



NCDware User's Guide

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Revisions

Revision history of this document:

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9300678	Rev. A November, 1998	Revised for NCDware 5.1.
9300568	Rev. B October, 1997	Revised for NCDware 5.0.
9300463	Rev. A August, 1996	Revised for NCDware 4.1.
9300354	Rev. A July, 1995	First release of this manual for NCDware 4.0. Replaces <i>Getting Started with NCD X Terminals</i> .

Before You Begin

Intended Audience

The *NCDWare User's Guide* is for users of thin client devices (also called terminals) who have little or no experience using NCD terminals or NCDware operating system software.

The guide provides an overview of NCD terminal operations and what you can accomplish with NCDware.

In addition, the *NCDWare User's Guide* suggests ways to get the best performance out of your terminal when running either of two graphical user interfaces (GUIs) that help simplify X Window System (X) operations.

Assumptions

This guide assumes that your system administrator has already:

- Assembled your terminal and attached it to the network
- Installed NCDware on a network host
- Set up an account for you on your network's primary host computer
- Prepared the startup files you need for your terminal
- Installed the terminal on the network
- Configured the terminal

Before you start reading the *NCDware User's Guide*, ask your system administrator for the following information:

- The name of the primary host and operating system you are using
- The name of the graphical user interface or window manager you are using
- Your login and password

Note If you do not have a system administrator, refer to the system administration guides and manuals cited in “Additional Documents” at the end of this section.

Contents of this Manual

This document is organized as follows:

- ❑ Chapter 1, NCD Terminals and NCDware—Introduces NCD terminals and the NCDware operating system.
- ❑ Chapter 2, Quick Tour of an NCD Terminal—Illustrates software features and defines some concepts and terms.
- ❑ Chapter 3, NCD Terminal Interface Basics—Explains how to enter and manipulate data and manipulate windows.
- ❑ Chapter 4, Starting and Ending NCDware Sessions—Explains how to log in and out of your terminal.
- ❑ Chapter 5, Using the NCDware Console—Explains how to use the Console, which provides access to many terminal utilities.
- ❑ Chapter 6, Customizing Your Desktop Environment—Explains how to use the Console’s Change User Preferences window to change your desktop working environment.
- ❑ Chapter 7, Using the NCD Terminal Emulator—Explains how to use the NCD Terminal Emulator, which provides an alternative way to log in to a host.
- ❑ Chapter 8, Using Windows Access—Explains how to use the Windows Access utility to connect to a Windows NT server and run Microsoft Windows applications.
- ❑ Chapter 9, Using the Local NCD Window Manager—Explains how to manipulate windows using a window manager.
- ❑ Chapter 10, Using the NCD Mosaic Browser—Explains how to use the browser to view sites on the World Wide Web (WWW) or a local intranet.

- ❑ Chapter 11, Using NCD Utilities—Explains how to run Java applets, access files on PC (PCMCIA) cards and floppy disks, and play videos.
- ❑ Chapter 12, Using XRemote—Explains how to use XRemote software over a serial connection or on the LAN.
- ❑ Chapter 13, Using OpenWindows on NCD Terminals—Explains how to use the OpenWindows GUI on NCD terminals.
- ❑ Appendix A—Describes the X Window System architecture, X software components, and the characteristics that make the X environment unique.
- ❑ Appendix B—Explains how to use a touch screen monitor and a light pen.
- ❑ Appendix C—Explains how to use the *ncdfloppy* command to access a floppy drive.

This manual includes a glossary and an index.

Text Conventions

This document uses the following conventions:

Ctrl-Z	Indicates that you should press two keys at the same time; in this case, the Ctrl key and Z.
<CR>	Indicates that you should press the Return key.
⇒	Indicates movement through menus. For example, the phrase “In the Console, select Statistics ⇒ Show Version” means that you display the Statistics menu and select the Show Version menu item.
bold	Indicates a directory, file, or remote configuration parameter, such as /tftpboot or boot-automatically .

<i>bold italic</i>	Indicates a utility or a variable, such as Xncdxxx where xxx indicates the variable portion.
<i>italic</i>	Indicates emphasis or the name of a publication, such as <i>NCDware User's Guide</i> .
<code>courier</code>	Indicates information displayed on the screen or text in a file.
<code>courier</code>	Indicates information you should type.

Additional Documents

For documents describing NCD's WinCenter software, see the WinCenter manuals accompanying the WinCenter software. (See the *NCDware Publications Roadmap* for references to configuring NCDware for use with WinCenter.)

The following NCD manuals provide additional information about NCD terminals:

- ❑ NCD terminal installation booklets—explain how to unpack and set up NCD terminals and connect them to the network. Each document is designed for a specific NCD terminal or series of terminals.
- ❑ NCD memory installation booklets—explains how to install memory in NCD terminals and run the recommended memory test.

The following manuals describe NCDware. These manuals are included with the NCDware CD-ROM.

- ❑ NCDware CD Insert—explains how to install NCDware on UNIX and WinCenter hosts.
- ❑ *Remote Configuration Parameter Quick Reference*—summarizes the remote configuration parameters in a condensed format.

- ❑ *NCDware System Administrator's Guide for UNIX Systems*—explains how to customize terminals to support the users at your site and solve problems that may occur.
- ❑ *NCDware Publications Roadmap*—provides a high-level index of major topics in NCD manuals, pointing you to the documents or chapters in which the topics are addressed.
- ❑ *Using the 3270 Terminal Emulator*—explains how to use and customize NCD's local 3270 terminal emulator.
- ❑ *Release Notes*—describes new NCDware features in this release, known problems, and problems that have been fixed in this release.

The *NCDware Reference Manual* provides details about many aspects of NCDware and alternatives to some of the procedures in the *System Administrator's Guide*. It also includes topics not covered in the *System Administrator's Guide*. The *NCDware Reference Manual* is available online from the NCD Web site (www.ncd.com) or from the NCD FTP site. Printed copies of this manual can be ordered from NCD.

Using a PC Card in Your NCD Thin Client Device explains how to get terminals up and running quickly using NCDware on PC cards. This manual is included with the Quick Start PC card.

Comments on Manuals

You can send comments, suggestions, or questions about NCD manuals to the NCD Technical Publications Department by e-mail. Write to techpubs@ncd.com.

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Glossary

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1 NCD Terminals and NCDware

The NCD terminal is based on a network computing model that supports access to multiple applications running anywhere on the network. Using an NCD terminal, you can run applications residing on host computers and display the output of those applications in windows on your terminal.

This chapter describes the NCD terminal and introduces NCDware, the terminal's operating system.

Terminals—Access to All Platforms

NCD terminal design emphasizes information access across platforms, regardless of architecture.

Terminals put processing power, applications, and information wherever they are needed on the network and give each user the power of any or all of the processors on the network (Figure 1-1).

Using an NCD terminal and NCDware, you can run applications written for the X Window System, legacy applications designed for ASCII terminals, applications written for IBM 3270-series terminals, and Windows NT applications.

NCD's WinCenter software (sold separately from NCDware), also allows you to run Windows applications on your terminal. In addition, WinCenter allows you to run Java, Video, and UNIX applications on the Windows NT desktop.

Besides running applications from many different types of host systems, terminal users can use networked devices such as printers and plotters. In addition, devices attached directly to a terminal (such as a printer or a floppy drive), can be accessed by users on other terminals.

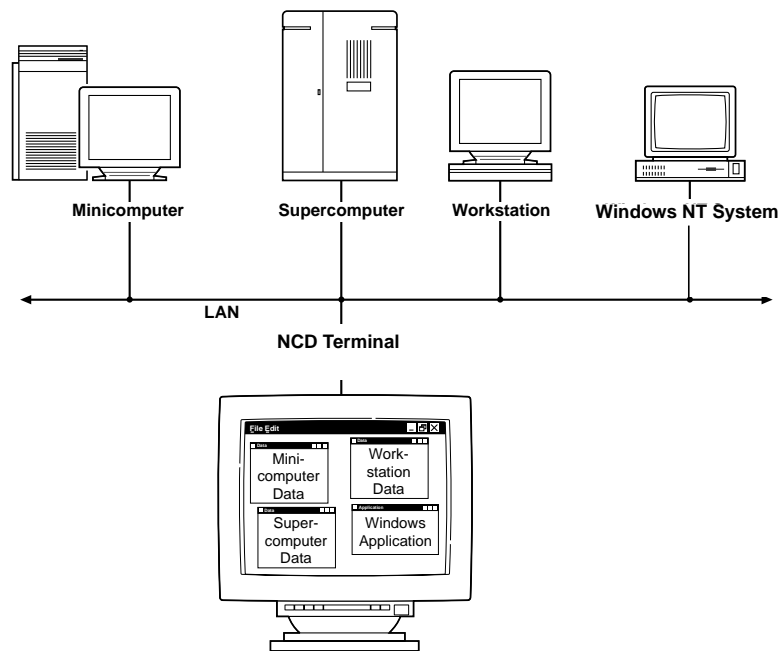


Figure 1-1 Network Computing Model

NCD terminals include:

- A monitor—receives the output from most applications and makes it visible to the user. Some customers choose to provide their own monitors.
- The base—contains the processors that run NCDware.
- A keyboard and mouse—the input devices for your terminal. Most applications take their input from the keyboard and mouse.

NCDware

NCDware consists of the operating system that runs on your NCD terminal (the basic X server plus loadable modules) and numerous host-based utilities and support files, such as fonts. This section describes the NCD X server, client software, and networking software.

The X Server

NCD X servers consist of a basic server program that handles input and output and network communications, and a number of smaller modules. Normally, the modules are not loaded by the terminal until you start a program requiring that module. For example, the DPS (Display PostScript) module is not loaded unless you start an application that uses Display PostScript.

NCD User Services

NCD User Services is a set of commands and configuration and management tools accessed through the Console (Figure 1-2). The Console appears on the terminal screen when you press the Setup key.

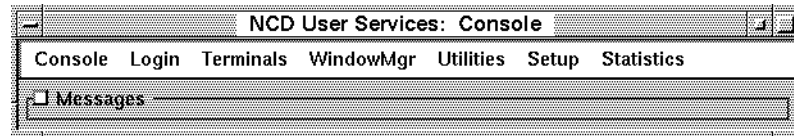


Figure 1-2 The Console

Some NCD keyboards do not have a Setup key. Table 5-1 on page 5-2 lists the equivalent key combinations for displaying the Console.

Other methods of accessing NCD User Services are described in the *NCDware System Administrator's Guide*. Your system administrator may set up some of these alternatives for you.

The Console provides access to a variety of NCD utilities that allow you and your system administrator to manage your X session, network access, and terminal environment, including:

- Customizing your environment
- Logging in and logging out
- Rebooting the terminal
- Connecting to hosts and running applications
- Running NCD utility programs, including the local window managers
- Examining statistics that describe the performance of your terminal and the network

NCD User Services includes local applications that run on the NCD terminal.

Local Window Managers and Companion Software

The NCD window managers provide the window frames used to change the size and location of windows. The local window managers look and function like the OSF/Motif window manager, but, unlike the Motif window manager, they run on the terminal's processor instead of on a host computer on the network. (The NCD Window Manager can also run as a host-based client.)

Note Using the local Motif Window Manager requires a license.

A major benefit of a local window manager is that it responds more quickly than host-based window managers to window operation requests. In addition, it allows you to use the terminal in non-X environments.

Keymap Editor

The NCD Keymap Editor provides an easy-to-use interface for reassigning keyboard keys for the local terminal emulators.

Font Utilities

NCD terminals are configured to download fonts from a host by default. NCDware includes utilities for converting fonts to formats that NCD terminals can use.

See “Font Options” on page 6-7 for information about adding fonts to and deleting fonts from your terminal’s font path.

The NCD Font Server centralizes font management. It runs on a network host and provides scalable fonts so that the bitmaps for every font size do not need to be stored on the host.

System Administration Utilities

NCDware includes host-based utilities that simplify network administration through centralized management. These facilities are normally used by the system administrator.

System administration software is described in the *NCDware System Administrator’s Guide*.

Network Connectivity

NCD terminals provide multi-vendor connectivity via their Ethernet, Token-Ring, and serial communications interfaces.

LAN Connection

Local area network (LAN) connections for terminals vary, depending on the model and the interface board installed in the terminal.

HMX Terminals

For the HMX family of terminals, the network connections depend on the type of interface board installed in the terminal:

- If you have an ESP (Ethernet/Serial/PC) board, your HMX terminal has an Ethernet port, a parallel port, and up to three serial ports.
- If you have a TRP (Token-Ring/PC) board, your HMX terminal has a serial port, a parallel port, a shielded Token-Ring connector, and an unshielded Token-Ring connector.
- If you have a PEP (Parallel/Ethernet/PC) board, your HMX terminal has a serial port, two parallel ports, a twisted-pair Ethernet connector, and a thin Ethernet connector.

- ❑ If you have a NIM (Network Interface Module) board, the terminal has a serial port, a parallel port, and either a thin or twisted-pair Ethernet connector.

Communication Methods

NCD terminals can communicate over a LAN or serial connection in various ways:

- ❑ Over Ethernet using TCP/IP or DECnet/NCDnet protocols. TCP/IP and DECnet can be used concurrently.
- ❑ Over Ethernet using the LAT protocol, typically supported by Digital hosts.
- ❑ Over Token-Ring using TCP/IP.
- ❑ Over a serial connection (or a LAN) using NCD's XRemote software.

Serial Connection

NCD terminals can have up to three serial ports with RS-232 C connectors. The ports are used for:

- ❑ Local or remote serial connections.
- ❑ XRemote, the NCD software for running X over a serial connection. For information about XRemote, see Chapter 12, Using XRemote.
- ❑ A printer or any serial input/output device

Parallel Connection

HMX, Explora, Explora Pro, Explora 400/450 series, and Explora 700 terminals and interface boards include an industry-standard Centronics-compatible parallel port. The parallel port supports output devices only. You can attach a printer or floppy disk drive to the parallel port.

2 Quick Tour of an NCD Terminal

Tip

A network might also include PCs. To access PCs from NCD terminals, the PCs must be running NCD's WinCenter software or Citrix WinFrame or MetaFrame software.

This chapter is a short introduction to NCDware.

In the example provided in this chapter (writing a memo), the terminal is on a network with computers that provide data storage and run user software, such as word processors.

Note Your software setup may be different from that used in the example, so it may function somewhat differently.

If you have questions about how your particular system differs from the examples included in this guide, refer to these sources for more information:

- The *NCDware System Administrator's Guide*
- Your system administrator

For further information about each of the functions introduced in this chapter, see "For More Information" at the end of each section.

Power On, Booting, and Logging In

Tip

Most users keep their terminals powered on. They log out when they leave their terminals for an extended period and log back in to start another session. To save electricity, users who do not have ENERGY STAR-compliant monitors can turn their monitor off when not logged in.

When you power on your NCD terminal to start a session, it automatically starts the boot process.

The boot process tests the terminal's memory and then loads the system software. You can tell that the terminal is booting by the appearance of test results and other information that scrolls by on the display. It takes approximately 20 seconds to boot.

When the boot process is complete, the Console and Login Chooser appear on the display (Figure 2-1).

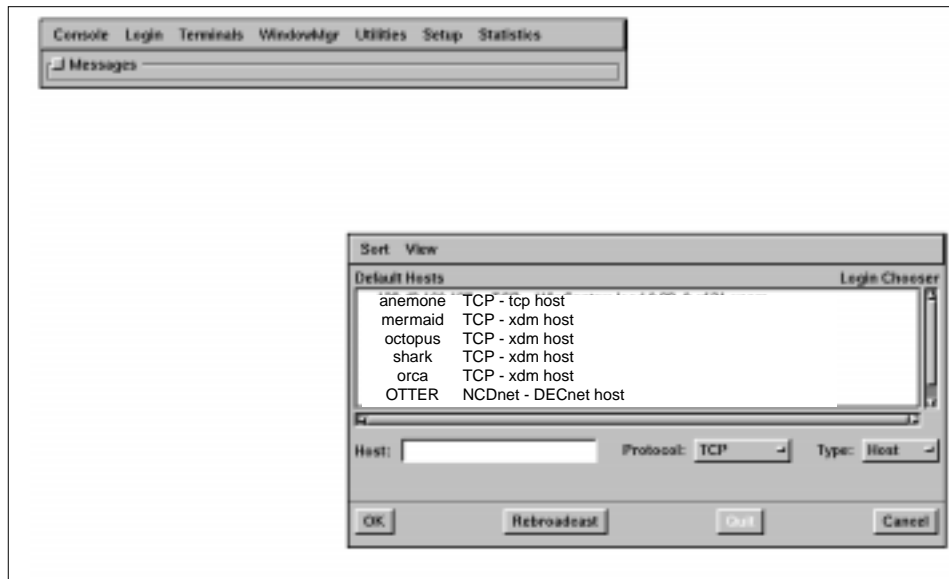


Figure 2-1 Screen Display Immediately After Booting

About the Console

The Console provides a way of:

- Connecting to host computers and applications
- Customizing your working environment

Logging In

By default, the Login Chooser displays after booting; however, system administrators can choose to set up an entirely different login method. These different login methods are described in later chapters.

The Login Chooser lets you select a login host and start a session on that host. You select a login host by:

- Moving the mouse pointer to a hostname in the `Default Hosts` list
- Clicking the left mouse button to highlight the hostname
- Clicking the `OK` button to confirm the selection

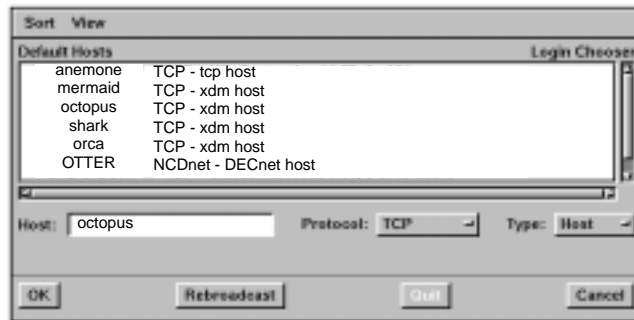


Figure 2-2 The Login Chooser

If your login host is not listed in the Login Chooser, contact your system administrator. You may need to enter the name of a host in the `Host :` field.

Once you select a login host, the Console and Login Chooser close and a login banner appears (Figure 2-3).

The login banner contains prompts that show you where to enter your login name and password.

To log in, enter your login name and password in the login banner.

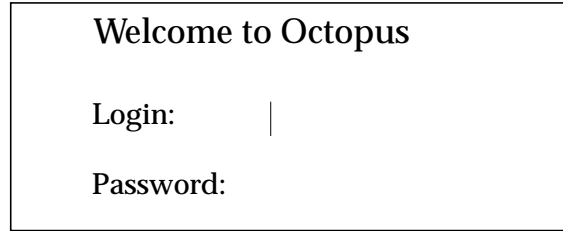


Figure 2-3 A Login Banner

For More Information

For more information on powering on, booting, and logging in, see the *User's Guide* sections listed in Table 2-1.

Table 2-1 Powering On, Booting, and Logging In

For Information On	Look In
Booting	"Booting" on page 4-2
Logging in	"Logging In" on page 4-2
Logging into a remote host	Chapter 12, Using XRemote "Using the NCD Terminal Emulator" on page 7-1
X software and hardware	Appendix A, The X Window System and NCD Terminals
Console	Chapter 5, Using the NCDware Console
Logging in to a Microsoft Windows NT host	Chapter 8, Using Windows Access

Starting Applications

After you enter your login name and password, the applications configured to start automatically are displayed. Figure 2-4 shows a display on which a clock and a terminal emulator started automatically. These programs are called clients. A client is a software application that is written especially to run with the X Window System. Unless there's an important reason to distinguish between an application written for X and one that is not, this guide uses the term application instead of client.

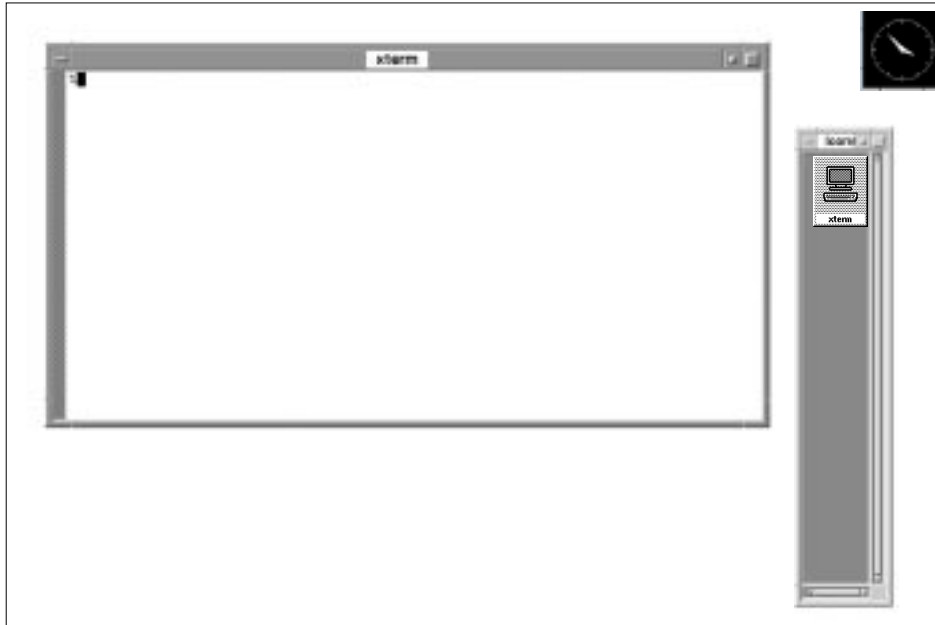


Figure 2-4 A Display After Login

A terminal emulator is an application that provides a connection to a host for using programs written for ASCII terminals or other legacy applications. One of the most frequently used terminal emulators is *xterm*, which runs from a host and mimics the behavior of a VT102 terminal.

Another application, called a window manager, also started automatically. The window manager controls aspects of the appearance and function of the windows in which the other applications appear. For example, the window manager provides the outside borders of a window. Refer to “Using Windows” on page 2-8 for details on how to use a window manager.

Starting Applications from Root Menus

One way of starting applications is to display a root menu. An example menu is shown in Figure 2-5.

xterm	->
Applications	->
Utilities	->
Games	->
Log Off	->

Figure 2-5 A Root Menu

A root menu is a menu that appears when you place the mouse pointer on the root window (the background upon which the other windows appear), and click a mouse button. Often, root menus are set up by the system administrator to list the most frequently used applications.

Root menus may be *cascading*; for example, when you click the Applications item in the root menu, a submenu appears (Figure 2-6).

xterm		
Applications	->	-Apps-
Utilities	->	Calculator
Games	->	Clock
Log Off	->	Text Editor
		FrameMaker

Figure 2-6 A Submenu

When you select an application from the submenu, the menu close, and the application opens in its own window.

For More Information

For more information on connecting to hosts and starting applications, refer to the sections in this manual listed in Table 2-2.

Table 2-2 Starting Applications

For Information On	Look In
X applications	Appendix A, The X Window System and NCD Terminals
Starting applications automatically	“Startup File” on page 4-5
Terminal emulators	Chapter 7, Using the NCD Terminal Emulator
Starting applications manually	“Starting Applications” on page 9-4
Root window and root menu	“Starting Applications” on page 9-4
Microsoft Windows applications	Chapter 8, Using Windows Access

Using Windows

As an example of how to manipulate windows, assume you are copying some information from an old memo into the report you are writing. The report is in a file you created using the FrameMaker application (Figure 2-7).

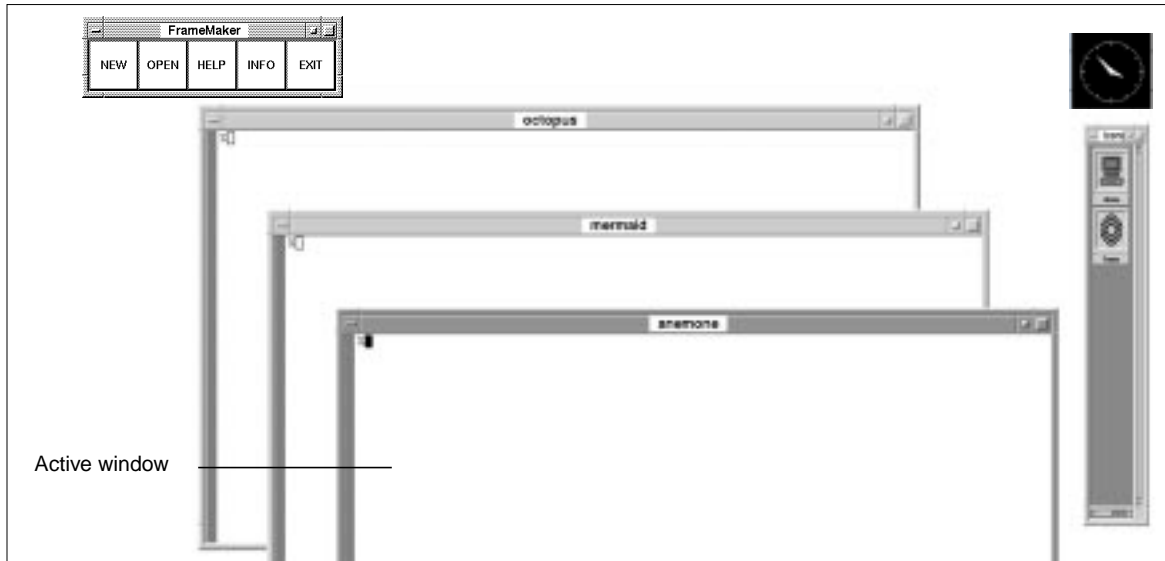


Figure 2-7 Starting an Application

Tip
The active window is the window that accepts keyboard and mouse input.

To read the old memo, you must make one of the terminal emulator windows the active window.

Making a Window Active

You make a window active by placing the mouse pointer on the window and clicking the left mouse button.

The frame of the active window is different from the other windows. In the example shown in Figure 2-7, the frame on the active terminal emulator window is darker than the frame around the other windows.

You use the terminal emulator just as you would a terminal connected to the host. In this introduction, we assume the host

is running the UNIX operating system, so you can use the UNIX *vi* editor to display the memo.

Next, you open the FrameMaker file that contains your report.

Resizing a Window

The part of the report displayed in the FrameMaker window is too small for your purpose, so you use the window frame to make the window larger. First you click with the left mouse button in the FrameMaker window to make it the active window. Then you place the pointer on the resize handle in the corner of the window frame. You drag the mouse while pressing the left mouse button (Figure 2-8).

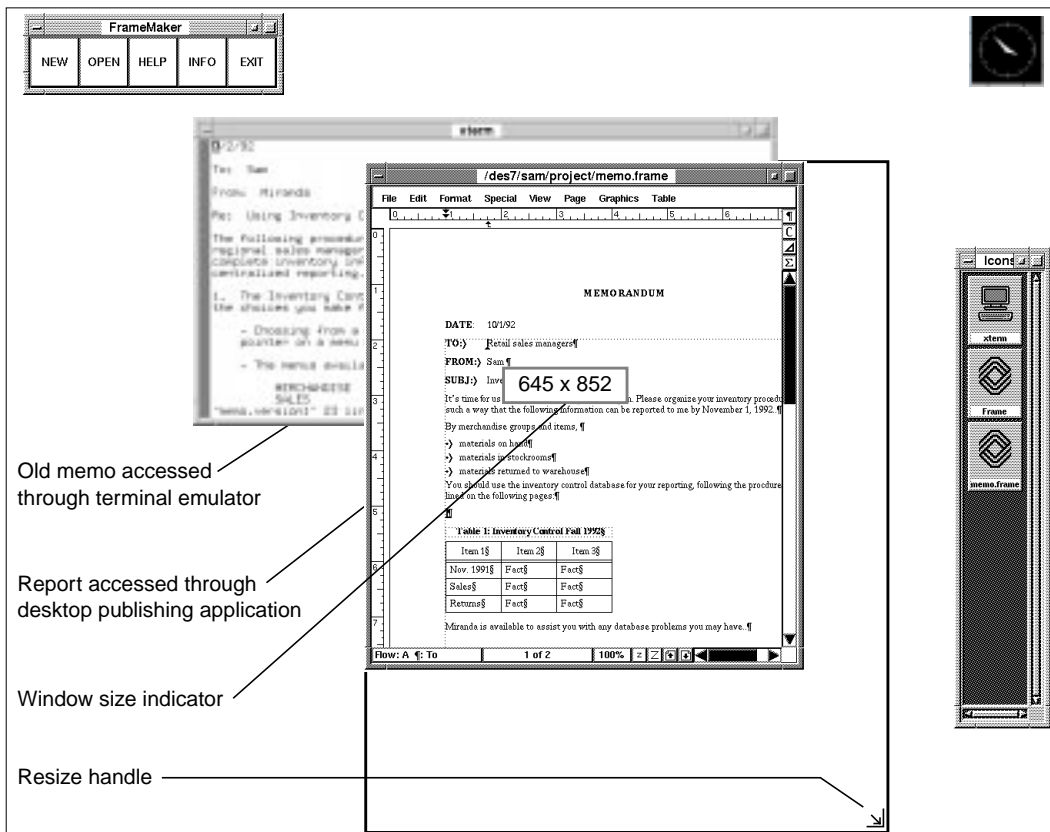


Figure 2-8 Enlarging a Window

As you drag the mouse, an outline of the window appears and changes size in proportion to the mouse's movement. A small box in the center of the display indicates the size of the outlined window in a unit of measurement set by the application (typically pixels or rows by columns).

When the window outline is the size you want, release the mouse button. The window immediately changes to the size of the outline and more of the report shows in the window.

You then decide you want to compare the old memo against another one. You need another terminal emulator to look at the second memo, so you display the root menu again and select `xterm`. This starts another terminal emulator (Figure 2-9).



Figure 2-9 Adding Another Terminal Emulator

You use the *vi* editor again to view the file containing the second memo. The second terminal emulator window overlaps the window containing the first memo, so you need to move the windows to compare the two.

Moving a Window

To move a window, place the pointer on the title bar running across the top of the window frame, press the left mouse button, and drag the mouse. An outline of the window appears, moving in proportion to the movement of the mouse (Figure 2-10).

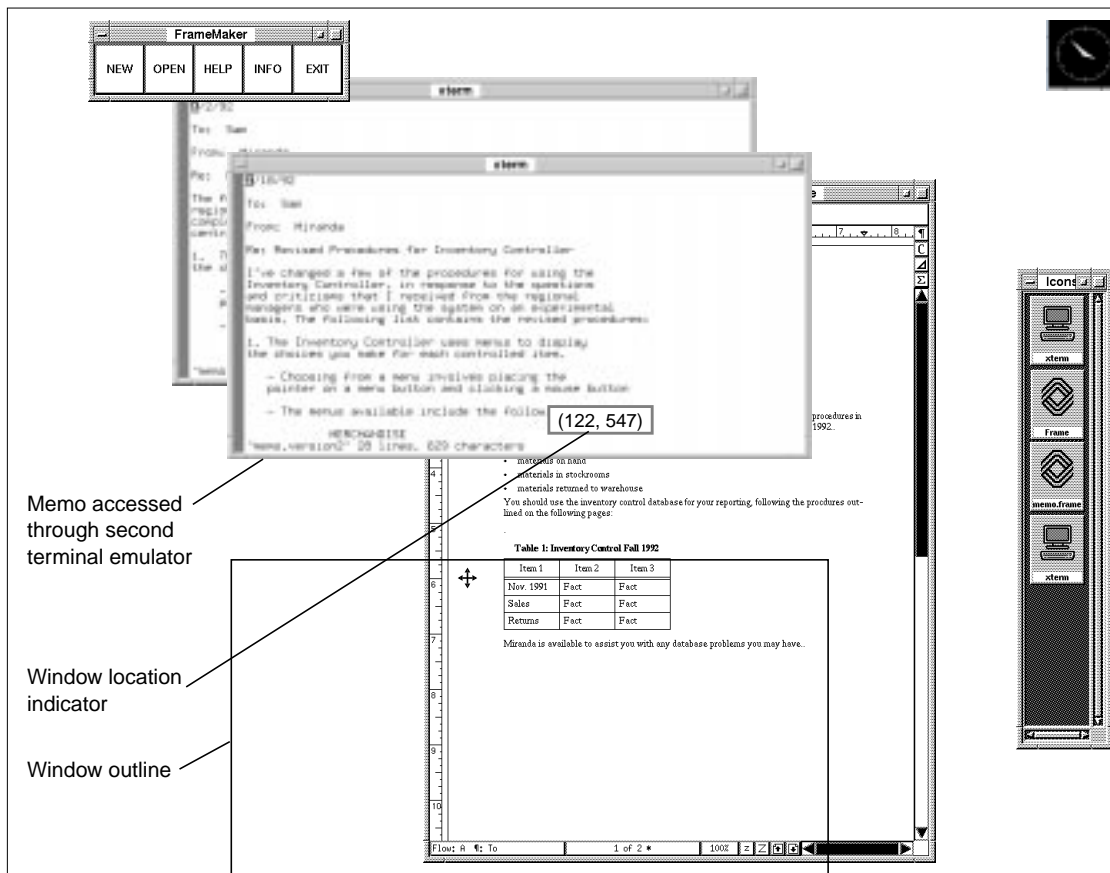


Figure 2-10 Moving a Window

A small box in the center of the display indicates the location of the upper-left corner of the outline.

When the outline is where you want the window, release the mouse button. The window immediately moves to the spot where the outline appeared.

After studying the windows, you decide you don't need the information in the first memo after all, so you exit the *vi* editor and close the terminal emulator by double clicking the Window menu button in the upper-left corner of the window frame (Figure 2-11). The window closes.

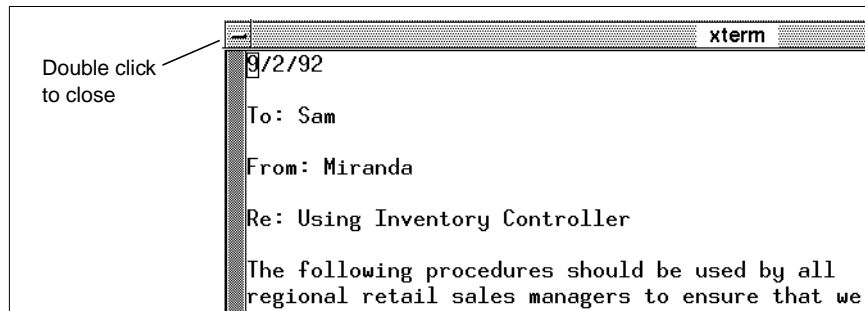


Figure 2-11 Using the Window Menu Button

Cut and Paste Between Windows

Next, you want to copy a portion of the memo and paste it into the report. To do so, you:

1. Press and drag the left mouse button to highlight some text in the memo.
2. Click in the window containing the report to make it the active window.
3. Place the cursor where you want the text to appear.
4. Click the middle mouse button to place the highlighted text into the report at the position of the pointer.

For More Information

For more information on using window managers, refer to the sections in this manual listed in Table 2-3.

Table 2-3 Using NCDware

For Information On	Look In
NCD Window Manager	Chapter 9, Using the Local NCD Window Manager
Active window	“Focus Policy—Directing Input to a Window” on page 3-6
Changing window size	“Changing Window Size” on page 9-13
Window manager resize handles	“NCD Window Manager Windows” on page 9-6
Moving windows	“Moving Windows” on page 9-12

Locking the Screen

Tip

On keyboards without a Setup key, pressing a combination of keys displays the Console. See Table 5-1 on page 5-2

After saving and printing the report, you intend to leave your terminal for a while. You don't want to leave your terminal available for other users, yet you don't want to have to log in all over again when you return.

To secure the terminal, press the Setup key to display the Console (if it's not already on the screen) and select **Lock Screen** from the Utilities menu (Figure 2-12).

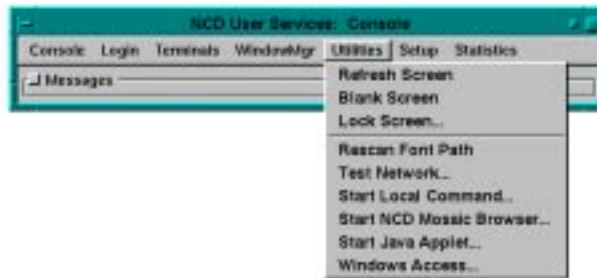


Figure 2-12 The Console's Utilities Menu

The Lock Screen utility blanks the screen except for a popup window that prompts you to enter a password (Figure 2-13).

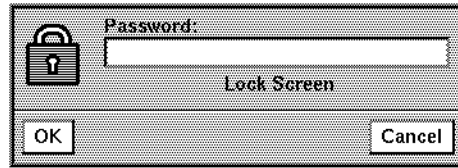


Figure 2-13 The Lock Screen Utility

As you type the password, asterisks appear instead of the characters you type. After you type the password, the box reappears prompting for the password again.

Until you retype the same password in the dialog box, the terminal display is locked and accepts no input.

For more information, see “Locking the Screen” on page 4-5.

Logging Out

Tip

On keyboards without a Setup key, pressing a combination of keys displays the Console. See Table 5-1 on page 5-2.

Before logging out, quit all applications to prevent losing data or leaving incomplete processes running on the host:

1. Press the Setup key to display the Console if it’s not already on the screen.
2. Select the Login menu and click the Logout item. A popup window appears asking you to confirm that you want to log out.
3. Click Yes. The popup window closes, as do any applications that are still running, and in a moment the Console and Login Chooser redisplay so that you can begin another session when ready.

For more information, see “Logging Out” on page 4-7.

3 NCD Terminal Interface Basics

This chapter describes the following input devices and user interface operations familiar to most terminal users:

- The mouse pointer
- The keyboard
- Window management tools
- Motif-style graphical tools

If you want to know more about your system's input devices and user interface, refer to:

- The *NCDware System Administrator's Guide*
- Your system administrator

Using the Pointer

Pointer movement corresponds to movement of the mouse, and indicates where you direct your input.

The appearance of the pointer varies with the type of window manager you are using and the location of the pointer on the screen. For example, when using the NCD Window Manager to perform certain operations, the pointer has an arrow shape. However, when you place the pointer on the root window, it has the shape of an X.

For more information about the different kinds of pointers, see "NCD Window Manager Pointers" on page 9-9 and "Components of the OpenWindows GUI" on page 13-3.

Controlling Pointer Motion

The Change User Preferences utility (accessed from the Console's Setup menu) includes a setting for adjusting the mouse pointer's speed relative to the movement of the mouse. This is especially useful for moving the pointer over a large area of the screen. For more information about changing mouse tracking speed, see "Pointing Device Options" on page 6-12.

Mouse-Button Mapping

The standard mapping of a three-button mouse, with the cord pointing away from you, is:

- Left button (also called physical button 1) as logical button 1
- Middle button (also called physical button 2) as logical button 2
- Right button (also called physical button 3) as logical button 3

See "Pointing Device Options" on page 6-12 for more information about changing mouse-button mapping.

The standard mapping is preferred by right-handed people.

All references to mouse buttons in this document assume that the default (right-handed, three-button) mouse mapping is in effect.

Left-handed mapping is the reverse of the default: the left button is logical button 3, the middle button is logical button 2, and the right button is logical button 1.

Using the Keyboard

The keyboard is used to provide instructions and data to applications.

Keyboard Setup

NCD offers six types (called groups) of keyboards:

- 97-key UNIX-style—N-97/N-Kana keyboards in English and Japanese Kana
- 101-key IBM PS/2 style—N-101/N-102-key keyboards in English, European, and Japanese Kana languages; Windows 95 keyboards
- 107-key Sun Type 4 compatible style—N-107 keyboards in English
- 108-key DEC compatible (VT220) style—N-108/N-108LK keyboards in English and European languages
- 122-key 3270 compatible style—N-122 keyboards in English
- 123-key Sun Type 5 compatible style—N-123 keyboards in English

Within each keyboard group, there may be many different models; for example, keyboards for languages other than US English. When you boot your terminal, it automatically recognizes the group to which your keyboard belongs but does not automatically recognize the keyboard model unless you are using the default model, which is US English. If you are using either a non-US model or a model that is not PS/2-compatible, your system administrator can configure the terminal so it can recognize the keyboard.

You can reassign some key functions and keyboard LED functions, or assign your own functions to function keys. See “Keyboard Options” on page 6-8 for more information.

Keyboard Input Keys

A keyboard consists of several distinct groups of keys:

- ❑ The main area contains the alphanumeric keys, punctuation keys, and keys that control special functions like Shift or Enter.
- ❑ Across the top, above the main area, a series of function keys may appear.
- ❑ In addition there may be a numeric/application keypad, cursor (arrow) keys, and edit keys.

In general, if you type a key, the input is the character that appears on the key's legend (the symbol printed on the keycap).

Most keycaps have just one alphabetic character on them. Pressing it produces a lowercase character; pressing it with the Shift key produces the uppercase character.

Some keycaps have two legends per key. Pressing the key by itself results in the character shown in the bottom legend; pressing it with the Shift key results in the character shown in the upper legend.

Tip

On the N-107 Sun Type 4-compatible keyboard, you can access the third and fourth legends by pressing Alt/Graph + **key** and Alt/Graph + Shift + **key**, respectively.

Some keyboards include keys with three legends per key. The third character is produced using the combination of Alt/Graph and the key. (Alt/Graph is the label on the right Alt key on some European-style keyboards.)

The Keymap Editor allows you to change the default functions assigned to the keys on your keyboard. Talk to your system administrator, or read the *NCDware System Administrator's Guide* if you would like to learn more about this feature.

Using the Setup Key

Most NCD keyboards have a Setup key that you use to access the Console. However, for the keyboards that do not have a key labelled Setup, see Table 3-1 for equivalent key combinations.

Table 3-1 Setup Key Equivalents

Keyboard	Setup Key
N-107 Sun Type 4-compatible	Alt/Graph and Help/Setup simultaneously.
N-108 DEC-compatible (VT220-style)	Compose and F3 simultaneously.
N-108LK	Alt and F3 simultaneously.
N-122 3270-compatible	Alt and Alt-ExSel simultaneously.
Windows 95-compatible	Pause.

Using Window Management Tools

Windows are areas of the display screen to which a specific application's input and output are directed. Windows are defined by frames, usually rectangular.

The background display on which windows appear is called the root window, or the background window. When the pointer is on the root window, it has the shape of an X.

Windows that display on the root window are called children of the root window. When you start an application a new child window opens enabling input and displaying output for the application.

Using the Window Manager

See Chapter 9, Using the Local NCD Window Manager or Chapter 13, Using OpenWindows on NCD Terminals, for detailed descriptions of how to use the window manager.

This section is a general description of the functions of window managers.

The basic components of window managers are the window frame tools used for:

- Directing input to applications
- Starting and stopping applications
- Changing the size of windows
- Changing the location of windows

Many window managers also provide menu and keyboard equivalents and shortcuts for accomplishing the same operations as the window frame tools.

Focus Policy—Directing Input to a Window

Window managers provide a mechanism for selecting a window for input. When you direct focus to a window, it becomes the active window. Figure 3-1 shows how the active window is indicated by a darker window frame.

The last window opened is automatically the active window.

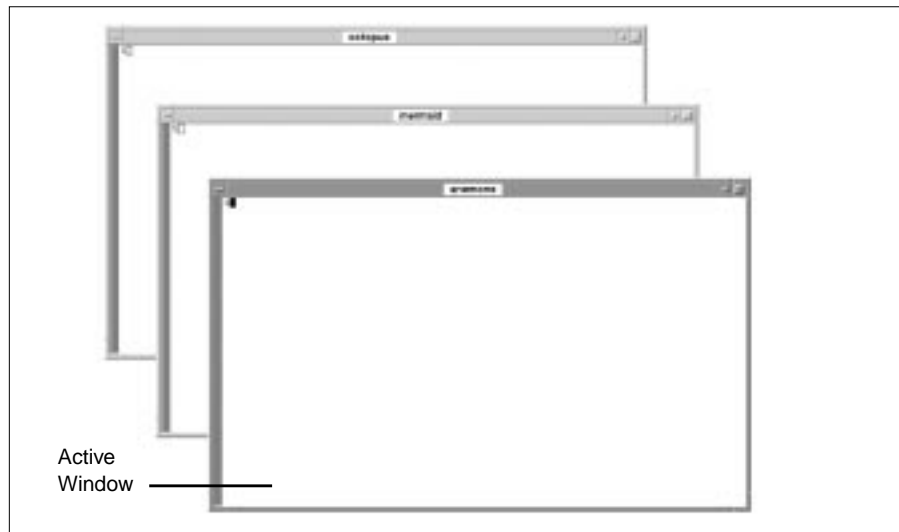


Figure 3-1 Window Manager Indicating the Active Window

The basic types of focus policy are:

- ❑ Click-to-focus—(the default policy) Place the pointer on the window to which you want your input directed, then click a mouse button to focus the input there. If you open a new window, it automatically becomes the active window.
- ❑ Explicit focus—Just like click-to-focus, except that a newly opened window is not automatically the active window.

- ❑ **Pointer focus**—You shift focus from one window to another simply by moving the pointer (without clicking) to the desired window. However, to bring the window to the front, you must click on the window border.

Like the NCD Window Manager, most window managers allow you to choose a focus method.

Iconifying and Deiconifying

When you open a window, a small, rectangular representation of it (called an icon) also appears. Icons are stacked in a special window called an icon box (Figure 3-2).

Tip

See “Iconifying Windows and the Icon Box” on page 9-14 and “Deiconifying Windows” on page 9-16 for ways to iconify and deiconify windows.

Window managers allow you to remove a window (or application) from the root window without closing it, a process called iconifying. When a window is iconified, the application does not stop, but you cannot direct input or view output.

Window managers also provides a mechanism for restoring an iconified window to its larger, deiconified form (Figure 3-2). Like the NCD Window Manager, most window managers allow you to restore the window by double-clicking on the icon.

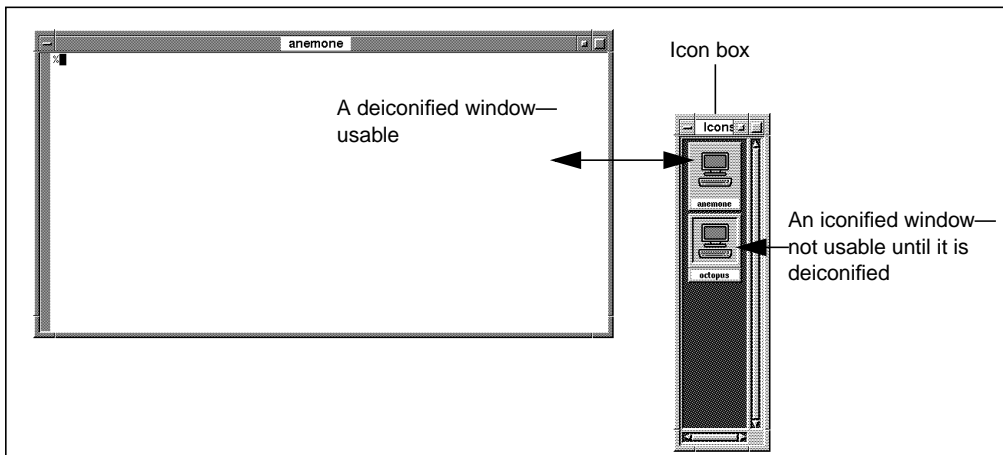


Figure 3-2 Iconified and Deiconified Windows

Closing a Window

When you close a window, the application exits unless it is running in more than one window. To close a window, most window managers allow you to either:

- Double click a window frame button, or
- Select the Close item from a window menu.

Using Motif-Style Graphical Tools

This section describes the graphical tools that appear in applications written to follow OSF/Motif style and usage.

The Console, the NCD utility for access to NCD User Services, uses OSF/Motif-style graphical tools. This section uses the Console to illustrate the tools.

Menu Bar Tools

Motif-style menu bar tools are illustrated by the Console features in Figure 3-3.

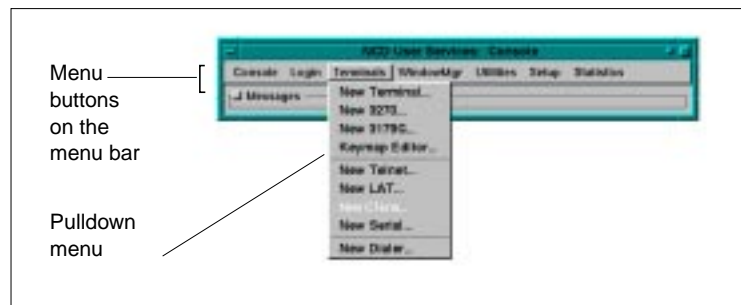


Figure 3-3 Menu Bar and Related Tools

Table 3-2 summarizes the use of the Motif menu bar tools shown in Figure 3-3.

Table 3-2 Using Menu Bar Tools

Graphical Tool	Description	Usage
Menu bar	The strip across the top of the window that contains menu buttons.	Click a button on the menu bar to access the application's main menus.
Menu button	A menu name that appears on a menu bar.	Display a menu by clicking on the menu button.
Menu or pulldown menu	A list of items that appears when you click a menu button or an option button (see Table 3-4). If an ellipsis (. . .) appears to the right of a menu item, selecting it displays a popup window.	Select an item from the list by clicking on it or by dragging to it and releasing. Close a menu without selecting an item by moving the pointer off the menu and clicking.
Popup window	A window that appears on the display screen when you click a menu item that has an ellipsis following it.	Read the information displayed in the popup window or enter information in the text entry fields.

Button Tools

Figure 3-4 shows button-type graphical tools; Table 3-3 describes them.

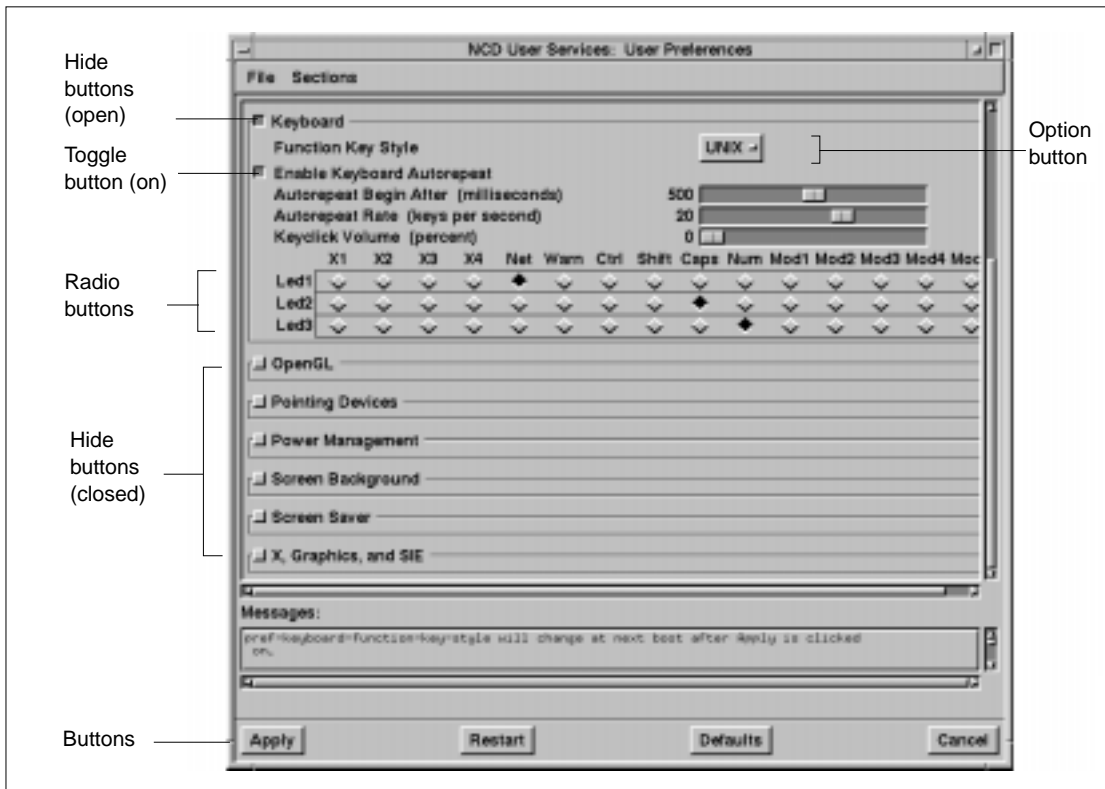

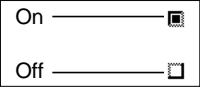
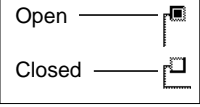
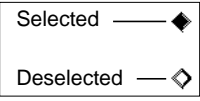



Figure 3-4 Motif-Style Buttons in Popup Windows

Table 3-3 summarizes the purpose and use of Motif-style buttons.

Table 3-3 Use of Motif-Style Buttons

Graphical Tool	Description	Usage
Button 	A rectangular box.	Click to invoke the action specified on the button.
Toggle button 	A square box to the left of descriptive text.	Click the toggle button to enable the item—the button turns solid. Click the toggle button to disable the item—the button becomes an outline.
Hide button 	A toggle button used to open or close a hide box; for example, in the User Preferences window.	Click the hide button to display the contents of a hide box—the button turns solid and the contents are displayed. Click the hide button to hide the contents of a hide box—the button becomes an outline and the contents are hidden.
Radio buttons 	Diamond-shaped buttons next to text describing choices.	Click radio buttons to select a limited number of choices among a larger number of options. If you exceed the permitted number of selections, buttons previously selected are deactivated.
Option button 	A rectangular button, labeled with its purpose, with a small dash on the right of the label	Click the option button to display a pulldown menu.

Slider and Text Tools

Sliders allow you to specify numerical quantities, and text fields display text or allow you to enter text. Figure 3-5 shows the slider and text tools; Table 3-4 summarizes their purpose and use.

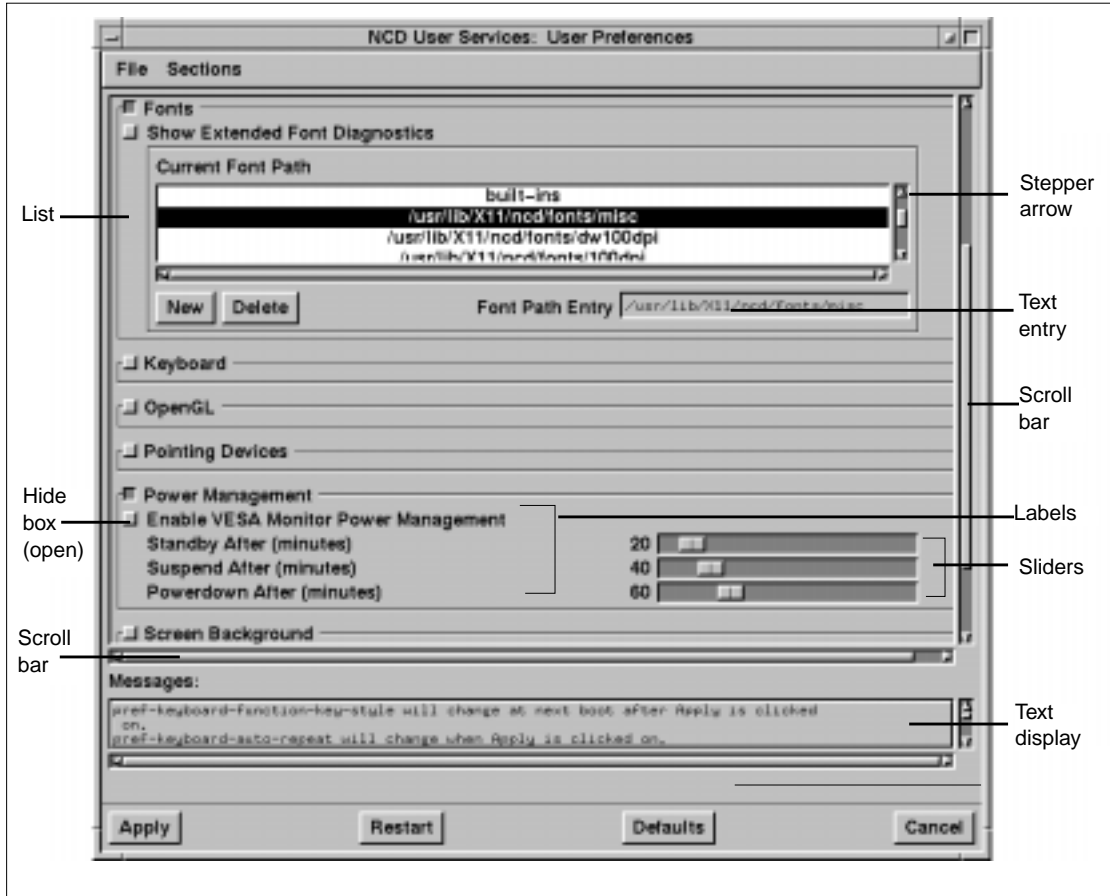


Figure 3-5 Slider and Text Tools

Table 3-4 summarizes the purpose and usage of the slider and text tools.

Table 3-4 Use of Sliders and Text Tools

Tool	Description	Usage
Label	A line of text in a proportionally spaced font.	Identifies input or output information.
Slider	A control device with a numerical value to its left and a slider bar that you can move horizontally.	Drag the slider bar to change the value. Click one end of the slider to increase or decrease the value by one.
Scroll bar	A bar along the side or bottom of a list or text display area. Between the arrows is a slider.	Click the left mouse button on the stepper arrows of a side scroll bar to scroll through text one line at a time. Press and hold the left mouse button on the stepper arrows to scroll continuously through the text one line at a time. Click the left mouse button above or below the slider bar to scroll forward or backward one page at a time. Click the slider bar and drag the slider to scroll through the text. Use the scroll bars along the bottom of the text to see portions of text that are hidden.
Text entry	Editable text in a monospaced font.	Click in the text entry field, and enter text.
Text display	Computer output text in a monospaced font.	Read the computer output for information.
Hide box	A rectangular box with a line of text in the upper-left corner and a hide button to open and close it.	Click a hide button to reveal the hide box contents—the button turns solid and the contents are revealed. Click the hide button to hide the hide box contents—the button becomes an outline and the contents are hidden.
List	Text lines in a proportionally spaced font.	Click a text line in a list to highlight the text.

4 Starting and Ending NCDware Sessions

This chapter explains how to log in, log out, and suspend an NCDware session. It also tells how to reboot (restart) an NCD terminal.

If you want to know more about your particular system setup, refer to:

- The *NCDware System Administrator's Guide*
- Your system administrator

Assumptions

This chapter assumes you are familiar with the operating system of the login host.

The procedures described in this chapter assume you are using the X Display Manager (XDM).

Turning on the Terminal

The power switch is in different locations on different terminal models. Ask your system administrator or see the terminal installation booklet if you do not know where your terminal's power switch is located.

If your NCD terminal is properly set up, it automatically loads and executes the terminal software when you turn the power on. This process is called booting.

Booting

Booting is the process of running power-on diagnostic tests, and loading and executing the terminal software. When the boot process starts, memory test results and other messages appear. If the tests pass, the terminal software is loaded into memory from a host on the network.

The boot process takes approximately 20 to 30 seconds, depending on how your system is set up.

Logging In

When the boot process is completed, an X-shaped cursor appears on the display screen until it is replaced by a small, watch-shaped cursor. Then the Console and Login Chooser appear (Figure 4-1).

Your system administrator may have configured a different initial display. For example, you may see a login banner or a terminal emulator window instead of a Login Chooser.

The Console

The Console is the primary way of connecting to host computers and applications, and accessing NCD User Services. “Basic Console Usage” on page 5-1 describes the Console in detail.

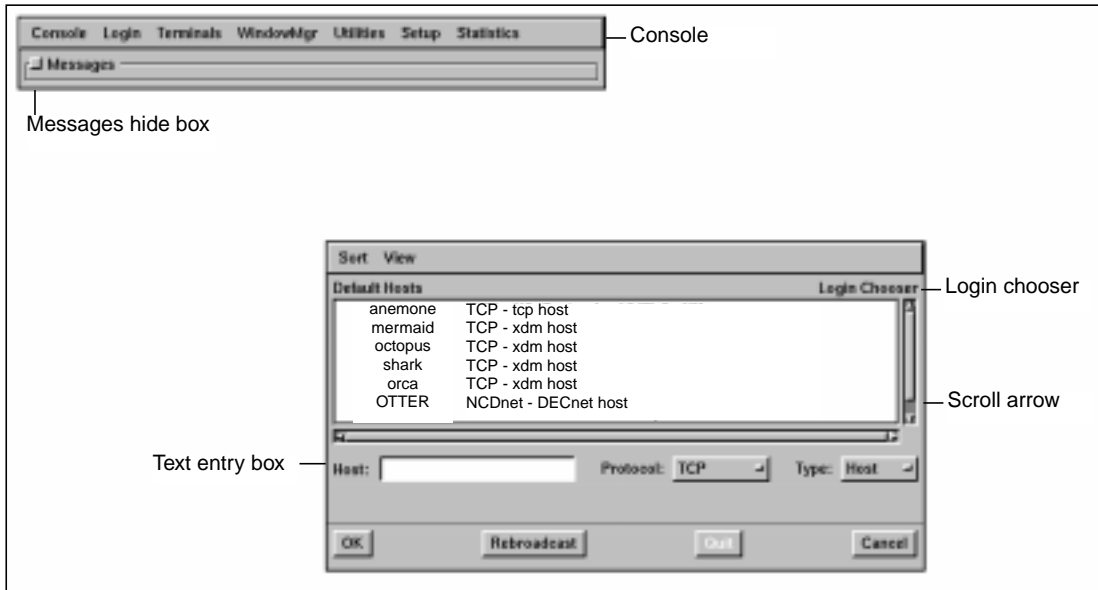


Figure 4-1 The Terminal Display After Booting

Using the Login Chooser

Tip

If the Login Chooser does not appear automatically when the terminal boots, display it manually by:

1. Clicking the Login menu button in the Console.
2. Clicking the Login New X Session item.

The Login Chooser allows you to select a login host from a list of available hosts.

To log in and choose a host:

1. From the `Hosts` list, select the name of the host you want.
 - The list is scrollable; if the host you want is not visible, click the left mouse button on the scroll bar's stepper arrow to display more host options.
 - When you select a host in the `Hosts` list, its name appears in the `Host` text entry box. The values for the `Protocol` and `Type` pulldown menus are also automatically selected.
 - You can also request a host by typing its name in the `Host` text entry box and selecting its protocol and type.

2. To establish the connection, click the `OK` button at the bottom of the Login Chooser window. The terminal software connects to the host you selected. For most systems, XDM displays a login banner (Figure 4-2). If the host you selected is not available, a message appears in the `Messages` hide box. You have the following options:
 - To cancel the request, click the `Quit` button.
 - To recheck which hosts are available, click the `Rebroadcast` button.
 - To cancel the login process and close the Login Chooser, click the `Cancel` button.

Login Banner

Logging into the host is similar to logging into any other kind of terminal. By logging in, you identify yourself to XDM. The host can then verify that you are an authorized user.

Login procedures vary, depending on how your system administrator has customized the software. Usually, a login banner (Figure 4-2) appears. To log in:

1. Type your username (also called a login name) and press the Return key.
2. Type your password and press the Return key. Your password may appear as a series of asterisks.

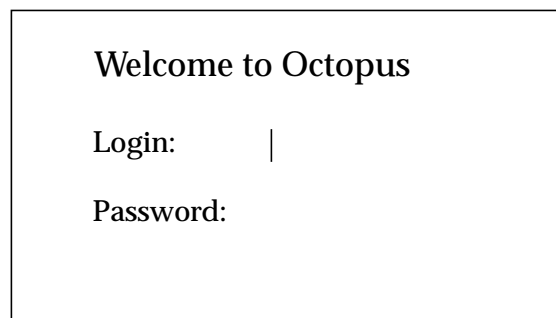


Figure 4-2 An XDM Login Banner

Startup File

After you log in, XDM reads a startup file in your home directory. This file lists applications that start automatically each time you begin a session.

After reading the startup file, XDM starts the window manager and the listed applications. For example, these might include the NCD Window Manager, a terminal emulator, and clock as shown in Figure 4-3.

The terminal is now ready for you to start applications.

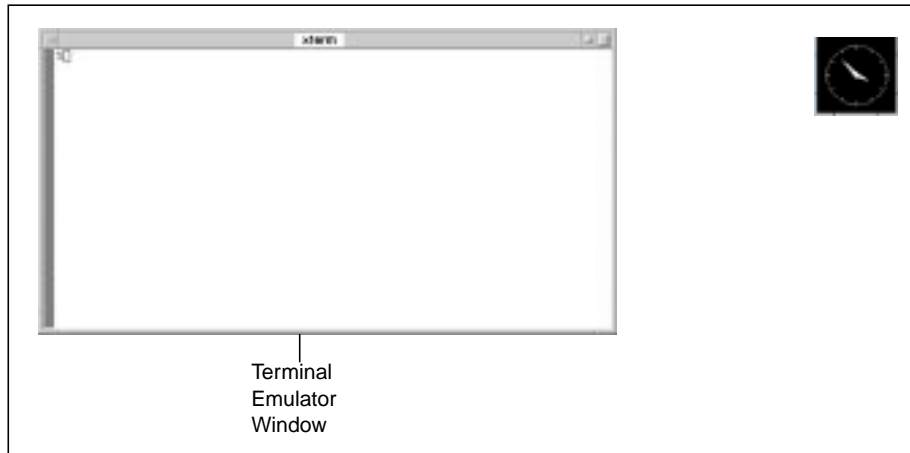


Figure 4-3 Typical Display After Login

Locking the Screen

On occasion, you may want to lock the display screen without ending your session.

To lock the screen:

1. If necessary, display the Console by pressing the Setup key. If your keyboard doesn't have a Setup key, see Table 5-1 on page 5-2 for the equivalent key combination.
2. From the Console, select Utilities ⇒ Lock Screen.

3. The screen goes blank, and the Lock Screen dialog box appears (Figure 4-4).

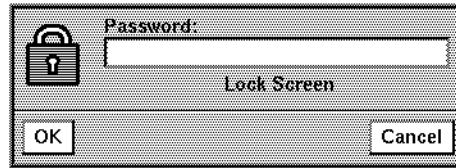


Figure 4-4 The Lock Screen Dialog Box

4. Type a password in the `Password` text entry box. This can be any password.
5. Press the Return key or click `OK`.
6. When prompted, type the password again.
7. Click `OK`; the screen displays `Screen Locked`.

To unlock the screen and resume your session:

1. Type the same password in the `Password` text entry box.
2. Press the Return key or click `OK`.

Setting Automatic Lock Screen

You can set your terminal to lock the screen automatically if you leave it idle for a specified period.

To set the screen to lock automatically:

1. From the Console, select `Change User Preferences` ⇒ `Console and Utilities`. In the `Automatic Lock Screen After (minutes)` text entry box, enter how much time must pass for the screen to lock automatically.
2. In the `Lock Screen Default Password` text entry box, enter the password you want to use to unlock the screen after the screen automatically locks.
3. Click the `Apply` button. The `Lock Screen Default Password` text entry box changes to 15 asterisks to disguise the length of your password.

Tip

Unless you ask your system administrator to save the changes you make in `Change User Preferences`, they are reset to the default settings when you reboot the terminal. (See “Saving Preferences for Later Sessions” on page 6-3.)

When you leave the terminal idle for the specified number of minutes, a popup dialog box appears so you can unlock the screen.

To unlock the screen and resume your session:

1. Type the password into the `password` text entry box.
2. Press the Return key or click `OK`.

Logging Out

As in the procedures for logging in, logout procedures depend on the software running on your system and how your system administrator has customized your environment. You can log out one of three ways:

- From the Console's Login menu
- From a root window menu
- By setting automatic logout

Logging Out from the Console's Login Menu

To use the Console Login menu to log out:

1. Select the `Login` menu.
2. Click `Logout`.
3. A popup window appears asking you to confirm that you want to end the session (Figure 4-5).
 - Click `Yes` to log out. The session ends, and the Console and Login Chooser redisplay. You can start another session by choosing a host and logging in again.
 - Click `No` to stop the logout process. The current session resumes.
 - Click `Show` to display the `Show Connections` popup window, which lists the current X connections (local and host-based applications).

Tip

Your system administrator may set up your terminal so that the popup window does not display and you are logged out immediately.

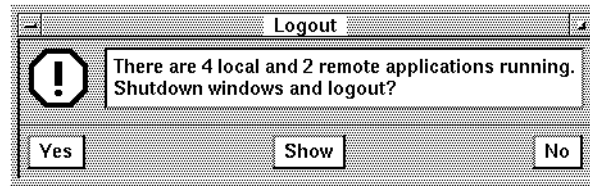


Figure 4-5 Confirming Logging Out

Logging Out from the Root Menu

Tip
See "Using Window Management Tools" on page 3-5 for more information about the root menu.

Your system administrator might configure a root menu for you to use for accessing hosts and applications and for logging out. You can display the root menu by clicking a mouse button while the X cursor is on the root (background) window. Your system administrator determines which root menu appears when you click each mouse button.

To log out from a root menu:

1. Click a mouse button. (Your system administrator determines which mouse button provides the root menu.)
2. Select `Logout`.

When you log out, a cautionary popup dialog box asks you to confirm that you wish to log out. After you click `Yes`, your session ends. The Console and Login Chooser then reappear, and you can begin another session.

Setting Automatic Logout

To configure your terminal to log out automatically after a specified period of inactivity:

1. From the Console window, select `Setup` ⇒ `Change User Preferences` ⇒ `Console and Utilities`.
2. In the `Automatic Logout After (minutes)` text entry box, enter how much time must pass for the session to end automatically.

3. In the `Automatic Logout Cancel Delay (seconds)` text entry box, enter the number of seconds of delay to allow you to cancel the logout after the popup dialog box appears.

Tip

Unless you ask your system administrator to save your changes, they are reset to the default settings when you log out or boot the terminal. (See “Saving Preferences for Later Sessions” on page 6-3.)

4. Click `Apply`.

When you leave the terminal idle for the specified amount of time, a popup dialog box appears so you can confirm or cancel the logout.

- Click `No` to stop the logout.
- Click `Yes` to confirm the logout.

Rebooting

To apply changes to your user preferences or setup parameters, you may need to reboot your terminal.

To reboot your terminal:

1. From the Console window, select `Console ⇒ Reboot`. A popup window appears, prompting you to confirm that you want to boot the terminal.
 - Click `OK` to reboot. The screen goes black, and the boot process begins shutting down all of the applications.
 - To stop the reboot, click `Cancel`. The current session resumes.
2. The reboot process takes 20 to 30 seconds. When booting is complete, the Console and Login Chooser appear.

5 Using the NCDware Console

The NCDware Console is a local application that provides access to NCD User Services. The services are a set of utilities and local applications that help optimize NCD terminal use and management.

Note

A local application is an application that runs on the NCD terminal's processor instead of a host's processor.

This chapter introduces the NCD User Services accessible through the Console and describes how to start and run them. Subsequent chapters include detailed instructions on some of the applications.



Changes made to system settings and parameters may have unexpected and undesirable results! We recommend that only system administrators change settings or parameters accessible through the Console, especially those that are not described in this guide.

Basic Console Usage

The Console window (Figure 5-1) provides access to NCD User Services.

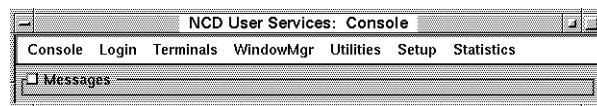


Figure 5-1 The Console

Displaying and Hiding the Console

By default, your terminal displays the Console automatically after booting.

If the Console does not open when the terminal boots, you can display it by pressing the Setup key or using an equivalent key combination if your keyboard has no Setup key (Table 5-1).

Table 5-1 Setup Key Combinations

Keyboard	Setup Key
N-107 Sun Type 4-compatible	Alt/Graph and Help/Setup simultaneously (These keys have blue letters.)
N-108 DEC-compatible (VT220-style)	Compose and F3 simultaneously
N-108LK	Alt and F3 simultaneously
N-122 3270-compatible	Alt and Alt/ExSel simultaneously
Windows 95-compatible	Pause

To hide the Console, press the Setup key or key combination again.

Accessing Console Menus

Click the Console's menu bar buttons to display menus. The menus accessible through the Console's menu bar invoke applications, utilities, and configuration parameters. Table 5-2 summarizes the commands and utilities available through each menu.

Your system administrator can control the items that are available from your Console menus. For example, if you do not perform system maintenance, you do not need access to system administration utilities.

Most users have access to the menus described in this section. You may also have access to menu items that are not described in this section. Menu items that you cannot access may be grayed out.

Starting Local Applications from the Console

To start applications from the Console:

1. Click the menu button of the main menu from which you access the application (Table 5-2).

For example, to start a window manager, click the `WindowMgr` menu button.

2. Click or drag to the item representing the application you want to start.

For example, to start the local NCD Window Manager, click the `NCD Window Manager toggle` button. The NCD Window Manager starts and the characteristic frames appear around the windows on the display.

Table 5-2 Console Pulldown Menus

Menu	Item	Description
Console	Clear Messages	Deletes all output from the Messages area.
	Rescan Messages	Recalls messages that were cleared from the Messages area.
	Abort Waiting Fonts	Cancels persistent font requests to the NCD font server (if the terminal is using the font server).
	Abort Ringing Bell	Stops the bell ringing.
	Abort Serial Line Abort Parallel Port	Cancels a serial or parallel connection.
	Reboot ...	Reboots the terminal (loads and executes terminal software).
	Close	Closes (hides) the Console.
Login	Login New Session ...	Displays the Login Chooser, allowing you to start a session.
	Logout ...	Logs you out and displays the Login Chooser.

Table 5-2 Console Pulldown Menus (Continued)

Menu	Item	Description
Terminals	New Terminal ...	Starts a terminal emulator or chooser for host connection.
	New 3270 ...	Starts a 3270 local terminal emulator. ¹
	New 3179G ...	Starts a 3179G local terminal emulator for use with 3270 IBM mainframe graphics. ¹
	Keymap Editor ...	Starts the local Keymap Editor.
	New Telnet ... New LAT ... New CTerm ... New Serial ...	Starts a terminal emulator host connection. If an NCDnet address is not assigned to the terminal, the New CTerm item is grayed out.
	New Dialer ...	Starts the dialer for XRemote.
	WindowMgr	NCD Window Manager
Motif Window Manager		Starts and stops the local Motif Window Manager. ¹
Utilities	Refresh Screen	Redraws the screen.
	Blank Screen	Starts the screen saver.
	Lock Screen ...	Locks the screen to prevent unauthorized usage.
	Rescan Font Path	Rescans the font path.
	Free DPS Memory	Releases terminal memory used by Display PostScript applications. ²
	Test Network ...	Tests the terminal's network connection.

Table 5-2 Console Pulldown Menus (Continued)

Menu	Item	Description
Utilities	Start Local Command...	Starts a local application.
	Start NCD Mosaic Browser...	Starts the NCD Mosaic Browser. ¹
	Start Java Applet...	Starts a specified Java applet. ¹
	Video Player ...	Starts the Video Player and associated programs. ²
	Windows Access ...	Allows connections to Windows NT hosts.
Setup	Change Quick Setup...	Provides access to terminal and network parameter settings. Except for Change User Preferences settings, these are primarily for advanced users and system administrators.
	Change Setup Parameters...	
	Change User Preferences...	
Statistics	Show Version ...	Provides information about the terminal hardware and software.
	Show Memory ...	Shows the amount of free memory.
	Show X Connections ...	Lists active applications and terminal resources used by each.
	Show Statistics ...	Provides detailed network statistics.
	Show Wireless...	Provides detailed wireless network statistics. ²

¹ Requires a license for use.

² Does not appear on some terminal models.

Displaying Terminal Messages

A process in the terminal monitors its activities and issues messages. The messages are collected and displayed in the Console's `Messages` hide box.

Console Messages Hide Box

Below the Console menu bar is the `Messages` hide box. To see the messages, click the hide box's toggle button.

Once you've opened the `Messages` hide box, the message area remains open—even if you remove the Console from the display and then redisplay it—until you click the hide box again to close it.

- Click the `Messages` hide box to open the Console's message area.
- Resize the Console to display as much message area as you need.
- Adjust the Console message area's scroll bars to redisplay output that has scrolled by and no longer fits in the message area.
- Click the `Messages` hide box again to close the Console's message area.

Message Categories

The Console's message area displays four categories of terminal messages. Table 5-3 shows an example of each type of message.

Table 5-3 Types of Messages

Category	Sample Message
Informational	<code>%CONFIGD-I-IPADDR, IP address for this unit: 192.43.154.123</code>
Warning	<code>%CONFIGD-W-BADPASSWD, incorrect password entered</code>
Error	<code>%CONFIGD-E-GATEWAYBADNET, gateway 89.0.0.1 is not on local net</code>
Fatal	<code>%CONFIGD-F-INITUI, unable to initialize user interface</code>

Getting Information from the Console

This section describes how to use the Console's Statistics menu to get information about the terminal, its software, and the network.

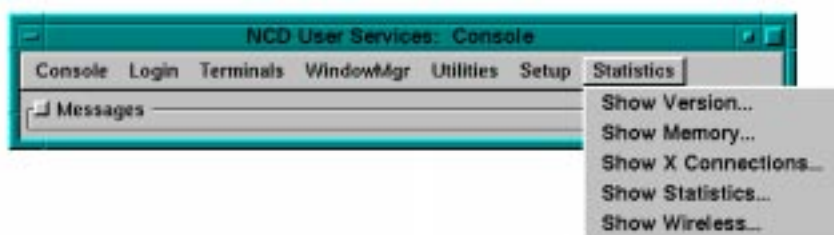


Figure 5-2 The Statistics Menu

Show Version

The Show Version item displays a popup window containing information about the terminal and its software and hardware.

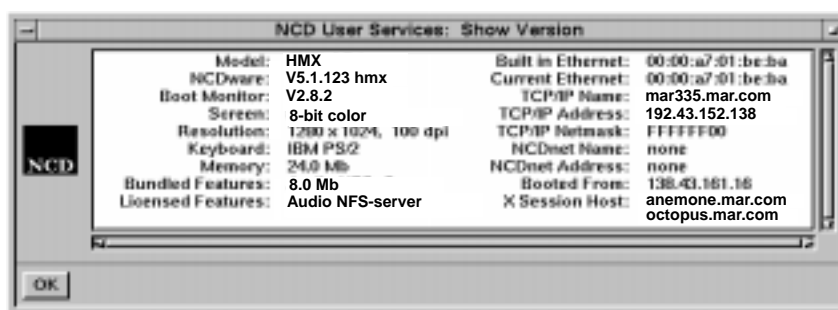


Figure 5-3 The Show Version Popup Window

Tip

On a Token-Ring network, two fields are different: Built in Token Ring instead of Built in Ethernet and Current Token Ring instead of Current Ethernet.

You can select text in this window to copy into another window.

- To select an entire row of text, click the left mouse button on the desired row.
- To select all of the text in the window, click the right mouse button on the text.

Table 5-4 explains the information displayed in the Show Version popup window.

Table 5-4 Contents of the Show Version Window

Field	Information Displayed	Field	Information Displayed
Model	Terminal model	Built in Ethernet or Built in Token Ring	Default physical Ethernet or Token-Ring network address
NCDware	Software version and X server name	Current Ethernet or Current Token Ring	Current physical Ethernet or Token-Ring address
Boot Monitor	Boot Monitor version	TCP/IP Name	Domain name (terminal's hostname for Internet communications)
Screen	Display type	TCP/IP Address	Terminal's address for Internet communications
Resolution	Display resolution and dots per inch	TCP/IP Netmask	Subnet mask (address used in routing)
Keyboard	Group name of keyboard	NCDnet Name	Node name for DECnet
Memory	Amount of memory installed	NCDnet Address	Node address for DECnet
Bundled Features	Terminal software features that you may use without an additional license	Booted From	Boot host (host from which terminal was booted)
Licensed Features	Currently licensed terminal software features	X Session Host	Login host

Show Memory

The `Show Memory` item displays a popup window containing a histogram representation of the amount of available memory.

Below the histogram, the window includes the:

- Amount of total installed memory
- Amount of free memory
- Size of the largest free memory block

The `Update` button adds to the histogram by showing an updated reading of free memory.

The `Restart` button starts the histogram again with an updated reading of free memory.

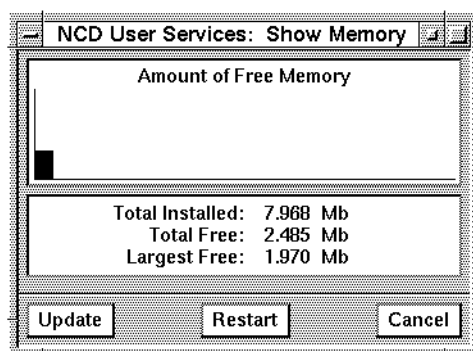


Figure 5-4 The Show Memory Window

Show X Connections

The Show X Connections item displays a popup window that lists all active X connections and the terminal resources used by these connections.

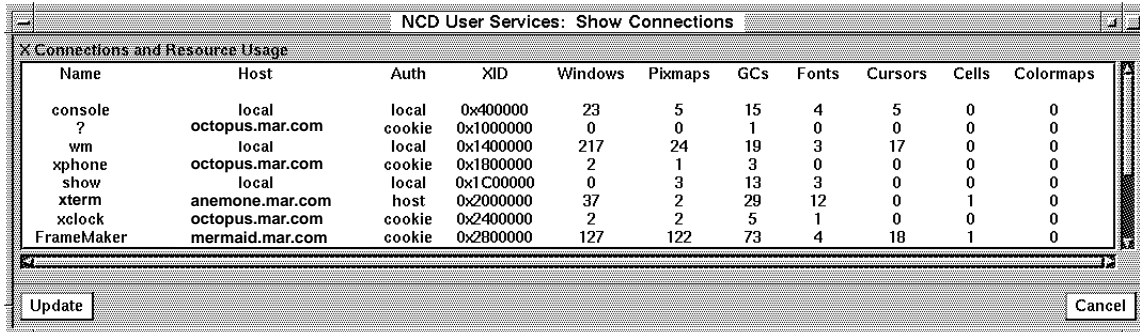


Figure 5-5 The Show X Connections Window

Table 5-5 describes the information displayed for each application.

Table 5-5 Contents of the Show X Connections Window

Field	Information Displayed	Field	Information Displayed
Name	Application's name	GCs	Graphics context information
Host	Host on which the application is running	Fonts	Number of fonts in use
Auth	Type of authorization used	Cursors	Cursors created by the application
XID	Window identification number	Cells	Color cells allocated by the application
Windows	Windows created by the application	Colormaps	Colormaps allocated by the application
Pixmaps	Off-screen drawing areas used by the application		

Show Statistics

The `Show Statistics` item displays a detailed description of system and network statistics that are primarily useful to system administrators and advanced users.

Show Wireless

Note

The `Show Wireless` command only appears if you are using an NCD Explora 400/450 series terminal.

The `Show Wireless` item displays a detailed description of the network statistics for an NCD wireless terminal.

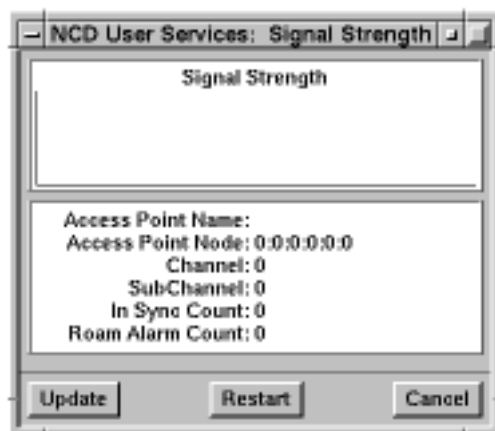


Figure 5-6 The Show Wireless Window

Table 5-5 describes the information displayed for each NCD wireless terminal.

Table 5-6 Contents of the Show Wireless Window

Field	Information Displayed
Signal Strength	Strength of the last packet received
Access Point Name	Host name
Access Point Node	IP address
Channel	Current channel
Subchannel	Current subchannel
In Sync Count	Number of times the terminal was able to synchronize to a Master station
Roam Alarm Count	Number of roaming alarm packets received; indicates weak signal strength

6 Customizing Your Desktop Environment

This chapter explains how to use the Console's User Preferences utility to customize your work environment. If you want to know more about your particular system setup, refer to:

- ❑ The *NCDware System Administrator's Guide*
- ❑ Your system administrator

Setting User Preferences

This section explains how to access the User Preferences window (Figure 6-1) and use it to make temporary or permanent changes to your desktop environment.



Changes made to system settings and parameters may have unexpected and undesirable results! We recommend that only system administrators change settings or parameters accessible through the Console, especially those that are not described in this guide.

Displaying the User Preferences Window

You can specify desktop preferences in the User Preferences window. To display the User Preferences window:

1. Press the Setup key or key combination (see Table 5-1 on page 5-2) to display the Console.

Setting User Preferences

2. Select Change User Preferences from the Console's Setup menu item.
3. The User Preferences window (Figure 6-1) appears.

Clicking a hide button reveals options that you can set to customize your work environment

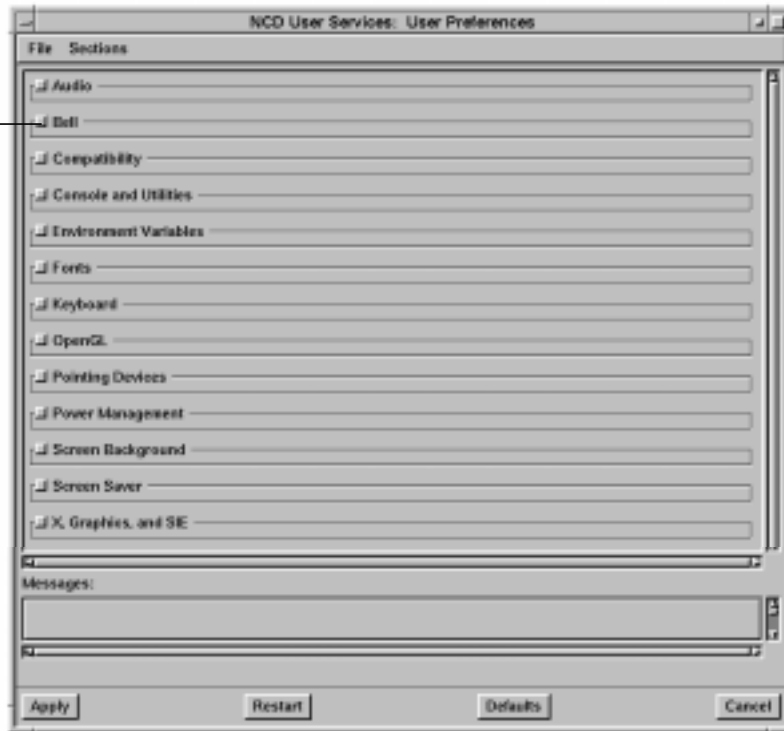


Figure 6-1 User Preferences Window

Components of the User Preferences Window

The User Preferences window consists of:

- A series of hide boxes that you open by clicking the toggle button next to the hide-box title. Each hide box contains a set of graphical tools for specifying your preference relating to an aspect of your desktop environment.

- ❑ Menus accessible from the menu bar include:
 - File menu, for specifying that changes should be saved to a file or read from a file
 - Section menu, for opening a specific sub-window without using the toggle button
- ❑ Messages area, for the terminal to report when changes take effect and other information about the process of changing preferences setting
- ❑ Buttons for applying or cancelling preferences that you specify in the User Preferences hide boxes

Specifying Your Preferences

To specify your preferences:

1. Click a hide box to display the options.
For example, click the `Bell` hide box to display the bell options available.
2. Use the graphical tools in the hide box to specify your preferences.
For example, in the `Bell` hide box, drag the `Bell Base Volume` slider to adjust the volume; drag the `Bell Duration` slider to adjust how long the bell sounds.

Applying Your Preferences to the Current Session

To apply your preferences to the current session, click the `Apply` button at the bottom-left corner of the User Preferences window.

Saving Preferences for Later Sessions

User preference settings (and any other parameters set through the Console) can be specified by your system administrator using remote configuration.

You can also save the preferences that you specify in the User Preferences window and make them available for later sessions:

1. Ask your system administrator for the name of the file to use for saving preferences.
2. From the Console, select Change User Preferences ⇒ File ⇒ Save to File.
3. In the popup window, type the name of the file on the host system where you want the preferences saved. Include the complete pathname (usually your login directory).
4. Each time you log in, the preferences you specified are automatically loaded into the terminal.

Note If you change your user preferences and log out without saving them, they revert to their default settings.

Restoring Default Preferences

If you change options in User Preferences and decide that you'd rather keep the settings that were in effect when you booted the terminal, you can click the `Defaults` button at the bottom of the User Preferences window. The settings loaded from the remote configuration file at boot time are applied to the current session.

Cancelling Changes

If you change options in User Preferences and decide that you want to cancel the changes, click the `Cancel` button at the bottom of the User Preferences window. The changes are cancelled and the User Preferences window disappears.

Closing the User Preferences Window

To close the User Preferences window, select File ⇒ Close.

Options in the User Preferences Window

This section describes the options that you can modify in Change User Preferences.

Audio Option

Click the `Audio` hide button in the User Preferences window to display the `Maximum Gain` option, which defines the maximum volume for audio applications.

Bell Options

Click the `Bell` hide box to display bell options.

The bell audibly announces events (such as the arrival of new mail) or problems (such as an attempt to scroll past the end of a document).

Enable or disable the bell by clicking the `Enable Bell` toggle button, which is enabled by default.

You can change the following bell features from the `Bell` hide box. When you change the bell values, it beeps to let you know what the new value sounds like.

- Bell volume:** drag the `Bell Base Volume` slider to adjust the percentage of the default bell volume.
- Bell pitch:** drag the `Bell Pitch` slider to choose a pitch of between 0 Hz and 3,000 Hz.
- Bell duration:** drag the `Bell Duration` slider to adjust how long the bell sounds, from 0 msec. to 1,800 msec.
- Ring Bell:** click the `Ring Bell` button to test the bell sound without changing any values.

Compatibility Options

Click the `Compatibility` hide button to display the Compatibility options. The compatibility settings control software features that can affect the performance of applications on your NCD terminal.

Click the toggle buttons to enable or disable these features.

- Permit Old X Bugs:** If enabled (the default), allows transmissions from applications that do not comply with the current X standard.
- Be Compatible with Old DECwindows Vendor String:** If enabled, controls the vendor string returned by the X server to X applications that request it.
- Be Compatible with Old DECwindows Keyboards:** If enabled, changes the presentation of modifier keys to applications to accommodate DECwindows modifier key interpretation.
- Be Compatible with Old DECwindows Images:** If enabled, allows DECwindows applications to display images using the correct byte ordering.

Console and Utilities Options

The `Console and Utilities` hide box options control the Console access key sequence, automatic logout, screen saver, and time stamps in the Console's message area.

Click the `Console and Utilities` hide button to display the Console and Utilities options.

- Console Key Sequence** specifies an alternative key sequence for accessing the Console. To use this feature, type in *ModifierList-Key*, where *ModifierList* is any number of modifiers (such as Ctrl, Shift, or Alt) separated by hyphens, and *Key* is one alphanumeric or function key (such as F4, Y, or 9).

Some valid examples are:

- Shift-F9
- Ctrl-Alt-Shift-A

- Automatic Logout After (minutes), Automatic Logout Cancel Delay (seconds), and Automatic Lock Screen After (minutes)** specify how the automatic logout feature functions. See "Setting Automatic Lock Screen" on page 4-6 and "Setting

Automatic Logout” on page 4-8 for information about settings for automatic logout and screen lock.

- Delay When Blanking Screen specifies how long a delay you want from the time you select the Blank Screen utility until the screen actually blanks. Type the delay in milliseconds in the text entry box.
- Show Console Message Timestamps specifies that you want diagnostic messages to be printed with time stamps in the Console. Your system administrator might use the time stamp information to diagnose problems.

Environment Option

The Environment Variables hide box allows you to specify environment variables for Java and the NCD Mosaic Browser (for example, specifying your home directory). For more information about these variables, see the *NCDware System Administrator's Guide*.

Font Options

Click the Fonts hide button to display font options.

You can change the current font path using the Font Path Entry list and text entry field. The font path includes the font directories available for your current session.

Tip

Be careful when setting the font path for your terminal. The number of font directories and the order in which they appear affects terminal software performance, memory consumption, and the appearance of applications.

- To delete a font directory:
 - a. Click the directory you want to delete in the Font Path Entry list.
 - b. Click the Delete button, then the Apply button.
 - c. Select Console ⇒ Utilities ⇒ Rescan Font Path for the new path to take effect.
- To add a font directory or font server:
 - a. In the Font Path Entry list, determine where the new font directory should appear, and click the current directory below that. The Font Path Entry field appears.

- b. Click the **New** button. A `nil` line appears in the `Font Path Entry` list, above the directory you highlighted in Step a.
- c. Delete the word `nil` by backspacing through the word.
- d. Type the name of the font directory or font server that you wish to add to the font path and press the **Return** key. The new directory appears in the `Font Path Entry` list in place of the `nil` entry.
- e. Click the **Apply** button.
- f. Select **Console ⇒ Utilities ⇒ Rescan Font Path** for the new path to take effect.

- To save your changes to the font path for future sessions, ask your system administrator to save the settings in an appropriate configuration file.
- To see extensive diagnostic information about font access (such as notices of fonts being opened and **Font Server** activity), turn on the `Show Extended Font Diagnostics` toggle button. The diagnostic output appears in the **Console's** message area.

Tip

Do not display extended font diagnostics unless you are trying to solve font problems. The output is extensive and might obscure important messages.

Keyboard Options

Click the `Keyboard hide` button to display the following keyboard options:

- Function key mapping is either UNIX-style or VMS-style. VMS is not supported in this release.
- Keyboard autorepeat is a keyboard feature that causes continued repetition of a keystroke when you hold the key down.
 - Enable or disable keyboard autorepeat by clicking the `Enable Keyboard Autorepeat` toggle button.
 - Drag the `Autorepeat Begin After` slider to specify how long (from 0 milliseconds [msec.] to 1,000 msec.) a key must be held down before

- the autorepeat function takes effect. The value in milliseconds is displayed to the left of the slider.
- Drag the `Autorepeat Rate` slider to specify the rate of keystroke repetition (from 2 repetitions per second to 30 repetitions per second).
 - Keyclick volume is the volume of the sound that occurs when you press a keyboard key. You specify `Keyclick Volume` as a percentage of the default volume.
Drag the `Keyclick Volume` slider to change the percentage value.
 - Most NCD keyboards have LEDs. You can change the LED usage using the LED radio button matrix.
The LED functions are listed in Table 6-1.

Table 6-1 Keyboard LED Functions

Function Name	Purpose
X1, X2, X3, X4	The LED is controlled by applications.
Net	Lights the specified LED when the terminal receives network traffic.
Warn	Lights the specified LED when the terminal begins to run low on memory.
Ctrl	Lights the specified LED when the keyboard Ctrl key is pressed.
Shift	Lights the specified LED when the keyboard Shift key is pressed.
Caps	Lights the specified LED when the keyboard Caps Lock key is toggled on.
Num	Lights the specified LED when the keyboard Num Lock key is toggled on.
Mod1, Mod2, Mod3, Mod4, Mod5	User-defined. Lights the specified LED when the keyboard <code>Modn</code> (Modifier) key is pressed. Mod keys are usually assigned to Alt, Ctrl, Shift, Caps Lock, and Option keys.

OpenGL

Tip

The OpenGL graphics extension does not provide support for GL applications, which are designed expressly for Silicon Graphics, Inc. (SGI) workstations. If you try to run a GL application with output to an NCD terminal, error messages such as the following result:

```
dgl error (protocol): remote
machine not DGL capable -
tjfhTx:0
dgl error (default init):
default dglopen(tjfhTx:0,4)
returned -13
```

For more information about the differences between OpenGL and GL, see the NCD FTP site or Web site.

The OpenGL graphics extension included in NCDware provides support for running OpenGL-based graphics programs on HMX and Explora 700 terminals.

The OpenGL hide box options, which control how applications that use OpenGL process graphics, are:

- Allow Dithering:** Enables color dithering operations to improve color resolution when rendering to a visual with few color bitplanes. Dithering is performed on 24-bit visuals. When disabled, dithering is not controllable by the application.
- Allow Blending:** Enables color blending operations that combine incoming pixel color and alpha values with those of the pixel already at that location. The blending operations are available only with RGBA visuals. When disabled, the operation is not controllable by the application.
- Allow Depth Test:** Enables Z-buffering operations, used for hidden surface elimination. When disabled, the operation is not controllable by the application.
- Allow Alpha Test:** When enabled, the application accepts pixels for rendering based on their alpha values. The alpha test is available only with RGBA visuals. When disabled, the operation is not controllable by the application.
- Allow Scissor Test:** Enables scissor test operations to mask a rectangular region of the screen to prevent drawing outside of it. When disabled, the operations are not controllable by the application.
- Allow Stencil Test:** Enables stenciling operations used to prevent drawing to an irregularly shaped region of the screen. When disabled, the operations are not controllable by the application. Disabling this option saves memory.

- Allow Polygon Stipple:** Enables stippling operations used to fill polygons with a non-solid, application-defined, 32-bit x 32-bit window-aligned pattern. When disabled, the operations are not controllable by the application.
- Allow Logical Operations:** Enables bitwise logical operations that combine incoming pixel values with already drawn pixels. This is available only with color-index visuals. When disabled, the operations are not controllable by the application.
- Fast Perspective Rendering:** Enables fast perspective rendering of primitives in perspective viewing situations. Enabling this option reduces the quality of texture-mapping with large polygons that have small textures rendered in a perspective view.
- Activate Alpha Buffer for RGBA Visuals:** Enables built-in, 8-bit alpha buffers. RGBA visuals are predefined in pairs, one pair with an 8-bit-deep alpha buffer and the other, a zero-bit-deep alpha buffer. This option allows use of the 8-bit alpha buffers. Disabling it causes visuals with 8-bit-deep alpha buffers not to be advertised to applications and also saves memory. This option does not affect color-index visuals. It takes effect the next time the OpenGL extension is loaded.
- Enable 8-bit color-index double buffered Visual:** Advertises the 8-bit color-index double-buffered visual type to applications, taking effect the next time the OpenGL extension is loaded.
- Enable 8-bit color-index single buffered visual:** Advertises the 8-bit color-index single-buffered visual type to applications, taking effect the next time the OpenGL extension is loaded.
- Enable 8-bit RGBA double buffered Visual:** Advertises the 8-bit RGBA double-buffered visual type to applications, taking effect the next time the OpenGL extension is loaded.

- Enable 8-bit RGBA single buffered Visual: Advertises the 8-bit RGBA single-buffered visual type to applications, taking effect the next time the OpenGL extension is loaded.
- Enable 24 bit RGBA double buffered Visual: Advertises the 24-bit RGBA double-buffered visual type to applications, taking effect the next time the OpenGL extension is loaded.
- Enable 24 bit RGBA single buffered Visual: Advertises the 24-bit RGBA single-buffered visual type to applications, taking effect the next time the OpenGL extension is loaded.

Pointing Device Options

See Appendix B, Using Alternate Input Devices, for more information about touch screen and light pens.

Click the `Pointing Devices` hide button to display options for adjusting a mouse, a trackball, or a touch screen monitor.

- Current `Pointing Device` controls whether you are using the mouse or other device (or both) as the pointing device.
- `Threshold Distance (pixels)`. Setting the acceleration ratio higher than the default sometimes makes it difficult to accomplish fine movements with the mouse or trackball because the pointer moves too quickly across the display screen.

To alleviate this problem, drag the `Threshold Distance` slider to a new value (from 1 pixel to 20 pixels). `Threshold Distance` is the number of pixels over which the pointer moves at the default speed before the `Acceleration` value comes into effect.

For example, if you want to move the pointer at 8-pixel increments, you could set threshold at 12. Then while you move the pointer the 8 or so pixels for fine positioning, it moves at the slower default pace, allowing you to position the pointer carefully. When you move it more than 12 pixels, however, the `Acceleration Ratio` value takes effect and moves it

across the screen 3 times more quickly than your hand's motion.

- Acceleration Ratio (percent) controls how quickly the pointer moves across the screen relative to the motion of your hand. The value used is a percentage that multiplies pointer motion. Increasing pointer speed is useful if you are using a large display screen and need to move the pointer across large portions of it quickly.

For example, if you set acceleration to 300 percent, then the pointer moves across 3 times the number of pixels that your pointing device covers in any motion.

To change the acceleration from the system default, drag the Acceleration Ratio slider to a new value.

An example of a standard setting is Threshold at 1 and Acceleration at 300. These are the default values.

- Button Arrangement: choose right-handed or left-handed mapping by clicking the preferred setting in the Button Arrangement option button.
- Button Press Threshold and Button Release Threshold: set the finger pressure levels that trigger button actions and presses on touch screen monitors.

Power Management Options

Click the Power Management hide button to display the Power Management options (Figure 6-2).



Figure 6-2 Power Management Preferences



Power management should only be enabled on monitors that are VESA- (Video Electronics Standards Association) compliant. Using this feature on non-VESA-compliant equipment subjects the user to the serious risk of personal injury or permanent damage to the equipment. VESA-compliant equipment is clearly labeled. If you are unsure whether your equipment is VESA-compliant, do not use this feature until you have consulted your monitor documentation.

The US Environmental Protection Agency has instituted the ENERGY STAR Computers program, which promotes the use of energy-efficient equipment. Desktop computers, monitors, and printers purchased by the federal government must comply with the guidelines set forth in this program.

To meet the EPA's ENERGY STAR requirements, computer equipment must enter a low-power state when inactive. In the low-power state, the equipment must consume no more than 30 watts of power. To bring the equipment back to full power, the user presses a keyboard key or moves the mouse.

You can change the following power management features from the Power Management hide box:

- Enable VESA Monitor Power Management: click the toggle button to enable or disable (default is disabled) the power management feature.
- Standby After: drag the slider to specify how long (from 0 to 240 minutes, default 20) the terminal remains idle before the transition to the standby state.
- Suspend After: drag the slider to specify how long (from 0 to 240 minutes, default 40) the terminal

remains idle before the transition to the suspend state.

- `Powerdown After`: drag the slider to specify how long (from 0 to 240 minutes, default 60) the terminal remains idle before the transition to the powerdown state.

Screen Background Options

The screen backgrounds available to you depend on the type of terminal you are using and the software installed.

Click the `Screen Background hide` button to display the Screen Background options.

- To get a gray mesh pattern, click the `Default` setting in the `Screen Background Type` option box.

- To display in solid color, click the `Solid Color` setting in the `Screen Background Type` option box.

Type the name of the color you want in the `Solid Color` text entry field. The color must be specified as one of the predefined list of colors in the `/usr/lib/X11/ncd/rgb.txt` file.

You can also specify RGB levels directly using the hexadecimal `#rrggbb` notation.

- To display the contents of a bitmap file, click the `Bitmap` setting in the `Screen Background Type` option box.

Type the full pathname of the file in the `Bitmap File` text entry field. If the file is not found, ask your system administrator to mount the directory that contains the file.

Choose bitmap background and foreground colors by specifying the colors as in the predefined list of colors in `/usr/lib/X11/ncd/rgb.txt`.

Type the background and foreground color specifications in the `Bitmap Foreground Color` and `Bitmap Background Color` text entry fields.

Screen Saver Options

The screen saver utility displays a random pattern after a specified number of seconds of screen inactivity. Screen savers prevent the burn-in effect that can occur if the same image remains on the screen for a very long time.

Click the `Screen Saver` hide button to display the Screen Saver options.

- `Enable Screen Saver`: click the toggle button to enable or disable the screen saver.
- `Allow Exposures After Screen Saver`: click the toggle button to enable or disable this feature. If enabled, the terminal software discards the window contents while the screen saver is activated. The window contents must then be redrawn by the application when the display becomes active again.
- `Save Screen After`: drag the slider to specify a period of time (from 0 seconds to 3,000 seconds) that the display can remain inactive before the screen saver begins.
- `Change Screen Saver After`: drag the slider to specify a period of time (from 0 seconds to 3,000 seconds) before the screen saver changes the pattern to avoid burn-in.
- `Screen Saver Style`: specify the background to use by clicking the preferred setting in the `Screen Saver Style` option box.
 - `Blank` displays a scattering of stars.
 - `X Logo` displays an X-pattern that moves across the display.
 - `Bitmap` displays a bitmap file. Type the name of the bitmap file into the `Screen Saver Bitmap File` text entry field.

X, Graphics, and SIE

The X, Graphics, and SIE (Simple Imaging Extension) settings allow you to specify X settings related to use of graphics applications with X.

You can change the following features from the X, Graphics and SIE hide button:

- Enable Benchmark Optimizations:** click this toggle to enable or disable this feature. When enabled, some graphics operations are optimized for benchmarks.
- Enable Graphics Optimizations:** click this toggle to enable or disable this feature. When enabled, some graphics operations are optimized for speed with a possible loss in accuracy.
- Screen Resolution:** drag the slider to specify a resolution in dots per inch (from 1 to 512; 100 is default).
- Use Backing Store:** if enabled, an off-screen image of a concealed window (or portion of a window) is stored in local memory to reduce the time it takes to redraw concealed windows when they are exposed. If disabled, anything concealed by another window is discarded and the application must redraw it.

Use of backing store can involve a trade-off between performance and memory usage. Choose one of these three settings by clicking the preferred setting in the Use Backing Store option box:

- **When Mapped:** the terminal software can use backing store for all mapped (displayed) windows, even if the client has not requested the feature.
- **By Request:** the terminal software can honor requests for backing store from clients requesting this feature. By Request is the default.
- **Disabled:** the terminal software does not honor any requests for backing store from clients.

The following parameters affect SIE support, which is included in the X server but no longer supported by NCD:

- SIE Sampling Method:** specifies the sampling method to use when scaling. An option box includes four settings:
 - **Nearest Neighbor (default):** uses a scaling algorithm in which each destination pixel is reverse-mapped into the source image space, and the source pixel nearest that point is used to determine whether the resultant pixel is on or off.
 - **Any Neighbor:** looks at the four closest pixels and turns on the destination pixel if any one of those four is on.
 - **Bilinear Interp:** performs a weighted average of the four closest pixels, and turns on the destination pixel if the result is above an assigned contrast threshold. A slider allows you to set the contrast threshold value.
 - **4x4 Area:** looks at the sixteen closest pixels, and turns on the destination pixel if the sum of those pixel values is above an assigned contrast threshold. A slider allows you to set the contrast threshold value.
- SIE Contrast Threshold:** for the **Bilinear Interp** and **4x4 Area** sampling methods, specifies the contrast value (percentage) used when scaling. 50 is the default.

7 Using the NCD Terminal Emulator

This chapter explains how to use the NCD Terminal Emulator (VT320 emulation) to connect to a host. It also explains how to use and customize the NCD Terminal Emulator window.

If you want to know more about your particular system setup, refer to:

- ❑ *NCDware System Administrator's Guide*
- ❑ Your system administrator

Local Terminal Emulators

Terminal emulators are applications that allow you to connect to a host and run non-X programs.

A local terminal emulator runs on the terminal's processor, instead of a host computer, reducing host processing and memory usage.

NCD Terminal Emulator

The local NCD Terminal Emulator (VT320 emulation) connects to a host using the protocols listed in Table 7-1. You can have multiple local terminal emulator windows open on your terminal, depending on available memory.

Table 7-1 Protocols for Connecting to Hosts Using the VT320 Terminal Emulator

Protocol	Description
TELNET	A TELNET connection to various hosts. TELNET is a simple terminal emulation protocol.
LAT	A Local Area Transport (LAT) connection to a host providing LAT services. LAT is a Digital Equipment Corporation communications protocol.
CTERM	A Command Terminal Protocol (CTerm) connection to a host using DECnet/NCDnet. (An NCD terminal requires a license and an NCDnet address to participate on a DECnet network.)
Serial	A local or remote serial connection from the serial port. NCD terminals have up to three serial ports, so up to three local serial terminal emulators (or dialers) can be open at once.

NCD 3270 Terminal Emulator

The local NCD 3270 Terminal Emulator allows you to run applications developed for IBM 3270 terminals. Refer to the manual *Using the 3270 Terminal Emulator* for detailed information about this terminal emulator. A license is required to run the 3270 terminal emulator.

Connecting to a Host

This section describes how to use the Console to start a terminal emulator and log in to a host. You can display multiple terminal emulator windows simultaneously.

The Serial or Dialer connection is used primarily for connecting to a host via a modem. For information about using a modem with your terminal, see Chapter 12, *Using XRemote*.

Starting a Terminal Emulator Connection

To log into a host through a TELNET, LAT, CTerm, or serial connection, use the following procedure:

1. From the Console menu bar, select **Terminals**. The Terminals menu appears.
2. Click an item in the Terminals menu:
 - To display all possible host connections (Telnet, LAT, CTerm, and serial) select **New Terminal**. A Terminal Host Chooser window appears with a list of the default host connections that are available on your network (Figure 7-1).
 - To display only a certain kind of host connection, select one of the other items—**New Telnet**, **New LAT**, **New CTerm**, **New Serial**, or **New Dialer**.

Tip

The Terminal Host Chooser lists local services called Config, Diag, and File (Figure 7-1) that are used primarily by system administration.

Tip

CTerm requires an NCDnet license and address.

Another way to display the Terminal Host Chooser is to select **Start Terminal** from the default NCD Window Manager root menu.

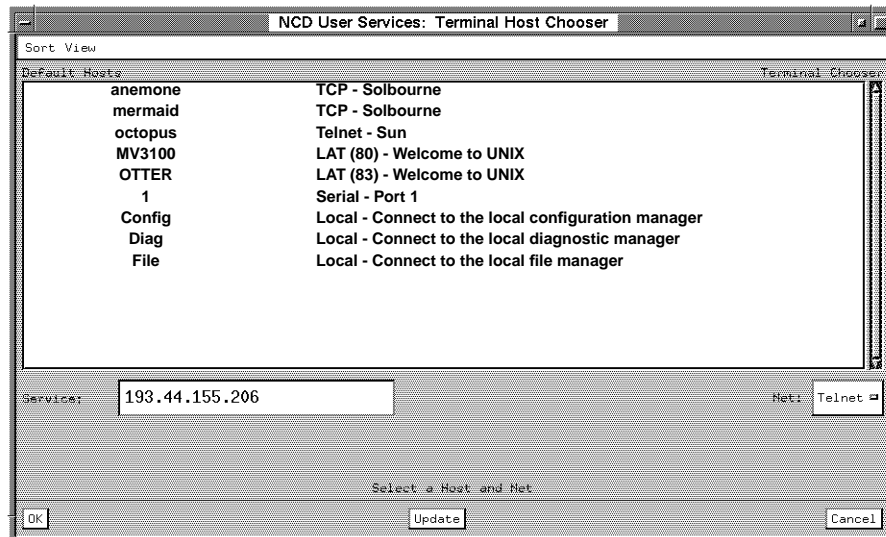


Figure 7-1 The Terminal Host Chooser Window

Selecting New LAT

When you select `New LAT` or `New Terminal`, only one line appears in the Terminal Host Chooser for each LAT service, even if the service is available on more than one host. The host connection represented by that line is selected to balance the current load on the hosts offering the service.

However, you can display all hosts offering a particular service by selecting that service and then clicking the `Show Node List` button.

Selecting New Serial or New Dialer

When you select `New Serial` or `New Dialer` and your terminal has only one serial port, a serial terminal emulator window appears.

If the serial port is not configured for terminal emulation, and you select `New Serial` or `New Dialer`, an error message appears in the `Console Messages` hide box, and no connection is made. Ask your system administrator to help you.

Selecting a Host From the Terminal Host Chooser

To connect to a host from the Terminal Host Chooser:

1. Select a host:
 - If the host you want appears in the `Default Hosts` list, click on its name.
 - If the host is not in the `Default Hosts` list, type the hostname or address of the host you want into the `Service` text entry field. You can type more than one hostname, separated by + signs, and the first available host is selected.
 - To update the list of available network hosts, click the `Update` button.
 - To sort the `Default Hosts` list by name or by network, use the `Sort` menu on the Terminal Host Chooser's menu bar.

-
- To select the types of connections to display, use the View menu.
 2. For LAT service, use one of the following methods:
 - Allow LAT to select a default LAT host node offering the service you want. Click a LAT item in the Terminal Host Chooser. The words `Node (optional)` and `Port (optional)` appear under `Service:` as reminders that you can specify the node and port as well as the service name.
 - Specify a particular LAT host node offering the service you want. Click a LAT service in the Terminal Host Chooser, and click `Show Node List` to see a list of all hosts offering that service. Click a host. The `Host:` field changes to `Service:` and the words `Node (optional)` and `Port (optional)` appear under the field as reminders that you can specify the node and port as well as the service name. Click `OK`. Click `Show Node List` again to return to the listing of available LAT services.
 3. Verify that the correct network appears on the `Net` option button.
 - a. If the wrong network appears on the `Net` option button, click the button to display your options.
 - b. Select the network you want to use.
 4. If a `Password` text entry field appears on the Terminal Host Chooser, click in the field and type your password.
 5. Click `OK` to connect.
 - The Terminal Host Chooser disappears.
 - The terminal emulator window appears. (See the example Telnet window in Figure 7-2.)
 - A host login prompt appears.

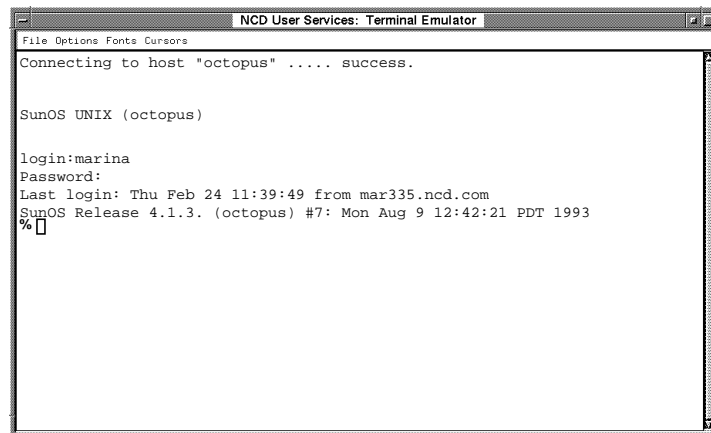


Figure 7-2 A TELNET Terminal Emulator Window

Logging Into a Host

Log into your selected host by typing your login name and your password as you are prompted by the host.

Starting Applications

To start applications from the terminal emulator window, you may need to set the *DISPLAY* variable to correctly direct output to your terminal. If an application fails to start and instead displays the message *Can't Open display*, set the *DISPLAY* variable as explained below.

In the following commands, *display* is the IP address or hostname (such as 192.43.154.205 or mar335) of the terminal.

Type one of the following commands to set the *DISPLAY* variable for the current session:

```
% setenv DISPLAY display:0 (for C shell)
$ DISPLAY=display:0; export DISPLAY (for Bourne shell or K shell)
```

If you do not know the terminal's IP address or hostname, see *Console* ⇒ *Statistics* ⇒ *Show Version*.

NCD Terminal Emulator Features

Tip

On hosts that don't require standard UNIX login and password security, your system administrator can set up your terminal to start a TELNET connection to the host using the *ncdrunterm* utility. For more information, see the *System Administrator's Guide*.

This section describes the VT320 terminal emulator features accessible from an NCD Terminal Emulator window.

The NCD Terminal Emulator, including command-line options and resource usage, is described in detail in the *ncdterm* man page.

Once you've logged into a host as described in "Connecting to a Host" on page 7-2, the terminal emulator displays the VT320 terminal emulator window (Figure 7-3).

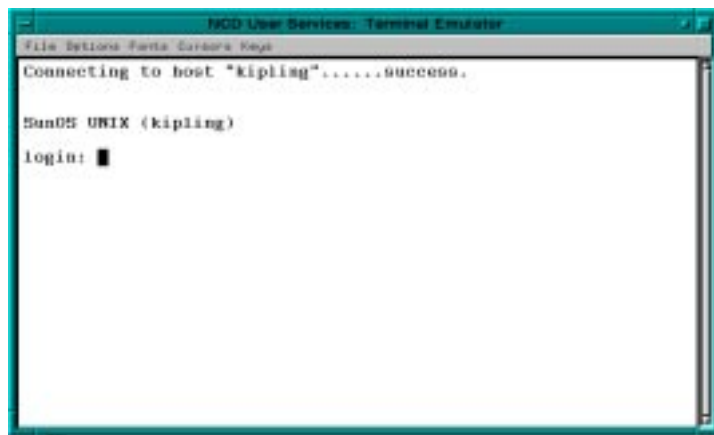


Figure 7-3 An NCD Terminal Emulator Window

The NCD Terminal Emulator offers the same features as traditional terminals plus additional features. Like a traditional terminal, you can display 24 or 25 lines of text in 80 or 132 columns, but you can also resize the window to display fewer or more rows (by changing the height) or columns (by changing the width).

Some of the terminal emulator features not found on traditional terminals are described in the following paragraphs.

Rectangular Cut and Paste

You can select, cut, and paste arbitrary rectangular sections of text in a terminal emulator window. This is useful if you want to copy a column of listed information.

1. To start the rectangular selection, press Shift and the left mouse button. The cursor changes to a plus sign (+).
2. To extend the selection, press the right mouse button (without the Shift key). The cursor again changes to a plus sign in the corner of the selection nearest the cursor, allowing you to extend the selection.
3. To paste the selection, place the pointer where you want the text, and press the middle mouse button.

Ask your system administrator if you need to change the way each line in a rectangular selection ends. The default method inserts an extra line.

Scroll Bar

Use the scroll bar on the side of the terminal emulator window to review information that has passed out of viewing range during your terminal emulator session. The Motif-style scroll bar is described in Table 3-4 on page 3-13.

Printing Services

To print the contents of the current terminal window to the default printer, select `Print Screen` from the File menu in the Terminal Emulator window.

You can change the default printer or select a different printer for a specific print job.

To change printers:

1. Choose `Select Printer...` from the File menu. The Select Printer window appears (Figure 7-4).

2.

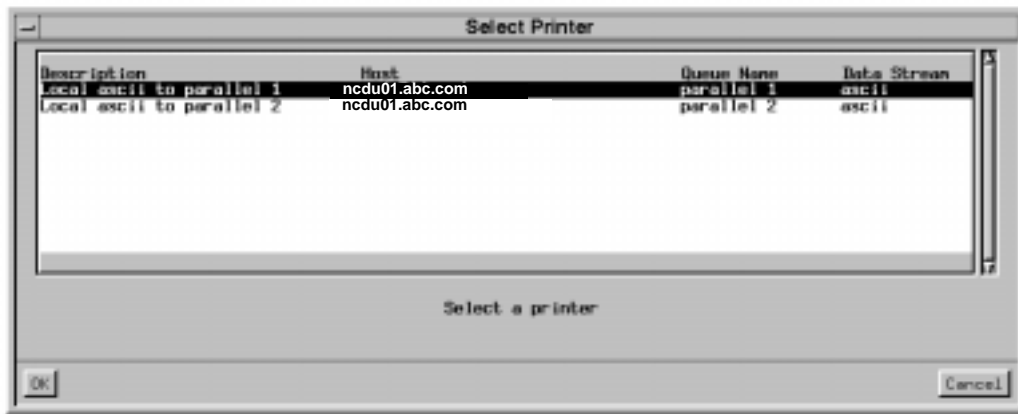


Figure 7-4 Select Printer Window

3. Select the printer you want to use.
All printers connected to a parallel port or serial port are listed. Available remote printers are also listed. The default printer is the first printer on the list.
4. Click **OK** to accept the selected printer. The selected printer becomes the default printer.
5. To print the contents of the current screen to the selected printer, select **Print Screen** from the **File** menu in the Terminal Emulator window.

Menus

Several menus are accessible from the terminal emulator's menu bar: **File**, **Options**, **Fonts**, **Cursors**, and **Keys**. The **Dialer** includes an additional **Communications** menu.

A solid toggle button indicates that an option is turned on. An outlined toggle button indicates that an option is turned off.

The following paragraphs describe the items in each menu.

File Menu

Table 7-2 summarizes the items in the File menu.

Table 7-2 NCD Terminal Emulator File Menu

Menu Item	Action
Redraw	Redraws the contents of the display window.
Soft Reset	Resets the terminal to the default state.
Hard Reset	Does a soft reset, deletes all content, clears all selections.
Close Connection	Closes the current session. In addition, for a serial session resets the serial connection to terminal mode.
Start Debugging Log	Writes the contents of the session to a log file. This function requires special set up to execute correctly. For more information, see the <i>ncdterm</i> man page.
Select Printer	Defines where a job will be printed. Lists available serial, parallel, and remote printers.
Print Screen	Prints the contents of the current Terminal Emulator window.
Print Log Buffer	Prints the entire contents of the log buffer (the window contents you can see by scrolling).
Print Selection	Prints the contents of a selection in any terminal emulator window.
Send Break	Breaks the connection. Some modems require this before they can release the connection.
Exit	Ends the session. For the Dialer and Serial terminal emulator only, this item leaves the connection in its current state.

Options Menu

The Options menu offers a variety of terminal mode settings. Table 7-3 summarizes the Options menu modes.

Table 7-3 NCD Terminal Emulator Options Menu

Menu Item	Action
Menu Bar	Removes the terminal emulator menu bar.
Jump Scroll	Enables the terminal emulator to add lines to the screen quickly.
Reverse Video	Reverses the display's foreground and background characteristics (for example, if your terminal emulator is displaying dark characters on a light background, reverse video displays light characters on a dark background).
Visual Bell	Specifies that flashing is used instead of an audible bell.
Auto Wraparound	Specifies that the character typed after the cursor reaches the right border of the page automatically appears on the next line. By default, autowrap is enabled. If autowrap is disabled, that character replaces the character at the end of the line.
Reverse Wraparound	Allows the cursor to wrap from the leftmost column on the line to the rightmost column of the previous line, thereby allowing you to backspace to the previous line.
Auto Linefeed	Generates a linefeed automatically. For use with programs that generate carriage returns without dropping down a line on the screen.
Application Cursor Mode	Generates ANSI escape sequences rather than standard cursor movements when you use arrow keys.
Application Keypad Mode	Generates control functions rather than numeric characters when you use the keypad.
Local Flow Control	Provides quicker response to flow control characters (such as Control-S). If disabled, flow control characters are passed to the host.

Table 7-3 NCD Terminal Emulator Options Menu (Continued)

Menu Item	Action
Allow 80/132 Switching	Permits (by default) or does not permit the application running in the terminal emulator window to display in the 132-column format as needed.
80/132 Font Switching	Permits (by default) or does not permit the application running in the terminal emulator window to display output in a condensed font when the 132-column format is in use.
Clear Screen with Blanks	Clears the screen by inserting a screenful of blank lines. Saves the previous display but uses more of the scrolling buffer. If disabled, clears the screen by erasing what is visible in the window.
Curses Emulation	Emulates a bug in the UNIX <i>curses</i> screen-handling package.
Margin Bell	Rings a bell when the cursor reaches the margin.
Strip Parity	Strips parity bit from any data sent by the host so that the terminal emulator looks only at 7-bit bytes. The default is false for all but the Dialer, which defaults to true.
Grab Keyboard Input	Directs all keyboard input to the terminal emulator window. Prevents another user from intercepting your input.
ISO Latin 1 Font	Enables use of the ISO Latin Alphabet supplemental character set, which includes letters with accents and diacritical marks required in many European languages.
Blink Cursor	Specifies whether the cursor blinks.
Visible Status Line	Displays a 25th line at the bottom of the window, used by applications to display status information.
Log Output To File	Logs output to the file opened from the File menu. If no file is available for output logging, the item is grayed out in the Options menu.

Fonts Menu

You can use the Fonts menu to change the terminal emulator's display font. The choices are:

- Default (14 point)
- Small (10.5 point)
- Large (14 point)
- Jumbo (18 point)

The font you choose for a terminal emulator window is important. It controls the size of the characters you see as well as whether certain terminal emulation features appear to work. As a rule, if you do not know which font to choose, use the default font.

Tip

Changing the font size results in a resized window, but changing the window size through the window manager does not result in a change of font size.

To change the font size:

1. Click the Fonts menu in the terminal emulator window.
2. Click the toggle button of the size you prefer. The window size changes automatically to accommodate the new font size.

Cursors Menu

You can use the Cursors menu to change the terminal emulator's cursor by selecting one of the descriptions in the menu. The choices are:

- Solid Block
- Hollow Block
- Underline
- Bright Underline
- Hatched
- Bright Hatched
- Diagonal Lines
- Framed
- Invisible

Keys Menu

You can use the Keys menu to start the Keymap Editor. The Keymap Editor displays a layout of a keyboard that has keys labelled with their keycaps and the functions assigned to them and provides a simple way to change the assigned functions. For information about using the Keymap Editor, see the *NCDware System Administrator's Guide*.

Communications Menu

The Communications menu appears only in the Dialer (used for XRemote) as a convenience in converting the connection to SLIP mode and in stopping PPP/SLIP.

The Communications menu includes the following list of items. Select only one at a time.

- PPP—Point-to-Point Protocol
- SLIP—Serial Line Internet Protocol
- XRemote—NCD's software for connecting a remote terminal over a serial connection to a host
- Serial—regular terminal mode

For more information about using the Dialer and XRemote, see Chapter 12, *Using XRemote*.

8 Using Windows Access

This chapter shows how to use the Windows Access utility to connect to multi-user Microsoft Windows NT servers and run Windows applications.

When you connect to a Windows NT server, the server's desktop is displayed in a window on the terminal screen. You can use the icons and other objects on the desktop and run applications just as you would if you were seated at a PC running Windows NT 3.51 or 4.0.

Note Your system administrator may have configured other ways for you to connect to Windows NT servers.

If you want to know more about connecting to Windows NT servers, refer to:

- The *NCDware System Administrator's Guide*
- Your system administrator

Connecting to a Windows NT Server

To connect to a Windows NT server or published Windows application:

1. Open the Windows Access chooser in the Console (Utilities ⇒ Windows Access). The example chooser in Figure 8-1 contains two servers and one published application.

A published application is a Microsoft Windows application that has been configured to be shared over the network by multiple users.

Note If there are no entries in the chooser, you must add at least one before you can use Windows Access to connect to a Windows NT server; see “Adding a Connection” on page 8-3.

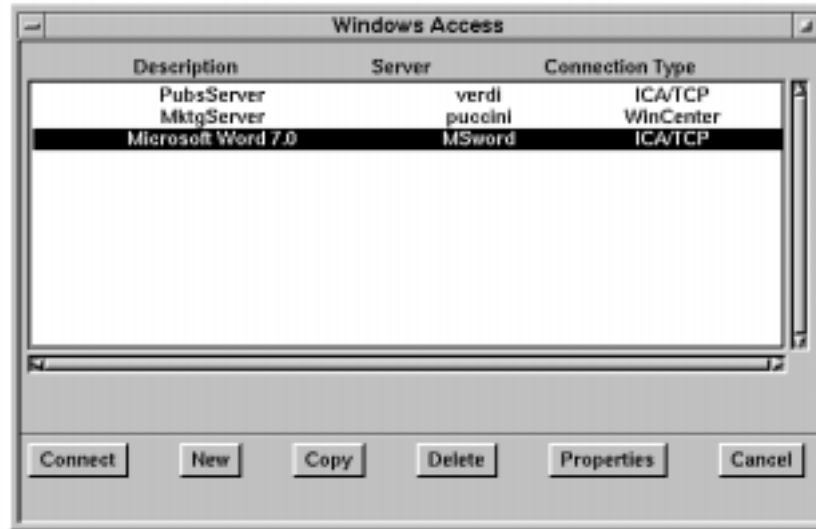


Figure 8-1 The Windows Access Chooser

2. Click the server or application you want, and then click Connect.
 - If you selected a server, the server’s desktop appears in a window on the terminal.
 - If you selected an application, only the application appears in a window on the terminal.
3. The Windows NT logon dialog box may appear. Enter your username and password. If necessary, select the correct NT domain from the drop-down list. Click OK.
4. The Windows Access chooser usually remains on the terminal screen, and you can connect to additional servers or applications if desired.

5. When you've finished with a session:
 - If you connected to a desktop, close all applications and log off the Windows NT server.
 - If you connected to an application, quitting the application logs you off.

Adding a Connection

If the Windows Access chooser does not display any servers or applications, you must add at least one connection before you can use the chooser to connect to a Windows NT server.

To add a server or published application:

1. Open the Windows Access chooser (Utilities ⇒ Windows Access).
2. Click **New**. The Windows Access connection properties dialog box appears (Figure 8-2).

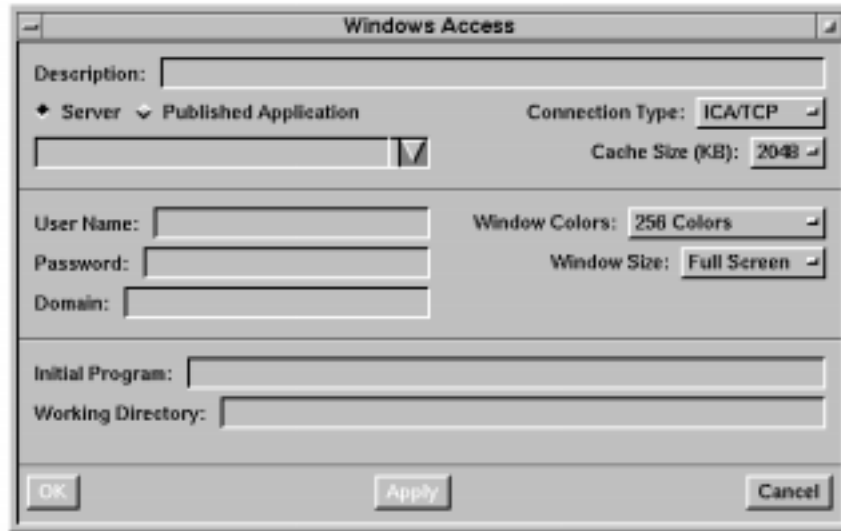


Figure 8-2 Windows Access Properties Dialog Box

3. Fill in the **Description** field with a description of your choice.

Copying Connections

4. Select ICA/TCP or WinCenter from the Connection Type drop-down menu.
5. If you selected ICA/TCP connection type:
 - a. Select Server or Published Application.
 - b. Click the down arrow to display a list of available servers (or applications) and click on the server you want.
 - c. If the server or published application is not listed and you know its name, you can type the name in the entry field.
6. If you selected WinCenter connection type, enter the name of the Windows NT server in the server entry field.
7. Only the Description and Server/Published Applications fields must be filled in, but you can set other options, if desired. For information about all of the options, see "Connection Properties" on page 8-5.
8. When you've finished configuring the connection, click OK.
9. The Windows Access chooser appears. Click the connection you added and then click Connect.

Connections added to the Windows Access chooser also appear in the Login Chooser the next time you log in.

Copying Connections

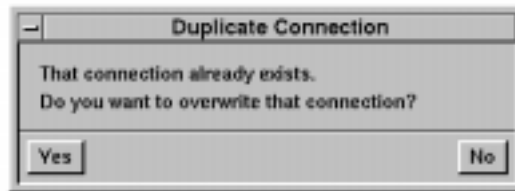
You can add a new connection by copying an existing one. To copy a connection:

1. Click on the connection in the Windows Access chooser and click Copy. The properties dialog box opens with all of the properties of the connection filled in.
2. Enter a new description in the Description field.
3. Edit any other fields you want to change and click OK.

Editing Connections

To edit an existing connection:

1. Click on the connection in the Windows Access chooser and click `Properties`. The properties dialog box appears.
2. Make the desired changes in the properties dialog box and click `OK`.
3. When the Duplicate Connection dialog box appears, click `Yes`.



Edits cannot be undone after you click `Yes`.

Deleting Connections

To delete an existing connection, click on the connection in the Windows Access chooser and click `Delete`.

Deletions cannot be undone after you click `Delete`.

Connection Properties

Table 8-1 explains all of the options in the Windows Access properties dialog box. Some options are valid for only one of the connection types, and some options have different choices, depending on the connection type.

Table 8-1 Windows Access Properties

Field Name	Description
Description	A description of the connection. Each description must be unique.
Server or Hostname	<p>Select Server if the connection is to a Windows NT server. When you connect, the server's desktop appears in a window on the user's terminal.</p> <p>WinCenter: Type the name or IP address of a WinCenter server in the Hostname field.</p> <p>ICA/TCP: Type the name or IP address of a WinCenter, WinFrame, or MetaFrame server or select a server from the drop-down list of servers.</p>
Published Application (ICA/TCP only)	<p>Select Published Application if the connection is to a published application. When you connect to a published application, you first log on to the server. Then, a window containing the application appears on the terminal.</p> <p>Type the name of a published application or select an application from the drop-down list of applications.</p>
Connection Type	<p>Select a protocol from the drop-down list:</p> <p>ICA/TCP—connection uses the ICA protocol</p> <p>WinCenter—connection uses the X protocol and WinCenter</p>
Cache Size (KB) (ICA/TCP only)	<p>Select a cache size from the drop-down list. This cache is used by ICA for video display, and a larger cache increases the speed of the video display. Depending on the number of simultaneous connections the user may have and the amount of free memory in the terminal, you may want to increase or decrease the default value of 2048K. Reduce the cache size if the terminal is running out of memory.</p>
Network Type (WinCenter only)	<p>LAN—Use this option for connections to servers on the local network.</p> <p>WAN—Use this option for servers outside your building or servers accessed via a lower-bandwidth connection such as an ISDN line.</p>

Table 8-1 Windows Access Properties (Continued)

Field Name	Description
Window Colors	<p>Select the number of colors from the drop-down list:</p> <ul style="list-style-type: none"> 16 colors 256 colors High Color (16-bit) (WinCenter only) True Color (24-bit) (WinCenter only)
Window Size	<p>Select a window size or Custom Size from the drop-down list.</p> <p>For Custom Size, enter a custom window size (in pixels) using the format <i>widthxheight</i>; do not use spaces.</p> <p>ICA/TCP: The maximum window size permitted is 1280x1024.</p> <p>WinCenter: The maximum window size is 1600x1200.</p>
User Name Password	<p>Your username and password on the Windows NT server. If you include these values, you don't have to log on to the server. Including the password may compromise network security.</p> <p>For a published application, you log on to the server where the application resides.</p>
Domain	<p>The Windows NT domain in which the password and user name are valid.</p>
Initial Program	<p>The name of an initial program to be started automatically when the you log on to the NT server. This field does not apply if the connection is to a published application.</p>
Working Directory	<p>The path to your working directory on the NT server. If you specify a path, applications use the working directory for retrieving and saving files. This field does not apply if the connection is to a published application.</p>

Connection Properties

Using Windows Access8

9 Using the Local NCD Window Manager

Note

The usage instructions for the NCD Window Manager in this section also apply to the Motif Window Manager, NCD's local version of the OSF/Motif 1.2.2 window manager. Differences between the two window managers are described as necessary. Where they are identical, only the NCD Window Manager is mentioned.

This chapter explains how to use the local NCD Window Manager, and how to start the host-based OSF/Motif window manager.

If you are using the OpenWindows window manager, refer to Chapter 13, Using OpenWindows on NCD Terminals.

If you want to know more about your particular system setup, refer to:

- The *NCDware System Administrator's Guide*
- Your system administrator

Introduction

A window manager is an application that allows you to move, resize, circulate and iconify (minimize) windows.

The local NCD Window Manager is similar in style, function, and usage to the OSF/Motif window manager (*mwm*). NCDware includes a local version of *mwm*, which requires a license.

The NCD Window Manager provides unlicensed OPEN LOOK support and a subset of the standard OSF/Motif 1.2.2 functionality with less memory usage and does not require a license. To provide these advantages, the NCD Window Manager modifies or excludes some *mwm* features (Table 9-1).

Table 9-1 Differences between the NCD Window Manager and *mwm*

The NCD Window Manager provides...	<i>mwm</i> provides...
<input type="checkbox"/> Partial traversal ability via the Alt/Tab key combination	<input type="checkbox"/> Full keyboard traversal
<input type="checkbox"/> A small set of most frequently used resources	<input type="checkbox"/> Full Motif resource configurability
<input type="checkbox"/> Non-modifiable key accelerators	<input type="checkbox"/> Modifiable key accelerators
	<input type="checkbox"/> International text support (for example, non-European)

The NCD Window Manager runs in either of these ways:

- As a host-based application (as conventional window managers do)
- As a local application on the NCD terminal processor

As a local application, NCD Window Manager manages window activities for other local applications as well as for host-based applications.

ncdrunwm, the companion program to the NCD Window Manager, is responsible for starting the applications listed in NCD Window Manager's root menu. *ncdrunwm* executes on the host processor.

Running the NCD Window Manager

You can start and stop the NCD Window Manager in several ways, all of which are explained in the following sections.

The usage instructions for the NCD Window Manager in the following sections also apply to the Motif Window Manager, except where noted.

Starting the NCD Window Manager

Tip

When no window manager is running, the hierarchy, location, size, and focus of a window are not changeable. In addition, all windows are deiconified, the icon box does not appear, windows do not have title bars, and window frames are thin lines with no built-in tools.

Ideally, your system administrator has set up your startup files to start the local window manager automatically when you log in. If the window manager starts automatically, all window frames are Motif-style.

You can start the NCD Window Manager from the Console as follows:

1. Click on the Console's WindowMgr menu button.
2. Click on the NCD Window Manager toggle button (for Motif Window Manager, use the Motif Window Manager toggle button). The NCD Window Manager starts and the characteristic frames appear around all windows.

Tip

To start the Motif Window Manager using the commands described here, use the `-mwm` argument.

There are two other methods for starting the NCD Window Manager:

- From a host running the UNIX operating system, in a terminal emulator window, type `ncdrunwm -d displayname:0`, where *displayname* is the TCP/IP address or hostname of the NCD terminal on which the window manager should be started.
- By using remote configuration

If you start the NCD Window Manager from the Console or by using one of the other methods, the window frames of the applications that are already running change to NCD Window Manager frames. Any subsequent applications you start appear with NCD Window Manager frames.

Restarting the NCD Window Manager

To restart the NCD Window Manager while it is running, press the Enter key on the keypad while holding down the Ctrl and Alt keys. For other methods of restarting the NCD Window Manager, see your system administrator.

Stopping the NCD Window Manager

To stop the NCD Window Manager while it is running, click on the `NCD Window Manager` toggle button in the Console's `WindowMgr` menu. For other methods of stopping the NCD Window Manager, see your system administrator.

Starting Applications

To start applications by using the NCD Window Manager, you can use the root menu. (You can also use the NCD Terminal Emulator to start applications. See “Starting Applications” on page 7-6.)

Starting Local Applications—Default Root Menu

Tip

By default, any mouse button displays the default root menu. Your system administrator may have customized your terminal to display other root menus.

The default root menu contains commands for starting local applications.

To start applications from the default root menu:

1. Place the pointer anywhere on the root window.
2. Click a mouse button. The menu appears on the root window and remains there until you select one of the menu items or click a mouse button on the root window.

Starting Applications—Customized Root Menu

System administrators can customize root menus to include commands for connecting to hosts and starting host-based applications, as well as starting local applications.

The commands in customized root menus depend on how your system administrator has configured your terminal and the network. For example, the root menu may have commands for contacting network hosts, starting applications, and logging off. There may be up to three root menus.

To start applications from a customized root menu:

1. Place the pointer anywhere on the root window.
2. Click a mouse button. A menu appears on the root window and remains there until you select an item or click a mouse button on the root window.

Once you select an item from the root menu or a submenu, the menu (and submenu, if any) disappears and the command you selected executes.

The Active Window

When you start an application, the NCD Window Manager places a new window on top of those already running, leaving a portion of the lower windows in view. By default, the active window is the newest window or the window on top.

The frame of the active window in Figure 9-1 (the window called *anemone*) is a different shade from the others.



Figure 9-1 Adding Windows

NCD Window Manager Windows

This section explains how to use the NCD Window Manager to manage windows.

When the NCD Window Manager is running, each window is surrounded by an NCD Window Manager frame (Figure 9-2).

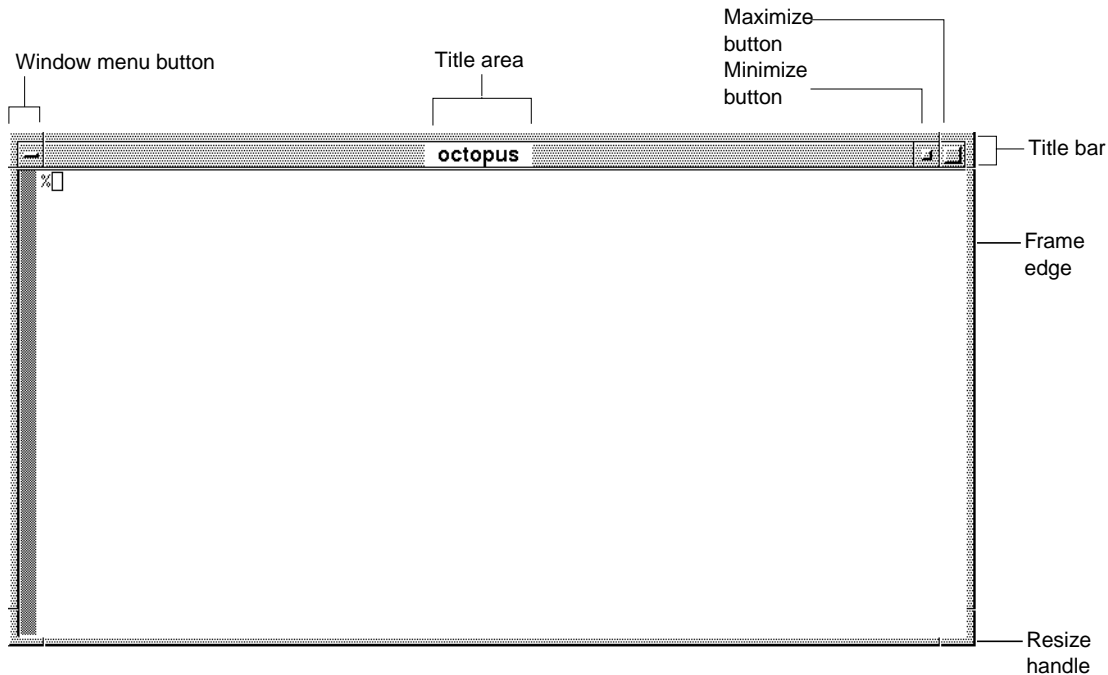


Figure 9-2 An NCD Window Manager Window

The % symbol inside the window in Figure 9-2 is a UNIX prompt, an example of output from a process displaying in the window. When you provide input by typing or using the mouse in a window, the input appears in the window, too.

The top bar of the window frame is called the title bar. It contains a title area in the center, which usually contains the name of the application or host. In Figure 9-2, the name of the host, octopus, is in the title area.

Use the tools in the window frame to perform window manager functions. Tools are shown in Figure 9-2 and summarized in Table 9-2.

“Using NCD Window Manager Windows” on page 9-10 describes in detail how to use the tools listed in Table 9-2.

Table 9-2 Window Manager Tools

Tool	Action	Results
Window menu button	Click	Displays a menu of window operations (Figure 9-4).
	Double click	Closes the window; in some cases, it stops the application.
Title bar	Click	Raises the window above or below other windows.
	Drag	Moves the window.
Minimize button	Click	Iconifies the window.
Maximize button	Click	Enlarges the window to a full screen or restores it to its original size if it has been enlarged.
Resize handles	Drag	Changes window size.

An NCD Window Manager frame has four sides and four corners. The sides and corners are called resize handles. Each resize handle can be used to change the size of the window (Figure 9-3). “Using NCD Window Manager Windows” on page 9-10 describes how to use resize handles to change window size.

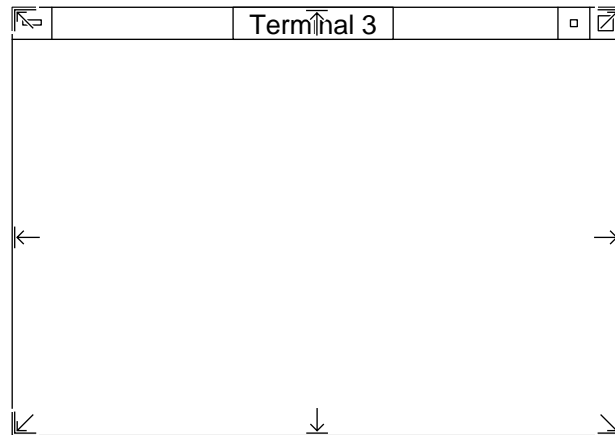


Figure 9-3 Resize Handles and Pointer Appearance

NCD Window Manager Focus Policy—the Active Window

This section describes how to direct mouse and keyboard input to a window, making it the active window.

The default NCD Window Manager focus policy is click-to-focus. Click-to-focus means that to make a window active, you position the pointer on it and click the left mouse button. If you open a new window, however, the new window automatically becomes the active window. You can tell which window is the active window by the color or shading of the frame. The frame of the active window is a different shade from the others.






The NCD Window Manager also supports pointer focus and explicit focus. With pointer focus, the window under the pointer tip automatically becomes the active window, regardless of whether you click, even if it is not on the top. Explicit focus is just like click-to-focus, except that a newly opened window is not automatically the active window.

For information about changing the default focus policy, see your system administrator.

NCD Window Manager Pointers

The mouse pointer takes on a different appearance, depending on the operation the NCD Window Manager is performing, as summarized in Table 9-3.

Table 9-3 NCD Window Manager Pointers

Pointer	Name	Description
	Arrow pointer	The usual appearance when the pointer is on a window.
	Root pointer	Appears when the pointer is on the root window. Pressing a mouse button displays the root menu.
	Crossed-arrow pointer	Appears when a window is being moved.
	Resizing arrow (two views)	Appears when a window's size is being altered.
	Watch pointer	Appears when terminal software is connecting to a host or performing a similar function. Wait for another pointer to appear before using the mouse.

Using NCD Window Manager Windows

Note

All descriptions of NCD Window Manager usage assume that the default click-to-focus policy is in effect. If you are using pointer focus or explicit focus, some of the window manager features work differently than described in the following sections.

The NCD Window Manager provides three ways for you to use frame and keyboard tools: the Window menu, keystroke combinations, and the mouse.

If you are an experienced user, you might be more comfortable using the Window menu or keystroke combinations described in Table 9-4. If you rely on the mouse when using applications, you might prefer the mouse-driven manipulation discussed in the sections from page 9-12 to page 9-17.

Using the Window Menu or Keystroke Combinations to Manipulate Windows

The Window menu (Figure 9-4) lists mouse-selectable action items and equivalent keystroke combinations.

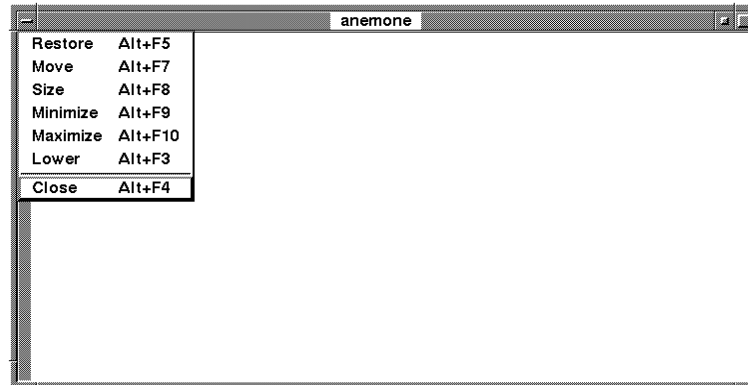


Figure 9-4 Window Menu

For the equivalent keystrokes to take effect, you must first click the window or icon that you want to manipulate.

Table 9-4 summarizes the items in the Window menu.

Table 9-4 Window Menu Items

Window Menu Item	Keyboard Equivalent	Results
Restore	Alt + Ctrl + F5	Undoes your last manipulation (moving, resizing, or deiconifying) of the window.
Move	Alt + Ctrl + F7	The window follows the mouse pointer. Click a mouse button to release the window where you want it.
Size	Alt + Ctrl + F8	Move the pointer over the frame border or corner that you want to adjust. Move the resizing arrow until the window outline is the right size. Click a mouse button to keep the window in its resized shape or press Escape to abort the action.
Minimize	Alt + Ctrl + F9	The window disappears from the screen, and the icon representing it in the icon box changes from a flat appearance to three-dimensional.
Maximize	Alt + Ctrl + F10	The icon changes to a flat appearance as the window appears on the screen.
Lower	Alt + Ctrl + F3 (Not available with a 108-key keyboard.)	The window goes to the lowest position on the root window, and input is focused to it.
Close	Alt + Ctrl + F4	The window and its icon (or the iconified window) disappear from the screen and the application exits (unless it is running in another window or icon).
Pack Icons (for icon box only)	Shift + Alt + F7	Rearranges the icons in the icon box to remove empty spaces.

Using the Mouse to Manipulate Windows

The following sections describe mouse-driven methods of using the same options listed in the Window menu.

Moving Windows

You can move windows around on the screen using the mouse and title bar (Table 9-5).

Table 9-5 Moving Windows: Use the Mouse and Title Bar

Action	Result
1. Place the pointer on the title bar of the window.	
2. Press the left mouse button.	The pointer becomes a crossed-arrow.
3. Hold down the left mouse button and drag to where you want the window to appear.	The window outline appears and moves with the pointer.
4. When the window outline is in the position you want, release the mouse button.	The outline disappears and the window appears in its new position.

Changing a Window's Hierarchical Position

You can change the hierarchical position of all windows except for the root window. The root window always remains the lowest, the background upon which the NCD Window Manager displays the others.

The NCD Window Manager allows you to change a window's hierarchy by:

- Using the mouse (Table 9-6)
- Using the Ctrl + Alt keys and mouse (Table 9-7)

Table 9-6 Raising or Lowering a Window: Use the Mouse

Action	Result
1. Place the pointer on the window frame of the window. Do not put the pointer on buttons, menus, or resize handles.	The window is selected.
2. Click the left mouse button to raise a window, or click the right mouse button to lower it.	The window goes to the top or bottom position, and input is focused to it.

Table 9-7 Lowering a Window: Use the Alt Key and Mouse

Action	Result
This method changes windows' hierarchical position <i>without changing the input focus</i> that existed before the change.	
1. Position the pointer in the window you want to place beneath the others.	The window is selected.
2. Hold down the Ctrl + Alt keys and click the right mouse button.	The window goes to the bottom, but input remains focused where it was before the position change.

Changing Window Size

You can change the size of a window using the following methods. (Also see the next section, "Iconifying Windows and the Icon Box" on page 9-14.)

- Use the mouse and window frame (Table 9-8)
- Use the Maximize button (Table 9-9)

Table 9-8 Changing Window Size: Use the Window Frame

Action	Result
1. Place the pointer on one of the eight resize handles on the window frame.	The pointer becomes a resizing arrow.
2. Press the left mouse button and drag.	A small box appears indicating the total size of the window. An outline of the window appears.
3. Release the mouse button when the outline is the size you want the window to be.	The outline and small box disappear, and the window size changes to the size you specified.

Table 9-9 Changing Window Size: Use the Maximize Button

Action	Result
1. Click on the Maximize button (Figure 9-5). The Maximize button is the large button in the upper right corner of the window frame.	The Maximize button looks indented. The window expands to its maximum size, usually the entire display area.
2. Click again on the Maximize button.	The window shrinks to its original size.

Iconifying Windows and the Icon Box

An icon is a small representation of a window. You can set a window manager resource to have icons appear in a special window called an icon box. When you open a window, an icon representing it appears in the icon box on the side of the display screen. Icons of windows that are visible on the screen appear flat; those representing iconified windows appear three-dimensional (Figure 9-5).

The process running in a window continues when it is iconified, but you cannot direct input to an iconified window.

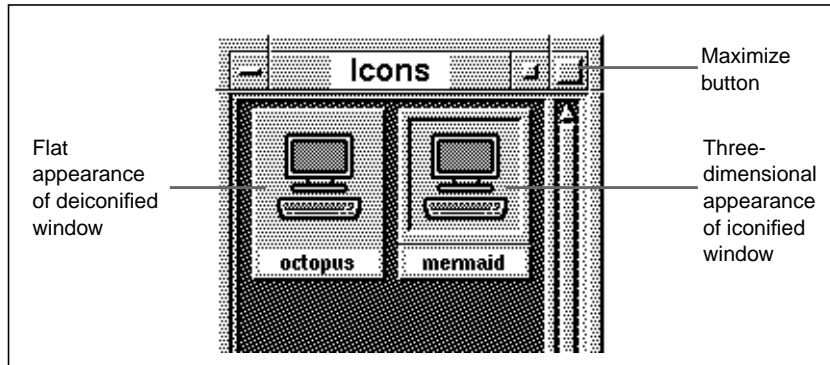


Figure 9-5 Icons in the Icon Box

The icon box window differs in the following ways from other NCD Window Manager windows:

- As you add and delete icons during a session, spaces may remain in the icon box where icons have been deleted. Pack Icons—a Window menu item available only for the icon box—reshuffles the icons to remove empty spaces.
- The icon box has a scroll bar across the bottom and along the right side to allow you to scroll through the icons when there are too many to be seen in the window at once.

You can iconify windows by

- Using the Minimize button (Table 9-10)
- Using the Alt key and mouse (Table 9-11)

Table 9-10 Iconifying a Window: Using the Minimize Button

Action	Result
Click on the Minimize button, the small button in the upper right corner of the window frame.	The window disappears, and the icon representing it in the icon box looks three-dimensional.

Table 9-11 Iconifying a Window: Using the Alt Key and Mouse

Action	Result
1. Place the pointer on the window you want to iconify. 2. While pressing Alt, click the middle mouse button.	The window disappears from the screen, and the icon representing it in the icon box looks three-dimensional.

Deiconifying Windows

The NCD Window Manager allows you to restore an iconified window to the display screen (deiconify a window) using the mouse (Table 9-12).

Table 9-12 Deiconifying a Window: Using the Mouse

Action	Result
1. Place the pointer on the icon you want to restore to a window. 2. Double click with the left mouse button or click with the middle mouse button.	The window appears in the same size and position as before it was iconified.

Closing Windows and Icons

When you close a window and its icon, you remove it from the display screen and icon box. If an application is running in only one window, closing that window also closes the application. The NCD Window Manager allows you to close windows using the Window menu button (Table 9-13).

Table 9-13 Closing Windows: Using the Window Menu Button

Action	Result
<ol style="list-style-type: none"> 1. Place the pointer on the dash-shaped Window menu button of the window that you want to close. 2. Double click with the left mouse button. 	<p>The window and its icon disappear from the screen and the application exits (unless it is running in another window or icon).</p>

Customizing the NCD Window Manager

When you become a more experienced user, you may want to modify the Window Manager's behavior or the appearance of its windows. The NCD Window Manager provides many opportunities for customization via X resources, which are used for passing default settings to applications.

For more information about resource settings, see the X guides cited in the bibliography at the end of this manual. For information about the resources used by the NCD Window Manager, see the *ncdwm* man page.

Using the Host-Based OSF/Motif Window Manager

The OSF/Motif window manager (*mwm*) provides a popular user environment developed by the Open Software Foundation.

NCDware includes a local version of *mwm*, which provides standard *mwm* functionality. The local Motif Window Manager requires a license.

This section explains how to start the host-based OSF/Motif window manager and the local Motif window manager.

The usage instructions in this chapter for the NCD Window Manager apply to the Motif window managers as well.

Changing to *mwm* from the NCD Window Manager

If your terminal starts up with the NCD Window Manager, you can change to host-based *mwm* as follows:

1. In a terminal emulator window, set the *DISPLAY* environmental variable. In the following commands, *display* is the IP address or hostname of the terminal.

```
% setenv DISPLAY display:0
```

(for C shell users)

or

```
$ DISPLAY=display:0; export DISPLAY
```

(for Bourne shell users)

2. Invoke *mwm* as a background process:

```
% mwm &
```

Starting the Local Motif Window Manager

To start the local Motif Window Manager, select WindowMgr ⇒ Motif Window Manager from the Console.

10 Using the NCD Mosaic Browser

This chapter explains how to use the NCD Mosaic Browser to view sites on the World Wide Web (Web) or use your organization's intranet. The browser runs on the NCD terminal, not the host computer.

If you want to know more about your particular system setup, refer to:

- The *NCDware System Administrator's Guide*
- Your system administrator

Overview

The NCD Mosaic Browser is based on Version 3.2 of Spyglass Mosaic. The browser requires a license that you obtain from NCD.

The browser supports Web browsing, Java applets, and JavaScript Version 1.1. You can print from the browser to a local printer attached to your terminal as well as to remote printers.

Supported File Formats

The NCD Mosaic Browser supports the following file formats:

- HyperText Markup Language (HTML)
- Graphics Interchange Format (GIF) and Joint Photographic Experts Group (JPEG)
- Moving Pictures Experts Group (MPEG)

Video file formats are supported by some NCD models. See “Using Video on NCD Terminals” on page 11-9 for more information about video.

Browser Limitations

The browser has the following limitations:

- ❑ Some of the HTML 3.2 optional tags are not supported.
- ❑ The only available helpers are the MPEG video player and the AU audio player.
- ❑ Plug-ins are not supported.
- ❑ If you log out from the Console menu, files are not updated.
- ❑ For full browser functionality, you should use Network File Service (NFS) for file access.
- ❑ If you use Trivial File Transfer Protocol (TFTP), the following features are not available:
 - You cannot view HTML source files.
 - The browser cannot download a file and pass the entire file to the helper applications (the audio and MPEG players).
 - The Save As and Open Local menu items cannot list either files in a directory or directories in a directory. As a result, you cannot navigate through a directory tree by clicking on directory names.
 - You cannot use helper applications because TFTP cannot create the temporary files they need.
 - The browser cannot read or write to preference files unless the files already exist and are world-readable and writable.
 - Background audio is not supported.
- ❑ The NCD Mosaic Browser does not support 16-bit color depth. You can use 8-bit or 24-bit color only. For more information about color depth support, see the *NCDware System Administrator's Guide*.

Internet Terminology

If you are new to browsing the Internet, it might help to understand the following terms.

Internet—the collection of networks and gateways that use the TCP/IP protocol family and function as a single cooperative network, connecting many businesses, universities, and government facilities.

Protocol—a set of rules for transferring data over a network.

Internet Protocol (IP)—a protocol used to route files in an Internet environment.

Web—a global network of interconnected documents or files.

Hypertext Markup Language (HTML)—the language used to write Web documents.

Hypertext link—a connection between one piece of information on the Web and another. The browser displays a document when you click its hypertext link.

Uniform resource locator (URL)—a unique address for each Web document or site. For example, the URL for the NCD Web site is

`http://www.ncd.com/contact.html`

where:

http:// indicates the protocol used to transfer the file. In this example, the protocol is hypertext transfer protocol. Other protocols include File Transfer Protocol (FTP), Simple Mail Transport Protocol (SMTP), and gopher.

www.ncd.com is the name of the Web server where the file is stored.

contact.html is the name of a file.

Starting the NCD Mosaic Browser

The NCD Mosaic Browser runs on the terminal's processor. You can start the browser through the Console's Utilities ⇒ Start NCD Mosaic Browser item.

The NCD Mosaic Browser Document Window

The NCD Mosaic Browser document window provides access to the browser toolbar, menu bar, and other browser elements (Figure 10-1). See Table 10-1 for descriptions of the document window elements.

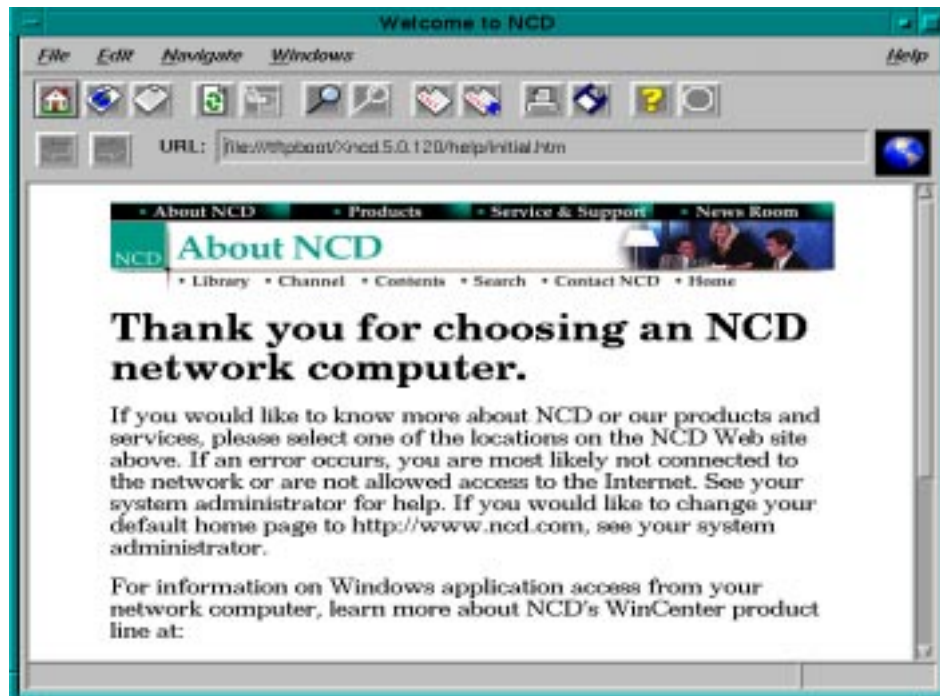


Figure 10-1 NCD Mosaic Browser Main Document Window

Table 10-1 lists the elements in the NCD Mosaic Browser Main Document Window.

Table 10-1 NCD Mosaic Browser Document Window Elements

Element	Description
Title bar	Displays the title of the currently loaded document.
Menu bar	Contains menu buttons.
Menu button	A menu name (such as File, Edit, Navigate, Window, and Help) that appears on a menu bar.
Toolbar	Displays icons in the toolbar. Place the pointer on a button to display a description of its function in the status message area.
Backward and forward buttons	Returns you to a previous document or to the document first displayed.
URL field	Displays the URL of the current document.
Status message area	Displays messages while a document is loading. Also displays information about a window element such as a menu button or hypertext link when the mouse is placed on the item.

Customizing the NCD Mosaic Browser

This section explains how you can customize the browser display and set system preferences. For more information about setting preferences in the browser, see the *NCDware System Administrator's Guide*.

To display the Preferences window (Figure 10-2) and set preferences:

1. From the NCD Mosaic Browser's Main Document Window, select Edit ⇒ User Preferences.
2. Click buttons at the top of the window to select types of preferences to set.

3. When you finish setting preferences, click **OK**.
4. Your changes are applied to the browser.

Normally, the browser also saves any preferences that you specify in the **.nmosaic-prefs** file in your home directory. If your system administrator has set your configuration so you cannot modify this file, you can set preferences for the current session only. When you end your browser session, the preference selections revert to those specified by the system administrator.



Figure 10-2 The Preferences Window

Customizing the NCD Mosaic Browser Display

You can select preferences to customize the appearance of your browser display. The preferences that you can specify are:

- Language**—Click the **Miscellaneous** category in the Preferences window to select a language.
- Fonts**—Click the **Fonts** category in the Preferences window to modify font preferences.

Table 10-2 explains the fonts you can specify.

Table 10-2 Browser Font Preferences

Element	Description
Normal text font	Font used for most text
Header font	Font used for headings
Monospace text font	Font used for fixed-width text

- Color**—Click `Colors` in the Preferences window to modify color preferences.

Table 10-3 explains the color elements you can specify.

Table 10-3 Browser Color Preferences

Element	Description
Text color	Color of normal text
Background color	Color of document window background
Link color	Color of hypertext links
Visited link color	Color of recently visited hypertext links

Setting System Preferences

You can specify the following system preferences:

- Load Images Automatically
- Enable Java
- Enable JSCRIPT

To specify a system preference, click `Miscellaneous` in the Preferences window (Figure 10-2).

Loading Images Automatically

Loading documents without images improves browser performance. Images that are not loaded are shown by text enclosed in a box. After loading a document, you can load one or all of the missing images.

Unless modified by your system administrator, the `Load Images Automatically` option is enabled. To prevent automatic image loading, click the `Load Images Automatically` option to disable it.

Enabling Java

Tip

If you encounter a Java applet in a Web document that causes problems, you may want to disable Java to bypass the problem.

The NCD Mosaic Browser automatically runs any Java applets encountered in Web documents. Use the `Enable Java` option to control whether applets are executed when you load a Web document.

Unless modified by your system administrator, the `Enable Java` option is enabled. To prevent running Java applets, click the `Enable Java` to disable it.

Enabling JavaScript

JavaScript (or JSCRIPT) is a language developed by Netscape for creating dynamic Web pages. It is not the same as Java, although some of its capabilities are similar. Use `Enable JSCRIPT` to control whether JavaScript routines are executed when a Web document is loaded.

Unless modified by your system administrator, the `Enable JSCRIPT` option is enabled. To prevent executing JavaScript routines, click the `Enable JSCRIPT` option to disable it.

Opening a Web Document

You can open a Web document using any of the methods described in the following sections.

- Entering a URL
- Selecting a Document from the Hotlist
- Selecting a Document from the History List

Entering a URL

Tip

You can enter a URL directly in the URL field in the Main Document Window (Figure 10-1).

To open a Web document using a URL, follow these steps:

1. From the NCD Mosaic Browser's Main Document Window, select File ⇒ Open URL... or click the Open URL button on the toolbar.
2. Type the URL of the document you want to open. URLs are case sensitive and must not begin with a space.
3. Click OK.

Selecting a Document from the Hotlist

The hotlist is a list that you create containing the titles and URLs of frequently accessed documents. Refer to "Creating a Hotlist" on page 10-10 for information on adding document URLs to your hotlist.

To open a Web document from your hotlist, follow these steps:

1. From the NCD Mosaic Browser's main document window, select Navigate ⇒ Hotlist.
2. Double click the document you want to open, or select it and click Go To.

Selecting a Document from the History List

The history list contains the titles and URLs of recently opened Web documents. The NCD Mosaic Browser automatically creates your history list.

To open a Web document from your history list, follow these steps:

1. From the NCD Mosaic Browser's Main Document window, select Navigate ⇒ History.
2. Double click the document you want to open, or select it and click Go To.

Creating a Hotlist

Tip

You can add a Web document URL to your hotlist by clicking on the **Add Current to Hotlist** button on the toolbar.

With the NCD Mosaic Browser, you can create a hotlist to save the URL of a Web document so that you can access the document at a later time. The NCD Mosaic Browser saves only the document's title and URL in the hotlist.

To add a Web document to your hotlist, follow these steps:

1. Open the document.
2. From the NCD Mosaic Browser's Main Document window, select **Navigate ⇒ Add Current to Hotlist**.

To remove a Web document from your hotlist, follow these steps:

1. From the NCD Mosaic Browser's Main Document window, select **Navigate ⇒ Hotlist**.
2. Select the document title that you want to remove and click the **Delete** button.

To save your hotlist as an HTML file, follow these steps:

1. From the NCD Mosaic Browser's Main Document Window, select **Navigate ⇒ Hotlist**.
2. Click the **Export** button.
3. Enter the name that you want to give to your hotlist. Be sure to use **.html** or **.htm** as the filename extension.

Searching a Web Document

You can search a Web document for a specific word or phrase. To search a document, follow these steps:

1. From the NCD Mosaic Browser's Main Document window, select **Edit ⇒ Find** or click the **Find** button on the toolbar.
2. Type the word or phrase that you want to find in the **Text to Find** field.

To find text with specific capitalization, click the **Match Case** check box. To start searching from the top of the document, click the **Start From Top** check box.

3. Click **OK**.
The browser highlights text that is found.
 4. To find the next occurrence, select **Edit ⇒ Find Again** or click the **Find Again** button on the toolbar.
-

Saving a Web Document

You can save a Web document retrieved by the NCD Mosaic Browser. You must save text and graphics separately.

To save a text document, follow these steps:

1. From the NCD Mosaic Browser's main document window, select **File ⇒ Save As...** or click the **Save As** button on the toolbar.
2. Enter the name that you want to give the document.
3. Select a file format. The formats available depend on the type of file you are saving.
4. Click **OK**.

To save a graphic, press and hold the right mouse button over the image. From the popup menu, click **Download Image to Disk**.

Printing a Web Document

You can print Web documents on a local printer attached to the terminal, or on remote printers if your system administrator makes remote printers available to you. Remote printing uses the LPD protocol, and the terminal always sends a Postscript data stream. Note that local printing may be slow and remote printing uses terminal memory.

To print a Web document:

1. From the NCD Mosaic Browser's Main Document Window, select File ⇒ Print.... The Print Setup window appears.

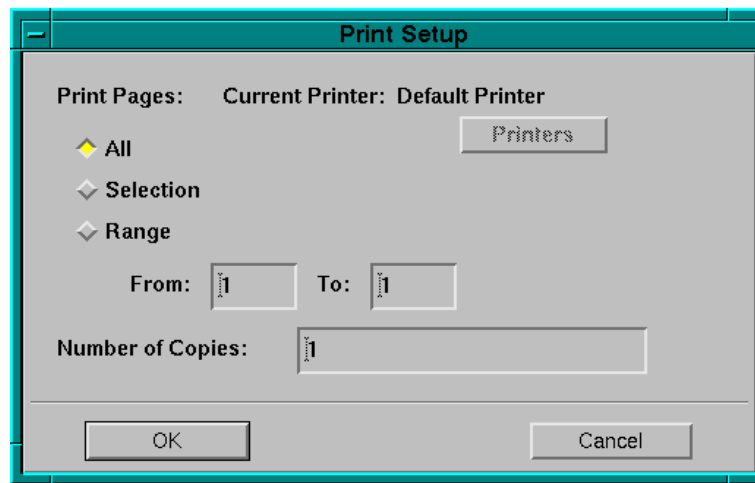


Figure 10-3 NCD Mosaic Browser Print Setup Window

2. Click `Printers`. Select a printer from the list displayed in the `Printers` popup window. Printers are placed in this list by the system administrator.
3. Specify whether you want to print the entire document (default) or a range of pages, and the number of copies to be printed (default is 1 copy).
4. Click `OK`.

11 Using NCD Utilities

This chapter explains how to use NCDware utilities for:

- Running and printing Java applets
- Using files stored on local file systems (on a PC card or a floppy disk)
- Playing videos (Explora 700 and HMX terminals only)

The following utilities are described elsewhere in this manual:

- The NCD Mosaic Browser is described in Chapter 10.
- The Windows Access chooser is described in Chapter 8.
- The other utilities in the Console's Utilities menu are described in Chapter 5.

The Utilities Menu

The Console's Utilities menu (Figure 11-1) provides access to some of the utilities described in this chapter. Other utilities are started from the command line or from other Console menus.

Note Explora 700 and HMX terminals have an additional item in the Utilities menu for starting the Video Player.

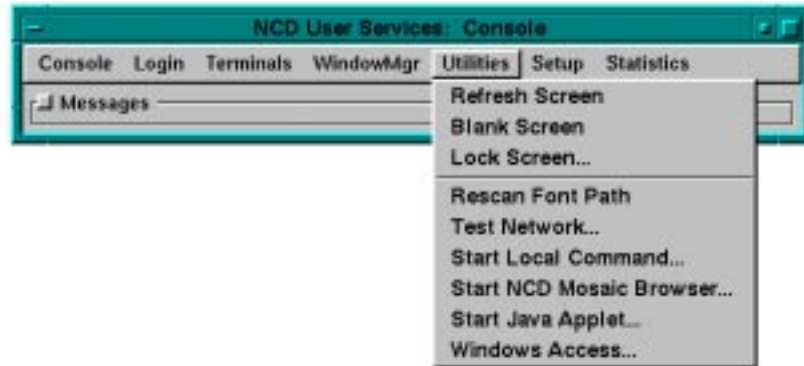


Figure 11-1 The Utilities Menu

Running Java Applets

This section describes how to start Java applets from NCDware and how to print Java applets. A Java applet is a small Java application that can be embedded in another application, such as an applet viewer or Web document.

Starting Java Applets

With the Java applets utility, called Start Java Applet, you can start applets that reside on the local network or the World Wide Web (Web). Although the Java utility allows you to run an applet that is embedded in a Web document, the utility does not display any of the surrounding HTML text.

You start the Java applets utility from the Console's Utilities menu (Utilities ⇒ Start Java Applet). Enter the applet's Uniform Resource Locator (URL), then click **OK**.

Printing from Java Applets or Applications

After you start an applet, you can print it to local printer (a printer attached to the terminal), remote printer, or file. If you are using Java applications other than Start Java Applet, you may be able to print from those applications as well.

When you select Print from a Java application, the following Print Dialog box appears (Figure 11-2).

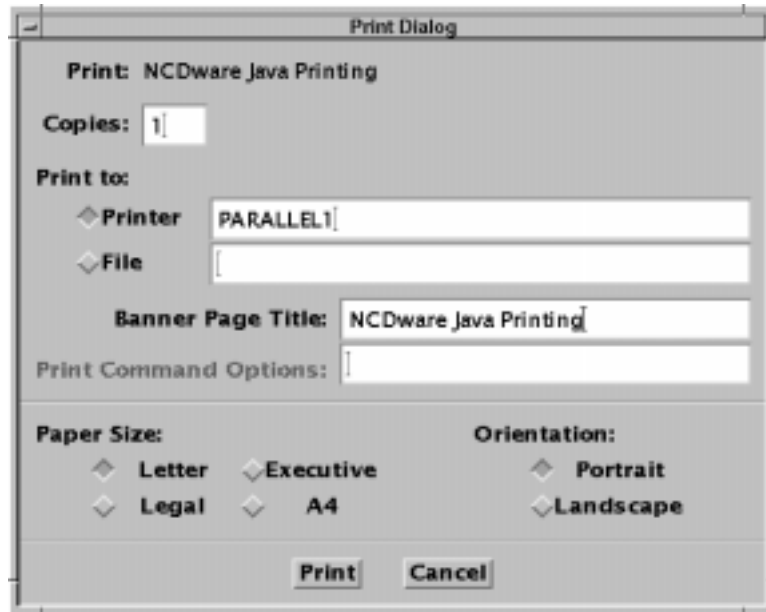


Figure 11-2 Printing from a Java Application

Printing to a Local or Remote Printer

Note The `Print Command Options` field in the Print Dialog box is grayed out when you print to a printer.

To print to a printer:

1. Type the number of copies you want to print in the `Copies` field.
This option is only available if you print to a remote printer. You cannot print multiple copies when you print to local printers.
2. Select `Printer`, then type the printer name in the `Printer` field. You may need to get the printer name from your system administrator.

The default printer name, `PARALLEL1`, sends the print job to a printer attached to the terminal's parallel port.

You may have a different default printer, such as a remote printer.

3. Type a banner page title in the `Banner Page Title` field. This title is used on the banner page of the remote print server.

Banner pages are only available on remote printers. They are not available for local printers.

4. Select the paper size.
5. Select the orientation.
6. Click `Print`.

Printing to a File

Note The following fields in the Print Dialog box are grayed out when you print to a file: `Copies`, `Banner Page Title`, and `Print Command Options`.

When you print to a file, the resulting file contains PostScript data. To print to a Postscript file:

1. Select `File`; then type the file name to which the print job is to be saved. You must type an absolute file name, starting at the root file system.
For example, for a user "george," with a home directory of `/usr/george` and a file called `printout.ps` in the home directory, the correct entry would be `/usr/george/printout.ps`.
2. You do not need to select paper size or page orientation when you print to a file.
3. Click `Print`.

Using a Local File System

This section tells how to access and manage a file system on either a PC card installed in your terminal or a floppy disk in a drive attached to your terminal.

Sometimes, PC cards are also used to boot terminals, either on a local area network or with XRemote. For more information about PC card booting, see the *NCDware System Administrator's Guide*.

Tip

Besides the commands described in this section, you can also use the hostside **ncdfloppy** utility for accessing and managing the file system on a floppy disk. For more information, see Appendix C.

You can use a floppy disk drive attached to your terminal to copy files between the UNIX system and DOS-compatible 720K or 1.44M floppy disks.

Note If your file systems are on floppy disks, the terminal must be configured to use the Local File Manager. Ask your system administrator to enable floppy file system use, or see the *NCDware System Administrator's Guide*.

The Local File System Interface

The NCDware interface to a PC card or floppy drive is a hierarchical local file system. On a PC card, you specify the local file system using **/local**. On a floppy disk, you specify the local file system using **/xfloppy**.

Managing Files on a Local File System

The Local File Manager is a utility for managing a local file system, and includes commands for:

- Formatting and verifying the local file system
- Making and removing directories, changing the current working directory, and listing directory content recursively
- Copying, deleting, listing, renaming, and comparing files
- Displaying information about the local file system and the current directory

- ❑ Listing Local File Manager commands

Starting the Local File Manager

Ask your system administrator whether you need a password to start the Local File Manager.

Tip

You can also access a *remote* terminal's local file system. Type the hostname or IP address of the remote terminal and the port number (default is 5996). When requested, type the password for the remote terminal's Local File Manager.

To start the Local File Manager:

1. From the Console, select **Terminals** ⇒ **New Terminal** to start a Terminal Host Chooser.
2. Select **File** from the Terminal Host Chooser.
Alternatively, you can type the hostname or IP address of the terminal, followed by the port number, in the **Service** field. The default port number is 5996.
3. Click **OK** or press **Return**.
4. If a password is required, the Local File Manager password prompt appears:

```
Trying 192.43.116.50 . . .  
Connected to ncd7.  
Escape character is '^]'.  
***NCD Local File Manager ***  
Password:
```

Type the Local File Manager password and press **Return**.
5. The Local File Manager starts immediately, and displays the following. You can enter Local File Manager commands at the **>** prompt.

```
Connecting to the host "filed_telnet"  
..... success  
***NCD X Terminal Local File Manager***  
>
```
6. To issue a Local File Manager command, type the command (Table 11-1) at the prompt and press **Return**.

Tip

If the Local File Manager disconnects instead of displaying a prompt (**>**), make sure that a password has been defined and that you know the correct password. For more information about the File Manager password, see your system administrator or the *NCDware System Administrator's Guide*.

Local File Manager Commands

Table 11-1 lists and describes Local File Manager commands. The Local File Manager does not recognize wildcard characters.

Table 11-1 Local File Manager Command Summary

Command	Description
cd <i>directory</i>	Changes the current working directory to <i>directory</i> .
compare <i>file1 file2</i> or cmp <i>file1 file2</i>	Compares the contents of two files and displays a message stating whether the files are equivalent.
copy <i>sourcefile destfile</i> or cp <i>sourcefile destfile</i>	<p>Copies <i>sourcefile</i> to <i>destfile</i>. Copying files may take a long time and affect response time while it is going on.</p> <p>Before you can copy files to the local file system from a remote file system:</p> <ul style="list-style-type: none"> <input type="checkbox"/> On a PC card, if you have deleted files from the local file system recently, use the reclaim command to ensure that all available space is accessible. <input type="checkbox"/> Make sure that the terminal's file service table ¹ includes an entry for the remote location. <p>Before you can copy files from the local file system to a remote file system:</p> <ul style="list-style-type: none"> <input type="checkbox"/> If you are using TFTP ² to copy files from the local file system to a remote location, an empty file must exist on the remote file system. <input type="checkbox"/> Write access must be enabled for the file on the remote file system. <input type="checkbox"/> The terminal's file service table ¹ must include an entry for the remote location.
cwd or pwd	Displays the current working directory.
delete <i>file(s)</i> , del <i>file(s)</i> , remove <i>file(s)</i> , or rm <i>file(s)</i>	Deletes files from the local file system. On a PC card, after using the delete command, use the reclaim command to re-pack previously used file space for subsequent use.

Table 11-1 Local File Manager Command Summary (Continued)

Command	Description
format [<i>filesystem</i>] <i>The optional arguments -q and -720 are for use with a floppy drive only.</i>	Formats (creates) a local file system. The variable <i>filesystem</i> must be either /local or /xfloppy . The default is /local . <i>Formatting a file system destroys any data that is already on the PC card or floppy.</i> On a floppy drive, the -q option creates a file system faster, but should be used only if the disk has already been completely formatted and you are sure that it contains no bad sectors. The -720 option formats a 720K floppy disk. On a PC card, formatting requires about two minutes per megabyte.
help	Displays a list of Local File Manager commands.
info or df [<i>filesystem</i>]	Lists the total size in bytes of the local file system and the total number of free bytes available.
list [<i>directory</i>], ls [<i>directory</i>], or dir [-R] [<i>directory</i>]	Displays a list of the files stored in the local file system. The -R option lists subdirectory contents recursively.
mkdir <i>dir_name</i>	Makes a directory in the local file system.
quit	Disconnects from the Local File Manager.
reclaim <i>(PC card use only.)</i>	Reclaims previously used file system space. This command may take several minutes, so use it after you have finished other operations on the local file system.
rename <i>file1 file2</i>	Changes the name of a file from <i>file1</i> to <i>file2</i> without altering its contents.
rmdir <i>dir_name</i>	Removes a directory from the local file system.
verify <i>(PC card use only.)</i>	Confirms that the local file system structure is valid.

¹ The file service table is an internal table used by the terminal for all file access when the X server is running. For more information, see your system administrator or the *NCDware System Administrator's Guide*.

² TFTP (Trivial File Transfer Protocol) is one of the file transfer protocols used by the terminal for file access. The other protocol for file transfer is NFS (Network File System).

Using Video on NCD Terminals

The NCD Video Player decodes, displays, and controls MPEG-1 video data.

Video support is available on the Explora 700 and the HMX family of terminals.

Preparing to Play a Video

Before playing a video, you must:

- Make sure your video input file is in a format that the video software can read
- Specify the video decoder you want to use
- Specify how to deliver the video input data

This section explains format requirements, decoder options, and video data delivery methods.

Video Format

NCD's video software reads MPEG-1 format video files.

Decoder Selection

Note

The Berkeley decoder is adapted from code that is copyright 1992 by the Regents of the University of California.

NCD video software includes either the CompCore fast MPEG decoder, which requires a license that you must obtain from NCD, or the Berkeley decoder, which does not require a license, but is slower than the CompCore decoder and does not decode audio.

The Berkeley decoder is used by default.

To specify that you want to use the CompCore decoder instead:

- Make sure that the license requirement has been fulfilled (ask your system administrator or see the *NCDware System Administrator's Guide*).
- In the Console, select Change Setup Parameters ⇒ Video ⇒ Video ⇒ Fast MPEG decoder (requires a license).

Note The fast MPEG decoder plays video at the correct speeds; the Berkeley decoder does not.

Data Delivery

You can transfer video data to the Video Player using NFS, TFTP, the hostside program *ncdsendvideo(1)*, or the Starlight Networks' StarWorks data server running on a network host.

Tip

By default, NCD terminals use TFTP for file transfer. Contact your system administrator if you need to use NFS instead.

NCD recommends using NFS rather than TFTP to transfer video files. Video clips played using TFTP play straight through from beginning to end; the Video Player's pause, seek, and single step controls are disabled. Performance and synchronization using TFTP are also poor compared to when using NFS transport.

The *ncdsendvideo* command reads a video file on the host, starts the Video Player on the terminal, and then sends video data to the terminal. *ncdsendvideo* is especially useful for sending video clips to the terminal from applications such as Netscape. (See "Starting the Video Player from a Host" on page 11-15.)

The Video Player can receive video data from the Starlight Networks' StarWorks video data server running on a network host. The StarWorks host must be on the same subnet as your terminal. StarWorks software must be purchased from a StarWorks vendor and must be installed and configured as described in the StarWorks documentation. NCDware's StarWorks software support requires a license for use.

Playing a Video

Tip

To play MPEG interleaved audio and video streams, you have to use the CompCore video fast MPEG decoder. The default decoder does not play MPEG interleaved audio and video streams.

There are several ways to display videos on a terminal:

- From a terminal using the Console's Utilities ⇒ Video Player item
- From a terminal using a remote shell command with *vp* or *video*
- From a host using the hostside *ncdsendvideo* utility

- ❑ From a host using StarWorks software (requires a license on the terminal and purchase and installation of StarWorks software).

Using the Console

To start the Video Player from the Console:

1. Select Utilities ⇒ Video Player.
2. From the Video Player, select File ⇒ Open File...
3. The Video Player dialog box appears; type the name of the video input file you want to play in the text entry space.
4. Click OK to start the video.
The Video Player window appears on the terminal, its image size defined in the video file. The video starts playing.
5. To play the video, click the PLAY button (Figure 11-3 on page 11-16).

Using Remote Shell Commands

When you start the Video Player using a remote shell command, you can use either the *vp* command to start the Video Player interface or the *video* command to run the decoding software without the Video Player interface.

Using the *vp* (1) Command

Tip

You can also use the **remsh** remote shell command.

To use the *vp* (1) command to run the Video Player, use the command-line syntax:

```
rsh hostname vp [-options] [videofilename]
```

where:

- | | |
|-----------------|--|
| <i>hostname</i> | Is the name or IP address of the terminal where <i>vp</i> is running. |
| <i>options</i> | Are options to the <i>vp</i> command. Table 11-2 lists frequently used options; see the <i>vp</i> (1) man page for more options. |

videofilename Is the name of the video file (optional). If you supply a name, the Video Player starts immediately and pauses at frame 1 in the video file. Otherwise, a dialog box appears and you must enter the name of the video and click the OK button.

To play the video, click the `Play` button (Figure 11-3 on page 11-16).

Table 11-2 lists the command-line options for the `vp` command. You can use X resources to set most these options; see the `vp(1)` man page.

Table 11-2 `vp` (1) Command-Line Options

Option	Action, Values, and Default
<code>-display display</code>	Specifies the name (host name or IP address) of the terminal running the Video Player. For the <code>vp</code> command, the default display is the terminal on which you started the terminal emulator used for issuing the <code>vp</code> command.
<code>-dither dither_alg</code>	Specifies the dithering algorithm. The default for color monitors is "ordered2." The default for grayscale monitors is "gray."
<code>-dxhost hostname</code>	Specifies the decoder host to which the Video Player should connect. The default is the current display.
<code>-geometry geometry</code>	Specifies the location and size of the Video Player window. The default depends on the terminal. Specify <code>-geometry</code> using the standard geometry string (<i>widthxheight+/-xoff+/-yoff</i>).
<code>-hifi</code>	Enables high fidelity decoding of the audio portion of the video. NCD does not recommend use of this option because it significantly slows the MPEG decoding.
<code>-loop</code>	Replays the video when it reaches the end (loop mode). The default is to stop at the end of the video (one-time through).
<code>-mute</code>	Turns off the sound.

Table 11-2 *vp* (1) Command-Line Options (Continued)

Option	Action, Values, and Default
-name <i>name</i>	Specifies the class name that <i>vp</i> uses to find X resources. The default is <code>videoPlayer</code> . (See the <i>vp</i> (1) man page for more information about X resources.)
-play	Starts the Video Player in play mode instead of paused at frame 1, which is the default.
-playonce	Starts the Video Player in play mode and exits at the end of the video clip.
-starfilter <i>pattern</i>	Specifies the StarWorks filter to use in the Video Player browser. The default is <code>*.*</code> .
-starvolume <i>vol_name</i>	Specifies the StarWorks volume to use in the Video Player browser. No default.
-separateVideoWindow	Specifies that the decoded video should be in a separate window from the Video Player. This is required when running the Video Player and decoder on different displays.
-title <i>title</i>	Specifies the title of the video application window. The default is <code>Video</code> .
-vol <i>level</i>	Sets the volume level in a range of 0 to 255. The default is 100.

Using the *video* (1) Command

Tip

You can also use the **remsh** remote shell command.

The *video* command displays the video without displaying the Video Player user interface. The command-line syntax is:

```
rsh hostname video [-options]
```

where:

hostname Is the name or IP address of the terminal where *video* is running.

options Table 11-3 lists frequently used options of *video*. A complete list of options is included in the *video* (1) man page.

For example:

```
%rsh hawk video -file speaker.mpg -play <CR>
```

If you do not specify a video data file using either the `-file` or `-star` option, no video plays.

One video process at a time can run on a terminal.

Table 11-3 lists the command-line options for the `video` command. The Video Player does not support X resources.

Table 11-3 Command-Line Options for the `video` Command

Option	Action, Values, and Default
<code>-title title</code>	Specifies the title for the application window. The default is "NCDvideo."
<code>-icon_title icon_title</code>	Specifies the icon title for the application window. The default is "video."
<code>-dither dither_alg</code>	Specifies the dithering algorithm used. The default is "color8" for 8-bit color default visuals, "gray8" for 8-bit grayscale default visuals, and "color24" for 24-bit true-color default visuals. An additional dithering mode, "2x2color8," gives double-size 8-bit color images.
<code>-play</code>	Start in play mode. By default, the video starts paused at the first frame.
<code>-exit_on_end</code>	Exit at the end of the video clip. By default the video pauses at the end.
<code>-loop</code>	Replays the video when it reaches the end (loop mode). By default the video pauses at the end.
<code>-vol volume</code>	Sets the volume for audio playback, in the range of 0 (mute) to 255 (full volume). The default is 128.
<code>-star starlight_movie</code>	Specifies the name of a StarWorks movie to play, in the format <code>volume:movie:0</code> . The 0 represents track; always specify the track field as 0. No default.

Table 11-3 Command-Line Options (Continued) for the *video* Command

Option	Action, Values, and Default
<code>-file movie</code>	Specifies the name of a movie to play. The directory containing the movie must be accessible through the file service table (Setup ⇒ Change Setup Parameters ⇒ File Service ⇒ File Service Table). No default.
<code>-hifi</code>	Decodes the audio track using hifi, which degrades playback performance. By default, the audio is decoded in “low” fidelity.
<code>-install</code>	Installs the colormap; the default is to request that the window manager install the colormap.
<code>-mute</code>	Sets the volume to 0 (mute). By default, volume is 128.

Starting the Video Player from a Host

Tip

The Video Player does not support X resources.

To start the Video Player from a host, use the `ncdsendvideo(1)` command.

The command-line syntax of `ncdsendvideo` is:

```
ncdsendvideo [-h hostname] [videofilename] [-- -vp_options]
```

For example, the following command uses `ncdsendvideo` to start a Video Player entitled “Demonstration Video”:

```
% ncdsendvideo demovideo.mpg -- -title "Demonstration Video"
```

The optional hostname parameter (`-h hostname`) specifies the name of the terminal on which the Video Player should run. If you do not use this parameter, make sure that you have set the `DISPLAY` variable. The command runs on the terminal named in the `DISPLAY` variable. For information about setting the `DISPLAY` variable, see “Starting Applications” on page 7-6.

If you do not specify `videofilename`, `ncdsendvideo` uses standard input (`stdin`) for input.

You can use the `vp` command options listed in Table 11-2 on page 11-12 with the `ncdsendvideo` command by typing two additional dashes (`--`) before the options, then typing the `vp` command options. `ncdsendvideo` sends all options listed after `--` to `vp`.

Using StarWorks

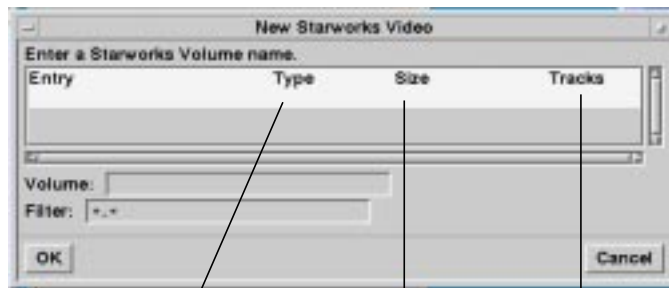
These instructions for using Starlight Networks' StarWorks for delivering video data to the NCD terminal assume that StarWorks has been installed, configured, and enabled on a host on the same subnet as your terminal. If this is not the case, see your system administrator or the StarWorks documentation.

To use StarWorks from the Video Player:

1. Specify the StarWorks volume file using Setup ⇒ Change Setup Parameters ⇒ Video ⇒ StarWorks volume file.

The StarWorks volume file lists StarWorks volume names and the associated hardware locations. The default volume file is `/usr/lib/X11/ncd/volumes.sw`.

2. Start the Video Player as described in "Using the Console" on page 11-11 or "Starting the Video Player from a Host" on page 11-15.
3. From Video Player, select File ⇒ Open StarWorks to display the New StarWorks Video dialog box (Figure 11-3).



The type of volume name: "mov" for movie clip; "dir" for directory; or "vol" for volume

The size of the movie clip in bytes

The number of tracks in the movie

Figure 11-3 New StarWorks Video Dialog Box

4. Select or enter a StarWorks volume name.
The StarWorks volume name is 15 or fewer characters identifying the StarWorks volume, which

is a data object used in the StarWorks user interface to provide access to movies. For more information, see your StarWorks documentation.

5. Enter a list filter to qualify the files you want to display.
6. Select a movie from the list that appears in the dialog box. You can either double click it or click once and then click OK.
7. The Video Player starts. To play the video, click the Play button.

Controlling the Video Player

Use the VCR-like controls below the video display area to control the Video Player's display (Figure 11-3).

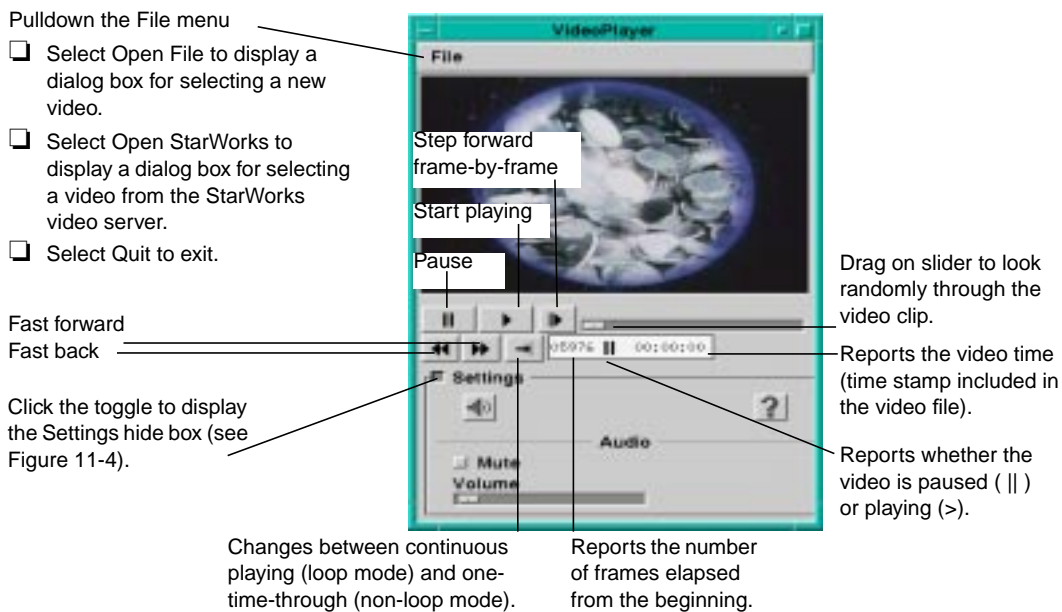


Figure 11-3 Basic Video Player Controls

The Settings toggle displays additional configuration and information items, as in Figure 11-4.

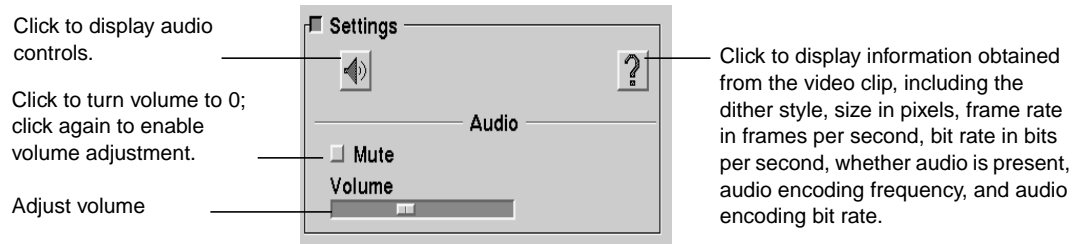


Figure 11-4 The Video Player's Settings Hide Box

12 Using XRemote

NCD's XRemote software allows you to use NCD terminals in remote locations. Once logged in, you can run X applications just as if you were on a local network.

This chapter explains:

- ❑ How to set up and use XRemote at a remote location over a serial line, for example, from a branch office.
- ❑ How to use XRemote at a central workplace over a direct serial connection or on an Ethernet or Token-Ring network.

For more information about XRemote, refer to these sources:

- ❑ The *NCDware System Administrator's Guide*
- ❑ Your system administrator

XRemote and Related Software and Hardware

XRemote can run on terminals connected to a host on a serial line (either using a modem or a direct connection) and on terminals connected to an Ethernet or Token-Ring LAN (Local Area Network). A complete XRemote system is illustrated in Figure 12-1.

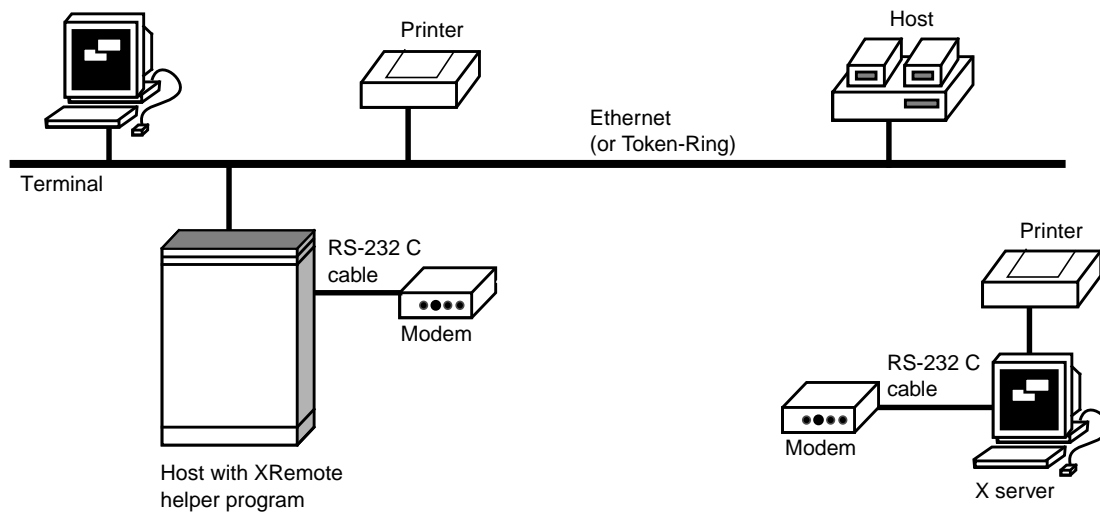


Figure 12-1 A Local Area Network With XRemote

XRemote software consists of two parts:

- ❑ The XRemote module in the X server (on a PC card or downloaded if you are using XRemote with TCP/IP protocols) is responsible for managing local processes and handling communications with the host over a serial connection.
- ❑ The host-resident helper program (called *Xremote*) is provided on the NCDware distribution media. The helper process allows the terminal to communicate with other hosts (including other terminals) on the network.

Before Running XRemote

Before you can run XRemote, your system administrator must perform the following tasks and provide the following information. The tasks are explained in the *NCDware System Administrator's Guide*.

- Provide an X server (on a PC card if you are using XRemote over a serial line)
- Verify that you have an XRemote license
- If you are using XRemote through a modem:
 - Provide a modem with cables and a modem user's manual
 - Configure the host computer's modem
 - Provide the host computer's phone number
- Make sure the host is prepared for XRemote use
- Make sure your font path is set up to provide fonts for the applications you need to run
- If you are using PPP or SLIP:
 - Provide you with the address or name of the host on which you should start XRemote
 - Provide you with the command for starting PPP or SLIP
- Configure your terminal's serial port or provide you with directions for configuring the terminal

In addition to the tasks listed above, using XRemote is more convenient if the system administrator does the following tasks. These tasks are described in the *NCDware System Administrator's Guide*.

- Configure your modem and terminal. If you need to do the configuration yourself, there are directions in this chapter.
- Revise your *PATH* environment variable to include the directory for the *xinitremote* and *XRemote* programs.

- Add an XRemote startup file to your home directory to start applications automatically.
- Make sure your font path provides access to all the necessary fonts.
- Tells you how to end your XRemote session easily.

Accessing the Terminal's Console Window

The Console window provides access to utilities used in procedures described in this chapter.

Press the Setup key to display the Console. If your NCD keyboard does not have a Setup key, see Table 5-1 on page 5-2 for equivalent key combinations.

Using XRemote—Serial Connection Using a Modem

This section provides the procedures for configuring, starting, and ending a serial XRemote session over a modem.

Your system administrator may set up XRemote to connect in a different way than is described here. Ask your system administrator if you need help connecting over XRemote.

Before you Start XRemote

The following section describes equipment you need and tasks that you should perform before starting an XRemote session.

Deciding Which Protocol to Use

You can run XRemote over a modem in two ways:

- Using PPP (Point-to-Point Protocol) or SLIP (Serial Line Interface Protocol) over a serial connection. If you are using this method, follow the procedures in “Using XRemote Over a Modem with PPP or SLIP Protocol” on page 12-7.

See the *NCDware System Administrator's Guide* for a comparison of the XRemote, PPP, and SLIP protocols.

- ❑ Using the XRemote proprietary protocol over a serial connection. If you are using this method, follow the procedures in “Using XRemote Over a Modem with the Proprietary XRemote Protocol” on page 12-11.

Ask your system administrator which way to run XRemote.

Connecting a Modem to the Terminal

To run XRemote from a remote site, you need a modem and a serial cable.

Suitable Modems

Some modems are better suited for use with XRemote than others. Ask your system administrator for an appropriate model. The US Robotics Courier HST Dual Standard modem is one type that works properly.

Serial Ports

All terminals include at least one serial port. Serial ports on terminals have a DB-25 (25-pin) or DB-9 (9-pin) female connector.

The Explora, Explora Pro, Explora 400/450 series, and Explora 700 terminals have one serial port.

A standard HMX-series terminal has one serial port, labelled AUXILIARY. If you have an ESP board (Ethernet/Serial/PC) installed, you have either two or three serial ports. Attaching a Y cable to the ESP serial port converts the single port into two ports, for a total of three serial ports.

Serial Cables

For a modem connection, you need a short serial cable. This cable is not provided with XRemote, but some modems include a cable.

Most modem connections require a cable with male connectors. If your cable's connector does not fit, adapters are available.

To connect the modem:

1. Connect one end of the serial cable to the terminal's serial port and the other end to the modem.
2. Connect the modem to the phone line, as directed in the modem manual.

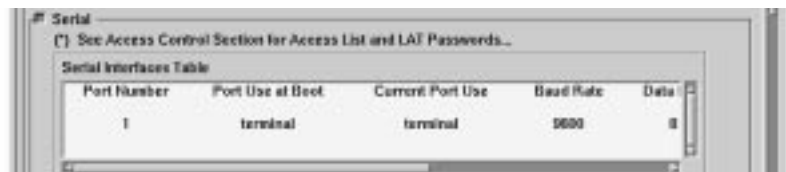
Configuring the Terminal's Serial Port

Usually, the default configuration of the terminal's serial port is correct. If not, follow these directions:

1. Display the Console's Change Setup Parameters window (Setup ⇒ Change Setup Parameters) and open the Serial hide box.
2. In the Serial Interfaces Table (Figure 12-2), scroll to display the field you need to change and click the field. Select the correct value for the field.

If more than one serial port is displayed in the Serial Interfaces Table, make sure you are configuring the port being used for XRemote.

- If the modem is faster than 9600 baud, change the `Baud Rate` field to the appropriate baud rate.
- If you are using RTS/CTS flow control on the modem, set the `Handshake` field to `rts/cts`.
- Make sure the `Port Use at Boot` field is set to `terminal`.



Port Number	Port Use at Boot	Current Port Use	Baud Rate	Data
1	terminal	terminal	9600	8

Figure 12-2 Serial Interfaces Table

3. When you finish configuring the serial port, click `Apply` at the bottom of the Setup Parameters window.

Your changes take effect immediately and are saved in the terminal's non-volatile RAM (NVRAM).

4. If the `Auto Save File` field just above the `Apply` button is selected, your changes are also saved in a configuration file on the PC card or on the host for terminals without a PC card.

Saving the changes to NVRAM or a file means that the serial port retains its configuration even if the terminal is powered off or rebooted.

Using XRemote Over a Modem with PPP or SLIP Protocol

Dial Up the Host and Start PPP or SLIP

See "Connecting a Modem to the Terminal" on page 12-5 for directions on attaching the modem.

1. Make sure the modem is connected to the terminal and to the phone line, and that the modem is turned on.
2. If the terminal is not running, turn it on and allow it to boot completely.
3. Open the Dialer (Terminals ⇒ New Dialer).
4. If a Dialer Port Chooser appears, that means you have more than one serial port. In the Chooser, highlight the number of the serial port that you want to use, and click `OK`. The numbers in the `Port Number` field correspond to the following physical ports:
 - Port Number 1 is the connector labelled `AUXILIARY` on an HMX-series terminal or the single serial port on other terminals.
 - Port 2 is the serial connector on the HMX terminal's ESP board (if installed).
 - If a Y cable is attached to the ESP board serial port, the A connector on the Y cable is Port 2 and the B connector is Port 3.
5. Make sure that `Strip Parity` in the Dialer's Options menu is turned on if the host you are dialing up is

using 7-bit characters, the most likely situation. The default value is true (on).

6. Type the modem command to connect to the host. If you or your system administrator have already configured your modem, use the following directions to dial up the host. If the modem is not configured, first configure the modem as described in “Configuring a Modem” on page 12-13.

- If you are using a US Robotics modem, type the command:

`ATDTphonenumber <CR>`

where *phonenumber* is the remote host’s phone number. For example:

`ATDT12125551132 <CR>`

If you need to dial 9 to get an outside line, insert a comma after the 9. For example, the command:

`ATDT9,12125551132 <CR>`

instructs the modem to pause after dialing the 9 until it hears the second dial tone. This prevents a miscommunication.

After you type the `ATDT` command, the modem displays one of the messages listed in Table 12-1.

Table 12-1 Modem Messages

Message	Status	Action
RING CONNECT 9600/V32/NONE	You are connected. The host displays its login prompt.	If the login prompt does not appear, press Return.
BUSY	The line is busy.	Try to connect later.

- If you are using a different modem, follow the directions in the modem manual to dial the remote host’s phone number. If the modem is not configured, see “Configuring a Modem—Generic Instructions” on page 12-14.

7. If PPP or SLIP does not start automatically, type the command defined by your system administrator to start PPP or SLIP.
8. For SLIP, select `SLIP` from the Communications menu in the Dialer to convert the line to SLIP mode. For PPP, this step may not be necessary because PPP packets are autodetected. If the remote host does not initiate the negotiation, select `PPP` from the Communications menu.
9. When PPP starts, the Dialer is iconified and these messages appear in the messages area of the Console:

```
%NCDTERM-I-MISC Switching to PPP Mode...
%PPPD-I-UP, Port n: local = x.x.x.x, remote = x.x.x.x
Hot down the local address. You may need it later.
```

Log In and Start the XRemote Helper for PPP or SLIP

1. Open the Terminal Host Chooser (Terminals ⇒ New Terminal or New Telnet). Figure 12-3 shows an example Chooser.

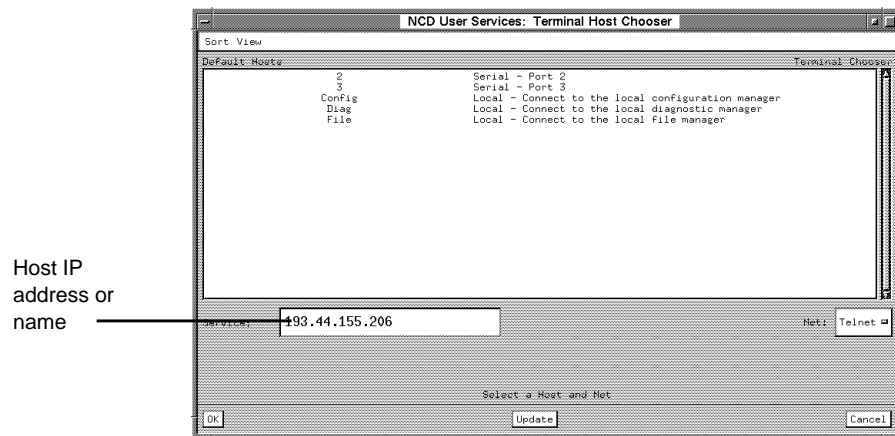


Figure 12-3 NCD Terminal Host Chooser

2. If the host on which you need to run the XRemote helper is listed in the Chooser, click the hostname and click `OK`.

3. If the host is not listed, click in the `Service:` field and type the host's name or IP address and click `OK`.
4. When the login prompt appears, type your login name and password.
5. To start the XRemote helper, type the following command:

```
% xinitremote -- -inet & <CR>
Log file is /usr/tmp/Xremotel
```
6. The `xinitremote` command starts the XRemote helper as well as any applications specified in a `.xinitmoterc` startup file in your home directory. If you have no startup file, an `xterm` window appears. `xterm` is the basic X Window System terminal emulator. The window is titled `Login`. See the *NCDware System Administrator's Guide* for information about XRemote startup files.
7. If no applications or `xterm` windows appear, the XRemote helper has not started. The usual reasons are:
 - If the message `Command not found` is displayed, your system administrator has not added XRemote commands to your search path. Usually XRemote resides in the directory `/usr/bin/X11/ncd`. You may be able start XRemote by typing the complete pathname:

```
% /usr/bin/X11/ncd/xinitremote -- -inet <CR>
```
 - The terminal's `DISPLAY` variable is not set. Follow the directions in "Setting the Terminal's `DISPLAY` Variable" on page 12-22 and type the `xinitremote` command again.
8. When XRemote starts, you use the applications started automatically and start other applications and network services as you would using a terminal on a local network.
9. To end the XRemote session, see the instructions in "Ending the XRemote Session" on page 12-22.

Using XRemote Over a Modem with the Proprietary XRemote Protocol

Dial the Host

See “Connecting a Modem to the Terminal” on page 12-5 for directions on attaching the modem.

1. Make sure the modem is connected to the terminal and to the phone line, and the modem is turned on.
2. If the terminal is not running, turn it on and allow it to boot completely.
3. Open the Dialer (Terminals ⇒ New Dialer).
4. If a Dialer Port Chooser appears, you have more than one serial port. In the chooser, highlight the number of the serial port that you want to use, and confirm by clicking **OK**. The physical serial ports corresponding to the numbers in the Dialer are:
 - Port 1 is the port labelled AUXILIARY on an HMX-series terminal or the single serial port on other terminals.
 - Port 2 is the serial port on an HMX terminal’s ESP board (if installed).
 - If a Y cable is attached to the ESP board’s serial port, the A connector on the Y cable is Port 2 and the B connector is Port 3.
5. Make sure that `Strip Parity` in the Dialer Options menu is turned on if the host you’ve dialed up is using 7-bit characters, the most likely situation. The default value is true (on).
6. If you or your system administrator have already configured your modem, use the following directions to dial up the host. If the modem is not configured, before proceeding, configure the modem as described in “Configuring a Modem” on page 12-13.
 - For a US Robotics modem, type the following command:
`ATDTphonenumber <CR>`

where *phonenumber* is the remote host's phone number. For example:

```
ATDT12125551132 <CR>
```

If you need to dial 9 to get an outside line, insert a comma after the 9. For example, the command:

```
ATDT9,12125551132 <CR>
```

instructs the modem to pause after dialing the 9 until it hears the second dial tone. This prevents a miscommunication.

After you enter the `ATDT` command, the modem displays one of the messages listed in Table 12-2.

Table 12-2 Modem Messages

Message	Status	Action
RING CONNECT 9600/V32/NONE	You are connected. The host displays its login prompt.	If the login prompt does not appear, press Return.
BUSY	The line is busy.	Try to connect later.

- For any other type of modem, refer to your modem manual for the command to use to dial the host.

Log Into the Host and Start the XRemote Helper

1. When the login prompt appears, type your login name and password.
2. Start the XRemote helper by typing:

```
$ xinitremote <CR>
```

```
Log file is in /usr/tmp/Xremotel
```

The `xinitremote` command starts the XRemote helper and any applications specified in the `.xinitremoterc` startup file, which may exist in your home directory.

If you do not have a startup file, an `xterm` window titled Login appears. `xterm` is the basic terminal emulator.

If the message `Command not found` is displayed, XRemote has not started. The usual reason is that your system administrator has not added XRemote commands to your search path. XRemote usually resides in the directory `/usr/bin/X11/ncd`. You may be able to start XRemote by typing the complete pathname of the `xinitremote` command:

```
% /usr/bin/X11/ncd/xinitremote <CR>
```

3. When XRemote starts, you use the applications started automatically and start other applications as you would using a terminal on a local network.
4. To end the XRemote session, see the instructions in “Ending the XRemote Session” on page 12-22.

Configuring a Modem

If your system administrator has not already configured the modem, follow the relevant directions:

- If you have a US Robotics modem, follow the procedure in “Configuring a US Robotics Modem.”
- If you have a different modem, follow the procedure in “Configuring a Modem—Generic Instructions” on page 12-14.

To ensure that XRemote works correctly, both the remote and hostside modems must be set properly. Ask your system administrator to set up the hostside modem.

If you want more suggestions for specific modems, ask your system administrator to review the XRemote Technical Note via FTP from NCD.

Configuring a US Robotics Modem

The US Robotics Courier HST Dual Standard modem meets all XRemote requirements. Use this procedure as an example for configuring a US Robotics modem for use with XRemote.

1. In the Dialer, type the commands listed in Table 12-3.
2. Return to Step 6 on page 12-8 (if you are using PPP/SLIP) or page 12-11 (if you are using the proprietary XRemote protocol) and dial the host.

Table 12-3 Modem Configuration Settings

Type This Command	Modem Display	Result of Your Action
AT&A3 <CR>	OK	Displays error code indicators (HST, LAPM, MNP, SYNC, or NONE) and data compression type (V42BIS or MNP5).
AT&B1 <CR>	OK	Fixes DTE/DCE data rate at the DTE setting.
AT&H1 <CR>	OK	Sets modem flow control to hardware only. This allows compatibility with non-XRemote uses of the remote and/or host-side modems.
AT&M0 <CR>	OK	Sets asynchronous mode to normal, with no error control.
AT&N0 <CR> <i>or</i> AT&N6 <CR>	OK	Sets the baud rate to default (normal connection operations) or 9600.
AT&W <CR>	OK	Saves these settings to the modem's NVRAM so that you don't have to re-enter these commands each time you use XRemote.

Configuring a Modem—Generic Instructions

1. In the Dialer window, set the following modem parameters. Use the commands described in your modem manual.
 - Configure the modem to ignore DTR signals.
 - Disable any compression algorithms used by the modem. These algorithms delay XRemote transmissions and degrade performance. Consult your modem manual for instructions on disabling compression and error correction such as Microcom Networking Protocol (MNP).

- Disable XON/XOFF flow control for the modem. If you want to use flow control, enable hardware flow control using RTS/CTS.
 - Be sure that the modem is configured for 8 data bits, 1 stop bit, and no parity.
2. Type the modem command for saving parameters in the modem's NVRAM so that you don't have to re-enter the configuration commands each time you use XRemote.
 3. Return to Step 6 on page 12-8 or "Dial the Host" on page 12-11.

Using XRemote—Direct Serial Connection

This section provides procedures for using XRemote on a direct serial connection. A serial cable extends directly from the terminal to a local host computer or to a terminal server or switch box connected to a host computer.

Your system administrator may set up XRemote to connect in a different way than is described here. Ask your system administrator if you need help connecting over XRemote.

Deciding Which Protocol to Use

You can run XRemote over a direct serial connection in two ways:

- Using PPP or SLIP. If you are using this method, follow the procedures in "Using XRemote—Direct Serial Connection with PPP or SLIP Protocol" on page 12-17.
See the *NCDware System Administrator's Guide* for a comparison of XRemote, PPP, and SLIP protocols.
- Using the XRemote proprietary protocol over a serial connection. If you are using this method, follow the procedures in "Using XRemote—Direct Serial Connection with the Proprietary XRemote Protocol" on page 12-19.

Ask your system administrator which way to run XRemote.

Configuring the Serial Port

From the Console, display the Serial Interfaces Table (Setup ⇒ Change Setup Parameters ⇒ Serial). Make sure that the serial port you are using is set to match the host's handshake method and the baud rate is set as high as possible.

Figure 12-4 shows the default Serial Interfaces Table. Note that you must use the horizontal scroll bar to see all of the table.

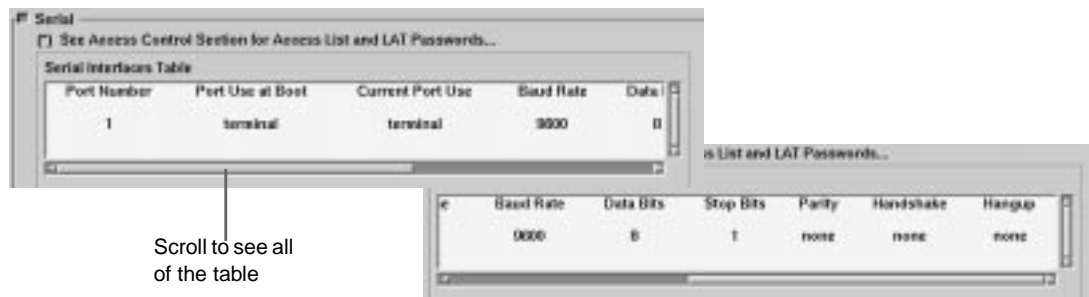


Figure 12-4 Serial Interfaces Table Default Settings

If more than one serial port is listed, the terminal has an ESP interface board installed. Ask your system administrator which port to use. To make sure you configure the correct port:

- The connector labelled AUXILIARY is the Port 1.
- The connector on the ESP board (if installed) is Port 2.
- If a Y cable is attached to the ESP board, the A connector on the Y cable is Port 2 and the B connector is Port 3.

To change parameters in the Serial Interfaces Table:

1. To change the handshake (flow control) method, click the Handshake field and select the correct method.

2. To change the baud rate, click the `Baud Rate` field and select the correct baud rate.
3. Click `Apply` at the bottom of the `Setup Parameters` window to apply the changes to the current configuration and save the changes into the terminal's NVRAM.

If `Auto Save File` is selected, the changes are saved into your terminal's configuration file as well.

Using XRemote—Direct Serial Connection with PPP or SLIP Protocol

Start PPP or SLIP

1. Open the Dialer (Terminals ⇒ New Dialer).
2. If a Dialer Port Chooser appears, you have more than one serial port. In the chooser, highlight the number of the serial port you are using for XRemote and confirm by clicking `OK`.
3. Make sure that `Strip Parity` in the Dialer's Options menu is turned on if the host you are logging into is using 7-bit characters, the most likely situation. The default value is true (on).
4. If PPP or SLIP does not start automatically, type the command defined by your system administrator to start PPP or SLIP.
5. For SLIP, select `SLIP` from the Communications menu in the Dialer to convert the line to SLIP mode. For PPP, this step may not be necessary because PPP packets are autodetected. If the remote host does not initiate the negotiation, select `PPP` from the Communications menu.
6. When PPP starts, the Dialer is iconified and these messages appear in the messages area of the Console:

```
%NCDTERM-I-MISC Switching to PPP Mode...  
%PPPD-I-UP, Port n: local = x.x.x.x, remote = x.x.x.x
```

7. Jot down the local address. You may need it later.

Log In and Start the XRemote Helper for PPP or SLIP

1. Open the Terminal Host Chooser in the Console (Terminals ⇒ New Terminal or New Telnet).
2. If the host on which you need to run XRemote is listed in the Terminal Host Chooser, click the hostname and click **OK**.
3. If the host is not listed, click in the `Service:` field of the Terminal Host Chooser.

Type the host's name or IP address and click **OK**.

4. When the login prompt appears, type your login name and password.
5. To start the XRemote helper, type the following command:

```
% xinitremote -- -inet <CR>  
Log file is /usr/tmp/Xremotel
```

6. The `xinitremote` command starts the XRemote helper as well as any applications specified in an XRemote startup file in your home directory.

If you have no startup file, an `xterm` window appears. `xterm` is the basic X Window System terminal emulator. The window is titled Login.

See the *NCDware System Administrator's Guide* for information about XRemote startup files.

7. If no applications or `xterm` window appear, the XRemote helper has not started. The usual reasons are:
 - If the message `Command not found` is displayed, your system administrator has not added XRemote commands to your search path. Usually XRemote resides in the directory `/usr/bin/X11/ncd`. You may be able start XRemote by typing the complete pathname:

```
% /usr/bin/X11/ncd/xinitremote -- -inet <CR>
```

- The terminal's `DISPLAY` variable is not set. Follow the directions in "Setting the Terminal's

DISPLAY Variable” on page 12-22 and type the *xinitremote* command again.

8. When XRemote starts, you use the applications started automatically and start other applications as you would using a terminal on a local network.
9. To end the XRemote session, see the instructions in “Ending the XRemote Session” on page 12-22.

Using XRemote—Direct Serial Connection with the Proprietary XRemote Protocol

Log Into the Host

1. Open the Dialer in the Console (Terminals ⇒ New Dialer).
2. If a Dialer Port Chooser appears, you have more than one serial port. In the Chooser, highlight the number of the serial port that you want to use, and confirm by clicking **OK**.
3. Confirm that `Strip Parity` in the Dialer Options menu is turned on if the host you’ve dialed up is using 7-bit characters, the most likely situation. The default value is true (on).
4. When the login prompt appears, type your login name and password.

Start XRemote

1. Start the XRemote helper by typing:

```
$ xinitremote <CR>
```

Log file is in /usr/tmp/Xremotel

The *xinitremote* command starts the XRemote helper and any applications specified in the *.xinitmoterc* startup file, which may exist in your home directory. If you do not have a startup file, an *xterm* window titled Login appears. *xterm* is the basic X Window System terminal emulator.

If the command does not start, the usual reasons are:

- If the message `Command not found` is displayed, XRemote has not started. The usual reason is that your system administrator has not added XRemote commands to your search path. Usually XRemote resides in the directory `/usr/bin/X11/ncd`. You may be able to start XRemote by typing the complete pathname of the `xinitremote` command:

```
% /usr/bin/X11/ncd/xinitremote <CR>
```

- The terminal's `DISPLAY` variable is not set. Follow the directions in "Setting the Terminal's DISPLAY Variable" on page 12-22 and type the `xinitremote` command again.
2. After XRemote starts, you can start other X applications as you would on a terminal connected to a local network.
 3. To end the XRemote session, see the instructions in "Ending the XRemote Session" on page 12-22.

Using XRemote on an Ethernet or Token-Ring LAN

Follow the directions in this section to use XRemote over a local area network (LAN) instead of a serial connection.

You may want to use XRemote on an Ethernet or Token-Ring LAN to improve performance. If you need to run applications on a host that is on a different local network and the connection between the local networks is relatively slow, you can use XRemote to speed up communications.

Log Into the Host

Log into the host as follows:

1. Select a TELNET connection in the Console (Terminals ⇒ New Telnet).
2. Select a host from the Terminal Host Chooser and click **OK**.

If no hosts are listed, type the IP address or hostname of a host in the `Service:` field and click `OK`.

3. In the terminal emulator window, type your login name and password.

Start XRemote

1. To start XRemote (in the terminal emulator window) type:

```
% xinitremote -- -inet & <CR>
Log file is in /usr/tmp/Xremotel
```

2. The `xinitremote` command starts the XRemote helper and any applications specified in the `xinitremote.rc` startup file for customizing XRemote.

If you have no startup file, an `xterm` window titled Login appears. `xterm` is the basic X window system terminal emulator.

3. If no applications or `xterm` windows start, XRemote has not started. The usual reasons are:
 - If the message `Command not found` is displayed, your system administrator has not added XRemote commands to your search path. XRemote usually resides in the directory `/usr/bin/X11/ncd`. You may be able to start the helper by typing the complete pathname:

```
% /usr/bin/X11/ncd/xinitremote -- -inet & <CR>
```

- The terminal's `DISPLAY` variable is not set. Set the variable as explained in "Setting the Terminal's `DISPLAY` Variable" on page 12-22 and try the `xinitremote` command again.
4. After XRemote starts, you can start other applications on the host or use network services as you normally would on a local network.
 5. To end the XRemote session, see the instructions in "Ending the XRemote Session" on page 12-22.

Ending the XRemote Session

Follow these steps to end the XRemote session and close the connection with the host:

1. Close the last application started by the startup script, if you know which one was started last. Otherwise, just close all of the applications.
2. If you used the Dialer to connect to a host, close the connection:
 - a. Deiconify the Dialer if necessary.
 - b. If you connected through a modem, type the modem's escape sequence to hang up. For most modems, the command is `+++atH`.

Some modems require you to send a break signal by selecting Send Break from the Dialer's File menu.

Setting the Terminal's DISPLAY Variable

Follow the directions in this section if you need to set the *DISPLAY* variable to run *xinitremote*. You may need to set the variable if you are using XRemote on a LAN or through PPP or SLIP.

The value of the *DISPLAY* variable is the IP address or hostname of your terminal, followed by `:0`. For example, for a terminal with the hostname `ncdpp3`, the value of the variable is `ncdpp3:0`. If you can't find the terminal's hostname, you can use its IP address; for example `138.43.125.30:0`.

If you are using PPP, use the local IP address that you wrote down when you started PPP.

To set the *DISPLAY* variable, type a shell command. For example:

```
C shell:      % setenv DISPLAY display <CR>
```

```
Bourne shell: % DISPLAY=display; export DISPLAY <CR>
```

Checking XRemote Diagnostics

If you are having problems with XRemote, you can display diagnostic messages through the Console or look in the XRemote log file.

Diagnostic Messages in the Console

1. Display the Console.
2. Select the Messages hide box to display all diagnostic messages.
3. Note any errors reported in the message area, and report them to your system administrator if you cannot resolve the problem.

The XRemote Log File

XRemote and the applications run by the startup file direct their message output to a log file. By default, the output goes to a log file in the `/usr/tmp` directory. Sometimes, the system administrator designates a different directory for the log files.

Log files are named `Xremoten`, where `n` is a number assigned by XRemote. The first terminal to start an XRemote session creates a log file called `Xremote1`, and the number increases incrementally for other users who start XRemote.

Right after you type the `xinitremote` command to start XRemote, a message is displayed that provides the location and name of your log file.

You can look in the log file for information if you are having trouble starting XRemote.

13 Using OpenWindows on NCD Terminals

This chapter introduces the use of Sun Microsystem's OpenWindows, an environment often used on NCD terminals.

The chapter includes a brief introduction to this GUI and tips for improving its performance on NCD terminals.

The OpenWindows window manager discussed in this chapter is an alternative to the NCD Window Manager. If you want to know more about your particular system's GUI configuration, refer to these sources:

- The *NCDware System Administrator's Guide*
- Your system administrator

Overview

OpenWindows is a user environment based on the Sun OPEN LOOK graphical user interface (*olwm*). For detailed information about using OpenWindows, ask your system administrator for Sun OpenWindows documentation.

NCDware is compatible with OpenWindows Version 2 and OpenWindows Version 3.

Logging In

If your terminal has been configured to allow it, you can log into and use OpenWindows directly from the XDM login banner, as described in "Logging In" on page 4-2.

Configuring your system to use OpenWindows when you log in from the XDM banner involves customizing several of the files that control your session.

When you have logged in, the terminal software starts up with *olwm* (instead of NCD Window Manager) and whatever applications and utilities are indicated in your *.xsession* file (Figure 13-1).

Common startup applications might include:

- The File Manager (Sun Microsystems Computer Corporation owns File Manager V3), a file and directory management tool
- A command tool, a scrolling window-based shell environment
- The NCDware Console

If your software is not configured to start OpenWindows immediately when you log in, you can start it yourself after logging into a host on which the OpenWindows software has been installed:

1. If the NCD local window manager is running when you log in, use the Console's WindowMgr menu to turn off the local window manager.
2. Open a terminal emulator window.
3. In the window, type:

```
% olwm &
```

The characteristic OpenWindows frames appear around the windows.

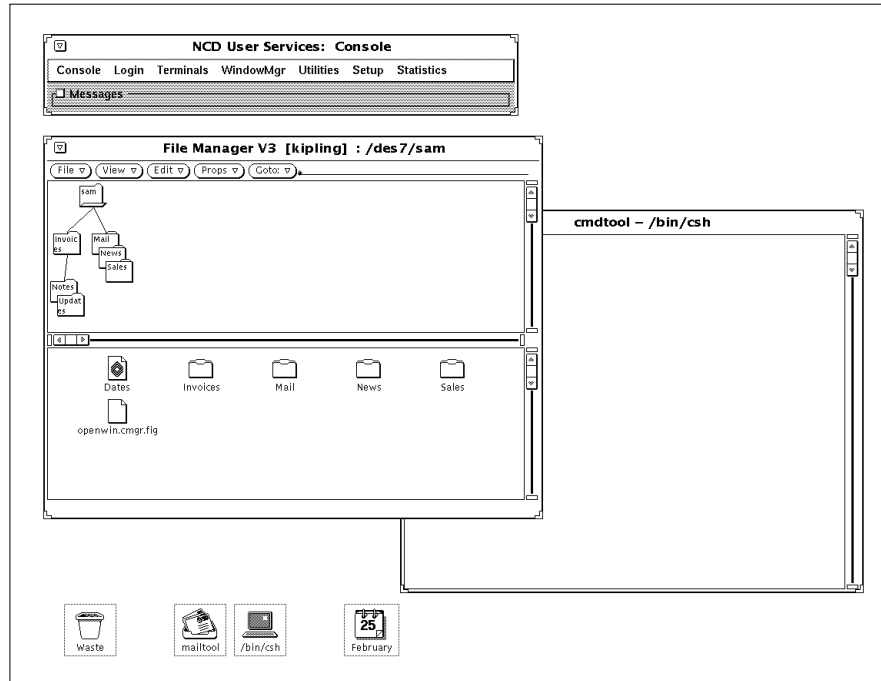


Figure 13-1 An OpenWindows Display After Login

Components of the OpenWindows GUI

This section introduces the components of the OpenWindows GUI. These components are:

- Mouse and pointer
- Workspace
- Window management
- Focus Policy
- Additional OpenWindows utilities
- Online documentation

Mouse and Pointer

In the OpenWindows environment, the mouse operates similarly to its use in NCD Window Manager. In OpenWindows, however, the buttons are described by function instead of by logical or physical numbers.

- The left button is the SELECT button.
- The middle button is the ADJUST button.
- The right button is the MENU button.

In the OpenWindows environment, the pointer appears in several forms, described in Table 13-1.

Table 13-1 Pointers in OpenWindows

Pointer	Meaning
Clock	System cannot accept input
Basic arrow	On the background window
Arrow with small square attached	Dragging an item
Arrow with square containing text	Dragging a portion of text
Arrow with two small squares	Copying an item by dragging

The OpenWindows cursor appears in a different shape depending on whether its window is inactive or active:

- A small triangle in an active window
- A small diamond in an inactive window

Workspace

In the OpenWindows environment, the root window is called the *Workspace*.

Window Management

In the OpenWindows environment, applications display their output in OpenWindows windows (Figure 13-2), which contain graphical tools for performing window management functions.

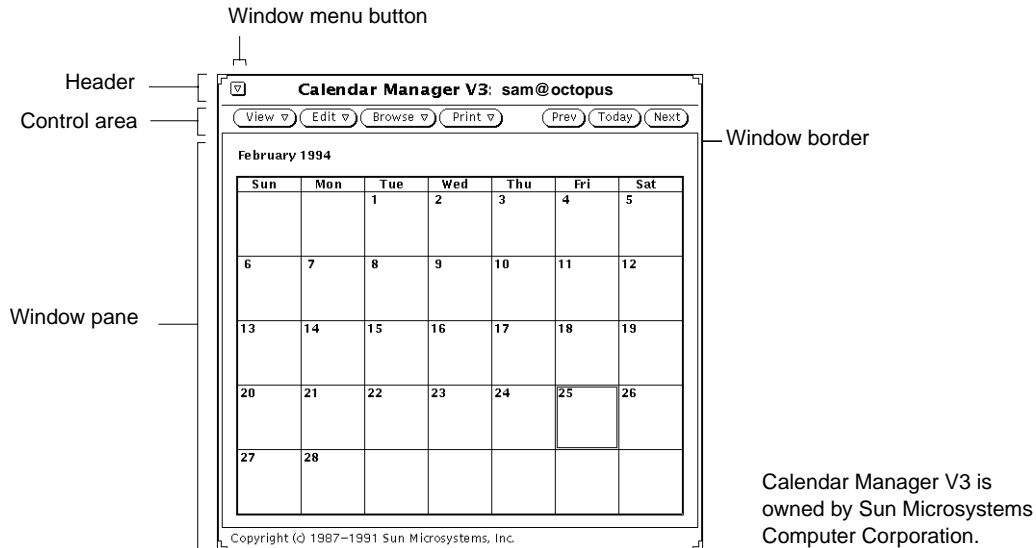


Figure 13-2 An OpenWindows Window

The frame surrounding an OpenWindows window is called the window border. The window has a header across the top that contains a title area and a button used to obtain a Window menu. Beneath the header is an area called the control area. Depending upon the application in the window, the control area may contain buttons used to display additional menus or other control mechanisms. The area in which input and output appear is called the window pane.

The Window menu contains options for manipulating windows, including:

- Closing
- Moving
- Changing size

- Changing hierarchical position
- Refreshing the display
- Quitting the application

Table 13-2 summarizes window manager functions.

Table 13-2 OpenWindows Window Management Functions

Function	Method
Displaying the Window menu	Put the pointer on the header or border and click the MENU button.
Moving windows	<ol style="list-style-type: none">1. Position the pointer on the window border.2. Press the SELECT button and drag the window to the desired location.3. When the window is where you want it, release the SELECT button.
Moving a window to the back of a stack of windows	<ol style="list-style-type: none">1. Put the pointer on the header of the window you want to lower.2. Click the MENU button to open the Window menu.3. Position the pointer over the Back menu item.4. Release the MENU button.
Changing the size of a window	<ol style="list-style-type: none">1. Position the pointer on one of the window corners.2. Press the SELECT button and drag the corner until the window is the size you want it to be.3. Release the SELECT button.
Closing windows	Click on the Window menu's Close item.
Quitting applications	Click on the Window menu's Quit item.

Focus Policy

The OpenWindows environment provides the same two basic input focus methods as NCD Window Manager and OSF/Motif: click-to-focus and pointer focus. In OpenWindows, the default click-to-focus policy is called click SELECT mode. In click SELECT mode, you use the SELECT mouse button to indicate the active window.

Pointer focus policy is called move pointer mode in OpenWindows.

Additional OpenWindows Utilities

OpenWindows DeskSet is a set of applications and utility programs that may be installed with OpenWindows. They include:

- Shell tools and command tools (command interpreter windows). Shell tools scroll forward; command tools scroll forward and backward.
- A file directory management tool
- A text editor
- A clock
- A calendar
- A printing tool
- A mail tool

DeskSet applications are accessed through the Workspace menu, which appears when you place the pointer on the Workspace and click the MENU button.

Online Documentation

OpenWindows contains two types of online documentation—spot help and handbooks.

Spot help popup windows contain brief descriptions of window mechanisms. To display spot help:

1. Place the pointer on the window area that you want information about.
2. Press the Help key on your keyboard. (You can remap a terminal's function key to act as the Help key. See "Remapping the Keyboard" on page 13-8.)

Handbooks, including the tutorial-style "Desktop Intro," describe how to use the DeskSet applications and the components of the OpenWindows environment.

- To display the "Desktop Intro," select Workspace ⇒ Menu ⇒ Desktop Intro.

- To display the other handbooks, choose the `Help` item from the Workspace menu.

Tips for Running OpenWindows Applications

This section includes tips for getting the best performance from OpenWindows running on your terminal. They are:

- Optimizing the display of fonts
- Remapping the keyboard
- Shell Tool and command prompts
- Screen resolutions
- Using the Save Workspace utility

Optimizing Display of Fonts

OpenWindows displays best on your terminal if you set the 75 dpi fonts in front of the 100 dpi fonts in the font path. (The default font path has the 100 dpi fonts first.)

To change the font path, use the Change User Preferences popup window, accessed from the Console's Setup menu. (Setup ⇒ Change User Preferences ⇒ Fonts.) For detailed information about changing fonts, see "Font Options" on page 6-7.

Remapping the Keyboard

NCD's N-123 Sun Type-5 compatible keyboards and N-107 Sun Type 4-compatible keyboards have Help, Copy, Paste, and Cut keys that do not appear on NCD's other keyboards. Your system administrator can remap the function keys of NCD's other keyboards to include the Sun special keys. Remapping is accomplished by altering `.xmodmaprc.sun` and `.xsession` files.

The remapped keys are:

- F5—Help
- F6—Copy
- F7—Paste
- F8—Cut

Shell Tool and Command Tool Prompts

If you do not have a SunOS prompt when you invoke a shell tool or a command tool, ask your system administrator to make sure that the commands to invoke the prompts are prefaced with the line `/usr/etc/setsid -b`.

Screen Resolutions

The Sun Microsystems screen resolution differs from that of the NCD terminal monitors. Consequently, when you use OpenWindows on a terminal, icons may appear in the wrong area of the display or they may not appear at all. If your icons seem misplaced or are missing, check with your system administrator to see if the necessary filter is in your `.xsession` file.

Using Save Workspace

The Save Workspace utility, accessed from the Workspace menu's Utilities submenu, saves the current display configuration so that the layout of your applications remains the same the next time you log in.

When you use the Save Workspace utility on a terminal, the utility does not save local applications.

A The X Window System and NCD Terminals

Your NCD terminal and the X Window System (X) offer a simple way to use a variety of computers and application programs over a network.

This appendix describes the network structure that makes many computers accessible from your NCD terminal.

Closer Look at X Software and Hardware

This section describes in more detail the X system software and hardware involved in an X computing environment.

The major benefits of X are summarized in Table A-1.

Table A-1 Benefits and Characteristics of X

Benefit	Description
Distributed processing	The network's processing power is distributed throughout the network as needed. You can access any computer on the network using the terminal.
Network transparency	The network is transparent. Regardless of where on the network an application resides, it appears to be running on your desktop.
Operating system independence	The operating system is independent of the X software. You can display applications from computers with different operating systems at the same time on your terminal.
Host transparency	The type of computer host you are connected to is not apparent from your terminal. Regardless of the computer host, the X software provides a consistent way to connect to it, start and stop applications, and manipulate windows.
Windows	Each application directs its output to a separate window on your display screen. The window manager software gives each of the windows a frame that you can manipulate with a mouse or keyboard to direct the application's actions and change the appearance or location of the window.

X Software Components

The X computing environment achieves the characteristics listed in Table A-1 using three components:

- ❑ X server software that controls the physical display and input devices (typically the mouse and the keyboard)
- ❑ X applications that request that the X server perform operations on windows
- ❑ Communication channels implemented in software and hardware that are used by the applications and X server to exchange data and instructions

Figure A-1 illustrates the relationships among the three components of the X system.

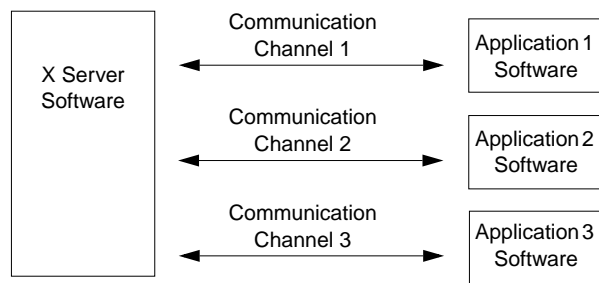


Figure A-1 X System Components

Because applications, X servers, and communications software are separate, they can exist on separate processors. This makes it possible for an NCD terminal—a display monitor and a processor dedicated to running the X server—to provide access to an unlimited array of hosts and applications over a network.

Servers

An X server is one kind of *server*. A server refers to a program that provides services over the network. Some of the NCDware servers and the services they provide are:

- ❑ X server—connects terminals to hosts or additional services in a local area network and controls the physical

display and input devices (for example, a keyboard) on the user's desktop.

- ❑ Font server—provides convenient application access to fonts, including scalable fonts.

The X server was developed at the Massachusetts Institute of Technology (MIT) in 1984. The most recent version, X11, was released in 1987. X11 is industry-standard windowing software.

X server software performs actions such as creating and removing windows and placing text and graphics in them for application programs that request them. Basic X server functions include:

- ❑ Allowing applications access to the display
- ❑ Interpreting network messages
- ❑ Passing user input to the appropriate applications
- ❑ Performing two-dimensional and three-dimensional drawing (text and graphics)
- ❑ Maintaining complex data structures such as windows, cursors, and fonts

Tip

Some NCD keyboards do not have a Setup key. See Table 5-1 on page 5-2 for equivalent key combinations.

Many of the services provided by the X server are organized in the Console that appears when you press the Setup key.

For example, when you want to connect to a host through a terminal emulator window, you open the Terminals menu in the Console and select `New Terminal`. The Terminal Host Chooser appears on your screen displaying a list of the available hosts to connect to. If you want a Telnet session and you select an appropriate host, the X server requests a login connection to the selected Telnet host.

The X server provides other services without any explicit action on your part. For example, when an application needs to display a font, the X server requests the font from the Font Server.

Applications (Clients)

X applications request the X server to perform actions on the X display. Applications can run on a remote machine across a network, or they can run as local applications on the terminal processors. A small part of the application program is dedicated to communication with the X server.

In addition to the X server software, most implementations of the X computing environment include programs to provide various utilities to the X system. Some examples are:

- Display managers, which manage login processing
- Terminal emulators, which allow you to run programs that do not have windowing capabilities

Window Managers

A window manager is a special application that controls the appearance and operation of the frame that surrounds the application windows. By using the mouse or keyboard to manipulate the control devices available on the frame (such as scroll bars and toggle and selection buttons), the user controls the interaction and layout of the windows on the display. Window managers often provide a menu for starting new applications.

Although the window manager dictates the appearance and utility of the *frame* surrounding the window, the application controls what appears *inside* the frame of the window through its requests to the X server.

Several different window managers may be available, but only one window manager can run on a display at a time.

NCDware includes a local NCD Window Manager that runs on the NCD terminal with the X server, and an optional local Motif Window Manager is available. A local window manager is beneficial because its response is quicker than a host-based window manager.

Other common host-based window managers are listed in Table A-2.

Table A-2 Common Window Managers

Window Manager	Description
<i>mwm</i>	Included with the Open Software Foundation/Motif (OSF/Motif) X software.
<i>olwm</i>	Manages windows for OpenWindows using Sun Microsystem's OPEN LOOK graphical user interface.
<i>twm</i>	Distributed by MIT with the standard X distribution.

For more information about using window managers, see Chapter 9, Using the Local NCD Window Manager, and Chapter 13, Using OpenWindows on NCD Terminals.

Communication Channels

When the X server and applications converse across the network, they rely upon *communication channels*, the third component of the X system software.

Channels for communicating across computer networks are composed of software and hardware. The software and hardware are designed according to protocols (standard rules) for passing messages between different sorts of machines. Many layers of software and hardware protocols are used for a communications job, each one handling specific tasks involved in the communication process.

When using terminals, the most commonly used protocols for governing the routing of requests around the network are Transmission Control Protocol/Internet Protocol (TCP/IP) and DECnet. The most commonly used protocol for the physical transport of the requests is the Ethernet 802.3 LAN, which can support a variety of physical cable types. TCP/IP can also be used over the Token-Ring 802.5 LAN.

Common X Utilities

This section introduces some of the common utility programs that are part of the MIT X11 distribution.

The applications described in this section are commonly available to users working in the UNIX environment.

For additional information about standard X utilities, see the X guides listed in the bibliography at the end of this manual.

Online Help

The host-based *xman* program is a simple facility for access to system documentation, often called *man* pages (abbreviation for manual) in a UNIX environment. NCDware includes man pages for NCD utilities.

Screen Dump Utilities

xwd is a host-based utility for copying the contents of the display screen into a file.

xwud is a utility for displaying the contents of a window dump file on the display.

xpr is a utility for formatting and printing a file that was created with *xwd*.

Convenience Utilities

Some standard host-based X utilities that provide a convenient work environment include:

- xclock*—An analog or digital clock
- xcalc*—A calculator
- xbiff*—A utility that displays a mailbox to announce the arrival of new electronic mail

VT102 (*xterm*) Terminal Emulator

The standard host-based X11 utility called *xterm* is a terminal emulator available from MIT. It allows you to run application programs that are not X-compatible from a window on your terminal.

This utility is called Command Tool/Shell Tool in the OpenWindows environment.

The application program functions as a VT102 terminal, while providing additional features, such as a scroll bar and a copy/paste mechanism. Detailed information on *xterm* is included in the standard X references cited in the bibliography at the end of this manual.

Copy and Paste Between X Applications

Many X application programs permit copying and pasting text between windows and between applications. The exact usage varies from application to application, but most work as follows:

1. Press and drag the left mouse button to highlight text. This action is based on the position of the pointer, which follows the mouse's movement, not the position of the cursor.
2. Click the right mouse button to extend the highlighted portion to another pointer location.
3. Click the middle mouse button to paste a copy of the highlighted text at the position of the cursor, not the pointer.

B Using Alternate Input Devices

The mouse is the standard input device for manipulating windows and making screen selections. You may use alternative input devices with your terminal instead of or in addition to a mouse.

This appendix describes how to use a touch screen monitor or a light pen as an input device.

Using a Touch Screen Monitor

Tip

Your system administrator can specify that the touchscreen application software start immediately when you boot the terminal. For more information, see the *NCDware System Administrator's Guide*.

A touch screen monitor allows you to use a finger (or the soft eraser on a pencil) instead of or in addition to a mouse to move around the display screen and make selections.

If your application software includes touch screen features, use the directions in this section to configure the software (unless your system administrator has configured it for you) and to switch between touch screen and mouse usage.

If you have to configure the terminal yourself, ask your system administrator to put your changes into the terminal's remote configuration file so they are permanent. Otherwise, your changes are cleared from memory if the terminal is rebooted or powered off.

Configuring Terminal for Touch Screen Use

See "NCD Window Manager Windows" on page 9-6 for information about starting one of NCD's window managers.

After the touch screen hardware is installed and the terminal is booted, start a window manager if one is not running.

To operate a touch screen monitor, you must configure the serial port, input device, and touch screen characteristics as described in the following sections.

Configuring the Serial Port

To configure the serial port, set the following values in the Console's Change Setup Parameters window (Setup ⇒ Change Setup Parameters):

1. In the Serial hide box, set the values listed in Table B-1 for the serial port in the Serial Interfaces Table.

Table B-1 Serial Interfaces Table Setting for Touch Screen

Field	Value	Field	Value
Port Use at Boot	input-device	Stop Bits	1
Current Port Use	input-device	Parity	none
Baud Rate	9600	Handshake	none
Data Bits	8	Hangup	none

2. Select Apply to put the changes into effect.

Configuring the Input Device

Select the Input Devices hide box from the Console's Change Setup Parameters window (Setup ⇒ Change Setup Parameters). Set Input Devices to Touchscreen.

Configuring Touch Screen Characteristics

Tip

To configure the touch screen software permanently, ask your system administrator to place the settings in a configuration file on the host or in the terminal's NVRAM.

This section describes how to calibrate the monitor's active display surface, set touch sensitivity, and activate touch input for the current configuration (until you reboot).

Calibrating the Monitor's Active Display Surface

If the cursor is not directly beneath your finger as you touch the screen, your display needs to be re-calibrated.

To calibrate the display surface, set the following in the Console's Change Setup Parameters window (Setup ⇒ Change Setup Parameters):

1. In the Input Devices hide box, select Calibrate Touchscreen.

A large black square containing a tiny white box appears near the lower left corner of the active display surface.

-
2. The `Touch Here` message and arrow prompt you to press your finger on the white box.
After you touch the white box, it disappears and another appears near the upper right corner. You are prompted again to touch the white box.
After you touch the second box, calibration is complete.
 3. Select `Apply` in the `Change Setup Parameters` window to put the changes into effect.

Changing Touch Screen Sensitivity

To change the press and release sensitivity of the monitor, make the following changes in the Console's `Change User Preferences` window (`Setup` ⇒ `Change User Preferences`):

1. In the `Pointing Devices` `hide box`, the two sliders labeled `Button Press Threshold` and `Button Release Threshold` set the finger pressure levels that trigger finger button actions and finger presses.
 - If you have to press too hard on the monitor, reduce `Button Press Threshold`.
 - If the monitor is too sensitive, increase `Button Press Threshold`.
2. `Button Press Threshold` should always be *greater than* `Button Release Threshold`.

If `Button Release Threshold` is not lower than `Button Press Threshold`, touch screen behavior becomes erratic. For example, menus do not remain open for selecting an item.

This requirement is not enforced automatically.

If you change `Button Press Threshold`, verify that `Button Release Threshold` is lower.

3. Select `Apply` in the `Change User Preferences` window to put the changes into effect.

Switching Between Touch Screen and Mouse

To switch between using a touch screen and a mouse, select the pointing device in the Console's Change Setup Parameters window (Setup ⇒ Change User Preferences):

1. In the Pointing Devices hide box, Current Pointing Device controls the pointing device in use:
 - If you are using the mouse and want to use touch screen only, select Input Extension Device Only.
 - If you are using touch screen, and want to use the mouse only, select Mouse.
 - If you want to use touch screen and the mouse interchangeably, select Mouse And Extension Device.
2. Select Apply in the Change User Preferences window to put the changes into effect.

Tips on Using Touch Screen Monitors

If you think of the touch screen as a one-button mouse, it follows that you can use touch screen for any X application or window manager function that normally relies on a single mouse button, such as the terminal's Setup menus.

The touch screen is easier to use on applications designed for its use, that contain relatively large areas for receiving button (finger) events. Applications not written for the touch screen might be more difficult to use because the input areas might be too small to use accurately with a finger.

When you use the touch screen monitor, lightly touch or roll your finger across the screen. The cursor follows (tracks) your finger around the display area. When you remove your finger, the cursor stops.

If you increase the pressure on your finger, the touch screen interprets that action the same as the click of a mouse button. When you remove your finger from the screen, the touch screen interprets that action as if you had released your finger from the mouse button.

Using a Light Pen

Using a light pen with your terminal allows you to perform the typical operations of a mouse—such as pointing, clicking, dragging, and positioning—without having to coordinate the movement of a mouse with the cursor on the screen. A light pen provides direct control as you move around the display screen and make selections.

The Explora, Explora Pro, and Explora 400/450 series of terminals support light pens. The FTG Data Systems PXL-795 light pen is the only light pen that the NCD terminals support. You can use a light pen in place of a mouse or you can use it in conjunction with a mouse.

Pressing the light pen tip against the display provides the same function as clicking the left mouse button. Pressing the light pen tip against the display while holding down the Caps Lock key provides the same function as clicking the right mouse button.

Limitations

Light pen blue flooding does not work at 16- and 24-bit color depths. For more information about color depth, see the *NCDware System Administrator's Guide*.

Connecting a Light Pen to a Terminal

Follow the instructions provided by FTG Data Systems to connect your light pen to your terminal.

If you are connecting an FTG Data Systems PXL-795 light pen to your terminal, do not connect the light pen port cable to the keyboard and keyboard port as instructed in the FTG Data Systems *Installation and User's Guide*. You must connect the light pen port cable to your mouse and the mouse port on your terminal.

Configuring Terminals for Light Pen Use

See "NCD Window Manager Windows" on page 9-6 for information about starting one of NCD's window managers.

After the light pen hardware is installed and the terminal is booted, start a window manager if one is not running.

To operate a light pen, you must configure the input device and calibrate the light pen as described in the following sections.

Configuring the Input Device

Select the `Input Devices` hide box from the Console's `Change Setup Parameters` window (`Setup` ⇒ `Change Setup Parameters`). Set `Input Devices` to `Light Pen`.

Calibrating the Light Pen

This section describes how to calibrate the light pen's active display surface.

You can activate the light pen calibration process directly using a combination of keystrokes, or you can activate the calibration process from the Console's `Change Setup Parameters` window. At any time during the calibration process you can abort the calibration by pressing the `Esc` key.

Directly Activating the Calibration Process

To directly activate the light pen calibration process, do the following:

1. From any display, press the `Caps Lock` and `Right Alt` keys simultaneously.

A small white target appears in the lower-left corner of the display screen.

2. Select the lower-left target.

To select a target, press the light pen tip against the display. Keep the light pen perpendicular to the display as you make your selection. You might have to press the light pen tip against the target more than once for the selection to be accepted. After the selection is accepted, a target appears in the upper-right corner of the display.

3. Select the upper-right target.

After the selection is accepted, a target appears in the center of the display.

4. Select the center target.

The center target provides a check of the minimum and maximum locations specified when you selected the lower-left and upper-right corners. If the calibration is accepted, the original display appears and the calibration is automatically set in NVRAM.

If the calibration fails, the target appears in the lower-left corner of the display screen. Repeat steps 2 through 4.

Activating the Calibration Process through the Console

To activate the light pen calibration process through the Console's Change Setup Parameters window (Setup ⇒ Change Setup Parameters), do the following:

1. In the `Input Devices` hide box, select `Calibrate Light Pen`.

A small white target appears in the lower-left corner of the display screen.

2. Select the lower-left target.

To select a target, press the light pen tip against the display. Keep the light pen perpendicular to the display as you make your selection. You might have to press the light pen tip against the target more than once for the selection to be accepted. After the selection is accepted, a target appears in the upper-right corner of the display.

3. Select the upper-right target.

After the selection is accepted, a target appears in the center of the display.

4. Select the center target.

The center target provides a check of the minimum and maximum locations specified when you selected the lower-left and upper-right corners. If the calibration is accepted, the Change Setup Parameters window is displayed and the calibration is automatically set in NVRAM.

If the calibration fails, the target appears in the lower-left corner of the display screen. Repeat steps 2 through 4.

Enabling the Light Pen Blue Flood Feature

A light pen must detect light in order to determine its position on a display. As a result, you cannot use your light pen in areas of the display that are very dim or completely black unless you enable the light pen's blue flood feature.

When you enable the blue flood feature, the light pen momentarily brightens dark display areas when you press it to the display. Once the light pen's selection is detected, the display returns to its normal colors.

The light pen blue flood feature is enabled by default. However, if you need to disable the feature, set the following in the Console's Change Setup Parameters window (Setup ⇒ Change Setup Parameters):

1. In the `Input Devices` hide box, select `Light Pen Blue Flood`.
2. Select `Apply` in the `Setup` window to put the changes into effect.

Note Light pen blue flood does not work at 16- and 24-bit color depth.

C Using a Floppy Drive

This appendix explains how to use a floppy drive on an NCD terminal.

If you are using a floppy disk for storing a local file system, see the information in Chapter 11, Using NCD Utilities, as well.

Starting *ncdfloppy*

ncdfloppy, a utility that runs on UNIX hosts, allows you to use a floppy drive connected to an NCD terminal to access DOS-compatible 740K or 1.44M floppy disks.

To start an *ncdfloppy* session, type:

```
% ncdfloppy <CR>  
>
```

By default, *ncdfloppy* looks for a floppy drive connected directly to your terminal (on a parallel port). If you want to use a floppy drive connected to another user's terminal, see your system administrator.

At the *ncdfloppy* prompt (>), you can type any *ncdfloppy* command (including **help** or **?**, which displays a list of available commands). Table C-1 lists all of the *ncdfloppy* commands and options.

Table C-1 *ncdfloppy* Commands and Options

Command	Description
cat <i>filename(s)</i> type <i>filename(s)</i>	Displays the named files on the screen.
cd [<i>directory</i>] chdir [<i>directory</i>]	If you specify a directory, this command moves you to that directory on the floppy disk file system; if you don't specify a directory, it displays the current floppy disk directory.

Table C-1 *ncdfloppy* Commands and Options (Continued)

Command	Description
del <i>filename</i> delete <i>filename</i>	Deletes a file from the floppy disk.
dir [-w] [<i>filename ...</i>] ls [-w] [<i>filename ...</i>]	Displays a DOS-like directory listing of the floppy disk files. If you omit the filename, it displays a listing of the current floppy disk directory. The -w option displays only the filename, and omits the size and creation dates.
exit quit	Terminates the <i>ncdfloppy</i> session.
format [-f 720] [-l <i>label</i>] [-q]	Creates a new DOS file system on the floppy disk. By default, it creates a file system for a 1.44M floppy; use the -f 720 option to format a 720K floppy disk. The -l option specifies the volume label. The -q option performs a quicker method of formatting, but should be used only if the disk has already been completely formatted, and only if you are sure the disk is in perfect condition (containing no bad sectors).
get [-n] [-m] <i>flop-file local-file</i> get [-n] [-m] <i>flop-file ... local-dir</i>	Copies files from the floppy disk onto the local UNIX file system. The -n option suppresses warning messages about overwriting existing files. The -m option preserves the original file's modification time.
help ?	Displays a list of <i>ncdfloppy</i> commands.
md [-v] <i>directory ...</i> mkdir [-v] <i>directory ...</i>	Creates floppy disk directories. The -v option results in the display of messages if you must modify the directory name to fit DOS directory-naming requirements.

Table C-1 *ncdfloppy* Commands and Options (Continued)

Command	Description
<pre>put [-n] [-m] [-v] [-x] local-file flop-file</pre> <pre>put [-n] [-m] [-v] [-x] local-file ... flopdir</pre>	<p>Copies files from the local UNIX file system to the floppy disk.</p> <p>The -n option suppresses warning messages about overwriting existing files.</p> <p>The -m option preserves the original file's modification time.</p> <p>The -v option displays a message if you must modify the destination filename to fit DOS file-naming conventions.</p> <p>The -x option suppresses filename expansion of wildcard characters.</p>
<pre>pwd</pre>	<p>Displays the current floppy disk directory.</p>
<pre>rd directory</pre> <pre>rm directory</pre> <pre>rmdir directory</pre>	<p>Deletes one or more empty floppy disk directories.</p>
<pre>ren [-v] file1 file2</pre> <pre>rename [-v] file1 file2</pre>	<p>Renames a file.</p> <p>The -v option displays a message if the destination file must be modified to meet DOS requirements.</p>

***ncdfloppy* Command Line Syntax**

The complete syntax of the *ncdfloppy* utility is:

```
ncdfloppy [ -h servername ] [ -p port ] [ command ]
```

where:

- h** *servername* Specifies a floppy drive connected to a different terminal. (*servername* is the IP address or hostname of the other terminal)
- p** *port* Specifies the TCP port for the parallel daemon, which is 5964, by default. Normally, you use the default port and don't need to use this option.

<i>command</i>	Executes the specified command without displaying the <i>ncdfloppy</i> command interpreter prompt and exits. (Table C-1 lists the <i>ncdfloppy</i> commands.)
----------------	---

For example, the following command copies the file **mary-3-94** from the floppy disk into the current directory of the local UNIX file system, then exits:

```
% ncdfloppy get mary-3-94 <CR>
%
```

***ncdfloppy* Naming Conventions**

When you specify filenames and directories with *ncdfloppy* commands, keep the following guidelines in mind to avoid conflicts between DOS- and UNIX-style file system conventions:

- ❑ You can use either a UNIX-style slash (/) or a DOS-style backslash (\) as a separator in pathnames.
- ❑ *ncdfloppy* recognizes the asterisk (*), question mark (?), and open and close square brackets ([]) in filenames, and interprets them as wildcard characters.
- ❑ DOS limits label names to eleven characters—*ncdfloppy* truncates label names that exceed that length.
- ❑ DOS limits filenames and directory names to an eight-character filename separated from a three-character extension by a period (for example, **letter21.doc**)—*ncdfloppy* truncates any names that exceed those lengths. So, if your UNIX filename is **ltr-first.draft**, *ncdfloppy* truncates the name to **ltr-firs.dra** when it copies the file to the floppy disk.
- ❑ DOS does not permit more than one period (the separator between the filename and its extension) in filenames or directory names—*ncdfloppy* converts extra periods to the character “x”. So, if your UNIX filename is **ltr.1.draft**, *ncdfloppy* changes the name to **ltr.1xd** when it copies the file to the floppy disk.

Glossary

This glossary includes simple definitions of the X Window System and NCDware terms used in this manual.

acceleration parameter	Parameter used to control the proportion of display screen represented by the mouse's motion across the mouse pad.
access control	Process of restricting host or user access to terminal facilities or data.
active window	Window to which user input is focused. The active window is distinguished from other windows by different frame color or shading.
application	Program for a specific purpose, such as accounting or word processing. Applications and other programs written especially for X are also called clients.
architecture	Design and structure of the software and/or hardware components comprising a system.
background	Solid color or tile pattern that usually underlies the characters or graphics in a window or menu.
background process	Detached process, initiated by a command line ending with an ampersand (&). You don't have to wait for such a command to complete before running other commands from the same terminal emulator window.

backing store	Off-screen image saved when the window or a portion of a window is obscured.
batch processing	Mode of computer operation in which program instructions are executed one after the other without user intervention.
bitmap	Sequence of bytes representing a grid of pixels; used to form pointers, icons, and background window patterns.
boot	In NCD terminals, the process of testing the terminal's memory and loading the terminal software.
Boot Monitor	Firmware in the terminal responsible for initiating the loading and executing of the terminal software and testing the terminal memory.
click-to-focus	Focus policy under which directing input to a window (making it the active window) is accomplished by clicking in the window. Click-to-focus is the default under most window managers, including <i>ncdwm</i> . See also focus and explicit focus .
client	X Window System application program. Most clients run on a host computer, but NCDware includes local clients that run on the terminal's processor.
configuration	A compatible assembly of computer hardware and software.
configure	To select and install compatible hardware and software components for a computer system. Configuring the computer network is a major part of a system administrator's responsibility.

Console	Window used to access NCD User Services. Provides a hide box for displaying diagnostic messages and a menu bar for accessing other local clients.
CTERM	Command Terminal Protocol; a DECnet communication protocol.
CTerm client	Client used to provide VT320 terminal emulation using the CTERM protocol.
DCE	Data Communications Equipment. A device that provides the functions required to establish, maintain, and terminate a data-transmission connection; for example, a modem.
deiconify	To change an icon back into the window from which it was iconified.
Dialer local client	Local client that provides a VT320 terminal emulator window for connecting to a host through the serial port. Includes options for starting and stopping PPP, SLIP, or XRemote through a Communications menu.
display	Video screen upon which output and input may appear.
<i>DISPLAY</i>	Environment variable that tells applications which display to connect to. For NCD terminals, the <i>DISPLAY</i> variable consists of the terminal hostname followed by :0.
display manager	Application used to start and manage X sessions. See also X Display Manager .
downloading	Process of transferring files from a host computer to the terminal's memory.
dpi	Dots per inch. A measure of screen resolution.

DTE	Data Terminal Equipment. A device that acts as a data source, data sink, or both.
ENERGY STAR	US Environmental Protection Energy program that promotes the use of energy-efficient equipment. To meet ENERGY STAR requirements, computer equipment must enter a low-power state when inactive.
ESP board	Ethernet/Serial/PC board. An HMX terminal network interface board that incorporates two serial communication channels, an Ethernet interface, and a socket for a PC card.
Ethernet	Popular network protocol and a physical channel for transmitting data over coaxial cable, twisted-pair cable, or fiber-optic cable.
explicit focus	Focus method supported by the NCD Window Manager. Under explicit focus, a window becomes active when you click on it. It is different from click-to-focus only in that a newly opened window is not automatically the active window. See also focus .
File Manager	Application used with Sun Microsystem's OpenWindows to provide graphical file system utilities.
focus	To direct keyboard input to a specific window. The window to which focus is directed is called the active window or the focus window. See also click-to-focus , pointer focus , and explicit focus .
focus policy	The method used by a window manager to select the active window. See also click-to-focus , pointer focus , and explicit focus .

font	Distinct set of character glyphs, such as 10-point Roman bold.
font file	File that contains the definition of a font.
font path	Specification of the font directories from which to download fonts to an NCD terminal.
font server	Optional software module that can scale outline fonts and relieve the X server of all tasks related to downloading fonts.
gateway	Computer that routes traffic from one network to another.
glyph	Pictorial representation of a single character in a specific font. It is represented internally by a bitmap.
graphical user interface (GUI)	Software that facilitates the interaction between the computer and the user.
helper program	In XRemote, a host-resident program used to facilitate communication between applications and the X server.
host	Individual device on a network, such as an NCD terminal or another type of computer.
Hypertext link	Connection between one piece of information and another.
HyperText Markup Language (HTML)	Language used to write Web documents.
ICA (Independent Computing Architecture)	Protocol used for connecting to Microsoft Windows NT servers.
icon	Small symbol that represents a window.

icon box	Feature of some window managers that allows users to group their icons to save space on the screen.
iconify	To change a window into a small graphical representation. Processing may occur in an iconified window, but you cannot direct input to it.
input device	Device used to direct data and instructions to a processor. The keyboard and a mouse are the standard input devices used with the terminal.
interface board	Removable printed circuit board in an HMX terminal base. Contains Boot Monitor PROMs and network connectors. May contain a socket for a PC card. See also Network Interface Module, ESP board, TRP board, PEP board.
Internet	Collection of networks and gateways that use the TCP/IP protocol family and function as a single cooperative network, connecting many businesses, universities, and government facilities.
Internet Protocol	Protocol used to route files in an Internet environment.
LAN	See Local Area Network.
LAT	See Local Area Transport.
LAT client	Client used for VT320 terminal emulation using the LAT protocol.

LED	Light-emitting diode. LEDs are built into NCD keyboards and some NCD monitors and bases. The LEDs on NCD keyboards are configurable and used for functions such as displaying network activity and the state of the Caps Lock key.
local area network (LAN)	Network of computers that are physically close, usually in the same building or group of buildings, connected by high-speed communication software and hardware such as Ethernet or Token-Ring.
Local Area Transport (LAT)	Digital Equipment Corp. communication protocol used in local area networks. LAT is used by NCDware for connecting to non-X applications.
local application	Application that runs on the NCD terminal instead of on a host.
Local File Manager	NCD utility for managing the local file system on a PC card or a floppy disk.
local server	Compressed X server that can be booted from a PC card.
local window manager	NCD Window Manager or Motif Window Manager; a local application that provides window management tools for an NCD terminal. (Host-based versions are also available.)
logging in	Process of providing a username and password to a host computer to verify that you are authorized to use the computer.
logging off	Terminating a session on a host computer.

login	User identification word used by a computer system to authenticate users. See also password .
login banner	Banner displayed on the screen to provide a means of entering the username and password for logging in.
Login Chooser	In NCDware, a popup window that provides a list of accessible hosts and allows selection of a host.
login host	When using an NCD terminal, the login host is the host that runs the login process used to begin the session.
LPR/LPD	Line Printer Remote/Line Printing Daemon. Protocols used for printing in mixed, multi-platform environments.
magic cookie	Secret password used under XDM to control access to a server and protect a user's display from unauthorized access.
menu	List of items that can be selected by clicking a mouse button.
MetaFrame	Software from Citrix Systems that allows a terminal to connect to Microsoft Windows NT 4.0, Terminal Server Edition.
modem	Device that performs modulation and demodulation, converting digital signals to analog form (and vice versa) for transmission over telephone circuits.
modifier keys	Keys such as Control, Alt, and Shift that modify the actions of other keys. X also supports a set of logical modifier key functions (such as the meta key) that can be mapped to physical keys.

Motif Window Manager	NCD's local window manager with the same functionality as the host-based OSF/Motif 1.2.2 window manager; see also OSF/Motif ; <i>mwm</i> ; <i>ncdrunwm</i> ; and NCD Window Manager
mouse	Hand-held input device used with terminals to direct the movement of the screen pointer.
<i>mwm</i> local client	Local window manager with the same functionality as the host-based OSF/Motif 1.2.2 window manager; see also <i>ncdrunwm</i> and <i>ncdwm</i> .
NCD terminal	Display monitor, keyboard, base containing processors, and a mouse. The NCD terminal processors are dedicated to running the X server. Also called a terminal.
NCD User Services	NCD's set of utilities for accessing hosts and applications, customizing the X environment, and examining network and terminal statistics.
NCD Window Manager	NCD's local window manager program. See also local window manager and Motif Window Manager .
<i>ncdfloppy</i>	NCD utility that allows you to use a floppy drive connected to an NCD terminal.
NCDnet	Software option that allows an NCD terminal to participate fully in a DECnet network as a DECnet phase IV end node. It is the same software as DECnet, but licensed through NCD.

<i>ncdrunwm</i>	Companion program to the NCD Window Manager. <i>ncdrunwm</i> runs on the host, sends a description file to the window manager running inside the terminal, starts applications, and connects to other hosts.
<i>ncdsendvideo</i>	NCD utility for starting the Video Player on a terminal from a host system and sending video data to it. See also <i>video</i> .
NCDware	NCD's software for terminals.
network	Collection of computing devices connected by communication hardware and software.
Network File System (NFS)	Protocol developed by Sun Microsystems that allows a set of computers to access each other's file systems as if they were local; used on NCD units to support font files, the color definition file, and remote configuration files, and other file service tasks.
Network Interface Module (NIM board)	Removable printed circuit board in an HMX terminal's base. Contains Boot Monitor PROMs and network connectors. See also TRP interface board , ESP interface board , PEP board .
NFS	See Network File System .
NVRAM	Non-volatile random-access memory used to store parameter settings in NCD terminals when the power is off.
OPEN LOOK	Graphical user interface specification developed by Sun Microsystems and registered by UNIX Systems Laboratories, Inc.

OpenWindows	Sun Microsystem's X-based user environment.
OSF/Motif	Open Software Foundation's graphical user interface; used by the local NCD Window Manager.
output device	Device used to receive the output from a processor. The display screen is the output device used by terminal users. Another frequently used output device is a printer.
parallel port	Connector for parallel-line communications.
parameter	Definable characteristic of an item, device, or system.
password	User-defined word used to authenticate computer system users.
PC card	Integrated circuit defined by the Personal Computer Memory Card International Association (PCMCIA). The card provides local memory for storing a terminal's X server, fonts, configuration files, or audio features.
PEP board	Parallel/Ethernet/PC board. An HMX terminal interface board that incorporates a parallel communication channel, an Ethernet interface, and a socket for a PC card.
pixel	Smallest element of the display grid of a graphics display device. The name comes from an abbreviation of the words <i>picture element</i> .
Point-to-Point Protocol	See PPP .

pointer	Device used by the user to communicate with the server. Pointer also refers to the symbol that represents the device's location on the screen (for example, an X or an arrow shape).
pointer focus	Focus method supported by the NCD Window Manager. Under pointer focus, a window becomes active when you place the pointer on it. See also focus .
popup window	Window that appears on the screen in response to selecting an item from a menu. It is used to enter information that an application needs to operate. In most applications, items that invoke popup windows are indicated by ellipses (. . .). Also called a dialog box.
power management	Parameters in the User Preferences window for setting up ENERGY STAR-compliant equipment.
PPP	Point-to-Point Protocol. An Internet protocol for transmitting datagrams over serial links. See also SLIP .
programmable read-only memory (PROM)	Memory chips used to store the booting software in NCD terminals.
PROM	See programmable read-only memory .
protocol	Formal description of message formats and the rules for transferring data over a network.
published application	Microsoft Windows application that has been configured for sharing over a network by multiple users.

reboot	See boot .
remote configuration	Method of configuring an NCD terminal by downloading a file containing operational parameters from a host computer.
root menu	Root menus are menus that are accessed by placing the pointer on the root window and clicking on a mouse button. The system administrator can configure the root menu.
root window	Window that fills the screen during an X session; all windows opened by applications appear on top of the root window.
router	Device responsible for deciding which path network traffic should follow. In the Internet, an IP gateway is a router.
RS-232 C	Industry standard serial protocol for communications connections.
<i>rsh/remsh</i>	UNIX utilities for starting applications from a remote computer. Can be used on NCD terminals for starting local applications from a host computer.
Serial client	Local application that provides a VT320 terminal emulator window for connecting to a host through the serial port.
serial communication	Type of data transmission in which data and instructions are sent one after the other over the same wire.
serial port	Port located on all NCD terminals. For attaching a modem, printer, or other serial device.
server	An X server. (See X server .) Also a device on a network providing a service, such as a boot server or a print server.

session	See X session .
Session Manager	DECwindows application used to control DECwindows sessions.
Setup key	Key or combination of keys used to display the Console. See also Setup key combination .
Setup key combination	On keyboards that do not have a Setup key, a combination of keys may be used instead to invoke the Console.
shell	Also called a command interpreter. The user types commands at a prompt, and the commands are accepted and passed to the operating system for execution. On an NCD terminal, a shell is often accessed through an <i>xterm</i> terminal emulator.
SIE	Simple Imaging Extension. An extension to the X protocol that enhances the display capabilities of NCD terminals. Offers image compression, pan, zoom, and rotation.
SLIP	Serial Line Internet Protocol. A defacto standard protocol for transmitting IP datagrams over serial links. See also PPP .
SunOS	Sun Microsystem's implementation of the UNIX operating system.
system administrator	Individual responsible for managing computers and the network.
TCP/IP	Networking protocol family commonly used for communication over local area networks.
TELNET	Internet standard protocol for remote terminal connection services.

TELNET client	Local application that provides VT320 terminal emulation for connecting to a host using TELNET.
terminal emulator	Application that mimics the function of a terminal so that you can use non-X applications. <i>xterm</i> , the standard terminal emulator, emulates a VT102 terminal. NCD's local-client terminal emulators (TELNET, LAT, CTerm, and Serial) emulate VT320 terminals.
terminal server	Device that connects terminals to services or hosts in a local area network.
threshold parameter	Parameter used to specify at which point the acceleration parameter should come into effect in controlling mouse motion. You can change the threshold parameter using the Console's Setup menu's Change User Preferences submenu.
Token-Ring	Network protocol in which a token (a continuously repeating frame) is passed sequentially from station to station. Only the station that has the token can communicate on the network.
touch screen	Hardware that allows you to use a finger instead of a mouse to navigate around the display screen and make selections.
TRP board	Token-Ring/PC. An interface board that incorporates a Token-Ring connector and a socket for a PC card.
UNIX	Portable, multi-user time-sharing operating system developed in the early 1970s.
Uniform Resource Locator (URL)	Unique address for each Web document or site.

<i>vi</i>	UNIX visual text editor.
<i>video</i>	NCD utility for displaying the Video Player application window from an NCD terminals and sending video data to it. See also <i>ncdsendvideo</i> .
Video Player	Window for displaying and controlling video applications.
<i>vp</i>	Video Player's graphical user interface.
VT102, VT220	Widely used terminal emulation standards.
VT320	Terminal emulation standard used in the NCD Terminal Emulator.
Web	See World Wide Web .
WinCenter Pro	NCD's software enabling Windows NT servers to be shared by multiple users simultaneously, running applications on NCD terminals, PCs, or workstations.
window	A region on the display created by a application. Windows can be manipulated by a window manager.
window manager	Host-based or local application that allows you to manipulate windows on a display.
Windows Access	Console utility for connecting to Microsoft Windows NT servers.
WinFrame	Multi-user Windows NT from Citrix Systems.
World Wide Web	Global network of interconnected documents or files.
X	See X Window System .

X 11 Release 5 (X11R6)	Current release of the X Window System, implemented by NCD in NCDware.
X Consortium	Guiding organization for the development of standards for the X Window System. It was made up of more than 90 corporations and universities, including NCD. In 1997, the X Consortium transferred responsibility for the X Window System to The Open Group.
X Display Manager (XDM)	Protocol that provides automatic X protocol connection to a specified host when an NCD terminal is reset.
X server	Software that provides display services for applications and handles keyboard and pointer input. This is the part of the X Window System that runs in NCD terminals.
X session	All the processing that goes on from the time you log in to use the X Window System until you log out.
X Window System	Network-based graphical window system developed at MIT to allow workstation users to use applications running on more than one host.
XDM	See X Display Manager .
<i>xinitremote</i>	NCD utility for starting XRemote.
XRemote	NCD's software for running X over a serial line.
XRemote/Serial	XRemote operating mode involving use of NCD's proprietary, non-networked protocol for serial connectivity.
XRemote/TCP	XRemote operating mode involving use of TCP/IP transport protocols run over PPP, SLIP, and Ethernet or Token-Ring.

xterm

Standard X Window System terminal emulator; gives you a window in which to type commands or run a program. See also **terminal emulator**.

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Entries with a Console menu or submenu name in parentheses refer to local applications accessed from the Console; for example, Change User Preferences (Console).

Entries followed by the words *Terminal Emulator* in parentheses refer to items in NCD Terminal Emulator menus; for example, Auto Linefeed (Terminal Emulator).

Entries followed by the words *Window menu* in parentheses refer to items in root menus; for example, Restore (Window menu).

Entries followed by a number in parentheses refer to applications; for example, *ncdwm*(1).

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