if everything is working in a satisfactory manner, be prepared for users to raise support issues.

There are usually surprises when performing a major upgrade. Deal with problems as they arise, and be prepared for the worst-case scenario: rollback. If any post migration problems are severe and cannot be quickly resolved, restore the systems from the most recent backup and return to the testing phase.