

Copyright © 1998 by Network Computing Devices, Inc.

Network Computing Devices, PC-Xware and XRemote are registered trademarks of Network Computing Devices, Inc. Explora, HMX, Marathon, NCDware, ThinSTAR, and WinCenter are trademarks of Network Computing Devices, Inc.

PostScript, Display PostScript, FrameMaker, and Adobe are trademarks of Adobe Systems Incorporated.

MetaFrame and WinFrame are trademarks of Citrix Systems, Inc.

UNIX is a registered trademark in the United States and other countries licensed exclusively through X/Open Company Limited.

X Window System is a trademark of X Consortium, Inc.

Windows 95, Windows NT, and Windows Terminal Server are trademarks of Microsoft Corporation. Windows and Microsoft are registered trademarks of Microsoft Corporation.

Other trademarks and service marks are the trademarks and service marks of their respective companies.

All terms mentioned in this book that are known to be trademarks or service marks have been appropriately capitalized. NCD cannot attest to the accuracy of this information. Use of a term in this book should not be regarded as affecting the validity of any trademark or service mark.

Part number 9300673, Revision A

# Installing NCDware

This booklet tells you how to install NCDware from CD-ROM onto UNIX and WinCenter systems using NCD installation programs. Use this booklet along with the *NCDware Release Notes*.

<b>To Install:</b>	<b>On:</b>	<b>See:</b>
NCDware	UNIX hosts	page 3 and the <i>NCDware Release Notes</i>
NCDware	WinCenter servers	page 15 and the <i>NCDware Release Notes</i>
WinCenter Products	WinCenter servers	WinCenter documentation and <i>WinCenter Release Notes</i>

---

## Licensed Features

Before installing NCDware, make sure that you have the licenses required for optional features. The following features require licenses: Java, NCD Mosaic Browser, Wireless terminal support, OpenGL, the CompCore video fast MPEG decoder, Starlight Networks' StarWorks support, NCDnet, 3270 Terminal Emulator, Display PostScript (DPS), X Imaging Extension (XIE), the local Motif Window Manager, and XRemote. If you don't have the licenses you need, contact NCD Sales Support at (650) 694-0650.

---

## **NCDware Contents**

NCDware provides X servers and support files for HMX, HMXpro, HMXpro24, Explora, Explora Pro, Explora 400/450 series, and Explora 700 thin client devices (terminals). Binaries of host-based software are provided for the following UNIX host platforms:

- ❑ SPARC—SunOS versions 4.1.3 to 4.1.4
- ❑ SPARC—Solaris 2.5
- ❑ x86—Solaris version 2.4
- ❑ HP Precision Architecture—HP-UX version 10.01
- ❑ IBM RS/6000—AIX version 4.1
- ❑ SGI—IRIX version 5.3

This release supports NCDware on a WinCenter server running WinFrame 1.6 or later.

NCDware is provided on a CD-ROM and on PC cards (also called PCMCIA cards).

---

## Installing NCDware on UNIX Systems

This section describes how to install NCDware on a UNIX host and configure terminals to be used on the network. For information on modifying terminals or removing them from the network, see the *NCDware System Administrator's Guide*.

**Note** If you are not sure whether you can use the installation program (*ncdinstall*) on your UNIX host, follow Step 1 on page 6 through Step 7 on page 9. After you complete these steps, *ncdinstall* displays a message if it cannot run on your system. In that case, you may need to install files manually; call NCD Technical Support for assistance.

*ncdinstall* does the following:

- ❑ Examines the host system for sufficient disk space. For information on space requirements, see the *Release Notes* or the **SIZES** file on the CD-ROM.
- ❑ Examines the host system for required communication and login services (XDM). If you request it, the installation program enables the software.
- ❑ Installs X servers; X server modules containing local clients, extensions, libraries, and protocols; host system executables and fonts; color database; X keysym database; ICA and 3270 keyboard files; downloadable Boot Monitor upgrade files; and configuration files (listed in the *Release Notes*).

- ❑ Starts the license management software and adds startup commands to the host startup file
- ❑ Configures terminals on the network, updating network and host databases to include required address information. On UNIX systems, *ncdinstall* saves the original network and host database files with the extension *\_O*.

---

### **Preparing to Configure Terminals Using *ncdinstall***

Before you install NCDware and configure your terminals, you need:

- ❑ A host system with access to a CD-ROM drive
- ❑ Super-user access privileges
- ❑ Approximately 10 minutes to install NCDware
- ❑ Terminals set up and attached to the network (see terminal installation booklets for instructions)
- ❑ An empty directory. During installation, files are installed in this directory.
- ❑ Information about the terminals you will be adding to the network. Obtain the following information for each terminal before you start the installation program:

Terminal models	The terminal model names: HMX, HMXpro, HMXpro24, Explora, Explora Pro, Explora 400/450 series, or Explora 700
-----------------	---

Ethernet address	A physical identifier placed in NVRAM at the factory and printed on a sticker on the bottom of the terminal base or on the carton. The identifier is a 12-character string beginning with 0000A7; for example, 0000A7123608
Name (node name or hostname)	The terminal's node or hostname; a unique name consisting of alphanumeric characters that you assign to the terminal to correspond with its IP or node address; for example, crocushmx
Internet address	A 4-part, 32-bit IP address that you assign to identify the network and terminal; for example, 139.43.193.93
Subnet mask	A 4-part, 32-bit mask that distinguishes the subnet from the rest of the IP address; for example, 255.255.255.0
Gateway	The IP address of the gateway. You need to supply a gateway address if the terminal is on a different subnet from the host computer or you need to access any hosts on a different subnet from the terminal.
Licensed features/node licenses	If you are using node-locked licenses for any licensed features, you need to know the 12- or 16-character license string for each licensed feature. If you do not have licenses, contact NCD Sales Support at (650) 694-0650.

---

## Using *ncdinstall*

The following instructions include sample command lines for common UNIX management utilities used while installing NCDware. The syntax on your host may vary; check your host documentation for specifics.

### Prepare to Run *ncdinstall*

1. Log into the host as super-user.
  2. Place the CD-ROM in the drive.
  3. If you do not already have one, make a directory to use as a mount point for your CD-ROM:  

```
# mkdir /cdrom
```
  4. The instructions for mounting the CD-ROM vary depending on the host and the CD-ROM drive configuration. Substitute your host's device name for */dev/cdrom*.
    - ❑ On **SunOS**, mount the CD-ROM:  

```
# mount -r -t hfs /dev/cdrom /cdrom
```
    - ❑ On **Solaris** hosts not running the Volume Management daemon, mount the CD-ROM:  

```
# /etc/mount -F hfs -r /dev/cdrom /cdrom
```
- Note** On Solaris hosts running the Volume Management daemon, *you do not need to run the mount command*. The CD-ROM is automatically mounted onto */cdrom/cdrom0* instead of

`/cdrom`. When you run `ncdinstall` (Step 6 of this procedure), use `/cdrom/cdrom0` instead of `/cdrom`.

- ❑ On **HP-UX**, mount the CD-ROM:  
# `mount -t cdfs -r /dev/cdrom /cdrom`
- ❑ On **AIX**, use SMIT to mount the CD-ROM on `/cdrom`.
- ❑ On **SGI** hosts not running the Media Monitor daemon, mount the CD-ROM:  
# `mount -rt iso9660 /dev/cdrom /cdrom`

**Note** On SGI hosts running the Media Monitor daemon, *you do not need to run the `mount` command*. The CD-ROM is automatically mounted on `/cdrom`.

### Run `ncdinstall`

5. Make an empty install directory and change to it. For example:

```
# mkdir /home/ncd/rel_ver
# cd /home/ncd/rel_ver
```

where *rel\_ver* is the release version, such as 5.1.129.



6. Start *ncdinstall*.

- On **SunOS, Solaris, or SGI**, type:  
# `/cdrom/ncdinstall`
- On **HP-UX or AIX**:
  - a. Look at the CD-ROM listing to find the case and spelling of *ncdinstall*; in some cases it is spelled differently (such as `NCDINSTA.\1`).
  - b. Type:  
# `/cdrom/cd-rom_name -map`  
where *cd-rom\_name* is the name for *ncdinstall* found on the CD-ROM.

Throughout *ncdinstall*, you can use the following commands:

- q** Quit from *ncdinstall*
- m** Go to the Main Menu
- t** Go to the top of the current submenu
- h** Display Help
- !** Enter a subshell; type `exit` to return to *ncdinstall*

Each time you run it, *ncdinstall* adds information about the session, such as the status of system services, to a chronological record in the file `/home/ncd/rel_ver/installog`, where *rel\_ver* is the release version, such as 5.1.129.

**Note** The `-s` option for `ncdinstall` performs a staging installation, which is useful if you have a CD-ROM drive on one workstation, but want to install NCDware on another workstation. The staging installation places the entire contents of the CD-ROM in the current directory, but does not change system files or install software in system directories. You install NCDware from the staging directory by mounting it on another host and running `ncdinstall` from the mounted staging directory to install NCDware into an empty directory.

### Install NCDware

7. From the Main Menu, select 1 Install NCDware.
8. From the Install NCDware menu, select 1 CD-ROM. If you are installing from a staging directory and want to install on another workstation, select 2 Disk.
9. Confirm the location of the NCDware distribution (such as `/cdrom`). Press the Return key at the prompt to accept the default. You can press the Return key at most `ncdinstall` prompts to select the default, which appears in brackets following the prompt (for example, `[ /cdrom ]`).
10. Select the file groups you want to install. To install all groups, type `a11` at the prompt.

**Note** The X Servers group includes the 3270 ASCII/EBCDIC conversion files, ICA keyboard files and downloadable Boot Monitor upgrade files.

11. Select the terminal models for which you are installing X servers. Type the number for each model you are installing from the options listed. Separate the numbers by spaces.

For example:

Enter the numbers of the NCD terminal models to install, separated by spaces: 1 2

12. If you are installing host system executables, *ncdinstall* assumes you want to install executables for the host on which you are installing NCDware and offers that host as the default. You can install executables for hosts other than the one on which you are installing NCDware.

13. Select the file service method you want to use—NFS or TFTP. If you select TFTP, go to Step 14.

If you select NFS and install on the local file system, *ncdinstall* exports the file system for you. If you select NFS and install on a remote or NFS-mounted file system, you must export the file system from the remote host. Use the **df** command to find out whether your file system is local or remote.

If you select NFS for accessing terminal files such as boot, Java, and X server modules, you must export the directory in which you installed the files.

If you select NFS for file service but want to use TFTP for booting, make sure that TFTP is enabled on the boot host. *ncdinstall* does not enable TFTP if you selected NFS.

**Note** To use the full functionality of the NCD Mosaic Browser, select NFS as the file service. If you select TFTP as the file service, some browser features are not available. Refer to the *NCDware System Administrator's Guide* for further information.

14. Perform this step only if you selected TFTP for file service.

Before beginning the installation, *ncdinstall* checks available disk space in the TFTP directory. If space is inadequate, *ncdinstall* tries to install in the installation directory. If the installation directory has enough space, *ncdinstall* relocates the TFTP directory to the installation directory.

If there is not enough room in the TFTP directory or the installation directory, *ncdinstall* reports how much space is available and how much more is needed. Select whether you want to continue anyway (which usually results in an unsuccessful installation); or press **t** to return to the **Install NCDware** menu to select to install fewer files; or press **q** to quit *ncdinstall* to free enough space for the installation.

**Note** If TFTP is not currently enabled on the host, be sure to prepare system services as described in "Prepare Host Services for Terminal Booting" on page 13.

15. After confirming sufficient space, *ncdinstall* lists the file groups you selected and the directories where they will be installed. If the directories do not exist, *ncdinstall* creates them.

Verify that *ncdinstall* should proceed by pressing Return.

*ncdinstall* installs:

- ❑ X servers in **/tftpboot**
- ❑ Server modules in **/tftpboot/modsmodel**, where *model* is the terminal model, such as **modshmx**
- ❑ Host executables in **/home/ncd/re1\_ver/hosts1de/host**, where *re1\_ver* is the release version, such as 5.1.129, and *host* is the host, such as SunOS.
- ❑ License management binaries (*ncdlicense*, *ncdlmd*, and *lmgrd*) in **/usr/bin/X11/ncd**.

**Note** **/usr/bin/X11/ncd** is linked to **/home/ncd/re1\_ver/hosts1de/host**.

- ❑ Configuration files (**ncd\_std** and an example configuration file), keysym and color databases, and login-related files in **/usr/lib/X11/ncd**. (If you are running secure TFTP, *ncdinstall* places the files accessed using TFTP, including X servers, fonts, and configuration files, under the secure TFTP directory.)
- ❑ Help directory containing the browser help files in **/tftpboot/help**.
- ❑ License management help files in **/tftpboot/htmldoc**.
- ❑ Java directory containing the Java classes in **/tftpboot/java**.
- ❑ ICA keyboard files in **/tftpboot/icakbds**.
- ❑ 3270 ASCII/EBCDIC conversion files in **/tftpboot/3270kbds**.
- ❑ Downloadable Boot Monitor upgrade files in **/tftpboot/prom**.

## Prepare Host Services for Terminal Booting

16. From the Main Menu, select 2 Prepare System Services.  
*ncdinstall* checks that BOOTP, TFTP or NFS, a login service, and the license management services are available. If any service is not running, *ncdinstall* attempts to start it.
17. If the file access method is NFS, specify whether you want to install the NCD Display Manager (*ncddm*). Type **n** for no or press Return for yes.  
The NCD Display Manager provides user ID, group ID, and environment information to the NCD Mosaic Browser.

## Add Terminals to the Network

18. From the Main Menu, select 3 Configure NCD Terminals.
  19. From the Configure NCD Terminals menu, select 1 Add NCD Terminal.
  20. Supply the model, IP address, Ethernet address, hostname, subnet mask, and gateway for each terminal you are installing.
  21. Verify your input and correct any errors.
- Note** *ncdinstall* changes the */etc/bootptab* and */etc/host* files, saving old files with an extension *\_O*, and installs two configuration files per terminal.

22. Specify whether you want to use the terminal as an NFS server (type **y** for yes or press Return for no).  
If you answer **y**, specify whether you want to export a local file system on a floppy drive or a PC card or both. Type **1** to export a PC card file system, **2** for a floppy file system, or **a11** for both.
23. Specify whether you want to license optional features. If you are not using node-locked licenses, press Return and go to Step 24. If you are using node-locked licenses, enter the following:
  - a. Type **y** to indicate you want to use an optional licensed feature.
  - b. Enter the 12- or 16-character license string and press Return.
  - c. Type **y** to indicate you want to license another optional feature or press Return to continue.
24. After adding all the terminals, type **q** to exit *ncdinstall*.



**Before booting HMX terminals on a Token-Ring network, you must set the terminals' Token-Ring speed to match that of the Token-Ring network. For instructions, see the *NCDware System Administrator's Guide*.**

---

## Installing NCDware on WinCenter Systems

The procedure in this section is required for Microsoft Windows NT-only networks. If your NCD terminals are on a Windows NT-only network, you need to install NCDware on a WinCenter server so it can act as a boot server for the NCD terminals.

The following instructions describe how to install NCDware on a WinCenter server running WinFrame 1.6 or later. For information about WinCenter, see WinCenter product documentation. For additional information about using and configuring NCDware, see NCDware documentation.

---

### Using *setup*

To install NCDware you need:

- A WinCenter server equipped with a CD-ROM drive and running WinFrame 1.6 or later
- Administrator rights on Windows NT
- Approximately 10 minutes for the installation

**Note** For information on space requirements, see the *Release Notes* or the **SIZES** file on the CD-ROM.



To install NCDware:

1. Place the NCDware CD-ROM in the CD-ROM drive.
  2. To run *setup*, choose one of the following:
    - From the menu bar, select File ⇒ Run. Then type `d:\WINNT\setup` and press Return (where `d` is the CD-ROM drive).
    - or
    - Open the File Manager and select the CD-ROM drive. Double click `setup.exe`.The NCDware License Agreement appears.
  3. Read the license agreement and click `Yes` to accept the license terms.

If you click `No`, the Exit Setup dialog box appears. Click `Resume` to return to the license agreement. Click `Exit Setup` to quit.
  4. Setup prepares the Installation Wizard.
  5. The Select Components dialog box appears, listing the components you can install. The default selection, `Install NCDware`, installs NCDware. Click `Next` to continue.
- Note** Throughout the installation procedure, a selected item is designated by a box with an `x` inside. Click the `x` to clear the selection or click an empty box to select an item.

6. The Choose Destination Location dialog box appears. Type the path you wish to use to install NCDware or select the default destination path for installing NCDware, **c:\ftpboot**. Click **Next** to install NCDware.
7. The screen displays a list of items to install. Make sure only the correct items are selected. Click **Next** to continue.
8. The screen lists the NCD terminals for which you can install software. Make sure only the correct terminals are selected. Click **Next**.
9. The screen lists the fonts you can install.
10. Use the default fonts, select additional fonts, or deselect the default fonts. Click **Next** to continue.
11. The installer begins to install the NCDware files. Several screens may appear only briefly.
12. The **Select Components** dialog box reappears. Select **Configure Terminals**, then click **Next** to continue.
13. The screen displays the configuration files you can select to install.
  - Select Standard NCDware** (for UNIX and WinCenter use) for devices running on mixed Microsoft Windows NT/UNIX networks.
  - Select WinCenter only** (for Windows NT-only networks).Click **Next** to install the appropriate configuration files.

14. If you select the mixed network option, a confirmation dialog box appears. This dialog box states that the configuration file will be installed in `c:\tftpboot\usr\lib\X11\ncd\configs\ncd_std`. You must still set the boot host and gateway. Click **OK** to continue.
15. The **Select Components** dialog box reappears. Select **Prepare System Services**, then click **Next** to continue.
16. The **Select Services** dialog box appears. The default selections are **TFTPD**, **BOOTP** and **LMGRD**. Click **Next** to accept the defaults.
17. The **Choose Destination Location** dialog box appears. Select the **TFTP** directory path. The default directory path is `c:\tftpboot`. Type a new path or use the default. Click **Next** to continue.
18. A confirmation dialog box reports that the system services software has been installed and that you need to restart the computer. Click **OK** to continue the installation.  
The installation program places:
  - X servers (**Xncdshm**, **Xncdexpl**, and **Xncdxpt**) in `c:\tftp_dir` (where `c:\tftp_dir` is the directory selected in Step 6)
  - Supplemental X server files in `c:\tftp_dir\modshm`, `c:\tftp_dir\modexpl`, and `c:\tftp_dir\modsxpt`
  - Configuration files, font files, and supplemental files in `c:\tftp_dir\usr\bin\X11\ncd`
  - License server software in `c:\winnt\system32`.

- ❑ On-line help files and frequently asked questions (FAQs) in HTML format for the *FLEXlm User's Guide* in `c:\tftp_dir\htmldoc\flexuser` and `c:\tftp_dir\htmldoc\flexfaq`
  - ❑ ICA keyboard files in `c:\tftp_dir\icakbds`
  - ❑ 3270 ASCII/EBCDIC conversion files in `c:\tftp_dir\3270kbds`
  - ❑ Downloadable Boot Monitor upgrade files in `c:\tftp_dir\prom`
19. The Select Components dialog box reappears. Select **Quit**, then click **Next** to exit *setup*.
  20. The Restarting dialog box appears. Select the option for restarting the computer at a later time and click **OK**.
  21. When the installation process is complete, remove the NCDware CD-ROM from the drive.
  22. If you are using floating or site licenses for any NCD features, see Chapter 3 in the *NCDware System Administrator's Guide* for directions on setting up the WinCenter host as a license server.
  23. You must restart the WinCenter host if you are using TFTP, and you must restart the host after setting it up as a license server in Step 22.

---

## For More Information

See the *NCDware Release Notes*, the *NCDware System Administrator's Guide*, or the WinCenter documentation for more information about terminal and host configuration.

---

## Contacting Technical Support

If you encounter difficulties, you can send e-mail or a fax to NCD Technical Support, contact them by phone, or use the Web.

For information about services available from NCD Technical Support, contact your NCD representative or send e-mail to **info@ncd.com**.

## Sending E-Mail or Faxes to Technical Support

NCD Technical Support uses an automated system for e-mail. Send e-mail to the Internet address **support@ncd.com**, or send a fax to (503) 641-2959. To ensure that your e-mail is answered quickly, please provide as much as possible of the information listed on the next page.

## Using the Web

You can also submit a request through NCD Web Services. Go to **<http://www.ncd.com>** to reach the Service and Support home page.

## **Phoning Technical Support**

From the U.S. and Canada, you can phone (800) 800-9599 and ask for Technical Support. International customers can call (503) 641-2200. Be prepared to provide as much as possible of the information listed below.

### **Information to Provide**

Be prepared with the following information when you contact Technical Support:

- Model name of the terminal.
- Release of NCDware you are running.
- Release of WinCenter you are running.
- Host system you are on.
- Hardware configuration of the WinCenter server, if applicable.
- Operating system running on your host system.
- Release of the X Window System you are running on the UNIX host.
- If the problem involves a third-party application, the name of the application and which version you are running.

