

# Release Notes



Microsoft®  
**WINDOWS NT™**



# Release Notes

## **Microsoft Windows NT**

**Beta March 1993**

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# Introduction

Welcome to the March 1993 Beta Release of the Microsoft® Windows NT™ version 3.1 operating system, the powerful, reliable and open operating system that's designed to make the most of today's powerful machines.

This Beta release provides significant improvements in performance, hardware support, and compatibility with MS-DOS® and Windows™ 3.1 applications. In response to feedback from the October Beta release, we've fixed bugs and streamlined the installation process. We've also added Microsoft Mail, Schedule+, Network DDE, and Remote Access Service to the basic Windows NT feature set. This March Beta Release also includes Boot Loader—allowing you to install Windows NT on an existing system while still maintaining your previous operating system.

Your response to this Beta release will help us put the finishing touches on Windows NT.

Windows NT is designed to meet the demands of power users, developers, and MIS for powerful hardware and applications, without sacrificing the ease of use and application availability of Windows. Windows NT is another member of the family of Windows operating systems, meeting these needs and making the most of today's powerful machines.

We also provide a Microsoft Windows NT Advanced Server package that is the server edition of the Windows NT operating system. It builds on the capabilities of Windows NT to provide a powerful, reliable, and open server platform to support sophisticated business applications. That product is part of a separate Beta program.

## Contents of the March Beta Release

This March Beta Release of Windows NT contains all of the features of the product: the Windows NT File System (NTFS) and applications support for MS-DOS, Windows (both 16-bit and new 32-bit applications), character-based OS/2® 1.x, and POSIX 1003.1.

The benefits of application support across these categories are *choice and availability*, and *integration with your existing environment*. The benefits of the Windows NT File System are *security, reliability, and high capacity*.

The Windows NT March Beta Release includes the following installation media:

- One CD-ROM compact disc containing all Windows NT operating system files and supporting applications for both x86 and MIPS® computers.
- One 3.5-inch and one 5.25-inch boot disk, used for CD-ROM installation on x86-based computers.
- One 3.5-inch floppy disk installation set, used for floppy-disk installation on x86-based computers.
- One 5.25-inch boot disk, used for computers to boot Setup for the 3.5-inch floppy disk installation on x86-based computers. (This is for computers that have both 3.5-inch and 5.25-inch drives where the 5.25-inch drive is the boot drive.)

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**Note** On RISC-based computers, you install Windows NT directly from the CD-ROM, without using a boot floppy disk.

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This release includes the following documentation:

- *Windows NT System Guide*
- *Windows NT Evaluation Guide*
- *Windows NT Preliminary Resource Guide*
- *Release Notes*, which includes sections on using TCP/IP networks and the Remote Access Service.

Throughout this document, \WINNT refers to the Windows NT directory with all its subdirectories (also called the system tree). The Windows NT Setup program prompts you to install into the \WINNT directory, unless you have an MS-DOS-based version of Microsoft Windows, such as Windows for Workgroups or Windows 3.1, on your computer. If Windows NT Setup detects a version of Microsoft Windows on your system, it suggests that you install Windows NT into the same directory. In this case, Setup creates a \SYSTEM32 directory in the Windows directory and installs Windows NT in it.

If you install into the Windows directory, you can easily run your MS-DOS-based and Windows-based applications under either operating system. In the final release of Windows NT, you will automatically have access to all settings for your Windows-based applications, the common program groups in Program Manager, the desktop configuration, file associations, and the information used for object linking and embedding.



## System Requirements

Windows NT operates on a computer with:

- An x86-based microprocessor (386/25 or higher) with 12 MB or more of RAM for this release, or an ARC-compatible RISC-based computer with 16 MB of RAM such as the MIPS R4000 or R4400.
- A hard disk with approximately 70 MB of free disk space for Windows NT (80 MB on an ARC computer), 20 MB of which will be used for the virtual-memory paging file.

For a list of compatible computer systems, CD-ROM drives, SCSI® adapters, and other peripherals that have been tested, see the *Hardware Compatibility List* included in your kit.

## Installing the Windows NT Beta Release

This section provides:

- “Quick start” instructions for installing Windows NT from CD-ROM or floppy disks.

Use the installation method described in “Quick Start for Installing Windows NT” and choose Express Setup to install Windows NT quickly and easily using the recommended default settings.

Installation from CD-ROM requires a supported SCSI CD-ROM device physically attached to your computer.

- Detailed instructions for installing Windows NT from MS-DOS.  
Use this method if you have an unsupported CD-ROM device or if you want to install Windows NT on a workstation over the network. This procedure is not supported on RISC-based computers.
- Notes on Windows NT Setup for this release, including troubleshooting tips from the Windows NT development team.

For detailed information about Windows NT Setup, see “Installing Windows NT,” in the *System Guide*.

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**Note** Users of the October 1992 Beta release should delete this version of Windows NT before installing the March 1993 Beta. If you are using the NTFS file system, your October release will not be able to access the NTFS partition once you upgrade to the March 1993 Beta. However, the March 1993 release can access the October NTFS partition. All files on that partition will be maintained therein. In addition, the files required to boot the operating system have changed significantly and are not compatible.

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## Before You Begin

Before installing Windows NT, you should know the following details about your system:

- The *name of your computer* and the *name for the workgroup or domain* that this computer will join.

A computer name can be any name you invent as long as it is not the same as any other computer, workgroup, or domain name on the network. Windows NT will accept any workgroup name you choose, including the default WORKGROUP.

- The type of *network adapter* in your computer, the card's *interrupt number* (IRQ), *base I/O address*, and other settings. Windows NT Setup identifies most network adapter cards automatically. For cards that can be identified automatically, Setup suggests default values for these settings. See the documentation that came with your network adapter card, and the section called “Notes on Network Adapter Cards” later in this Release Notes document, to confirm settings suggested by Setup.
- If you have a printer attached to your computer, the kind of *printer(s)* and *printer port(s)* used.

You will also need a high-density floppy disk for creating an Emergency Repair disk during Setup.

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**Notes** Windows NT supports the MS-DOS FAT file system and applications. It does not support DoubleSpace, the integrated data compression technology available with future versions of MS-DOS. We are looking to make this technology available in a future release of Windows NT.

Please install the March 1993 release on a partition that does not contain data compression, or backup the compressed partition and reformat without using a compression utility. The March 1993 release will not recognize any files or data that has been compressed.

If you plan on installing Remote Access Service (RAS), please see the RAS section at the end of these Release Notes.

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## Quick Start for Installing Windows NT

Follow these simple instructions for installing Windows NT. You can press F1 to get online Help at any time during Setup.

### Running Windows NT Setup

When Windows NT Setup starts, you must choose either *Express Setup*, for automatic installation, or *Custom Setup*, for more precise control over how Windows NT is installed. We recommend that you choose Express Setup, which automatically installs all system components and sets up applications on your computer so they can be used with Windows NT. For a detailed description of Express vs. Custom Setup, see “Installing Windows NT,” in the *System Guide*.

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**Note** If you are using a CD-ROM for Setup, make sure that your SCSI CD-ROM drive is *not* set to ID 0 or 1. For further details, see “Troubleshooting Setup” later in these Release Notes.

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#### ► To install Windows NT on an x86-based computer from CD-ROM

1. Insert the boot floppy disk for CD-ROM Setup into drive A, and insert the Windows NT compact disc into the CD-ROM drive.
2. Reboot your computer.
3. Follow the instructions on the screen.

► **To install Windows NT on an x86-based computer from floppy disks**

1. With your computer turned off, insert Disk #1 of the Microsoft Windows NT disk set (or the 5.25-inch boot disk for 3.5-inch disk installation) in the floppy boot drive (A), and then turn on your computer.
2. Follow the instructions on the screen.

► **To install Windows NT on a RISC-based computer**

Before you can run Windows NT Setup on a RISC-based computer that is ARC-compliant, you must first read the manufacturer-supplied instructions for starting programs from CD-ROM or disk. For more information, see “Notes on Setup for RISC-based Computers” later in these Release Notes.

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**Note** To install Windows NT on a RISC-based computer, the computer’s system partition must be a FAT partition of at least 2 MB.

---

The following sample procedure for starting Windows NT Setup is typical of many (but not all) RISC-based computers.

1. Insert the Windows NT compact disc into the CD-ROM drive.
2. Reboot the computer.
3. At the ARC screen, choose Run A Program.
4. At the prompt, type `cd:\mips\setupldr`

For some systems, you might need to supply a full device name instead of “cd:”. See your hardware documentation for details.

5. Follow the instructions on the screen.

If you have problems, see “Notes on Setup for RISC-based Computers” later in this section.

## **Completing Setup and Starting Windows NT**

At the end of Setup, remove any floppy disks from the floppy disk drives and click the Reboot button to run Windows NT.

► **To run Windows NT**

1. When the Boot Loader menu appears after you start the computer, press an arrow key to select the Windows NT option, and then press ENTER.
2. When the message prompts you, press CTRL+ALT+DEL to log on.
3. When Windows NT asks for a password, type the password you specified in Setup.

Passwords are case-sensitive.

## Installing Windows NT from MS-DOS

You can use the WINNT.EXE program to install Windows NT from MS-DOS. Use this method to install Windows NT if either of these cases is true:

- You are installing Windows on an x86-based computer and are connecting to a network to run Setup from a remote computer,
- You are installing Windows on an x86-based computer that has a SCSI or CD-ROM device which is supported by MS-DOS but is not supported by Windows NT.

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**Note** The WINNT.EXE program must be run from MS-DOS. It cannot be run from Windows 3.x, OS/2, or Windows NT. You must have 85 MB of free disk space.

---

### Using WINNT.EXE to Install Windows NT

1. Boot the computer using MS-DOS as the operating system.
2. If you have a local CD-ROM device, insert the Windows NT compact disc into the drive, and then change to the `<cd_drive>:\i386` directory.  
For example, if D:\ is the location of the source files, type **d:** and press ENTER. Then type **cd \i386** and press ENTER.  
Or, if the Windows NT files are stored on a remote computer, connect to the shared network drive and change to the directory that contains the WINNT.EXE program.
3. Insert a blank, formatted high-density floppy disk into the boot drive (A).
4. At the MS-DOS command prompt, type **winnt** and press ENTER.
5. When you are asked for the Windows NT source, type the path for the directory where the WINNT.EXE program is stored, which is the same directory you specified in Step 2.  
For example, if D:\ is the location of the source files, type **d:\i386** and then press ENTER.
6. When you are asked for the installation destination path, type the path or press ENTER to accept the default path.

If Windows NT Setup detects a version of Microsoft Windows on your system, it suggests that you install Windows NT into the same directory. If you take this suggestion, Windows NT creates a \SYSTEM32 directory within your Windows directory and installs Windows NT in it.

After the necessary files are transferred, a message asks you to press ENTER to restart the computer.

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**Note** When you restart the computer, be sure to leave the boot floppy disk in the computer.

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You can now choose either Express or Custom Setup, and then the text-based portion of Windows NT Setup begins, as described in “Installing Windows NT” in the *System Guide*.

## Setting Up a Remote Computer for WINNT.EXE

If you want to use WINNT.EXE for installing Windows NT without using a local CD-ROM device, there are two methods for accessing the files on the Windows NT compact disc:

- Copy the files from the \I386 directory of the Windows NT compact disc to a shared directory on a network computer.

This is the fastest and most direct method for taking advantage of WINNT.EXE for installation.

- Connect a CD-ROM device to a network server, and make sure that the \I386 directory of the compact disc is shared on the network.

Users can also connect to this shared resource and run WINNT.EXE. However, this method is slower than connecting to a shared hard disk directory.

If you want to use WINNT.EXE for installing Windows NT from floppy disk, first install Windows NT on a separate system as a server for this process. Using the Command Prompt or File, Run, type:

```
setup /i initial.inf /s <source> /d <destination> /n
```

- From floppy for example, type:  
setup /i initial.inf /s b:\  
(where B:\ is the location of the setup floppies)
- From CD-ROM for example, type:  
setup /i / initial.inf /s d:\i386 /d c:\files/n

## Notes on WINNT.EXE

WINNT.EXE supports several options, listed next. To see this information on your computer, type **WINNT /?** at the Windows NT command prompt.

**WINNT** [/S[:]*sourcepath*] [/T[:]*tempdrive*] [/I[:]*inffile*] [/X | /F] [/C]

*/S[:sourcepath*

Specifies the source location of Windows NT files. This must be a full path of the form x:\[*path*] or \\server\share\[*path*]. The default is the current directory.

*/T[:tempdrive*

Specifies a drive to contain temporary setup files. If not specified, Setup will attempt to locate a drive for you.

*/I[:inffile*

Specifies the filename (no path) of the setup information file. The default is DOSNET.INF.

*/X* Do not create the Setup boot floppy.

*/F* Do not verify files as they are copied to the Setup boot floppy.

*/C* Skip free-space check on the Setup boot floppy you provide.

## Notes on Windows NT Setup for This Release

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**Note** You cannot place Windows NT on a partition configured with any compression or partition product.

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## Notes on Windows NT Files

Setup copies most of the new files into the \WINNT directory, except:

- For an x86-based computer, the following files are copied to the root directory on the C drive: BOOT.INI, BOOTSECT.DOS (if another operating system is on your computer), NTLDR, and NTDETECT.COM.

The NTBOOTDD.SYS file is also copied if you install Windows NT onto a SCSI disk.

- For a RISC-based computer, the following files are copied to the \OSNT directory on the system partition: HAL.DLL and OSLOADER.EXE.

These files should not be deleted because your system will not boot without them.

---

**Note** These files are all read-only, hidden system files.

---

Setup also places the paging file PAGEFILE.SYS by default in C:\. You can change the location and size of this file by using the System option in Control Panel, but do not reduce pagefile size below 20 MB.

---

**Note** The files AUTOEXEC.BAT and CONFIG.SYS are also copied to your root directory. (Setup doesn't overwrite existing copies.) These files, along with AUTOEXEC.NT and CONFIG.NT in the \WINNT\SYSTEM32 directory, exist for compatibility with MS-DOS applications. For more information on running MS-DOS applications, see "Other Application Environments" in the *System Guide*.

---

## Notes on Boot Loader and Upgrading from MS-DOS, Microsoft Windows, or OS/2

If you are upgrading from the MS-DOS, Microsoft Windows, or OS/2 version 1.x or 2.0 operating system, you have two options:

1. Keep the existing operating system and add Windows NT to your computer.  
Setup installs Boot Loader, which allows you to choose the operating system to run each time you start the computer. Your system's old boot sector is saved as C:\BOOTSECT.DOS. Do not delete C:\BOOTSECT.DOS because it is used to boot your previous operating system.
2. Remove the existing operating system and install Windows NT as the sole operating system on your computer.

---

**Note** Boot Loader does not support booting both the March Beta and a previous Beta release.

---

Boot Loader works with COMPAQ® DOS 3.31, MS-DOS versions 4.0 and later, and OS/2 versions 1.x and 2.0. Most of our Boot Loader testing has been done with MS-DOS 5.0 and OS/2 versions 1.21, 1.3, and 2.0.

### Installing Windows NT with the OS/2 Boot Manager

Install Windows NT on a partition different than that used by OS/2.

If you have OS/2 Boot Manager installed on your computer and want to continue to use it after Windows NT installation is complete, you need to re-enable it. Start Disk Administrator from the Administrative Tools program group in Program Manager. Select the OS/2 Boot Manager Partition, then select Mark Active from the Partition Menu.



To Return to booting Windows NT, use FDSKPM in OS/2 to make the Windows NT partition bootable.

### Installing Windows NT on a Windows 3.x Computer

Windows NT can be installed on an existing Windows 3.x installation (including Windows for Workgroups).

The following information is migrated from Windows 3.x to Windows NT once when the first user logs on after Setup.

1. All of the OLE information from the Windows 3.x REG.DAT file is moved to Windows NT.
2. The following variables and sections from WIN.INI are migrated:

[Compatibility]	[Fonts]	[Windows]
[Devices]	[FontSubstitutes]	Spooler
[Embedding]	[PrinterPorts]	DeviceNotSelectedTimeout
		TransmissionRetryTimeout

The following information is migrated once for each new user the first time they logon after Setup. The “Administrator” user name do *not* participate in this migration.

1. The following variables and sections from WIN.INI

[Clock]	[Windows]	
[Colors]	CursorBlinkRate	Beep
[Cursors]	BorderWidth	SwapMouseButton
[DeskTop]	ScreenSaveTimeOut	DoubleClickSpeed
[Extensions]	ScreenSaveActive	MouseThreshold1
[Int1]	KeyboardSpeed	MouseThreshold2
[Sounds]	KeyboardDelay	MouseSpeed
[Terminal]		
[TrueType]		

2. The following variables and sections from SYSTEM.INI:

```
[boot]
    SCRNSAVE.EXE
```

3. The following variables and sections from CONTROL.INI:

[Color Schemes]	[Custom Colors]	[Screen Saver.Mystify]
[Current]	[MMCPL]	[Screen Saver.Marquee]
	[Patterns]	[Screen Saver.Stars]

4. All variables and sections from WINFILE.INI.

5. All Windows 3.x Program Manager group files as identified by the list of group files in PROGMAN.INI. If the name (as contained within the group file, not the actual .GRP file name) matches the name of the Windows NT group, either Personal or Common, then that group is *not* migrated.

If your Windows NT display resolution is different from your Windows 3.x resolution, program groups may need to be resized.

## Notes on Windows NT Setup

The notes here provide additional information for this release to supplement the information in “Installing Windows NT” in the *System Guide*.

- **Select a Disk Partition.** The Setup screen shows existing partitions and any unpartitioned disk space that can be used to create new partitions. If you plan to use more than one partition on your hard disk, it's probably best to create these partitions during Setup. You cannot divide a partition without losing the data on that partition.

---

**Caution** If your hard disk contains stripe sets, volume sets, or mirrors, these elements appear on the Setup screen as “Windows NT Fault Tolerance.” Be careful not to delete any of these elements.

---

- **Select a File System.** The three file systems that Windows NT can use are Windows NT File System (NTFS), the File Allocation Table (FAT) used by the MS-DOS operating system, and the High Performance File System (HPFS) used by the OS/2 operating system, version 1.2 and higher.

During Setup, you can select the NTFS or FAT file system to format a partition. You can also convert an existing FAT or HPFS system partition to NTFS during Setup, preserving your existing files.

The choice you make at this step is not final. After Setup, you can use Disk Administrator to change partitions on your hard disk(s) and use the Format command or the CONVERT.EXE utility to change file systems on any partitions. However, you cannot convert an NTFS partition to any other file system without backing up all the files, reformatting the partition, and then restoring the files.

To remove an NTFS partition:

If Windows NT is not installed on the NTFS partition, then all that is necessary is to use the Format command from a Windows NT command prompt. If Windows NT is installed on the NTFS partition, and you want to reformat the drive, you will need to perform the following steps in order to reformat it:

1. Start Windows NT Setup.
  2. Choose Express or Custom installation.
  3. When Windows NT Setup asks you to select the partition where you would like to install, highlight the NTFS drive and press “P” to delete the partition.
  4. Either continue from here using the Setup program to recreate and format the partition, or exit the Setup program and use the MS-DOS Fdisk and Format commands to complete the process.
- **Select a Path.** Setup proposes to copy all system components to \WINNT, unless it detects an existing Windows directory. We recommend you accept this default.

After you supply this information, Setup copies files, reboots your computer, and starts the graphical portion of Windows NT Setup. If you choose to convert the system partition to NTFS during Setup, your computer will reboot twice. This is normal behavior.

---

**Note** If you quit during the text-based portion of Setup, Boot Loader is not added to your computer. You will be able to boot the previous operating system in the usual way.

Also, if you choose to convert an existing file system to NTFS, the conversion does not take place until Setup is complete and you reboot your system. So if you quit Setup before completion, the file system on that partition is not converted.

---

You can use standard Windows keyboard and mouse techniques for all actions during the graphical portion of Setup, and press F1 for context-sensitive Help at any time.

- **Windows NT Setup.** In the series of dialog boxes that request information about your installation, you must enter a unique *computer name*. This unique computer name is used to identify your computer on a network. If you are unsure about the name, ask your network administrator.

---

**Note** Domain names and computer names cannot contain space (blank) characters.

---

If you need to change the computer name after Setup is complete, double-click the Network option in Control Panel, and choose the Change button in the dialog box.

- **Optional Windows Components (Custom Setup Only).** The Optional Windows Components and the Customize dialog boxes each display the total disk space required for selected components and the disk space remaining. If disk space is at a premium on your computer, watch these totals to make sure that you do not choose to install more files than disk space allows.

If you want to add or remove components after Setup is complete, you can choose the Windows NT Setup icon in Program Manager.

- **Virtual Memory (Custom Setup Only).** Windows NT creates a special file on your hard disk called a *paging file*. For Custom Setup, you can choose to change the drive where the paging file is stored.

We recommend that you accept the proposed location for the paging file. If you want to change the location or size of this file, or create other paging files, choose the System option in Control Panel after Setup is complete. For more information about paging files, see Chapter 5, "Control Panel," in the *System Guide*.

- **Printer Setup.** Use this option only if you have a printer physically attached to your computer. If you are printing through a network, choose Cancel in this dialog box, and then choose OK. You can use Print Manager to connect to a network printer after Setup is complete.
- **Network Adapter Setup.** During installation of the network, Windows NT Setup will attempt to detect the type of network adapter in your system. It will also attempt to detect the setting for that network adapter. Detection is only done during initial install of the network. Detection is not attempted once the network is already installed. For example, if adding an additional network adapter through the Network Control Panel Applet, no detection is attempted, since attempt detection at this time may interfere with the normal operation of devices already installed and running in the system. Further, settings are only detected and confirmed for the first network adapter installed.

Some network adapter cards are either not automatically detected, or require detection methods that may disrupt system operation. For this release, the following cards are not automatically detected:

- Ungermann-Bass Ethernet NIUpc Adapter
- Ungermann-Bass Ethernet NIUpc/EOTP Adapter
- Proteon P1390 Adapter

Custom Setup asks you to confirm settings for the adapter card it detects in your computer. If you are unsure about your network card or its settings, accept the defaults that Setup proposes. After Setup is complete, you can use the Network option in Control Panel to change network settings.

---

**Note** Using the wrong network adapter card settings can prevent you from joining a domain during Setup. If this happens, use the Network Control Panel applet after Setup is completed to join a domain.

---

For information about completing any options in the dialog boxes that appear during the network part of Setup, choose the Help button.

---

**Note** If you are installing more than one network adapter of the same type (Ethernet, Token Ring), each card must be attached to a separate network segment or each card must be running a different network protocol (NetBEUI, TCP/IP). Otherwise, the network software will fail to start. For this reason, we recommend you install only one network adapter during Setup and then use Control Panel to add others after installation is complete.

---

- **Networks.** For Custom Setup, you can configure the detected adapter card and then choose to install additional network adapter cards and supporting software. If you choose to install additional network support, you might be asked to supply disks from the manufacturer of the network card or software. You can supply information and disks, following the instructions on screen, or choose Cancel to dismiss the dialog box and then continue with Windows NT Setup.

We recommend that you choose to install and configure additional network adapters and software after Setup is complete by choosing the Network option in Control Panel.

- **Domain Settings in Windows NT.** In Windows NT, a computer can join a workgroup or a domain. A *workgroup* is a collection of computers that for convenience appear under the same workgroup name when browsing network resources. Any computer can join any workgroup.
- **Joining a Workgroup.** You can join an existing workgroup, or create a new one simply by typing in a name you make up. Windows NT Setup will accept any workgroup name you choose, including the default WORKGROUP.
- **Joining a Domain.** A *domain* is a collection of computers defined by the administrator for a Windows NT Advanced Server network. A domain provides the same convenience for network browsing, plus provides access to the centralized user and group accounts maintained by the domain administrator.

Unless you know the precise domain name, you should select the Workgroup Name option, and type a name. Later, you can use the Network option in Control Panel to join a domain or to change the workgroup name.

If you are a domain administrator on the domain this computer will join, you can type your username and password. An account for the current computer will be created automatically on the domain.

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**Caution** Windows NT Advanced Servers, including the domain controller, cannot be removed from one domain and added to another. Also, existing domains cannot be renamed. If you need to change the domain name after Setup, you will need to reinstall Windows NT Advanced Server.

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- **Local Account Setup.** If your computer is not a member of a Windows NT Advanced Server domain, you must supply a unique username of 20 or fewer characters that does not include spaces. Windows NT displays all user names in uppercase letters.

If you define a password, remember that passwords are case-sensitive.

If you do not want a password for this user account, leave the Password and Confirm Password boxes blank.

- **Set Up Applications.** For Express Setup, all applications on your path are added to the Applications group in Program Manager during Setup. You may be asked to provide information about some of the applications that Setup finds.

For Custom Setup, you can choose to set up specific applications on your hard disk by responding to a series of messages about where to search for applications.

If you want to add applications to Program Manager groups after Setup is complete, choose the Windows NT Setup icon in Program Manager.

- **Emergency Repair Disk.** For both Express and Custom Setup, you will create a disk for emergency maintenance to be used if system files become corrupted.

You can only create an Emergency Repair disk while running Windows NT Setup to install the Windows NT system files. You cannot create this disk after Setup is complete. For details about using this disk to repair your system, see Chapter 12, "System Maintenance with Windows NT Setup," in the *System Guide*.

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**Note** If you experience difficulty using a 2.88 MB floppy disk as the Emergency Repair Disk, format the 2.88 MB floppy Disk as 1.44 MB

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- **Setup Time Zone.** Setup needs information about your local time zone to set the correct time for your system.

## Notes on Setup for RISC-based Computers

In general, you should consult the documentation for your computer before running Windows NT Setup. RISC systems can have different startup user interfaces, depending on the manufacturer. The instructions that follow are for a MIPS Magnum series computer, but may also be applicable to other manufacturer's systems.

These instructions assume that you have set up a system partition. The system partition must be a FAT partition, which will contain the files \OS\NT\OSLOADER.EXE and \OS\NT\HAL.DLL—even if you are going to use NTFS as the file system. If you need to create the partitions, the procedure is discussed here.

### ► To install Windows NT on MIPS Magnum-series computers

1. Choose Run A Program from the menu.
2. When the system asks for the name of the program, type **cd:\mips\setupldr** to start Windows NT Setup.

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**Note** Magnum systems are capable of running either “big endian” or “little endian,” but must be configured in little endian mode to run Windows NT.

If your system does not display an ARC Boot Loader banner on the screen, you must insert the Magnum Setup floppy that came with the system and reboot the system. When the message asks if you want to load an NT PROM, follow the directions on screen. Then continue with Windows NT Setup.

---

### ► If your disk needs to be partitioned

1. Choose Run A Program from the menu.
2. When the system asks for the name of the program, type **cd:\mips\arcinst.exe** to start the ARC installation program.

Use this program to create the system partition. Note that to use NTFS for your operating system partition, you must create two separate partitions—one for the system partition, and one for the operating system. The system partition can be as small as 2 MB.

The system is now ready and you can run Setup as described above.

For other RISC-based computers, you might need to supply a full device name instead of “CD:”; for more information, see your hardware documentation.

## Troubleshooting Setup

The following is a list of solutions for common installation problems that occur on both x86- and RISC-based computers.

For more details on hardware-related problems that can affect installing and running Windows NT, see “Hardware Notes” later in this chapter.

### If You Have Problems Setting Up with CD-ROM

- When installing from a SCSI CD-ROM, make sure that it does not have an ID of 0 or 1. Some SCSI BIOS programs reserve 0 and 1 for hard disks. If you set your CD-ROM with an ID of 0 or 1, you will likely see an extra partition that does not exist or may encounter other disk errors.
- If Windows NT Setup cannot find the external CD-ROM or other SCSI devices, make sure the last device on the SCSI chain is properly terminated. If Windows NT Setup still cannot find your SCSI devices, this may indicate that your SCSI adapter card is terminated. You must remove the terminator on the SCSI card, which is usually in the form of jumpers, so that Windows NT can find SCSI devices attached to it. For information, see your hardware manual.

Remember that when you disconnect external devices from a SCSI card used to control internal devices, you might need to replace the card's terminator to allow access to those internal devices.

- If you have a Trantor T-128 or T-130B, make sure the jumper is set to IRQ5. The default jumper setting is “no interrupt.” This default will not work with Windows NT.
- If you have a SCSI hard disk drive that uses removable media, such as a cartridge drive, make sure that there is media mounted in the drive before running Setup. If no media is in the drive, you will likely encounter errors during Setup, and Setup will be unable to begin installation of Windows NT.
- On an x86 computer, if there are previously installed Windows NT trees that are on disks attached to SCSI adapters, and you install Windows NT to a disk on a different SCSI adapter or to a non-SCSI disk, then the previous Windows NT trees will no longer be bootable. You will need to copy the relevant SCSI miniport driver from the SYSTEM32\DRIVERS subdirectory to C:\NTBOOTDD.SYS.



### If Windows NT Fails to Boot After Setup

- Make sure your disk has enough space for the paging file (at least as much as you specified during Setup, and a minimum of 20 MB).
- Make sure that BOOT.INI statements refer to the correct Windows NT path. (BOOT.INI is a hidden file. Use the command **attrib -r -s -h boot.ini** to see it)

### If the Network Cannot be Installed or If the Network Fails to Start

- The two most common reasons for network installation failure are interrupt conflict and duplicate computer names.

To resolve possible interrupt conflicts, see “Assigning IRQs for Network Adapter Cards” later in these Release Notes.

Computer names must be unique for the workstation service to function. Also, a computer cannot have the same name as a workgroup or domain.

If network problems persist, use Event Viewer from the Administrative Tools group to review the error log information generated by your system’s drivers during startup. Details in the system error log will reveal possible interrupt conflicts or other driver problems.

## Microsoft Windows NT March 1993 Beta Release

The Windows NT Beta Release for March 1993 includes the following:

- Support for Win32™-based applications
- Support for Windows 3.1 and MS-DOS-based applications
- Support for OS/2 1.x character-mode applications
- Support for running POSIX-compliant applications (Windows NT is compliant to POSIX 1003.1-1990)
- Improved performance
- “Introducing Windows NT” tutorial
- 32-bit Microsoft Mail and Schedule+
- Network Dynamic Data Exchange (DDE)
- Remote Access Service software
- Increased device compatibility
- Streamlined installation including network adapter card detection
- A backup boot configuration (called “Last Known Good Configuration”) and Repair disk to recover from system corruption
- 3270 Emulator applet

This section of the Release Notes provides an overview of new capabilities you will find in Windows NT, describes the Windows NT system applications, and presents notes on running applications created for MS-DOS, Windows 3.x, and OS/2 1.x.

## Windows NT Overview

The Windows NT user interface is similar to Microsoft Windows 3.1. However, Windows NT provides several new capabilities that may be unfamiliar to you. This section describes these concepts. For more information, see Chapter 1, “Introducing Windows NT,” in the *System Guide*.

### “Introducing Windows NT” Tutorial

A tutorial is included with this Beta release. It can be run from the main program group Windows NT, or from Windows 3.x or DOS. The executable file, INTRO.EXE, is located in the SYSTEM32 subdirectory of the Windows NT directory.

To run from Windows 3.x or MS-DOS, you’ll need 450K of memory. In addition, you may need to copy MOUSE.COM to your root directory and, from the C:\ command prompt (or the root of your boot drive), type **mouse** before starting the tutorial.

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**Note** If you are running the ATI Graphics Ultra card with the standard VGA driver, you may experience problems trying to run the tutorial. To get around the trouble, choose the Command Prompt icon. Then, to start the tutorial from the command prompt, change to the SYSTEM32 directory and type **intro**. To start it from Windows, double-click the icon.

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## Security

Windows NT is a secure operating system. After booting the computer, each user must log on to Windows NT by pressing CTRL+ALT+DEL. To log off, choose Logoff from the File menu in Program Manager.

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**Note** The logon procedure assures you that the logon dialog box is actually Windows NT and not an impostor program that will steal your password. Even if you see the logon dialog box on the screen when you first approach a Windows NT computer, press CTRL+ALT+DEL to be sure.

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After you log on, you can press CTRL+ALT+DEL to change your password, lock or secure the computer, log off, shut down, or reboot the computer.

During Setup, you may be asked to specify a password for a built-in user account called Administrator. We recommend that you write down this password and store it in a safe place so that you always have a way to access your system.

► **To change the Administrator password**

1. Log on as Administrator.
2. Press CTRL+ALT+DEL, and then choose the Change Password button.
3. Type a new password.
4. Record this password and store it in a safe place.

While you are logged on as Administrator, you can create accounts for other users using the User Manager. To avoid inadvertently changing your system, you should log on to your Administrator account only when you need to use its additional capabilities, such as when you need to change network configuration or protocol settings.

For information about the built-in account groups in Windows NT and about managing user accounts, see Chapter 13, “User Manager,” in the *System Guide*.

To protect files using Windows NT security, you must use the NTFS file system. For information about ensuring security by defining file and directory access, see Chapter 4, “File Manager,” in the *System Guide*.

## Windows NT File System

Windows NT provides a new file system called Windows NT File System (NTFS) in addition to supporting the FAT and HPFS file systems. Specifically:

- NTFS allows long file names and supports 64-bit file addresses, meaning that files and volumes are effectively unlimited in size.
- NTFS offers excellent recoverability through the file system’s transaction capabilities.
- NTFS allows large volumes to be checked in a matter of seconds.
- NTFS provides security. With NTFS, you can specify the types of access users have to each file and directory.

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**Caution** Do not change permissions on the root directory of an NTFS partition.

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## Securing System Partitions

Since the system partition on a RISC-based computer must be formatted for the FAT file system, there is no way to secure information in individual directories and files on that partition. Therefore, the only way to secure the system partition is to allow access only to members of the Administrators group.

► **To secure the system partition on a RISC-based computer**

1. From the Partition menu of Disk Administrator, choose Secure System Partition. A message asks you to confirm this request. When the command is in effect, a check mark appears next to the command in the Partition menu.
2. To activate security on the system partition, restart your computer.

► **To remove security from the system partition on a RISC-based computer**

1. From the Partition menu of Disk Administrator/, choose Secure System Partition. The check mark disappears, but security on the system partition will not actually be removed until you restart your computer.
2. Restart your computer.

## Windows NT Networking

Windows NT comes with built-in networking functionality that includes client-level network support, file sharing, and print sharing. Built-in networking includes the ability to use your computer as an application server through the use of named pipes or RPC calls. With File Manager and Print Manager, you can browse and connect to shared directories or printers over a network.

### Networking in This Release

In this release, you can browse files, directories, and printers among computers in the same workgroup and in other domains and workgroups. If you want a computer to join a workgroup, double-click the Network option in Control Panel, and then choose the Change button next to the Workgroup field and type a workgroup name.

This release supports the following network transports:

- NetBEUI (for Windows for Workgroups, LAN Manager, and LAN Server connectivity)
- TCP/IP (for LAN Manager and UNIX® connectivity)

## Binding NetBIOS to the Network Adapter Card Driver

If you disable bindings of a transport provider to an NDIS-compliant network adapter card provider but do not disable the NetBIOS bindings to the transport provider at installation time or while adding additional software through the NCPA, insufficient information is written to the Registry which causes the NetBIOS interface to fail. The current workaround is to disable the NetBIOS to transport bindings at the same time you disable the transport to NDIS bindings.

## Using TCP/IP and Related Utilities

To install and configure TCP/IP, first log on as Administrator. Then double-click the Network option in Control Panel, then choose the Install Software button and follow the instructions on screen. After the installation is completed, you'll be prompted to reboot your computer to activate TCP/IP.

Note that TCP/IP can also be installed as a software option during normal setup if Custom is selected.

You can use the following standard utilities in Windows NT:

arp	netstat	rcp	route	telnet
ftp	ping	rexec	rsh	tftp

Telnet works with the Windows Terminal application or other terminal emulators. To use Telnet, make sure that TCP/IP has been initialized, and then type **telnet** at the command prompt.

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**Note** For 8-bit Ethernet cards with a small receive buffer space, such as the 3COM EtherLink II, the default TCP window size of 8192 may cause them to drop an excessive number of packets when connected to computers with faster network cards. This situation will degrade TCP/IP performance.

To alleviate this problem, decrease the TCP window size by using the Registry Editor (REGEDT32.EXE) to create a new registry value called `TcpWindowSize` of type `REG_DWORD` under the existing key `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters` and assigning a smaller value (we recommend 2920 decimal). Note that the value name is case sensitive. This problem should not occur if two computers with similar network adapter cards are communicating.

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► **To get online Help with most TCP/IP utilities**

- At the command prompt, type the executable name followed by the `-?` switch. For example, type **ping -?** and press ENTER.

For more information, see the TCP/IP section at the end of these Release Notes.

## **Network DDE**

Dynamic Data Exchange (DDE) provides the ability for Windows-based applications to dynamically exchange information. For example, a spreadsheet application can exchange information with a word processing program to ensure that the word processor document contains up-to-date information. Network DDE extends the DDE mechanism from the local workstation to other computers on the network.

## **Remote Access Service**

The Windows NT Remote Access Service enables Windows NT computers to accept or initiate telephone communications. For more information on this feature, see “Getting Started With Remote Access Service,” later in these Release Notes.

## **Using SQL Server**

For this release, you may experience difficulty when trying to run both the SQL Server front-end and back-end on the same Windows NT computer.

To avoid difficulties, follow these steps:

1. Choose the System icon from Control Panel.  
The System dialog box displays.
2. Choose the Tasking command button.
3. Select the option button labeled “Foreground and background applications equally responsive.”

This sets the foreground and background priorities to be the same for both the front-end and back-end of SQL Server.

4. Choose OK.

## Preventing File Damage and Data Loss

When you use NTFS, Windows NT logs all file transactions, replaces bad sectors automatically, and stores copies of key information for all files on the NTFS volume. Regardless of which file system you use, Windows NT automatically preserves the previous working boot configuration to ensure that you can always start Windows NT in spite of any changes to the system configuration that may occur during a work session. This previous working configuration is called the *Last Known Good* configuration.

You can also restore corrupt or missing system files using the Emergency Repair disk you create during Setup.

## Using the Last Known Good Configuration

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**Note** If you run into trouble during Setup or when booting Windows NT, first check the “Troubleshooting Setup” section earlier in these Release Notes.

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If you encounter difficulty booting Windows NT, you may choose to start Windows NT using the Last Known Good configuration. Start your computer and select Windows NT from the boot selection menu (if it does not boot automatically). After you choose Windows NT, or as soon as the screen clears and the words “OS Loader” appear on the screen, hold down the space bar. Windows NT displays a prompt asking the user to select between the current boot configuration and the Last Known Good.

To restore the last working system configuration, choose Use Last Known Good Configuration. Configuration changes since your system was last successfully started are lost.

## Using the Emergency Repair Disk

If your system files are corrupt and you are unable to start the previous boot (Last Known Good) configuration, you can use the Emergency Repair disk to restore your system to its initial Setup state. Any user accounts and file security added since Setup are lost, unless you have backed up the `\WINNT\SYSTEM32\CONFIG` directory.

To use the Repair disk, start your system with the Setup disk in drive A, then press R to attempt repair of your system. The Repair disk will check the status of system files. If it finds a corrupt file, it prompts you to install the correct Setup disk.

To repair a computer, you must use the Repair disk specifically created for that computer. For more information, see Chapter 12, "System Maintenance With Windows NT Setup," in the *System Guide*.

## Windows NT Registry

Windows NT stores configuration information in a database called the Registry that is organized in a tree format. Usually, users do not need to view the Registry directly, because most values can be set using the tools provided in Windows NT, such as Control Panel and User Manager. However, you can use the Registry Editor (REGEDT32.EXE) to directly inspect and modify the Registry. We expect that most administrators will not allow their users to run the Registry Editor.

For more information about Registry Editor, see the online documentation.

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### Caution

You can break or impair your Windows NT system if you make incorrect changes in the Registry. Wherever possible, use the other graphical tools provided in Windows NT, such as Control Panel applets, to make configuration changes.

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## Windows NT System Applications

The Windows NT desktop is similar to Microsoft Windows version 3.1, but there are many additional features available in Windows NT. This section describes new functionality present in the March 1993 Beta Release. The descriptions are divided by Program Manager group.

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**Note** The name of the Windows NT Help application has been changed from WINHELP.EXE to WINHLP32.EXE.

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## Main Program Group Applications

### File Manager

The File Manager provides the Windows 3.1 File Manager functionality, plus:

- A toolbar
- Integrated networking functions, such as connecting to network drives and sharing directories
- Security features on an NTFS partition



## Print Manager

The Print Manager has a new design to accommodate the Win32 printing architecture in Windows NT. All printing control is now centralized in the Print Manager. This new functionality includes the following:

- A toolbar
- Usability improvements, such as easy printer installation, multiple-document interface (MDI), and network browsing
- No need to select a local port (LPT1) and redirect it
- Remote administration of Windows NT printers
- The ability to connect directly to a shared Windows NT printer without installing drivers locally

You can also browse the network for printers installed on MS-DOS-based computers. When you connect to such printers, Print Manager prompts you to install a local printer driver.

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**Note** You can run Print Manager by choosing its icon from the Main program group or by starting the Printers applet from Control Panel.

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## 3270 Emulator

Windows NT now includes a simple Windows 3270 Emulator for connecting to IBM® host environments. The 3270 Emulator provides a single 3270 emulation session, capable of emulating one IBM 3178/79 terminal. The emulator uses the Data Link Control (DLC) driver that is built into Windows NT to connect to the IBM host system over NDIS-compliant Token Ring or Ethernet adapters. It is capable of supporting Model 2, 3, 4 and 5 display sessions and will automatically resize its font to adjust for the model type and window size.

## Microsoft Mail

Mail is part of the set of applications that you can install on your system with Windows NT Setup. With Mail, you can:

- Send and receive electronic messages (e-mail).
- Attach files created with other applications, such as spreadsheet and word-processing applications, to your messages.
- Search for messages in your mailbox according to criteria you specify.
- Print messages, and organize and store them in folders.

For more information, see Chapter 7, “Mail,” in the *Windows NT System Guide*.

## **Schedule+**

Schedule+ is a scheduling tool that helps you keep track of important appointments and tasks, block out time for meetings, and record notes to yourself. (It is a much more powerful application that replaces the small Calendar application in former versions of Windows and earlier releases of this product.)

In the March 1993 release of the documentation, references to MSRMND.EXE actually refer to MSRMND32.EXE.

## **Control Panel**

The Control Panel includes Windows 3.1 functionality plus a redesigned Network option and several new tools—Server, Services, System, and UPS.

The following notes highlight some of the new features:

### **Devices**

You can use this tool to start and stop device drivers.

### **Network**

This tool is used to install, remove, and configure network components.

### **Server**

This tool is used to manage shared resources, user connections, and file locks on your computer and to perform other tasks related to server management.

In this Beta release, a user connection to your shared printer displays as a named pipe connection for Windows NT to Windows NT printing. (This appears in both the User Sessions and Shared Resources dialog boxes; the same is true for the Server Manager utility.)

### **Services**

This tool is used to start, stop, and configure services. For example, you can start or stop the Server service to control whether resources can be shared.

In addition to the default services described in the documentation for the Services option in Control Panel (and in the documentation for Server Manager), these additional default services have been added.

Service	Description
Clipbook	The Clipbook service supports the Clipbook Viewer application, allowing pages to be seen by remote Clipbooks.
Network DDE	The Network DDE (Dynamic Data Exchange) service provides a network transport for DDE conversations and provides security for DDE conversations.
Network DDE DSDM	The Network DDE DSDM (DDE Share Database Manager) service manages the shared DDE conversations. It is used by the Network DDE service.
Remote Procedure Call (RPC) Locator	<p>The RPC Locator service allows distributed applications to use the Microsoft RPC name service. The RPC Locator service manages the RPC name service database.</p> <p>The server side of a distributed application registers its availability with the RPC Locator service. The client side of a distributed application queries the RPC Locator service to find available compatible server applications.</p>
Remote Procedure Call (RPC) Service	The RPC Service is the RPC subsystem for Microsoft Windows NT. The RPC subsystem includes the endpoint mapper and other miscellaneous RPC services.

- Assigning a Logon Account to the Schedule Service

The Schedule service supports the AT command, and must be running if the AT command is to be used. The AT command is used to schedule commands and programs to run on a computer at a specified time and date.

By default, the Schedule service logs on under the system account; this is the same account that is used by most services. However, when the Schedule service uses the system account, the AT command can only be used to access those network resources that permit Guest access.

In many cases, if you want the AT command to access network resources, you must create a special user account and then configure the Schedule service to log on using that special account. To accomplish this you must:

1. Create a user account for the service using User Manager or User Manager for Domains. When creating the account, select the Password Never Expires option, and give the account membership in the appropriate groups. The particular group memberships you assign will depend on the operations that need to be accomplished remotely.

For example, if the AT command is to be used to perform regularly scheduled backups of the hard disk of a remote server in a Windows NT Advanced Server domain, the user account created for the Schedule service would need to be a member of the domain's Backup Operators local group.

2. Assign the Logon As A Service right to the user account, using User Manager or User Manager for Domains.

3. Assign the user account to the Schedule service using Server Manager or the Services option in Control Panel.

For information about creating and configuring user accounts, assigning group memberships to user accounts, and assigning rights to user accounts, see the User Manager chapter of the *Microsoft Windows NT System Guide* or the *Microsoft Windows NT Advanced Server System Guide*. For information about assigning a user account to a service, see Control Panel or the Server Manager chapter of those guides. For information about the AT command, see the online Command Reference of the Windows NT Help file, which is installed with Windows NT as a program item in the Main program group.

### **System**

This tool is used to set the default operating system for Boot Loader, to view and define environment variables, to change the response time of a foreground application relative to other applications, and to make paging file changes.

### **UPS**

This tool is used to configure an Uninterruptible Power Supply.

### **Command Prompt**

This application (which is *not* MS-DOS) provides a command prompt similar in appearance to that in Windows 3.1, but more powerful, since you can use Command Prompt to start \*.BAT and \*.CMD files from the same command prompt. From this command prompt, you can start 16-bit applications created for MS-DOS, Windows 3.x, and OS/2 1.x (character-based only), plus POSIX-compliant and Win32-based applications. You do not have to distinguish between application types at the command prompt. For more information, see “MS-DOS and Windows-based Applications” later in these Release Notes. See also Chapter 9, “Command Prompt,” in the *System Guide*.

## **Administrative Tools**

This is a new group for Windows NT and includes these administrative tools: Event Viewer, Backup, Disk Administrator, User Manager, and Performance Monitor.

### **User Manager**

User Manager is used to administer accounts for the users who log on to your computer or to computers within a domain. With User Manager, you can create or remove users, manage groups, and define security policies for your computer or domain. If you define passwords for users, remember that passwords are case-sensitive.

## Default home directory

You can also use User Manager to assign a home directory to a user account. If no home directory is specified, the default home directory is C:\USERS\DEFAULT.

## Creating home directories and user profile paths on FAT volumes:

When assigning a home directory or a user profile path on a FAT volume to a user account, if the user name of the user account is longer than 8 characters (or if it is longer than 8.3 characters when the user name contains a period), do not use the %USERNAME% wild card.

The reason for this is that while user names can contain up to 20 characters, and while NTFS volumes can create directories and files having names of that length (the NTFS limit is 256 characters), FAT volumes restrict directory and file names to the 8.3 length convention (up to 8 characters, optionally followed by a period and up to 3 characters).

This limit should also be considered when copying user accounts, or when administering multiple user accounts and at least one user name exceeds the 8.3 limit.

The User Manager chapters of the *Microsoft Windows NT System Guide* and the *Microsoft Windows NT Advanced Server System Guide* discuss the assignment of user profile paths and home directories to user accounts, the use of %USERNAME%, and the manner in which user profile paths and home directories are copied when user accounts are copied.

In this release:

- It is best not to change default settings for logon hours assigned to user accounts. The default is to allow logons during all days and all hours.

If you do choose to assign logon hours to user accounts, be aware that during this Beta, logon hours and account expirations are handled by Windows NT servers as Greenwich mean time (GMT). However, if a Microsoft LAN Manager 2.x server running the OS/2 operating system is a member of a Windows NT Advanced Server domain, when that server authenticates logons it will treat logon hours as local time.

## Event Viewer

The Event Viewer provides a standard way for applications and the system to record important software and hardware events, so that you can view system and application events to see what happened in the system.

You must be logged on as an Administrator to view the security log.

## Disk Administrator

Disk Administrator is a graphical disk management tool that allows you to view, create, and delete disk partitions, and provides several new partition management features.

Use the Format command from the Command Prompt to format a hard disk. To convert your existing file system to NTFS, use the CONVERT.EXE utility at the command prompt. You must reboot after making such changes. Type **convert /?** at the command prompt to see options available with CONVERT.EXE.

Convert will fail if a volume does not have enough free space or appears to be corrupt. In these cases, the utility displays a message indicating the problem and exits, leaving the volume in its original state.

In this release:

Convert may also fail on a very fragmented HPFS volume. In this case, Convert simply states that the conversion failed, and exits leaving the volume unchanged.

## Backup

The Backup utility allows you to make and restore tape backups of the Windows NT system. You can back up other workstations in a network using this utility. In this release:

- NT Backup will not read tapes written on a previous release of Windows NT, as the tape format has been updated. Additionally, tapes written by other applications will be displayed as “foreign tapes,” and can be erased before using. Do not attempt to append backup sets to tapes written by other applications.
- If .Backup cannot locate a tape drive, first verify that your SCSI card driver is loading properly, the appropriate tape driver is installed and loaded, and the tape drive is powered on.
- Tape drive firmware is often sensitive to the media length. Use the proper media recommended for your tape drive. If you have difficulty loading a tape, try a different length tape.
- When exchanging tapes between drives, and hardware data compression is being used, be certain that both drives are using the same compression method.
- Write protection of tapes is not detected. Backup will fail when writing to protected tapes.

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**Note** If you restore the Windows NT Registry (the \SYSTEM32\CONFIG directory) from back up tape, you must restart your system to use the new Registry.

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## Notes on Floppy Tape Devices

- Windows NT Backup will not format DC2000 tapes for this release. Users must use pre-formatted media, or format tapes using another MS-DOS application. In addition, on DC2000 tapes, if a bad sector is encountered that has not been mapped from use, the application will fail with a “Fatal tape error.”
- You cannot simultaneously back up files to QIC117 tape drives and communicate with a floppy drive. This is due to conflicts between the QIC117 driver and the floppy disk driver.
- The QIC117 driver has only been tested with a limited number of QIC117 drives, including Mountain, Colorado Memory Systems, and Archive® drives.
- QIC 40 tapes when used in QIC80 drives can only be read, not written.
- On a few ARC systems there is a filter on the write enable line of the floppy driver. This will lead to inconsistent results when using a QIC117 device on this system.

## Performance Monitor

This application is used to monitor system resources such as processor utilization, committed memory, or disk usage. The data obtained through this application can be used to generate reports, ongoing logs, and alerts.

In this release:

- In order to get monitoring information for TCP/IP/Interface/ICMP object types, the Simple Network Monitoring Protocol (SNMP) must be installed using the Network option in Control Panel.
- If you monitor a remote system and that system is shut down then restarted, your next attempt to change the object types or counters will cause Performance Monitor to end abnormally. This will be fixed in the next release.

## Accessories Group

In this release, we are providing Sound Recorder, Media Player, and CD Player. All of the applications in the Windows 3.1 Accessories group will be included in the final Windows NT product.

### CD Player

This accessory plays audio CDs on your audio-compatible CD-ROM drives if your drive is equipped with an audio output jack.

This application includes a facility to create and maintain your own database of CDs and to track names and preferences. You can enter the track name information the first time you play a CD; CD Player will store this information and remember it the next time you insert the same CD.

CD Player supports certain SCSI-1 CD-ROM devices and SCSI-2 drives.

Please consult the *Hardware Compatibility List* in the Preliminary SDK for supported devices.

### **Media Player**

This accessory is used to control MCI multimedia devices.

### **Games**

Solitaire and Minesweeper are the same as their versions in Windows 3.1.

FreeCell is a logic puzzle in the form of a Solitaire card game. It is unlike most Solitaire games in that there is no luck involved after the initial shuffle. There are no hidden cards; they are all dealt face up at the start of the game. It is believed (although not proven) that every game is winnable.

### **Startup**

This group is initially empty and is the same as the Startup group in Windows 3.1. Any applications you add to this group will be loaded every time you log on to Windows NT.

## **MS-DOS and Windows-based Applications**

You can run MS-DOS and Windows-based applications just as you do under Windows 3.1—by using the File Run command, by creating an icon associated with an executable file, or, in the case of MS-DOS-based applications, by using a PIF file. In addition, you can start any application from the command prompt with the Single Command Shell, as described in “Single Command Shell” later in these Release Notes.

For more information about running applications that weren’t created for Windows NT, see Chapter 11, “Other Application Environments,” in the *System Guide*.

### **Support of Existing MS-DOS and Windows-based Applications**

Windows NT provides support for many existing applications created for MS-DOS and Windows. The level of support is compatible with MS-DOS 5.0 and Windows 3.1.



The subsystems to provide this support are complete and provide compatibility for many existing applications. The subsystems are fully integrated with Windows NT, so that Clipboard, DDE, OLE, and named pipes all work among the Windows NT subsystems. Also, MS-DOS–based applications will work in both full-screen and windowed text modes.

If you have trouble running an MS-DOS application, it may be because Windows NT does not recognize the executable as an MS-DOS program. To force Windows NT to treat a program as an MS-DOS application, you can run the FORCEDOS.EXE utility on a program. For more information on FORCEDOS.EXE, see “Command Prompt” in the *System Guide*.

## Communications Support for Existing Applications

In this release, Windows NT provides communications support for MS-DOS and Windows-based applications, so for example, you can access CompuServe® without booting an alternate operating system.

If you use an MS-DOS–based communications application with user-configurable data width, you must ensure that the host and your computer have the same parity and data width.

- If you experience communications problems, try these possible solutions: disable parity checking; turn on software flow control (that is, Xon/Xoff=Y); or turn off hardware flow control in the communications application.
- To improve communications performance on some systems, turn off hardware (CTS/RTS) flow control in your communications application.

## OS/2 Character-based Applications

You can run OS/2 1.x character-based applications just as you do under OS/2 by using the File Run command from Program Manager. Create an icon associated with an executable file from File Manager or from any Windows NT application. You can also start OS/2 applications from the command prompt with the Command Prompt, as described in “Command Prompt” later in these Release Notes. For more information about running applications that weren’t created for Windows NT, see Chapter 11, “Other Application Environments,” in the *System Guide*.

If you are running on a Boot Loader system that contains both OS/2 and Windows NT, the OS/2 subsystem transfers your OS/2 CONFIG.SYS information into the Windows NT Registry. In this Beta release, this operation is being performed as you run the first OS/2 application after system Setup. The OS/2 subsystem raises a popup message asking you either to log on as an administrator and run your first OS/2 application, or to continue with the default system environment. In the final release of Windows NT, the OS/2 subsystem will transform the OS/2 CONFIG.SYS information during the system Setup time, eliminating this popup.

## Command Prompt

You can start applications of any subsystem from the command prompt, including applications created for MS-DOS, 16-bit and 32-bit Windows, OS/2 1.x (character-based only), and POSIX. If you type the executable name, the program runs, using that command window. Alternatively, you can type **start** *exe-name* at the command prompt to start a program and return control to the command prompt. Windows NT supports the Clipboard, DDE, OLE, and piping among these subsystems. (This alternate is not applicable to POSIX applications.)

The Command Prompt provides a major enhancement to the command-line interface in Windows NT. The command prompt supports DOSKEY and the ability to run applications from any subsystem.

DOSKEY support is automatic and key-compatible with MS-DOS DOSKEY support. The UP ARROW and DOWN ARROW keys recall past commands, and F7 provides a pop-up with your command history. The DOSKEY utility can be used to set aliases, change the size of your command history, and load a file of stored aliases. For information, type **doskey** */?* at the command prompt.

Also, you can use the command prompt's Control menu to choose fonts, set screen colors, set the size of your screen buffer, cut and paste, and use the console window in full-screen mode. These attributes are associated with the program-item icon in the Program Manager, so you can have separate icons with different defaults to meet different needs.

In the release:

- XCOPY.EXE will not copy a directory tree from an NTFS drive to a FAT drive, if any directory names on the NTFS partition are incompatible with MS-DOS. For example, if an NTFS directory has a name that is longer than 8 letters, XCOPY fails because it unsuccessfully tries to generate a name of the same length on the MS-DOS partition.

## Notes on Replication

The following notes discuss directory replication. Directory replication is managed using either Server Manager, or the Server option in Control Panel.

## Managing Imported or Exported Directories

This note applies to the management of imported or exported directories from the Directory Replication dialog box. The Directory Replication dialog box is accessed from Server Manager or from the Server option in Control Panel, by choosing the Replication button from the Properties dialog box.

If the Do Not Import or Do Not Export option is initially selected when the Directory Replication dialog box appears, the associated Manage button will be unavailable. To make that Manage button available, you must select Import Directories or (as appropriate) Export Directories, choose OK to save the change and exit to the Properties dialog box, and then in the Properties dialog box select the Replication button again. When the Directory Replication dialog box reappears, the associated Manage button is available.

The imported or (as appropriate) exported directories can then be managed as described in the Server Manager and Control Panel chapters of the *Windows NT System Guide* and the *Windows NT Advanced Server System Guide*.

## Replicating To or From a Domain Name

This note applies to the management of the To List and the From List in the Directory Replication dialog box. The From List contains the names of the domains and computers from which replicated directories will be imported, and the To List contains the names to which replicated directories will be exported. The Directory Replication dialog box is accessed from Server Manager or from the Server option in Control Panel, by choosing the Replication button from the Properties dialog box.

Replication to a domain name will not always succeed when some or all of the replication import computers in that domain are located across a wide-area network router from the export computer. In this situation, when entering names in the To List or the From List of the Directory Replication dialog box, you must explicitly enter the computer names of those computers that are separated by a wide-area network router. In addition, if you are running TCP/IP, you must enter the exporter's name and address in the importer's LMHOST file, and vice versa.

The To List and the From List can be managed as described in the Server Manager and Control Panel chapters of the *Windows NT System Guide* and the *Windows NT Advanced Server System Guide*.

## Error Codes in Directory Replication Alerts

The Directory Replicator service can generate alerts in the form "System error *N* occurred," where *N* is an error code. Descriptions for these error codes can sometimes be accessed from the command prompt using the **net helpmsg** command; for example, **net helpmsg 2200**.

## Starting the Directory Replicator Service on an Export Server

The Directory Replicator service can be started in several ways. For example, it can be started from the Windows NT command line, or from the Services dialog box using either Server Manager or the Services option in Control Panel.

Additionally, if that service is not already running, it is started automatically from the Directory Replicator dialog box after the Export Directories or Import Directories option is selected, and then the OK button is chosen to exit that dialog box. When the service starts in this manner, the system automatically creates (unless it already exists) a special share named REPL\$, which is required for directory replication.

For an export server only, the first time the Directory Replicator service is started it should only be started from the Directory Replicator dialog box, as described above, so that the required REPL\$ share will be created.

The Directory Replication dialog box is accessed from Server Manager, or from the Server option in Control Panel, by choosing the Replication button from the Properties dialog box.

## Permissions Required By the Replicator Local Group

If the permissions for an export directory do not grant Full Access to the Replicator local group, then the exported files will be copied to the import computers but will receive the wrong permissions. An error will be written to the event log reporting access denied.

If necessary, use File Manager to grant Full Access to the Replicator local group for the export directories.

## Replication Checksums

When a file is stored in a replication export directory, a change in that file causes a new copy of it to be replicated. The characteristics that are checked for change are the last write time, attributes, extended attributes, the file size, and the filename. For this Beta, however:

- The time stamp is limited to a 2-second resolution.
- Changes to the NTFS alternate data stream do not cause replication.
- Changes to file or directory permissions do not cause replication.
- Changes to the case of the characters in the filename do not cause replication.

# Hardware Notes

This section provides notes for this release on RISC-based computers, possible hardware problems, resource conflicts, SCSI devices, removable media, network adapter cards, video display adapters, and multimedia.

## Notes on Possible Hardware Problems

- If you receive a System Error F002, this probably means that your hardware is faulty; for example, you may be experiencing a memory failure. If this occurs, run the manufacturer's diagnostics procedure and check to see if your memory is the proper speed for your CPU.
- The Sound Blaster® and ProAudio cards are known to have some compatibility problems with some fast 486 computers and some system chip sets. You may encounter an IRQ or DMA channel conflict with another device. Use the Drivers tool in Control Panel to reset if necessary. The recommended settings for the sound card are:  
DMA1  
IRQ 2, 7, or 10 (LPT1 also often uses IRQ 7)  
Port 220h
- Dell® 486D/50 and 25/50 MHz ISA systems have been known to have problems that prevent them from recognizing greater than 16 MB of RAM on Windows NT. Contact Dell Product Support for additional information.
- For AST EISA systems, enable access to memory above 16 MB, even if the computers only have 16 MB of RAM. To enable memory, run the EISA configuration utility supplied with the computer.
- We do not currently support installation of Windows NT on an IBM Personal System/2® with less than 8 MB of memory on the system board. This is a BIOS reporting problem that is under investigation.
- For the Olivetti® LSX5030, disable all ROM shadowing.
- Avoid installing your own mouse drivers. Certain drivers cause problems with mouse performance.
- The IDE/ESDI support is limited to two disk drives. A second IDE/ESDI controller that conforms to the Compaq specifications is supported. If the target system has more than two drives attached, only the first two will be used by Windows NT.

## Notes on Resource Conflicts

A common problem in a computer with several supported devices is conflicting interrupts, I/O ports, or memory usage. Where possible, we have identified such cases. However, if one of the supported devices does not seem to work, it may be due to the particular hardware configuration. For more specific information, see your hardware manual or contact your system manufacturer.

If you have two or more COM ports on your computer, you might find that the EtherLink II card will conflict with one port. Two common symptoms are that the workstation fails to start, and that an error attributed to the Elnkii card is logged in Event Viewer.

► **To solve conflicts between an EtherLink II card and your COM ports**

1. Choose the Network option in Control Panel.
2. Double-click the EtherLink II® entry in the list of Adapter Cards.
3. In the configuration dialog box, change the interrupt number from 3 to another interrupt, such as 5.

Make sure that the interrupt you choose is not being used by another device.

If you have an Adaptec™ or Future Domain SCSI adapter and a DEC EtherWORKS Turbo TP network adapter, they might use conflicting memory addresses. This requires reconfiguring the hardware by changing jumpers.

## Notes on Multiport Serial Adapters

► **To configure multiport serial adapters for Windows NT**

1. Determine the best IRQ and port address values for your adapter to use in your computer.
2. Install the adapter according to the manufacturer's instructions.
3. Using Registry Editor, open the key HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\Serial\Parameters  
(For more information on how to do this, see the online help for Registry Editor.)
4. From the appropriate table below add the Serial\* Keys under Parameters and add the corresponding values for each Serial\* key. The actual values for your adapter may be different. Also, if you have only one serial port on your computer, you may start with Serial1 and Com2. If no serial ports are built into your computer, you may start with Serial0 and Com1.

5. If there are no serial ports built into your computer, the following Values need to be added under the key HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\Serial:

Add Value Names	Data Type	Data
ErrorControl	REG_DWORD	1
Group	REG_SZ	Extended base
Start	REG_DWORD	2
Type	REG_DWORD	1

6. Exit from the Regedt32, and enter the following 2 commands to activate the changes:

NET STOP SERIAL

NET START SERIAL

The serial ports should now work. Restarting Windows NT will also activate the changes.

Note that COM1 through COM9 can be directly referenced just like a filename from programs and from the command line. However, COM10 and above must be referenced with the following syntax:

\\.\com10

The command line MODE command does not recognize ports above COM9.

## Sample Configuration Key Values

The samples below all assume that there are two serial ports already available that will be listed as "Serial0" and "Serial1" in the Registry and assigned to COM1 and COM2 respectively. The additional ports will start at COM3. For more than four port adapters, simply continue the pattern for as many ports as needed. The following scripts will work even if one of the first two ports has a serial mouse attached.

### Hostess 4-port adapter at IRQ 2, starting port address 500, starting at COM3:

Add Key (no class)	Add Value Names	Data Type	Data
Serial2	PortAddress	REG_DWORD	0x500
	Interrupt	REG_DWORD	2
	DosDevices	REG_SZ	COM3
	PortIndex	REG_DWORD	1
	InterruptStatus	REG_DWORD	0x507

Add Key (no class)	Add Value Names	Data Type	Data
Serial3	PortAddress	REG_DWORD	0x508
	Interrupt	REG_DWORD	2
	DosDevices	REG_SZ	COM4
	PortIndex	REG_DWORD	2
	InterruptStatus	REG_DWORD	0x507
Serial4	etc.	etc.	etc.

**DigiBoard 4-port adapter at IRQ 2, starting port address 100, starting at COM3:**

Add Key (no class)	Add Value Names	Data Type	Data
Serial2	PortAddress	REG_DWORD	0x100
	Interrupt	REG_DWORD	2
	DosDevices	REG_SZ	COM3
	PortIndex	REG_DWORD	1
	InterruptStatus	REG_DWORD	0x140
	Indexed	REG_DWORD	1
Serial3	PortAddress	REG_DWORD	0x108
	Interrupt	REG_DWORD	2
	DosDevices	REG_SZ	COM4
	PortIndex	REG_DWORD	2
	InterruptStatus	REG_DWORD	0x140
	Indexed	REG_DWORD	1
Serial4	etc.	etc.	etc.
Serial5	etc.	etc.	etc.

**StarGate 4-port adapter at IRQ 2, starting port address 180, starting at COM3:**

Add Key (no class)	Add Value Names	Data Type	Data
Serial2	PortAddress	REG_DWORD	0x180
	Interrupt	REG_DWORD	2
	DosDevices	REG_SZ	COM3
	PortIndex	REG_DWORD	1
	InterruptStatus	REG_DWORD	0x580
Serial3	PortAddress	REG_DWORD	0x188
	Interrupt	REG_DWORD	2
	DosDevices	REG_SZ	COM4
	PortIndex	REG_DWORD	2
	InterruptStatus	REG_DWORD	0x580
Serial4	etc.	etc.	etc.



Add Key (no class)	Add Value Names	Data Type	Data
Serial5	etc.	etc.	etc.

## Notes on SCSI Devices

When you are installing Windows NT from a SCSI CD-ROM device, make sure that the device does not have an ID of 0 or 1. Some SCSI BIOS programs reserve 0 and 1 for hard disks. If you set your CD-ROM with an ID of 0 or 1, you will likely see an extra partition in Setup that does not exist.

### SCSI Termination

The SCSI bus must be properly terminated on both ends. If you are using both an external and an internal SCSI device, it is best to terminate the devices and remove the terminators on the SCSI adapter.

For the SCSI adapter to operate effectively, termination power must be provided on the SCSI bus either by the adapter or by a SCSI device connected to the bus. Some adapters provide termination power with no configuration options. Others do not provide termination power (for example, Future Domain 1660 and Trantor 128 and 130B). Still others provide termination power only if a jumper is set on the adapter (for example, Future Domain 850M).

Please consult the documentation for your SCSI adapter and SCSI device to make sure that termination power is present on the SCSI bus.

### Adaptec

An Adaptec adapter might use conflicting memory addresses. This requires reconfiguring the hardware by changing jumpers.

If you have a SCSI controller that uses the AHA154x driver, and you do not shut down your computer correctly, your system may be unable to use the SCSI card the next time it starts up. The work-around is to reboot the computer at that stage, and things will work fine. If you do a clean shutdown of your system, you will not encounter this problem.

The Adaptec 1640 Micro Channel® adapter does not support the Maynard 2000 or 1300 DAT drives in this release.

There is a known problem using Micronics VL bus motherboards with Adaptec 1542x adapters.

If you have the Adaptec 1542B with BIOS version 3.08, you may experience intermittent SCSI problems and should consider upgrading your SCSI BIOS to version 3.20. Version 3.20 also supports drives larger than 1 GB. Please contact Adaptec Technical Support at (408) 945-8600.

## **Future Domain**

If you have a 16-bit Future Domain card or an 8-bit “M” series card configured with an external SCSI device, make sure that SCSI termination is correct. You must set a jumper on the card for this setting. Check the card’s documentation for details.

A Future Domain SCSI adapter might use conflicting memory addresses. This requires reconfiguring the hardware by changing jumpers.

## **Maynard SCSI Adapter**

You cannot use Express Setup to install Windows NT onto a hard disk attached to a WD33C9C SCSI host adapter (Maynard SCSI adapter) because Setup cannot identify this adapter. However, you can use Custom Setup to install this adapter card. Or, after Setup, you can use the Setup icon to install the adapter card.

## **Mylex DCE376 and Tangent 48933 USA**

The Tangent and Zeos 433 EISA system comes standard with a Mylex 376 controller which operates in WD1003 emulation mode by default.

This will be no longer be necessary when a SCSI driver for this card becomes available for Windows NT.

## **UltraStor SCSI Controllers**

If you experience a problem in tape functionality with a 4mm DAT Tape Device and an UltraStor 14F or 24F controller, contact UltraStor for an upgrade to resolve this.

If you have an UltraStor 34F controller installed into a Micronics VLB motherboard, it is recommended that you turn the motherboard external cache off.

Engineers from all three companies are currently investigating this problem.

## Trantor

The Trantor T-128 and T-130B must be set to IRQ 5 for this release.

In addition, these adapters are SCSI-termination sensitive. If Windows NT hangs upon booting, or if Windows NT Setup cannot find devices attached to a Trantor adapter, verify that the SCSI termination occurred and that one of the SCSI devices attached to the Trantor adapter is providing termination power.

## Notes on Removable Media

Removable media drives (such as Bernoulli and Syquest®) are supported for use with the FAT file system only.

If you install Windows NT or any portion of Windows NT onto removable media, be sure to shut down Windows NT before removing the media. (That is, choose Shutdown from the File menu of Program Manager.) Do not remove the media until after Windows NT has completed its shutdown process.

## Notes on Network Adapter Cards

Network adapter cards typically require three settings: the interrupt request level (IRQ), I/O port address, and the memory buffer address. Older network cards have circuit board (jumper) settings for each of these items; settings on newer cards can often be programmed by the driver software using only the I/O port address. In all cases, however, the information is crucial to system operation and must be correct.

### Assigning IRQs for Network Adapter Cards

All common network interface cards require a unique IRQ. Finding an available IRQ level can be difficult because AT-bus computers have a limited number of interrupt request lines (IRQs). The standard devices COM1, COM2, LPT1, and LPT2 are assigned these IRQs:

IRQ 3 = COM2

IRQ 4 = COM1

IRQ 5 = LPT2

IRQ 7 = LPT1

Therefore, a typical computer with a mouse on COM1 and a modem on COM2 cannot use IRQ 3 or 4 for a network adapter card. IRQ 5 is generally a safe choice, since most x86-based computers do not have two parallel printer ports. COM1 (IRQ 4) and COM2 (IRQ 3) are generally poor choices because most x86-based computers come with two active serial ports. No network card should be assigned the same IRQ as that of an active serial or parallel port, even if no device is currently attached to the port.

One often-overlooked solution to the IRQ allocation problem is that most newer x86-based computers allow you to disable any or all of the built-in serial or parallel ports. After a built-in port has been disabled, its associated IRQ can be used by another device. For details about how to disable serial or parallel ports, see your computer's hardware manual.

If you use a network printer, you can usually disable the built-in parallel printer ports for both LPT1 and LPT2 without harm. Network software does not use these interfaces when the underlying devices are redirected.

### Default Network Card Settings

Card name	Default setting
Ungermann-Bass ®	
Ethernet NIUps (MC)	Not necessary
Ethernet NIUps/EOTP (short MC)	Not necessary
Ethernet NIUpc (long)	IRQ = 5, IoBaseAddress = 0x368, MemoryMappedAddress = 0xd8000
Ethernet NIUpc/EOTP (short)	IRQ = 5, IoBaseAddress = 0x368, MemoryMappedAddress = 0xd8000
3Com ®	
EtherLink II	IRQ = 3, IoBaseAddress = 0x300, Transceiver = External, MemoryMapped = OFF
EtherLink II / TP	IRQ = 3, IoBaseAddress = 0x300, Transceiver = External, MemoryMapped = OFF
EtherLink II/ 16	IRQ = 3, IoBaseAddress = 0x300, Transceiver = External, MemoryMapped = OFF
EtherLink II/ 16 TP	IRQ = 3, IoBaseAddress = 0x300, Transceiver = External, MemoryMapped = OFF
EtherLink® / MC	Not necessary
EtherLink 16/16 TP	IRQ = 5, IoBaseAddress = 0x200, MemoryMappedAddress = 0xd0000, MemorySize = 16, Transceiver = External, Zero Wait State = OFF
DEC	
EtherWORKS LC	IRQ = 5, MemoryAddress = 0xd0000, IO Port Address = Primary
EtherWORKS Turbo	IRQ = 10, MemoryBaseAddress = 0xd0000, IO Port Address = Primary
EtherWORKS Turbo / TP	IRQ = 10, MemoryBaseAddress = 0xd0000, IO Port Address = Primary
DEC PC	Not necessary

Card name	Default setting
IBM	
Token Ring 16/4	IO Port Address = Primary
Token Ring 16/4A	Not necessary
Novell ®	
NE3200	Not necessary
NE2000	IRQ = 3, IO Port Address = 0x300
Proteon	
P1390	IRQ = 5, IO Port Address = 0xa20, DMA channel = 5, Cable Type = STP, Card Speed = 16
P1990	Not necessary
SMC®/Western Digital™	
8003EP	IRQ = 2, MemoryBaseAddress = 0x0, IO Port Address = 0x200
8013EWC	IRQ = 2, MemoryBaseAddress = 0x0, IO Port Address = 0x200
8013WB	IRQ = 2, MemoryBaseAddress = 0x0, IO Port Address = 0x200
8013EA	Not necessary
Built-In Ethernet on MIPS ARC/R4000 systems from Acer, MIPS, and Olivetti	Not necessary

## Assigning I/O Port Addresses

Most devices have unique default I/O port addresses. In the rare case that an I/O port appears to be in conflict, it can usually be moved to another setting without harm.

## Assigning Memory Buffer Addresses

No two devices can share memory buffers. You should be sure that the network card buffer address is not already used by another device, such as a SCSI adapter card or hard disk controller. Check the installation guide for your computer or peripherals to verify the setting of the memory buffer address.

## Notes on Specific Network Adapter Cards

### 3Com EtherLink II

If you have an older version of this card (rev. 01-0c or before), you might find that it is not reliable on fast, high-end computers. These cards may cause non-maskable interrupts (NMIs). This is a documented problem with Microsoft LAN Manager 2.1 as well. The best solution is to upgrade your network card.

For the 3Com EtherLink II/16 TP card on a 486/50 or faster computer, we suggest that you use the shared-memory mode of this adapter with Windows NT.

There is a data reliability problem with the 3Com EtherLink 16 card on MIPS machines. This will be fixed in the next release.

There is a known issue with regard to the 3Com Elnkii card and COM2. If an interrupt conflict exists on IRQ3 between the preferred default on the card and COM2, the system will silently disable COM2, because the network adapter card loads first. Make sure there are no conflicts before you run Setup if you want to use COM2.

For more information related to this card, see “Notes on Resource Conflicts” earlier in these Release Notes.

### DEC EtherWORKS Turbo /TP

A DEC EtherWORKS Turbo TP network adapter might use conflicting memory addresses. This requires reconfiguring the hardware by changing jumpers.

### Ungermann-Bass EOTP

If problems with booting Windows NT occur when this card is configured on an EISA-bus system, run the configuration utility and then remove the configuration information for this card.

## Notes on Video Display Drivers and Adapters

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**Notes** The information in this section is applicable for x86 computers only. To select a video adapter other than VGA, you must run Custom Setup or run Windows NT Setup from the Main program group after you have completed installation.

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This release supports the VGA standard video cards plus some newer video cards. If the video card you use is not listed in this section, select VGA as the display device in Windows NT Setup. If you choose a display mode in Setup that your hardware does not support, you will need to reinstall Windows NT. You should be careful when installing some of the higher resolution modes to be sure that your monitor supports the resolution *and* vertical refresh rates.

If the display mode selected by the user is not valid—because the video card was not present or because the card had insufficient video memory—an alternate driver will be selected by Setup automatically so that the computer is able to boot.

## **Display Adapters for x86-based Computers**

The additional video devices supported in this release are described in this section.

### **VGA**

If you experience a problem with the standard VGA driver, try the alternative VGA driver that programs the VGA directly. The standard VGA driver uses the VGA display adapter's BIOS to initialize the card. To use the alternate driver, rename the standard driver VGA.SYS to VGA.SAV. Then copy VGA\_ALT.SYS to VGA.SYS and reboot.

### **ATI Ultra**

For these devices, select VGA during Setup. You will not be able to run some full screen applications such as the tutorial. To work around this problem you can use an ATI-supplied driver instead of the standard VGA driver, or contact ATI technical support.

### **Cirrus-based Cards**

For boards based on the Cirrus Logic chip set, select Cirrus with the appropriate resolution during Setup. We have performed testing on the 542x chip sets.

### **Dell DGX Display**

For these devices, select Dell DGX with the appropriate resolution during Setup. The vertical refresh rate set by the driver will be 60 Hertz.

### **Diamond SpeedSTAR (and any ET4000 SVGA)**

For the Diamond SpeedSTAR cards, select ET4000 with the appropriate display mode during Setup. Some of the Diamond SpeedSTAR cards will drive the display in interlaced mode even when non-interlaced is selected. Vertical refresh rates will always be 60 Hertz even when other IBM rates are selected in Setup. If you have a card with only 512K bytes of video memory, the 800x600x256 and 1024x768x256 color modes will not work correctly.

If you experience a problem with the standard ET4000 driver, try an alternative ET4000 driver that programs the ET4000 directly. The standard ET4000 driver uses the ET4000 display adapter's BIOS to initialize the ET4000. To use the alternate driver, rename the standard driver ET4000.SYS to ET4000.SAV. Then copy ET4K\_ALT.SYS to ET4000.SYS and reboot.

## **ProDesigner II Display**

For the Orchid Technologies ProDesigner 2 and ProDesigner IIs cards, select ET4000 with the appropriate display mode during Setup.

## **S3 VGA and The Number Nine GXE**

The S3 VGA cards include Actix Systems GraphicsENGINE, Diamond Computer Systems Stealth, Orchid Technology Fahrenheit 1280, and the Number Nine Computer Ticket-to-Ride GXE card. For these devices, select S3 with the appropriate resolution during Setup. You can select the Number Nine 1280x1024 resolution only if you have a GXE with 3 MB or more of video memory.

You cannot run an S3-based card with a COM3 port installed.

If you experience difficulties using the S3 -based video card on your HP® Vectra® computer, call HP technical support to upgrade your BIOS EEPROMS.

You must have at least 1 MB of video memory to successfully use this driver.

Some early releases of Number Nine GXE cards have been observed to stop with a blank screen when going into full-screen mode on high speed machines. The ALT+ENTER key sequence should free you from the window.

At the time of this release, the Number Nine GXE is available with either 2 MB or 3 MB of video memory. If you have a Number Nine GXE with 3 MB (that is, 2 MB of VRAM plus 1 MB of DRAM), then Windows NT can support the 1280x1024x256 color mode. The Windows NT S3 video driver does not support 1280x1024x256 color on any other boards at the time of this release.

We have noted a problem with the Number Nine GXE and fast machines. On a COMPAQ 486/66 on 1280, you may lose vertical sync at initialization time. This seems to be a timing problem with Bt485. We expect to have this problem resolved following the March Beta and a driver will be available through CompuServe.

## **Trident**

For Trident cards, select Trident with the appropriate display mode during Setup. The 256 color modes are not supported on 9000-based boards in this release. We have performed testing on the 8900C and 9000A chip sets.

## **Video Seven™, Headland Technologies VRAM II, and VRAM II Ergo**

For these devices, select Video Seven VRAM with the appropriate resolution during Setup.



When using the VRAM II with BIOS version 8.05, you may see random characters or vertical lines when rebooting. Contact Headland Technologies for a ROM upgrade.

The VRAM II Ergo display card also causes problems if its DIP switches are not set correctly. All the switches should be off (set to the right) except for switch #3. If this fails to correct your problem, please contact Headland Technologies technical support.

If you have only 512K bytes of video memory, you will not be able to run in mode 1024x768x256 colors or 800x600x256 colors. If you select these modes in Setup, when you reboot you will be placed in standard VGA mode.

## Western Digital/Paradise

For Western Digital cards, select WD with the appropriate display mode during Setup. We have performed testing on WD90C30 and WD90C31 chip sets.

## XGA®

For these devices, select XGA or XGA2 with the appropriate resolution during Setup. The XGA cards require 1 MB of video memory, and only support 256 color modes. If you select XGA2 1024x768x256 color non-interlaced, be sure your monitor is suitable for this selection.

## Notes on Multimedia

---

**Note** The external MIDI port of the Media Vision ProAudio Spectrum 16 will not be supported for the beta 2 release of Windows NT. The ProAudio Spectrum's wave input and output devices and MIDI synthesizer interface are supported.

---

This section describes how to install Sound Blaster and the Windows Sound System to work with Windows NT. (Note that this is configured after running Setup.)

### ► To install and configure a Sound Blaster driver

1. Start Windows NT and log on with Administrator rights.
2. Run Control Panel, and then double-click the Drivers icon.
3. In the Drivers dialog box, choose the Add button.
4. In the Add Driver dialog box, select Creative Labs Sound Blaster 1.x, and then choose the OK button.
5. In the message that tells you the driver already exists, choose the Current button.
6. In the configuration dialog box, select the correct port and interrupt number.

The typical default setting for the interrupt number is IRQ 7, and the port setting is usually 220. However, you might need to change these settings on your card to avoid conflicts with other hardware on your computer. For example, if your computer has an LPT1 port, you cannot use your Sound Blaster card on IRQ 7.

7. When the message asks if you want to restart your computer, choose Restart Now.

► **To install and configure the Windows Sound System driver**

1. Start Windows NT and log on with Administrator rights.
2. Run Control Panel, and then double-click the Drivers icon.
3. In the Drivers dialog box, choose the Add button.
4. In the Add Driver dialog box, select Windows Sound System, and then choose the OK button.
5. Insert the Windows NT Setup CD-ROM or the appropriate floppy disk in drive A.
6. Accept the default configuration settings suggested by Windows NT.
7. When the message asks if you want to restart your computer, choose Restart Now.

Some RISC-based systems have built-in sound capabilities. Sound drivers are available for the following systems:

- Olivetti PWS 4000
- Acer ARC1
- MIPS ARC System 100
- MIPS ARC System 150

Follow the same steps as previously described to install one of these drivers. However, you do not have to change any configuration settings.

## **For More Information On Novell NetWare® and Banyan® VINES® Support**

We are working with Novell, Banyan, and other network vendors to ensure that support will be available for connecting to networks other than Microsoft Windows NT, Windows for Workgroups, and LAN Manager. At the time these notes were printed, we were unable to announce availability dates.

# Getting Started With Remote Access Service

This section helps users install and get started with Remote Access Service. For details, see online help.

## Overview and Planning

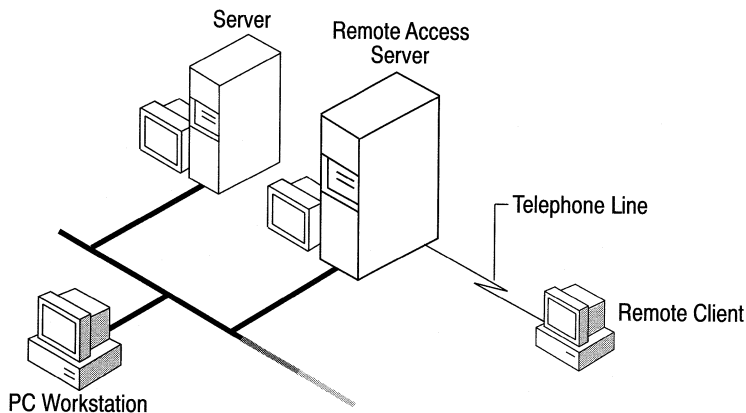
Windows NT Remote Access Service contains two main components:

### Remote Access Components

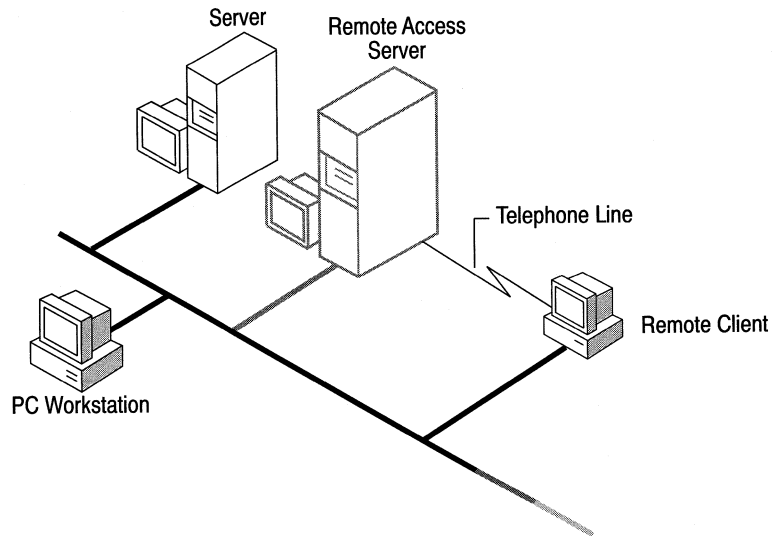
Component	Description
Remote Access Server	A Windows NT workstation configured to accept incoming calls.
Remote Access Client	A Windows NT, MS-DOS, or Microsoft Windows computer that dials in to a server.

Windows NT can act as both a server and a client.

A *remote client* is a computer (or workstation) that is not directly connected to a network. The user calls a server and connects to the network through a telephone line, as shown in the following illustration.



Once connected, the telephone link is transparent. From the remote client, users can see and access network resources on the LAN just as they do in the office from a machine physically connected to the LAN. In this way, Remote Access Service acts as a *gateway* between the remote client and the network, as shown in the following illustration.

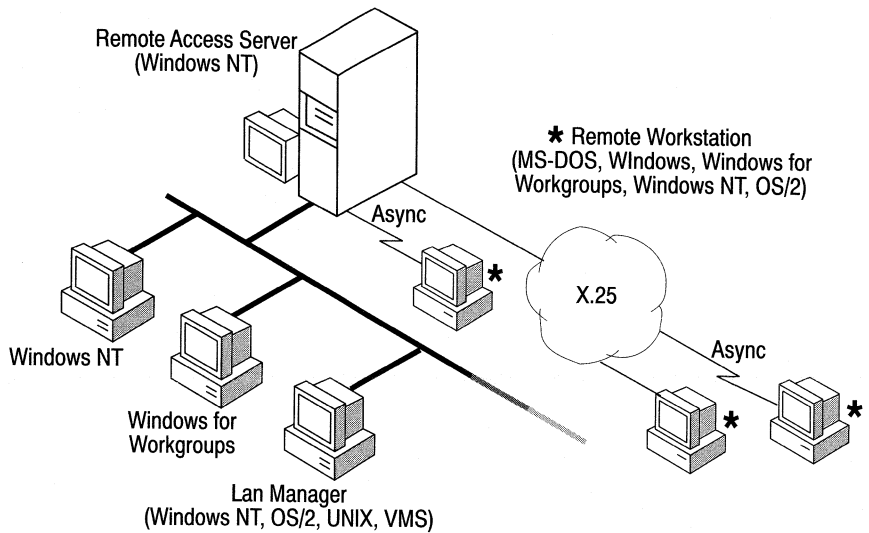


The client features a Phone Book program for entering and maintaining the names and telephone numbers of remote networks, which users can connect to and disconnect from through the Phone Book program. (For information about using the Remote Access Phone Book, see the online help.)

The server consists of the Remote Access Service and the Administrator's utility, a graphical user interface for system administrators. Through the Administrator's utility, you can do the following:

- Start, stop, pause, or continue the Remote Access server.
- Grant or revoke Remote Access permissions.
- Monitor Remote Access traffic and user accounts.

The Administrator's utility also runs on Windows NT workstations, allowing you to monitor Remote Access servers and users from any computer on the network, including a remote one. Windows NT logs Remote Access errors and audits in the Event Viewer, located in the Administrator Tools group. For information about the Event Viewer, see the *Microsoft Windows NT System Guide*.



### Overview of Windows NT Remote Access Service

## Features

Windows NT Remote Access Service offers the following features:

- Compatibility with workstations and servers running Remote Access Service versions 1.0 and 1.1
- Support for X.25 wide-area networks
- Support for modem data compression
- Transparent access to any network running Windows NT, LAN Manager for UNIX, LAN Manager 2.x, and LAN Server
- Security
  - Explicit Remote Access permissions
  - Encrypted authentication
  - Support for third-party security hosts that authenticate users
- Callback for either added security or user convenience
- Central administration of servers and users
- Support for all the modems listed in Remote Access online help
- Support for NetBIOS, named pipes, RPC, and the LAN Manager application programming interface (API)

## Setting Up Remote Access Service

1. In the Windows NT Control Panel, double-click the Networks icon.
2. Click Add Software.
3. From the drop down list, click Remote Access.
4. Click Continue.
5. From the Installation Options dialog box, choose the software you want to add to your Windows NT setup: Remote Access Server, Remote Access Client, and/or Remote Access Admin Program.
6. Click OK.
7. Follow the instructions on the screen.

If you need help, click the Help button on any of the Remote Access Setup screens.

When you return to Windows NT, you will see the Remote Access Service group, which contains the **Remote Access** (and **RAS Admin**) icon(s).

## Allowing Others to Connect to Your Workstation

Without permission, users cannot dial in to your workstation, even if the Remote Access client software has been installed on their computers.

### ► To grant Remote Access permission to users

1. Start the Administrator's utility by double-clicking the **RAS Admin** icon in the Remote Access Service group.
2. From the Users menu, choose Permissions.

The Remote Access Permissions dialog box appears.

You can grant or revoke Remote Access permissions to either one user at a time or to all users at once. For more information on granting Remote Access permissions, click Help.

## X.25 Support

The Remote Access Service lets you access an X.25 network in two general ways:

Method of Access	Server / Client
Asynchronous PADs	Client (for the Windows graphical environment or Windows NT)
Direct connections	Server and client (for Windows NT only)

## X.25 Configurations

Remote Access Service for X.25 networks offers three configurations for the client and two for the server:

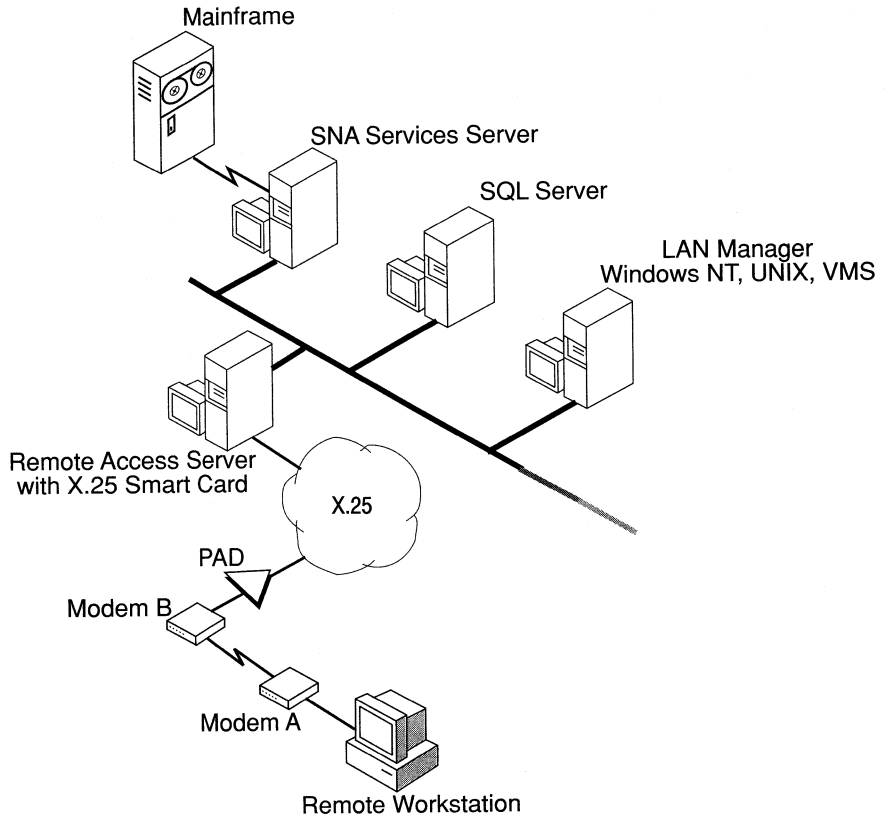
Client/Server	Configuration
Client	Dial-up PAD
Client	Direct connection through X.25 smart card
Client	External PAD
Server	Direct connection through X.25 smart card
Server	External PAD

## Accessing X.25 through Dial-Up PADs

1. Dial to a PAD (modem-to-modem).
2. Establish a connection over the X.25 network between the PAD and the server-side X.25 smart card.

Once you've established a connection, communicate as you would through any asynchronous connection.

Dial-up asynchronous PADs require only the telephone number of the PAD service for the carrier. They do not require a line plugged into the workstation.

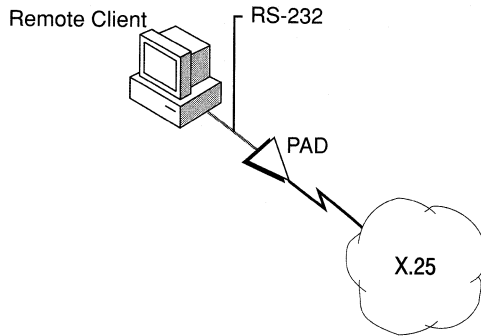


### How Remote Access Connects to the Server through a Dial-Up PAD

#### Client External PAD

In this configuration, the PAD is connected to the client workstation by an RS-232 cable attached to a serial port. Treat the PAD as an advanced modem by creating in the MODEM.INF file a section that contains a dialog script for connecting to a server. For examples, see the MODEM.INF file.

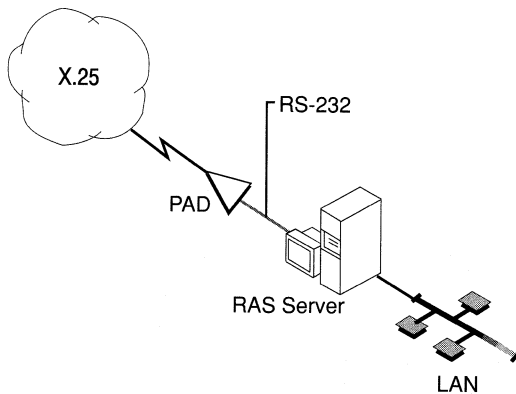




**Client Connecting to the X.25 Network through an External PAD**

### **Server External PAD**

Servers with external PADs must be configured to receive incoming calls. As with the client, treat the PAD as an advanced modem by creating in MODEM.INF a section that contains a dialog script for connecting to clients. For examples, see the MODEM.INF file.



**Server Connecting to the X.25 Network through an External PAD**

## PAD and Serial Configuration

To configure your PAD correctly, set the X.3 parameters as shown in the following table.

### X.25 Configuration Values

Parameter No.	X.3 Parameter	Value
1	PAD Recall	0
2	Echo	0
3	Data Fwd. Char	0
4	Idle Timer	1
5	Device Ctrl	0
6	PAD Service Signals	1
7	Break Signal	0
8	Discard Output	0
9	Padding after CR	0
10	Line Folding	0
11	<i>Not Set</i>	
12	Flow Control	0
13	Linefeed Insertion	0
14	Padding after LF	0
15	Editing	0
16	Character Delete	0
17	Line Delete	0
18	Line Display	0
19	Editing PAD Srv Signals	0
20	Echo Mask	0
21	Parity Treatment	0
22	Page Wait	0

---

---

**Warning** Failure to set these values as shown prevents the Remote Access Service from functioning properly. For information on setting these values, see the instructions with your X.25 smart card.

---

Also, configure external and dial-up PADs to the following serial communication settings:

- 8 databits
- 1 stopbit
- No parity serial communication

For dial-up PADs, make sure your vendor supports this configuration. The PADs are often already set to the correct configuration for connecting directly through an internal X.25 smart card. Do not change it.

## Connecting to the X.25 Network Directly

The Remote Access Service also supports connecting directly from the remote workstation to the X.25 network through a smart card. An *X.25 smart card* is a hardware card with a PAD embedded in it. To the personal computer, the X.25 virtual circuit looks like a communications port with an advanced modem connected to it.

To access the X.25 network through a direct connection, you need:

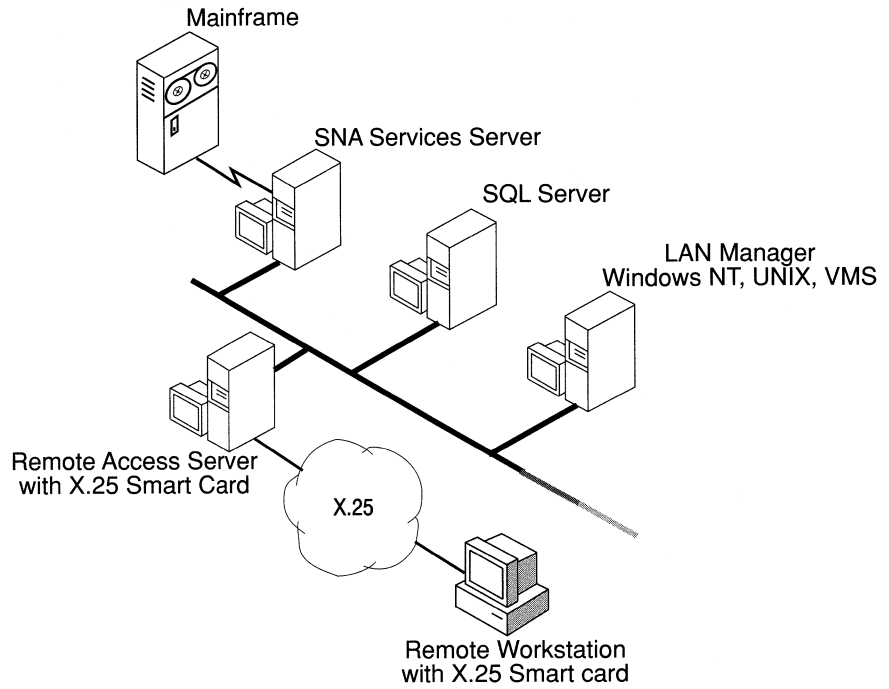
- A direct line connection to an X.25 network (clients only)
- A smart card

---

**Note** The server side always requires an X.25 smart card, but the client side requires one only when connecting to the X.25 network directly.

---

The following illustration shows how the server and a Windows NT client (both equipped with smart cards) connect to the X.25 network directly.



### Connecting to X.25 Directly

## Callback

The Remote Access server does not support callback on X.25 networks.

## Setting Up the Remote Access Server for an X.25 Network

► **To set up the server to connect through an X.25 network**

1. Install the X.25 smart card (according to the manufacturers instructions).

Remote Access X.25 supports one from the list of cards in the “X.25 Product Information” section, later in this chapter.

A communications driver for the X.25 smart card supplied by the hardware manufacturer or a third party then emulates communication ports.

2. Make sure your X.25 smart card is configured with the X.3-parameter values shown in the X.25 Configuration Values table earlier in this chapter.
3. Install Remote Access Service through the Windows NT Control Panel.
4. From the list of modems on the Remote Access Setup screen, select an entry corresponding to the X.25 smart card. For more information, see the manufacturers documentation for your smart card.
5. In setting up the Remote Access server, make sure that the ports selected are configured for dial in.

---

**Note** Make sure that the speed of the leased line can support all the serial communication (COM) ports at all speeds at which clients will dial in. For example, four clients connecting at 9600 bps (through dial-up PADs) will require a 38,400-bps (four times 9600) leased line on the server end. If the leased line does not have adequate bandwidth, it can cause timeouts and can cause the performance for connected clients to degrade.

---

## Setting Up a Remote Access Client

This section tells you how to set up a Windows NT Remote Access client so that it can do the following:

- Connect to the X.25 network through PAD services.
- Connect to the X.25 network directly.

## Connecting through Dial-Up PADs

Remote Access clients can connect with Remote Access servers through dial-up PAD services supplied by X.25 carriers. In the illustration under “Accessing X.25 through Dial-Up PAD’s” earlier in this chapter, once the client’s modem (modem A) connects to the PAD’s modem (modem B), the client software must converse with the dial-up PAD. When their conversation is successfully completed, a connection is established between client and server. The conversation (command/response scripts) for the PADs supported by an X.25 carrier is stored in the PAD.INF file. Remote Access software supplies one example. To customize for your PAD, see “PAD.INF Format,” later in this chapter, and use the editing program you’re familiar with.

### Configuring Client PADs

The X.29 client PAD, through which a remote workstation connects to the X.25 network, may have previously been set to X.3-parameter values that are incompatible with the Remote Access Service. Therefore, it is very important to configure the X.25 smart card on the Remote Access server so that it changes the client PAD’s X.3 settings to the values in X.25 Configuration Values table (earlier in this chapter) as soon as a connection is established through X.29 commands. To configure an X.25 smart card to make these changes, see the configuration manual for your specific card.

---

**Note** If the X.25 smart card on the server end does not support commands for the X.29 language, the client PAD script must set the X.3 parameters locally. If you have problems, contact the support site for your X.25 smart card vendor.

---

## Connecting Directly

To set up the client for connecting directly to the X.25 network, follow the same procedures as you did in setting up the Remote Access server. See “Setting Up the Remote Access Server for an X.25 Network,” earlier in this chapter. Make sure the communication ports are selected as dial out.

---

**Note** The low bps settings for the smart card in the **Asynchronous Communication Settings** dialog box are immaterial, because the actual speed of the connection will be the speed of the leased line.

The low bps rates assigned to X.25 Remote Access connections cause the Remote Access software’s error control to defer to the X.25 network’s error control. Setting these bps rates higher would duplicate error control, resulting in unnecessary retransmissions and a possible degradation in performance.

---

## Configuring Remote Access Software for X.25

Connecting to a server through an X.25 network is similar to connecting through a phone line. The only difference is that the phone book entry must specify an X.25 PAD type and an X.121 address. Follow these steps:

- ▶ **To add a phone book entry with X.25 or to add X.25 to an existing entry**
  - See Remote Access online help.

### PAD.INF Format

Similar in format to MODEM.INF, PAD.INF contains the conversations between the client software and the PAD, whereas MODEM.INF contains script information used to talk to the modem. You can find PAD.INF in the \NT\SYSTEM32\RAS subdirectory.

The macros in the following list are *reserved words*, which you cannot use in PAD.INF to create a new entry. Reserved words are case insensitive.

- **x25address**
- **diagnostics**
- **userdata**
- **x25pad**
- **facilities**

---

---

**Warning** Using reserved words as macro names in PAD.INF could result in unpredictable behavior of the Remote Access software.

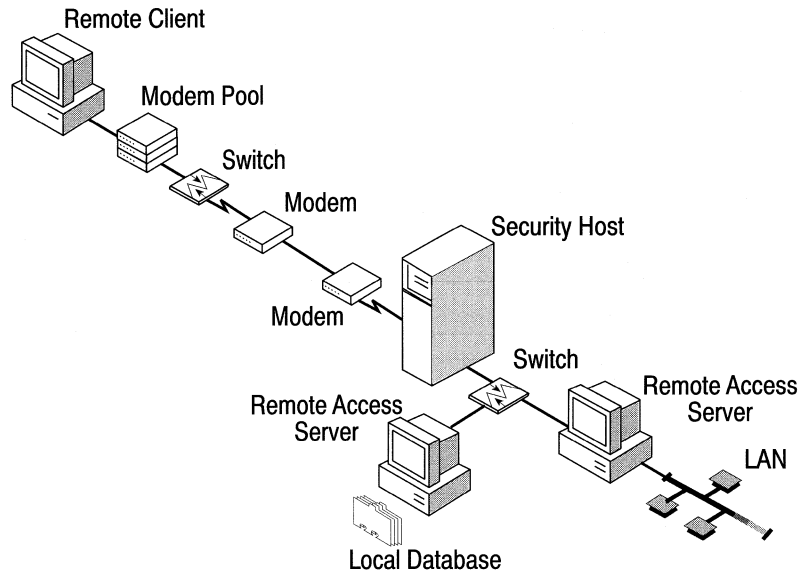
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## Support for Security Hosts and Switches

Remote Access Service for Windows NT supports various kinds of *intermediary devices* (switches and hosts) between the Remote Access client and the Remote Access server. These devices include:

- Modem-pool switch
- Security host
- X.25 network



**Sample Configuration with Modem Pool and Security Host**

## Connecting Through Intermediary Devices

Before a client can connect to the Remote Access server through intermediary devices, it usually has one of two possible dialogs with each intermediary device:

### Static

A dialog that's always the same and requires no input from the user.

### Interactive

A dialog that always changes, requiring input from the user.

You must prepare the client to conduct the correct dialog with each intermediary.

With a configuration that requires both types of dialogs, preparation takes two general steps:

1. Write a script for the static dialog.
2. Activate terminal mode for the interactive dialogs.

If your configuration requires only one kind of dialog, take only one of these steps. For example:

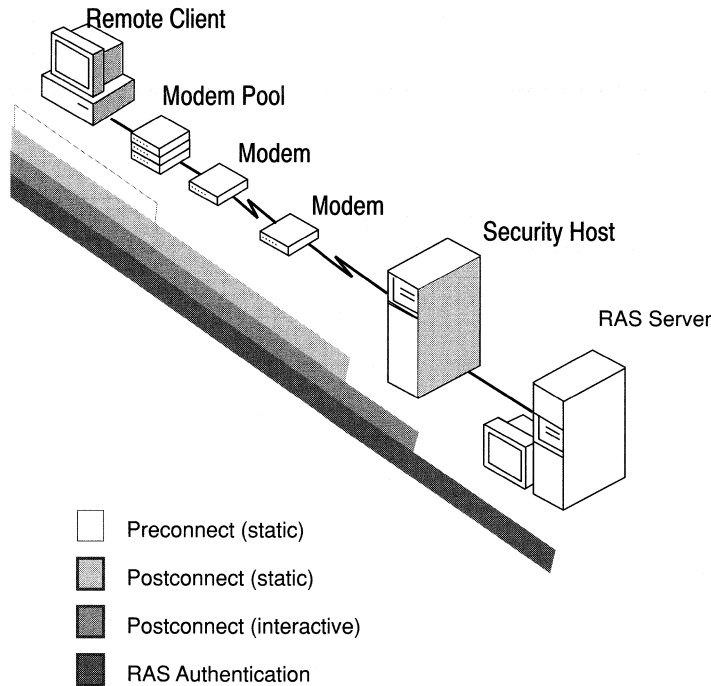
- If your clients connect through only one intermediary with a static dialog, such as an X.25 network, take step 1 only.



- If your clients connect through a security host with an interactive dialog, take step 2 only.

## Writing Scripts

To write a script for static dialogs, such as the one between the client, modem pool, and security host, as shown in the following illustration, add the modem pool and security host to the SWITCH.INF file.



### Dialogs Between Client and Intermediary Devices

In this illustration, X.25 conducts a post-connect dialog. Since connecting through X.25 is a common occurrence, Remote Access simplifies it through special treatment:

- Users select X.25 scripts from the X.25 dialog box rather than from the Switch dialog box.
- Remote Access allows the user to have another post-connect dialog after the X.25 dialog, which happens in no other connection sequence.

► **To write a script:**

1. In the client's SWITCH.INF file, type the name of the device within brackets.
2. Add one or more commands followed by zero or more responses.

---

**Note** As with PAD.INF, responses in SWITCH.INF immediately follow their commands.

---

Here is a sample entry from a SWITCH.INF file:

```
[AT&T&Teleswitch]
COMMAND=<cr><cr>
OK=Ready<cr>
Error=Failure<cr>
```

To add an entry to your SWITCH.INF file, create a sequence of commands and responses that follow the order in the sample SWITCH.INF file.

The Remote Access Terminal feature lets the user communicate with intermediary devices that require an interactive dialog. For instructions about activating Terminal, see Remote Access online help.

# Microsoft® Windows NT™ Remote Access Service Beta Version Errata

This information for the Microsoft® Windows NT™ Remote Access Service Beta version supplements the *Microsoft Windows NT Advanced Server Remote Access Service Administrator's Guide* and *Getting Started With Remote Access Service* with new information on the following topics:

Topic	Description
Network adapter cards	Tells how to order Digiboard adapters and how to set up the Remote Access Service without a network adapter card.
Installing from a network server	Tells how to install the Remote Access Server software from a network server.
Selecting and browsing domains	Tells how to join a domain, log on to a domain you have joined, and how to improve performance by turning off browsing.
Troubleshooting modem problems	Recommends steps to take if a client has modem problems and provides a list of modems that are supported for this release.

## Network Adapter Cards

This section tells you how to do the following:

- Order Digiboard adapters.
- Set up Remote Access on a computer without a network card.

## Getting Beta Windows NT Drivers for Digiboard Adapters

To get a Digiboard adapter, follow these steps:

1. Call Digiboard at (612) 943-9020.
2. Ask for Customer Service.
3. Identify yourself as a Windows NT beta tester.

Digiboard will provide you with beta Windows NT serial drivers and if necessary will direct you to the nearest Digiboard distributor, where you can buy a Digiboard adapter.

## Setting Up Remote Access on a Computer With No Network Adapter

► **To set up Windows NT on a computer that has no network adapter**

1. Install the Windows NT system in Custom Mode.
2. On the Add Network Adapter screen select "<none> Network interface to be chosen later."
3. Click Continue.
4. In the Network Settings screen, click Add Software.
5. Select Remote Access Service.
6. Click Continue.

You will be prompted to enter a full path.

7. If you are installing from a CD, type

**D:\i386**

If you are installing from a floppy disk, type **A:** or **B:** (depending on which floppy drive you are using). You will then be prompted for the appropriate Remote Access disk.

8. Insert appropriate disk, and click OK.
9. On the Remote Access Configuration screen, click Continue to accept the default modem, or click Configure to select a new modem model.
10. On the Network Settings screen, click OK.
11. On the Domain/Workgroup Settings screen, click OK.
12. Do not try to select a domain because you are not yet connected to the network.

## Installing from a Network Server

To install the Windows NT Remote Access Service from a network server, you must install the Windows NT system, and then install the Remote Access Service.

► **To install the Windows NT system from a network server**

1. Connect to the network drive that has the Windows NT Setup software. For example:

```
net use z: \\server\cdshare
```

2. Change to the network drive, and type  
WINNT

Follow the instructions to complete installation of the Windows NT system.

► **To install the Windows NT Remote Access Service from a network server**

1. Connect to the network drive that has the Windows NT Setup software. For example:

```
net use z: \\server\cdshare
```

2. Start the Windows NT Control Panel, and double-click the Network icon.
3. Click Add Software.
4. Select Remote Access Service, and click Continue.

When prompted, type in the drive letter for Windows NT Setup software.

Follow the instructions to complete the Windows NT Remote Access Service installation.

## Selecting and Browsing Domains

This section tells how to do the following:

- Join a domain.
- Log on to a domain you have joined.
- Turn off domain browsing to speed up system response over slow connections.

## Joining a Domain From a Remote Workstation

► **To join a domain from a remote workstation**

1. Start the Remote Access Service.
2. Connect to the network.
3. Start Windows Control Panel, and double-click the Network icon.
4. Click the Change button next to your workgroup name.
5. In the Domain box, type the name of the domain you want to join.
6. Click OK.
7. Wait while network control panel joins the domain.
8. When you have successfully joined the domain, a welcome screen appears. Click OK.
9. On the Network Settings screen, click OK
10. When prompted to reboot, click Yes.

## Logging On to a Domain From a Remote Workstation (After Joining the Domain)

► **To log on to a domain from a remote workstation**

1. When the system restarts, log on to your computer.
2. Start the Remote Access Service.
3. Connect to the network.
4. From the File menu on the Program Manager screen, click Logoff.
5. On the Logoff screen, click OK
6. On the Windows NT Welcome screen, press CTRL+ALT+DEL to log on.
7. Click the From drop down list, and select the domain you just joined.
8. Type your password for the domain.
9. Click OK

You are now logged on to your domain. Your domain selection is stored and used when you next log on to your computer.

## Turning Off Domain Browsing

To speed up system response when trying to connect to network resources over slow connections, turn off domain browsing.

► **To turn off domain browsing**

1. From the Main group, start the File Manager.
2. From the Disk menu, select Connect Network Drive.
3. On the Connect Network Drive screen, clear the Expand by default box.
4. Click OK.

Now the File Manager will not browse the domain whenever you try to connect to a network drive.

# Troubleshooting Modem Problems

The maximum baud rate enabled for modems using the Remote Access Service is 38400. If your serial port can support higher baud rates, you can change the default maximum baud rate by editing the **maxconnectbps** value in your MODEM.INF file. The MODEM.INF file is in the \SYSTEM32\RAS directory.

If you are having trouble connecting to the Remote Access server, follow these steps:

1. Verify whether the server is running and that the Remote Access Service is on.
2. Try disabling all advanced features for your modem and setting the connect rate to 9600 or 2400. (For more information, see the Remote Access online help.)

For the best performance, clients should use the same type of modem as the server and should match the server's modem configuration (same baud rate and the same features turned off or on).

If you have any modem problems, please report it to Microsoft via the appropriate beta services support channels (for example, CompuServe® or Product Support Services). In your report, include the output of your DEVICE.LOG file, located in the \SYSTEM32\RAS directory.

## Supported Modems

For the beta version, the following modems are supported:

ATI 2400 etc/e  
ATI 9600 etc/e  
AT&T® Paradyne ARK DM 424  
AT&T® Comsphere 3810  
AT&T® Comsphere 3811  
AT&T® Comsphere 3820  
AT&T® Comsphere 3830  
AT&T® Dataport  
AT&T® 4024  
Bocamodem M1440  
Cardinal 9600  
Codex 2264  
Codex 3220  
Codex 3260  
Codex 3261  
Codex 3262  
Codex 3263

Codex 3265  
Codex 3260 Fast  
Codex 3261 Fast  
Codex 3262 Fast  
Codex 3263 Fast  
Codex 3265 Fast  
Codex 3220 Plus  
Digicom Scout  
Digicom Scout Plus  
Evercom 24  
Evercom 24E  
Evercom 24E+  
Gateway 2000 Telepath Internal  
GVC SM2400  
GVC SM96  
GVC FM14400  
Hayes® Compatible 1200  
Hayes® Compatible 2400  
Hayes® Compatible 9600  
Hayes® Smartmodem 2400™  
Hayes® Smartmodem™ 9600  
Hayes® Optima 9600  
Hayes® Optima 14400  
Hayes® Ultra 9600  
Hayes® Ultra 14400  
Hayes® V Series 9600  
Intel® SatisFAXtion® 400e  
Intel® 9600EX  
Megahertz P2144 Pocket Faxmodem

The **maxconnectbps** value (in the MODEM.INF file) is set to 9600.

MicroComQX 4232bis

Advanced features disabled; MAXCONNECT set to 19200.

MicroComQX 4232HS

Advanced features disabled; MAXCONNECT set to 9600.

MicroPorte 1042

NEC® 9635E Plus

Null Modem 4800

Null Modem 9600

Null Modem 19200

Null Modem 38400

Practical Peripherals 2400SA

Works as a client modem only.

Practical Peripherals 9600SA

Practical Peripherals 14400SA



Racal-Milgo 2412  
Racal-Milgo 3222  
Racal-Vadic 9632PA  
Racal-Vadic 9642PA  
SupraModem 2400  
Supra Fax Modem V32  
Supra Fax Modem V32bis  
Supra Fax Modem Plus  
Telebit® QBlazer  
    PEP is disabled.  
Telebit® T1500  
    PEP is disabled.  
Telebit® T1600  
    PEP and advanced features are disabled.  
Telebit® T2000  
    PEP is disabled.  
Telebit® T2500  
    PEP is disabled.  
Telebit® T3000  
    PEP is disabled.  
Telebit® TrailBlazer® Plus  
    PEP is disabled.  
Telebit® WorldBlazer  
    PEP is disabled.  
UDS Motorola® V.3227  
UDS Motorola® V.3229  
UDS Motorola® FasTalk V.32/42b  
US Robotics Courier Dual  
US Robotics Courier HST  
US Robotics Courier V.32bis  
US Robotics Sportster 2400  
Zoom AFX  
Zoom FX 9624V  
Zoom VFX V.32bis  
ZyXel U-1496  
ZyXel U-1496E

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**Note** If you are using a modem that isn't on this list, try using Hayes Compatible 2400 or the Hayes Compatible 9600. If this doesn't work, see your modem documentation.

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## Unsupported Features for Beta Version

The following features are not supported for this beta release:

- Third party security devices, such as scripted and interactive pre-connect and post-connect switches.
- X.25 server functionality for the Windows NT system. However, X.25 clients do have dial-up capability.
- ISDN functionality.