



WinCenter Connect Installation and User's Guide

March 1997

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Document History

Pre-release—December 1995
First release—February 1996
Second release—May 1996 (WinCenter 2.0)
Third release—September 1996 (WinCenter 2.1)
Fourth release—March 1997 (WinCenter 3.0)

About This Guide

This guide contains up-to-date information about managing WinCenter desktops on an NT-only network or on a combined UNIX/NT network. The following sections summarize the contents of this guide, define the text conventions used in this guide, and describe where to find information about other products mentioned in this guide.

Intended Audience

This guide is intended for system administrators and users who are responsible for:

- Installing WinCenter software
- Maintaining WinCenter networks
- Using WinCenter desktops

Although it refers to them, this guide does not include detailed information about the Windows NT operating system, the UNIX operating system, the X Window System (X), NCDware, or local area networks. For more information about these topics, refer to the documents included with those products.

Overview of Topics

This guide provides the following information on the WinCenter products:

Chapter 1: Overview for System Administrators

Provides introductory information about the products, their supported platforms, and their features. For use by system administrators.

Chapter 2: Installing Service Packs

Explains how to install Service Packs on the WinFrame server. For use by system administrators.

Chapter 3: Installing WinCenter Connect

Explains how to install WinCenter Connect on the WinFrame server. For use by system administrators.

Chapter 4: Installing Hot Fixes

Explains how to install Hot Fixes on the WinCenter server. For use by system administrators.

Chapter 5: Installing the WinCenter PC Client

Explains how to install WinCenter PC Client on personal computers in the network. For use by system administrators.

Chapter 6: Installing WinCenter WS+

Explains how to install WinCenter WS+ on UNIX workstations in the network. For use by system administrators.

Chapter 7: Configuring WinCenter Connect

Explains how to configure WinCenter stations, WinCenter Connect features (such as configuring diskette drives for use with WinCenter), NCD network computers, and keyboards. For use by system administrators.

Chapter 8: Configuring and Using NIS for User Validation

Explains how to enable and use the Network Information Service (NIS) configuration utility. For use by system administrators.

Chapter 9: Configuring WinCenter WS+

Provides information about how to create and edit startup files for WinCenter WS+ using a text editor. For use by system administrators.

Chapter 10: Scripts for WinCenter Administration

Contains several scripts: one for creating a shadow session on multiple WinCenter stations, and several for launching Windows applications from the UNIX desktop. For use by system administrators.

Chapter 11: WinCenter Connect Resources

Lists the resources that WinCenter Connect recognizes. For use by system administrators.

Chapter 12: Overview for Users

Provides introductory information about the products and their features. For use by everyday users of WinCenter.

Chapter 13: Starting a WinCenter Session

Explains how to use the WinCenter Login Choosers for starting a WinCenter session on your WinCenter station. For use by everyday users of WinCenter.

Chapter 14: Using WinCenter

Explains how to use the **WinCenter Desktop Icon** and its features. For use by everyday users of WinCenter.

Chapter 15: Using Windows NT During a WinCenter Session

Explains how to use your local diskette drive as a Windows NT drive to format, write, and eject diskettes. It also describes how to launch Windows NT applications from UNIX and how to print to NCD network printers. For use by everyday users of WinCenter.

Appendix A: Using the Command Line

Explains how to use the options for the WinCenter command line. For use by system administrators and everyday users of WinCenter.

Appendix B: Product Support

Describes how to contact NCD customer support and access the NCD world wide web site. For use by system administrators and everyday users of WinCenter.

Glossary

Provides definitions of terms used in this guide. For use by system administrators and everyday users of WinCenter.

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Terminology and Text Conventions

This guide uses the following text conventions:

- Indicates movement through menu options. The example below means to select Print from the File menu:
File → Print
- bold** Indicates a directory or a file. For example:
c:\tftpboot
- bold italic*** Indicates a program or utility. For example, *File Manager* is a Windows utility.
- italics* Indicates a list, text-entry box, check mark item, or radio button selection in a dialog.
<Other> *Requires disk from manufacturer*
- `courier` Indicates information that displays on the screen. For example, the date command displays:
Monday March 3 03:05:12 PTD 1997
- `courier bold`** Indicates information you type. For example, to start WinCenter WS+, you type:
% wincenter
- `courier italic`* Indicates a variable for which you can substitute one or more parameter values, group names, or file names. For example:
mkdir sptemp
- [] Square brackets indicate command options.
- | A vertical bar separates each option within square brackets. If you specify an option, choose only one value within the square brackets.

Finding Additional Information

For late-breaking information about the products that were not available when this guide was printed, see the *WinCenter Release Notes*.

The table below tells you how to get information on other products mentioned in this manual:

For information on...	See...
WinCenter InterDrive NT	<i>WinCenter InterDrive NT Installation and User's Guide</i>
WinCenter WinFrame	<i>WinFrame Installation Guide</i> <i>WinFrame Concepts and Planning Guide</i>
UNIX X Window System (X) NCDware Local area networks	The documentation provided by the manufacturers of these products.

Comments on the Manual

Send comments, suggestions, or questions about this manual to the NCD Technical Publications Department by Internet e-mail. Write to us at techpubs@ncd.com.



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Part 1

WinCenter Installation and Administration

This part of the *WinCenter Connect Installation and User's Guide* describes how to install and configure the software on the WinCenter Connect CD. The information in the following chapters is intended for the system administrator of WinCenter Connect. This part contains:

- Chapter 1 — Overview for System Administrators
- Chapter 2 — Installing Service Packs
- Chapter 3 — Installing WinCenter Connect
- Chapter 4 — Installing Hot Fixes
- Chapter 5 — Installing the WinCenter PC Client
- Chapter 6 — Installing WinCenter WS+
- Chapter 7 — Configuring WinCenter Connect
- Chapter 8 — Configuring and Using NIS for User Validation
- Chapter 9 — Configuring WinCenter WS+
- Chapter 10 — Scripts for WinCenter Administration
- Chapter 11 — WinCenter Connect Resources



Chapter 1

Overview for System Administrators

How to Use this Manual

This manual is separated into the following two parts:

- Part 1, “WinCenter Installation and Administration,” is for use by system administrators when installing and configuring WinCenter Connect.
- Part 2, “Using WinCenter Connect,” is for use by anyone who uses WinCenter Connect on a daily basis.

At the back of this manual are a glossary and an index.

Features of WinCenter Connect

WinCenter Connect includes:

- Administrative tools:
 - HotFix Maintenance Tool automates installation of WinFrame Hot Fixes. The tool also queries NCD’s FTP

site and downloads new Hot Fixes as they become available.

- Bootp Configuration Tool for NCD network computers booted from WinCenter servers.
- NIS (Network Information Service) Configuration tool to validate users against an NIS password database, to create NT accounts using NIS information, and to automount NIS user's home directories.
- WinCenter Configuration Tool allows an administrator to:
 - Arrange WinCenter stations into groups.
 - Manage WinCenter station default settings.
 - Manage methods that users and groups can use for starting WinCenter sessions (e.g., XDM, RSH, or Telnet).
 - Balance the processing load or user load within a set of WinCenter servers.
 - Enable or disable shadowed WinCenter sessions.
 - Enable or disable encrypted WinCenter sessions.
 - Set up virtual Windows COM ports for Windows NT access to your NCD network computer's serial peripheral device.
- Universal desktop management support:
 - WinCenter Desktop Icon provides a tabbed user interface to WinCenter's features. In the WinCenter Desktop Icon you see information about WinCenter and you can:
 - Launch remote applications (UNIX, Java, X Windows) to display within the WinCenter desktop.
 - Start a window manager to control remote applications within the WinCenter desktop.
 - Encrypt session data.

- Cut and paste text and graphics between windows.
- Shadow other WinCenter sessions for diagnostic purposes.
- Adjust audio input and output.
- WinCenter Login Choosers — WinCenter WS+ for HP, IBM, Silicon Graphics and Sun UNIX workstations; and WinCenter PC Client for Windows 3.1, Windows 95, NT 4.0, or NT 3.51 PCs (personal computers) providing:
 - a graphical chooser for selecting a WinCenter server and starting WinCenter on your workstation or PC,
 - sound from NT applications directed to your local audio port, and
 - the ability to use your local floppy drive to read and write NT disks.
- WinCenter server selection based on the load or the number of server users as displayed in the WinCenter Login Chooser.
- Support for your local floppy disk drive or printer to send or receive Windows NT data.
- Support for MPEG video on your NCD HMX network computer.
- NCD Network Computers Quick Start support:
 - Boot support for Explora and HMX network computers.
 - Automated minimal installation of NCDware on your WinCenter server.
 - Support for DHCP, TFTP, and Bootp startup methods.
 - Minimal WinCenter server configuration and no NCD network computer configuration needed to boot NCD network computers from WinCenter servers.

Supported Platforms and Features

This section lists the supported WinCenter platforms and features.

WinCenter WS+

WinCenter WS+ supports the following UNIX platforms.

Workstation	Operating System	Version(s)
Sun/SPARC	SunOS	4.1.3 to 4.1.4
Sun/SPARC	Solaris	2.4, 2.5.1
HP	HP-UX	9.0, 10.10
IBM RS/6000	AIX	3.2 to 4.1
Silicon Graphics Inc.	IRIX	5.3

Some platforms do not support all WinCenter WS+ features. Features supported on each platform include:

Operating System	WinCenter Chooser	Audio	Read/Write Floppy	Format Floppy	Eject Floppy
SunOS	Yes	Yes	Yes	Yes	Yes
Solaris	Yes	Yes	Yes	Yes	Yes
HP-UX	Yes	Yes	Yes	No	N/A
AIX	Yes	No	Yes	Yes	N/A
IRIX	Yes	Yes	Yes	No	Yes

WinCenter PC Client

The WinCenter PC Client supports the following platforms. Each platform must include a Microsoft-compatible WinSock TCP/IP network:

- Microsoft Windows 3.1
- Microsoft Windows for Workgroups 3.11
- Microsoft Windows 95
- Microsoft Windows NT 3.51
- Microsoft Windows NT 4.0

Some platforms do not support all WinCenter features. Features supported on each platform include:

Operating System	WinCenter Chooser	Audio	Read/Write Floppy	Format Floppy	Eject Floppy
Windows 3.1	Yes	Yes	Yes	Yes	No
Windows for Workgroups 3.11	Yes	Yes	Yes	Yes	No
Windows 95	Yes	Yes	Yes	Yes	No
Windows NT 3.51	Yes	Yes	Yes	Yes	No
Windows NT 4.0	Yes	Yes	Yes	Yes	No

Online Help

This guide contains introductory and conceptual information about WinCenter Connect, as well as procedures for installing and using the products. The online help for these products provide additional information.

For the system administrator, online help is available in the following WinCenter Administration program group items:

- WinCenter Configuration
- Hot Fix Maintenance
- NIS Configuration
- Bootp Configuration

For information on contacting NCD Product Support, see Appendix B, "Product Support".

Online WinFrame information is available from the following Main program group items:

- WinFrame Help
- WinFrame Books Online
- Hardware Compatibility List



Chapter 2

Installing Service Packs

Note This chapter assumes that you have already installed the WinFrame multi-user NT operating system as described in the *WinCenter Release Notes*.

About Service Packs

Service Packs are numbered WinFrame patches that correct a list of specific problems. When a sufficient number of Hot Fixes exist for a given WinFrame version, a Service Pack is created. You should install the Service Pack before you install WinCenter Connect. See Chapter 4, “Installing Hot Fixes” for information about Hot Fixes.

Service Packs are available from:

- The WinCenter Connect CD
- The NCD ftp site

Service Pack on the WinCenter Connect CD

The Service Pack on the WinCenter Connect CD is version 5 for WinFrame version 1.6. It is stored on the CD as follows:

- **Spack1_6**
This directory contains the uncompressed version of Service Pack 5 for WinFrame 1.6.
- **Spack1_6\Packed**
This directory contains the compressed version of Service Pack 5 for WinFrame 1.6. If you have multiple WinFrame servers to update, copy the file from this directory to an empty directory on each of those servers. Execute the file to uncompress the archive.
- **Spack1_6\Symbols**
This directory contains the symbols file for the Service Pack 5.

Service Packs on the NCD FTP Site

If additional Service Packs are created for WinFrame 1.6, they are posted on NCD's FTP site. The NCD FTP site, <ftp.ncd.com>, contains WinFrame Service Packs in:

`/pub/ncd/Archive/WinCenter/CitrixHotFixWF16`

Download the following file to get a list and short description of Service Pack files available:

`/pub/ncd/Archive/WinCenter/CitrixHotFixWF16/index.txt`

Guidelines about Service Packs

- Service Packs always include **README.TXT** or **README.1ST** files. Read these files before you install the Service Pack.
- Install Service Packs on their intended WinFrame version only.
- Service Packs are cumulative; install only the latest Service Pack.
- Service Packs also include updated symbols files. Be certain to obtain and install the Service Pack symbols file too.

- The NCD FTP site may contain more recent Service Packs than those available on the WinCenter Connect CD.

Installing WinFrame Service Pack 5

The WinFrame Service Pack 5 is supplied on your WinCenter Connect CD.

1. Log on to the WinFrame Server as the Administrator.
2. Make sure that no other users are logged onto the system before going any further. To see who is logged in, use **Administrative Tools → WinStation Administration → View → Users**.

If other users are logged onto the system, either send them a message to log off or forcibly log them off by highlighting their names and clicking Logoff.

Close the **WinStation Administration** window.

3. Insert the WinCenter Connect CD into the CD drive on the WinFrame server.
4. Double click the file named **UPDATE.EXE** in your **\SPACK1_6** directory on your CD.
5. On the **Setup Message** dialog, click OK. The *update* program copies files and, after about a minute, a WinFrame Setup dialog reports the update is complete.
6. Verify there are no diskette(s) in the floppy drive(s), then click the *Restart Computer* button shown in the dialog. (Unless you are doing diagnostics or other special tasks, such as changing the display driver to be used, do not respond to prompts that appear during the startup process; wait for the display of the WinFrame title screen.)

Installing Future WinFrame Service Packs

Note To check the version of the most recently installed Service Pack, from the Program Manager of the WinFrame server, select **Help → About Program Manager**. The number listing the Version number also lists the latest Service Pack installed.

If additional WinFrame Service Packs become available on the NCD FTP site, install them as follows:

1. Log on to the WinFrame Server as the Administrator.
2. Make sure that no other users are logged onto the system before going any further. To see who is logged in, use **Administrative Tools → WinStation Administration → View → Users**.

If other users are logged onto the system, either send them a message to log off or forcibly log them off by highlighting their names and clicking Logoff.

Close the **WinStation Administration** window.

3. Open a Command Prompt window.
4. Create an empty, temporary directory on your server:
`md holding`
5. Move to the temporary directory:
`cd holding`
6. Login anonymously to the NCD FTP site. To connect with this site, enter the following command line:

```
ftp ftp.ncd.com
```

If you have trouble accessing the FTP site by name, try its IP address:

```
ftp 192.43.160.245
```

When you have accessed NCD's FTP site, at the ftp prompt, enter the user name:

anonymous

When prompted for a password, enter your email address.

7. Navigate to the directory:

/pub/ncd/Archive/WinCenter/CitrixHotFixWF16

Download the file **index.txt** by entering:

get index.txt

8. Review the **index.txt** file to determine which Service Pack and Service Pack symbols file to download.
9. Download the files you need:
 - a. Set the file type to binary, using the **binary** command (or its equivalent).
 - b. Use the **get** or **mget** command to download the desired Service Pack file and its associated symbol file to the temporary directory on your local machine. Service pack files have names of the form:

sp<ID>.exe (for example: **sp5_16s.exe**)

where <ID> is an alphanumeric identifier. Symbol files have names of the form:

sym<ID>.exe (for example: **sym5_16s.exe**)

where <ID> is an alphanumeric identifier matching that of the associated Service Pack.
 - c. Exit the FTP session with the **quit** command (or its equivalent).
10. To install the new Service Pack, proceed to Step 4 on page 2-3 and complete that procedure. Substitute the name of your Service Pack file for the name listed in those steps.
11. To install symbols files:

Note Only install the symbol files if you are instructed to do so by NCD Technical Support.

- a. Decompress the symbols file by double clicking on **SYM#_16S.EXE**, where # is the version number of the corresponding Service Pack.
- b. Read and follow the instructions given in the **README.1ST** file.

What Do I Do Next...

If your WinFrame server is a Symmetric Multiprocessor (SMP) machine, install the Hardware Abstraction Layer (HAL) driver provided by the machine's manufacturer. Go to "Installing Custom HAL Drivers" in the *WinCenter Release Notes* next.

If your WinFrame server is not a Symmetric Multiprocessor (SMP) machine, go to Chapter 3 to install WinCenter Connect.



Chapter 3

Installing WinCenter Connect

Installing WinCenter Connect

After you have installed WinFrame as described in the *WinCenter Release Notes*, and have installed the most recent Service Pack as described in Chapter 2 of this User's Guide, use the procedures in this section to install WinCenter Connect.

Before You Begin

Before installing WinCenter Connect, you need to be aware of the following:

- The WinCenter product requires a license for each simultaneous user login session.
- You must be able to log on as the Administrator to install or uninstall WinCenter Connect on your WinFrame server.

Upgrading WinCenter Connect

If you are upgrading to a more recent version of WinCenter Connect, you should:

- Install the new version of WinCenter Connect, as described in “Installing WinCenter Connect” on page 3-2.
- Restart the WinCenter server, as indicated in “Restarting the System” on page 3-9. If you do not restart the WinCenter server, an error can result when you attempt to reconfigure the WinStations, and the WinCenter server will not function properly.
- Optionally, reconfigure your WinStations, as described in “Configuring WinStations” on page 7-1.

Installing WinCenter Connect

Once WinFrame and the most recent Service Pack(s) are correctly installed, you are ready to install WinCenter Connect on that machine. (For information on installing WinFrame, see the *WinCenter Release Notes*.)

Logging on to the WinFrame Server

1. Log on to the WinFrame Server as the Administrator.
2. Make sure that no other users are logged onto the system before going any further. To see who is logged in, use **Administrative Tools → WinStation Administration → View → Users**.

If other users are logged onto the system, either send them a message to log off or forcibly log them off by highlighting their names and clicking Logoff.

Close the **WinStation Administration** window.

3. Insert the WinCenter Connect CD into the CD drive on the WinFrame server.

Starting the Installation Wizard

1. From the Program Manager, select **File → Run**. Then enter the CD drive letter, followed by `\setup`. For example:
`d:\setup`
and click OK.
2. Read the license agreement and click Yes to accept the license terms. If you click No, the installation program exits.
3. When the **Select Setup Type** dialog appears, choose the type of installation to be performed:
 - Click Next to accept the default WinCenter installation of a *Typical NT Only* install. This installation is for an NT-only environment and does not support NIS. (See Chapter 8 for an overview of NIS functionality.) Go to “Select Default Local Device Access Method” on page 3-5 where your next installation steps are explained.
 - Click *Mixed NT and UNIX* and then click Next to install WinCenter in an NT and UNIX environment. This installation does support NIS. Go to “Select Default Local Device Access Method” on page 3-5 where your next installation steps are explained.
 - Click *Custom* and then click Next to specify which components of WinCenter you want to install. Go to “Select Custom Options” in the following section.

Select Custom Options

If you picked *Custom*, in the **Select Setup Type** dialog, the **Custom Options Selection** dialog displays.

- If you want to install the core WinCenter Connect component only, select *Base WinCenter Components*. This option only appears if you have WinCenter Connect 3.0 or higher installed.
- If you plan to boot NCD network computers on an NT-only network, you must install the Tftpd file service daemon.

- If you want the WinCenter server to provide boot information to the NCD network computers, you must install the Bootp service daemon.
- If you want audio support, you must install the Network Audio System wave driver.

Note Audio support for workstations requires that WinCenter WS+ software be installed and configured.

- If you want accelerated animated motion video support for your NCD HMX network computers, you must install the MPEG Video driver.
- If you want to:
 - Validate NT users against an NIS password database
 - Create NT accounts, using NIS information
 - Automount NIS users' home directories. . . then you must install the Network Information Service user validation.
- If you want Microsoft Windows 3.1 or Windows for Workgroups 3.11 machines to connect to the WinCenter server, you should install the WinCenter PC Client for Windows 3.x.
- If you want Microsoft Windows NT 4.0, NT 3.51 or Windows 95 machines to connect to the WinCenter server, you should install the WinCenter PC Client for Windows 95/Windows NT.
- If you want NCD Explora network computers to boot from the WinCenter server, you must install NCDware for Explora.
- If you want NCD HMX network computers to boot from the WinCenter server, you must install NCDware for HMX.

The default is to install everything.

To select your custom components:

1. In the **Select Setup Type** dialog:
 - To clear the selection of all displayed options, click Clear All.
 - To deselect specific options, click on the checkmark of each option not to be installed to remove the checkmark in front of the option's name.
2. Click Next to continue.
The **Select Default Local Device Access Method** dialog appears.

Select Default Local Device Access Method

If you picked *Typical NT Only* or *Typical UNIX Support* in the **Select Setup Type** dialog, or when you click Next in the **Custom Options Selection** dialog, the **Select Default Local Device Access Method** dialog displays. Local devices are floppy drives and printers attached to the network computer or workstation that accesses the WinCenter server. WinCenter can assume you have these devices available every time you use WinCenter, or you can connect the devices only when you want to use them.

1. Specify the default access method for floppy drives and local printers in the **Select Default Local Device Access Method** dialog:
 - The default is *Inherit the User's settings*, which uses existing floppy drive and local printer access methods for each user. (This method is established in **User Configuration** dialog, accessed from **Administrative Tools** → **User Manager for Domains** → **User** → **Properties** → **Config** → **Client Devices**.)

Note If you are not using floppy drives or printers, or if some desktops have the devices and some do not, accept this default setting. (See "Setting Up Printers" on page 7-38 and "Enabling Printer Support on the WinCenter Server" on page 7-40 for information about

enabling selected users' diskette drives and printers.)

- The alternative, *Select settings for all WinStations*, permits you to select the default access for local printers and diskette drives for all users instead of using the existing settings for each user.

2. Click Next to continue.

If you choose *Inherit the User's settings*, go to "Set TFTP Root Directory" on page 3-7 for your next installation step.

If you choose *Select settings for all WinStations*, proceed with the next section.

Select Local Device Options for All WinStations

If you picked *Select settings for all WinStations*, in the **Select Default Local Device Access Method** dialog, the **Select WinStation Device Options** dialog displays.

1. Specify the device option for your WinStations in the **Select WinStation Device Options** dialog:
 - If every NCD network computer and workstation on the network has a floppy drive attached and you want users to have access to the drive when they log on, click *Connect Client Drive at Logon*.

Note Workstation floppy access is available only if WinCenter WS+ is installed and configured.

- If every NCD network computer has a printer attached and you want users to have access to their printer when they log on, click *Connect Client LPTs at Logon*.
2. Click Next to continue.
Go to "Set TFTP Root Directory" in the next section.

Set TFTP Root Directory

The TFTP Root Directory dialog displays the default TFTP directory, **c:\tftpboot**, and asks you to confirm this is the correct directory.

1. You can either enter your own directory or accept the default by clicking Next.

Tip You could also click Browse to display a list of existing directories, and then choose the one you want to use from the list.

2. Click Next to accept the selection.

If the directory does not exist, you are asked if you want the setup program to create it. Click Yes.

If the directory exists, you are not prompted to create it.

3. If you are performing a *Typical NT Only* installation, go to “Verify the Components to be Installed” on page 3-8 for your next installation step.

If you are performing either a *Typical UNIX Support* or a *Custom* installation, go to “Configuring NIS” in the next section.

Configuring NIS

Configure the Network Information Service (NIS) in the **NIS Configuration** dialog.

1. Enter the full NIS domain in the *NIS Domain* field.

Note The NIS Domain is not necessarily the same as the DNS or NT domains.

2. Enter the name or the IP address of the NIS server on your network in the *NIS Server* field. Enter **broadcast** in the *NIS Server* field to broadcast on the local subnet for an NIS server for the specified *NIS Domain*.

3. If your WinCenter server is a member of an NT domain, you also need to supply the username and password of an administrator in that domain.
4. Optionally, click *Advanced NIS configuration* if you'd like to configure other NIS features when installation completes. If you leave this item unchecked, click the **NIS Configuration** icon in the WinCenter Administration program group to configure NIS at a later time.
5. If you select *Disable NIS*, NIS is installed but not activated.
6. Click Next to continue.
Go to "Verify the Components to be Installed" in the next section.

Verify the Components to be Installed

1. Verify that all the software components you want to install are displayed in the **Selected WinCenter Components and Options** dialog.
2. If they are not, click Back as necessary to return to the dialog where you can re-select them. Then, click Next as necessary until you return to the **Selected WinCenter Components and Options** dialog.
3. Click Finish.
Go to "What Occurs During Software Installation" in the next section.

What Occurs During Software Installation

The system begins to install the WinCenter Connect files. A set of thermometers appears and an information window names each file as it is installed. A moving slider graphically displays what percentage of the installation is complete.

When the file-installation process is complete, either the **WinStation Configuration** dialog, the **WinCenter NIS Configuration** dialog, or the **Restarting** dialog displays.

If you haven't configured any WinCenter WinStations yet, then the **WinStation Configuration** dialog displays. In this case, perform the following steps. Otherwise if you have at least one WinStation configured, the **Restarting** dialog displays (go to "Restarting the System" on page 3-9).

1. Enter the number of WinStations you want to activate on the WinCenter server. The default number of WinStations is typically 15, but is based upon the number of WinStation licenses you have.

Note Every WinStation you configure uses memory and other resources. Configuring too many WinStations can affect system performance.

2. Click Next to continue.
3. Click OK to confirm the number of WinStations.

If you had previously selected *Advanced NIS configuration* in the **NIS Configuration** dialog, the **WinCenter NIS Configuration** utility appears. Click Help for explanations of the NIS tabs.

Restarting the System

1. When the **Restarting** dialog displays, select *Yes, I want to restart my computer now* and click OK. The system restarts so the new installation can take effect.

To resume without restarting, select *No, I will restart my computer later*, then click OK to continue.

The system shuts down and restarts. During the restart process, several messages may appear on the screen. You do not have to respond to any of the messages. The system automatically responds for you. However, if you press a key other than Return, the restart process stops and waits for your choice.

2. Remove the WinCenter Connect CD from the CD drive.

What Do I Do Next...

Go to Chapter 4 to determine if you need to install Hot Fixes.

Uninstalling WinCenter Connect

If you need to remove WinCenter Connect from the WinCenter server, use the WinCenter Connect installation program:

1. Log on to the WinCenter server as the Administrator.
2. Make sure that no other users are logged onto the system before going any further. To see who is logged in, use **Administrative Tools → WinStation Administration → View → Users**.

If other users are logged onto the system, either send them a message to log off or forcibly log them off by highlighting their names and clicking Logoff.

Close the **WinStation Administration** window.

3. Insert the WinCenter Connect CD into the CD drive on the WinCenter server.
4. Start the installation script by selecting **File → Run**. Then enter the CD drive letter, followed by `\setup`. For example:
d:\setup
and click OK.
5. Click Yes to accept the license terms. If you click No, the installation program exits.
6. Select *Uninstall*.
7. Click Next to uninstall the WinCenter Connect.

The installation program exits and displays the **Restarting** dialog.

8. Select *Yes, I want to restart my computer now* and click OK. The system restarts so the uninstall can take effect.

To resume without restarting, select *No, I will restart my computer later*, then click OK to continue.

The system shuts down and restarts. During the restart process, several messages may appear on the screen. You do not have to respond to any of the messages. The system automatically responds for you. However, if you press a key other than Return, the restart process stops and waits for your choice.

9. Remove the WinCenter Connect CD from the CD drive.



Chapter 4

Installing Hot Fixes

Note This chapter assumes that you have already installed WinFrame and the current WinFrame Service Pack.

About Hot Fixes

Hot Fixes are single-item, intermediate software patches for a specific version and service pack of WinFrame. When a sufficient number of Hot Fixes exist for a given WinFrame version, a new Service Pack is created.

Hot Fixes are available from:

- The WinCenter Connect CD
- The NCD ftp site

Hot Fixes on the WinCenter Connect CD

Hot Fixes for WinFrame 1.6, Service Pack 5 that are available at the time of this release are on the WinCenter Connect CD in the directory:

HFIX1_6

NCD recommends that you install the following Hot Fixes in that directory:

Hot Fix	Description
wf160501.exe	Allows IIS to run after installing Service Pack 5.
wf160502.exe	Eliminates the creation of blue screen trap when a large number of users are logged into the WinCenter server.
wf160505.exe	Supplies CPROFILE.EXE utility to shrink user profiles.
wf160506.exe	Eliminates problem where print jobs got stuck on client's printer.
wf160510.exe	Eliminates problem where Microsoft Word 97 could not open a shortcut to a client file.
wf160511.exe	Corrects a WinStation trap due to receiving a bad packet.

Note Please view the **index.txt** file on the NCD FTP site periodically to see if new Hot Fixes are available.

To determine what Hot Fixes you have applied, run **hotfix /L** from a Command Prompt window.

Hot Fixes on the NCD FTP Site

If additional Hot Fixes are created for WinFrame, they are posted on NCD's FTP site. The NCD FTP site, ftp.ncd.com, contains WinFrame Hot Fixes in the directory:

/pub/ncd/Archive/WinCenter/CitrixHotFixWF16

You can use the Hot Fix Maintenance Tool, discussed later in this chapter, to download the Hot Fixes.

Guidelines about Hot Fixes

- Install Hot Fixes on their intended WinFrame version only.
- Hot Fixes are not cumulative; install each needed Hot Fix.
- The NCD FTP site may contain more recent Hot Fixes than those available on the WinCenter Connect CD.

Installing Hot Fixes

Before you start installing Hot Fixes:

- Familiarize yourself with the concepts in “Hot Fixes on the NCD FTP Site” on page 4-2.
- Survey the Hot Fix descriptions in “Hot Fixes on the WinCenter Connect CD” on page 4-1.

About the Hot Fix Maintenance Tool

Installing WinCenter Connect puts a Hot Fix Maintenance tool in your WinCenter Administration program group. The Hot Fix Maintenance tool automates much of the work involved in updating WinFrame with Hot Fix patches. This procedure shows you how to install Hot Fixes using the Hot Fix Maintenance tool.

Before You Begin

1. Log on to the WinFrame server as the Administrator.
2. Make sure that no other users are logged onto the system before going any further. To see who is logged in, use **Administrative Tools → WinStation Administration → View → Users**.

If other users are logged onto the system, either send them a message to log off or forcibly log them off by highlighting their names and clicking Logoff.

Close the **WinStation Administration** window.

Copying Hot Fixes from the WinCenter Connect CD

Six WinFrame 1.6 Hot Fixes, available at the time of this release, are supplied on your WinCenter Connect CD.

1. Insert the WinCenter Connect CD into the CD drive on the WinCenter server.
2. In the WinCenter Administration program group, double click the **Hot Fix Maintenance** icon. The WinCenter **Hot Fix Maintenance** dialog is displayed.

3. At the bottom of the dialog, specify or browse to an empty temporary directory on the computer's hard drive into which the Hot Fix files can be copied. You can also specify a directory that has not yet been created, for example, **c:\hotfix**.
4. In the WinCenter **Hot Fix Maintenance** dialog, select *Get from CD*.
(If the directory you specified in Step 3 does not yet exist, a dialog asks if you want to create it; click *Yes*.)
5. A message informs you the Hot Fix files have been copied to the specified target directory. Click OK to dismiss the message.
6. Remove the WinCenter Connect CD from the CD drive and store in a safe place.
7. If you want to download the latest Hot Fixes from NCD's FTP site (generally a good practice), go to "Downloading Hot Fixes from NCD's FTP Site" in the next section.
If you only want to install the Hot Fixes you have copied from the CD, go to "Installing the Hot Fixes" on page 4-5.

Downloading Hot Fixes from NCD's FTP Site

NCD's FTP Site maintains Hot Fixes developed since the latest WinCenter Connect CD. To make sure you have all the latest Hot Fixes, after copying Hot Fixes from a WinCenter Connect CD, also download Hot Fixes from the NCD FTP site, as described below:

1. If the WinCenter **Hot Fix Maintenance** dialog is not already displayed, click on the **Hot Fix Maintenance** icon in the WinCenter Administration group to display it.
2. At the bottom of the dialog, specify or browse to a temporary directory on the computer's hard drive into which to deposit the Hot Fix files. If you download after copying Hot Fix files from a CD, specify the same target directory.
3. In the WinCenter **Hot Fix Maintenance** dialog, click *Download*. A dialog prompts for your email address, which is used as a password to login to NCD's FTP site.

4. Enter your email address, then click OK.
5. When prompted, select the Hot Fixes to download. You can select multiple files using Shift+click and Ctrl+click. Click OK to start the download.

Note Because downloading of Hot Fixes can be a lengthy process, the Hot Fix Maintenance tool automatically times out after about 45 minutes. If you suspect that the downloading process has failed prior to the timeout, click Cancel in the spinning clock dialog, click Browse in the Hot Fix Maintenance tool to see which Hot Fixes completed downloading, and restart the downloading process for those Hot Fixes required.

6. After all the Hot Fix files have been downloaded, go to "Installing the Hot Fixes" in the following section.

Installing the Hot Fixes

After you have copied and/or downloaded Hot Fixes to a directory on the WinCenter server (described in the previous two sections), you are ready to install them.

1. If the WinCenter **Hot Fix Maintenance** dialog is not already displayed, click on the **Hot Fix Maintenance** icon in the WinCenter group to display it.
2. At the bottom of the dialog, specify or browse to the directory into which you copied and/or downloaded the Hot Fix files.
3. Click *Install*.

Note If you attempt to install Hot Fixes that already exist in the Hot Fix directory, you are asked if you want to remove the existing Hot Fixes before beginning the installation process.

4. In the **Begin Installing Hot Fixes?** dialog, your choices are:
 - To review the Hot Fixes, click *Review Hot Fixes*. The **Review Hot Fix** dialog appears. Select the Hot Fixes to be

installed and read the description at the bottom of the screen. Click a Hot Fix and then *Do Not Install* for those you don't want installed. (You can also drag a Hot Fix from one list to the other.) Click OK.

- To install the Hot Fixes, click *Begin Installing Hot Fixes*. A message appears explaining that a Hot Fix is to be installed. Click OK in the message.

What Happens When Hot Fixes are Installing

The computer automatically restarts *after each Hot Fix is installed*.

CAUTION As the computer restarts for each Hot Fix, a special WinCenter title screen displays, with a red caution statement alerting you that Hot Fixes are being installed, and *not to log on during this process*. When all of the Hot Fixes have been installed, the regular WinCenter title screen is displayed. Then you can log on.

The Hot Fix installation automatically deletes the Hot Fix files from the Hot Fix directory after they install.

What Do I Do Next...

1. To install InterDrive NT for Network File System (NFS) support, go to Chapter 1 of the *WinCenter InterDrive NT Installation and User's Guide*.
2. Go to the *WinCenter Release Notes* for instructions on installing your Windows NT applications.
3. If you have PCs that need WinCenter access, go to Chapter 5 for instructions on installing the WinCenter PC Client.

Removing Hot Fixes

After you have installed Hot Fixes, the WinCenter **Hot Fix Maintenance** tool lets you selectively remove them.

1. Log on to the WinCenter server as the Administrator.
2. Make sure that no other users are logged onto the system before going any further. To see who is logged in, use **Administrative Tools → WinStation Administration → View → Users**.

If other users are logged onto the system, either send them a message to log off or forcibly log them off by highlighting their names and clicking Logoff.

Close the **WinStation Administration** window.

3. In the WinCenter Administration group of Program Manger, click the **Hot Fix Maintenance** icon.

The WinCenter **Hot Fix Maintenance** dialog appears.

4. Click *Remove*.

The **Remove Hot Fixes** dialog lists all the Hot Fixes currently installed on the computer.

5. Select the filenames of the Hot Fixes you want to remove. (You can select multiple files using Shift+click and Ctrl+click.) Then click OK.

The Hot Fix Maintenance tool removes the selected Hot Fixes, restarting the computer after each Hot Fix is removed.

CAUTION

As the computer restarts for each Hot Fix, a special WinCenter title screen displays, with a red caution statement alerting you that Hot Fixes are being updated, and *not to log on during this process*. When all of the Hot Fixes have been removed, the regular WinCenter title screen is displayed. Then you can log on.



Chapter 5

Installing the WinCenter PC Client

About the WinCenter PC Client(s)

After you have installed the most recent Hot Fixes as described in Chapter 4, use the procedures in this section to install the appropriate WinCenter PC Client on each PC in your network that needs to access WinCenter. The WinCenter PC Client brings the WinCenter desktop to your PC using a simple WinCenter Chooser window to start the session.

This section explains how to install the WinCenter PC Client software on:

- A PC that has a CD drive
- A PC that is on a network with a WinCenter server
- A PC that has a floppy diskette drive

Before You Begin

Before installing the WinCenter PC Client, you need the following:

- The WinCenter Connect CD.
- 5.5 megabytes of available disk space on each PC running Windows NT 4.0, NT 3.51, or Windows 95.
- 2.5 megabytes of available disk space on each PC running Windows 3.1 or Windows for Workgroups 3.11.
- Blank, formatted floppy disks if you are installing the WinCenter PC Client from floppy disks:
 - Three disks for Windows NT 4.0, NT 3.51, or Windows 95
 - Two disks for Windows 3.1 and Windows for Workgroups 3.11

If you installed the WinCenter PC Clients at the time you installed WinCenter Connect, you can directly install the WinCenter PC Clients on each PC across the network. To do this, you must have access to the appropriate directory on the WinCenter server:

- For Windows NT 4.0, NT 3.51, or Windows 95:
`\winframe\system32\WinCen\PCclient\NTand95`
- For Windows 3.1:
`\winframe\system32\WinCen\PCclient\Win31`

Installing from a CD Drive

1. Start the PC on which you want to install the WinCenter PC Client. Wait for the operating system to launch. If necessary, start Windows.
2. Insert the WinCenter Connect CD into the CD drive.
3. Run the setup program from the CD:
 - For Windows NT 4.0, NT 3.51, or Windows 95 run:
`\PCclient\NTand95\setup.exe`

- For Windows 3.1 or Windows for Workgroups 3.11 run:
`\PCclient\Win31\setup.exe`

The installation wizard launches.

4. When prompted, enter the path and directory where you want the WinCenter PC Client installed. The default is:
 - For Windows NT 4.0 or Windows 95:
`c:\Program Files\WinCenter`
 - For Windows NT 3.51:
`c:\win32app\WinCenter`
 - For Windows 3.1 and Windows for Workgroups 3.11:
`c:\wincentr`
5. Click Install.
The WinCenter PC Client is installed. This creates the:
 - **Start → Programs → NCD WinCenter → WinCenter Chooser** menu item (Windows 95 and Windows NT 4.0), or the
 - NCD WinCenter program group containing the **WinCenter Chooser** icon (Windows NT 3.51, Windows 3.1, and Windows for Workgroups 3.11).
6. When the **Installation Complete** dialog displays, click OK.
On Windows 3.1 or Windows for Workgroups 3.11, restart Windows before using the WinCenter Chooser.

Installing from the Network

- Note** To install the WinCenter PC Client from the network, you must have the WinCenter Server Option Pack installed. If it is not installed, you cannot share WinCenter server directories. To install the WinCenter Server Option Pack, see Chapter 3.

If you did not install the WinCenter PC Clients when you installed WinCenter Connect, you first need to copy the WinCenter PC Client(s) from the WinCenter Connect CD onto the WinCenter server. Thereafter, you can install the WinCenter PC Client(s) on PCs across the network.

Copying the Files onto the WinCenter Server

1. Log on to the WinCenter server as the Administrator.
2. Insert the WinCenter Connect CD into the CD drive of the WinCenter server.
3. Create a subdirectory in your server's `\WINFRAME\system32\WinCen` directory named **PCclient**.
4. Copy the following directories, and all their included subdirectories and files, from the CD to your `...PCclient` subdirectory on the WinCenter server:
 - `\NTand95`
 - `\Win31`

Installing Across the Network

1. Make the `\WINFRAME\system32\WinCen\PCclient` WinCenter PC Client directories on the WinCenter server sharable by using File Manager's **Disk → Share As** menu item.
2. Start the PC on which you want to install the WinCenter PC Client. Wait for the operating system to launch.
3. Use File Manager or Windows Explorer to connect across the network to the WinCenter server.
4. Run the setup program from the following WinCenter server directory:
 - For Windows NT 4.0, NT 3.51, or Windows 95 run:
`\PCclient\NTand95\setup.exe`
 - For Windows for Workgroups 3.11 run:
`\PCclient\Win31\setup.exe`

The installation wizard launches.

5. When prompted, enter the path and directory where you want the WinCenter PC Client installed. The default location is:
 - For Windows NT 4.0 or Windows 95:
c:\Program Files\WinCenter
 - For Windows NT 3.51:
c:\win32app\WinCenter
 - For Windows for Workgroups 3.11:
c:\wincentr
6. Click Install.

The WinCenter PC Client is installed. This creates the:

 - **Start → Programs → NCD WinCenter → WinCenter Chooser** menu item (Windows 95 and Windows NT 4.0), or the
 - NCD WinCenter program group containing the **WinCenter Chooser** icon (Windows NT 3.51, Windows 3.1, and Windows for Workgroups 3.11).
7. When the **Installation Complete** dialog displays, click OK. On Windows 3.1 or Windows for Workgroups 3.11, restart Windows before using the WinCenter Chooser.

Installing from Diskettes

Before you can install the WinCenter PC Client from floppy diskettes, you must first copy the files to floppy disks. After you have copied the appropriate WinCenter Client(s) to diskettes, you can then install the WinCenter PC Client(s) on the PCs in your network.

1. If necessary copy the WinCenter PC Client files to a WinCenter server as described on page 5-4.
2. Log onto the WinCenter server, select **File** → **Run** and select the file **cd2disk.bat** in the appropriate **\PCclient** subdirectory:
 - For Windows NT 4.0, NT 3.51, or Windows 95, select the **cd2disk.bat** file in the **\WINFRAME\system32\WinCen\PCclient\NTand95** subdirectory.
 - For Windows 3.1 or Windows for Workgroups 3.11, select the **cd2disk.bat** file in the **\WINFRAME\system32\WinCen\PCclient\Win31** subdirectory.
3. Click OK. The **Browse** dialog closes.
4. Type the drive designator for your floppy drive following the **cd2disk.bat** filename in the **Run** dialog's *Command Line* box. For example, if your floppy drive is drive a: and you are copying the Windows NT WinCenter PC Client files, the command in the Run dialog is:

```
\WINFRAME\system32\WinCen\PCclient\NTand95\cd2disk.bat a:
```
5. Click OK in the **Run** dialog.
A DOS window opens and you are prompted to insert a blank, formatted disk into the floppy drive.
6. Insert a blank, formatted disk into the diskette drive and press any key.
Files are copied to the diskette.
7. When prompted, remove the floppy disk from the diskette drive; insert another blank, formatted disk; and press any key to continue. If prompted, repeat this step.
8. Start the PC on which you want to install the WinCenter PC Client. Wait for the operating system to launch. If necessary, start Windows.
9. Insert the first installation diskette (for the appropriate operating system) into the floppy drive.

10. Run the **setup.exe** program from the first installation diskette.

The installation wizard launches.

11. When prompted, enter the path and directory where you want the WinCenter PC Client installed. The default is:

- For Windows NT 4.0, NT 3.51, or Windows 95:
c:\Program Files\WinCenter
- For Windows NT 3.51:
c:\win32app\WinCenter
- For Windows 3.1 and Windows for Workgroups 3.11:
c:\wincentr

The WinCenter PC Client is installed. This creates the:

- **Start → Programs → NCD WinCenter → WinCenter Chooser** menu item (Windows 95 and Windows NT 4.0), or the
- NCD WinCenter program group containing the **WinCenter Chooser** icon (Windows NT 3.51, Windows 3.1, and Windows for Workgroups 3.11).

12. When the **Installation Complete** dialog displays, click OK. On Windows 3.1 or Windows for Workgroups 3.11, restart Windows before using the WinCenter Chooser.

What Do I Do Next...

If you are installing WinCenter functionality for UNIX workstations, go to Chapter 6 for instructions on installing WinCenter WS+.

If you are not installing WinCenter WS+, go to Chapter 7, “Configuring WinCenter Connect”.



Chapter 6

Installing WinCenter WS+

About WinCenter WS+

WinCenter WS+ provides:

- A graphical “chooser” window where users select a WinCenter session from a list of WinCenter servers.
- Support for directing Windows NT audio to UNIX workstations.
- The ability to read and write Windows NT data to UNIX workstation floppy drives.

This section explains how to install WinCenter WS+ on:

- **A workstation** for use by one or more users of that workstation.
- **A network server** for access by users of multiple UNIX workstations. After you install WS+ in a central network location, typically on a shared machine with a large amount of available disk space, you “export” the WS+ installation directory and “mount” the directory on each workstation that will access WS+.

Before You Install

Before installing WinCenter WS+, check to make sure you have the following:

- A workstation with a CD drive on a network that includes a WinCenter 2.1 (or later) server.
- The WinCenter Connect CD.
- 10 megabytes of available disk space.
- Root access to the workstation.

Installing WS+ on a Workstation

This section explains how to install WS+ on a single workstation for access by one or more users.

1. Log in as the root user.
2. Insert the WinCenter Connect CD in the workstation's CD drive.
3. If necessary, mount the CD as a filesystem for your workstation.
4. Change to the **wspplus** or **WSPLUS** directory on the WinCenter Connect CD.

Note If your workstation cannot read the CD directory structure:

- a) Copy the **wspplus.tar** file to an empty, temporary directory on your workstation.
- b) Uncompress the file using
`tar -xvf ./wspplus.tar`
- c) Continue with step 5.

5. From a command shell, enter:

```
./install or  
./INSTALL or  
./"INSTALL;1"
```

6. Follow the on-screen instructions to install the product.
7. After you complete installation, add the WinCenter WS+ installation path to each user's startup file (**.cshrc**, **.login**, or **.profile**). By default, this directory is **/usr/local/wincenter**.
8. Verify that users of workstations with diskette drives have read and write access to the default diskette device on the workstation. The following are the default devices

Workstation	Operating System	Default Devices
Sun/SPARC	SunOS/Solaris	/vol/dev/aliases/floppy0 /dev/rfd0c /dev/fd0
HP	HP-UX	/dev/rfloppy/c0t0d0 /dev/floppy/c0t1d0 /dev/rfloppy/c201d0s0 /dev/floppy/c0t0d0 /dev/floppy/c0t1d0 /dev/floppy/c201d0s0
IBM RS/6000	AIX	/dev/fd0
Silicon Graphics	IRIX	/dev/rdisk/fds0d2.3.5hi

WinCenter WS+ is now installed.

Installing WS+ on a Network Server

This section helps you install WS+ on a network server for access by users of multiple UNIX workstations. WS+ installs program files for all supported UNIX hosts. For example, if you install WS+ on a Sun machine, the executables for IBM, Silicon Graphics, and HP are also installed.

After you install the product on the server, "export" the installation directory so that it is accessible by all UNIX workstations. On each UNIX workstation, "mount" the installation directory so that the workstation can run WS+.

1. Perform steps 1 through 5 in “Installing WS+ on a Workstation” on page 6-2.
2. Follow the on-screen instructions to install the product in a central location.
3. On the network server machine, use the *exportfs* command or its equivalent to make the installation directory available (exported) for other UNIX workstations on your network.
4. On each UNIX workstation that will use WS+, use the *mount* command or its equivalent to attach to the WS+ installation directory on the network server.

WinCenter WS+ is now installed and you’re ready to configure the product for multiple network users.

What Do I Do Next...

If you installed WS+ for multiple users, go to “Setting Defaults for All Users” on page 9-1 for instructions on configuring the product.

If you installed WS+ for a single user, go to “Setting Up Local Diskette Drives as Windows NT Drives” on page 7-23 for instructions on enabling diskette drive support.

Uninstalling WinCenter WS+ from Your Workstation

To remove WinCenter WS+ from your UNIX workstation:

1. Log into the UNIX workstation as the root user.
2. Change to the directory in which the WinCenter WS+ Chooser is installed. For example, with WinCenter WS+ Chooser in the default directory:

```
cd /usr/local/wincenter
```

3. Remove all files in this directory:

```
rm *
```

Note You can also use the `rmdir` command to remove the directory.

The WinCenter WS+ software is removed.

Uninstalling WinCenter WS+ from a Network Server

To remove WinCenter WS+ from a network server:

1. Log into the UNIX workstation as the root user.
2. Change to the directory in which the WinCenter WS+ Chooser is installed. For example, with WinCenter WS+ Chooser in the default directory:

```
cd /usr/local/wincenter
```

3. Remove all files in this directory:

```
rm *
```

Note You can also use the `rmdir` command to remove the directory.

4. On each UNIX workstation using WinCenter WS+, use the `unmount` command or its equivalent to detach from the WS+ installation directory on the network server.



Chapter 7

Configuring WinCenter Connect

Configuring WinStations

Configure only as many WinStations as you really need. This might be less than the total number of WinFrame licenses you have. Configuring too many WinStations can cause a system slowdown. Each WinStation uses 2.5 megabytes of memory and 4 megabytes more when a user is connected. Additional memory is then required for each Windows NT application that runs on that WinStation.

Note Edit the configuration of existing WinStations by double clicking the WinStation name in the **WinStation Configuration** window.

To configure a new WinStation (other than those you selected during installation):

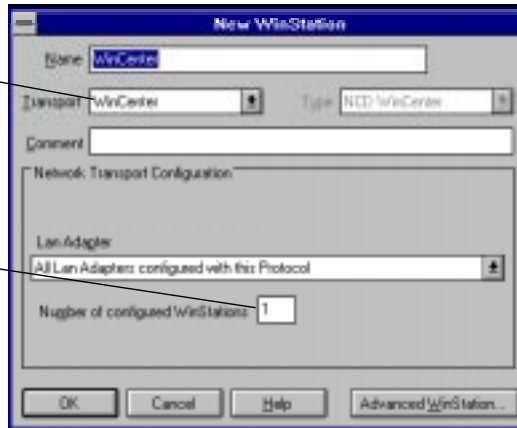
1. At the console, log on to the WinCenter server as the Administrator.
2. Double click the Administrative Tools group.
3. Double click the **WinStation Configuration** icon.

4. Select **WinStation** → **New**.
5. Select *WinCenter* in the Transport field and fill in the *Number of configured WinStations*.

Note WinCenter Connect only works when the selection for Transport is WinCenter.

Select WinCenter from the list.

Enter the total number of WinStations you want to configure. The number is limited by the number of user licenses you have.



Note You can enter values for the other fields but you are not required to do so. These values change automatically to reflect the Transport and Number choices you make.

6. Click OK to continue.

What Is the WinCenter Configuration Tool?

The **WinCenter Configuration** tool in the WinCenter Administration program group allows you to easily configure the WinCenter stations connected to the WinCenter server. A WinCenter station is any machine in your network identified by an IP address and/or a TCP/IP name (such as "pc_joe") that can establish communication with a WinCenter server.



You can customize many WinCenter station attributes using the **WinCenter Configuration** tool. The major categories of controls in the **WinCenter Configuration** tool are:

- **Group Configuration**

Lets you define groups of WinCenter stations, so you can configure all the members of a group at once in the **Access Control** or **Vendor and Station Configuration** tabs. Thus, if you have a number of WinCenter stations in your network that you want to configure identically, by putting them in a group you can apply the settings to all of them at the same time. For information on how to use the **Group Configuration** tab of the **WinCenter Configuration** tool, see "Configuring Groups" on page 7-5.

- **Access Control**

Lets you choose the communication protocols WinCenter stations use to connect to the WinCenter server. You can use this facility to limit the type of connection WinCenter stations

can make, or to prohibit connections entirely. For information on how to use the **Access Control** tab of the **WinCenter Configuration** tool, see “Controlling Access” on page 7-10.

- **Load Balancing**

Offers you two ways to distribute the processing demands of WinCenter stations among the WinCenter servers in your network. For information on how to use the **Load Balancing** tab of the **WinCenter Configuration** tool, see “Configuring Load Balancing” on page 7-12.

- **Vendor and Station Configuration**

Lets you adjust many of the WinCenter station customizable parameters, such as encryption, keymapping, passwords, usernames, and so forth. For information on how to use the **Vendor and Station Configuration** tab of the **WinCenter Configuration** tool, see “Vendor and Station Configuration” on page 7-14.

- **Virtual COM Ports**

Lets you configure serial ports on WinCenter stations (or other connected devices) to perform bidirectional transfer of data with the WinCenter server. For information on how to use the **Virtual COM Ports** tab of the **WinCenter Configuration** tool, see “Configuring Virtual COM Ports” on page 7-16.

- **Global Station Options**

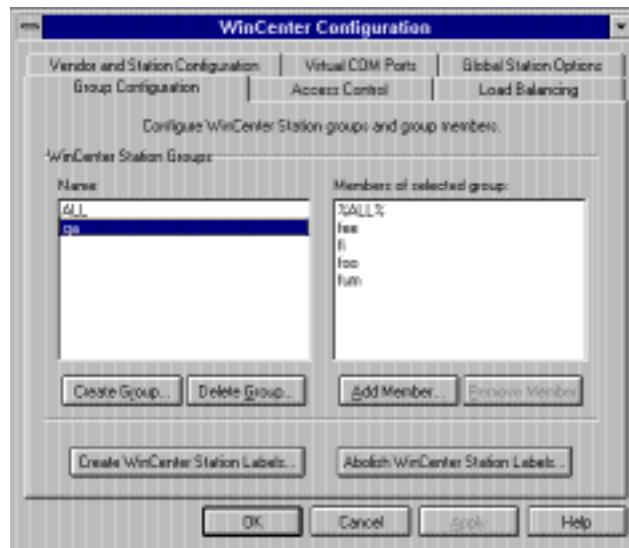
Lets you enable or disable shadowing and *rshd*, to determine if the window manager is always started at login, and to determine if cut and paste operations always copy to the Window’s clipboard. These options apply to all WinCenter stations that connect to this WinCenter server. For information on how to use the **Global Station Options** tab of the **WinCenter Configuration** tool, see “Setting Global Station Options” on page 7-19.

Opening the WinCenter Configuration Tool

1. At the console, log on to the WinCenter server as the Administrator.
2. In the WinCenter Administration program group, double click the **WinCenter Configuration** icon to open the **WinCenter Configuration** window.

Configuring Groups

The **Group Configuration** tab of the **WinCenter Configuration** tool lets you classify multiple WinCenter stations under a single name. This provides a quick way to apply the same configuration settings to a number of WinCenter stations by referencing that single name.



The steps to create and configure WinCenter station groups are:

1. Create a group.
See “Creating a Group” on page 7-6.
2. Create a list of WinCenter station labels (names) for devices on your network.
See “Creating a WinCenter Station Label” on page 7-7.
3. Add members to your group from the list of WinCenter station labels. See “Adding a Member” on page 7-8.

Creating a Group

A WinCenter station group allows you to easily apply configuration settings to all WinCenter stations, groups, and labels contained in that group. A WinCenter station group can consist of other groups, labels, and specific WinCenter stations.

1. Open the **WinCenter Configuration** window as described in “Opening the WinCenter Configuration Tool” on page 7-5.
2. In the **Group Configuration** tab, click the Create Group button.
3. In the **Create Group** dialog, type the desired name for the WinCenter station group you are creating.
4. Click OK.

The named group is created, the dialog closes, and the new group name appears in the Name list of the **Group Configuration** tab.

Note The group ALL is predefined by WinCenter. That group contains all WinCenter station labels.

Creating a WinCenter Station Label

You can create a WinCenter station label that represents a single WinCenter station or multiple WinCenter stations by:

- Using a TCP/IP name.
Go to “Using a TCP/IP Name as a Label” on page 7-7.
- Using an IP address.
Go to “Using an IP Address” on page 7-7.

Using a TCP/IP Name as a Label

1. In the **WinCenter Configuration** window’s **Group Configuration** tab, click **Create WinCenter Station Labels**.
2. In the **Create WinCenter Station Label** dialog, make sure the *Use IP Address* box is unchecked.
3. In the **Label** field, enter a TCP/IP name. Use the wildcard character (*) as appropriate to specify a set of TCP/IP names. For example, suppose your network includes a set of WinCenter station PCs with the names “PC_joe1”, “PC_joe2”, and “PC_joe3”. You could enter a label of “PC_joe*” to represent all three PCs.
4. Click **Create**.
The WinCenter station label is created and appears in the *Currently Existing Labels* list.
5. Make as many labels as desired. When done, click **Close**.

Using an IP Address

1. In the **WinCenter Configuration** window’s **Group Configuration** tab, click **Create WinCenter Station Labels**.
2. In the **Create WinCenter Station Label** dialog, check the *Use IP Address* box. A set of IP address fields is displayed.
3. To specify a single IP address, enter the address in the appropriate fields.

4. To specify multiple IP addresses:
 - Enter the wildcard character (*) in one of the IP address fields. For example, 192.86.85.10*, designates the addresses 192.86.85.100 through 192.86.85.109.
 - Click *Specify range*. A second set of IP address fields is displayed. In the first set of fields, enter the lower-numbered address of the desired range. In the second set of fields, enter the higher-numbered address of the desired range.

Note You cannot use wildcard characters with this method.

5. Click Create.

The WinCenter station label is created and appears in the *Currently Existing Labels* list.

Note The label "*" is predefined by WinCenter. That label represents all WinCenter stations that may connect to the WinCenter server.

6. Make as many labels as desired. When done, click Close.

Adding a Member

WinCenter station group members consist of labels and WinCenter station group names. To add members to a WinCenter station group:

1. In the **Group Configuration** tab's Name list, select the name of the group to which you want to add a member.
2. Click Add Member.
3. In the **Add Member** dialog, click the WinCenter station label, WinCenter station group, or multiple names, and click Add. (WinCenter station group names appear as %*name*%.)
The selected items are added as members of the group.

Removing a Member of a Group

To remove a member of a group:

1. In the **Group Configuration** tab's Name list, select the name of the group from which you want to remove a member.
2. In the *Members of selected group* list, click one or more members you want to remove from the group.
3. Click Remove Member.
4. In the **Remove Member(s)** message, click Yes.
The selected items are removed from the group.

Deleting a Group

Note Deleting a group does not destroy other group memberships held by the members of the deleted group.

1. In the **WinCenter Configuration** window's **Group Configuration** tab, from the Name list select the name of the group to be deleted.

Note The group ALL cannot be deleted.

2. Click Delete Group.
3. In the **Delete Group(s)** dialog, click the group or groups to delete and then click OK.
4. Click Yes in the confirmation dialog and the groups are deleted.

Abolishing a WinCenter Station Label

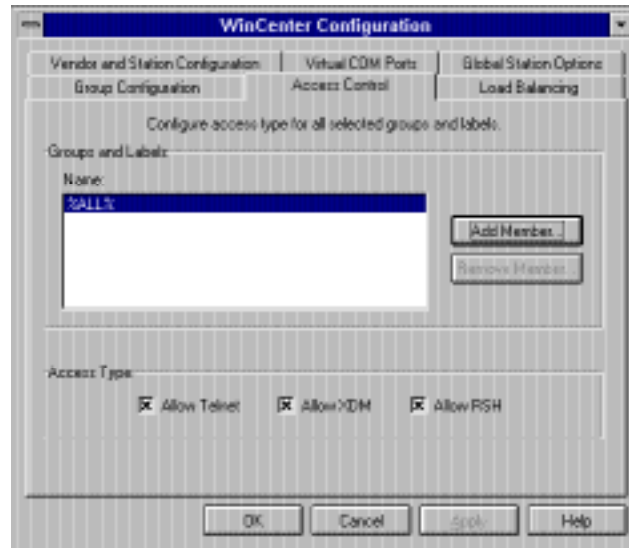
CAUTION Abolishing a label removes the label and removes the label from all groups where it is a member.

1. In the **WinCenter Configuration** window's **Group Configuration** tab, click **Abolish WinCenter Station Labels**.
2. In the **Abolish WinCenter Station Labels** dialog, click the label or labels to be eradicated and then click **OK**.
3. When prompted to confirm the abolish operation, click **Yes**.
The abolished WinCenter station labels (and thus, all WinCenter stations they specified) are removed from all groups to which those WinCenter station labels belonged.

Controlling Access

The **Access Control** tab of the **WinCenter Configuration** tool controls the network protocol WinCenter stations can use to access this WinCenter server. You can apply access control settings to WinCenter station groups and individual WinCenter station labels.

If a WinCenter station appears in multiple Access Control groups, its resultant access types (see step 4 below) are the boolean AND of each individual occurrence. Thus, to control access to a small number of stations, create a group of those stations in the **Group Configuration** tab, then control them in the **Access Control** tab. Access denied that group will remain denied even if Access Control does not restrict the ALL group.



To set a group or label's access control:

1. Open the **WinCenter Configuration** window as described in "Opening the WinCenter Configuration Tool" on page 7-5.
2. Click the **Access Control** tab.
3. From the Name list, select the name of the WinCenter station label or group you want to control.

Note Group names are enclosed in a set of % characters, such as **%admin%**.

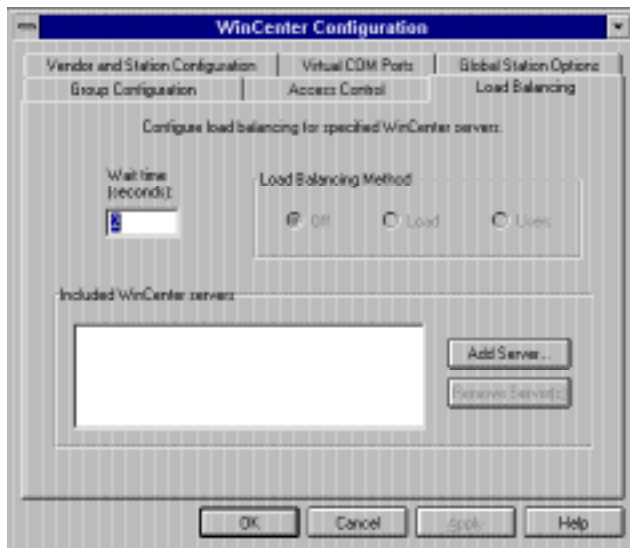
If the desired WinCenter station label or group does not appear in the list, click Add Member. In the **Add Member** dialog, click the entries for which you want to control access, then click Add.

4. In the *Access Type* region, click the desired access types for the currently selected name. Your access type choices are:

- *Allow Telnet* — Allows the selected WinCenter station label or group members to connect to this WinCenter server using the Telnet communication protocol.
 - *Allow XDM* — Allows the selected WinCenter station label or group members to connect to this WinCenter server using the XDM communication protocol.
 - *Allow RSH* — Allows the selected WinCenter station label or group members to connect to this WinCenter server using the RSH communication protocol.
5. Click Apply to save the settings.

Configuring Load Balancing

The **Load Balancing** tab of the **WinCenter Configuration** tool lets you configure how the system load or user load is distributed among the WinCenter servers available on your network. WinCenter servers that participate in load balancing can redirect login requests to less utilized WinCenter servers.



To create a group of balanced servers:

1. Open the **WinCenter Configuration** window as described in “Opening the WinCenter Configuration Tool” on page 7-5.
2. Click the **Load Balancing** tab.
3. In the *Wait time* box, enter the number of seconds the WinCenter server waits to receive load and user information from participating balanced servers (that is, those in the *Included WinCenter servers* list).
4. Click Add Server to add each WinCenter server to the list of those participating in load balancing with this WinCenter server.

Note If you want each WinCenter server load balanced, rather than balancing the load on a single server, complete steps 1- 6 on each participating WinCenter server.

If desired, click Remove Server to remove WinCenter servers from the list of those participating in load balancing.

5. Select a *Load Balancing Method*. Choose whether and how to balance loads among the servers listed in the *Included WinCenter servers*. Your options are:
 - *Off* — Disables load balancing. This WinCenter server processes all login attempts sent to it.
 - *Load* — Attempted logins to this WinCenter server are distributed among the participating WinCenter servers based upon the current load on each machine. Load is calculated as the average number of jobs in a server’s run queue over an interval of time.
 - *Users* — Attempted logins to this WinCenter server are distributed among participating WinCenter servers based on the percentage of maximum allowed users currently logged in to each machine.

Note The maximum number of users allowed to log in to a particular WinCenter server is set through the

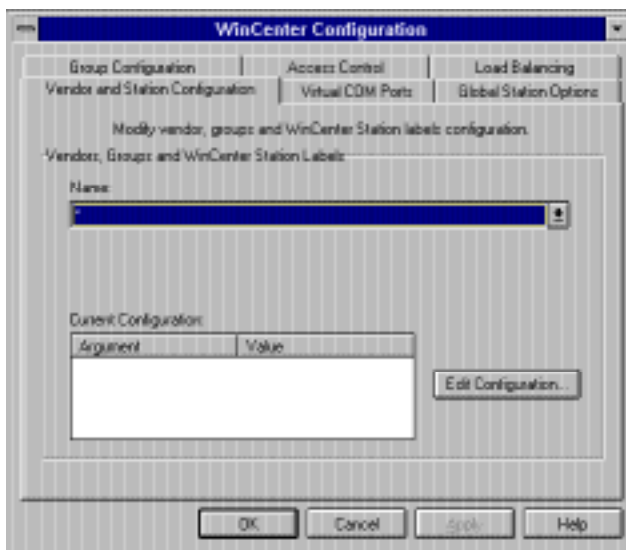
WinStation Configuration tool, located in the Administrative Tools program group.

6. Click Apply to save the settings.

Note Login attempts made at the console of the WinCenter server and all ICA sessions are never load balanced.

Vendor and Station Configuration

The **Vendor and Station Configuration** tab of the **WinCenter Configuration** tool lets you select a set of one or more WinCenter station(s) to which particular configuration settings will be applied. These configuration settings override the default settings that WinCenter uses for those WinCenter stations.



1. Open the **WinCenter Configuration** window as described in "Opening the WinCenter Configuration Tool" on page 7-5.
2. Click the **Vendor and Station Configuration** tab.

3. From the Name list, select the WinCenter stations to which you want to apply specific configuration settings. The Name list displays all WinCenter station designators currently defined on this WinCenter server. These designations are:
 - By vendor (machines produced by the same vendor and for which certain configuration options must have a particular value). A set of major vendor names is supplied for you.
 - By WinCenter station group
 - By WinCenter station label
 - By individual WinCenter station
4. Check that the settings given in the *Current Configuration* area are what you want to assign to the selected WinCenter stations. If these are not the settings you want to assign, click Edit Configuration and go to “Editing Configuration Options” in the next section.
5. When the *Current Configuration* settings display the desired settings, click Apply to save the settings.

Editing Configuration Options

1. Click Edit Configuration in the **Vendor and Station Configuration** tab.
2. In the **Edit Configuration Options** dialog, make sure that the *Vendor/WinCenter Station* box displays the item whose options you are configuring.
3. Make sure the *Configuration* area lists the desired values for all WinCenter configuration options you want to apply to the WinCenter stations designated by the item in the *Vendor/WinCenter Station* box.
4. To remove one or more settings from the *Configuration* area, click the item(s) to be removed, and then click Delete Value(s).

5. To add options to the *Configuration* area, and hence assign them to specified WinCenter stations:
 - a. From the Options list, click the option to add.
 - b. If the selected option has a default value, or if it has previously been set, the value appears under *Current Option* to the right of the Options list. Modify this setting as desired. For an explanation of the option and its possible values, click Help.
 - c. Click *Add to Current Configuration*.
6. Click OK to apply the options shown in the *Configuration* area to the WinCenter station(s) designated by the value in the *Vendor/WinCenter Station* box.

Configuring Virtual COM Ports

The **Virtual COM Ports** tab of the **WinCenter Configuration** tool lets you create virtual (as opposed to physical) serial communication ports for use by NCD network computers. The virtual COM port can be shared among NCD network computers or used individually by each such network computer.

Typically, your WinCenter server will have two physical COM ports: COM1 and COM2. With the virtual COM port facility, you can create COM3 and COM4 that represent the physical serial port(s) of your NCD network computers. This allows you to establish communication between the WinCenter server and external devices, such as scanners, bar code readers, personal digital assistants, and other devices attached to the serial ports of your NCD network computers. You can use the virtual COM port facility in two ways:

- You can map a virtual COM port to the serial ports of all NCD network computers that log into the WinCenter server. This method is useful if you have a number of NCD network computers connected to external devices that need to communicate with the WinCenter server.

- You can map a virtual COM port to the serial port of a specific NCD network computer, identified by its IP address. This method is useful when you want to map the virtual COM port to a specific NCD network computer's physical port, which is attached to a device (such as printer) to which other user's on the network need access.



1. Open the **WinCenter Configuration** window as described in “Opening the WinCenter Configuration Tool” on page 7-5.
2. Click the **Virtual COM Ports** tab.
3. From the *Virtual COM Ports* drop-down list, select the name of the virtual COM port to be configured.

If the virtual COM port that you want to configure does not appear in the drop-down list, click **Create**.

In the **Number** box, enter the number you want used in the name of the new virtual COM port. It defaults to a value 1 greater than that of the highest-numbered virtual COM port. However, you can key in any number.

4. If the name of the selected virtual COM port matches that of a physical COM port on this WinCenter server, click the *Override Current Physical COM setting* box to replace the physical COM port with the virtual COM port.

If this box is selected, the physical COM port on the WinCenter server and any attached devices are unusable.

If you do not want to override the physical COM port designation, make sure this box is unchecked. Then the virtual COM port name continues to exist, but it is inactive, and the physical COM port designation remains in force.

5. Specify how to map the selected virtual COM port with the *Use Client Serial Service* box.

If this box is selected, the virtual COM port is mapped to the serial port of all NCD network computers that log into this WinCenter server (the COM port name is shared). This allows the user at each NCD network computer to use that COM port name with NT applications, running in the WinCenter desktop, to send or receive data from the serial device attached to their NCD network computer.

Note At present, WinCenter users cannot use the virtual COM port mapped in this way for printing.

If *Use Client Serial Service* is unselected, the virtual COM port is mapped to the serial port of the device specified under *IP Address*. Enter the IP address of the network computer where the serial device exists. Use this method to specify and reserve a COM port for a shared network device such as a scanner. Users running WinCenter sessions from this WinCenter server could then configure the scanner in their NT desktops on that virtual COM port.

6. Specify the *TCP Port Number* used by the NCD network computer's serial service to identify its serial port.
 - If *Use Client Serial Service* is unselected, the *TCP Port Number* defaults to 87, which is the required value for NCD network computers. This value comes from NCDware's **Console → Setup → Change Setup Parameters → Serial → Serial Daemons Table → TCP Port** field.
 - If *Use Client Serial Service* is selected, the *TCP Port Number* defaults to 0, representing the first serial port on your network computer. If the serial device is on the network computer's second serial port, set this field to 1.
7. Click Apply to save the settings.

To configure the NCD network computer's serial port for use with the virtual COM port, open NCDware's **Console → Setup → Change Setup Parameters → Serial → Serial Interfaces Table**. Then modify the **Current Port Use** value to reflect the type of protocol required for the device connected to the network computer's serial port. If the protocol is not known, select *Printer*, which allows the data to be sent to the port without any protocol encoding.

Setting Global Station Options

The **Global Station Options** tab of the **WinCenter Configuration** tool lets you set some basic options for all WinCenter stations connected to this WinCenter server. These settings are overridden by changes the user makes in the **WinCenter Desktop Icon**. The options are:

- *Shadowing* — WinCenter has the capability to place a copy (shadow) of a WinCenter session desktop onto another WinCenter desktop device. WinCenter can also request a copy (shadow) of another WinCenter session to appear on your desktop device. Shadowed sessions appear exactly the same on the originating device as at the shadow location. The

originating device and the shadow location can generate input (key presses, mouse movement, and mouse clicks) to the original session.

Shadowed sessions enable system administrators to resolve WinCenter questions and WinCenter issues, or to train users by remotely sharing sessions.

- *Start Window Manager at login* — WinCenter's window manager controls the appearance, location, and size of non-Windows applications within the WinCenter desktop. These applications can be launched from the WinCenter desktop using the **New Connection** tab of the **WinCenter Desktop Icon**.
- *RSHD Service* — WinCenter servers contain a remote shell server. The *RSHD Service* option enables or disables *rsh* requests from connected WinCenter sessions. *RSHD Service* does not control the ability to enable or disable the *rsh* method to start a WinCenter session. That ability is specified in the **Access Control** tab.
- *Ensure accurate copy & paste* — WinCenter desktops have the capability to launch non-Windows applications (typically X Window System applications from UNIX machines) using the **New Connection** tab in the **WinCenter Desktop Icon**. On these mixed environment desktops, users may copy data between non-Windows application and Windows applications. Some non-Windows applications put inaccurate timestamps on copied data and the data never accurately updates the Windows clipboard. To avoid this possible problem and post each data "copy" to the Windows clipboard, turn *Ensure accurate copy & paste* on.



1. Open the **WinCenter Configuration** window as described in “Opening the WinCenter Configuration Tool” on page 7-5.
2. Click the **Global Station Options** tab.
3. Set the *Shadowing* option:
 - Select *Enable* to allow users to initiate shadows of WinCenter sessions on this WinCenter server and to display the **Shadowing** tab in the **WinCenter Desktop Icon**.
 - Select *Disable* to prevent users from initiating shadows of WinCenter sessions on this WinCenter server and to remove the **Shadowing** tab from the **WinCenter Desktop Icon**.
4. Set the *Start Window Manager at login* default state. Users may change this setting in the **WinCenter Desktop Icon**.
 - Select *True* to make the Window Manager start at login on all WinCenter stations connected to this WinCenter server.

- Select *False* to prevent the Window Manager from starting at login on all WinCenter stations connected to this WinCenter server.
5. Set the *RSHD Service* option:
 - Select *Enable* to permit RSH communication protocol requests to this WinCenter server during a WinCenter session.
 - Select *Disable* to deny RSH communication protocol requests to this WinCenter server during a WinCenter session. If the *RSHD Service* option is disabled, the **Rshd** tab in the **WinCenter Desktop Icon** does not appear.
 6. Set the *Ensure accurate copy & paste* default state. Users may change this setting in the **WinCenter Desktop Icon**.
 - Select *True* to make cut and paste operations always update the Microsoft Windows clipboard rather than rely on timestamp changes on copied selections to cause the clipboard update.
 - Select *False* to rely on the timestamps on copied data to determine if the Window's clipboard will get updated.
 7. Click **Apply** to save the settings.

Shadowing a Session without Notifying the User

This feature is only available to users with Administrator privilege on the WinCenter server.

1. Log on to the WinCenter server as the Administrator.
2. Double click the **WinCenter Desktop Icon**.
3. Select the **Shadowing** tab.
4. Click *Select a WinStation to shadow in my WinCenter session*.

- From the list box, type in or select a WinStation to shadow. The format is *WinCenter server**user**WinStation ID* where:
 - WinCenter server* is the “Computer Name” defined in that machine’s **Main → Control Panel → Network** window.
 - user* is the name of a user logged into that WinCenter server.
 - WinStation ID** is the value from the ID field of the **Administrative Tools → WinStation Administration** window.
- Select *Don’t notify the shadowed session* and click Start. The **Shadowing Started** dialog displays on your PC.

Setting Up Local Diskette Drives as Windows NT Drives

This section helps you preconfigure workstations, network computers, and WinCenter PC Client-equipped PCs so that users can access their diskette drives as the WinCenter A: drive when logged onto WinCenter. You can either enable diskette drives for all users at the same time, or enable WinCenter diskette drive access for specific users.

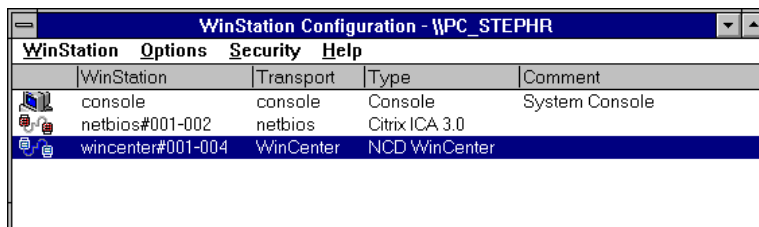
Users can also enable their diskette drive after logging onto a WinCenter server. For information, see “Enabling Your Local Diskette Drive” on page 15-2.

If All Devices Have Diskette Drives

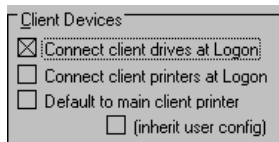
This section enables diskette drives for all users at the same time. After users start WinCenter sessions, WinCenter's A: drive refers to the diskette drive in the user's workstation, network computer, or WinCenter PC Client-equipped PC.

To enable diskette drives:

1. Ensure that all users are logged off the WinCenter server. Any users still on the WinCenter server while you are performing this procedure are forcibly logged off.
2. At the console, log on to the WinCenter server as Administrator.
3. Open the Administrative Tools program group.
4. Double click the **WinStation Configuration** icon.
5. In the **WinStation Configuration** dialog, double click the wincenter entry (for example, **wincenter#001-014**):



6. In the **Edit WinStation Configuration** dialog, click the Advanced WinStation button.
7. In the Client Devices group of the **Advanced WinStation Configuration** dialog, deselect (*inherit user config*). Then select *Connect client drives at Logon*.



If Only Some Devices Have Diskette Drives

This section enables WinCenter diskette drive access for specific users whose workstations, network computers, or WinCenter PC Client-equipped PCs have a diskette drive. After those users start WinCenter sessions, WinCenter's A: drive refers to the diskette drive in the user's workstation, network computer, or WinCenter PC Client-equipped PC.

To enable diskette drives:

1. Follow steps 1–6 of the procedure in the previous section, "If All Devices Have Diskette Drives".
2. In the Client Devices group of the **Advanced WinStation Configuration** dialog, select (*inherit user config*):



3. Click OK in the **Advanced WinStation Configuration** dialog.
4. Click OK in the **Edit WinStation Configuration** dialog.
5. Select **WinStation** → **Exit**.
6. From the Administrative Tools program group, double click the **User Manager for Domains** icon.
7. Select one or more user accounts to edit.
8. Select **User** → **Properties**.
9. In the **User Properties** dialog, click the Config button.
10. In the Client Devices group of the **User Configuration** dialog, select *Connect client drives at Logon*.

Configuring WinCenter and NCD Network Computers

This section describes how to configure WinCenter for use with NCD network computers. Topics include:

- Booting NCD network computers from WinCenter servers on page 7-27.
- Configuring NCDware for logging into WinCenter servers on page 7-36.
- Configuring diskette drives for use with WinCenter servers on page 7-37.
- Configuring printers for use with WinCenter servers on page 7-38.

Some of the following sections refer to the NCD network computer's Console configuration utility. Display the Console by pressing the Setup key. Not all keyboards have a Setup key. The following table lists the key combinations to use on NCD keyboards that do not have a Setup key.

Keyboard Type	Key Combination
Sun Type-4-compatible	<Alt Graph>+<Help Setup>
VT220-style	Compose+F3
101-key PC-style	Pause
108-key-style	Alt+F3
122-key 3270-compatible	Alt+<keypad slash (/)>

Note Some of the following sections assume that NCDware, operating system software for NCD network computers, was installed on the WinCenter server. NCDware was installed unless you selected *Custom* in WinCenter Connect's **Select Setup Type** installation dialog and unselected *NCDware*.

Booting NCD Network Computers from WinCenter Servers

The methods available for booting NCD network computers from WinCenter servers depends on the Boot Monitor version in the network computer. The Boot Monitor version is displayed on the network computer screen when it powers on. The default boot methods for NCD network computers are:

Boot Monitor Version	Available Boot Methods
2.8 or higher	DHCP, then bootp if DHCP fails, then RARP*
Lower than 2.8	bootp, then RARP* if bootp fails

* RARP boot methods are not discussed in this manual. Please see the NCDware manual that came with your NCD network computer.

Using DHCP to Boot NCD Network Computers

Note If DHCP booting fails, for example if all DHCP IP addresses are already leased, bootp is used to boot the network computer. Due to this fallback mechanism, please read the following section, “Using Bootp to Boot NCD Network Computers”.

NCD network computers with boot monitor version 2.8 or higher, come with DHCP enabled. No further configuration of the network computer is necessary. However, you do need to install and configure DHCP on your WinCenter server as follows:

1. Log on to the WinCenter server as the Administrator.
2. Make sure that no other users are logged onto the system before going any further. To see who is logged in, use **Administrative Tools → WinStation Administration → View → Users**.

If other users are logged onto the system, either send them a message to log off or forcibly log them off by highlighting their names and clicking Logoff.

Close the **WinStation Administration** window.

3. In Control Panel, double click the **Network** icon.
4. If Microsoft DHCP Server does not appear in the *Installed Network Software* list, you need to install it:
 - a. Choose Add Software.
 - b. In the resulting dialog, select *TCP/IP Protocol and related components* and click Continue.
 - c. In the Windows NT **TCP/IP Installation Options** dialog, select *DHCP Server Service*, click Continue, and answer the remaining dialog questions. Reboot the WinCenter server when the installation completes.
5. In the Network Administration program group, double click the **DHCP Manager** icon. Each network environment will have different requirements, but the basic steps to configure DHCP follow.
6. Create a DHCP Scope. Select the Local Machine (as the DHCP server). Select **Scope → Create**. In the **Create Scope** dialog, specify the range of DHCP-managed IP addresses and their lease duration.
7. Add DHCP options specific to NCD network computers. Click the DHCP scope you created in Step 6, then select **DHCP Options → Default**.
8. In the **DHCP Options: Default Values** dialog, select New. Fill in the following:
 - Name — Boot Server IP Address
 - Data Type: String
 - Identifier: 66
 - Comment: Boot server IP address in the form of a string.and click OK.
9. In the **DHCP Options: Default Values** dialog, again select New. Fill in the following:
 - Name — Boot File
 - Data Type: String
 - Identifier: 67
 - Comment: Boot file override of bootp area.

and click OK. Click OK in the **DHCP Options: Default Values** dialog.

10. Highlight the DHCP scope you created in Step 6, then select **DHCP Options → Scope**. In addition to the options configured in Steps 8 and 9, the following options are supported. Set the options appropriate for your network environment:

- 002 Time Offset
- 003 Router
- 004 Time Server
- 005 Name Servers
- 006 DNS Servers
- 008 Cookie Servers
- 012 Host Name
- 015 Domain Name
- 028 Broadcast Address
- 029 Perform Mask Discovery
- 049 X Window System Display

Refer to the TCP/IP book in the online **WinFrame Books Online** icon found in the Main program group for further information.

Using Bootp to Boot NCD Network Computers

The **Bootp Configuration** tool in the WinCenter Administration program group allows you to edit the configuration file used by the Internet Boot Protocol (bootp) when NCD network computers boot from the WinCenter server.

To use Bootp to start an NCD network computer:

1. Find the network computer's Ether Address. This is printed on a sticker on the network computer and displays on the network computer's monitor when powered on.
2. Log on to the WinCenter server as the Administrator.
3. In the WinCenter Administration program group, double click the **Bootp Configuration** icon.

4. Create a Host Entry for each NCD network computer. See “Creating and Editing the Host Entries List” on page 7-30.
5. Set the Current Entry tags for each NCD network computer. See “Creating and Editing Host Entry Tags” on page 7-31.

Creating and Editing the Host Entries List

A host entry is the hostname of a network computer or a “template” entry. Template entries are invalid hostnames that are used to provide default values (tags) used by multiple valid hostnames in the Host Entries list.

To add a name to the Host Entries list:

1. Click New to display the **Add New Host** dialog. Type the hostname for an NCD network computer and click OK.

Note When a hostname begins with a dot, for example **.myhost**, subsequent hostnames can reference this template host entry, inherit its tags or inherit and override its tags. “Template” host entries must appear in the Host Entries list above host entries that reference it.

2. To add multiple names to the Host Entries list, click Import and select your host entries file. Each line in the file should contain information for a separate hostname. Blank lines and comment lines (lines that begin with #) are ignored when the file is imported.

The format for each line in the imported host entries file is:
<hostname> <Ether Address> <IP address>

For example:

```
geoffs 0000A71A7FF3 192.86.85.101
```

3. Click a Host Entries item and then Move Up or Move Down to reposition the host entry where desired within the list.
4. Click Delete to remove the selected host entry from the list.

Creating and Editing Host Entry Tags

For each host entry, you need to specify its current tags:

1. Select an entry from the Host Entries list, then click New in the *Current Entry* area of the **Bootp Configuration** tool.
2. Select a tag from the **Add New Tag** dialog and click OK.

Note Select multiple tags by pressing the Ctrl key while clicking the desired tags.

The *Vendor Tag Extension* box is only ungreyed if you select Tn as the tagname. Ignore this box and the Tn extension unless instructed otherwise by NCD Technical Support.

NCD network computer users should set at a minimum the following tags:

dn (Domain Name)	hn (Client's Hostname)
ds (Domain Name Server)	ip (IP Address)
ha (Hardware Address)	sm (Subnet Mask)
gw (Gateway Address List)	

Current tag names include:

Tag	Description
bf	Bootfile. The name of the image file downloaded to the network computer.
bs	Bootfile size in 512-octet blocks. The bootfile size, bs, may be either a decimal, octal, or hexadecimal integer specifying the size of the bootfile in 512-octet blocks, or the keyword auto which causes the server to automatically calculate the bootfile size at each request. As with the time offset, specifying the bs symbol as a boolean has the same effect as specifying auto as its value.
cs	Cookie server address list. (1)
df	Merit dump file.
dn	Domain name. For example, ncd.com.

Tag	Description
ds	Domain name server address list. The IP address or address of your DNS server(s). (1)
ef	Extension file.
gw	Gateway address list. (1)
ha	Host hardware address or Ether Address of the network computer. The Ether Address is printed on a label attached to your NCD network computer. The ha tag takes a hardware address which may be specified as a host name or in numeric form. Note that the numeric form must be specified in hexadecimal; optional periods and/or a leading '0x' may be included for readability. The ha tag must be preceded by the ht tag (either explicitly or implicitly). If the hardware address is not specified and the type is specified as either "ethernet" or "ieee802", then bootpd will try to determine the hardware address.
hd	Bootfile home directory. The hd tag is actually relative to the root directory specified by the td tag. For example, if the real absolute path to your BOOTP client bootfile is C:\tftpboot\bootimage, and tftpd uses \tftpboot as its "secure" directory, then specify the following in bootptab: :td=\tftpboot:hd=\\:bf=bootimage:
hn	Send client's hostname to client. The hn tag is a boolean; it does not take the usual equals-sign and value. It's presence indicates that the hostname should be sent to RFC1084 clients. Bootpd attempts to send the entire host name as it is specified in the configuration file; if this will not fit into the reply packet, the name is shortened to just the host field (up to the first period, if present) and then tried. In no case is an arbitrarily-truncated hostname sent (if nothing reasonable will fit, nothing is sent).
ht	Host hardware type. The ht tag specifies the hardware type code as either an unsigned decimal, octal, or hexadecimal integer or one of the following symbolic names: ethernet or ether for 10Mb Ethernet, ethernet3 or ether3 for 3Mb experimental Ethernet, ieee802, tr, or token-ring for IEEE 802 networks, pronet for Proteon ProNET Token Ring, or chaos, arcnets, or ax.25 for Chaos, ARCNET, and AX.25 Amateur Radio networks, respectively.
im	Impress server address list. (1)

Tag	Description
ip	Host IP address. The IP address of your NCD network computer. (2)
lg	Log server address list. (1)
lp	LPR server address list. (1)
ns	IEN-116 name server address list. (1)
nt	NTP (time) Server (RFC 1129). (1)
ra	Reply address override. (1)
rl	Resource location protocol server address list. (1)
rp	Root path to mount as root.
sa	TFTP server address client should use. (2) The sa tag may be used to specify the IP address of the particular TFTP server you wish the client to use. In the absence of this tag, bootpd will tell the client to perform TFTP to the same machine bootpd is running on.
sm	Host subnet mask. (2)
sw	Swap server address. (2)
tc	Table continuation (points to similar "template" host entry). Often, many host entries share common values for certain tags (such as name servers, etc.). Rather than repeatedly specifying these tags, a full specification can be listed for one host entry and shared by others via the tc (table continuation) tag. Often, the template entry is a host that doesn't actually exist and never sends bootp requests. Note that bootpd allows the tc tag symbol to appear anywhere in the host entry, not solely as the last tag. Information explicitly specified for a host always overrides information implied by a tc tag symbol, regardless of its location within the entry. The value of the tc tag may be the hostname or IP address of any host entry previously listed in the Host Entries list. The tc tag must appear in the Tags list prior to any tag that overrides (undoes) definition in the template. Sometimes it is necessary to delete a specific tag after it has been inferred via tc. This can be done using the Undo checkbox on the bootptab tab (see "Referencing Another Host Entry" on page 7-35).

Tag	Description
td	TFTP root directory used by "secure" TFTP servers. Some newer versions of tftpd provide a security feature to change their root directory using the chroot(2) system call. The td tag may be used to inform bootpd of this special root directory used by tftpd.
tn	For future modification to the bootp protocol, "n" represents the vendor field tag number.
to	Time offset in seconds from UTC. The time offset, to, may be either a signed decimal integer specifying the client's time zone offset in seconds from UTC, or the keyword auto which uses the server's time zone offset. Specifying the to symbol as a boolean has the same effect as specifying auto as its value.
ts	Time server address list. (1)
vm	Vendor magic cookie selector. The vendor magic cookie selector (the vm tag) may take one of the following keywords: auto (indicating that vendor information is determined by the client's request), rfc1048 or rfc1084 (which always forces an RFC1084-style reply), or cmu (which always forces a CMU-style reply).
yd	Yellow Pages (NIS) domain name.
ys	Yellow Pages (NIS) server address. (2)

(1) These tags take a whitespace-separated list of IP addresses.

(2) These tags take single IP addresses.

3. For each entry in the Tag list, set the tag's value by selecting the entry, typing the value in the *Selected Tag Value* box, and then clicking Apply.

All IP addresses are specified in standard dot notation and may use decimal, octal, or hexadecimal numbers. Any IP addresses can also be specified as a hostname, causing bootp to look up the IP address for that host. If the ip tag is not specified, the IP address is determined using the Host Entries name as the hostname. (Templates should use an invalid hostname to avoid automatic IP lookup.)

4. Click Move Up or Move Down to position the entry where desired within the Tags list.
5. Click Delete to remove the selected tag from the list.
6. Click Apply to save your changes.

Referencing Another Host Entry

If you have multiple network computers that share similar information, create a template item in the Host Entries list and use it to define the common characteristics of those devices:

1. Create a template item in the Host Entries list. The name must begin with a dot, for example, `.subnet.a`.
2. Define the template's tags and values shared by multiple network computers.
3. For each network computer that needs those common characteristics, create a host entry. In the Tags list, define tc (Table Continuation) as its first tag. Set the value of tc to the name of the Host Entries template.
4. Define additional tags for this network computer as needed.
5. If you want to override a tag entry in the template:
 - a. Click New in the **Current Entry** dialog and add the tag name.
 - b. Select that tag from the Tags list, then click Undo.
 - c. Click New in the **Current Entry** dialog and add the same tag name.
 - d. Select that tag from the Tags list and enter its new value in the Selected Tag Value field.
 - e. Click Apply.

Note The template hostname must appear in the Host Entries list above any hostname that refers to it (via the tc tag).

Logging into a Specific WinCenter Server

If WinCenter Connect was installed for a *Typical NT* environment and you are booting your network computers from that WinCenter server, you should see the WinCenter login screen after booting.

If WinCenter Connect was installed for a *Typical UNIX Support* environment, you see the NCDware Login Chooser after booting. To bypass the Login Chooser and connect directly to a WinCenter server:

1. Log on to the WinCenter server as the Administrator.
2. Select **File** → **Run**, enter Notepad, and click OK.
3. In Notepad, select **File** → **Open** and navigate to the following directory:

```
\tftpboot\usr\lib\X11\ncd\configs
```

4. In the **List Files of Type** dialog, select All files (*.*) .
5. Select **ncd_std** from the list of files and click OK.
6. Search for "exec-startup-commands" in the file. Change the location of the "#" comment character from:

```
exec-startup-commands = {  
    { "login" }  
# { "login ip address" }  
}
```

to:

```
exec-startup-commands = {  
# { "login" }  
    { "login ip address" }  
}
```

After this change, the Login Chooser is bypassed and a direct login to the WinCenter server specified by the IP address occurs.

7. Select **File** → **Save**.
8. Reboot your NCD network computer.

Note A WinFrame license is used each time the WinCenter login window is displayed. If your network computer remains unused for extended periods, turn the network computer off to preserve the WinFrame license.

Configuring NCDware for a Diskette Drive

To use the diskette drive on the NCD network computer, NCDware must recognize the parallel port to which the drive is connected.

1. On the NCD network computer, press the Setup key to display the NCDware Console.
2. From the NCDware Console, select **Setup → Change Setup Parameters → Parallel → Parallel Daemons Table → Use Parallel Protocol.**

Note If NCDware is not properly configured to recognize the parallel port and you attempt to use the diskette drive, after a 20-second delay the following message appears:

```
A device attached to the system is not  
functioning.
```

3. Toggle the Use Parallel Protocol button until the value reads false.
4. Check the port number listed for TCP Port. If it is not 5964, click on the existing entry. Clicking highlights the entry and a TCP Port text entry box displays below. Click in the text entry box and backspace to delete the existing number. Enter **5964**.
5. Click Apply.

See “Setting Up Local Diskette Drives as Windows NT Drives” on page 7-23 to inform WinCenter about your network computer diskette drives.

Setting Up Printers

When using a printer connected to an NCD network computer's port, you must:

- Configure NCDware to use the port correctly. See "Configuring NCDware for a Local Printer" on page 7-38.
- Connect the printer physically to the network computer. See "Connecting Printers to NCD Network Computers" on page 7-39.
- Enable printing support on the WinCenter server. You can do this during installation of WinCenter Connect (see "Select Default Local Device Access Method" on page 3-5) or you can do it later (see "Enabling Printer Support on the WinCenter Server" on page 7-40).
- Create and configure a WinCenter WinStation printer (see "Creating a WinStation Printer" on page 7-42).

Configuring NCDware for a Local Printer

To use a printer attached to the serial or parallel port on your NCD network computer, NCDware must be configured to use the parallel or serial port to which the printer is connected.

Settings for a Parallel Printer Connection

If the printer is attached to a parallel port:

1. On the NCD network computer, press the Setup key to display the NCDware Console.
2. From the NCDware Console, select **Setup** → **Change Setup Parameters** → **Parallel** → **Parallel Daemons Table** → **Use Parallel Protocol**.
3. Toggle the *Use Parallel Protocol* button until the value reads false.
4. Check the port number listed for TCP Port. If it is not 5964, click on the existing entry. Clicking highlights the entry and a TCP Port text entry box displays below. Click in the text entry box and backspace to delete the existing number. Enter **5964**.

5. Click Apply.

Settings for a Serial Printer Connection

If the printer is attached to a serial port:

1. On the NCD network computer, press the Setup key to display the NCDware Console.
2. From the NCDware Console, select **Setup** → **Change Setup Parameters** → **Serial** → **Serial Daemons Table** → **Use Serial Protocol**.
3. Toggle the *Use Serial Protocol* button until the value reads false. (This is the default setting. You probably don't need to change it.)
4. Check the port number listed for TCP Port. If it is not 87, click on the existing entry. Clicking highlights the entry and a TCP Port text entry box displays below. Click in the text entry box and backspace to delete the existing number. Enter **87**.
5. In the Serial Interfaces Table, make sure that *Port Use at Boot* and *Current Port Use* are both set to Printer. To change either from another setting to Printer, click the existing setting. Clicking highlights the existing setting and a pulldown menu for selecting an alternate setting displays below. Click the pulldown menu and drag to Printer.
6. In the Serial Interfaces Table, make sure that the settings for Baud Rate, Data Bits, Stop Bits, Parity, and Handshake match those recommended in your printer manual. In most cases, the default settings work.
7. Click Apply.

Connecting Printers to NCD Network Computers

You can connect a printer to an NCD network computer's serial or parallel port. Refer to your printer manual and NCD network computer hardware booklet to determine which type of interface is supported on your hardware.

- For a serial port connection, use a null modem cable (DTE-to-DTE).

- For a parallel port connection, use a cable equipped with a DB-25 connector on one end and a Centronics parallel interface on the other.

Enabling Printer Support on the WinCenter Server

Printers can be enabled in several ways, depending on whether or not all of the NCD network computers on the network have printers attached.

Note During the installation of WinCenter Connect, you may have already enabled all printers or specified that all printers should be enabled based upon the pre-existing user settings.

To enable printers correctly, make sure you do so from the console of the WinCenter server. Otherwise, enabling may appear to work, even though it does not.

If All Network Computers Have Printers

If every NCD network computer has a printer attached and you want users to have access to the printer when they log on, follow these steps:

1. Log on to the WinCenter server as the Administrator.
2. Make sure that no other users are logged onto the system before going any further. To see who is logged in, use **Administrative Tools → WinStation Administration → View → Users**.

If other users are logged onto the system, either send them a message to log off or forcibly log them off by highlighting their names and clicking Logoff.

Close the **WinStation Administration** window.

3. Double click the **WinStation Configuration** icon in the Administrative Tools group.
4. Double click the WinCenter WinStation.
5. Click Advanced WinStation.

The **Advanced WinStation Configuration** dialog displays.

6. In the Client Devices group, click the (*inherit user config*) box to de-select it. (It is selected by default.)
7. Select *Connect client printers at Logon* to turn it on, then click OK.

If Only Some Network Computers Have Printers

If only some NCD network computers have printers attached, but you want their users to have access to the printers when they log on, follow these steps:

1. Follow steps 1 through 5 of the previous procedure, "If All Network Computers Have Printers".
2. In the Client Devices group, verify that (*inherit user config*) is selected. If not, click the box.
3. Click OK in the **Advanced WinStation Configuration** dialog and click OK in the **Edit WinStation Configuration** dialog.
4. Select **WinStation → Exit**.
5. From the Administrative Tools folder, double click **User Manager for Domains** icon.
6. You must edit each of the individual user accounts to indicate that they have a printer.
7. Select the user account you want to edit. You can select and configure several users at once. With the mouse, highlight the desired users. Then follow the rest of the procedure.
8. Select **User → Properties**.
9. Click Config.
10. On the **User Configuration** dialog, verify that *Connect client printers at Logon* is selected.

Creating a WinStation Printer

System administrator's can use these steps to create a WinStation printer that is shared on a Virtual COM Port. For more information about WinCenter Connect's Virtual COM Port facility, see "Configuring Virtual COM Ports" on page 7-16.

Network computer users can use these steps to create a WinStation printer for the printer attached to their NCD network computer.

To create a WinStation printer:

1. Log on to WinCenter as the user who will have authority over the printer (this can be Administrator or another username).
2. In the Main program group, double click Control Panel.
3. In Control Panel, double click Printers.
4. Select **Printer → Create Printer**.
5. Make the *Printer Name* field empty. This field will be filled automatically when the *Print to* field is set.
6. Set the *Driver* field to the appropriate driver for the printer attached to the network computer.
7. Set the *Print to* field to **CLIENT\LPT1:** for a parallel printer or **CLIENT\COM1:** for a serial printer.
8. Click OK.

Configuring WinCenter Parameters in NCDware

NCDware contains settings to tune NCDware for your WinCenter sessions. From the NCDware console, select **Setup → Change Setup Parameters → WinCenter**. These settings take precedence over any similar settings in the WinCenter Administration tools' **Vendor and Station Configuration → Edit Configuration** dialog.

The NCDware items configurable for WinCenter are:

- Use WinCenter Colors — dampens the effect of colormap flashing, which occurs when the user switches from a non-Windows application to Windows application.

- **Window Size** — controls the size of the WinCenter window. This is the same as the Geometry setting in **WinCenter Administration → Vendor and Station Configuration → Edit Configuration**.
- **Number of Colors** — specifies the number of colors used in the WinCenter window. This is the same as the Depth setting in **WinCenter Administration → Vendor and Station Configuration → Edit Configuration**.
- **Audio Enabled** — enables or disables audio input and output. This is the same as the NoAudio setting in **WinCenter Administration → Vendor and Station Configuration → Edit Configuration**.

The values for the configurable WinCenter parameters are:

Item	Values
Use WinCenter Colors	<p>Disabled (no colormap flash dampening) — the default for HMX network computers</p> <p>Local Clients — A pseudo-color visual is used and the 20 Microsoft Windows standard colors are pre-allocated in the colormap.</p> <p>WM and Local Clients — The same as "Local Clients" except that the NCDware window managers also allocate colors from the Microsoft standard color cells.</p> <p>All Clients — A static color visual is used and the Microsoft standard colors are pre-allocated in the colormap.</p>
Window Size	<p>Default — Full Screen</p> <p>Full Screen — Covers the display screen</p> <p>640x480</p> <p>800x600</p> <p>1024x768</p> <p>1152x900</p> <p>1280x1024</p> <p>1600x1200</p>

Item	Values
Number of Colors	16 256 — the default TrueColor — Only available on HMXpro24 network computers
Audio Enabled	Enabled (button pushed in) — the default. Disabled

International and Non-Standard Keyboard Support

WinCenter Connect provides support for the following international and non-standard keyboards. The keyboard maps are located in the `%SYSTEMROOT%\system32\WinCen` directory. The supplied and supported keyboard types are:

Keyboard Filename	Purpose
belgfr.kbd	French Belgium keyboard
dec.kbd	DEC keyboard
dec108.kbd	DEC 108 keyboard
french.kbd	French keyboard
frenchx.kbd	French X terminal keyboard
german.kbd	German keyboard
italian.kbd	Italian keyboard
italianx.kbd	Italian X terminal keyboard
norsk.kbd	Norwegian/Scandinavian keyboard
spanishx.kbd	Spanish X terminal keyboard
svensk.kbd	Swedish keyboard
swfr.kbd	Swiss-French keyboard
swfrx.kbd	Swiss-French X terminal keyboard

Keyboard Filename	Purpose (Continued)
swgerman.kbd	Swiss-German keyboard
uk.kbd	United Kingdom keyboard
us.kbd	United States keyboard (default)
usx.kbd	United States X terminal keyboard

Changing WinCenter Keyboards

To change the WinCenter Connect keyboards, assist your users with the following instructions:

If users start WinCenter using . . .	Do this...
WinCenter PC Chooser	Click Properties and enter the keyboard <i>filename</i> in the Keymap File field.
WinCenter WS+	Click Configure and enter the keyboard <i>filename</i> in the Keymap File field. Alternately, use the <code>-keymapfile filename</code> option in the WinCenter.rc or .wincenrc file. See Appendix A for information about the <code>-keymapfile</code> option.
rsh or telnet	Use the <code>-keymapfile filename</code> option on the WinCenter command line, where " <i>filename</i> " is one of the files listed in the previous table. See the table on page A-5 for information about the <code>-keymapfile</code> option.
XDM	For NCD network computers, add the following resource setting to your NCD configuration file: <code>xserver-initial-x-resources = "WinCenter.keymapfile: filename"</code> ...where <i>filename</i> is the filename of a keymap file listed in the previous table. For network computers booted from WinCenter servers, the configuration file is: <code>\ttboot\usr\lib\X11\ncd\configs\ncd_std</code>
Any method	Start WinCenter Configuration and select the Vendor and Station Configuration tab. Select an item for the Name list, click Edit Configuration, and select KeymapFile from the options list.



Chapter 8

Configuring and Using NIS for User Validation

Overview

This section describes the features of WinCenter NIS, how user validation occurs, and the differences between NIS accounts and NT accounts under WinCenter.

NIS Features

WinCenter's Network Information Service (NIS) support allows the WinCenter server to access an existing UNIX NIS user account database. Instead of manually managing each WinCenter server's user accounts, users with valid NIS accounts are automatically allowed to log onto the WinCenter server.

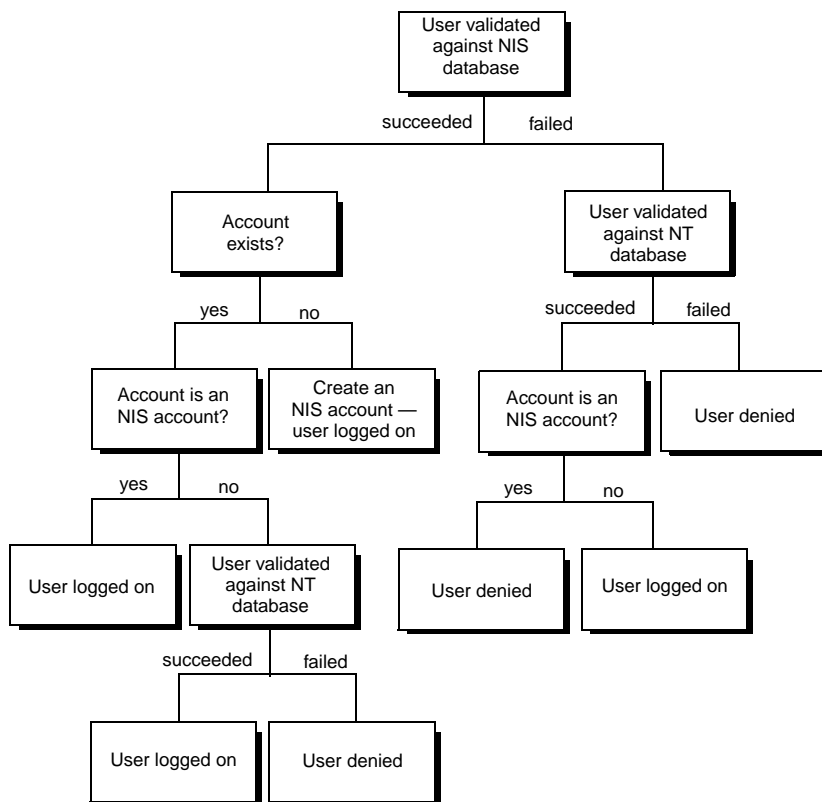
Features of WinCenter's NIS support include:

- Validating user accounts using the NIS password map
- Regulating logons to WinCenter stations and the Console by account type

- Automatic account creation on the WinCenter server using existing NIS database information
- Managing NIS users' properties
- Mapping NIS groups to NT groups
- Automatic access to NIS user's home directories when NIS provides an auto-mount map and the NFS InterDrive Client is installed

User Validation

The following chart describes what happens when a user logs on after NIS has been enabled:



Differences Between NIS Accounts and NT Accounts

NIS accounts are:

- Automatically created when NIS is enabled and a user logs on, or
- Created by placing **NIS account** in the **Administrative Tools** → **User Manager for Domains** → **User** → **New User** → **Description** field.

The following list explains the differences between an NIS account and an NT account:

- In order to log on to an NIS account, the user must be validated against the NIS database.
- Upon logon, the NIS account's full name field is set to match the full name in the NIS password map.
- If NIS groups are enabled, the NIS account is added to and removed from the appropriate NT groups as specified by the NIS password and groups databases, and by any configured group mapping. Users are only removed from NIS-maintained groups (those with the string **NIS group** in their description field), although users may be added to groups whether or not the groups are NIS maintained.
- Upon logon, if the *On account creation and logon* option is selected on the **User Properties** tab, the NIS account's home directory information is updated as specified on the **User Properties** tab.
- Changing the password via the dialog brought up with Ctrl+Alt+Del or **Program Manager** → **File** → **NT Security** also changes the password in the NIS password database. Changing the password through any other NT mechanism (such as the User Manager) does not change the password in the NIS password database.
- To unlock a screen-saver locked screen, the user must be validated against the NIS database.

- At login, if the *Set Paths at Login* option is selected on the **User Properties** tab, the NIS account's User Profile Path and Logon Script Name are updated as specified.

Enabling NIS

The NIS configuration utility can be used to both enable and disable NIS support. You must be an administrator to run the WinCenter **NIS Configuration** utility. Once you have enabled NIS, you can go into the utility and set the initial NIS configurations. Later, when there are changes in your environment, you can go back in and make changes to those configurations.

Note You have the choice of disabling NIS functionality through the **NIS** tab of the WinCenter **NIS Configuration** utility. If you decide not to use WinCenter NIS, then user validation is done in the standard NT fashion: If users are logging on to an NT domain, they are validated by the domain controller; if users are logging on to the local system, they are validated by the local system.

Start the NIS configuration utility by double clicking the **NIS Configuration** icon in the WinCenter Administration program group, then follow the procedures below.

Joining the NIS and NT Domains

To enable NIS and have the WinCenter server join the NIS domain, you need to set the following:

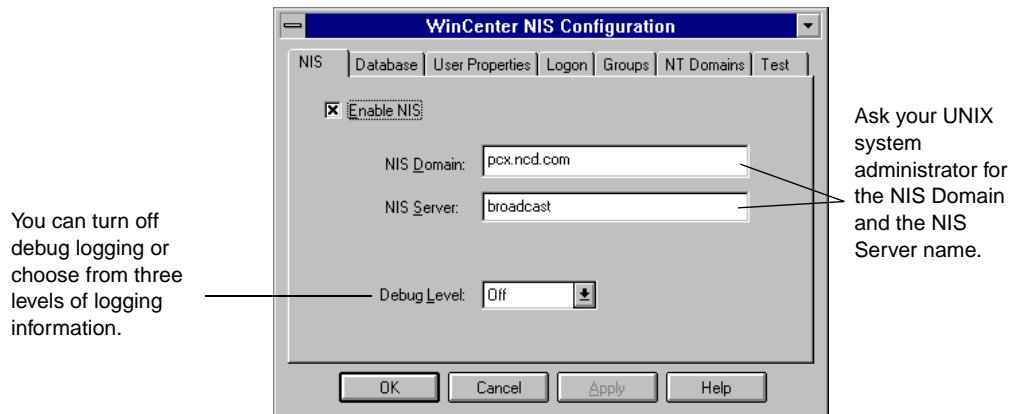
- NIS domain name
- NIS server name

In addition, if your WinCenter server is a member of an NT domain, you need to provide access to the NT domain's database as well. The following procedures explain how to do this.

Joining an NIS Domain

To have the WinCenter server join an NIS domain:

1. Select the NIS tab from the **WinCenter NIS Configuration** screen.



2. If the box is not already checked, select *Enable NIS*.
3. Enter the NIS Domain name.

Note The NIS domain name is unrelated to the NT domain name. The NIS domain name is often (but not always) the same as the DNS domain name. Your UNIX system administrator can provide you with the name.

4. Enter the name or the IP address of the NIS Server. Enter **broadcast** to broadcast on the local subnet for an NIS server for the specified NIS Domain.

5. Choose a debug level from the list:

Selection	Description
Off	No debug logging occurs.
Errors	Errors are logged.
Warnings	Warnings and errors are logged.
Information	Information, warnings, and errors are logged.

Debugging output is sent to the Event Log. See “Viewing the Event Log” on page 8-16 for detailed information.

6. Click Apply to save the changes.

Establishing Access to an NT Domain

Before You Begin

Be aware of the following:

- To establish access to an NT domain, NIS must be enabled (*Enable NIS* must be checked on the **NIS** tab). If NIS is disabled, only the **NIS** tab displays.
- The **NT Domains** tab displays only if you are running the WinCenter **NIS Configuration** utility on a system that is a member of an NT domain.

For logon management to function in an NT domain, you must supply the username and password of an NT domain administrator (for that domain).

Adding a New Domain

To add a new NT domain:

1. Select the **NT Domains** tab from the **WinCenter NIS Configuration** window.
2. Enter the NT domain name in the *NT Domain Name* box.
3. Enter an NT domain administrator’s username in the *Administrator’s Username* box.

4. Enter the NT domain administrator's password in the *Administrator's Password* box.
5. Click Add/Change.
6. Click Apply to save the changes.

Making Access Changes to an Existing NT Domain

To change access to an existing NT domain:

1. Edit the username and/or password fields.
2. Click Add/Change.
3. Click Apply to save the changes.

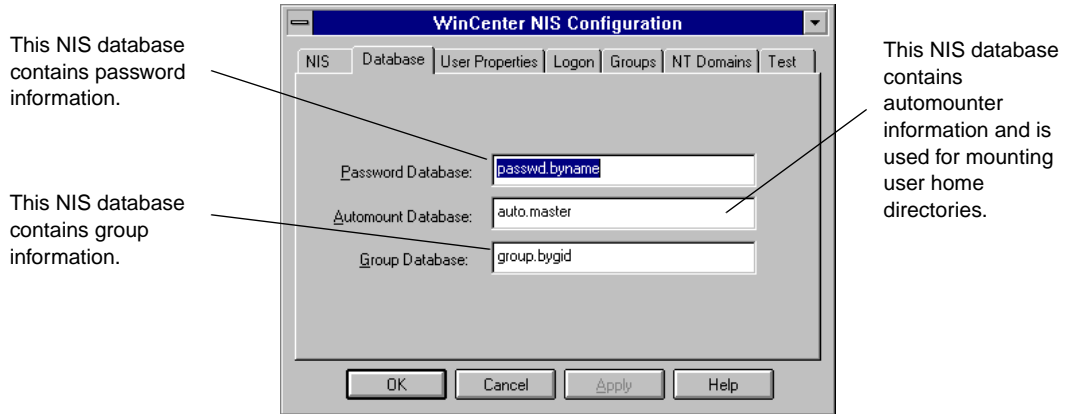
Deleting Access Information on an NT Domain

To delete NT domain administrator information for a specific domain:

1. Select the domain from the *NT Domain* listbox.
2. Click Delete.
3. Click Apply to save the changes.

Setting Up the NIS Map Databases

Before you can use the existing UNIX database information to manage your NIS user accounts, you need to direct NIS to the three NIS map databases containing the information to be used. To do this, select the **Database** tab from the **WinCenter NIS Configuration** window, and make the appropriate selections (as described below) as they pertain to the NIS server specified on the **NIS** tab.



To automatically mount a user's home directory:

Note WinCenter InterDrive NFS/NT must be installed and configured in order for auto-mounting to work.

1. Set the *Password Database* to the name of the that file on your NIS server. The default is **passwd.byname**.
2. Optionally, set the *Automount Database* to the name of that file on your NIS server. The database may be in either Sun or AMD format. This field and database are only used if *Use password database* is selected on the **User Properties** tab. The default is **auto.master**. With a Solaris 2.x NIS server, use **auto_master**.
3. Optionally, set the *Group Database* to the name of that file on your NIS server. Use this database only if you have selected *Enable NIS Groups* on the **Groups** tab. The default is **group.bygid**.

Managing User Accounts with NIS

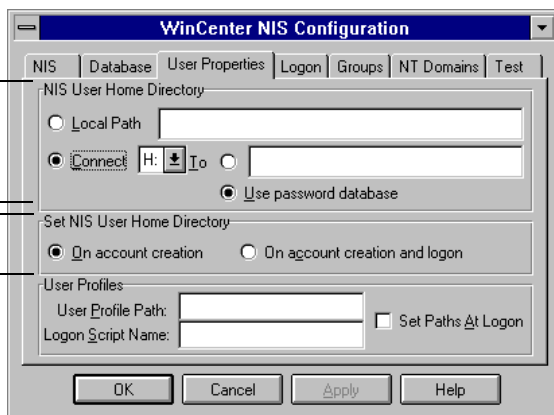
Setting a User's Home Directory

To set up an NIS user's home directory:

1. Select the **User Properties** tab from the **WinCenter NIS Configuration** screen.

You can set the NIS user's home directory to either a local or network path.

You can choose to set up home directory information just once (upon account creation) or each time the NIS user logs on.



2. Choose from one of the following selections in the *NIS User Home Directory* group:

Selection	Description
Local Path	Allows you to enter a path on a local machine. This path is used as the NIS user's home directory. The NIS user's username is automatically appended to the pathname.
Connect	Connects the NIS user to a network machine. Select a drive letter to connect to the NIS user's network path.

Selection	Description (Continued)
To	<p>The network path that will be used as the NIS user's home directory. You can:</p> <ul style="list-style-type: none"> • Enter a network path. The NIS user's username is automatically appended to the pathname. • Select <i>Use password database</i> to automatically mount the user's home directory as specified in the Database → Automount Database file. <p>Note WinCenter InterDrive NFS/NT must be installed and configured in order for auto-mounting to work.</p>

3. Select one of the following two options from the *Set NIS User Home Directory* group:

Selection	Description
On account creation	Sets home directory information only when the account is first created. %username% will be replaced with the actual username at login.
On account creation and logon	Sets or updates home directory information when the account is first created and whenever the NIS user logs on. %username% will be replaced with the actual username at login.

Tip If you select the *On account creation and logon* option and then change any of the database information, the user's home directory could change. Select the *On account creation* option if you want any new information to be applicable only to new NIS users.

4. Enter a *User Profile Path* for an NIS user. This is the directory path and filename of a user profile created in the **Administrative Tools → User Profile Editor**.
5. Enter a *Logon Script Name* for an NIS user. Login scripts are **.bat** or **.cmd** files.

6. If you want the *User Profile Path* and *Logon Script* applied to the NIS user's account at each logon, check *Set Paths At Logon*.

Leave *Set Paths At Logon* unchecked to apply these profiles only when a user initially creates an NIS account.

Controlling Groups for NIS Users

You can control the group to which NIS users belong using the **Groups** tab. The *Enable NIS Groups* option on that tab determines how groups are applied:

If the NIS Groups function is . . .	Then . . .
Enabled	NIS users are added to and removed from NT groups as determined by the Group Mapping feature. Logons may then be restricted to members of specific NIS groups. If an NT group with the appropriate name does not exist, one is automatically created. Groups created in this fashion are considered to be "NIS maintained" and can be identified by the string NIS group in the description field of the group under the User Manager.
Disabled	New NIS accounts are added to the NT groups as specified in the <i>Default NT Group</i> box in the Groups tab.

Mapping NIS Groups to NT Groups

When an NIS user logs on, the user's NIS groups are determined by the NIS password and group maps specified on the **Database** tab (see "Setting a User's Home Directory" on page 8-9). By default, NIS groups are mapped to NT groups of the same name. However, with the group mapping feature, you can choose to:

- Map NIS groups to specific NT groups.
- Ignore an NIS group.
- Remove a previously defined group map.

To map an NIS group to a specific NT group:

1. Select *Enable NIS Groups*.
2. Enter the NIS group name in the *NIS Group* box.
3. Enter the NT group name in the *maps to NT Group* box.
4. Click Add/Change.
5. Click Apply to save the changes.

To ignore an NIS group:

Note We recommend that you configure WinCenter NIS to ignore an NIS “Administrator” group.

1. Select *Enable NIS Groups*.
2. Enter the NIS group name in the *NIS Group* box.
3. Leave the *maps to NT Group* box empty.
4. Click Add/Change.
5. Click Apply to save the changes.

To remove an NIS group mapping:

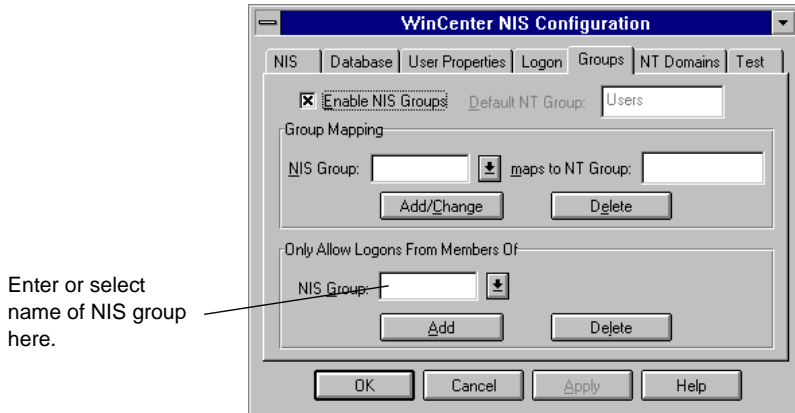
1. Select the NIS group from the *NIS Group* listbox.
2. Click Delete.
3. Click Apply to save the changes.

Restricting Group Logon

By default, any NIS user who is successfully validated against the NIS password database is allowed to log on. You can, however, restrict NIS logons to members of certain NIS groups.

To restrict NIS logons to specific groups:

1. Enter (or select) the NIS group name in the *NIS Group* box within the *Only Allow Logons From Members Of* area.



2. Click Add.

To remove an NIS group from the list of those allowed to log on:

1. Select the NIS group from the *NIS Group* box.
2. Click Delete.

To allow NIS logons from all NIS groups, delete all NIS groups from the *NIS Group* box.

Restricting Logon

With NIS, you can control:

- Where different types of accounts are allowed to log on.
- Whether or not an account is created automatically when a new user logs on.

Allowing or Denying Logon by Account Type

To allow or deny logon from the Console or WinCenter stations, select the **Logon** tab from the **WinCenter NIS Configuration** window. Make the appropriate selections for both the Console and the WinStation columns as shown in the following table.

Selection	Refers to . . .
NIS Accounts	User accounts that are created automatically when NIS users log on for the first time or manually created NT accounts with NIS account in the Administrative → Tools → User Manager for Domains → Description field.
NT Accounts	User accounts that are created normally using the User Manager for Domains.
NT Administrator Account	The account with the username Administrator.

Accounts that are not checked are not allowed to log on from the Console.

This account is always allowed to log on at the Console.

Accounts that are checked are permitted to log on from a WinCenter station.

This is the account with the username Administrator; it is not just an account in the administrator group.

If left unchecked (default), NIS automatically creates new accounts for first-time NIS users.

Note If none of the boxes on the **Logon** tab are checked, no one is allowed to log on to a WinCenter station, and only the NT administrator is allowed to log on to the console.

Enabling and Disabling Automatic Account Creation

To automatically create an NIS account when a new NIS user logs on to a WinCenter station, leave the *Don't create new NIS accounts* box unchecked.

If, however, you want to restrict access but still use other NIS functions, select the *Don't create new NIS accounts* box. Access to the system is allowed for existing NIS users but denied to NIS users who do not yet have an NIS account. You still have the ability, though, to create NIS accounts manually; see the following section for more details.

If you want to create accounts using **Administrative Tools → User Manager for Domains** and have them managed by WinCenter NIS, change the account's Description field to **NIS account**.

If you want to have WinCenter NIS manage an existing NT user's account, the username must be the same in NIS and NT. Using **Administrative Tools → User Manager for Domains** change the account's Description field to **NIS account**.

Note The procedure above requires administrator capability on the WinCenter server.

Testing User Accounts

You can run a quick test of a user account if the user is experiencing problems logging on. To do this:

1. Select the **Test** tab from the **WinCenter NIS Configuration** screen.
2. Enter the username in the *Username* box.
3. Click **Test**. The user's NIS password information and home directory are displayed below in the Results group.

4. If you detect a problem, you can view diagnostic information by clicking Diagnostics.

Note This procedure is useful for checking NIS operation.

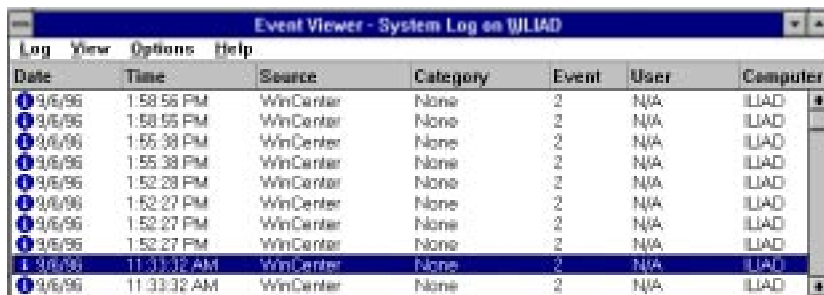
Viewing the Event Log

You can view NIS start-up and login information from the Event Log.

Note The amount of information logged depends on the debug level that has been set; see “Joining an NIS Domain” on page 8-5 for more information on changing the debug level.

To view WinCenter start-up information:

1. From the Administrative Tools program group, double click the **Event Viewer** icon.
2. Select **Log** → **System**.



Date	Time	Source	Category	Event	User	Computer
3/6/96	1:58:56 PM	WinCenter	None	2	N/A	IJLIAD
3/6/96	1:58:56 PM	WinCenter	None	2	N/A	IJLIAD
3/6/96	1:55:38 PM	WinCenter	None	2	N/A	IJLIAD
3/6/96	1:55:38 PM	WinCenter	None	2	N/A	IJLIAD
3/6/96	1:52:27 PM	WinCenter	None	2	N/A	IJLIAD
3/6/96	1:52:27 PM	WinCenter	None	2	N/A	IJLIAD
3/6/96	1:52:27 PM	WinCenter	None	2	N/A	IJLIAD
3/6/96	1:52:27 PM	WinCenter	None	2	N/A	IJLIAD
3/6/96	11:31:32 AM	WinCenter	None	2	N/A	IJLIAD
3/6/96	11:33:32 AM	WinCenter	None	2	N/A	IJLIAD

3. Double click any item in the Event Log with `winCenter` as the Source.



To view WinCenter NIS login information:

1. From the Administrative Tools program group, double click the **Event Viewer** icon.
2. Select **Log → Application**.
3. Double click any item in the Event Log with `wncnis` or `wncrpc` as the Source.



Chapter 9

Configuring WinCenter WS+

This chapter provides alternative, advanced methods for using and configuring WinCenter WS+. The following procedures describe how to:

- Set default values for the WinCenter WS+ Chooser
- Create and edit startup files
- Use keywords in startup files to specify options such as screen resolution, working directory, and additional hosts

Setting Defaults for All Users

This section explains how system administrators can specify identical default settings for multiple users of WinCenter WS+.

These procedures explain how to:

- Add default entries to the WinCenter WS+ Chooser's WinCenter Host list.
- Modify the configuration of WinCenter servers already in the list. You can change the description shown for the WinCenter server, configure the window that displays the WinCenter

desktop, and set other options that control how the WinCenter WS+ Chooser operates.

- Delete WinCenter servers from the list.
- Configure the WinCenter WS+ Chooser by editing startup files.

When you save your changes, WinCenter WS+ writes them to a startup file in your home directory. These procedures describe how to rename and relocate this startup file so that it applies to all users.

If WinCenter WS+ detects a **WinCenter.rc** startup file in `/usr/lib/X11/ncd`, it reads that file first, and then looks for a user-specific startup file named `.wincenrc` in each user's home directory. This enables the administrator to set options globally while users set other options according to their personal preferences. To change the location of the WinCenter file, set the `WSPLUSCONFIG` environment variable in your user's UNIX shells.

The next sections employ the WinCenter WS+ Chooser to set defaults. For instructions on how to create and edit startup files using a text editor, see "Configuring the WinCenter WS+ Chooser by Editing a Startup File" on page 9-6.

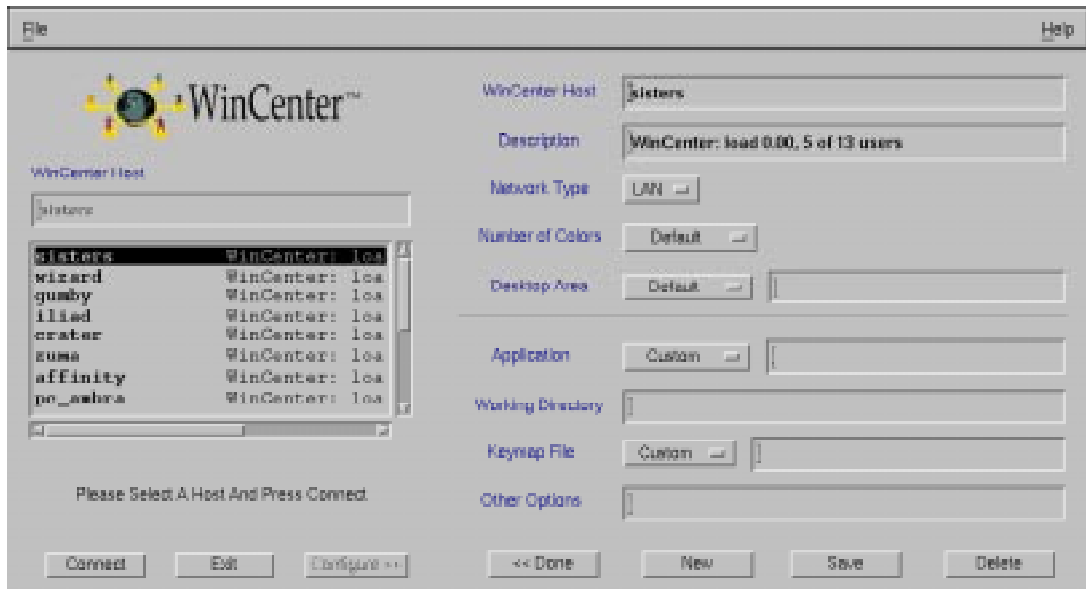
Creating a Host List

Use this procedure to add entries to the WinCenter WS+ Chooser's WinCenter Host list. By default, this list automatically contains all hosts that respond to a network broadcast, which are typically all WinCenter servers on the same subnet. This procedure enables you to add other hosts to the list.

Note To turn off the automatic display of hosts so that you can create a completely customized list, see "Controlling How the WinCenter WS+ Chooser Operates" on page 9-11.

1. Start the WinCenter WS+ Chooser. For instructions, see "Starting the WinCenter WS+ Login Chooser" on page 13-8.

2. Click Configure.



3. Click New.

4. Use these fields to add a new host:

- a. Replace any text in the WinCenter Host field with the name or IP address of the WinCenter server.
- b. Replace any text in the Description field with a brief description of this server.
- c. Modify the default values in any of the remaining fields. For a description of each field and its default value, select Help from the menu bar.

Note To add entries to the Application or Keymap File lists, you must edit the startup file directly. See “Using Keywords” on page 9-8 for more information.

5. Click Save to save your changes to the **.wincenrc** file in your home directory.
6. Rename the **.wincenrc** file in your home directory **WinCenter.rc**.

7. Do one of the following:
 - To set defaults for users of this workstation only, move the **WinCenter.rc** file to **/usr/lib/X11/ncd**.
 - To set different defaults for multiple workstations, place a copy of **WinCenter.rc** in **/usr/lib/X11/ncd** on each workstation where **WS+** is installed.
 - To set defaults identically for multiple machines, leave the **WinCenter.rc** file on the network server machine. On each workstation, use the **ln** command to connect the **WinCenter.rc** file to **/usr/lib/X11/ncd** on that workstation.

Modifying Entries in the WinCenter Host List

Use this procedure to modify the configuration of hosts displayed in the WinCenter WS+ Chooser's WinCenter Host list.

Note The WinCenter Host list can contain multiple instances of the same host. For example, if you change the configuration of an existing WinCenter server, it appears twice in the list—once with its old configuration and again with its new configuration.

1. Start the WinCenter WS+ Chooser. For instructions, see "Starting the WinCenter WS+ Login Chooser" on page 13-8.
2. Select the host whose configuration you want to modify from the WinCenter Host list.
3. Click Configure.
4. Modify the values in any of the fields that appear in the right half of the dialog. For a description of each field and its default value, select Help from the menu bar.
5. Click Save to save your changes to the **.wincenrc** file in your home directory.
6. Rename the **.wincenrc** file in your home directory **WinCenter.rc**.
7. Do one of the following:
 - To set defaults for users of this workstation only, move the **WinCenter.rc** file to **/usr/lib/X11/ncd**.

- To set different defaults for multiple workstations, place a copy of **WinCenter.rc** in **/usr/lib/X11/ncd** on each workstation where **WS+** is installed.
- To set defaults identically for multiple machines, leave the **WinCenter.rc** file on the network server machine. On each workstation, use the **ln** command to connect the **WinCenter.rc** file to **/usr/lib/X11/ncd** on that workstation.

Deleting Entries from the WinCenter Host List

Use this procedure to remove entries from the WinCenter Host list. The hosts you remove will no longer appear by default in the list.

Note This procedure only removes hosts that you added to the list using the New and Save buttons. To remove hosts that **WS+** displays automatically, see “Controlling How the WinCenter **WS+** Chooser Operates” on page 9-11.

1. Start the WinCenter **WS+** Chooser. For instructions, see “Starting the WinCenter **WS+** Login Chooser” on page 13-8.
2. Select the host you want to delete from the WinCenter Host list.
3. Click Configure.
4. Click Delete.
5. Click Save to save your changes to the file **.wincenrc** in your home directory.
6. Rename the **.wincenrc** file in your home directory **WinCenter.rc**.
7. Do one of the following:
 - To set defaults for users of this workstation only, move the **WinCenter.rc** file to **/usr/lib/X11/ncd**.
 - To set different defaults for multiple workstations, place a copy of **WinCenter.rc** in **/usr/lib/X11/ncd** on each workstation where **WS+** is installed.

- To set defaults identically for multiple machines, leave the **WinCenter.rc** file on the network server machine. On each workstation, use the *ln* command to connect the **WinCenter.rc** file to **/usr/lib/X11/ncd** on that workstation.

Configuring the WinCenter WS+ Chooser by Editing a Startup File

This section provides information about how to create and edit startup files using a text editor. You can use startup files to:

- Add default entries to the WinCenter WS+ Chooser's WinCenter Host list. By default, this list automatically contains all WinCenter servers that respond to a network broadcast, which are typically all WinCenter servers on the same subnet. This procedure enables you to add other WinCenter servers to the list.
- Set defaults for other WinCenter WS+ Chooser fields, such as the number of colors used in the WinCenter window and the size of the WinCenter desktop.
- Specify default entries for the WinCenter WS+ Chooser's Application and Keymap File lists.
- Set other options that control how WS+ operates. For example, you can turn off the automatic display of WinCenter servers to create a completely customized list.
- Set global defaults for all users of a single workstation or multiple workstations.
- Set user-specific defaults for a single user.

Startup File Locations

If WinCenter WS+ detects a **WinCenter.rc** startup file in **/usr/lib/X11/ncd**, it reads that file first, and then looks for a user-specific startup file named **.wincenrc** in each user's home directory. This enables the system administrator to set options

globally while users set other options according to their personal preferences. To change the location of the WinCenter file, set the `WSPLUSCONFIG` environment variable in your user's UNIX shells.

Creating or Editing a Startup File

To create or edit a startup file:

1. Use a text editor to create a new file or open an existing startup file.
2. Enter or modify keywords and their associated values. See "Using Keywords," below.
3. Do one of the following:
 - To set defaults for a single user, name the file `.wincenrc` and place it in the user's home directory.
 - To set defaults for users of this workstation only, name the file `WinCenter.rc` and move it to `/usr/lib/X11/ncd`.
 - To set different defaults for multiple workstations, name the file `WinCenter.rc` and place a copy in `/usr/lib/X11/ncd` on each workstation.
 - To set defaults identically for multiple machines, name the file `WinCenter.rc` and leave it on the network server machine. On each workstation, use the `ln` command to connect the `WinCenter.rc` file to `/usr/lib/X11/ncd` on that workstation.

Using Keywords

Each section in a **WinCenter.rc** or **.wincenrc** file consists of a bracketed ([]) keyword on a single line, followed by values for the keyword. For example:

```
[APPLICATIONS]
"Word 7.0" "c:\\Microsoft Office\\Office\\winword"

[OPTIONS]
UserChanges 0
```

If the keyword accepts multiple values, each value must occupy a separate line. You must enclose any value that contains white space in quotation marks (" ").

WinCenter WS+ processes backslashes (\) and quotation marks (") as control characters. To use a quotation mark literally, precede it with a backslash (\"). To use a backslash literally, such as in a Windows path name, you must specify double backslashes (\\).

The following sections provide the syntax, a description, and an example for each keyword.

Adding WinCenter Servers

Use the [ENTRIES] keyword to specify WinCenter servers that appear by default in the WinCenter WS+ Chooser's WinCenter Host list. By default, this list automatically contains all WinCenter servers that respond to a network broadcast, which are typically all WinCenter servers on the same subnet. This keyword enables you to add other WinCenter servers to the list.

Note To turn off the automatic display of WinCenter servers so that you can create a completely customized list, see "Controlling How the WinCenter WS+ Chooser Operates" on page 9-11.

Syntax: [ENTRIES]
"description" host_name [resolution] [colors]
[working_dir] [application] [other_options]
[0 | 1] [keymap_file]
.
.
.

Example: [ENTRIES]
"hood" hood 640x480 8 "" "" "-username sam" 0 ""

The example above specifies a description and host name for the WinCenter server "hood," a 640 x 480 resolution, 256 colors (8 bits), no working directory, no initial program started on the WinCenter server, the user name "sam" entered in the WinCenter login dialog, a LAN (0) connection, and no keymap file (the default is used). The **-username** option is a value for the [other_options] parameter.

To skip one or more parameters, you must insert two double quotation marks ("") for each parameter you skip. When you've specified the last optional parameter, you can leave the rest of the line blank. WS+ assigns default values to any value that you omit.

This option...	Specifies...
<i>description</i>	A description for the WinCenter server that will appear in the WinCenter Host list.
<i>host_name</i>	The name or IP address of a WinCenter server.
<i>resolution</i>	The size and location of the WinCenter desktop. Use the syntax <i>widthxheight+ -xoff+ -yoff</i> . You can specify any value between 640 x 480 and 6000 x 6000.

This option...	Specifies...
<i>colors</i>	The number of colors to use in the WinCenter window. Possible values are 2 (monochrome), 16, 256, true, true15, true16, and true24. By default, WS+ uses the highest number that doesn't cause colormap flashing or performance degradation. If your display can support more than 8 bits of color or one colormap, WS+ uses 256 colors; otherwise, it uses 16 colors. If you have a monochrome monitor, WS+ uses 2.
<i>working_dir</i>	The directory that WinCenter changes to when starting the session. By default, it changes to your home directory.
<i>application</i>	A Windows NT application that you want to start automatically when starting a WinCenter session.
<i>other_options</i>	Any of the <i>wincenter</i> command-line options listed in Appendix A.
0 1	Whether the host is accessed via a LAN (0) or a WAN (1). This option requires WinCenter 2.0 or later. The default value is LAN (0).
<i>keymap_file</i>	The name of a keyboard description file. This option requires WinCenter 2.0 or later.

Setting Defaults

Use the [DEFAULT] keyword to set the default values that appear in the configuration portion of the WinCenter WS+ Chooser when a user clicks New.

Syntax: [DEFAULT]
(See the [ENTRIES] keyword syntax above.)

Example: [DEFAULT]
"New Host" "name" "1024x768" 4 "" "" "" 0 ""

The example above displays these default values in the WinCenter WS+ Chooser: "New Host" in the Description field, "name" in the WinCenter Host field, 1024x768 on the Desktop Area button, and 16 (4 bits of color) on the Number of Colors button.

Adding Applications

Use the [APPLICATIONS] keyword to specify applications that appear by default in the WinCenter WS+ Chooser's Application list. This lets users select an application by name, without having to know its location.

Syntax: [APPLICATIONS]
"program_name" "program_path"
.
.
.

Example: [APPLICATIONS]
"Word 7.0"
"c:\Microsoft Office\Office\winword.exe"

Adding Keymap Files

Use the [KEYMAPFILES] keyword to specify keymap files that appear by default in the WinCenter WS+ Chooser's Keymap File list. This lets users select a description of the keyboard without having to know the location of the keymap file. WinCenter keymap files are located in the **system32\WinCen** directory on the WinCenter server.

Syntax: [KEYMAPFILES]
"description" "keymap_file"
.
.
.

Example: [KEYMAPFILES]
"French" "french.kbd"

Controlling How the WinCenter WS+ Chooser Operates

Use the [OPTIONS] keyword to set one or more of three possible options that control how the WinCenter WS+ Chooser operates.

Syntax: [OPTIONS]
[UseXDMResults 0 | 1]
[UserChanges 0 | 1]
[ActionOnStartup hide | quit | none]

Example: [OPTIONS]
UseXDMResults 1
UserChanges 0
ActionOnStartup quit

The example above displays all WinCenter servers in the WinCenter Host list that respond to XDM (X Display Manager) broadcasts, disables the use of any user-specific startup files (`~/wincenrc`), and directs the WinCenter WS+ Chooser to exit after a WinCenter session has started.

The table below explains each option in detail.

Use this option...	To do this...
UseXDMResults 0 1	Display (1) or suppress the display (0) of WinCenter servers that respond to XDM broadcasts in the WinCenter Host list. Typically, all WinCenter servers on the same subnet are displayed. By default, WinCenter WS+ displays (1) XDM-responsive WinCenter servers.
UserChanges 0 1	Specify whether WinCenter WS+ reads (1) or does not read (0) users' <code>.wincenrc</code> files in their home directories. If <code>UserChanges 0</code> appears in the <code>WinCenter.rc</code> file, the Configure button is greyed out and the user's <code>.wincenrc</code> file is not read. If <code>UserChanges 0</code> appears in the user's <code>.wincenrc</code> file, that <code>.wincenrc</code> file is read and the Configure button is greyed out, preventing any further changes. By default, WinCenter WS+ reads (1) users' <code>.wincenrc</code> files.
ActionOnStartup hide quit none	Specify what the WinCenter WS+ Chooser does after the WinCenter session begins: iconify the window (<code>hide</code>), exit (<code>quit</code>), or leave the window open (<code>none</code>). By default, WinCenter WS+ iconifies the window (<code>hide</code>).

Sample Startup File

```
[DEFAULT]
"New entry" "unknown" 1024x768 8 "" "" ""
# Specifies default text for the WinCenter WS+ Chooser's WinCenter Host
# and Description fields, a default size of 1024x768 for the WinCenter
# desktop, and 256 colors (8 bits) for the window that displays the
# WinCenter desktop.

[ENTRIES]
"Adams NT" "adams" 1024x768 4 "c:\\users\\nels" "notepad.exe"
"Hood NT" "hood" 640x480 24 "" "" "-username nels"
"Hood Excel" "hood" 1280x1024 8 "" "c:\\msoffice\\excel" "-username al"
# Specifies hosts for the WinCenter WS+ Chooser's WinCenter Host list.

[APPLICATIONS]
"Word 7.0" "c:\\Microsoft Office\\Office\\winword"
# Specifies Microsoft Word 7.0 as a default entry in the WinCenter WS+
# Chooser's Application list.
```




Chapter 10

Scripts for WinCenter Administration

Windows Scripts

This section presents a script for initiating multiple shadowing sessions of your WinCenter session.

Starting Shadowed Sessions on Multiple Hosts

With a DOS batch file, you can use a command-line utility (`wcshadow`) to send a shadow of your WinCenter session to multiple hosts. To do this, create a DOS batch file containing:

```
wcshadow -display displayname1
wcshadow -display displayname2
wcshadow -display displayname3
.
.
.
```

where *displayname* designates the name of the device where the shadowed session is to appear.

For example, an instructor teaching Microsoft Excel wants to display WinCenter and Microsoft Excel on each of his five students' PCs. Each PC has the WinCenter PC Client installed and each student has started the WinCenter Chooser on their PC.

On the instructor's WinCenter station, the instructor has created the following **shadow.bat** file using Microsoft Notepad:

```
wshadow -display pc_bob
wshadow -display pc_sally
wshadow -display pc_joe
wshadow -display pc_sam
wshadow -display pc_julie
```

The instructor now starts Microsoft Excel on his WinCenter station, selects Program Manager's **File** → **Run**, and enters:

```
M: \shadow.bat
```

Shadows of the instructor's session appear on the student's PCs.

UNIX Scripts

This section contains several scripts for launching Windows applications from the UNIX desktop, starting WinCenter if necessary. You may need to customize the scripts for your site. For help, contact NCD Technical Support.

The scripts in this section are:

- *wnccheck* checks to see if a user has a running WinCenter session
- *wncwait* starts up WinCenter if necessary, and waits until the user logs in before returning
- *wncexcel*, *wncword* are examples of simple scripts that use *wnccheck* and *wncwait* to let users start Excel or Word on a data file using a single command

Check for WinCenter Sessions (wnccheck)

```
#!/bin/sh -f
# see if WinCenter is running for user
#
# usage: wnccheck nthost <username>
#
# prints 'yes' if the user is on the host, 'no'
# otherwise.
# A 0 return code #means 'yes', non-zero #means 'no'.
#
nullcmd=mem
username=$USER
case $# in
0)
    echo Usage: `expr // $0 : '.*\/\(.*\)'` 'NT-hostname [username]'
    exit 1
    ;;
1)
    hostname=$1
    ;;
*)
    hostname=$1
    username=$2
    ;;
esac
response=`rsh $hostname -l $username $nullcmd 2>&1`
case $response in
*WinStation*)
    echo "no"
    exit 1
    ;;
*)
    echo "yes"
    exit 0
    ;;
esac
```

Start a WinCenter Session (wncwait)

```
#!/bin/sh -f
#
# start up WinCenter, and wait until its ready to
# accept rsh commands
#
# usage: wncwait NThost <wincenter arguments>
#
# returns 0 once its finally up, otherwise non-zero
#
username=$USER
wnccmd="wincenter -display $DISPLAY -depth 4 -geometry =1024x768+20+20"

# how many attempts to be made
maxtries=10

# duration of sleep between checks
delay=3

case $# in
0)
    echo Usage:`expr // $0 : '.*\/\(.*\)` `NT-hostname[wincenter arguments]`
    exit 1
    ;;
1)
    hostname=$1
    ;;
*)
    hostname=$1
    wnccmd=
    shift
    ;;
esac

# first see if its even necessary
case `wnccheck $hostname` in
yes)
    exit 0
    ;;
*)
    ;;
```

```
esac

# start up WinCenter
if [ "$wnccmd" ] ; then
    response=`rsh $hostname $wnccmd`
else
    response=`rsh $hostname wincenter $*`
fi

case $response in
*started*)
    ;;
*)
    echo "Failed to start up WinCenter: $response"
    exit 1
    ;;
esac

# now wait till rsh can work
tries=0
while true
do
    case `wnccheck $hostname` in
    yes)
        exit 0
        ;;
    no)
        tries=`expr $tries + 1`
        sleep $delay
        ;;
    esac

    if [ $tries -gt $maxtries ] ; then
        echo "Timed out waiting for user to log in"
        exit 1
    fi
done
```

Start MS Excel from a WinCenter Host (wncexcel)

```
#!/bin/sh
# copies arguments to NThost and starts up Excel on
# them
# usage: wncexcel NThost files...

excelpath="c:\\Microsoft Office\\Office\\excel"
destdir=tmp
if [ $# -lt 2 ]; then
    echo Usage: `expr //\$0 : '.*\\/\\(.*\\)'` 'NT-hostname file ...'
    exit 1
fi

hostname=$1
shift

if [ `wncwait $hostname` ]; then
    exit 1
fi

rcp $* $hostname:$destdir
rsh $hostname $excelpath $destdir\\`basename $1` &
```

Start MS Word from a WinCenter Host (wncword)

```
#!/bin/sh
#
# copies arguments to NThost and starts up Word on
# them
#
# usage: wncword NThost files...

wordpath="c:\\Microsoft Office\\Office\\winword"
destdir=tmp

if [ $# -lt 2 ]; then
    echo Usage: `expr //\$0 : `.*\\/\\.*)`` `NT-hostname file ...'
    exit 1
fi

hostname=$1
shift

if [ `wncwait $hostname` ]; then
    exit 1
fi

rcp $* $hostname:$destdir
rsh $hostname $wordpath $destdir\\`basename $1` &
```


Chapter 11

WinCenter Connect Resources

Resource settings modify the default action and appearance of the WinCenter desktop. UNIX workstations and network computers compatible with the X Window System can set and use the following resources.

Resources for UNIX workstations are placed in an **Xdefaults** file in your UNIX home directory. Then use the *xrdb* command to install the resources on your workstation. For more information about resources, refer to your host documentation for the *xrdb* command.

NCD network computer users can add the resource settings to their NCD configuration file:

```
xserver-initial-x-resources = "WinCenter.colors : 256\\n
                               WinCenter.resolution : Default\\n
                               WinCenter.audio : Off"
```

For NCD network computers booted from the WinCenter server, the configuration file is in:

```
\tftpboot\usr\lib\X11\ncd\configs\ncd_std
```

Chapter 11: WinCenter Connect Resources

Resource ¹	Resource values	Meaning
WinCenter.depth	1,4,8,15,16,24	See “-depth” on page A-3.
WinCenter.colors ²	2,16,256,true15,true16,true24,true	See “-colors” on page A-3.
WinCenter.geometry	widthxheight+/-xoff+/-yoff	See “-geometry” on page A-5.
WinCenter.resolution ²	widthxheight+/-xoff+/-yoff	See “-resolution” on page A-6.
WinCenter.borderWidth	integer	See “-bw” on page A-2.
WinCenter.audio	on, off	See “-noaudio” on page A-6.
WinCenter.keymapfile	filename	See “-keymapfile” on page A-5.
WinCenter.dibCache	cache_size	See “-cache” on page A-2.
WinCenter.compression	none,minimal,good,on	See “-image” on page A-5.
WinCenter.localDraw	on, off	See “-wan” on page A-7.
WinCenter.wan	on, off	See “-wan” on page A-7.
WinCenter.disconnect	on, off	See “-dco” on page A-3.
WinCenter.backingStore	none,mapped,always,default	See “-bs” on page A-2.
WinCenter.fontServer	on, off	See “-fs” on page A-4 and “-nofs” on page A-6.
WinCenter.windowsCursor	on, off	See “-wincursor” on page A-7.
WinCenter.encryption	off, login (on), always	See “-encryption” on page A-4.
WinCenter.serialBase	serial_daemon_port	See “-serial” on page A-6.
WinCenter.domain	Domain Name	See “-domain” on page A-4.
WinCenter.workingDirectory	Working Directory	See “-working_directory” on page A-7.
WinCenter.username	username	See “-username” on page A-6.
WinCenter.password	password	See “-password” on page A-6.
WinCenter.initialProgram	Initial Program	See “-initial program” on page 13-15.

¹ Resources are also valid when set to the hostname of the WinCenter server. For example, if engserver is the name of a WinCenter server, then engserver.depth is a recognized resource setting.

² If NCDware WinCenter parameters are set, they have precedence. See “Configuring WinCenter Parameters in NCDware” on page 7-42.



Part 2

Using WinCenter Connect

This part of the *WinCenter Connect Installation and User's Guide* describes how to use WinCenter Connect. The information in the following chapters is intended for anyone who uses WinCenter Connect. This part contains:

- Chapter 12 — Overview for Users
- Chapter 13 — Starting a WinCenter Session
- Chapter 14 — Using WinCenter
- Chapter 15 — Using Windows NT During a WinCenter Session
- Appendix A — Using the Command Line
- Appendix B — Product Support



Chapter 12

Overview for Users

How to Use this Manual

This manual is separated into the following two parts:

- Part 1, “WinCenter Installation and Administration,” is for use by system administrators when installing and configuring WinCenter Connect.
- Part 2, “Using WinCenter Connect,” is for use by anyone who uses WinCenter Connect.

At the back of this manual are a glossary and an index.

Features of WinCenter Connect

WinCenter Connect includes:

- Universal desktop management support:
 - WinCenter Desktop Icon provides a tabbed user interface to WinCenter's features. In the WinCenter Desktop Icon you see information about WinCenter and you can:
 - Launch remote applications (UNIX, Java, X Windows) to display within the WinCenter desktop.
 - Start a window manager to control remote applications within the WinCenter desktop.
 - Encrypt session data.
 - Cut and paste text and graphics between windows.
 - Shadow other WinCenter sessions for diagnostic purposes.
 - Adjust audio input and output.
 - WinCenter Login Choosers — WinCenter WS+ for HP, IBM, Silicon Graphics and Sun UNIX workstations; and WinCenter PC Client for Windows 3.1, Windows 95, NT 4.0, or NT 3.51 PCs (personal computers) providing:
 - A graphical chooser for selecting a WinCenter server and starting WinCenter on your workstation or PC,
 - Sound from NT applications directed to your local audio port, and
 - The ability to use your local floppy drive to read and write NT disks.
 - WinCenter server selection based on the load or the number of server users as displayed in the WinCenter Login Chooser.
 - Support for your local floppy disk drive or printer to send or receive Windows NT data.

- Command-line methods for launching WinCenter.
- Support for MPEG video on your NCD HMX network computer.
- NCD Network Computers Quick Start support:
 - Boot support for Explora and HMX network computers from WinCenter servers.
 - Support for DHCP, TFTP, and Bootp startup methods.
 - Minimal WinCenter server configuration and no NCD network computer configuration needed to boot NCD network computers from WinCenter servers.

Online Help

This part of the *WinCenter Connect Installation and User's Guide* contains introductory and conceptual information about WinCenter Connect, as well as procedures using the product. The online help for these products provide additional information.

For users of WinCenter Connect, online help is available from the Help buttons of the following:

- WinCenter Chooser window on your PC
- WinCenter WS+ Chooser window on your UNIX workstation
- WinCenter Desktop Icon window

For information on contacting NCD Product Support, see Appendix B, "Product Support".

Chapter 13

Starting a WinCenter Session

This chapter describes how to start a WinCenter Connect session on your WinCenter station.

Selecting a Start Method for WinCenter Connect

To start WinCenter Connect—and thereby launch Windows NT to your desktop device, you have six choices:

Method	Desktop Device
Selecting a WinCenter server from a graphical login “chooser” list. See “Locating the Login Chooser” on page 13-2.	<ul style="list-style-type: none">• NCD network computer• PC running the WinCenter PC Client• UNIX workstation• X terminal• PC X server
Typing in a remote shell (<i>rsh</i>) command to start WinCenter. See “Starting WinCenter Using a Command Line” on page 13-14.	<ul style="list-style-type: none">• NCD network computer• UNIX workstation• X terminal• PC X server

Method	Desktop Device (Continued)
Typing in a telnet command to start WinCenter. See “Starting WinCenter Using a Command Line” on page 13-14.	<ul style="list-style-type: none"> • NCD network computer • UNIX workstation • X terminal • PC X server
Selecting a WinCenter host from an X Display Manager (XDM) login “chooser” list. See “Locating the Login Chooser” on page 13-2.	<ul style="list-style-type: none"> • NCD network computer • X terminal • PC X server

To start WinCenter from any of the WinCenter login choosers, you select a WinCenter server from the list in the login chooser. The next section describes how to start the WinCenter sessions from the login choosers.

Locating the Login Chooser

Depending upon the type of operating system and the configuration of your desktop device, the login chooser may appear automatically, or you may need to launch the login chooser.

To launch the login chooser:

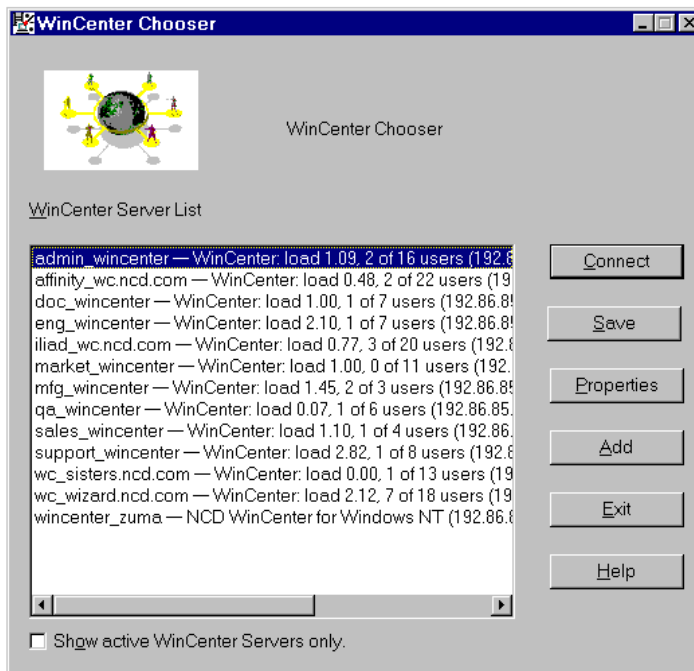
Desktop Device/Operating System	Select
WinCenter PC Client PC — Windows NT 3.51 or Windows 3.1x	NCD WinCenter group → WinCenter Chooser icon. See “Starting the WinCenter PC Client Login Chooser” on page 13-3.
WinCenter PC Client PC — Windows NT 4.0 or Windows 95	Start → Programs → NCD WinCenter → WinCenter Chooser. See “Starting the WinCenter PC Client Login Chooser” on page 13-3.

Desktop Device/Operating System	Select
UNIX workstation — any operating system listed under “WinCenter WS+” on page 1-4.	Run <code>/usr/local/wincenter/wincenter</code> to start the WS+ login chooser. See “Starting the WinCenter WS+ Login Chooser” on page 13-8.
NCD network computer — NCDware 4.1.x X terminals	Login chooser appears automatically upon power up. If booting from a WinCenter server, the WinCenter login dialog may appear. See “Starting the Network Computer Login Chooser” on page 13-7.
X server-based PC — any operating system	Either broadcast on your network (XDM broadcast) for XDM-capable hosts or send a direct request (XDM direct) to a WinCenter server. The login chooser appears or the WinCenter login dialog appears, respectively.

If the WinCenter login dialog appears automatically, you can go directly to “Logging On and Logging Off WinCenter Connect” on page 13-18.

Starting the WinCenter PC Client Login Chooser

This section explains how to start WinCenter using the WinCenter PC Client Chooser. The following shows a sample WinCenter Chooser.



Sample WinCenter Chooser

To select the WinCenter server from the WinCenter Chooser:

1. Scroll the list of WinCenter servers until the desired WinCenter server displays.

By default, the list displays:

- All active WinCenter servers detected on your network.
- All WinCenter servers detected during prior sessions, even if they are not currently active.
- All WinCenter servers you have added with the Add button.

For each WinCenter server in the list, the WinCenter Chooser displays the hostname or IP address, the WinCenter load and license information, and the WinCenter server's IP address.

2. Optionally, click *Show active WinCenter Servers only* to limit the list of WinCenter servers to only those that are currently active and connected to the same network as your PC.
3. Select the WinCenter server.
4. Click **Connect**.
5. If you are running Windows 3.1, you are prompted to supply a user name. Enter your WinCenter login name and click **OK**.
6. In the WinCenter Connect login dialog, enter your password and click **OK**.

The WinCenter desktop appears on your display. The WinCenter session runs in a single window titled **WinCenter Session**.

Setting Connection Properties

The **Properties** dialog accessed from the WinCenter Chooser allows you to configure how your PC establishes a connection to a specific WinCenter server.

To set the connection properties for a WinCenter server:

1. In the WinCenter PC Chooser, select the desired WinCenter server from the list and click **Properties**.
2. Set the properties:

Property	Description
WinCenter Server	Name or IP address of the WinCenter server.
Description	Descriptive phrase for the WinCenter server.
Network Type	Select from LAN or WAN. Specifies the type of network to which your PC is connected. See Appendix A for more information on these options.
Number of Colors	From the list, select the number of colors to be used in the WinCenter desktop. <i>Default</i> is the highest number of colors supported by the local Windows display driver. True Color is for displays supporting more than 256 colors.

Note Use *default* to avoid color flashing during your WinCenter session.

Property	Description
Desktop Area	Select or type in the dimensions of the rectangle in which you want to display the WinCenter desktop. <i>Default</i> allows WinCenter to determine the best dimensions for the WinCenter desktop.
Application	Enter a command line for automatically launching a Windows NT application when starting a WinCenter session on the WinCenter server. For example: c:\winframe\system32\write.exe
Working Directory	Enter the path to the default directory to use when running an application in the WinCenter session. If this property is left blank, by default WinCenter changes to your home directory on the WinCenter server.
Keymap File	Enter the name of the keymap file for your keyboard. The default file is us.kbd . See “International and Non-Standard Keyboard Support” on page 7-44 for details.
Other Options	Specify any WinCenter command line option listed in Appendix A.
User Name	Enter the user identifier for logging into the WinCenter server.

Adding WinCenter Servers

Use this procedure to add new servers to the WinCenter Chooser's *WinCenter Server List*. You can add a WinCenter server that is in your network, but inactive, or one that is on another network. In order to access a server that is added to the *WinCenter Server List*, the following conditions must occur:

- The added server must be a WinCenter server.
- Your PC must have network connectivity to the WinCenter server.

To add a WinCenter server:

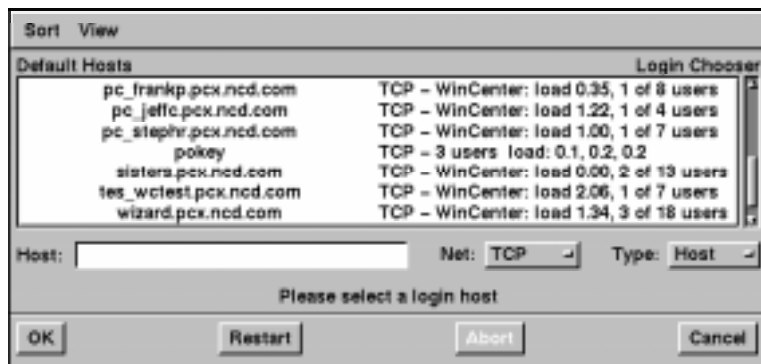
1. In the WinCenter PC Chooser, click Add.
2. Enter the name or TCP/IP IP address of the WinCenter server to be added.
3. Click OK.

Starting the Network Computer Login Chooser

This section explains how to start a WinCenter session from a network computer's login chooser. WinCenter Connect supports the X Display Manager protocol (XDM) for managing your log on, log off, and startup procedures.

Most network computers support XDM and use XDM to locate network servers available for login. Those network servers appear in a login chooser list on the network computer after the network computer starts.

The following example and login procedure pertains to an NCD network computer's Login Chooser.



Sample NCD Login Chooser

To select the WinCenter server from the NCD Login Chooser:

1. Scroll the list of hosts until the desired WinCenter server displays.
2. Select the WinCenter server.
3. Click OK.
The WinCenter Connect login dialog appears on your display.
4. Log onto the WinCenter server with your assigned username and password.

Starting the WinCenter WS+ Login Chooser

The WinCenter WS+ Chooser allows you to select a WinCenter server and customize its startup on your desktop.

Using the WinCenter WS+ Chooser

Starting a WinCenter session via WinCenter WS+ automatically activates:

- **Audio support.** Any Windows NT audio output will come from your UNIX workstation audio ports (if present).
- **Diskette drive support.** If your system administrator enabled diskette drive support for your NT account, WinCenter automatically converts your UNIX diskette drive to a Windows NT diskette drive. If the system administrator did not enable your diskette drive, you can enable it after you start the session by using File Manager's WinCenter menu as explained in Chapter 15.

To start a WinCenter session with the WinCenter WS+ Chooser:

1. At the UNIX command-line prompt, enter the following command:

```
% wincenter &
```

Note By default, WinCenter is installed in the directory **/usr/local/wincenter**. Put the WS+ installation directory in your UNIX path

2. Select a WinCenter server or application from the WinCenter Host list:



Note To display text that describes each of the WinCenter WS+ Chooser fields, select Help from the menu bar.

3. Click Connect.
4. When prompted, log onto the WinCenter server.

Setting Personal WinCenter WS+ Defaults

This section explains how to:

- Add new entries to the list of available Hosts in the WinCenter WS+ Chooser.
- Delete Hosts from the list.
- Modify the configuration of Hosts already in the list. You can change the description shown for the host, configure the window that displays the WinCenter desktop, and set other options that control how the WinCenter WS+ Chooser operates.

About Startup Files

When you save your changes, WinCenter WS+ writes them to a startup file named **.wincenrc** in your home directory.

If WinCenter WS+ detects a **WinCenter.rc** startup file in **/usr/lib/X11/ncd**, it reads that file first, and then looks for a user-specific startup file named **.wincenrc** in each user's home directory. This enables system administrators to set options globally while users set other options according to their personal preferences. The procedures below explain how to set personal defaults.

Setting Connection Properties

The Configure button accessed from the WinCenter WS+ Chooser allows you to configure how WinCenter sessions begin.

Note The WinCenter Host list can contain multiple instances of the same server. For example, if you change the configuration of an existing host, it appears twice in the list—once with its old configuration and again with its new configuration.

1. Start the WinCenter WS+ Chooser. For instructions, see "Using the WinCenter WS+ Chooser" on page 13-8.
2. Select the host whose configuration you want to modify from the WinCenter Host list.

3. Click Configure.
4. Modify the values in any of the fields that appear in the right half of the dialog. A description of each field and its default value follows:

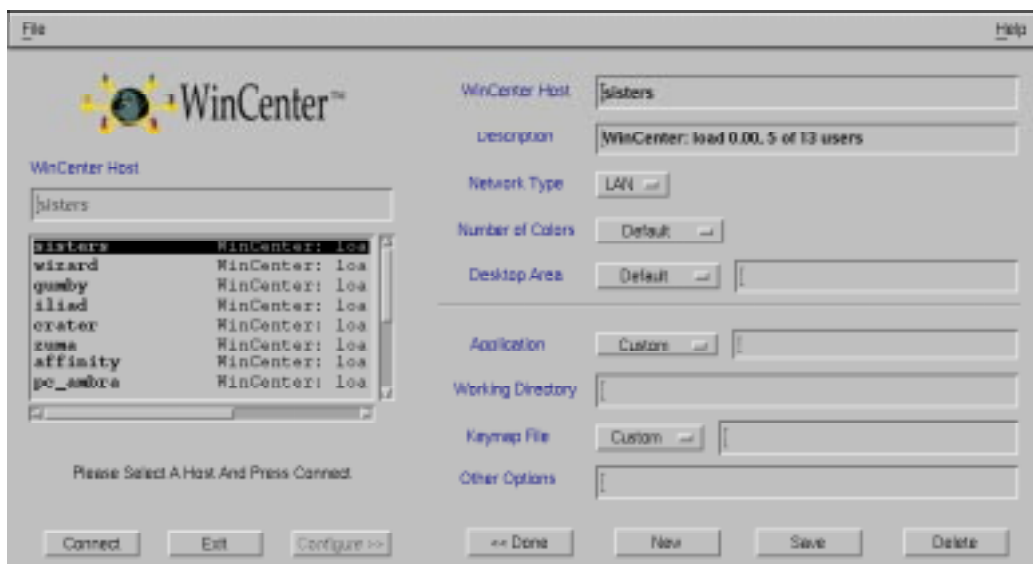
Property	Description
WinCenter Server	Name or IP address of the WinCenter server.
Description	Descriptive phrase for the WinCenter server.
Network Type	Select from LAN or WAN. Specifies the type of network to which your PC is connected. See Appendix A for more information on these options.
Number of Colors	From the list, select the number of colors to be used in the WinCenter desktop. <i>Default</i> is the highest number of colors supported by the local Windows display driver. True Color is for displays supporting more than 256 colors. Note Use <i>default</i> to avoid color flashing during your WinCenter session.
Desktop Area	Select or type in the dimensions of the rectangle in which you want to display the WinCenter desktop. <i>Default</i> allows WinCenter to determine the best dimensions for the WinCenter desktop.
Application	Enter a command line for automatically launching a Windows NT application when starting a WinCenter session on the WinCenter server. For example: c:\winframe\system32\write.exe
Working Directory	Enter the path to the default directory to use when running an application in the WinCenter session. If this property is left blank, by default WinCenter changes to your home directory on the WinCenter server.
Keymap File	Enter the name of the keymap file for your keyboard. The default file is us.kbd . See “International and Non-Standard Keyboard Support” on page 7-44 for details.
Other Options	Specify any WinCenter command line option listed in Appendix A.

5. Click Save to save your changes to the **.wincenrc** file in your home directory.

Adding WinCenter Servers

Use this procedure to add new servers to the WinCenter WS+ Chooser's WinCenter Host list. You can add a WinCenter server that is on your network, but inactive, or one that is on another network.

1. Start the WinCenter WS+ Chooser. For instructions, see "Using the WinCenter WS+ Chooser" on page 13-8.
2. Click Configure.



3. Click New.

4. Use these fields to add a new host:
 - a. Replace any text in the WinCenter Host field with the TCP/IP name or IP address of a host.
 - b. Replace any text in the Description field with a brief description of this host.
 - c. Modify the default values in any of the remaining fields. For a description of each field and its default value, select Help from the menu bar.

Note To add entries to the Application or Keymap File lists that you can select during subsequent sessions, you must edit the **.wincenrc** startup file directly. See “Using Keywords” on page 9-8 for more information.

5. Click Save to save your changes to the **.wincenrc** file in your home directory.

Deleting WinCenter Servers from the Chooser

Use this procedure to remove entries that you added to the WinCenter Host list. You cannot permanently remove servers that the system administrator has specified in a system-wide startup file or servers that the WinCenter WS+ Chooser includes in the list automatically. If you remove one of these preconfigured entries, it reappears in the list.

- Note** To prevent the automatic display of hosts in the list, see “Controlling How the WinCenter WS+ Chooser Operates” on page 9-11.
1. Start the WinCenter WS+ Chooser. For instructions, see “Using the WinCenter WS+ Chooser” on page 13-8.
 2. Select the host you want to delete from the WinCenter Host list.
 3. Click Configure.
 4. Click Delete.
 5. Click Save to save your changes to the **.wincenrc** file in your home directory.

Starting WinCenter Using a Command Line

This section describes how to start WinCenter from the command line.

Using the UNIX Remote Shell Command

Note If you are using a Hewlett-Packard system, use *remsh* instead of *rsh*. If you are using an SCO system, use *rcmd* instead of *rsh*.

To start WinCenter Connect by using a remote shell command with the *wincenter* command:

1. On your desktop device, open a UNIX window.
2. Enter the following command:

```
rsh server wincenter -display displayname
[arguments] [-- initial program]
```

where:

server is the IP address or name of the WinCenter server.

displayname is the name or IP address of the desktop device where you want to display WinCenter.

Tip If you have an NCD network computer, you can find the *displayname* in the NCDware Console. Press the Setup key and then select **Statistics** → **Show Version**. The *displayname* is listed as the TCP/IP Name.

arguments (optional) are the optional arguments defined in Appendix A.

initial program (optional) is the Windows NT application that you want to load automatically when you start WinCenter. To enter a full pathname for *initial program*, you must enter two backslashes for the system to recognize these characters correctly. For example, if the path you want to specify is `\users\john\tmp`, you would enter `\\users\\john\\tmp`.

The WinCenter screen, inviting you to log on, appears.

For example, if you want to start WinCenter, which was installed on a server named `pubs-pc`, on a workstation named `wk1`, you could enter:

```
rsh pubs-pc wincenter -display wk1
```

If you wanted to automatically load Microsoft Excel and have the working directory be `c:\users\john\tmp`, you could enter:

```
rsh pubs-pc wincenter -display wk1 -working_directory  
c:\\users\\john\\tmp -- C:\\MSOFFICE\\EXCEL\\excel.exe
```

Note If you enter the `-working_directory` or `-- initial program` arguments incorrectly, and the screen displays the WinCenter root window without any icons and you must restart WinCenter. To restart WinCenter, close the window using the system menu in the upper-left corner.

When you use the `initial program` option, the specified application is started in a special WinCenter session that is dedicated to that application. No other NT program groups or icons are displayed. To log off WinCenter:

1. Close your Windows application.
2. Close WinCenter by selecting the system menu in the upper-left corner.
3. Click OK to log off WinCenter.

Using Telnet

To start WinCenter Connect using Telnet:

1. On your desktop device, open a UNIX window.
2. At the UNIX prompt, enter:

```
telnet server 5999
```

where *server* is the IP address or name of the WinCenter server.

3. At the Telnet prompt, enter:

```
wincenter -display displayname  
[arguments][--initial program]
```

where:

displayname is the name or IP address of the desktop device where you want to display WinCenter.

Tip If you have an NCD network computer, you can find the *displayname* in the NCDware Console. Press the Setup key and then select **Statistics** → **Show Version**. The *displayname* is listed as the TCP/IP Name.

arguments (optional) are the optional arguments defined in Appendix A.

initial program (optional) is the Windows NT application that you want to load automatically when you start WinCenter. To enter a full pathname for *initial program*, you must enter two backslashes for the system to recognize these characters correctly. For example, if the path you want to specify is `\users\john\tmp`, you would enter `\\users\\john\\tmp`.

Note If you enter the *-working directory* or *--initial program* arguments incorrectly, and the screen displays the WinCenter root window without any icons and you must restart WinCenter.

To restart WinCenter, close WinCenter using the system menu in the upper-left corner.

The following example shows how to use the Telnet start-up method. In this example, WinCenter is installed on pubs-pc and the desktop device is called wk1.

```
>telnet pubs-pc 5999 <CR>  
wincenter -display wk1 <CR>
```

Note WinCenter does not echo the characters that you type, so the telnet on your system must echo the characters locally or you will not see them as you type.

The WinCenter title screen, inviting you to log on, appears.

Using a WinCenter WS+ Command Line

You can use WinCenter WS+ to start WinCenter either from the UNIX command line or via the WinCenter WS+ Chooser. See page 13-8 for how to use the WinCenter WS+ Chooser.

Use the following procedure to bypass the WinCenter WS+ Chooser:

1. At the UNIX command-line prompt, enter the following command:

```
% wincenter server [options...]  
[-- initial program]
```

Note By default, WinCenter is installed in:
/usr/local/wincenter

The wincenter command parameters include:

- The *server* parameter specifies the name or IP address of the WinCenter server you want to use. For example, 192.86.85.171.

- (Optional) The *options* parameter specifies one or more options for the WinCenter server. For a list of values, see Appendix A.
- (Optional) The *initial program* parameter specifies a Windows NT application that you want to start automatically after the WinCenter session starts. To enter a full pathname for *initial program*, you must enter two backslashes for the system to recognize these characters correctly. For example, if the path you want to specify is `\users\john\tmp`, you would enter `\\users\\john\\tmp`.

The WinCenter title screen appears on your screen.

Note If the DISPLAY environment variable is not set, the WinCenter desktop attempts to open on the workstation console (hostname:0).

2. When prompted, log onto the WinCenter server.

For example, this command starts a WinCenter session from WinCenter server “bachelor” and logs on the user “NelsR”:

```
wincenter bachelor -username nelsr -password bone
```

Logging On and Logging Off WinCenter Connect

After using a login chooser or command-line method to bring the WinCenter logon dialog to your desktop device, log on by:

1. If necessary, enter your username. Some start-up methods place a name in the Username box for you.
2. Enter your password and click OK.

You can cancel your logon by double clicking the Window system menu button (top left corner of the WinCenter Title screen).

When you have entered the correct username and password, the WinCenter desktop appears.

Logging On Through XDM

If you are logging on through XDM, the procedure is the same as described in the previous section. However, there are some notes that are specific only to XDM:

- The introductory screen with the logon dialog takes up the entire display. Once you have logged on, the WinCenter session desktop also covers the entire screen.
- To cancel the logging on attempt, click the system menu in the upper-left corner of the logon dialog and select Close.

Exiting Applications and Logging Off

To exit your NT applications and log off:

1. From the Program Manager menu, select **File → Logoff**.
2. If any unsaved application files are open, you are prompted to save the file. If desired, save the file.
3. Click OK to end the WinCenter session.

Suspending Applications and Disconnecting

WinCenter allows users to leave their NT applications open and to disconnect the NT session. When you are ready to use WinCenter again, you reconnect and resume the NT session — your suspended NT applications reopen, allowing you to continue where you left off.

The disconnect feature is selectable by users when they exit the WinCenter server session.

Note To reconnect, WinCenter maintains a duplicate set of screen images. For most disconnected NT applications, this does not impact performance and requires only a slight increase in NT server memory use. For some applications that use large off-screen images, such as Microsoft PowerPoint, the impact in performance and memory use is greater.

Disconnecting an NT Session

To disconnect your NT session:

1. From the Program Manager menu, select **File → Disconnect**.
2. Click OK to disconnect your session.

Resuming a Disconnected NT Session

To resume your disconnected NT session:

1. Start your WinCenter session.
2. The WinCenter session desktop displays. The applications that were open when you disconnected reopen.

Chapter 14

Using WinCenter

What is the WinCenter Desktop Icon?

The **WinCenter Desktop Icon** is a tool that allows you to easily customize and manage your WinCenter sessions. Double click the **WinCenter Desktop Icon** in the lower left corner of your desktop, or double click the **WinCenter** icon in the WinCenter program group.



The **WinCenter Desktop Icon** is only available after you login to a WinCenter server as described in Chapter 13.

The major categories of controls in the **WinCenter Desktop Icon** are:

- **WinCenter**

Lets you view general information about WinCenter. For information about the **WinCenter** tab of the **WinCenter Desktop Icon**, see “Finding Information About WinCenter” on page 14-19.

- **Rshd**

Lets you view the *rshd* log. For information on how to use the **Rshd** tab of the **WinCenter Desktop Icon**, see “Finding Information About WinCenter” on page 14-19. The **Rshd** tab does not appear if the system administrator has disabled *rsh* on the WinCenter server.

- **New Connection**

Lets you launch an application from a remote host or an application resident in your NCD network computer. For information on how to use the **New Connection** tab of the **WinCenter Desktop Icon**, see “Launching Remote Applications” on page 14-4.

- **Desktop**

Lets you control encryption and the remote application Window Manager. For information on how to use the **Desktop** tab of the **WinCenter Desktop Icon**, see “Encrypting WinCenter Information” on page 14-16 and “Controlling the Window Manager” on page 14-18.

- **Cut & Paste**

Lets you select a text or graphics cut and paste rectangle and specify that remote data is always copied to the Window’s clipboard. For information on how to use the **Cut & Paste** tab of the **WinCenter Desktop Icon**, see “Cutting and Pasting Information” on page 14-8.

- **Shadowing**

Lets you select the WinCenter stations either whose session you can shadow or who can shadow your session. For information on how to use the **Shadowing** tab of the **WinCenter Desktop Icon**, see “Sharing a WinCenter Session” on page 14-11. The **Shadowing** tab does not appear if the system administrator has disabled shadowing on the WinCenter server.

- **Audio**

Lets you control the audio portion of your WinCenter session. For information on how to use the **Audio** tab of the **WinCenter Desktop Icon**, see “Controlling Audio on Your WinCenter Station” on page 14-15.

- **Diagnostics**

Lets you view information about your WinCenter session. The information on the **Diagnostics** tab is useful if you need to contact NCD Technical Support. For information on the **Diagnostics** tab of the **WinCenter Desktop Icon**, see “Finding Information About WinCenter” on page 14-19.

The WinCenter Desktop Icon Menu

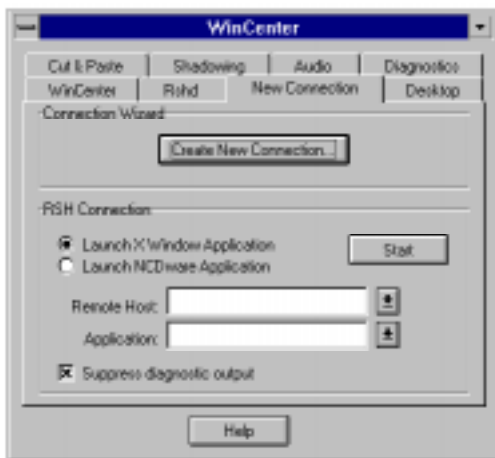
Click the **WinCenter Desktop Icon** to view its menu:

Menu Item	Description
Restore	Maximizes the iconified WinCenter Desktop Icon window.
Move	Allows you to move the WinCenter Desktop Icon window.
Minimize	Iconifies the WinCenter Desktop Icon window.
Switch to...	Displays the Windows NT Task List.
Select Graphics Cut-and-Paste Area	Presents a corner bracket cursor. Press and hold a mouse button, drag the cursor, and release the button it to define the rectangular area to copy.

Menu Item	Description
Create New Connection	Launches the WinCenter Connection Wizard, allowing you to define a connection and launch a remote application. This is a shortcut to the WinCenter Desktop Icon's Create New Connection button on the New Connection tab.
Start Window Manager or Stop Window Manager	Starts or stops WinCenter's remote application window manager. If the option is not selectable (grayed), a remote X Window Manager is already running.
About WinCenter	Displays the About WinCenter dialog, showing the version number.

Launching Remote Applications

From the **New Connection** tab of the **WinCenter Desktop Icon** you can launch either X Window applications or NCDware applications. The X Window applications that you start in this manner run on the designated host and display in your WinCenter desktop adjacent to your Windows applications.



Launching X Window Applications

WinCenter provides two methods for launching X Window applications. Which method you use depends upon how often you launch the same application:

- Infrequently (but immediately) — use the RSH Connection area of the **New Connection** tab. See “Launching from the New Connection Tab” in the next section.
- Repeatedly — create a connection that launches the application and attaches a program-group icon to it. See “Launching from a Connection Icon” on page 14-6.

Launching from the New Connection Tab

If you rarely desire to launch an X Window application, perform the following steps:

1. Double click the **WinCenter Desktop Icon**.
2. Select the **New Connection** tab.
3. In the *RSH Connection* area of the tab, select *Launch X Window Application*.
4. In the *RSH Connection* area of the tab, in the *Remote Host* box type in or select a UNIX hostname. You can also type in an IP address.
5. In the *Application* box, type in or select an application. Use the full directory path and filename for the application.

Note The *Application* list contains applications launched during the current WinCenter session.

Note Do not include the `-display displayname` options in the Application box. WinCenter provides that option automatically.



6. If you want a status window with application start-up information, unselect *Suppress diagnostic output*. By default, this item is selected and status is not presented.
7. Click Start.

If no error condition occurs, the application is launched. An error condition can occur:

- If the host name is not valid.
- If the WinCenter server is not in your **.rhosts** file on the UNIX host.

Note If an error condition occurs, click OK to close the message box and return to step 3.

Launching from a Connection Icon

If you desire to repeatedly launch a specific X Window application, create a *connection* and an icon for the application. You can create a specific connection for each X Window application that you run.

To create a connection:

1. Double click the **WinCenter Desktop Icon**.
2. Select the **New Connection** tab.
3. In the *Connection Wizard* area of the tab, click Create New Connection.

The Connection Wizard steps you through the process of creating the connection. For details on specific options the Connection Wizard offers, use the online help associated with it. Click "?" in the upper-right corner, then click the dialog area in question.

When the Connection Wizard finishes creating the connection, the new connection's icon appears in the WinCenter Connections program group. (If the WinCenter Connections program group does not exist, it is automatically created.)

4. To run the connection, double click its icon.

Launching NCDware Applications

To launch NCDware applications:

1. Double click the **WinCenter Desktop Icon**.
2. Select the **New Connection** tab.
3. Select *Launch NCDware Application*.
4. In the *Application* box, type in or select an application. For example, **console** or **show version**.

Note The *Application* list contains applications launched during the current WinCenter session.



5. If you want a status window with application startup information, unselect *Suppress diagnostic output*. By default, this item is selected and status is not presented.
6. Click Start.

Cutting and Pasting Information

You can cut and paste text between Windows and UNIX application windows. You can also copy graphics or entire windows and paste them into applications.

When either text or graphics are selected as described in the following procedures, the WinCenter Desktop Icon changes to indicate information now on the Window's clipboard.

Indicates Microsoft Windows data.

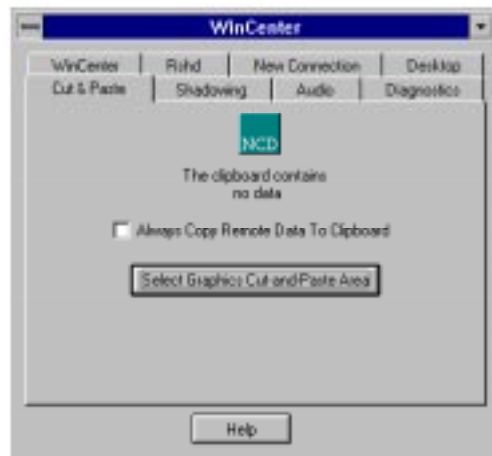


Indicates non-windows data.

Automatic Copying of Cut Elements to Clipboard

This procedure is useful when cutting and pasting elements between UNIX and Windows NT applications. On these mixed environment desktops, you can copy data between non-Windows application and Windows applications. Some non-Windows applications put inaccurate timestamps on copied data and the data never accurately updates the Windows clipboard. To avoid this and ensure that any elements that are “cut” are also copied to the clipboard:

1. Double click the **WinCenter Desktop Icon**.
2. Select the **Cut & Paste** tab.



3. Click *Always Copy Remote Data to Clipboard*. Thereafter, the Windows clipboard is updated with copied data each time you move the mouse from a non-Windows application to a Windows application. If your copied data is large, you may notice a slower desktop response while the data is being copied.

Cutting, Copying, and Pasting Text

To cut, copy, or paste text:

1. Using the mouse, select the text that you want to copy and use the application's copy function.
2. Move the cursor to where you want the text to display in the second window.
3. Paste the text into the new location using the paste mechanism supported by the second application.

The text automatically displays in the new location.

For example, if you are using FrameMaker in a UNIX window and Microsoft Word in the WinCenter window, you can use these commands to copy information from one window to another.

1. In the FrameMaker window, using the cursor, select the text to copy.
2. Select **Edit → Copy**.
3. Move the cursor to the Microsoft Word window and transfer control to that window.
4. Position the cursor where you want the next text to display.
5. Select **Edit → Paste**.

The FrameMaker text displays in the Microsoft Word file.

Note Text formatting from the FrameMaker document is not copied over; the text is pasted in as ASCII text.

Copying and Pasting Graphics

You can copy rectangular areas of the screen containing graphics or entire windows and paste them into applications.

To copy or paste graphics:

1. Click the left mouse button on the **WinCenter Desktop Icon**.
2. Select *Graphics Cut-and-Paste Area* either from the menu of the **WinCenter Desktop Icon** or from the **Cut & Paste** tab. The arrow cursor changes to a corner bracket cursor.

3. To copy a rectangular selection of a window containing graphics, click the left mouse button on one corner of the graphic, then drag the cursor to define the rectangle. A rectangular outline appears around the area you are selecting.
4. When the region you want is surrounded, release the mouse button to complete the selection.
5. To place the selection, use the paste mechanism supported by the application you are using for the document in which the selection is to appear.

Note You can also copy and paste entire windows. Follow the instructions for copying a rectangular area. In Step 2, instead of using the bracket cursor to drag through a rectangular area, place it on the window you want to copy, then press the Shift key and click the left mouse button at the same time.

Sharing a WinCenter Session

Shadowing allows a single WinCenter session to be shared by multiple users. Key presses, mouse movements, and mouse-button presses can be entered in the original and in the shadow session. Output to the original session goes to each shadow. Shadows are useful to share graphical information or to troubleshoot problems. From the **Shadowing** tab of the **WinCenter Desktop Icon** you can share a WinCenter session with one or more other WinCenter users.



Note The **Shadowing** tab does not appear if the system administrator has disabled shadowing on the WinCenter server.

Note Both users must have the same number of colors on their system for shadowing to operate.

Shadowing Another User's Session

To shadow another user's WinCenter session:

1. Double click the **WinCenter Desktop Icon**.
2. Select the **Shadowing** tab.
3. Select the WinCenter station to shadow by either of the following methods:
 - To see a list of all active WinCenter stations on your local network, click *Select a WinStation to shadow in my WinCenter session*. Then, click the down-arrow button (which displays the list of available WinCenter stations) and select the WinCenter station to shadow.

- To specify a WinCenter station that is outside of your local network, click *Select a WinStation to shadow in my WinCenter session*. Then, in the list box, type in WinCenter station to shadow. The format is

`\\WinCenter host\user\WinStation ID`

where:

WinCenter host is the name of the WinCenter server.

user is a username logged onto that WinCenter server.

WinStation ID is the ID field of the **Administrative Tools → WinStation Administration** window.

4. Click Start.

The **Requesting WinCenter Shadow Session** dialog displays your WinCenter desktop. A **WinCenter Shadow Request** window appears on the WinCenter desktop whose shadow you've requested. That desktop user can approve or deny the shadow request.

5. If the shadow session is denied, a dialog appears on your screen stating the denied request.
6. If the shadow is approved, the shadow WinCenter desktop appears on your screen. The title bar of that window says **Shadow WinCenter** followed by the version number and WinCenter server's name.

The **WinCenter Desktop Icon** is renamed to **WinCenter Shadowed** in the shadow session on your screen and on the originating WinCenter desktop.

Disconnecting a Shadow Session

To disconnect a shadowed session:

1. In the **Shadowing** tab of the **WinCenter Shadowed Desktop Icon**, click **Disconnect Shadow Sessions**.
The **Shadow Disconnect** dialog displays.
2. Select the session(s) you want to disconnect and click **Disconnect Shadow Sessions**. A confirmation dialog appears.
3. Click **Yes** and the session disconnects.

Note You can also select **Close** from the **Window Manager** menu in the upper-left corner of your shadowed window to disconnect a shadow session.

Shadowing your Session to Another Display

To have your WinCenter session shadowed on another display:

1. Double click the **WinCenter Desktop Icon**.
2. Select the **Shadowing** tab.
3. Click *Shadow my WinCenter session to a display*.
4. In the list box, type in the location where the shadow will appear. Use that device's TCP/IP name or IP address.
5. Click **Start**.

A dialog displays the following message:
Send shadow session to display *name*?
This shadowed session will not be encrypted.

6. Click **Yes**.
The **Shadowing started on display *name*** dialog displays.
7. Click **OK** and your shadow session begins.

Controlling Audio on Your WinCenter Station

The **Audio** tab of the **WinCenter Desktop Icon** lets you control the audio input and output devices of your WinCenter station during the WinCenter session. If your WinCenter station does not support an audio option, such as headphones, the associated control is either removed or grayed on the **Audio** tab. Typically, you do not need to change the settings on the **Audio** tab.



To change the audio settings:

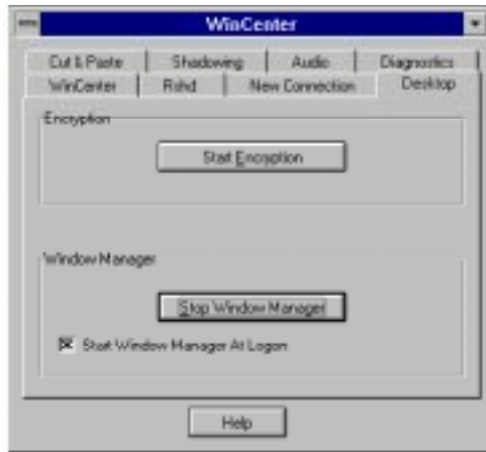
1. Double click the **WinCenter Desktop Icon**.
2. Select the **Audio** tab.
3. Set the output controls as desired:
 - Click **Speaker** to direct sound to your workstation speakers.
 - Click **Headphone** to direct sound to your workstation headphones.
 - Click **Line-Out** to direct the sound to your workstation's line-out port, typically linked to an amplifier, recorder, or a second set of speakers.

- Click and drag the Output slider to the desired volume setting.
 - Click Mute to turn off all sound.
4. Set the input controls on your workstation or NCD network computer as desired:
- Click Microphone to specify that your workstation receives microphone input.
 - Click Line-In to specify that your workstation receives input from the line-in port of the desktop device.
 - Click and drag the Input slider to the desired volume setting.

Encrypting WinCenter Information

The **Desktop** tab of the **WinCenter Desktop Icon** lets you start or stop encryption of your WinCenter session. By default, encryption is enabled during login so that no one can observe your login and password. Also by default, encryption is disabled after login.

Note Encryption is only available for NCD network computer's running NCDware version 4.1.141 or higher.



Stopping Encryption

If you have enabled encryption, here's how to disable it:

1. Double click the **WinCenter Desktop** icon.
2. Select the **Desktop** tab.
3. Click Stop Encryption.

Your setting lasts for the current session only.

Starting Encryption

Note To start encryption, you must have an NCD network computer running NCDware 4.1.141, or greater.

By default, encryption is enabled during login so that no one can observe your login and password, and disabled after login.

Here's how to start encryption after logging in:

1. Double click the **WinCenter Desktop** icon.
2. Select the **Desktop** tab.
3. Click Start Encryption.

Your setting only lasts for the current session.

Controlling the Window Manager

The **Desktop** tab of the **WinCenter Desktop Icon** lets you control a window manager for remote applications launched using the **New Connection** tab. The window manager used by WinCenter is a Microsoft look-and-feel window manager.



Starting the Window Manager

The default state of the window manager is enabled. To start the window manager:

1. Double click the **WinCenter Desktop Icon**.
2. Select the **Desktop** tab.
3. Click Start Window Manager.

Note If the Start Window Manager button is grayed out, you already have a window manager running on your desktop device.

Stopping the Window Manager

To stop a running window manager:

1. Double click the **WinCenter Desktop Icon**.
2. Select the **Desktop** tab.
3. Click Stop Window Manager.

Starting the Window Manager at Logon

To always have the window manager start when you log on to the WinCenter server:

1. Double click the **WinCenter Desktop Icon**.
2. Select the **Desktop** tab.
3. Click *Start Window Manager at Logon*.

Finding Information About WinCenter

The **WinCenter**, **Rshd**, and **Diagnostics** tabs of the **WinCenter Desktop Icon** provide useful information about the current WinCenter session.

Viewing Session Settings

The **WinCenter** tab of the **WinCenter Desktop** utility provides information about the settings for your current session; e.g., whether “Audio” is on or off. See your system administrator to change any of the settings listed on the **WinCenter** tab.



Viewing Rshd Log

The **Rshd** tab of the **WinCenter Desktop Icon** displays the Rshd log. It shows the *rsh* commands sent to WinCenter and the errors generated.



Note The **Rshd** tab does not appear if the system administrator has disabled rsh on the WinCenter server.

For example, if you enter an *rsh* command in a UNIX window on your desktop that is executed on the WinCenter server, *rshd* logs the command. A typical example might be:

```
rsh -l candisc -n sisters notepad
```

where:

candisc is the name of the WinCenter user.

sisters is the name of the WinCenter server.

notepad is the name of an executable file on the WinCenter server.

The log might read:

```
Started command "notepad"
```

Viewing Session Status

The **Diagnostics** tab of the **WinCenter Desktop Icon** lists information about the WinCenter session on your desktop device and events for the current session. This information can be useful for NCD Technical Support when helping you to diagnose problems.





Chapter 15

Using Windows NT During a WinCenter Session

Using a Local Diskette Drive as a Windows NT Drive

WinCenter allows you to write Windows NT data to the:

- diskette drive in the Windows NT server
- diskette drive connected to your NCD network computer
- diskette drive in your UNIX workstation
- diskette drive of your WinCenter PC Client computer.

To use your NCD network computer diskette drive you must:

- Properly install the diskette drive hardware
- Configure NCDware to use the diskette drive as explained in “Configuring NCDware for a Diskette Drive” on page 7-37
- Enable the drive in WinCenter as explained in the following section

To use your UNIX workstation diskette drive with WinCenter, you or your system administrator needs to install WinCenter WS+.

The following workstation devices are recognized by WinCenter:

Workstation	Operating System	Default Devices
Sun/SPARC	SunOS/Solaris	/vol/dev/aliases/floppy0 /dev/rfd0c /dev/fd0
HP	HP-UX	/dev/rfloppy/c0t0d0 /dev/floppy/c0t1d0 /dev/rfloppy/c201d0s0 /dev/floppy/c0t0d0 /dev/floppy/c0t1d0 /dev/floppy/c201d0s0
IBM RS/6000	AIX	/dev/fd0
Silicon Graphics	IRIX	/dev/rdisk/fds0d2.3.5hi

Enabling Your Local Diskette Drive

Depending on how your WinCenter stations were configured, you may or may not have immediate access to your NCD network computer, UNIX workstation, or WinCenter PC Client diskette drive when you log into WinCenter.

To determine if your diskette drive is enabled, open File Manager and click WinCenter in the menu title bar. The *Connect Local Disk As Drive A* menu item is either checked or unchecked depending upon the enabled state of your diskette drive.

State	Local Diskette Drive	Comments
unchecked	disabled	A: is the diskette drive in the WinCenter server
checked	enabled	A: is the diskette drive in your UNIX workstation, attached to your NCD network computer, or in your WinCenter PC Client PC

If you are already logged into WinCenter and need to connect your diskette drive as an NT drive:

1. Open File Manager.
2. Select **WinCenter → Connect Local Disk As Drive A**.
Drive A: is now the diskette drive in your UNIX workstation, NCD network computer, or WinCenter PC Client PC
The diskette label displayed by File Manger and other Windows NT applications will always be **\\Client\A:**, indicating that drive A is the local floppy drive.

Formatting Disks

To format Windows NT disks in your:

- Sun workstation
 - IBM workstation, or
 - NCD network computer drive
1. Open File Manager.
 2. Ensure that **WinCenter → Connect Local Disk As Drive A** is checked. If not, select that menu item.
 3. Select **WinCenter → Format Local Disk**.
 4. Select the disk capacity, enter any disk label, then click OK.
Although formatting will write your requested label to the diskette, the label displayed in File Manager and other Windows NT applications is always **\\Client\A:**. This indicates that drive A is the local floppy drive.

Writing Disks

To write Windows NT data to your UNIX workstation, NCD network computer, or WinCenter PC Client PC diskette drive:

1. Open File Manager.
2. Ensure that **WinCenter → Connect Local Disk As Drive A** is checked. If not, select that menu item.
3. Select **File → Save As** in your Windows NT application.
4. Select drive A: as the destination.

To write Windows NT data to the diskette drive in the WinCenter server:

1. Open File Manager.
2. Unselect **WinCenter → Connect Local Disk As Drive A**.
Drive A: is now the diskette drive in your WinCenter server.
3. Select **File → Save As** in your Windows NT application.
4. Select drive A: as the destination.

Ejecting Disks

To eject a disk in a:

- Sun or
 - Silicon Graphics Workstation drive
1. Open File Manager.
 2. Ensure that **WinCenter → Connect Local Disk As Drive A** is checked. If not, select that menu item.
 3. Select **WinCenter → Eject Local Disk**.

Note Eject Local Disk is grayed out on devices that do not support this functionality.

Printing to NCD Network Computer Local Printers

You can use WinCenter to print to a printer that is attached to:

- The NCD network computer parallel port
- A parallel diskette drive. The diskette drive is attached to the NCD network computer.

Before you can print WinCenter data to the printer:

- Your system administrator must configure the printer and the network computer as specified in "Setting Up Printers" on page 7-38.
- You must create a WinStation printer as describe in the following section.

Creating a WinStation Printer with Print Manager

To make you printer known to WinCenter, you must create a WinStation (client) printer for it using Print Manager.

To create a WinStation printer:

1. Log on to WinCenter from your network computer.
2. In the Main program group, double click Control Panel.
3. In Control Panel, double click Printers.
4. Select **Printer** → **Create Printer**.
5. Make the *Printer Name* field empty. This field will be filled automatically when the *Print to* field is set.
6. Set the *Driver* field to the appropriate driver for the printer attached to the network computer.
7. Set the *Print to* field to **CLIENT\LPT1:** for a parallel printer or **CLIENT\COM1:** for a serial printer.
8. Click OK.

Printing to a Local Printer

To print to your local printer:

1. Log on to WinCenter as the user who created the WinStation (client) printer.
2. Select **File** → **Print** in your WinCenter application.

Launching Windows NT Applications from UNIX

WinCenter uses two commands that allow you to launch Windows applications from a UNIX desktop:

- *rsh* or *remsh* (standard UNIX commands), which remotely execute a command on the WinCenter server
- *ncdrpc* (a Windows NT command), which remotely copies files from the WinCenter server to the UNIX desktop

ncdrpc is useful, for example, when you have a UNIX mail application that supports attachments. With WinCenter *ncdrpc* and *rsh*, you can move the attachment to the WinCenter server and launch Windows applications like Excel and Word.

Chapter 10 provides some sample scripts using the *rsh* command that allows a user to invoke an NT application from the UNIX desktop with a single command.

The *rsh* Command

The *rsh* command allows you to enter a command in a UNIX window on your desktop that is executed on the WinCenter server. *rsh* is fully compatible with the UNIX *rsh* command.

Security for the WinCenter *rsh* utility is handled the same way as *rsh* security is handled in UNIX. The **hosts.equiv** file is in `%SYSTEMROOT%\system32\drivers\etc\hosts.equiv` and the per-user **.rhosts** files are in the user's home directory (for example, `c:\users\joe\.rhosts`).

Note You cannot use the NT **edit** command to edit the **hosts.equiv** file or the **.rhosts** file because of

incompatibilities in the filename format. Use *notepad* instead. Then save the file using **File → Save As → Save File as Type → Text Files (*.txt)**.

The *ncdrpc* Command

The *ncdrpc* command allows you to copy files that reside on the WinCenter server to UNIX.

Like *rsh*, *ncdrpc* is fully compatible with the UNIX *rcp* command. However, the Microsoft version of *rcp* works differently. On the WinCenter server you can use either *rcp* (the Microsoft version) or *ncdrpc* (the WinCenter version), but the resulting files are not the same. The Microsoft *rcp* command transfers files in ASCII mode (by default), removing extra carriage returns and stopping when it encounters ^Z (the MS-DOS end-of-file character). On the other hand, *ncdrpc* transfers files in binary mode only. *Ncdrpc*'s data is copied exactly, but may require carriage return/linefeed (CR/LF) conversion after the file is transferred.

Note You can use the WinCenter *ncdu2d* (UNIX to DOS) and *ncdd2u* (DOS to UNIX) utilities to do a CR/LF conversion.

Using MPEG Applications with NCD Network Computers

If you have an NCD HMX network computer, you can use the accelerated MPEG facilities of WinCenter to play MPEG-1 video files.

To play your MPEG files:

1. Log on to WinCenter from your NCD HMX network computer.
2. Double click the **WinCenter Desktop Icon**.

3. Make sure that the WinCenter tab states *MPEG Acceleration: Available*. If MPEG Acceleration is not available, ask your system administrator to configure your network computer so that NCDware 4.1 or higher is loaded.
4. In the Accessories program group, double click Media Player.
5. Select **File** → **Open**, select an MPEG file, and click OK.
The NCDvideo window opens and is then replaced with the MPEG video.
6. Select the play button in Media Player.

Appendix A

Using the Command Line

Options for the *wincenter* Command

The **wincenter** command is used to display WinCenter on your desktop device. This appendix describes the options permitted when WinCenter is started with:

- a remote shell (*rsh*) command line
- a telnet command
- a WinCenter WS+ command

As specified in “Starting WinCenter Using a Command Line” on page 13-14, those command-line startup methods are:

```
rsh server wincenter -display displayname [arguments]  
[--initial program]
```

```
telnet server 5999  
wincenter -display displayname [arguments]  
[--initial program]
```

```
/usr/local/wincenter/wincenter -display displayname  
[arguments] [--initial program]
```

The following table defines the *arguments* option used in each command-line method.

Use this option...	To specify...
-auth <i>host name data</i>	Authorizes users to connect to WinCenter. The <i>host</i> , <i>name</i> , and <i>data</i> fields are comparable to the data output by the <code>xauth list</code> command on your UNIX host.
-balance	Defines whether your WinCenter logon attempt is load balanced: <ul style="list-style-type: none">• 0 = off (no load balancing)• 1 = load balanced• 2 = user balanced
-bs <i>none</i> <i>mapped</i> <i>always</i> <i>default</i>	Sets WinCenter's capability for retaining and restoring obscured window portions. <ul style="list-style-type: none">• none indicates that the application is responsible for restoring obscured window portions.• mapped indicates that WinCenter restore obscured portions of visible windows.• always indicates that WinCenter restores obscured portions of windows.• default means use the X server backing store setting.
-bw <i>width</i>	The width of the border around the WinCenter window.
-cache <i>cache_size</i>	Image caching. By default, the cache size is 512k bytes. Increasing the cache size may increase performance, since bigger and fewer images are sent between WinCenter and the desktop. However, more desktop device memorm will be used.

Use this option...	To specify...
<code>-colors num-colors</code>	<p>The number of colors to use in the WinCenter window. Possible values are 2 (monochrome), 16, 256, true, true15, true16, and true24. The default is the highest number of colors that doesn't cause color flashing or performance degradation. If the display can support more than 8 bits of color or one colormap, WinCenter uses 256 colors; otherwise it uses 16 colors or 2 colors on a monochrome device.</p> <p>Note Depth and colors both specify the color model to use in the WinCenter window. You should not specify both arguments.</p>
<code>-dco</code>	<p>Puts the session in disconnect mode in case of power outage or a similar event that might shut down the desktop device. Your WinStation Configuration → Advanced WinStation → On a broken or timed-out connection must be set to disconnect, too.</p>
<code>-depth depth</code>	<p>The number of colors to use in the WinCenter window, specified in bits. (Possible values are 1, 4, 8, 15, 16, 24.) The default value is 8. The depth values function only when the desktop device supports them. For example, a depth value of 1, which specifies two-color such as black and white, is only functional on a monochrome monitor.</p> <p>Note Depth and colors both specify the color model to use in the WinCenter window. You do not need to specify both arguments.</p>

Use this option...	To specify...
<code>-devfloppy <i>device</i></code>	Specify the name of a diskette device if it is not the workstation default. For a list of default devices, see page 6-3. This option is only valid for the WinCenter WS+ command.
<code>-domain <i>domain</i></code>	<p>The Windows NT domain for the user specified by <i>username</i>.</p> <p>Note A domain is a collection of computers defined by the administrator of a Windows NT network. If the network has multiple domains defined, each user account is associated with a specific domain.</p>
<code>-encryption</code>	<p>Scrambles data being transmitted between a WinCenter station and the WinCenter server, to prevent its being intercepted and read by other parties. It is then decrypted when received at its destination. The possible settings are:</p> <ul style="list-style-type: none">• Off - No data is encrypted. This is the default setting.• Login Only - Only user name and password used to login to the WinCenter are encrypted.• Always - All data transmitted between the WinCenter station and the WinCenter server is encrypted.
<code>-fs</code>	Turns on the WinCenter font server. The font server is on by default. See <code>-nofs</code> to turn off the font server.

Use this option...	To specify...
-geometry <i>geometry-spec</i>	The size and location of the window used to display WinCenter on the desktop. Use the standard format <i>widthxheight+/-xoff+/-yoff</i> . For example: 800x600+100+100
-image <i>none</i> <i>minimal</i> <i>good</i> <i>better</i> <i>best</i>	Only useful for desktops that support the WinCenter compression extension; for example, NCDware 4.1. <ul style="list-style-type: none">• none indicates no compression.• minimal indicates some compression with little impact on Windows NT server CPU usage.• good denotes better compression on 16/24 bit images and more Windows NT server CPU used.• better is the best available compression, optimized for Window images.• best, the default, denotes the best available compression based on CPU model and CPU load.
-keymapfile <i>filename</i>	Tells WinCenter to use the keymap file <i>filename</i> instead of the default us.kbd . The keymap files are stored in the %SYSTEMROOT%\System32\WinCen directory. <i>filename</i> may specify a path to a different directory. See "International and Non-Standard Keyboard Support" on page 7-44 for a list of the keymap files.

Use this option...	To specify...
-noaudio	Audio support is disabled. Additionally, if used on the WinCenter WS+ command line, the UNIX audio server is not started. The default is audio enabled.
-nofloppy	Prevents the WS+ floppy drive server from starting. This option is only valid for the WinCenter WS+ command.
-nofs	Turns off the WinCenter font server.
-password <i>password</i>	The password (if any) for the user specified by <i>username</i> . If the account you want to use does not have a password, use the value -no-password- for <i>password</i> .
-resolution <i>resolution</i>	The size and location of the WinCenter desktop that appears in the window specified by <i>geometry</i> . The <i>resolution</i> size must be greater than or equal to the <i>geometry</i> size. Use the standard format <i>widthxheight+/-xoff+/-yoff</i> . The default is screen width -100 x screen height -100. For example: 800x600+100+100
-serial	Specifies a base serial port number to be used in forming the serial port identifier for the WinCenter station. The default value is 87 (because COM87 is the required port number for NCD network computers).
-username <i>username</i>	The username to automatically put in the Windows NT login screen.
-version	Reports the WinCenter version number.

Use this option...	To specify...
<code>-wan</code>	Enables optimized, accelerated communication on a low bandwidth connection. Use this option if the WinCenter host is outside your building or accessed via a lower bandwidth line such as an ISDN line. This option turns on the <i>image</i> option. This option increases the NT CPU usage and memory utilization.
<code>-wincursor</code>	Specifies the WinCenter station uses a software-based cursor run from the WinCenter server, instead of its own hardware-based cursor. If enabled, cursor tracking performance can degrade significantly. Therefore, <code>-wincursor</code> is disabled by default, and should be enabled only for WinCenter stations whose local, hardware-based cursor does not perform correctly.
<code>-working_directory</code> <i>working-directory</i>	Becomes the current directory when you start WinCenter. The specified directory name is displayed as part of the MS-DOS command prompt and is the default directory for NT applications. Note When entering a full pathname for <i>working-directory</i> , which includes backslashes, you must type two backslashes for the system to recognize the characters correctly. For example, if the path you want to specify is <code>\users\john\tmp</code> , you would enter: <code>\\users\\john\\tmp.</code>



Appendix B Product Support

This appendix explains how to contact NCD Product Support staff. Before requesting product support for an NCD product, return your product registration card.

Note If you purchased your NCD product from an NCD distributor or a value-added reseller (VAR), contact that corporation to determine whether they provide product support before contacting NCD directly.

When you encounter a technical problem or have a question, consult the product's documentation and online help. For late-breaking updates and technical information, see the product *Release Notes*. If you cannot find an answer or a solution in the documentation, contact NCD Product Support as described below.

Contacting Product Support

The sections below explain how to contact NCD Product Support via e-mail, fax, or telephone.

Product Support Worldwide

International customers should contact the distributor from whom they purchased the NCD product. If this is not possible, or if you need direct technical assistance, use the country code dialing appropriate for your location to access the numbers provided in elsewhere in this appendix.

Because NCD is in the Pacific time zone, electronic mail is usually the best way for international customers to obtain product support. Send electronic mail to:

support@ncd.com

International customers can also obtain support over the World Wide Web, using the FTP site, or by sending a fax.

Electronic Mail Support

To contact NCD via e-mail, send a mail message to:

support@ncd.com

Product support will automatically return an electronic problem template in response to your message. The template includes the same information listed in "Information Required by Product Support" on page B-3.

Product Support's reply to your e-mail will contain an NCD customer ID number. Please include the number in subsequent e-mail messages to Product Support that pertain to this issue. Subsequent messages need not include the problem template information.

Fax Support

Before sending a fax to Product Support, make sure that it contains all of the information listed in "Information Required by Product Support" on page B-3. Then fax it to:

503-641-2959

Faxes enable the support engineer to analyze the question and prepare a solution before contacting you. When the support

engineer is prepared, it takes less of your time to resolve the problem.

Telephone Support

Before calling NCD, obtain the information listed in “Information Required by Product Support” on page B-3. Then call the following number and ask for Product Support:

503-641-2200

When you call, be at your PC, workstation, or server. Often the support engineer requests data from the machine or asks you to perform tasks on the machine.

After logging the problem with a support team member, you will receive an NCD customer ID number. Please mention the number in subsequent calls concerning the same issue.

Information Required by Product Support

- Customer ID (if you’ve contacted Product Support before)
- Your name, title, and company
- Your telephone number, fax number, e-mail address, and mailing address
- Product version and serial numbers
- Problem type (enhancement, question, bug, crash, or other)
- Problem area (hardware, server, documentation, application, configuration, network, etc.)
- Priority (low, medium, or high)
- If it is a WinCenter Connect (not WS+) problem:
 - Number and type of CPUs (e.g., Pentium) and CPU clock speed (e.g., 133)
 - Amount of installed memory (e.g., 64 MB)
 - Paging file size (e.g., 160 MB)
 - Disk controller type (e.g., SCSI)

- Disk description(s) (e.g., 2GB)
- Network card(s) (e.g., 3COM Etherlink Combo)
- Bus architecture (e.g., PCI)
- WinCenter WS+ version (select **Help** → **About** in the Chooser to display the version number)
- WinFrame version and WinFrame Service Pack (e.g., 3)
- WinCenter Connect version
- InterDrive NFS version
- Workstation or server
- Number of licenses
- If you're using NCD network computers:
 - Host type (such as Sun)
 - Version number of host operating system
 - Window Manager (NCDwm, olwm, host-based mwm, local mwm, etc.)
 - Boot method (MOP, TFTP, NFS, PROMS, or Flash)
 - Model of NCD network computer (such as HMX)
 - Amount of installed memory
 - NCDware version
 - NCDware boot prom version
- A detailed description of your problem

Accessing NCD's World Wide Web and FTP Sites

NCD provides information and product updates through these product support channels.

World Wide Web Support

NCD's World Wide Web site provides updates, product information, and technical notes. To access the NCD Web site, use your Internet browser to connect to:

<http://www.ncd.com>

FTP Support

The NCD FTP site provides product updates, NT service packs, and other software updates. To access NCD's FTP site, log into the following host:

<ftp.ncd.com>

When prompted for a user name, enter **anonymous**. When prompted for a password, enter your e-mail address. After logging in, go to the following directory to find updates for NCD WinCenter products:

[/pub/pcx/Archive/WinCenter](#)

Note Since most files are binary, remember to execute a binary command before getting a file.

Glossary

This glossary includes definitions of terms used by WinFrame, WinCenter, Windows NT, and NCDware.

- access control** Control over who or what can “access” a computer or software component. In terms of WinCenter, a method of ensuring that only authorized users from authorized WinCenter stations can connect to a WinCenter server.
- application server** A computer whose primary function is to run application programs. A WinCenter system is an application server.
- Backup Domain Controller (BDC)** A server that handles the same functions as a primary domain controller if that primary controller is unavailable. (See domain controller.)
- booting** The process of loading the first program into a machine after it has been turned on.
- chooser** A program that allows selection among servers. A window on a WinCenter station that lists available WinCenter servers on the network.

Glossary

client	A device on a network that accesses shared network resources provided by a server.
desktop	The working area of your screen where windows, icons, and dialog boxes appear. Alternatively, the Windows NT Program Manager window.
DNS	See Domain Name Service.
domain	A collection of systems that are administered together. A group of Windows NT servers that are gathered into a single administrative group. All of the servers in a domain have the same set of user accounts. A network can have multiple domains but only one NIS domain.
domain controller	A server that keeps the database defining a Microsoft administrative domain. The database identifies users and systems, both of which may be members of the domain. The server authenticates domain logons and maintains the NT domain's security policy and master database.
Domain Name Service (DNS)	A method used by a server to map hostnames to Internet addresses. The DNS is used to define a series of domains, each of which denotes a successively smaller group of systems. DNS is a distributed database that uses primary and secondary servers. Primary servers keep the original copy of a domain database and all updates must be made on the primary server. Secondary servers download copies of domain databases for reliability and security. All DNS servers network, giving the illusion of a unified domain name database.
hot fix	A software patch for correcting a specific problem in the WinFrame operating system. Hot Fixes accumulate until the next Service Pack is released.
InterDrive NT	The NFS client developed by FTP Software used in WinCenter.

IP	Internet Protocol. Part of the TCP/IP family of protocols. The protocol that specifies the most basic Internet message format.
IP address	Internet Protocol address. Internet addresses are currently 32-bit binary numbers typically written as four decimal bytes separated by periods, for example, 127.0.0.1. The IP address identifies devices on the network so that they can participate in the Internet using the TCP/IP protocols.
keymap	A definition of keyboard functions. A keymap assigns actions to specific keys on a keyboard.
load balancing	Process by which WinCenter sessions requested by WinCenter stations are distributed among several WinCenter servers to equalize the WinCenter server computing load or user load.
local area network (LAN)	A network that connects devices over relatively short distances, typically within a building or campus.
NCD network computer	An enterprise desktop device from NCD supporting applications that use various protocols (e.g., X, 3270, VT320).
NCDware	The dedicated software that controls an NCD network computer.
NCDware Console	A window that provides a variety of configuration services and diagnostic messages. You display the NCDware Console by pressing the Setup key or a key combination on your NCD network computer.
network server	A multiuser Windows NT server that provides centralized management and security, advanced fault tolerance and additional connectivity.

NFS	Network File System. A protocol developed by Sun Microsystems, and supported by most UNIX computers. NFS allows a set of computers to access each other's file systems as if they were local. NFS functionality is supported in WinCenter through InterDrive NT NFS Client.
NIS	Network Information Service. The Sun Microsystems protocol for defining administrative domains. Information shared within a computer in an NIS domain includes user and group information, system names, and mail aliases. Allows the WinCenter server to access an existing UNIX NIS database for user account and login verification.
NIS+	The Sun Microsystems protocol for defining multiple administrative domains and their relationships. More extensive and complete than NIS.
primary domain controller	See domain controller.
remote configuration parameters	In NCDware, configuration data that defines how an NCD network computer operates. These parameters are saved in a file that loads every time the device boots.
server	A computer or device that provides shared resources to network users. The WinCenter server, running the WinFrame operating system, is the computer to which WinCenter stations connect.
service pack	A patch to the WinFrame network operating system that corrects a set of problems. A service pack is a compilation of accumulated hot fixes, which addressed individual operating system problems.
shadowing	The ability for one WinCenter station to concurrently run the same desktop that another WinCenter station started, and to access the same data.

TCP/IP	Transmission Control Protocol/Internet Protocol. A common name for the Internet protocol family.
TELNET	An Internet standard protocol for connecting a text-oriented terminal or terminal window to a remote computer. Also, a program that implements telnet.
TFTP	Trivial File Transfer Protocol. The Internet standard protocol for file transfer. Used among other protocols in booting NCDware into NCD network computers.
fttpboot	Directory for storing binary files used when NCD network computers boot using TFTP.
virtual COM port	<p>A serial communications port created on a WinCenter server and mapped to one of the following.</p> <ul style="list-style-type: none">• The serial ports of all NCD network computers logged into that WinCenter server.• The serial port of one specific NCD network computer. All WinCenter stations on the network can then access that device through the same virtual COM port name.
WinCenter	Consists of WinFrame, WinCenter Connect, WinCenter PC Clients, WinCenter WS+, and InterDrive NT software products.
WinCenter Chooser	See chooser.
WinCenter Connect	A software product that delivers the Windows NT desktop from a WinCenter server to network computers, UNIX workstations, and WinCenter PC Client PCs, permitting them to run NT applications on the WinCenter server.
WinCenter server	A WinFrame server on which WinCenter Connect has also been installed.

WinCenter session	An NT desktop delivered by a WinCenter server to a WinCenter station.
WinCenter station	Any machine in your network identified by an IP address or a TCP/IP name (such as "pc_joe") capable of remotely accessing a WinCenter session. Thus, UNIX workstations, PC's, network computers, and conceivably other types of machines, such as point-of-sale terminals, can be WinCenter stations.
WinCenter station group	A named collection of WinCenter stations to which you expect to assign the same settings for a number of configurable attributes. A group can be comprised of any combination of the following member types: <ul style="list-style-type: none">• WinCenter station labels• Other groups you have already created. In other words, you can nest groups within groups.
WinCenter station label	An identifier representing one or more WinCenter stations in one of the following ways: <ul style="list-style-type: none">• A TCP/IP name. Multiple machines can be specified by using the wildcard character *. For example, PC_bob1 and PC_bob2 could be represented with the label PC_bob*.• An IP address. Multiple machines can be specified in two ways: by using the wildcard character * in the last address field, for example 125.188.107.13*, or; by specifying a range of IP addresses (for example, 125 188 107 100 - 125 188 107 155).
WinCenter WS+	A software product provided with WinCenter Connect that provides a WinCenter Chooser, local floppy support, and network audio support to UNIX workstations.
Windows NT server	A version of Windows NT that provides centralized management and security, advanced fault tolerance, and additional connectivity.

WinFrame	A multi-user Windows NT operating system, based on Microsoft's NT Server, manufactured by Citrix Systems Inc.
WinFrame server	A network server running the WinFrame operating system.
WinStation	A virtual port on the WinFrame server that has been configured to allow connection by a WinCenter Station or an ICA client.
X Display Manager (XDM)	A program that uses X Display Management Control Protocol (XDMCP) to manage login, logout, and client startup.

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