NCD

Network Computing Devices, Inc.

NCBridge Installation Manual for VMS Environments
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Manual Revision Status

VMS Installation

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Revision Status

Contents

Contents

Contents

Contents

Preface

This manual presents installation and configuration information for the network computers. This manual is written for system and network administrators responsible for installing network computers in a distributed-computing environment. The procedures in this manual assume you are familiar with:

- the operating system and administration of the intended host computer
- the network protocols and concepts related to your local-area network (LAN)
- the X environment, including window managers and display managers

The following conventions and terminology is used in this manual.

- *Pointing*: use the mouse to position the pointer on an object on the display
- *Moving:* use the mouse to change the location of the pointer on the display
- *Clicking:* press and release a mouse button without moving the pointer
- *Dragging*: press and hold down a mouse button while moving the pointer
- *Releasing:* release the mouse button to complete a *dragging* action

Related Documentation

Network Computer Installation for UNIX — 9300845

Network Computer Installation for Windows NT — 9300847

Serial Xpress User — 9300834

The following documentation is on the CD ROM included with NCBridge

Network Computer Reference

Network Computer User

3270/3179G User

3270E/5250 User

In addition, System or Network Administration manuals for your computer are also helpful for information such as subnet mask, and broadcast addresses.

Definition or file name

Command name

Enabling BOOTP

Bootstrap protocol, *bootp*, is the recommended way to establish
to the Network Computer in an IP environment. **bootp** obtains

Command (type as is)

1. Verify that the *bootpd* and *bootptab* files are in the */etc* direct

Prompt (do not type)

ls /etc/bootp *

Variable (substitute
the correct value)

2. If they are not there:

Path

cp /tekxp/bin/ *<host>* **/bootpd /etc**

3. Edit the */etc/hosts* file to add the Network Computer internet

Response on screen
or lines in a file

host03r 60. 30

Entering Serial Parameters with Setu

The parameters on the host computer must match the parame
in order for serial communications to work. Your system adm
in the remote configuration file, or tell you what parameters n

Program name

them in *Setup*.

To verify or change your serial parameters:

Menu or key name

1. Press Setup.

2. Select Setup.

Menu button name

3. Drag on the Configuration Summaries menu and release on

4. Determine if your cable is connected to Serial Port 0 or 1.

5. Select the **Return to Main Menu** button.

Required variable

Use This Command:		To:
Table 1. Boot Monitor Commands		
Authorize *authorization-key*		Enable o
B Method *ROM* or *MOP* or *TFTP* or *NFS* *[Read size]*		Specify

Required switch
(choose one)

Optional variable

M-1

Figure 1 Typographical Conventions

Pieces of the Puzzle

Configuration is the key to the successful integration of network computers into your environment. System configuration is represented as a puzzle: each piece must be completed and integrated before the entire system configuration is complete. The configuration puzzle is illustrated in Figure 2.

Throughout this manual, the individual puzzle pieces are used to visually guide you through the system configuration process. As you complete each piece, you are one step closer to a centralized system. When the puzzle is complete, you have created a custom environment tailored to your computing resources, your applications, and your users' requirements. As an added bonus, the system is centrally administered, easy to maintain, and has the flexibility to adapt to your changing computing needs.

Chapter 1, *Installing the Software*, is the first step in the configuration process. This chapter describes how to load the network computer software onto your computer.

Chapter 2, *Getting Acquainted*, introduces the various tools and utilities available for configuring and booting the first network computer. At the end of this chapter, you should be logged in to your host from the network computer.

Chapter 3, *Making Choices*, helps you analyze your environment and select the best methods to configure your network computers and your environment. Strategies for using a centralized configuration, integrating additional network computers, and using Flash memory are also included.

Chapter 4, *Building a Centralized System,* implements the choices you made in Chapter 3. All of the configuration files are discussed: *xp.cnf*, *gateway.tbl*, *hosts, tbl*, *nodes.tbl*, *nfs.tbl*, *fonts.tbl*, *rgb.tbl*, and *xhosts.tbl*. Refer to Chapter 3 for information on which files to modify.

Chapter 5, *Supporting a Centralized System*, provides the host specific procedures you need to implement your configuration decisions you made in Chapter 2. Refer to Chapter 2 for information on which procedures to perform.

Chapter 6, *Using Additional Fonts*, describes the procedures and utilities necessary to make your fonts available to the network computer.

Chapter 7, *Troubleshooting*, describes debugging methods and solutions to help troubleshoot your configuration.
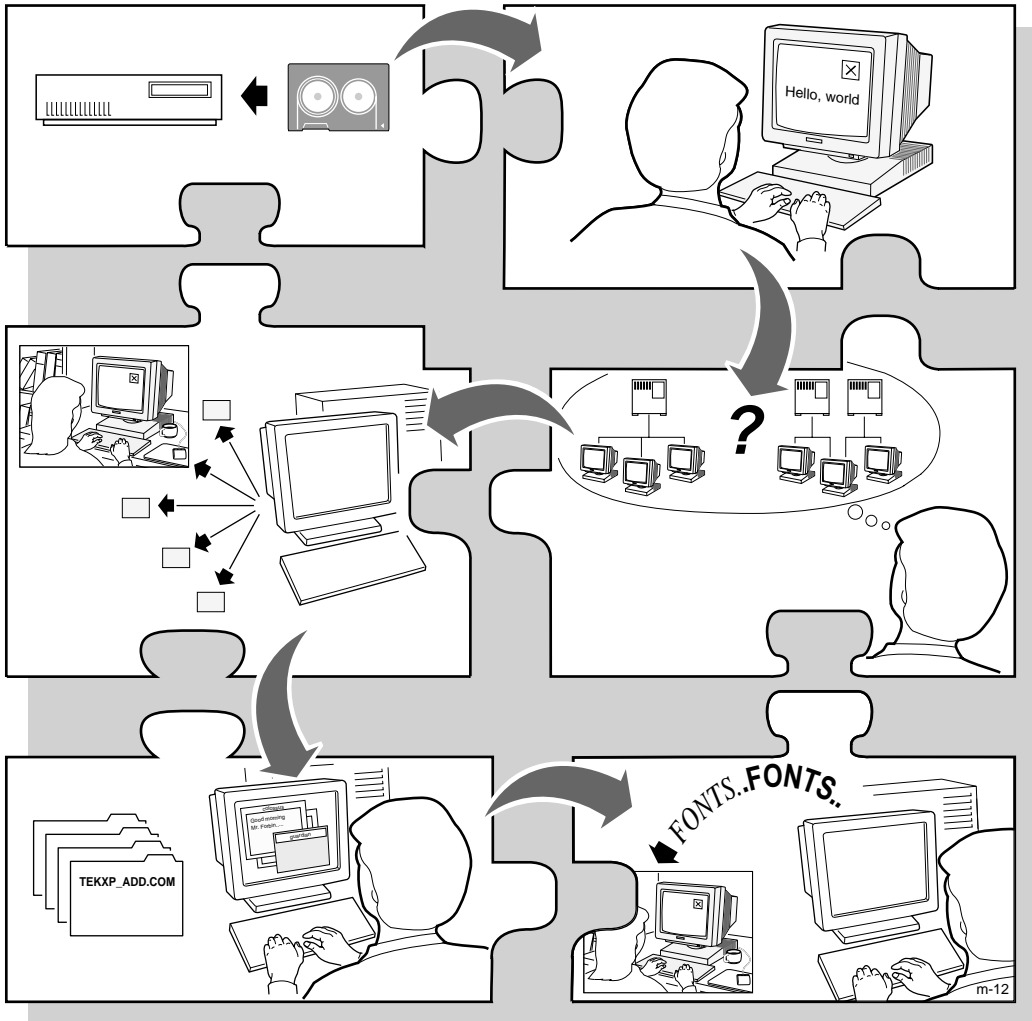
Figure 2 The System Configuration Process.

Installing the Software
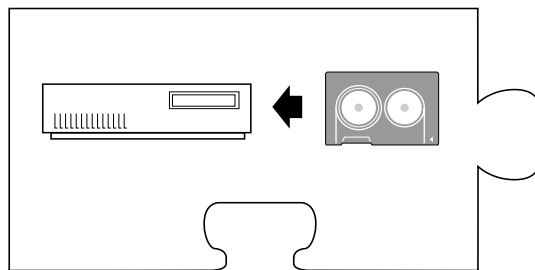
The first step is to install the network computer software on one or more hosts. The network computer plugs directly into the network, so you can install the software on one host or distribute it across different hosts on the same network.

You can install the software on a VAX running VMS Version 5.4 or greater, or on an AlphaAXP host running OpenVMS Version 6.1 or greater into any *disk-device***: [***directory***]**. The AlphaAXP software is available on a TK50 tape only.

To perform the installation procedure, you need system privilege and knowledge, and system responsibility.

> *NOTE: The directory names in the examples that follow assume the default directory structure. If you change from the default directory name, specify the new path rather than the default shown in the examples. The structure of the directory, however, is required as shown on the next page.*

Media Contents

The directory structure can be created wherever you decide. By default, the directory is *SYS$SYSDEVICE:[TEK]*. For consistency throughout the manuals, the top-level directory is assumed to be */TEK*. The directory hierarchy is illustrated in Figure 1-1.

Chapter 1   Installing the Software
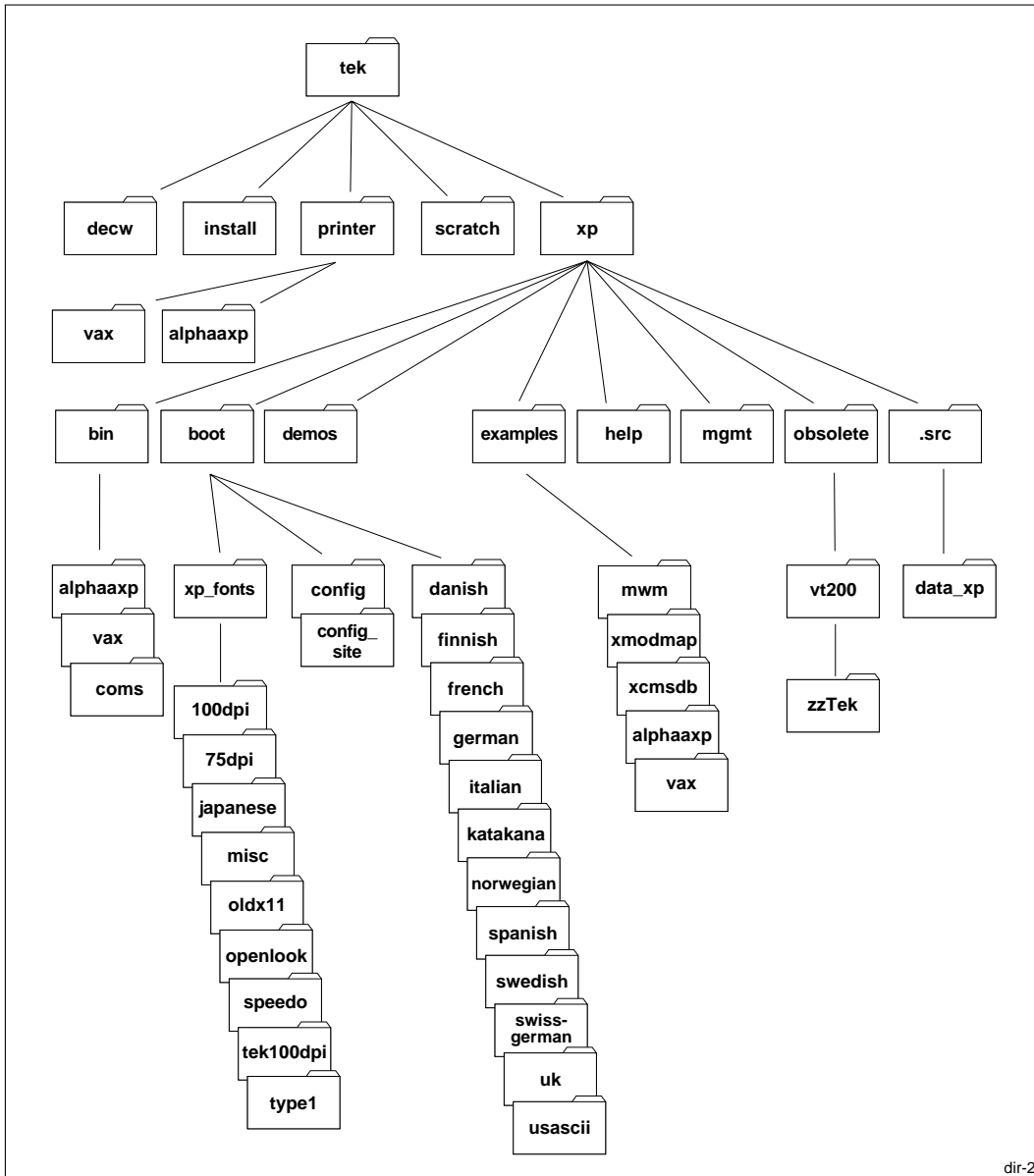
Figure 1-1 Directory Hierarchy.

The following directories are installed when loading the Installation media. */TEK* is the default install directory. Your install directory may be different.

- [TEK.PRINTER]

  This directory contains the host files for VAX.

- [TEK.SCRATCH]

  This directory contains scratch files used by some of the utilities.

- [TEK.XP]

  This directory contains supported VMS executables.

- [TEK.XP.BIN]

  This directory contains subdirectories for command procedures, and VAX processor-specific executable images.

- [TEK.XP.BOOT.CONFIG]

  This directory contains the boot files for XP10, XP330, and XP350 network computer models.

- [TEK.XP.BOOT.<languages>]

  There is a directory for each of the international languages supported by network computers.

- [TEK.XP.BOOT.CONFIG_SITE]

  This directory contains site-local modifications to files found in [TEK.XP.BOOT.CONFIG] and its subdirectories.

- [TEK.XP.BOOT.XP_FONTS]

  This directory contains the following subdirectories for the supplied non-resident fonts: 100dpi, 75dpi, Japanese, misc, oldx11, openlook, speedo, tek100dpi, and type1.

- [TEK.XP.DEMOS]

  This directory contains VAX processor-specific demo files.

- [TEK.XP.EXAMPLES]

  This directory contains example files and keyboard mapping files for use with 7 bit national character sets.

- [TEK.XP.HELP]

  This directory contains MWM and Hardcopy help files.

- [TEK.XP.MGMT]

  This directory contains SNMP MIB files.

- [TEK.XP.OBSOLETE.VT200]

  This directory contains various network computer startup files.

- [TEK.XP.SRC]

  This directory contains subdirectories for network computer utilities. Each command subdirectory contains the source files, header files, Makefiles, and READMEs required to build the command on this host.

The installation and implementation of the software under VMS requires a directory structure as shown on the previous page, *Media Contents*. The logical name, *TEK$TOOLS*, described later in this chapter in the *Required Logical Names* section, defines the top directory level where all common files reside.

The Installation media contains files you load on a host computer to support the network computers. It contains the boot files, configuration files, source for font tools, and downloadable fonts.

The media has over 700 downloadable fonts that supplement the resident fonts of the network computer and the host. These font files are in Server Normal Format (SNF) and are tailored specifically for network computers. The following provides a brief description of the font directories under the [*TEK.XP.BOOT.FONTS*] directory, or logical name:

- *misc*– Cursor font and character fonts

- *100dpi* – Fonts from the X Consortium distribution; some fonts contain eight-bit multinational character sets

- *75dpi* – Fonts from the X Consortium distribution; some fonts contain eight-bit multinational character sets

- *tek100dpi* – Lucida fonts

- *oldx11* – Fonts from the X Consortium distribution; includes fonts released prior to X Version 11, Release 3

- *openlook* – Fonts for OPEN LOOK applications

- *japanese* – Japanese fonts

- *type1* – Type 1 fonts

- *speedo* – Speedo scalable fonts

  NOTE: You need not install any fonts from the Installation media to use DECwindows and DECwindows fonts.

Preparing for Software Installation

The following software versions are required to install the NCBridge software: VMS Version 5.4 or greater, or for AlphaAXP hosts, OpenVMS Version 6.1 or greater. Before actually installing the software, perform the following procedure.

1. Check the current system version of the intended host with the command:

   $ **SHOW SYSTEM**

2. Check the amount of disk space available on the intended host with the following commands:

   $ **SHOW DEVICE SYS$SYSDEVICE**
   $ **SHOW DEVICE** *target-installation-disk*

   Table 1-1 shows the required disk space for a full installation on specific network computer models:

Table 1-1 Required Disk Space for Installations.

Network Computer model	Required Disk Space
XP10 series	58,700 blocks
XP330 series	65,700 blocks
XP350 series	78,700 blocks
NC200 series	~78,700 blocks
Combined XP10/XP330/ XP338P/XP350	130,900 blocks

NOTE: You should have a backup of the target and system disks before installing any software product. For instructions on backing up the system disk, refer to the VMS System Manager's Manual.

3. Determine the used global sections and pages with the **INSTALL** utility.

   NOTE: SYSPRV and CMKRNL privileges are required.

   Installing *SYS$SYSTEM:DECW$STARTLOGIN.EXE* requires one global
   section and four global pages.

   $ **INSTALL=="$INSTALL/COMMAND_MODE"**
   $ **INSTALL**
   install> **LIST/GLOBAL/SUM**

   The **LIST/GLOBAL** command lists the currently used totals. The example
   below shows global sections and pages found with the **LIST/GLOBAL**
   command:

   ```
   Summary of Local Memory Global Sections

   215 Global Sections Used, 12164/17836 Global Pages Used/Unused
   ```

4. Exit the INSTALL utility:

   install> **EXIT**

5. Determine the global sections and pages available with the VMS *SYSGEN*
   utility:

   $ **RUN SYS$SYSTEM:SYSGEN**
   sysgen> **SHOW GBLSECTIONS**

   ```
   Parameter NameCurrentDefaultMinimumMaximum   Unit      Dynamic
   -----------------------------------------   ----      -------
   GBLSECTIONS400   250     20       4095       Sections
   ```

6. The "Current" value should be at least 1 global section greater than the global
   sections used (listed in step 3). And there should be at least 4 unused global
   pages.To increase the GBLSECTIONS and GBLPAGES, refer to step 9.

7. Check that the SCSSYSTEMID parameter is set correctly so that **xpsh** can determine the host's DECnet address by entering the following:

   sysgen> **SHOW SCSSYSTEMID**

   In the "Current" column, the number should equal the following (based on the host's DECnet address):

   DECnet area $\times$ 1024 + DECnet number

   For example, on DECnet host 56.48, the DECnet area is 56, and the DECnet number is 48. The number in the Current column should be 57392 (56 $\times$ 1024 + 48).

   If the correct number is not set, edit the *SYS$SYSTEM:MODPARAMS.DAT* file and add the following line:

   SCSSYSTEMID=<number>

   where *<number>* is the host's DECnet area $\times$ 1024 + DECnet number.

8. Exit the SYSGEN utility:

   sysgen> **EXIT**

9. If sufficient resources are not available, increase the *GBLSECTIONS* and *GBLPAGES* values using the **AUTOGEN** utility (step 6). Also, use the AUTOGEN utility if you've edited the MODPARAMS.DAT file (step 7). Refer to the *AUTOGEN* utility in the *VMS System Manager's Manual*. After running **AUTOGEN**, reboot the system so that the new values take effect.

Installing the Software

This section describes how to install the software on the host using the *VMSINSTAL* command procedure. For more information about this command procedure, refer to the *VMS System Manager's Manual*.

1. Login to the SYSTEM account.

2. Start the **VMSINSTAL** command procedure:

   $ **@SYS$UPDATE:VMSINSTAL**

   VMSINSTAL identifies itself, informs you if any other processes are active on the system, and allows you to continue.

   ```
   VAX/VMS Software Product Installation Procedure V5.4-3
   It is 15-MAY-1995 at 07:41.
   Enter a question mark (?) at any time for help.

   %VMSINSTAL-W-ACTIVE, The following processes are still
   active:
   MARVA_XTERM

   * Do you want to continue anyway [NO]?
   ```

   The installation does not affect any currently executing processes, so enter **YES.** If you prefer to install when no processes are active, press the Return key; this terminates *VMSINSTAL*.

3. The procedure asks if the backup of your system disk is satisfactory:

   ```
   * Are you satisfied with the backup of your system disk
   [YES]?
   ```

   If you completed the steps in the *Preparing for Software Installation* section, you should have a satisfactory backup. Enter **YES**.

   If you are not satisfied, enter **NO** (or Return) to terminate *VMSINSTAL*. You can back up the system disk as described in the *VMS System Manager's Manual* and begin the installation again.

4. When prompted for the device where the distribution media is mounted, provide the appropriate device name; in this session we are using **MUA0**:

   ```
   * Where will the distribution volumes be mounted: MUA0:
   ```

5. When prompted for the product to be processed, enter the product number, **TEKXP081**. Or, for patch tapes or updates, check the tape label for the most recent version's product number.

   ```
   Enter the products to be processed from the first
   distribution volume set.
   ```

   * Products: **TEKXP081**

6. You are prompted for installation options:

   ```
   * Enter installation options you wish to use (none):
   ```

   This installation requires 31,000 blocks of working disk space on the system disk to unload the installation savesets. If you have enough disk space, press the Return key. If you do not have the blocks available on the system disk, enter:

   AWD=*device*

   where *device* is the name of a disk device that has at least 32,000 free blocks of working space.

   NOTE: This is only for working space.

7. When prompted, load the Installation media into the specified device and enter **Y**:

   ```
   Please mount the first volume of the set on MUA0:
   * Are you ready? Y
   ```

8. *VMSINSTAL* begins the installation by printing some informational messages:

   ```
   %MOUNT-I-MOUNTED, TEKXP mounted on _MUA0:
   The following products will be processed:
   TEKXP V8.1
   Beginning installation of TEKXP V8.1 at 07:43
   %VMSINSTAL-I-RESTORE, Restoring product save set A...
   ```

   Product saveset A contains the product-specific command procedure that controls the installation.

   The VMS version on the installation host is checked during the installation. For VAX processors, VMS version 5.4 is required; for AlphaAXP hosts, OpenVMS version 6.1 is required. If an appropriate version is not present, an error message displays and *VMSINSTAL* terminates. If this happens, upgrade the system to an appropriate version and begin the installation again.

9. If installing in a VAX cluster environment, you can install the software on a single node only, or into a homogeneous VAX cluster environment.

    ```
    Do you wish to install the TEKXP support software on this
    VAX cluster (YES/NO)?
    ```

    Answer NO to specify a single node, or YES to select a VAX cluster. If you select YES, you have the option to have SYSMAN execute TEK_STARTUP.COM on all the nodes in a cluster, or on specific nodes in a homogeneous VAX cluster environment.

    ```
    Do you wish to have TEK_STARTUP.COM executed by SYSMAN on
    all nodes (YES/NO)?
    ```

    Answer YES to select all nodes, or NO and select specific nodes with the following prompt.

    ```
    Enter the VAX cluster node list for SYSMAN (comma-
    separated)
    ```

    You must specify at least one member node of the VAX cluster.

10. If this is a first time installation, the device and directory for the root directory of the installation must be specified, for example [TEK]:

    You are asked where to store the NCD XP files. The files are stored in a directory tree called [Tek...] by default, on the device and directory you specify. System-wide logical names TEK$TOOLS and TEK$TOOLS_ROOT are created to refer to this directory tree.

    ```
    Enter the device and directory where [TEK] should be
    created [SYS$SYSDEVICE:[TEK]]:
    ```

    ```
    %VMSINSTAL-ISYSDIR, This product creates directory
    SYS$SYSDEVICE:[TEK].
    ```

11. The system checks to see if XP10, XP100, XP200, XP330, or XP350, or XP400 software currently exists. You are then asked to select which software to install. (To install XP338P (PEX), you must answer YES when asked to install the XP330 product.) The install script prompts you to select the same type of software that currently exists.

    ```
    Tek XP330 series software is installed on this system.
    Do you want to install the XP10-product software?
    Do you want to install the XP100-product software?
    Do you want to install the XP200-product software?
    Do you want to install the XP400-product software?
    Do you want to install the XP330-product software?
    Do you want to install the XP338P-product software?
    Do you want to install the XP350-product software?
    ```

Depending on the type of software being installed, system logicals are defined.

```
Defining system logical TEK$XP_BOOT.
Defining system logical TEK$XP10_BOOT.
Defining system logical TEK$XP100_BOOT.
Defining system logical TEK$XP200_BOOT.
Defining system logical TEK$XP400_BOOT.
Defining system logical TEK$XP330_BOOT.
Defining system logical TEK$XP350_BOOT.
Defining system logicals TEK$XP_CONFIG.
Defining system logical TEK$XP_BOOT_CONFIG_ROOT.
Defining system logical TEK$XP_FONTS.
%VMSINSTAL-I-SYSDIR, This product creates directory
TEK$TOOLS_ROOT:[SCRATCH].
%VMSINSTAL-I-SYSDIR, This product creates directory
TEK$TOOLS_ROOT:[XP.BOOT.CONFIG_SITE].
```

12. If this is an upgrade or re-installation, you are prompted to purge replaced files to conserve disk space:

    ```
    * Do you want to purge files replaced by this installation
    [YES]?
    ```

    Enter **YES** to automatically purge files at the end of the installation.

    If you answer **YES**, this message appears:

    ```
    *.com, *.TBL, DEVICE.CONFIG, and
    TEK$TOOLS_ROOT:[XP.BOOT.CONFIG_SITE] will not be purged.
    ```

13. An Installation Verification Procedure (IVP) verifies the installation and checks whether the host system can support the network computers. Answer Yes at the following prompt to run the IVP after the installation, or No if you do not want to run this procedure.

    ```
    This kit contains an Installation Verification Procedure
    (IVP) which is used to check the installation and
    determine if DECnet will support the NCD XP-products.
    ```

    ```
    After the installation is complete, you can invoke the
    IVP at any time to check if the host system can support
    the XP-products by executing the command:
    ```

    ```
    $ @tek$tools_root:[install]tekxp$ipv.com
    ```

    ```
    Do you want to run the IVP after the installation [YES]?
    ```

14. You can tailor the installation by selecting parts of the distribution:

    ```
    You will be asked if you want a full, partial, or minimum
    installation for XP X station software. When you finish,
    installation will proceed without your intervention.

    Reply FULL for a full installation which contains:

    o files needed to boot and configure the XP X station
      color matched hardcopy
      input extensions (tablet, touch screen, lightpen)
    o VMS utilities to manage the XP X station
    o 9 additional fonts directories (mit100dpi, mit75dpi,
      mitmisc, tek, oldx11, openlook, japanese, speedo, type1)
    o a system management utility for removing unused WSAx:
      devices
    o source code for building the data_xp utility
    o local mwm and related configuration files
    o XP338P PEX boot and support files
    o user documentation in Postscript form
    <#> disk blocks are required for the selected product mix

    Reply MINIMUM for a minimum installation consisting of:

    o files needed to boot and configure the XP X station
    o VMS utilities to manage the XP X station
    Select this to use minimum diskspace.
    <#> disk blocks are required for the selected product mix

    Reply PART and you will be allowed to selectively choose
    parts of the full installation. At the least, a MINIMUM
    configuration is pre-selected.

    * Do you want the FULL, PARTIAL, or MINIMUM installation
    [FULL]:
    ```
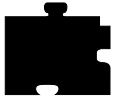
    If you want to install only selected parts of the distribution, enter **PART**.
    When prompted, enter **Y** for each section you want installed:

    ```
    Do you want the XP configuration files (Yes/No) [Y] ?
    Do you want the XP boot files (Yes/No) [Y] ?
    Do you want all XP font files (Yes/No for individual font
    selections) [Y] ?
    ```

15. If you indicated that you do not want to install all fonts, you can select the fonts you want to install by responding **Y** to each font module you want:

```
Do you want the XP mit 100dpi font files (Y/N)?[Y]
Do you want the XP mit 75 dpi font files (Y/N)? [Y]
Do you want the XP mit miscellaneous font files (Y/N)[Y]
Do you want the XP tek font files (Y/N)? [Y]
Do you want the XP oldx11 font files (Y/N)? [Y]
Do you want the XP openlook font files (Y/N)? [Y]
Do you want the XP japanese font files (Y/N)? [Y]
Do you want the XP scalable Speedo font files (Y/N)? [Y]
```

16. Specify whether to install the following files:

```
Do you want the XP source files (Y/N)? [Y]
Do you want the XP demo files (Y/N) [Y]
Do you want the XP338P PEX boot and support files (Y/N)? [Y]
Do you want the user document postscript file (Y/N)? [Y]
```

17. You are asked if you want to add network node information now. This command procedure prompts you for the DECnet name, DECnet address, ethernet address, and boot file name for your network computers. This information is used to set the DECnet NCP database enabling each network computer to obtain its initial booting parameters over the network without intervention. If installing a VAX cluster member, you are also asked if the volatile NCP database should be updated on all members of the cluster.

```
Do you want to enter new DECnet nodes now (Y/N)? [Y]

This command procedure will prompt you for the name,
DECnet address, ethernet address and boot file name for
your TekXpress family of network computers. This
information will be used to set the DECnet NCP database
enabling you to use the TDEnet option of your TekXpress.

Entering a ^Y at any time will safely exit this command
procedure.
Enter DECnet name of the XP (1-6 characters) [ ] :
Enter the DECnet address; or ? to list current node
entries [ ] :
Enter the XP hardware ethernet address [ ] :
Enter the XP boot filename [ XP10_OS ] :
```

NOTE: You may see a warning that the file is not found. Ignore the warning; the file will be installed later in the installation process.

```
Is this correct? [yes] :
Enter information for another XP [yes]:
```

18. You are asked if you want to create the default proxy account.

    ```
    Do you want to create the default TEKXPRESS proxy account
    now (Y/N) [Y]?
    ```

    If you answer Yes, the script creates the proxy account TEKXPRESS and you are prompted for the nodes that will use that Proxy account.

19. Installation continues unattended. If you have a previous version of the software (6.1 or earlier), the directory structure is changed before installing version 8.1 software. The following messages appear:

    ```
    End of prompts. Beginning of restoration of savesets.
    This will take up to 55 minutes depending on the options
    you have selected.
    ```

    ```
    No further questions will be asked . .
    15-MAY-1996 07:45:21.95
    ```

    ```
    Pre TEKXP version 8.1 directory located. Currently
    existing XP10 and XP330 boot directories will be removed.
    Beginning restructure . . .
    ```

    If you decide to purge the replacement files, the following messages appear:

    ```
    SYS$MANAGER:TEK_STARTUP.COM or TEKXP*_STARTUP.COM will
    not be automatically purged to preserve any local
    customization. Purge them manually.
    ```

    ```
    TEK$TOOLS:TEK_SYLOGIN.COM will not be automatically purged
    to preserve any local customization. Purge it manually.
    ```

    ```
    %VMSINSTAL-I-RESTORE, Restoring product save set B ...
    %VMSINSTAL-I-RESTORE, Restoring product save set C ...
    %VMSINSTAL-I-RESTORE, Restoring product save set D ...
    %VMSINSTAL-I-RESTORE, Restoring product save set E ...
    %VMSINSTAL-I-RESTORE, Restoring product save set F ...
    %VMSINSTAL-I-RESTORE, Restoring product save set G ...
    %VMSINSTAL-I-RESTORE, Restoring product save set H ...
    %VMSINSTAL-I-RESTORE, Restoring product save set I ...
    %VMSINSTAL-I-RESTORE, Restoring product save set J ...
    %VMSINSTAL-I-RESTORE, Restoring product save set K ...
    %VMSINSTAL-I-RESTORE, Restoring product save set L ...
    %VMSINSTAL-I-RESTORE, Restoring product save set M ...
    %VMSINSTAL-I-RESTORE, Restoring product save set N ...
    %VMSINSTAL-I-RESTORE, Restoring product save set O ...
    %VMSINSTAL-I-RESTORE, Restoring product save set P ...
    %VMSINSTAL-I-RESTORE, Restoring product save set Q ...
    %VMSINSTAL-I-RESTORE, Restoring product save set R ...
    %VMSINSTAL-I-RESTORE, Restoring product save set S ...
    %VMSINSTAL-I-RESTORE, Restoring product save set T ...
    %VMSINSTAL-I-RESTORE, Restoring product save set U ...
    ```

```
%VMSINSTAL-I-RESTORE, Restoring product save set V ...
%VMSINSTAL-I-RESTORE, Restoring product save set X ...
```

If a site-configured XP.CNF file is present, the following message displays:

```
Creating default TEK$XP_CONFIG:XP.CNF in
TEK$TOOLS_ROOT:[XP.BOOT.CONFIG_SITE]
```

If a site-configured XP.CNF file does not exist, the following message displays:

```
Default TEK$XP_CONFIG:XP.CNF not being created since
TEK$TOOLS_ROOT:[XP.BOOT.CONFIG_SITE]XP.CNF already
exists.
```

```
Depending on the fonts installed, add one of the
following into TEK$TOOLS_ROOT:[XP.BOOT.CONFIG]FONTS.TBL
or create your site-customized
TEK$TOOLS_ROOT:[XP.BOOT.CONFIG_SITE]FONTS.TBL.
```

```
If using TCP/IP transport for host file access:
 /TEK$XP_FONTS/100DPI
 /TEK$XP_FONTS/75DPI
 /TEK$XP_FONTS/MISC
 /TEK$XP_FONTS/TEK100DPI
 /TEK$XP_FONTS/OLDX11
 /TEK$XP_FONTS/OPENLOOK
 /TEK$XP_FONTS/JAPANESE
 /TEK$XP_FONTS/SPEEDO
 /TEK$XP_FONTS/TYPE1
```

```
or, if using DECNET transport for host file access:
 TEK$XP_FONTS:[100DPI]
 TEK$XP_FONTS:[75DPI]
 TEK$XP_FONTS:[MISC]
 TEK$XP_FONTS:[TEK100DPI]
 TEK$XP_FONTS:[OLDX11]
 TEK$XP_FONTS:[OPENLOOK]
 TEK$XP_FONTS:[JAPANESE]
 TEK$XP_FONTS:[SPEEDO]
 TEK$XP_FONTS:[TYPE1]
```

```
or, to use Digital-supplied DECWindows fonts (this is the
default):
 TEK$SYSCOMMON:[SYSFONT.DECW.75DPI]
 TEK$SYSCOMMON:[SYSFONT.DECW.100DPI]
 TEK$SYSCOMMON:[SYSFONT.DECW.COMMON]
 TEK$SYSCOMMON:[SYSFONT.DECW.CURSOR16]
 TEK$SYSCOMMON:[SYSFONT.DECW.CURSOR32]
 TEK$SYSCOMMON:[SYSFONT.DECW.USER_75DPI]
```

```
TEK$SYSCOMMON:[SYSFONT.DECW.USER_100DPI]
TEK$SYSCOMMON:[SYSFONT.DECW.USER_COMMON]
TEK$SYSCOMMON:[SYSFONT.DECW.USER_CURSOR16]
TEK$SYSCOMMON:[SYSFONT.DECW.USER_CURSOR32]
 Executing SYS$MANAGER:TEK_STARTUP.COM
%RUN-S-PROC_ID, identification of created process is
00000A9E
```

If a site-configured FONTS.TBL file is present, the following message displays:

```
Default TEK$XP_CONFIG:FONTS.TBL not being created since
TEK$TOOLS_ROOT:[XP.BOOT.CONFIG_SITE]FONTS.TBL already
exists.
```

If a site-configured FONTS.TBL file does not exist, and DECWindows font directories can be found, the following message displays:

```
Creating TEK$TOOLS_ROOT:[XP.BOOT.CONFIG_SITE]FONTS.TBL
```

If a site-configured FONTS.TBL file does not exist and DECWindows font directories cannot be found, the following message displays:

```
No font directories found in
DECW$SYSCOMMON:[SYSFONT.DECW]. Default
TEK$TOOLS_ROOT:[XP.BOOT.CONFIG_SITE]FONTS.TBL not being
created.
```

```
Installation of TEKXP V8.1 completed at 08:09
```

For VAX clusters, SYSMAN is used to execute *SYS$MANAGER:TEK_STARTUP.COM* on the node list specified in step 9.

20. Press Ctrl-Z to terminate *VMSINSTAL*.

```
Enter the products to be processed from the next
distribution volume set.
* Products:
VMSINSTAL procedure done at 08:12
```

Manually Supporting VAX Clusters

To add additional nodes to an existing VAX cluster, you must select a *<disk-device>*:[*<directory>*] that is common to them. Files for the added nodes should be moved from system-specific directories to system-common directories.

1. Move *TEK*_STARTUP.COM* from *SYS$SPECIFIC:[SYSMGR]* to *SYS$COMMON:[SYSMGR]*.

2. Move *DDIF$READ_XWD.EXE* and *DDIF$WRITE_TEK4693D.EXE* from *SYS$SPECIFIC:[SYSLIB]* to *SYS$COMMON:[SYSLIB]*.

3. For Series 100, 200, 330, 350, and 400 network computers, move *XPxxx_OS.SYS* from *SYS$SPECIFIC:[MOM$SYSTEM]* to *SYS$COMMON:[MOM$SYSTEM]*. Where *xxx* is 100, 200, 330, 350, or 400.

4. For XP10 Series network computers, move *XP10_OS.SYS*, *XP10_ST.SYS*, and *XP10_PT.SYS* from *SYS$SPECIFIC:[MOM$SYSTEM]* to *SYS$COMMON:[MOM$SYSTEM]*.

5. For XP338P Series network computers, move *XP330_PEX.SYS* from *SYS$SPECIFIC:[MOM$SYSTEM]* to *SYS$COMMON:[MOM$SYSTEM]*.

When booting the network computer, the first system that responds to the MOP request services the network computer. To boot a specific group of network computers from a particular VAX cluster member, copy the *XP*_OS.SYS* file (and *XP10_PT.SYS* and *XP10_ST.SYS* files for XP10 network computers) to *SYS$SPECIFIC:[MOM$SYSTEM]* of each member and assign them a unique name. For example, to boot XP10 network computers on a VAX cluster member named IDAHO, you would do the following:

1. Copy MOM$SYSTEM:XP10_OS.SYS to SYS$SPECIFIC:[MOM$SYSTEM]IDAHO10_OS.SYS

2. Copy MOM$SYSTEM:XP10_PT.SYS to SYS$SPECIFIC:[MOM$SYSTEM]IDAHO10_PT.SYS

3. Copy MOM$SYSTEM:XP10_ST.SYS to SYS$SPECIFIC:[MOM$SYSTEM]IDAHO10_ST.SYS

For information about automatic booting, see the *Adding Nodes to the NCP Database* section in Chapter 5.

Site-Specific System Startup

During installation, the *TEK_STARTUP.COM* and *TEKXP<nn>_STARTUP.COM* files are added to the *SYS$MANAGER:* directory (where *<nn>* is 10, 200, 330, 350, or 400). This command procedure should be executed at system startup time.

If this is a first time network computer installation, add this command to the site-specific system startup file *SYS$MANAGER:DECW$PRIVATE_APPS_SETUP.COM*.

> $ **@SYS$MANAGER:TEK_STARTUP.COM**

This command procedure:

- Initializes and starts an optional 4693 printer.

- Installs the executable images *SYS$SYSTEM:DECW$STARTLOGIN.EXE* and *TEK$TOOLS_ROOT:[XP]SXPROCESS*.

- Defines logical names to refer to the software installation disk and directories.

- Invokes product-specific startup files.

- Creates *FONTS.DIR* and *FONTS.ALIAS* for the DECwindows font directories, if necessary.

- Starts the *XP_SERVER* process.

At installation time, the *SYSGEN* and queue configuring commands are commented out. If you add an optional printer, enter the appropriate CSR and VECTOR information for the **SYSGEN** connect command. Uncomment the **SYSGEN** command, and the device and queue configuring commands, as appropriate. In this example procedure, the device and printer name is "lca0". You can change this name as required. "tcpr" is the queue name used for the color printer. If you change this name, also change it in the *TEK$TOOLS:TEK_SYLOGIN.COM* file.

The *SYS$SYSTEM:DECW$STARTLOGIN.EXE* file is installed with CMKRNL privilege. This allows any user to start the DECwindows login process on the network computer. Also installed with SYSGEN is the *TEK$TOOLS_ROOT:[XP]SXPROCESS* used to create the pseudo X server connection display used with Serial Xpress.

The **TEKXP_DECWFONT_FIXUP.COM** command procedure is executed to examine any installed DECwindows font directories. It also creates *FONTS.DIR* and *FONTS.ALIAS* files used by the network computer to create a font-name to font-filename mapping. This provides the network computer with filename information for locating a particular font.

The detached process, *XP_SERVER*, starts. This process exists until the host is rebooted or manually stopped by a privileged user. The process receives requests to start a DECwindows login on the network computer. The requests are either automatically generated by the network computer, or manually by the user with the **XPSTARTREQ** command.

User Login Information

The **TEK$TOOLS:TEK_SYLOGIN.COM** command procedure defines the commands used to run Tek-supplied utilities.

The logical name *HLP$LIBRARY* is used within this command procedure. A search is made for unused *HLP$LIBRARY_number* where *number* is the next consecutive number starting at 1.

You should add the command:

$ **@TEK$TOOLS:TEK_SYLOGIN.COM**

to either the system login command procedure (the default is *SYS$MANAGER:SYLOGIN.COM*) or each user's private login command procedure (default *LOGIN.COM*).

Executable Image Installation

Installing any image as a known image is at the discretion of the local system manager. The software needs no special user privileges to execute and is not required to be installed with privilege. If you expect high usage, install any executable image as a known, shareable image to decrease hard paging by competing processes.

Required Logical Names

The following logical names refer to the location where the software is installed. They are defined in the system logical name table so that they are defined for all users by default. Table 1-2 describes the logical names.

Table 1-2 Logical Names for Network Computer Software.

Logical Name	Description
TEK$TOOLS	Refers to the top of the installation directory tree.
TEK$TOOLS_ROOT	A rooted directory logical name to refer to subdirectories in *TEK$TOOLS*.
TEK$XP_FONTS	A rooted directory logical name to refer to font subdirectories.
TEK$XP_BOOT TEK$XP10_BOOT TEK$XP100_BOOT TEK$XP200_BOOT TEK$XP330_BOOT TEK$XP350_BOOT TEK$XP400_BOOT	A logical name to refer to the boot directory.
TEK$XP_CONFIG TEK$XP11_CONFIG TEK$XP12_CONFIG TEK$XP13_CONFIG TEK$XP15_CONFIG TEK$XP17_CONFIG TEK$XP18_CONFIG TEK$XP100_CONFIG TEK$XP114C_CONFIG TEK$XP115M_CONFIG TEK$XP117C_CONFIG TEK$XP119C_CONFIG TEK$XP119M_CONFIG TEK$XP200CH_CONFIG TEK$XP200_CONFIG TEK$XP214C_CONFIG TEK$XP214M_CONFIG	A logical name to refer to the directory containing the configuration table files (**.TBL*).

Table 1-2 Logical Names for Network Computer Software.

Logical Name	Description
TEK$XP217CH_CONFIG TEK$XP217C_CONFIG TEK$XP219CH_CONFIG TEK$XP219MH_CONFIG TEK$XP330_CONFIG TEK$XP334_CONFIG TEK$XP336_CONFIG TEK$XP337_CONFIG TEK$XP338_CONFIG TEK$XP350_CONFIG TEK$XP354_CONFIG TEK$XP356_CONFIG TEK$XP358_CONFIG TEK$XP400_CONFIG TEK$XP417C_CONFIG TEK$XP419C_CONFIG TEK$XP419G_CONFIG	A logical name to refer to the directory containing the configuration table files (*.TBL*) - continued.
TEK$XP_BOOT_CONFIG_ROOT	A rooted logical to refer to default configuration files.

Two logical names allow use of DECwindows font files and are defined in the **TEK$TOOLS_ROOT:[XP.BIN.COMS]TEKXP_DECWFONT_FIXUP. COM** command procedure. This command procedure is automatically executed by the command procedure, **SYS$MANAGER:TEK_STARTUP.COM**. Table 1-3 describes the logical names.

Table 1-3 Logical Names for DECwindows Fonts.

Logical Name	Description
TEK$DECW_ROOT	A rooted directory logical name; refers to the directory where the *FONTS.DIR* and *FONTS.ALIAS* files are created in a directory structure that mimics DECwindows font directories.
TEK$SYSCOMMON	A search list that is equivalent to the rooted directories of the DECwindows font and *TEK$DECW_ROOT*.

Chapter *2*

Getting Acquainted
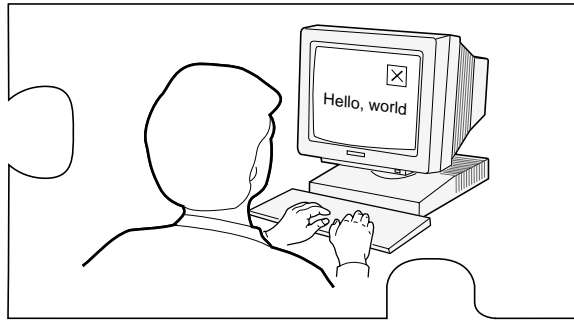
This chapter provides information about adding the first network computer to your system. The steps in this chapter help you become familiar with the network computer's *Boot Monitor* and *Setup* utility when establishing communications with the host computer.

> NOTE: If you are familiar with network computers, go to Chapter 3, *Making Choices* for information about integrating network computers into your environment.

The following steps are performed during a basic network computer installation:

- Collect booting information about your network computer and environment

- Use the *Boot Monitor* to enter network computer communication parameters

- Use *Client Launcher* to open a host connection

Gathering Information

To start, complete the following work sheet. The information is used later in this chapter.

Example 1-1.   Getting Acquainted Worksheet.

1. Network computer's TDEnet name:_____

2. Network computer's TDEnet address:_____

3. Network computer's Ethernet address (located on the label attached to the network computer):_____

4. Boot host's TDEnet address: _____

After gathering the information, begin with the following steps.

1. Verify that the VMS *Install* media has been installed on your host.

2. On the host, update the NCP database to include the network computer. If you entered the network computer's TDEnet name and address, Ethernet address, and boot file name as part of the Installation process, skip this step and go on to step 4.

   To update the NCP database, enter the following command:

   @TEK$TOOLS:TEKXP_ADD

   When prompted, enter the following information about the network computer:

   - TDEnet name (worksheet line 1)

   - TDEnet address (worksheet line 2)

   - Ethernet address (worksheet line 3)

   - boot file name. Use Table 2-1 to determine your boot file.

Table 2-1 Boot Files .

Boot File	Supported Network Computer Series
XP10_OS	XP10 Series (example: XP18)
XP330_OS	XP100D, XP330 Series (example: XP338)
XP350_OS	XP100 Series, XP200 Series, XP350 Series, and XP400 Series (examples: XP117C, XP219, XP358)
NC200_OS	NC200 Series

If the information is correct, answer **Y** for Yes at the `Is this correct?` prompt. If you made a mistake, enter **N** for No and enter the correct information.

3. On the host, add a proxy entry for the network computer in the Proxy database by entering the following command:

   @TEK$TOOLS:MAINTAIN_TEKXPRESS_ACCT

   When prompted to create a TEKXPRESS account, enter **Y** for Yes.

   - enter the network computer's TDEnet node name (worksheet line 1)

   A proxy entry is created and the Proxy database is updated to include the network computer.

Booting the Network Computer

1. Verify the physical installation of the network computer's cables, keyboard, mouse, and network connection with the pictorial installation sheet included in the packing box.

2. Turn on the network computer's power switch. On the first power-up, after all of the diagnostics are completed, you must specify the keyboard you're using. By default, the North American 101/102 or VT200 is selected (depending on the connected keyboard). Press Enter or Return to accept this keyboard. If using a UNIX keyboard or a foreign language keyboard, press the Spacebar to scroll through the list of available keyboards and press Enter or Return to select the appropriate keyboard.

   After specifying the keyboard, press Return or Enter again to display the BOOT> prompt.

   Note that the current status is displayed on the *scoreboard* located in the upper right corner. As you enter *Boot Monitor* commands, the status changes.

3. Enter **h** and press Return to see a full list of Boot Monitor commands:

   BOOT> **h**

4. Enter the **bmethod** command to specify MOP as the boot method to download the network computer boot files:

   BOOT> **bmethod MOP**

5. Enter the **nvsave** command to save your boot parameters to NVRAM:

   BOOT> **nvsave**

6. Enter the **boot** command to boot the network computer:

   BOOT> **boot**

Once communications are established, and the boot file is located, the *Percent of File Loaded* slide bar appears, showing the load progress. After the network computer code is loaded, messages appear indicating whether or not subsequent files are found.

> *NOTE: If the network computer does not boot, refer to Chapter 7, Troubleshooting.*

The network computer has finished the boot process when the *TekHostMenu* appears as shown in Figure 2-2.
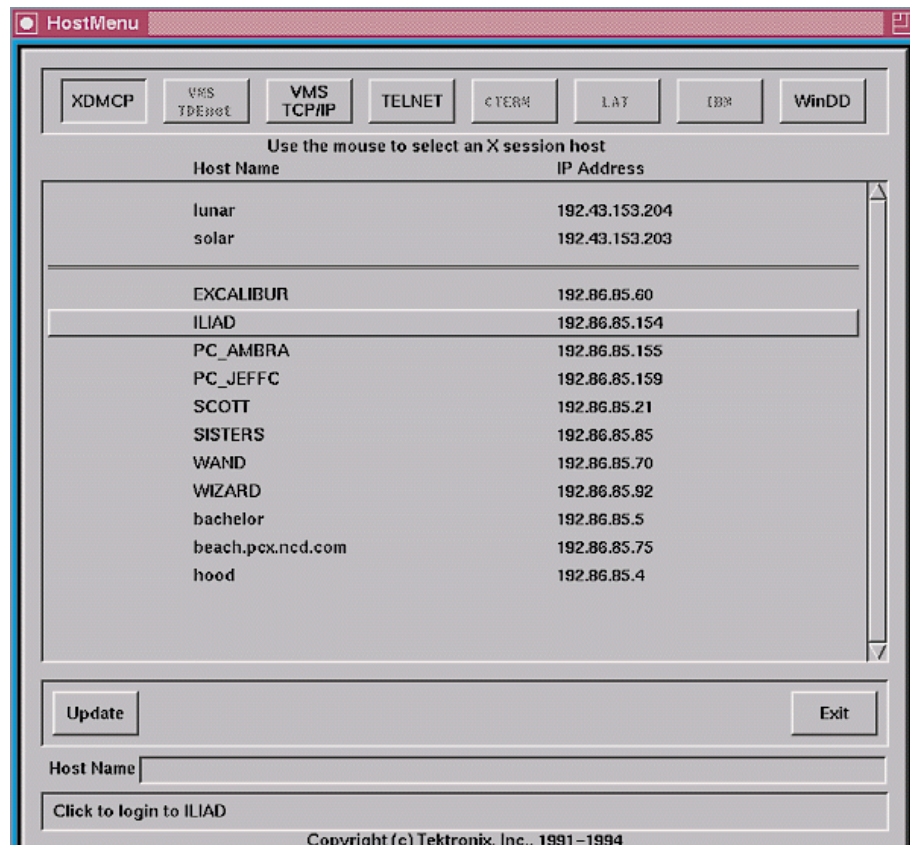
Figure 1-1.   TekHostMenu

Starting a Session with Launcher

Client Launcher is used to start local clients by selecting a client from a menu.
An arrow to the right of a *Client Launcher* entry indicates a submenu that
contains additional local clients. In Figure 1-2., selecting Host Connections
displays a sub-menu listing available host connections, such as *Telnet* or *Cterm*.
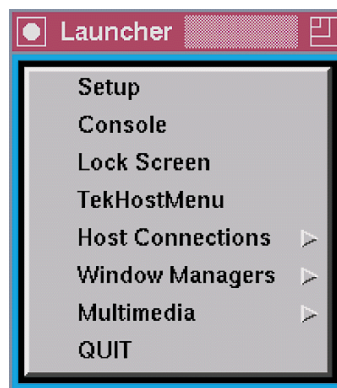
Figure 1-2.   Example Client Launcher.
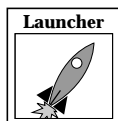
• Press the Setup key to bring up the *Client Launcher*. The symbol in the left
margin indicates a *Launcher* menu selection. If the *Launcher* is not present,
press the Setup key or key sequence for your keyboard.

Table 2-2 Setup Key and Key Sequences.

Keyboard Type	Press
101/102 with Setup	Setup key
101/102 with Pause	SHIFT-Pause
Sun keyboard	ALT-GRAPH-HELP
3270 keyboard	Right ALT-ExSel (The left ALT key does not work)
LK401	F3 key
UNIX keyboard	Alt-Graph

You can customize the Launcher client for your users through the
system.launcher file. Refer to *Starting the Client Launcher* in Chapter 5,
Supporting a Centralized System for details.

Logging in with Cterm

Cterm provides a direct connection from the network computer to a host.

To open a Cterm session from *Launcher:*

1. Position the pointer on the Host Connections option to display the submenu. Select Cterm to open a Cterm window.

```
CTERM>
```
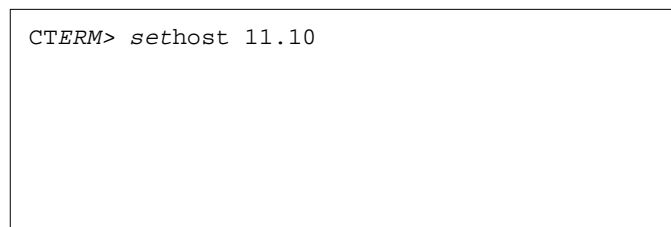
Figure 1-3.   Cterm Window Waiting for an Set Host Command.

2. Use the mouse to position the pointer in the Cterm window. You can type **help** and press Enter to see a list of Cterm commands.

3. Type:

   CTERM> **sethost** *hostname*

   where *hostname* is the node address of the host.

```
CTERM> sethost 11.10
```

Figure 1-4.   Cterm Set Host Command.

Once a connection is made (Figure 1-5.), you can log in:

```
connected to host 11.10
Welcome to VAX/VMS V5.5


Username:
```

Figure 1-5.   Cterm Window With a Host Connection.

4. At the *Username:* prompt, log in to the host computer by entering your user name:

   Username: *user_name*

5. At the *Password* prompt, enter your password:

    P**assword:** *password*

6. Type your user name at the *Username:* prompt and press Enter

7. Type your password at the *Password:* prompt and press Enter

Closing a Cterm Window

To close the Cterm window from the *NSH>* or *CTERM>* prompt, type **quit** or **exit** and press Enter.

Using Setup

Setup is a utility where you can add, modify, and display network parameters. The *Setup* main menu is illustrated in Figure 2-7. The *Setup* main menu is made up of four different areas: Menu Bar, Menu Input, Function Bar, and Message Box.
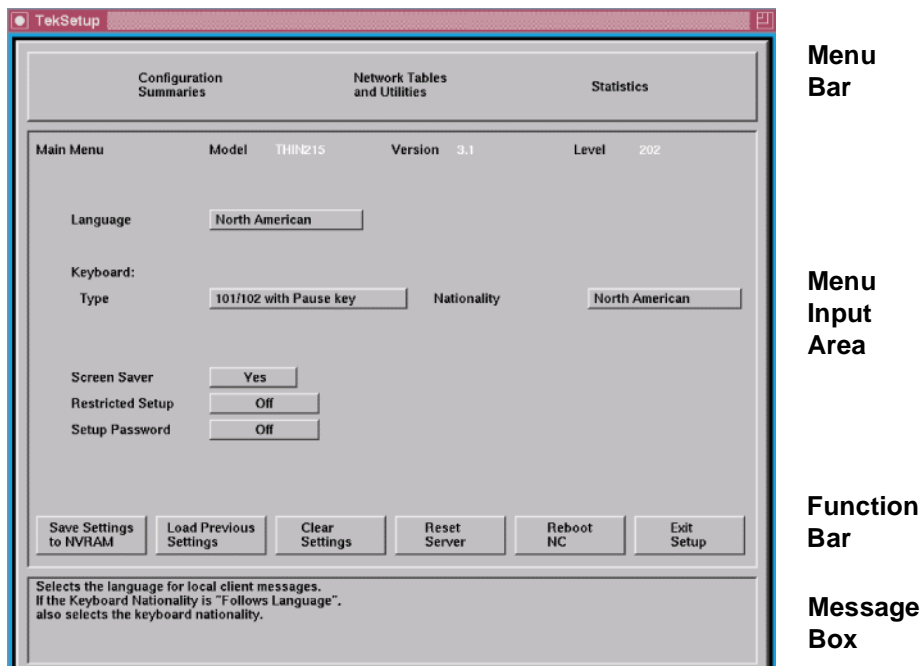
Figure 1-6.   The *Setup* Main Menu.

NOTE: The Setup window on your network computer may look different from this example based on your network computer model.

Use the following procedure to enter configuration parameters using *Setup*. After each typed entry, press Enter.

1. Drag in the Configuration Summaries menu and release on TDEnet.

   - Enter the following:

     TDEnet Network Computer Name   *network_computer_name*
     Default Cterm Host   *host_ name*

   - Click on **Return to Main Menu**.

2. Drag in the Configuration Summaries menu and release on
   X Environment.

   - Select the following:

     Host Connect Method   TekHostMenu
     Default Host List   VMS TDEnet

   - Click on **Return to Main Menu**.

3. Click on **Save Current Settings** to store the current settings in NVRAM.

Saving Setup Settings to a File

Setup entries can be saved to a host-based file which can then be used to configure one or more network computers. This is a good utility to create an initial remote configuration file, or for users to create an individual, customized remote configuration file.

- If the specified file already exists, *Setup* overwrites it. Unless you are sure you wish to overwrite the file, you may want to specify a temporary file name or create a backup of your previous file.

- Only settings available in *Setup* are saved to the file. Features that are only available in the remote configuration file (*xp.cnf*) must be manually added to the file written by *Setup*.

To save the current *Setup* settings to a sample remote configuration file:

1. Drag in the Configuration Summaries menu and release on *Save Settings to File*.

2. Enter your host name or address:

    Save Settings File Host   *host_name*

3. Click on **DAP** for the Save Setting Access Method.

4. Enter the full path and file name:

    Save Settings File Name   *file_name*

5. Click on **Save Settings to File**. A message appears to confirm the settings were written to the file.

6. Click on **Return to Main Menu**.

You can edit or view the created file with a text editor. Since we have only made a few changes in this chapter, the created file probably does not have all the information your site requires, but can serve as an example of a remote configuration file.

Exiting Setup

When you are ready to exit *Setup*, click on the **Exit Setup** button.

Once you have successfully completed a basic network computer installation, go on to Chapter 3 and develop a centralized administration scheme for a complete network computer installation.

Chapter 2   Getting Acquainted

Chapter **3**

Making Choices
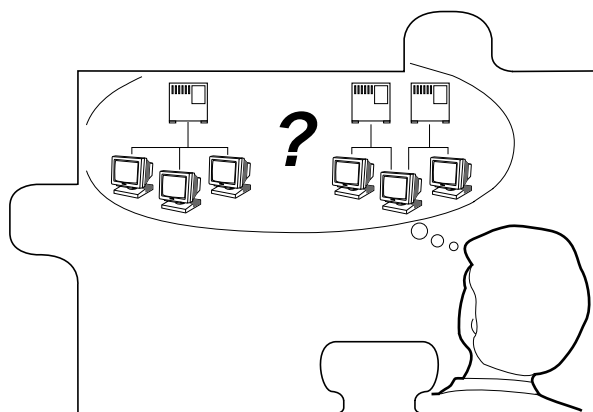
This chapter helps you collect and organize the information you need to create a centralized system, tailored to your environment. A Workbook is provided to assist you in this process.

At first glance, the Workbook resembles a tax form, but give it a try. The time you spend gathering information before you start is far less than the time to debug configuration later in the installation process. To use this chapter:

• Make a copy of the Workbook (page 3-19 to the end of this chapter). The Workbook follows the same organization as the remote configuration file (*xp.cnf)* to simplify implementing your choices.

• Read through the strategy sections beginning on the next page. The strategy sections are organized to help you analyze your environment and lead you through the decision-making process.

• As you make configuration choices, place a check mark on the Workbook line as directed, then fill in the requested information. Some lines in the Workbook direct you to other Workbook lines. Place a check mark on the new line and fill in the information. Whenever possible, entries have been filled in for you.

Chapter 3   Making Choices

- After you complete a Workbook line, return to the strategy text where you left off.

- When the Workbook is complete, continue on to Chapter 4, *Building a Centralized System*. Edit the files as needed to incorporate your configuration choices from the completed Workbook. When you edit a line in the *xp.cnf* file, it matches the line in your Workbook.

Configuration Strategies

System configuration is the key to successfully integrate network computers into your environment. With proper configuration, you can ensure your users a smooth transition to network computers with little or no disruption of their work.

Network computers run efficiently in a distributed-computing environment, where processing is shared by a number of networked host computers. This means applications competing for resources at any given time can be distributed across the system to maximize performance. Files can also be stored and transferred among the accessible computers to share mass storage resources.

The network computer typically connects directly to the network, so it can effectively communicate with any host on the network. The network computer receives files and display information over the network and manages communications between processes running on the network computer and on the host.

In a distributed computer environment, host computers perform a variety of functions. The strategy sections refer to three types of hosts, although in reality the functions can be as distributed or consolidated as you choose.

A *boot host* contains the files necessary to boot the network computers. This includes the model-specific operating system files and *xp.cnf* file. These files are downloaded to the network computer via the specified *boot method*.

A *file host* contains additional configuration files, fonts, and optional host-specific utilities for the network computer. The network computer may frequently access this host during a user session. Files are downloaded to the network computer via the specified *file access method*.

A *login host* is the host where the user's login account is found. You can specify a host for each user, or allow the user to select from a list of hosts, depending on your *host connection method*. The login host supplies a login window to the network computer, using a utility that provides login services.

Chapter 3   Making Choices

The strategy sections discuss the basics required to configure and support a centralized system. To simplify this task, all of the network computer features are not covered. Once your initial configuration is working, you can enable additional features as needed.

> ***NOTE: When you add a feature, perform the necessary host configuration to support the feature. Refer to Chapter 2 of the Business Network Computers Reference manual for more information.***

These topics are discussed:

- Booting Strategies
  - Boot Methods
  - Automatic or Manual First Boot
  - Subsequent Boots
- File Access Strategies
  - File Access Methods
- Host Connection Strategies
- ROM and Flash Memory Strategies
- Boot Host Check List
- Network Computer Check List
- File Host Check List
- What Next?

Booting Strategies

On a system with many network computers, you might want to install the boot software on more than one host. Then you can either set up different network computers to boot and download files from different hosts, or set up all the network computers to boot from the first available host.

Boot Methods

The network computer uses the boot method to download the X server. Many of the other booting decisions in this section depend on the boot method you select. The boot methods are **TFTP**, **NFS**, **MOP**, and **ROM**.

> *NOTE: NT systems only support NFS or ROM booting.*

- **TFTP** (Trivial File Transfer Protocol) can be used on TCP/IP networks. It is not as efficient as **NFS**, but can be made more secure. **TFTP** is the default method to boot network computers not equipped with TDEnet or the Flash Memory or ROM options.

- **NFS** (Network File Service) can be used on hosts supporting **NFS** (typically in a TCP/IP network). The advantage to **NFS** is faster booting and increased efficiency.

- **ROM** (Read-Only Memory) can be used with network computers equipped with Flash Memory or a ROM board. **ROM** is the default method to boot all network computers equipped with the Flash Memory or the ROM options. Refer to *ROM and Flash Memory Strategies* later in this chapter for more information.

- **MOP** (Maintenance Operation Protocol*)* is used on DECnet networks to download the boot files to the network computers. This is the default boot method if the network computer is not equipped with Flash Memory or the ROM options, and if the TDEnet option is enabled on the network computer.

Decide which boot method to use. Continue to the next pages to see how to implement the method you selected.

Automatic or Manual First Boot

For a first time boot, the network computers can boot automatically or manually, depending on how you configure your environment. This decision does not relate to ROM-based network computers.

Automatic means that the network computer determines boot parameters from the network and boots without operator intervention. In addition, with automatic booting you can implement a strategy where network computers can boot from the first available host.

Manual means that an operator would have to enter the boot parameters before the network computer could boot.

Implement the *manual* method if you are installing a single network computer. Use the example in Chapter 2 to enter the boot parameters. Implement your other Workbook selections with the *Setup* commands. Remember that *Setup* commands only affect the individual network computer.

Implement the *automatic* method if you are installing or planning to install more than one network computer, or want the network computers to boot from the first available host. Implement your other Workbook selections with the *xp.cnf* commands so they apply to each network computer.

For *automatic* booting:

> If you are going to use **TFTP** or **NFS** as the boot method:
> Check Workbook line 58 to use *bootp* (BOOTstrap Protocol) or check Workbook line 59 to use *DHCP* for automatic booting. A host that recognizes the network computer's hardware address responds with the following information: the network computer's Internet address, the boot server's Internet address, the name of the file to download, the subnet mask, and the primary gateway.

> As an additional method for **TFTP** or **NFS**:
> Check Workbook line 60 to use *rarp* (Reverse Address Resolution Protocol) for automatic booting. A host responds with the Internet address of the network computer and the Internet address of the responding host. The boot directory must be located (or linked) in the default (*/tekxp/boot*) directory on the host that replies. **rarp** and **bootp** can run simultaneously. The network computer alternates between **bootp** and **rarp** broadcasts.

> If you are going to use **MOP** as the boot method:
> Check Workbook line 65 and Workbook line 66 for automatic booting.

Subsequent Boots

The next boot decision determines how subsequent boots occur. There are three main strategies:

- Booting from a specific host, using parameters stored in NVRAM:

    - Controls which host is used. In the case of different workgroups on different hosts, each workgroup can have their own configuration.

    - Easier to provide a fixed environment.

    - Provides a specific backup (secondary) boot.

- Booting from the first available host, using parameters obtained from the network:

    - The least-busy host responds to the boot requests.

    - Provides backup booting. Booting occurs as long as any host is responding.

- Booting from a specific host, using parameters obtained from the network:

    - Controls which host is used. In the case of different workgroups on different hosts, each workgroup can have their own configuration.

    - Easier to administer in a dynamic environment, where network computers, workgroups, and network addresses tend to migrate.

    - Easier to provide a consistent environment.

Decide which strategy to use. Continue to the next page to see how to implement the strategy you selected.

> *NOTE: NT systems only support NFS or ROM booting.*

Booting from a specific host, using parameters stored in NVRAM. For this method, specify all of the required information, change booting to NVRAM, and save it. You can specify a secondary boot in case the primary boot fails.

The network computer has already booted once. If the current boot parameters are acceptable, do not change the primary boot information. The network computer saves the current method, host, and path as the primary.

To change the primary booting information:

Choose the primary boot method to use, either **TFTP**, **NFS**, or **MOP**:
For **TFTP**, check Workbook line 28.
For **NFS**, check Workbook line 29.
For **MOP**, check Workbook line 30.

Check Workbook line 37 to boot from NVRAM instead of NETWORK.

Check Workbook line 42 to save the new method.

To optionally set secondary booting information:

Choose the secondary boot method to use, either **TFTP**, **NFS**, or **MOP**:
For **TFTP**, check Workbook line 32.
For **NFS**, check Workbook line 33.
For **MOP**, check Workbook line 34.

Booting from the first available host, using parameters obtained from the network. Set up automatic booting (from the previous section) on every boot host. Add the information for *every* network computer to *every* boot host.

You can explicitly set the boot method but obtain the remainder of the boot parameters from the network. For example, if you want to boot with **NFS instead of TFTP**. To change the default boot method:

Choose the primary boot method to use, either **TFTP**, **NFS**, or **MOP**:
For **TFTP**, check Workbook line 28. Ignore boot host and path settings.
For **NFS**, check Workbook line 29. Ignore boot path setting.
For **MOP**, check Workbook line 30. Ignore boot path setting.

Check Workbook line 42 to save the new method.

Booting from a specified host, using parameters obtained from the network. Set up automatic booting (from the previous section) on every boot host. Add the information for the *specific* network computer to the *specific* boot host.

You can change only the boot method. Follow the preceding check mark paragraphs for the *booting from the first available host* section.

File Access Strategies

File access determines how the network computer locates and downloads configuration and font files. As discussed in the *Configuration Strategies* section, you can have one or more file hosts.

The file access path you specify is actually the path to the configuration (*.tbl*) files. For fonts, the *fonts.tbl* file contains the actual paths to the files, not the actual fonts. This may be confusing at first, but makes sense if you think about it. Font files take up a lot of disk space. By having the configuration file point to the various locations, you can distribute fonts across disks, partitions, or different hosts, depending on your disk space.

Here are some considerations for a file host:

- The host may be frequently accessed during a user session.

- Font files use a lot of disk space, so make sure you only have the ones you need. Many of the fonts on the installation media are probably duplicates of your host computer's native fonts. If the X server can read your computer's native fonts, use them and only keep the unique fonts from the installation media.

- Place the files on a machine with enough room. This does not have to be the boot host; the files can be installed in any directory on any machine on the network accessible to the network computers.

- The entries in the *fonts.tbl* file use network computer memory, so only add the font directories your applications require.

File Access Methods

The file access method choices are similar to the boot method choices. The file access methods are: **TFTP, NFS**, **DAP**, and **SXP**. The method you select is dependent on your network type and how your users connect.

> *NOTE: When a file_path is requested, provide the path to the .tbl files. The default path is /tekxp/boot/config[TEK$XP_CONFIG].*

If you do not enable any file access hosts or methods, the boot host and boot method are used by the network computer.

> *NOTE: NT systems only support NFS file access.*

- **NFS** can be used on hosts supporting **NFS** (typically on a TCP/IP network). The advantage to **NFS** is downloading speed and efficiency.

- **TFTP** can be used on TCP/IP networks. It is not as efficient as **NFS**.

- **DAP** is used on DECnet networks to download files to the network computers.

- **SXP** is used to download files for a Serial Xpress connection.

  Select a primary file access method:
  Check Workbook line 10 to use **NFS** as the primary file access method.
  Check Workbook line 11 to use **TFTP** as the primary file access method.
  Check Workbook line 12 to use **DAP** as the primary file access method.
  Check Workbook line 13 to use **SXP** as the primary file access method.

In addition, a secondary (backup) method can be enabled. The secondary information is only used if the primary method fails.

  Select a secondary file access method:
  Check Workbook line 14 to use **NFS** as the secondary method.
  Check Workbook line 15 to use **TFTP** as the secondary method.
  Check Workbook line 16 to use **DAP** as the secondary method.
  Check Workbook line 17 to use **SXP** as the secondary method.

> *NOTE: If the last method tried is NFS, the network computer automatically tries TFTP using the last file path specified. To take advantage of this feature, make sure TFTP is enabled.*

  Check Workbook line 56 to enable **TFTP**.

Host Connection Strategies

Host connection specifies how a user connects to their login host. There are several possibilities:

- **TekHostMenu** presents a list of hosts. The user uses the mouse to select a session type and login host (this is the default method). This is easy to use and provides flexibility for users who need access to multiple hosts.

- **Login Window to a Specific Host**. Displays a host login box where the user simply logs in to the host.

- **Session Window to a Specific Host**. Opens a session window and connects to the specific host. The user simply logs in.

- **Session Window with no Specified Host**. Opens a session window. The user would have to specify a host connection and then log in.

- **No connection method**. The user would have to start a session from the *Client Launcher* and then log in.

Pick the method that best fits your users and your environment.

TekHostMenu

TekHostMenu is the default connection method. Within the TekHostMenu interface, there are multiple lists of hosts available: **XDMCP**, **VMS** (both **TDEnet** and **TCP/IP** connections), **TELNET**, **CTERM**, **LAT, IBM** and **WinDD**. A user can pick the list to view, and then pick a host from that list. You can support as many of the lists as apply to your environment.

- **XDMCP** - this is a generated list based on hosts that respond to the network computer's **xdm** broadcast. **xdm** must be enabled on the host. Responding hosts can be optionally prioritized to appear at the top of the list.

  Check Workbook line 61 to enable **xdm** on the host.

  Check Workbook line 43 to optionally prioritize hosts on the list.

- **VMS TDEnet** - this is a list of entries you specify in the *xp.cnf* file. Use this list if you connect to DEC hosts running DECnet.

  Check Workbook line 44 to add VMS TDEnet host entries.

- **VMS TCP/IP** - this is a list of entries you specify in the *xp.cnf* file. Use this list if your users connect to DEC hosts running TCP/IP.

  Check Workbook line 45 to add VMS TCP/IP host entries.

- **TELNET** - this is a list of entries you specify in the *xp.cnf* file. In addition, the boot host and the default Telnet host (if defined) appears on the list. Use this list if your users connect to TCP/IP hosts via Telnet.

  Check Workbook line 46 to add TELNET host entries.

  Check Workbook line 38 to define a default TELNET host.

- **CTERM** - this is a list of entries you specify in the *xp.cnf* file. In addition, the boot host and the default CTERM host (if defined) appears on the list. Use this list if your users connect to DECnet hosts via CTERM.

  Check Workbook line 47 to add CTERM host entries.

  Check Workbook line 39 to define a default CTERM host.

- **LAT** - this is a generated list based on available LAT services.

  Check Workbook line 9 to start LAT services on the host

- **IBM** - this is a list of IBM host entries you specify in the *xp.cnf* file.

  Check Workbook line 47 to add IBM host entries.

- **WinDD** - this is a list of WinDD servers you specify in the *xp.cnf* file.

  Check Workbook line 49 to add WinDD server entries.

Login Window to a Specific Host

This option uses a utility on the specified host to display a login box on the network computer. The method you select for this option is network and host connection dependent.

If your user logs in to a TCP/IP host on a TCP/IP network:

    Check Workbook line 18 to specify a direct host connection.

    Check Workbook line 61 to enable **xdm** on the host.

If your user logs in to a DECnet node in a DEC environment:

    Check Workbook line 19 to specify a direct host connection.

    Check Workbook line 67 to enable DECwindows on the host.

If your user logs in to a TCP/IP host in a DEC environment:

    Check Workbook line 20 to specify a direct host connection.

    Check Workbook line 61 to enable **xdm** on the host.

If your user logs in to a Windows NT server:

    Check Workbook line 20 to specify a direct WinDD host connection.

    Check Workbook line 68 to install WinDD on the Windows NT server.

Session Window to a Specific Host

This option can be used to display either a **TELNET** or **CTERM** session window on a defined host or node. The session you select for this option is host dependent.

If your user logs in to a TCP/IP host, specify the connect method to be TELNET, and define the default Telnet host:

    Check Workbook line 21 to specify **TELNET**.

    Check Workbook line 38 to define a default Telnet host.

If your user logs in to a DECnet node, specify the connect method to be CTERM, and define the default CTERM host:

    Check Workbook line 22 to specify **CTERM**.

    Check Workbook line 39 to define a default CTERM host.

Session Window with No Specific Host

This option opens a session window. The user would have to open a host connection or service. Several sessions are available: **TELNET**, **CTERM**, **LAT**, **SERIAL0**, and **SERIAL1**. The session type you select is network and host connection dependent.

If your user logs in to a TCP/IP host:

> Check Workbook line 21 to specify a Telnet session.

If your user logs in to a DECnet node:

> Check Workbook line 22 to specify a CTERM session.

If your user logs in to a LAT service:

> Check Workbook line 23 to specify a LAT session.

If your user logs in via a serial connection on their network computer serial port 0:

> Check Workbook line 24 to specify a Serial0 session.

If your user logs in via a serial connection on their network computer serial port 1:

> Check Workbook line 25 to specify a Serial1 session.

No Connection Method

You can have the network computer simply display the root weave and X cursor by disabling host connections. A user would have to start a session from the *Client Launcher*.

To disable host connections:

> Check Workbook line 27.

ROM and Flash Memory Strategies

Reading Host-Based Remote Configuration Files

Network computers with Flash Memory can be set up to read an *xp.cnf* file on the host. Another strategy if you have space in Flash Memory, is to flash a version of *xp.cnf*, to free the network computer from trying to find a host during the boot process.

Check Workbook line 35 to read a host-based *xp.cnf* file with a network computer equipped with Flash Memory.

XP10 models equipped with the ROM (Read Only Memory) options can also read an *xp.cnf* file.

Check Workbook line 31 to read an *xp.cnf* file with an XP10 ROM model.

Saving your Configuration in Flash Memory

As you have worked through this chapter, you have selected the commands to implement in the configuration file. For RAM-based network computers, this configuration can either be saved in NVRAM, or loaded each time the network computer boots and reads the *xp.cnf* file. To take advantage of the Flash Memory option, you can flash all or part of your configuration.

This section provides the basic flash procedure. Refer to Chapter 2 of the *Network Computer Reference* manual for the specific flash commands.

- Create a remote configuration file with the *do_flash* and appropriate *flash_feature* enabled. Change the *boot_method* to ROM (for subsequent boots). If you are not going to flash the remote configuration file, you may wish to set the network computer to read a host-based *xp.cnf* file.

- Boot only the network computers that you want to flash. Use **TFTP**, **NFS**, or **MOP** as the boot method. You cannot flash a network computer that booted from Flash Memory (boot method **ROM**).

- Once flashing is complete, comment out the flash information in the *xp.cnf* file. Restore the *boot_method* settings as needed for your other network computers.

Enabling a Master Network Computer

A network computer equipped with Flash memory can be used as a master network computer to boot other network computers.

Check Workbook line 36 to enable or boot from a master network computer.

Boot Host Check List

Use this check list to verify that each boot host is completely configured:

- Boot software installed
- *ip_host_table* and *ip_host_entry* commands added to the *xp.cnf* file (TCP/IP)

  Check Workbook line 1.

- *gateway_table* and *gateway_entry* commands added to the *xp.cnf* file if the network computers are located on different subnets and require a gateway (TCP/IP)

  Check Workbook line 3.

- *tde_host_table* and *tde_host_entry* commands added to the *xp.cnf* file (DECnet)

  Check Workbook line 2.

- Primary and Secondary (if used) boot method enabled
- *xp.cnf* file configured
- Supporting host processes enabled and running

  NOTE: The _table (ip_host_tabletde_host_table) commands store up to four entries in the network computer's NVRAM. Use them for the most frequently accessed hosts. The _entry (ip_host_entrytde_host_entry) commands store all subsequent entries into RAM.

File Host Check List

Use this check list to verify that each file host is completely configured:

- Configuration and font files installed
- *ip_host_table* and *ip_host_entry* commands added to the *xp.cnf* file (TCP/IP)

  Check Workbook line 1.

- *gateway_table* and *gateway_entry* commands added to the *xp.cnf* file if the network computers are located on different subnets and require a gateway (TCP/IP)

  Check Workbook line 3.

- *tde_host_table* and *tde_host_entry* commands added to the *xp.cnf* file (DECnet)

  Check Workbook line 2.

- Primary and Secondary (if used) file access method enabled

- Font paths added to *fonts.tbl* file

  Check Workbook line 55.

Network Computer Check List

Gather the following information for each network computer:

- Network computer model (to determine boot path)

- Network computer hardware address

- Network computer name

- Network computer network address

This list shows the various host files that need network computer information:

- */etc/host or \winnt35\system32\drivers\etc\hosts* (TCP/IP) is needed on all hosts the network computer accesses.

  Check Workbook line 62.

- *bootptab* file, if **bootp** is used, is needed on all boot hosts.

  Check Workbook line 58.

- */etc/arp*, if **rarp** is used, is needed on all boot hosts.

  Check Workbook line 60.

- NCP database (DECnet), is needed on all boot hosts (can be clustered).

  Check Workbook line 65.

- Proxy database (DECnet), is needed on all boot hosts.

  Check Workbook line 66.

What Next?

Now that your Workbook is complete, continue on to Chapter 4, *Building a Centralized System*.

• Edit the *xp.cnf* file and implement any commands you checked on Workbook page 3-19 through page 3-32. Or, if the majority of your check marked lines have a corresponding *Setup* menu item, you may wish to enter your information in *Setup* and use the Save Settings to File feature. Any remaining check marked items could be added to the created file. Chapter 2 introduced the Save Settings to File feature.

• Edit any of the *.tbl* files you checked on Workbook page 3-34.

When you are done editing the files, continue on to Chapter 5, *Supporting a Centralized System*.

• Perform the host procedures you checked on Workbook page 3-35.

Configuration Workbook

To Do	**xp.cnf File**	**Setup Menu Paths**

___   1. Enter one or more host address/names (NVRAM).

    ip_host_table _____   _____
    ip_host_table _____   _____
    ip_host_table _____   _____
    ip_host_table _____   _____

If you have additional hosts, fill out Workbook line 5.

Network Tables and Utilities ⇓ Internet Host

....

___   2. Enter one or more node address/names (NVRAM).

    tde_host_table _____   _____
    tde_host_table _____   _____
    tde_host_table _____   _____
    tde_host_table _____   _____

If you have additional nodes, fill out Workbook line 6.

Network Tables and Utilities ⇓ TDEnet Host

....

___   3. Enter one or more net address/gateway addresses (NVRAM).

    gateway_table _____   _____
    gateway_table _____   _____
    gateway_table _____   _____
    gateway_table _____   _____

If you have additional hosts, fill out Workbook line 7.

Network Tables and Utilities ⇓ Gateway

....

___   4. Enter one or more file system name/local directories (NVRAM) along with the file transfer size (128 - 8192).

    nfs_table _____   _____ _____
    nfs_table _____   _____ _____
    nfs_table _____   _____ _____
    nfs_table _____   _____ _____

Fill out Workbook line 57. Also, if you have additional NFS entries, fill out Workbook line 8.

Network Tables and Utilities ⇓ NFS Mount

....

To Do	xp.cnf File	Setup Menu Paths

__	5. Enter one or more host address/names (RAM).	Not available

```
ip_host_entry _____   _____
ip_host_entry _____   _____
ip_host_entry _____   _____
ip_host_entry _____   _____
```
Continue adding entries as needed.

………………………   ……

__ 6. Enter one or more node address/names (RAM).   Not available

```
tde_host_entry _____   _____
tde_host_entry _____   _____
tde_host_entry _____   _____
tde_host_entry _____   _____
```
Continue adding entries as needed.

………………………   ……

__ 7. Enter one or more net address/gateway addresses (RAM).   Not available

```
gateway_entry _____   _____
gateway_entry _____   _____
gateway_entry _____   _____
gateway_entry _____   _____
```
Continue adding entries as needed.

………………………   ……

__ 8. Enter one or more file system name/local directories (RAM) along with the file transfer size (128 - 8192).   Not available

```
nfs_entry _____   _____ _____
nfs_entry _____   _____ _____
nfs_entry _____   _____ _____
nfs_entry _____   _____ _____
```
Continue adding entries as needed.
Fill out Workbook line 57.

………………………   ……

To Do	xp.cnf File	Setup Menu Paths

__   9.   Enter node name/LAT service tables (up to 20 services).   Not available

```
lat_services_table _____ _____
lat_services_table _____ _____
lat_services_table _____ _____
```
Continue adding services up to 20.

…………………………   ……

__   10.   Enter the file system name (for file_host_name) and the local directory (for file_path).

Configuration Summaries ⇓ Host File Access

```
file_access_1 NFS
file_host_name_1 _____
file_path_1 _____
```
Fill out Workbook line 4 and Workbook line 57.

…………………………   ……

__   11.   Enter the host address or name and the file path.

Configuration Summaries ⇓ Host File Access

```
file_access_1 TFTP
file_host_name_1 _____
file_path_1 _____
```
Fill out Workbook line 56.

…………………………   ……

__   12.   Enter the node address or name and the file path.

Configuration Summaries ⇓ Host File Access

```
file_access_1 DAP
file_host_name_1 _____
file_path_1 _____
```
Fill out Workbook line 64.

…………………………   ……

__   13. No host name or file path is used.

Configuration Summaries ⇓ Host File Access

```
file_access_1 SXP
```
Fill out Workbook line 63.

…………………………   ……

To Do	**xp.cnf File**	**Setup Menu Paths**

___ 14. Enter the file system name (for file_host_name) and the local directory (for file_path).

`file_access_2` <u>NFS</u>

`file_host_name_2` _____

`file_path_2` _____

Fill out Workbook line 4 and Workbook line 57.

Configuration Summaries ⇓ Host File Access

…………………………   ……

___ 15. Enter the host address or name and the file path.

`file_access_2` <u>TFTP</u>

`file_host_name_2` _____

`file_path_2` _____

Fill out Workbook line 56.

Configuration Summaries ⇓ Host File Access

…………………………   ……

___ 16. Enter the node address or name and the file path.

`file_access_2` <u>DAP</u>

`file_host_name_2` _____

`file_path_2` _____

Fill out Workbook line 64.

Configuration Summaries ⇓ Host File Access

…………………………   ……

___ 17. No host name or file path is used.

`file_access_1` <u>SXP</u>

Fill out Workbook line 63.

Configuration Summaries ⇓ Host File Access

…………………………   ……

___ 18. Enter the address or name of the XDMCP host.

`host_connect_method` <u>XDMCP</u>

`xdmcp_connect` <u>DIRECT</u>

`xdmcp_server` _____

Fill out Workbook line 61.

Configuration Summaries ⇓ X Environment

…………………………   ……

To Do	**xp.cnf File**	**Setup Menu Paths**

___	19. Enter the node address or name.
	    `host_connect_method` <u>`VMS`</u>
	    `vms_autologin_transport` <u>`TDENET`</u>
	    `vms_autologin_tdenet_host` _____`::`
	   Fill out Workbook line 67.
		Configuration
		Summaries
		⇓
		X Environment

	....	......

___	20. Enter the host address or name.
	    `host_connect_method` <u>`VMS`</u>
	    `vms_autologin_transport` <u>`TCPIP`</u>
	    `vms_autologin_tcpip_host` _____
	   Fill out Workbook line 61.
		Configuration
		Summaries
		⇓
		X Environment

	....	......
___	21. `host_connect_method TELNET` Fill out Workbook line 38.	Configuration Summaries ⇓ X Environment
	....	......
___	22. `host_connect_method CTERM` Fill out Workbook line 39.	Configuration Summaries ⇓ X Environment
	....	......
___	23. `host_connect_method LAT` Fill out Workbook line 9.	Configuration Summaries ⇓ X Environment
	....	......
___	24. `host_connect_method SERIAL0` Fill out Workbook line 40 and Workbook line 63.	Configuration Summaries ⇓ X Environment
	....	......

To Do	**xp.cnf File**	**Setup Menu Paths**
__	25. `host_connect_method SERIAL1` Fill out Workbook line 41 and Workbook line 63.	Configuration Summaries ⇓ X Environment
	....	......
__	26. host_connect_method <u>WINDD</u> Fill out Workbook line 49.	Configuration Summaries ⇓ X Environment
	....	......
__	27. `host_connect_method DISABLED`	Configuration Summaries ⇓ X Environment
	....	......

__	28. Enter the host address or name and path to the os file.
	`boot_method` <u>TFTP</u>
	`boot_host_name` _____
	`boot_path` _____
	If you have multiple families of network computers, replace the boot_path command with the applicable select commands.
	`select FAMILY=XP10  boot_path _____os.10`
	`select FAMILY=XP100 boot_path _____os.350`
	`select FAMILY=XP330 boot_path _____os.330`
	`select FAMILY=XP350 boot_path _____os.350`
	Fill out Workbook line 56.
		Configuration Summaries ⇓ Boot

	....	......

To Do	xp.cnf File	Setup Menu Paths

___	29. Enter the NFS read size and the path to the os file.
	`boot_method `<u>`NFS`</u>` _____`
	`boot_path _____`
	If you have multiple families of network computers, replace the boot_path command with the applicable select commands.
	`select FAMILY=XP10  boot_path _____os.10`
	`select FAMILY=XP100 boot_path _____os.350`
	`select FAMILY=XP330 boot_path _____os.330`
	`select FAMILY=XP350 boot_path _____os.350`
	Fill out Workbook line 57.
	
	…………………………
		Configuration
		Summaries
		⇓
		Boot
		
		……

___	30. Enter the path to the OS file.
	`boot_method `<u>`MOP`</u>
	`boot_path _____`
	If you have multiple families of network computers, replace the boot_path command with the applicable select commands.
	`select FAMILY=XP10  boot_path _____XP10_OS`
	`select FAMILY=XP100 boot_path _____XP350_OS`
	`select FAMILY=XP330 boot_path _____XP330_OS`
	`select FAMILY=XP350 boot_path _____XP350_OS`
	Fill out Workbook line 64.
	
	…………………………
		Configuration
		Summaries
		⇓
		Boot
		
		……

To Do	**xp.cnf File**	**Setup Menu Paths**
___	31. If you have an XP10 series with a ROM card (not a Flash Memory card) you can optionally read an *xp.cnf* file during subsequent boots by specifying a host address or name and path to the *xp.cnf* file.	Configuration Summaries ⇓ Boot

```
boot_method ROM
boot_host _____
boot_path _____
```

If you have multiple families of network computers, replace the boot_path command with the applicable select commands.

```
select FAMILY=XP10  boot_path _____os.10
select FAMILY=XP100 boot_path _____os.350
select FAMILY=XP330 boot_path _____os.330
select FAMILY=XP350 boot_path _____os.350
```

....

___	32. Enter the host address or name and path to the os file.	Configuration Summaries ⇓ Boot

```
boot_method_2 TFTP
boot_host_name_2 _____
boot_path_2 _____
```

If you have multiple families of network computers, replace the boot_path command with the applicable select commands.

```
select FAMILY=XP10  boot_path _____os.10
select FAMILY=XP100 boot_path _____os.350
select FAMILY=XP330 boot_path _____os.330
select FAMILY=XP350 boot_path _____os.350
```

Fill out Workbook line 56.

....

To Do	xp.cnf File	Setup Menu Paths

___ 33. Enter the NFS read size and the path to the os file.

```
boot_method_2 NFS _____
boot_path_2 _____
```

If you have multiple families of network computers, replace the boot_path command with the applicable select commands.

```
select FAMILY=XP10  boot_path _____os.10
select FAMILY=XP100 boot_path _____os.350
select FAMILY=XP330 boot_path _____os.330
select FAMILY=XP350 boot_path _____os.350
```

Fill out Workbook line 57.

Configuration
Summaries
⇓
Boot

....

___ 34. Enter the path to the OS file.

```
boot_method_2 MOP
boot_path_2 _____
```

If you have multiple families of network computers, replace the boot_path command with the applicable select commands.

```
select FAMILY=XP10  boot_path _____XP10_OS
select FAMILY=XP100 boot_path _____XP350_OS
select FAMILY=XP330 boot_path _____XP330_OS
select FAMILY=XP350 boot_path _____XP350_OS
```

Fill out Workbook line 64.

Configuration
Summaries
⇓
Boot

....

To Do	**xp.cnf File**	**Setup Menu Paths**

__ 35. If you have a Flash Memory card you can optionally read an *xp.cnf* file during subsequent boots by specifying a boot method other than ROM (either MOP, TFTP or NFS) and a host address or name and path to the *xp.cnf* file.

Configuration Summaries ⇓ Boot

```
boot_method_2 _____
boot_host_2 _____
boot_path_2 _____
```

If you have multiple families of network computers, replace the boot_path command with the applicable select commands.

```
select FAMILY=XP10   boot_path _____os.10
select FAMILY=XP100  boot_path _____os.350
select FAMILY=XP330  boot_path _____os.330
select FAMILY=XP350  boot_path _____os.350
```

....

__ 36. Set booting to be from a flash-equipped master network computer. Use the name or address of the master network computer.

Configuration Summaries ⇓ Boot

```
boot_method TFTP
boot_host _____
boot_path /rom/os.<model>
select TERMINAL NAME=___ enable_tftp_daemon YES
```

....

__ 37. Set booting to be from values stored in NVRAM, instead of values obtained from the network.

Configuration Summaries ⇓ Boot

```
determine_address_from NVRAM
```

....

__ 38. Enter the address or name of the default Telnet host.

Configuration Summaries ⇓ TCP/IP

```
default_telnet_host _____
```

....

To Do	**xp.cnf File**	**Setup Menu Paths**
___	39. Enter the address or name of the default CTERM node. `default_cterm_host` _____	Configuration Summaries $\Downarrow$ TDEnet
	....	......
___	40. Enter the parameters for Serial port 0. `data_bits_0` _____ `stop_bits_0` _____ `parity_0` _____ `flow_control_0` _____ `baud_rate_0` _____	Configuration Summaries $\Downarrow$ Peripheral Ports
	....	......
___	41. Enter the parameters for Serial port 1. `data_bits_1` _____ `stop_bits_1` _____ `parity_1` _____ `flow_control_1` _____ `baud_rate_1` _____	Configuration Summaries $\Downarrow$ Peripheral Ports
	....	......
___	42. `save_current_settings`	Not available
	....	......
___	43. Add an address or name for the XDMCP hosts to appear at the top of the TekHostMenu XDMCP list. `xdmcp_menu_entry` _____ `xdmcp_menu_entry` _____ `xdmcp_menu_entry` _____ Continue adding entries as needed.	Not available
	....	......

To Do	**xp.cnf File**	**Setup Menu Paths**

__   44. Add an address or name for all *preferred* nodes to appear at the top of the TekHostMenu VMS TDEnet list.

        Not available

```
vms_menu_entry TDEnet _____ PREF
vms_menu_entry TDEnet _____ PREF
vms_menu_entry TDEnet _____ PREF
```

Add an address or name for all other nodes to appear on the TekHostMenu VMS TDEnet list.

```
vms_menu_entry TDEnet _____ NOTPREF
vms_menu_entry TDEnet _____ NOTPREF
vms_menu_entry TDEnet _____ NOTPREF
```

Continue adding entries as needed.

………………………   ……

__   45. Add an address or name for all *preferred* nodes to appear at the top of the TekHostMenu VMS TCP/IP list.

        Not available

```
vms_menu_entry TCPIP _____ PREF
vms_menu_entry TCPIP _____ PREF
vms_menu_entry TCPIP _____ PREF
```

Add an address or name for all other nodes to appear on the TekHostMenu VMS TCPIP list.

```
vms_menu_entry TCPIP _____ NOTPREF
vms_menu_entry TCPIP _____ NOTPREF
vms_menu_entry TCPIP _____ NOTPREF
```

Continue adding entries as needed.

………………………   ……

To Do	xp.cnf File	Setup Menu Paths

___ 46. Add an address or name for all *preferred* hosts to appear at the top of the TekHostMenu TELNET list. Specify the emulator to use for the session (TEK220 or TEK340).

Network Tables and Utilities ⇓ Internet Host

```
telnet_menu_entry _____ PREF _____
telnet_menu_entry _____ PREF _____
telnet_menu_entry _____ PREF _____
```

Add an address or name for all other hosts to appear on the TekHostMenu TELNET list. Specify the emulator to use for the session (TEK220 or TEK340).

```
telnet_menu_entry _____ NOTPREF _____
telnet_menu_entry _____ NOTPREF _____
telnet_menu_entry _____ NOTPREF _____
```

Continue adding entries as needed.

…………………………   ……

___ 47. Add an address or name for all *preferred* nodes to appear at the top of the TekHostMenu CTERM list. Specify the emulator to use for the session (TEK220 or TEK340).

Network Tables and Utilities ⇓ TDEnet Host

```
cterm_menu_entry _____ PREF _____
cterm_menu_entry _____ PREF _____
cterm_menu_entry _____ PREF _____
```

Add an address or name for all other nodes to appear on the TekHostMenu CTERM list. Specify the emulator to use for the session (TEK220 or TEK340).

```
cterm_menu_entry _____ NOTPREF _____
cterm_menu_entry _____ NOTPREF _____
cterm_menu_entry _____ NOTPREF _____
```

Continue adding entries as needed.

…………………………   ……

To Do	**xp.cnf File**	**Setup Menu Paths**

___ 48. Add an address or name for all *preferred* IBM hosts to appear at the top of the TekHostMenu IBM list. Specify the emulator to use for the session (TEK220 or TEK340), the model (2, 3, 4, 5), and the protocol (TN or OCS).

Not available

```
ibm_menu_entry _____ PREF _____ __ ____
ibm_menu_entry _____ PREF _____ __ ____
ibm_menu_entry _____ PREF _____ __ ____
```

Add an address or name for all other IBM hosts to appear on the TekHostMenu IBM list.

```
cterm_menu_entry _____ NOTPREF _____ __ ____
cterm_menu_entry _____ NOTPREF _____ __ ____
cterm_menu_entry _____ NOTPREF _____ __ ____
```

Continue adding entries as needed.

…………………………   ……

___ 49. Add an address or name for all *preferred* WinDD servers to appear at the top of the TekHostMenu WinDD list. Specify the window size to use for the session (640, 800, 1024, 1280), whether to reconnect after a session log off (NORECONNECT, RECONNECT), and whether to display the menubar (MENUBAR, NOMENUBAR).

Not available

```
windd_menu_entry _____ PREF __ _____ _____
windd_menu_entry _____ PREF __ _____ _____
windd_menu_entry _____ PREF __ _____ _____
```

Add an address or name for all other WinDD servers to appear on the TekHostMenu WinDD list.

```
windd_menu_entry _____ NOTPREF __ _____ ____
windd_menu_entry _____ NOTPREF __ _____ ____
windd_menu_entry _____ NOTPREF __ _____ ____
```

Continue adding entries as needed.

…………………………   ……

To Do	<u>xp.cnf File</u>	Setup Menu Paths
___	50. Add the name or address and configuration information for the WinDD server when the *host_connect_method* is set to WINDD. *windd_size* can be 640, 800, 1024, 1280). *windd_auto_connect*, *windd_auto_reconnect*, and *windd_entrybox* can be set as ENABLED or DISABLED. *windd_menubar* can be set as YES or NO.	Not available

```
windd_host_name _____

windd_size _____

windd_auto_connect _____

windd_auto_reconnect _____

windd_menubar _____

windd_entrybox _____
```

<div align="center">

....

</div>

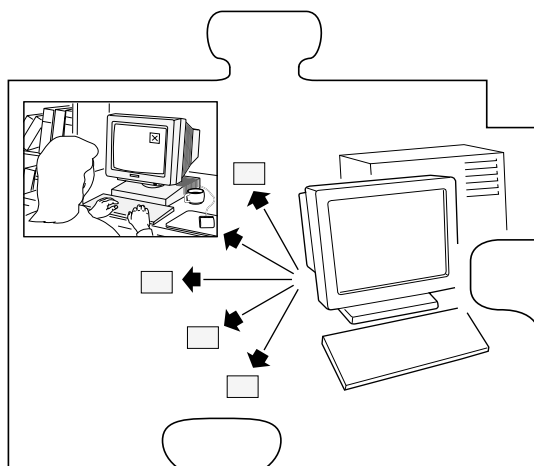| To Do	*.tbl Files	Setup Menu Paths
___	51. Edit the *gateway.tbl* file and enter as many additional gateways as needed.	Network Tables and Utilities ⇓ Gateway
	………………………	……
___	52. Edit the *hosts.tbl* file and enter as many additional hosts as needed.	Network Tables and Utilities ⇓ Internet Host
	………………………	……
___	53. Edit the file *nodes.tbl* and enter as many additional nodes as needed.	Network Tables and Utilities ⇓ TDEnet Host
	………………………	……
___	54. Edit the *nfs.tbl* file and enter as many additional NFS mounts as needed.	Network Tables and Utilities ⇓ NFS Mount
	………………………	……
___	55. Edit the *fonts.tbl* file and enter the directory paths (Example: *TEK$XP_FONTS:100DPI/tekxp/boot/fonts/misc)*. _____ _____ _____ _____	Network Tables and Utilities ⇓ Font Directory
	………………………	……

To Do	**Host Configuration Procedures**
___	56. Enable tftp on the host (see Chapter 5)
	……………………
___	57. Enable NFS on the host (see Chapter 5)
	……………………
___	58. Enable bootp on the host (see Chapter 5)
	……………………
___	59. Enable DHCP on the host (see Chapter 5)
	……………………
___	60. Enable rarp on the host (see Chapter 5)
	……………………
___	61. Enable XDM on the host (see Chapter 5)
	……………………
___	62. Add network computer entries to */etc/host* file
	……………………
___	63. Set up Serial Xpress (see the *Serial Xpress User* manual)
	……………………
___	64. Enable MOP on the host (see Chapter 5)
	……………………
___	65. Add the nodes to the NCP database (see Chapter 5)
	……………………
___	66. Create Proxy accounts on the host (see Chapter 5)
	……………………
___	67. Enable DECwindows on the host (see Chapter 5)
	……………………
___	68. Install WinDD on the Windows NT server.
	……………………

Chapter 3   Making Choices

Chapter *4*

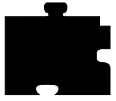## *Building a Centralized System*

This chapter contains instructions for modifying the centralized configuration files. These files are the key to building a centralized system based on your computing resources, applications, and users' needs.

All of the files do not need to be edited. Complete the Workbook in Chapter 3 to help determine which files need to be edited.

The first file is *xp.cnf*, the remote configuration file. It is located in: TEK$XP_CONFIG:XP.CNF. One key element of the *xp.cnf* file is to provide the path (*file_path_1* or *file_path_2*) to the other configuration files:

- *Gateway Table (gateway.tbl)* maps network addresses to gateway routers

- *Internet Host Table (hosts.tbl)* maps internet addresses and host names

- *TDEnet Node Table (nodes.tbl)* maps TDEnet addresses and node names

- *NFS Table (nfs.tbl)* maps NFS mount points to local directory structures

- *Font Path Table (fonts.tbl)* contains font directory paths

- *Color Table (rgb.txt)* maps colors to X server RGB color specifications
- *Display Access Table (xhosts.tbl)* lists hosts that can access the network computer

These files are read in the order listed. The files are unloaded in the directory TEK$XP_CONFIG. You must specify a primary or secondary file path in the remote configuration file in order for the network computer to locate these files.

Remote Configuration Commands

This section lists all the commands available in the *xp.cnf* file. For complete information on the commands, refer to the comments in the actual file, or to Chapter 2 of the *Network Computer Reference* Manual.

> *NOTE: If you previously had an xp330.cnf file, either rename it to something else, or remove it. It will no longer be read.*

Network Tables

clear_table clears the entries in the specified NVRAM table

ip_host_table stores TCP/IP information for up to four hosts in NVRAM

tde_host_table stores DECnet information for up to four nodes in NVRAM

gateway_table stores TCP/IP information for up to four gateways in NVRAM

nfs_table stores information for up to four NFS mounts in NVRAM

ip_host_entry stores subsequent TCP/IP host information in RAM

tde_host_entry stores subsequent DECnet node information in RAM

gateway_entry stores subsequent TCP/IP gateway information in RAM

nfs_entry stores subsequent NFS mounts in RAM

lat_service_entries is used to reserve LAT service entries for network computer use

lat_services_table is used in environments supporting the LAT protocol

File Host Configuration

file_access_1 specifies the access method for the primary host
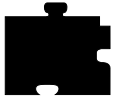
file_host_name_1 specifies the primary host

file_path_1 specifies the configuration files location on the primary host

file_access_2 specifies the access method for the secondary host

file_host_name_2 specifies the secondary host

file_path_2 specifies the configuration files location on the secondary host

Environment Configuration

retain_x_settings controls whether X settings are saved when the server resets after the last client is closed (**YES**)

backing_store specifies whether the network computer saves pixels when a window is obscured or unmapped (**ENABLED**)

dual_display_configuration specifies the position of multiple displays (**HORIZONTAL**)

display_access_table specifies a display access host table entry

enable_access_control specifies whether to restrict client access to the network computer (**NO**)

default_visual sets the visual type for the root window (**PSEUDOCOLOR** for color network computers and **GRAYSCALE** for gray scale network computers)

host_connect_method sets the network computer to host connection (**XDMCP**)

default_host_list specifies the hosts displayed on the TekHostMenu client

xdmcp_connect specifies an additional connection method for **xdmcp** (**BROADCAST**)

xdmcp_keepalive sets whether keepalive requests are sent to **xdm** (**OFF**)

xdmcp_server specifies the **xdmcp** server host (used if *xdmcp_connect* is **DIRECT** or **INDIRECT**)

vms_autologin_transport specifies the network protocol to use to autoconnect to a VMS host (used if *host_connect_method* is **VMS**)

vms_autologin_tdenet_host specifies the VMS host for DECnet X11 autologin (used if *host_connect_method* is **VMS**)

vms_autologin_tcpip_host specifies the VMS host for TCP/IP X11 autologin (used if *host_connect_method* is **VMS**)

screen_saver controls whether the screen blanks if the keyboard and mouse are inactive for 10 minutes (**ON**)

enable_xie specifies whether the XIE (X Imaging Extension) option is used to add image enhancements and display operations to applications

enable_xv specifies whether the X Video Server Extension is enabled

old_decwin_compatible supports old DECwindows clients that expect bitmap and image data in least significant byte (LSB) order (**NO**)

vendor_string specifies that a VT200/LK401 keyboard is used with a DEC system using DECwindows applications

font_cache_limit sets the amount of memory to allow for the font cache

Boot Configuration

boot_method specifies one of four boot methods: **TFTP, NFS, MOP,** or **ROM**

boot_host_name specifies the host where the boot files are located

boot_path specifies where the boot files reside

boot_method_ 2 specifies the secondary boot method

boot_host_name_2 specifies the secondary host

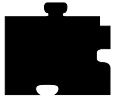*boot_path_2* specifies the secondary boot path

determine_address_from specifies whether the network computer determines its internet protocol address from the network or from NVRAM

boot_delay controls whether the network computer waits before requesting boot files to avoid overloading the host during a simultaneous boot

verbose_boot_msg specifies if filenames are displayed during booting

enable_boot_interrupt controls whether the boot process can be interrupted by a user (**YES**)

boot_config_type specifies (limits) the methods used by the network computer to obtain boot information when booting from the network

TCP/IP Configuration

netstation_name specifies the name of the network computer, if used

subnet_mask specifies the mask used for subnet addresses

broadcast_address specifies the IP address used for broadcasts

enable_broadcasts specifies whether the network computer responds to broadcasts (**YES**)

default_telnet_host specifies the telnet host

name_server_1,_2,_3 specifies the primary and two backup name servers

enable_name_service controls whether name service is used (default **NO**)

default_domain_suffix specifies the default domain for name service requests

TDEnet Configuration Parameters

tdenet_netstation_name specifies the name of the TDEnet network computer

default_cterm_host specifies the default host for a Cterm session

enable_trigger_reboot specifies whether the network computer reboots when the NCP TRIGGER command is executed

trigger_reboot_password specifies the password used with the NCP TRIGGER command

tdenet_connect_timer specifies the time between TDEnet connection attempts

tdenet_hello_timer specifies the time interval between hello packets

tdenet_inactivity_timer specifies the inactivity time on an established connection before a keepalive packet is sent to the remote node

tdenet_retransmit_limit specifies the number of times a packet requiring acknowledgment is transmitted on an established connection

tdenet_mop_id_timer specifies the interval between MOP identification packets

Serial Port Configuration Parameters

data_bits_0 specifies the number of data bits for Port 0

stop_bits_0 specifies the number of stop bits for Port 0

parity_0 specifies the parity for Port 0

flow_control_0 specifies the flow control for Port 0

baud_rate_0 specifies the baud rate for Port 0

tty_abort_session_0, 1 specifies whether open serial session windows exit or remain open if the serial line is physically disconnected from the network computer

delay_rts_signal_0 specifies whether the RTS signal is delayed until the serial session is started

data_bits_1 specifies the number of data bits for Port 1

stop_bits_1 specifies the number of stop bits for Port 1

parity_1 specifies the parity for Port 1

flow_control_1 specifies the flow control for Port 1

baud_rate_1 specifies the baud rate for Port 1

Net to Port Configuration

disable_net_to_port disables direct access to the serial and/or parallel ports

enable_net_to_port enables direct access to the serial and/or parallel ports

define_net_port redefines the port number that the *net_to_port* command listens to

net_to_port_protocol specifies a port, its network protocol, and socket number

net_to_port_connections controls the number of net to port connections

Keyboard Configuration Parameters

language specifies the language used for *Setup* fields and messages

keyboard_type specifies the type of keyboard in use

keyboard_language specifies the language of the keyboard

dp_mode specifies whether a VT200 keyboard is in data processing mode

compose_sequences specifies whether compose sequences are loaded

key_map_file specifies a custom keyboard

keymap_file_list_entry specifies a custom keyboard file and identification

keysym_action_entry specifies a key to cause an action on a keyboard

keyboard_repeat_rate specifies the how many characters are repeated per second, when a key is held down

keyboard_repeat_delay specifies the delay time between when the first character displays after a key press and when it starts repeating

control_alt_delete specifies the function of the Control, Alt, and Delete keys

alt_printscreen specifies what action is taken when the Alt+Printscreen keys are pressed
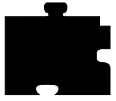
Input Extensions Configuration Parameters

touchSc_Min_X sets the screen left edge boundary for the touch screen

touchSc_Min_Y sets the screen lower edge boundary for the touch screen

touchSc_Max_X sets the screen right edge boundary for the touch screen

touchSc_Max_Y sets the screen upper edge boundary for the touch screen

touchSc_Down_Threshold specifies the button press for the touch screen

touchSc_Up_Threshold specifies the button release for the touch screen

tablet_Min_X specifies the left edge boundary of the tablet

tablet_Min_Y specifies the upper edge boundary of the tablet

tablet_Max_X specifies the right edge boundary of the tablet

tablet_Max_Y specifies the lower edge boundary of the tablet

lightpen_Min_X specifies the left edge boundary for the light pen

lightpen_Min_Y specifies the upper edge boundary for the light pen

lightpen_Max_X specifies the right edge boundary for the light pen

lightpen_Max_Y specifies the lower edge boundary for the light pen

enable_lightpen enables the lightpen calibration client

lightpen_Flood specifies that a blue color replaces dark or opaque display color

input_ext_config_file_0 specifies the device specific configuration file to use for input extensions for port 0

input_ext_config_file_1 specifies the device specific configuration file to use for input extensions for port 1

core_device_type specifies up to three input devices

enable_mouse_2 specifies that a non-logitech mouse (or compatible) is used with the network computer

pointer_control controls the pointer parameters for speed and distance moved

SNMP Configuration

snmp_trap_list specifies the host trap list for SNMP

snmp_comm_list specifies the host and community string for SNMP **GET**, **GETNEXT**, and **SET** operations

Token-Ring Interface

mtu specifies the maximum transmission unit

Local Clients

start downloads and starts local clients at boot time

preload downloads clients at boot time, but does not start them

start_session downloads session clients at boot time

LAT Configuration

lat_keepalive_timer specifies the amount of time between keepalive messages (default 20)

lat_connect_timer specifies the amount of time between service connection attempts before the connection attempts are terminated (default 16)

lat_retransmit_timer specifies the amount of time between retransmission attempts (default 200)

lat_circuit_timer specifies the message interval (default 80)

lat_retransmission_limit specifies the retransmission number (default 8)

add_lat_group_codes specifies the recognized group codes (default 0)

delete_lat_group_codes specifies codes to ignore and delete (default 0)

Miscellaneous Functions

unsupported_feature_warnings specifies whether warning messages appear if a valid but unsupported command is encountered by the network computer

restricted_setup determines whether a password is required to access many *Setup* fields

setup_password is used to set the password for restricted *Setup*

save_current_settings controls whether the settings downloaded from the remote configuration file are saved in NVRAM

Including Other Configuration Files

include_host_access specifies a host and file access method if you are reading a remote configuration file from a host other than the boot host

include specifies the remote configuration file name

select specifies selected network computers to execute a specific remote configuration file command

Restricting Configuration Parameters

select command allows selected network computers to execute a specific remote configuration file command

Tek220 and Tek340 Configuration

num_col specifies the number of columns to display

autowrap sets whether a line wraps to the next line or truncates

rev_video specifies the foreground and background colors

cursor_style sets the cursor to a block or underscore

emulation specifies different levels of emulation

dev_attr_resp controls the emulator's device attribute response to the host

user_features controls preferences and whether or not applications can change them

keypad_mode specifies the keypad mode: standard numeric or application-specific

cursor_key_mode specifies the cursor key mode: standard ANSI cursor control or application-specific

newline_mode specifies what happens when Return is pressed

autorepeat specifies whether auto repeat is enabled

answerback specifies the response to a host ENC command

tekterm_resource_control specifies where the Tek220 and Tek340 emulators find configuration settings for the menubar and reverse colors

tekterm_menubar specifies whether the emulator has a menubar displayed at the top of the Tek220 and Tek340 window

reverse_ansi_colors specifies whether the ANSI colors on the Tek220 and Tek340 emulator are displayed in reverse-video

Black and White Pixel Compatibility

black_pixel specifies whether clients use the X server BlackPixel and WhitePixel values, or the values 0 and 1 to represent black and white. This command is typically only needed in Sun environments.

Flash Memory Configuration

do_flash writes the *flash_features* to the network computer's flash memory

flash_console determines the console to receive flash messages

flash_do_not_compress specifies that files written to flash memory are not compressed (otherwise, files are automatically compressed)

flash_feature determines which features are to be written to flash memory

TekHostMenu Configuration

xdmcp_menu_entry specifies preferred host names to be displayed by the *TekHostMenu* client. Preferred hosts are first on the list of hosts that respond to an *xdmcp* broadcast when the **XDMCP** button is selected.

thm_broadcast specifies whether the TekHostMenu client automatically broadcasts to the local subnet for XDM hosts

thm_entrybox specifies whether the Host Name field displays at the bottom of the *TekHostMenu* client

vms_menu_entry specifies a list of VMS hosts to be displayed by the *TekHostMenu* client when one of the **VMS** buttons is selected

telnet_menu_entry specifies a list of Telnet hosts to be displayed by the *TekHostMenu* client when the **TELNET** button is selected

cterm_menu_entry specifies a list of CTERM hosts to be displayed by the *TekHostMenu* client when the **CTERM** button is selected

ibm_menu_entry specifies a list of IBM hosts to be displayed by the *TekHostMenu* client when the **IBM** button is selected

windd_menu_entry specifies a list of WinDD servers to be displayed by the *TekHostMenu* client when the **WinDD** button is selected

lat_menu_emulator specifies that a TEK220 or TEK340 emulator session starts when a user connects to a LAT service from the *TekHostMenu* LAT list

PEX_force_dither specifies whether the network computer overrides the dithering setting of PEX

Local Print Spooler/Printing Configuration

enable_print_spooler enables the local print spooler

spooler_size reserves memory for use with the spooler

spooler_listen_port specifies the TCP port on which the spooler listens for and accepts print requests

spooler_local_queue defines a printer queue name for the specified port

spooler_remote_queue defines a local printer queue name that forwards print requests to a printing via a remote queue

spooler_auth_host specifies hosts that are allowed print queue access

spooler_auth_user specifies users that are allowed print queue access

DEC Session Manager Configuration

dec_sme_resetserver specifies whether the server is reset when the DEC Session Manager quits

TFTP Daemon

enable_tftp_daemon specifies whether the tftp daemon is enabled for a master network computer used to boot other network computers via Flash memory.

Telnet Logout Configuration

telnet_exit_on_logout specifies whether Telnet quits when you log out from a host in a Telnet local client

Analog Video Configuration

video_source_label specifies the analog video source label, if used

video_source specifies the analog video source

video_attribute_group specifies that a particular group of attributes is associated with a video source

video_visual_preference video attributes can be set for a single video source, or can be created in a group of multiple attributes and then assigned to video sources

video_encoding specifies how the video signals are encoded on the cable

video_volume specifies the analog video volume when playing a video

video_switch specifies the video appearance settings when played in the video window

video_field_duplicate specifies whether field duplication takes place

video_window_size specifies the size of the video window

video_window_position specifies the position of the video window on the display

Remote Console

enable_remote_logging specifies the console log messages are sent to a log file

loghost specifies the remote host to receive console messages

logfacility specifies the type of log message

logpriority specifies the priority level for the console messages

console_pages specifies the number of pages in the console buffer

WinDD Configuration

default_windd_host specifies the WinDD host to connect to when you invoke *WinDD* from the *Client Launcher*

windd_host_entry specifies the name or address of a WinDD server

windd_size specifies the size (resolution) of the WinDD window

windd_auto_connect specifies whether to automatically connect to a server

windd_auto_reconnect specifies whether to reconnect to a server after logging out of a session

windd_menubar specifies whether to display the WinDD window menubar

windd_entrybox specifies whether to display the WinDD entry box

XBlink Configuration

enable_xblink enables the XBlink extension client

Update Authorization Keys

update_authkey specifies that the network computer reads the *authkey.dat* file when booting and updates specified network computer's authorization keys

RSHD Configuration

rshd_security specifies from where the *.rhosts* file is read when using rsh

Hardware MPEG Configuration

hwmpeg_dbsize specifies the size of the Video Player's memory buffer used when playing mpeg files

hwmpeg_chunksize specifies whether the Video Player's memory buffer is divided into "chunks"

hwmpeg_chunkdelay specifies how long the Video Player waits after each read request fills a memory chunk in the buffer

CSLIP Configuration

slip_compression specifies whether TCP/IP headers are compressed using Van Jorgenson compression while sending and receiving data

slip_serial_port specifies the network computer's port number on which to use CSLIP

slip_dest_ip specifies the host to which you are connecting. You can enter the host name, or its address

slip_src_ip specifies the network computer's name or IP address used with CSLIP

slip_mtu specifies the maximum transmission unit for data transmission

slip_mask specifies the subnet mask used for the CSLIP session

slip_def_route specifies whether the destination IP address (entered with the *slip_dest_ip* command) is added as the gateway default in the gateway table

Script Variable Configuration

script_variable defines variables and values used with the Scripting Language scripts

Serial Xpress Configuration

sxp_listen_port specifies where to start the Serial Xpress session that is started with a script

auto_load_sxp loads *sxptask* necessary for starting Serial Xpress with a script

Gateway Table Commands

All gateway information can now be added directly to the remote configuration file (*xp.cnf*). The applicable commands are *gateway_table*, to add up to four of the most frequently accessed gateways to the network computer's NVRAM, and *gateway_entry*, to add subsequent gateways that are stored in RAM.

The older method of using the gateway table is still available for this release.

The gateway table, *gateway.tbl*, can be used to hold gateway router information in addition to what is stored in NVRAM. Entries are added to NVRAM through the *gateway_table* command in the *xp.cnf* file, or through *Setup* on the network computer. Typically, you would store frequently accessed gateways in NVRAM.

Each network is mapped to a corresponding gateway host as follows:
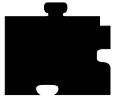
1. Edit the *gateway.tbl* file.

2. Specify gateway entries as necessary.

   ```
   network_address gateway_address
   ```

A gateway table might look like the following example. The first entry is the default gateway; its address is `128.07.60.100`, and it routes all non-local traffic that is not explicitly matched by another gateway entry. The special entry `0.0.0.0` matches all possible networks and is used to set the default gateway when no other specified gateway matches. The second entry lets the network computer access network `10` through the machine with address `128.07.60.110`.

   ```
    0.0.0.0    128.07.60.100
   10.0.0.0    128.07.60.110
   ```

   NOTE: If you have multiple routers, you can use the Route Manager to automatically re-route information if a router goes down. The Route Manager is started with the xp.cnf start command.

Internet Host Table Commands

All internet host information can now be added directly to the remote configuration file (*xp.cnf*). The applicable commands are *ip_host_table*, to add up to four of the most frequently accessed hosts to the network computer's NVRAM, and *ip_host_entry*, to add subsequent hosts that are stored in RAM.

The older method of using the internet host table is still available for this release.

The internet host table, *hosts.tbl*, maps host names to their corresponding IP addresses. You can refer to the hosts listed in this table by name in subsequent configuration files (see ordered list at the beginning of this chapter), *Setup,* or in a *Telnet* session.

The *hosts.tbl* entries are in addition to what is stored in NVRAM. Entries are added to NVRAM through the *ip_host_table* command in the *xp.cnf* file, or through *Setup* on the network computer. Typically, you would store frequently accessed gateways in NVRAM.

To add entries to the *hosts.tbl* file:

1. Edit the *hosts.tbl* file.

2. Specify internet protocol addresses and hostnames as necessary.

```
internet_address hostname
```

The internet host table uses the same format as a standard UNIX */etc/hosts* file. The alias portion of the file format is not supported in this version of the network computer. The host table can be a copy of */etc/hosts* or a symbolic link to it. If you use NFS, it can only follow symbolic links within the exported directory. For example, if */* is exported, */etc* can be found, whereas if */usr* is exported, */etc* is not available.

> ***NOTE: With secure tftp, symbolic links do not work outside the secure directory. See Chapter 1 for more information.***

An example *hosts.tbl* might look like:

```
# Internet Protocol Host entries:
128.07.60.10    washington
128.07.60.11    nevada
128.07.60.12    arizona
```

TDEnet Node Table Commands

All TDEnet node information can now be added directly to the remote configuration file (*xp.cnf*). The applicable commands are *tde_host_table*, to add up to four of the most frequently accessed hosts to the network computer's NVRAM, and *tde_host_entry*, to add subsequent hosts that are stored in RAM.

The older method of using the TDEnet host table is still available for this release.

The TDEnet node table, *nodes.tbl*, maps node names to their corresponding TDEnet addresses. This table is only used for network computers enabled with TDEnet. You can refer to the nodes listed in this table by name in subsequent configuration files (see ordered list at the beginning of this chapter), *Setup*, or in a *Cterm* session.

The *nodes.tbl* entries are in addition to what is stored in NVRAM. Entries are added to NVRAM through the *tde_host_table* command in the *xp.cnf* file, or through *Setup* on the network computer. Typically, you would store frequently accessed gateways in NVRAM.

To add entries to the *nodes.tbl* file:

1. Edit the *nodes.tbl* file.

2. Specify TDEnet addresses and nodenames as necessary.

   ```
   decnet_address:: nodename::
   ```

An example *nodes.tbl* might look like:

```
# TDEnet Node entries:
11.22::       alaska::
11.23::       hawaii::
11.24::       texas::
```

NFS Table Commands

All NFS mount information can now be added directly to the remote configuration file (*xp.cnf*). The applicable commands are *nfs_table*, to add up to four of the most frequently mounts to the network computer's NVRAM, and *nfs_entry*, to add subsequent mounts that are stored in RAM.

The older method of using the NFS host table is still available for this release.

The NFS table, *nfs.tbl*, specifies a host and directory (*hostname:/directory*) and the corresponding local path name (*path*) to be used by the network computer. This table is frequently used to access additional fonts.

The *nfs.tbl* entries are in addition to what is stored in NVRAM. Entries are added to NVRAM through the *nfs_table* command in the *xp.cnf* file, or through *Setup* on the network computer. Typically, you would store frequently accessed mounts in NVRAM.

A transfer size can be specified for each mount point. Transfer sizes can be in the range of 128 to 8192.

To add entries to the *nfs.tbl* file:

1. Edit the *nfs.tbl* file.

2. Add NFS directories as follows:

```
# Format "hostname:directory" "path" "size"
oregon:/usr                      /usr              8192
montana:/usr/tekxp/boot/fonts    /u1/tekxp/fonts   1024
arizona:/mydir/special/fonts     /myfonts          512
nevada:/usr3/tekxp/XP/fonts      /usr3/tekxp       512
```

Font Path Table Commands

The font path table, *fonts.tbl*, specifies the full path names of additional font directories that the network computer searches when looking for font files. These directories are added to the default font path for the X server before the boot directory and resident paths. The font path table allows the network computer to automatically locate font directories at boot time. If a font directory is in *fonts.tbl*, the user does not need to issue the **xset +fp** command during login to access that font; the X server on the network computer knows where to locate the fonts when a client requests them.
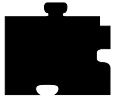
The fonts are not downloaded at boot time, but each font directory is searched for a *fonts.dir* and *fonts.alias* file. A long list of entries in *fonts.tbl* increases the boot time and uses network computer memory that could otherwise be used for windows and local clients. The *fonts.tbl* file should only list font directories used regularly. Comment lines are allowed.

To add a font path:

1. Edit the *fonts.tbl* file. No comment lines are allowed.

2. Add one font directory path per line. If the fonts are installed in TEK$XP_FONTS:, the *fonts.tbl* file may look like this:

```
TEK$XP_FONTS:[75DPI]
TEK$XP_FONTS:[100DPI]
```

For information about using DECwindows fonts, refer to Chapter 5, *Supporting a Centralized Configuration.*

Color Table Commands

The color table, *rgb.txt,* contains the RGB color specifications and the corresponding color names for the X server in the network computer. By modifying the file *rgb.txt*, you can change or add color names and definitions available to X clients. No comments are allowed. Some example entries are:

```
255 250 250      snow
248 248 255      ghost white
245 245 245      white smoke
```

Display Access Table Commands

The display access table, *xhosts.tbl*, contains entries for all hosts that are allowed access to the X server of the network computer. The entries specified in this file do not have the ability to change access control or modify the access list. Only the entries specified with the *display_access_table* commands in the remote configuration file can change the access control and access list. Entries can be added as follows:

1. Edit the *xhosts.tbl* file

2. Specify the host names and node names, or internet protocol addresses and node numbers as necessary

   NOTE: If running the DECwindows session manager, settings in the xhosts.tbl are overridden (the DECwindows session manager controls display access).

Entries that end with two colons are DECnet nodes.Use two colons to specify TDEnet node names. Comment lines are allowed. Using the entries from the previous *hosts.tbl* and *nodes.tbl* examples, the *xhosts.tbl* looks like this:

```
washington
128.07.60.11
arizona
alaska::
hawaii::
11.24::
```

NOTE: If the host-based xlock does not work, add the host's IP address to the display access table, then run xlock again. To decrease network use, use the local xlock client.

Chapter **5**

Supporting a Centralized System
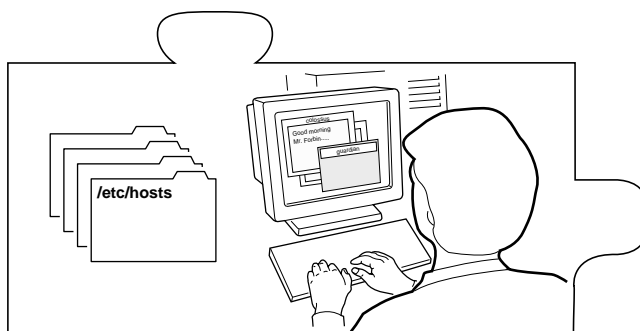
This chapter contains instructions for setting up the necessary operating system support files. The values selected in the remote configuration file dictate the operating system files that must be enabled, created, or modified.

The examples provided in this section assume the use of a DECnet network using MOP and DAP for file transfer.

- Ensure that MOP and DECnet are enabled. MOP and DECnet must be available and enabled, unless you are booting a ROM-based network computer that does not require host-resident files.

  NOTE: Even though DECnet is configured and started on the host, DECnet will not operate on the network unless it is licensed. See the DEC publication, Guide to DECnet-VAX Networking, for information on how to configure DECnet.

- Decide which network access method will be set up on the VAX to support the software files. Access of files over the network is required to boot the software. One of the following network access methods must be established. These methods are listed in decreasing security order (Proxy being the most secure).

- A Proxy login, used to permit users access to particular accounts on the VAX. When the remote user is assigned a proxy account on the VAX that maps to a local user account, the product assumes the same access privileges as the owner of the local account. This method validates network access for each individual product. Using Proxys is the most secure method of access between network computer nodes on a VAX network.

    A detailed example of verification and creation of Proxy file access appears under *Enabling Network Access* in this section.

- FAL (File Access Listener), used to validate requests from any remote node (XP or host) to allow local files on the VAX to be accessed by all other nodes.

- A default DECnet account, used for allowing access of all nonprivileged network activities.

• Add nodes to the NCP Database:

  $ **@TEK$TOOLS:TEKXP_ADD**

  For information about adding nodes to the NCP database, refer to the *Adding Nodes to the NCP Database* section later in this chapter.

• Enable *XIE* to run XIE applications.

• Download and start specified local clients.

• Configure and start the *Client Launcher* local client.

• Optionally start local Motif Window Manager from within DECwindows

• Update authorization keys of one or more network computers using the *Authorization Key Manager* client.

• Set up the XPT/A Graphics Tablet. The tablet provides a way to input graphics into your network computer application. This step is optional.

• Enable XBlink to use the XBlink extension

• Use the Touchscreen Calibration client to calibrate the touchscreen

Enabling Network Access

Start the host-configuration process by verifying the licensed operation of DECnet and the availability of MOP. On DECnet networks, network computers are configured by default to use MOP for file transfers from the host.

1. Verify the existence of a registered DECnet license by entering:

   $ **SHOW LICENSE DVNET***

2. Verify that DECnet is up and running by entering:

   $ **SHOW NETWORK**

3. Check that service operations are allowed on the host circuit where the network computers connect for the boot files by entering:

   $ **MCR NCP SHOW KNOWN CIRCUIT CHARACTERISTICS**

   The host responds with the following report:

```
Known Circuit Volatile Characteristics as of 25-OCT-1990 17:03:17
                 Circuit   =   QNA-0

                   State   =   on
                 Service   =   enabled

       Designated router   =   57.1 (R61B)
                    Cost   =   4
 Maximum routers allowed   =   33
          Router priority  =   64
             Hello timer   =   15
                    Type   =   Ethernet
           Adjacent node   =   57.1 (R61B)
             Listen timer  =   45
```

   Check the report to ensure that State = on and that Service = enabled. If Service is disabled, enable it in both the volatile and permanent databases using the following command sequence.

>>> *CAUTION: The following command sequence turns off DECnet in order to enable the service state. DECnet connections that are active when the state switches to OFF will probably terminate. Please use this command sequence with caution.*

```
$ MCR NCP
NCP>SET CIRCUIT circuit-id STATE OFF
NCP>SET CIRCUIT circuit-id SERVICE ENABLED
NCP>DEFINE CIRCUIT circuit-id SERVICE ENABLED
NCP>SET CIRCUIT circuit-id STATE ON
NCP>EXIT
```

4. Verify that DECnet network objects are known by entering:

```
$ MCR NCP SHOW KNOWN OBJECTS
```

Look to see that FAL and $MOM are listed.

5. Set up DECnet file access using one of the following supported types of access control. (See the DEC publication *VMS Authorize Utility Manual* for additional details.)

- *Proxy login* provides the highest level of system security implemented in the network computer and is the recommended type of access control. To provide network proxy login access for the network computers, you must create proxy entries as described in the DEC publication, *Guide to DECnet-VAX Networking*. As an example, the following commands create default proxy entries mapping the user on the network computer nodes:

```
$ SET DEFAULT SYS$SYSTEM
$ RUN AUTHORIZE
UAF> ADD/PROXY <XP-node-name>::TEKXPRESS <user account> /DEFAULT
UAF> EXIT
```

(where *<user account>* is a valid login account.)

NOTE: You can also set up a proxy record using the TEK$TOOLS:MAINTAIN_TEKXPRESS_ACCT.COM command procedure included on the media. This command procedure also creates a local proxy account in addition to setting up an account.

- *FAL (File Access Listener)* default user access, make sure that the user id and password are set on the FAL object and that they match a valid, active account. Use the command **$MCR NCP SHOW OBJECT FAL CHARACTERISTICS** to check the user id and password information; use the **AUTHORIZE** utility to modify the account. (To use this command, you must have Bypass privilege.)
- *Node/executor user access* ensures that the non privileged user id and password are set for the executor and that they match a valid, active account. Use the command **$MCR NCP SHOW EXECUTOR CHARACTERISTICS** to check the non-privileged user id and non-privileged password information; use the **AUTHORIZE** utility to modify the account.

Adding Nodes to the NCP Database

During the VMSINSTAL procedure, you are prompted to enter node information. To add additional nodes, enter the following command:

$ **@TEK$TOOLS:TEKXP_ADD.COM**

This command procedure is provided on the media as a utility to assist you in adding network computer DECnet node information to your permanent and volatile NCP databases. **TEK$TOOLS:TEKXP_ADD.COM** adds the DECnet node name, node address, hardware ethernet address, and XP boot file name for your network computer model (*XP10_OS.SYS*, *XP330_OS.SYS, or XP350_OS.SYS*). During the VMSINSTAL phase, this command procedure is executed, giving you the opportunity to add nodes. You can add additional node information at any time using this command. The following prompts are included in the install script:

```
Do you want to enter new DECnet nodes now (Y/N)? [Y]
Entering a ^Y at any time will safely exit this command
procedure.
...
Enter DECnet name of the XP (1-6 characters) [   ] :
Enter the DECnet address; or ? to list current node
entries [   ] :
Enter the XP hardware ethernet address [   ] :
Enter the XP boot filename [ XP350_OS.SYS ] :

Is this correct? [yes] :
Enter information for another XP [yes]:
```

Connecting to Other Nodes

Once the network computer is booted, you can use the Mirror feature to see what other nodes (hosts or network computers) DECnet can access. The Mirror feature can check the following connections:

- From a network computer to other hosts

- From a host to network computers

- From a network computer to other network computers

To use the Mirror feature:

1. Enter *Setup*.

2. Select the Network Tables and Utilities menu and drag on the Network Utilities option.

3. In the Host Name/Host Address field, enter the name or address of the host or network computer for which you want to test for a DECnet connection. Optionally, specify the Test Packet information.

4. Click on the TEST button to start the Mirror test. A message specifies whether the connection was successful or not.

   If the Mirror feature is used to test a network computer connection to a host, the network computer's Console can be used to display mirror statistics. The statistics include the test time, total number of packets, how many packets were read, and how many packets were wrote. (The number of packets read and wrote should equal the total number of packets.)

Setting up XIE

X Imaging Extension (XIE) is a standard extension to the X11 Window System. XIE is a library of support routines to add image enhancements and display operations to applications. XIE programmer documentation is available from MIT.

The XIE server is a network computer option. If the XIE option is available and enabled, the XIE server is downloaded and attached to the network computer's X server. The XIE server requires approximately 400K of memory. XIE must be authorized for the network computer, and then enabled through *Setup* or the remote configuration file.

XIE Authorization

Use *Setup* to verify if XIE is authorized. There are two ways to verify XIE:

• Drag on Configuration Summaries and release on X Environment. If the Enable XIE option appears on the screen, XIE is authorized.

• Drag on Statistics and release on Options. If XIE is listed, it is authorized.

If XIE was factory-loaded, the authorization key is already entered and XIE should be available. If XIE was purchased separately, the authorization key must be entered at the network computer *Boot Monitor* with the **Authorize** command. See Chapter 4 *Boot Monitor* of the *Network Computer Reference* manual.

Enabling XIE

XIE can be enabled through *Setup* or in the remote configuration file. In *Setup*, drag on Configuration Summaries and release on *X Environment*. The Enable XIE option should be **Ye**s. In the *XP.CNF* file, use *enable_xie*.

To automatically download XIE each time the network computer is booted, enable XIE and then use **Save Current Settings**. To download XIE on demand, enter *Setup* and enable it, but do not select **Save Current Settings**. As soon as it is enabled, XIE is downloaded.

To unload XIE from the server, enter *Setup* and disable it (use **Save Current Settings** if you previously saved XIE as enabled), then reboot the network computer.

Local Clients

This section describes various ways to start local clients. Local clients are those applications that execute on the network computer, rather than on the host, thus reducing network traffic. TekHostMenu, Telnet, Cterm, and Motif Window Manager are examples of local clients. Local clients can be started with **xpsh**, the remote configuration file (*XP.CNF*), with **rsh**, or with the *Client Launcher*.

This section also describes the Client Launcher, Audio Intercept Driver and Server, Authorization Key Manager, XIE, XBlink, XPT/A Graphics Tablet, the Touchscreen Calibration client, and the Common Desktop Environment local clients.

The following local clients are available on the network computer:

Analog Video Player	OPENLOOK Window Manager (OLWM)
Audio Mixer	Serial session
Audio Player	Setup
Authorization Key Manager	Telnet session
Cterm session	Touchscreen Calibration
Common Desktop Environment (CDE)	WinDD
Digital Video Player	XBlink
LAT session	XIE Viewer
Local Client Launcher	Xlock client
Motif Window Manager (MWM)	XP Window Manager (XPWM)

> *NOTE: MWM, OLWM, LAT, Cterm, XIE, the Tek340 emulator, the Digital Video player, and CDE require an authorization key.*

Determining Local Client Versions

To see the version of any local client in the boot directory, use the UNIX **ident** command. For example, to see the version of *Setup* currently in use, enter **ident setup.350** (where 350 is the OS level you booted with). The version and level information displays. You can use this command for any of the local clients.

Starting Local Clients With xpsh

xpsh is a host program used to download local clients to a network computer. It is a two-way communication mechanism between the host program (**xpsh**) and the local daemon (*xpshd*). **xpsh** sends information to the network computer specifying which local clients to download, and **xpsh** receives local client error messages and exit information from the network computer. **xpsh** can download and start:

Starting a client using **xpsh** enables the client to run locally instead of from the host. The host environment, client name, and arguments are sent to the local network computer. For example, using **xpsh** to download MWM enables access to files in $HOME. This allows you to customize the MWM environment for an individual user.

Clients can also be started with **xpsh** and access host-based configuration files. To do this, use the **-access xpsh** parameters when starting a local client with xpsh. For example, to start local Motif Window Manager and access the host-based configuration files, you would enter the following:

> **xpsh -display** *display_name***:0 -access xpsh mwm**

> *NOTE: When starting local clients with xpsh, instead of entering the* **-display** *variable each time, you can set the environment variable* **DISPLAY** *to* display_name**:0.** *Then when starting local clients with xpsh, enter* **xpsh** *and the local client only. For example:*

> *xpsh tek220 -e cterm*
> *xpsh tek340 -e telnet*
> *xpsh mwm*
> *xpsh tek220 -e llogin*
> *xpsh tek220 -e tip tty0*
> *xpsh tek340 -e tip tty1*
> *xpsh xlock -mode 1*
> *xpsh setup*

To reduce the startup time for a local client started with **xpsh**, you can access the client through an NFS path. (For information about NFS, refer to the *Supporting a Centralized System* chapter for your host.) For example, if you mount *host_name:/tekxp/boot* to */host_name/tekxp/boot* on your network computer, you can invoke MWM with the command:

> **xpsh** */host_name***/tekxp/boot/mwm**

To start a local client using **xpsh**, enter the appropriate command below:

Starting the Analog Video Player

xpsh -display *display_name***:0 xpvideo**

The following options can be set on the **xpsh** command line:

-encode specifies the encoding format. Specify either NTSC (National Television System Committee) or PAL (Phase Alternation Line-rate).

-source specifies the video source to which the video device is connected. Specify either COMPOSITE_1, COMPOSITE_2 or SVIDEO1.

-color specifies the color intensity of the video being played. Specify a number from -1000 to 1000. 0 is the default.

-bright specifies the color brightness intensity of the video being played. Specify a number from -1000 to 1000. 0 is the default.

-contrast specifies the color contrast intensity of the video being played. Specify a number from -1000 to 1000. 0 is the default.

-tint specifies the color tint of the video being player. Specify a number from -1000 to 1000. 0 is the default.

Starting the Audio Mixer

xpsh -display *display_name***:0 mixer**

Starting the Audio Player

xpsh -display *display_name***:0 aplay**

The following options can be set on the **xpsh** command line:

-h*host* — specifies the host name or address on which the audio file resides. The host must be entered in the network computer's Internet Host Table in *Setup*. This host displays in the Audio Player's File Information area.

-f*filename and path* — specifies the audio file name and its entire path. This file displays in the Audio Player's File Information area.

-a*access method* — specifies the access method used to access the audio file. Available access methods are **tftp**, **nfs**, and **dap**.

-**v** *volume level* — specifies the volume level to use when playing the audio file. Specify a number between 0 and 100, with 0 indicating no volume, and 100 indicating the loudest volume setting.

-**p** when used with the **-h**, **-f**, **-a**, and **-v** options, the specified file plays without opening the Audio Player. The entire file plays and cannot be interrupted.

Starting the Authorization Key Manager

xpsh authkey

The network computer reads the *authkey.dat* file when booting and updates the network computer and authorization key information. (Be sure that SNMP is available and enabled.)

Starting a Cterm session

A Cterm session can be started with a Tek220 or Tek340 emulator.

xpsh -display *display_name***:0 tek220 -e cterm**
xpsh -display *display_name***:0 tek340 -e cterm**

Resource settings can be specified for a Cterm session. Refer to the next section, *Specifying Client Resource Settings*.

Starting the Digital Video Player

xpsh -display *display_name***:0 vplay**

The following **vplay** options can be set on the **xpsh** command line:

-**h** *host* — specifies the host name or address on which the video file resides. The host must be entered in the network computer's Internet Host Table in *Setup*. This host displays in the Video Player's File Information area. When Multicasting, **-h** specifies the IP address. The port number displays in the Video Player's Addr/Port Information area.

-**f** *filename and path* — specifies the video file name and its entire path. This file displays in the Video Player's File Information area. When Multicasting, **-f** specifies the port number. The address displays in the Video Player's Addr/Port Information area

-a *access method* — specifies the access method used to access the video file. Available access methods are **tftp**, **nfs**, **dap,** and Multicast. NFS is the preferred file access method for faster and more accurate data transfer rates required by the player. In addition, there is a 16MB limit on files transferred with TFTP.

-v *volume level* — specifies the volume level to use when playing the video file. Specify a number between 0 and 100, with 0 indicating no volume, and 100 indicating the loudest volume setting.

-m (Mute) specifies that the video file plays with no sound.

-c (Color) specifies that the video file displays in color (used only if the video was recorded in color).

-nc (No Color) specifies that the video file displays in greyscale images.

-brightness *n* — sets the brightness level of the video file. Specify a number between -50 and +50.

-contrast *n* — sets the contrast level of the video file. Specify a number between -50 and +50.

-b (Big) specifies that the video file displays in a frame four times the size of the original file.

-p (Playonly) when used with the options above, the specified file plays without showing the Video Player. The entire file plays and cannot be interrupted.

-all (Play All; software player only) plays all frames in a video file. Frame scheduling is ignored and the audio will not be in sync.

-title "*string*" — assigns a title for the vplay windows.

-propcmd — creates properties that allow other clients to send command strings to the Video Player. These properties cannot be changed or modified and are used to control the Video Player from another client that you create. For details about the properties, see the **vplay** man page.

-BUFSIZE *n* — (Hardware Player only) specifies the size of the Video Player's memory buffer (in kilobytes). The value defaults to 1024 and can not be set lower than 1 kilobyte. If the value specified is greater than available memory when trying to play a file, the Video Player reduces its buffer to the available memory.

-CHKSIZE *n* — (Hardware Player only) specifies that the Video Player's memory buffer is divided into "chunks", measured in kilobytes. The network fills the chunks, and the Video Player empties them as they are accessed. The default is 32, which divides the buffer into 32 kilobyte chunks. If the chunk size is set to a number larger than the buffer size, the chunk size will be truncated to one half the buffer size. The chunk size cannot be set less than 1 kilobyte.

-CHKDELAY *n* — (Hardware Player only) specifies the time delay (in milliseconds) that the Video Player waits following each read request that fills a chunk.

-chan *n* — (Multicast only) specifies an index into an array of available Multicast channels. Do not use with the **-h**, **-f**, **-a**, or **-text** options.

-text "*string*" — (Multicast only) specifies the channel string to be displayed by the Video Player. Do not use with the **-chan** option.

Starting a LAT session

A LAT session can be started with a Tek220 or Tek340 emulator.

xpsh -display *display_name***:0 tek220 -e llogin**
xpsh -display *display_name***:0 tek340 -e llogin**

Resource settings can be specified for a LAT session. Refer to the next section, *Specifying Client Resource Settings*.

Starting the Local Client Launcher

xpsh -display *display_name***:0 launcher**

The following options can be added to the **xpsh** command line when starting the Client Launcher:

-auto Configures the Client Launcher with the automatic default settings even if a configuration file exists.

-file *filename* Configures the Client Launcher using a user-defined configuration file.

Starting local MWM

xpsh -display *display_name***:0 mwm**

NOTE: If both MWM version 1.1 and MWM version 2.0 are authorized, the 2.0 version will start.

Starting a Serial Session for Port 0 and Port 1

A serial session can be started with a Tek220 or Tek340 emulator for port 0 or port 1.

xpsh -display *display_name***:0 tek220 -e tip tty0**
xpsh -display *display_name***:0 tek340 -e tip tty1**

Starting Setup

xpsh -display *display_name***:0 setup**

A network computer's *Setup* and Console window can also be started and displayed on a remote network computer or host using **xpsh**. Once started, you can use *Setup* to configure network computer settings, establish communication connections, and monitor network computer operations.

To access a network computer's *Setup* from a remote network computer or host using C shell, enter:

setenv TEKSETUP_DISPLAY *display_device***:0**
xpsh -display *display***:0 setup**

If using a different type of shell tool, enter:

xpsh -display *display***:0 -xpenv "TEKSETUP_DISPLAY **
= *display_device***:0" setup**

where *display* is the remote network computer whose *Setup* and Console window is accessed, and *display_device* is the network computer or host where *Setup* is to display. Use IP addresses if the remote network computer does not know the host name of the display device (set up in the Internet Host Table in *Setup*).

If the network computer user currently has *Setup* started, it is not accessible remotely via **xpsh**. Likewise, if a remote network computer or host has *Setup* open via **xpsh**, it is not available to the network computer user.

NOTE: To prevent other users from accessing your network computer's Setup and resetting the server, set enable_access_control to Yes (in either the xp.cnf file or in Setup).

Starting a Telnet session

A Telnet session can be started with a Tek220 or Tek340 emulator.

xpsh -display *display_name***:0 tek220 -e telnet**
xpsh -display *display_name***:0 tek340 -e telnet**

Resource settings can be specified for a Telnet session. Refer to the next section, *Specifying Client Resource Settings*.

Starting WinDD

xpsh can start the WinDD client as needed. To start WinDD with **xpsh**, enter the following (where *display_name* is the name or address of your network computer):

xpsh -display *display_name***:0 windd** [*options*]

The following *options* can be set on the **xpsh** command line:

-display *display***:0**
  Specifies the *display* name or address to display the WinDD local client.

-c Auto-connect to the first application server in the application server list. If there are no application servers in the list, this option is ignored and the client window is displayed.

-nc Do not auto-connect to an application server. (Default)

-d Displays the menu bar and the internal borders. (Default)

-nd Does not display the menu bar or the internal borders. For example, this allows a 1280x1024 WinDD window to fully display on a 1280x1024 monitor (minus windows manager decorations).

-e Enables the *Application Server* edit field window so that users can add application servers to the application server list. (Default)

-ne Disables the *Application Server* edit field window so that users are not allowed to add application servers to the application server list.

-floppy
  Allows supported host versions of WinDD to use its local floppy drive as a network connected drive for the Application Server. Only the first host client to specify this option will be allowed to use the floppy device. NOTE: For host clients (with local floppy drive) only.

-no_floppy_cache
> Disables use of local floppy write cache. This is a fail-safe option to ensure the entire file has been updated in the event a user suddenly ejects a disk mechanically (when disks are ejected via the GUI button, that process flushes the cache so no information is lost).

-geometry *<geometry>*
> Standard X11 geometry option, <WidthxHeight+X+Y>.

-h *<application server>*
> Adds the named application server(s) to the application server list. Multiple application servers can be added to the list by listing them separated by spaces.

-help
> Displays a brief help list on the available WinDD command line options.

-initprog *<prog>* [**-initdir** *<dir>*]
> Specifies the application to execute upon application server login. The login session is terminated when the application is terminated.
>
> *Prog* specifies the application and can also specify its path (up to 259 characters) and parameters. The program path and name are written consecutively (and not separated by a space) when they are both specified in *prog*. A space separates the program name and its parameters. These parameters are program specific and can specify program settings or data files to invoke on execution.
>
> *Dir* specifies the path of the executable program.

-keysym_only
> Specifies that all NCD network computer keyboards are supported with keysym translations within WinDD.

-local_numlock
> Specifies that WinDD manages the state of the Num_Lock independent of any Xserver support.

-no_auto_numlock
> Specifies that WinDD does not control the Num_Lock setting.

-login *<username>* [**pass** *<passwd>*] [**-domain** *<domainname>*]
Specifies the application server user account login name, login password, and domain. These values will be used for user account verification.

When using a WinDD client and connecting to a WinDD application server, your username, password, domain, initial program, and initial directory are encrypted as they are sent across the network.

Username, *password*, *domainname*, *dir*, and *prog* are not viewable or changeable from the WinDD configuration window.

-r   Reconnect to the application server after log off.

-nr   Does not reconnect to the application server after log off. (Default)

-version
Displays the WinDD version in use. (If the license is 8019, this option also prints *For evaluation purposes only*.)

-x   Exits the WinDD client upon logging out of, or disconnecting from, the application server.

-nx   Does not exit the WinDD client upon logging out of, or disconnecting from, the application server. (Default)

-force_xcursor
Specifies that monochrome pointers within the WinDD desktop are to be implemented using X cursors. Some monochrome pointers are xor'd with the underlying desktop. When this switch is specified, it is no longer xor'd, as X cursors do not support that mode.

NOTE: The force_xcursor feature is intended to compensate for workstations that do not have a particularly high performance X server. Consider using this option if the pointer flashes when move, or poor performance is observed entering text in dialog boxes. Using this switch improves user interactivity. The only side effect is the pointer is displayed in a single color.

Starting the XIE Viewer

    xpsh -display *display_name***:0 xieview**

The following options can be set on the xpsh command line:

-ifg *color* specifies the color used as the foreground on bitonal images. The color specified must be in the network computer's *rgb.txt* file.

-ibg *color* specifies the color used as the background on bitonal images. The color specified must be in the network computer's *rgb.txt* file.

-cc *color* specifies the background color for the image window. The color specified must be in the network computer's *rgb.txt* file.

-fullpan True or **False**

        If True, the image uses less memory when zoomed. If False, the image uses more memory when zoomed. When set to False, panning the image is faster. If there is not enough memory to view the entire zoomed image, only part of the image will be available when panning. The default is True.

Starting Xlock

    xpsh -display *display_name***:0 xlock -mode** *<mode>*

where *<mode>* is an optional setting. If set to **1**, *Xlock* locks the keyboard only. If set to **0**, *Xlock* locks the keyboard and the screen. If a mode setting is not given, *Xlock* locks the keyboard and the screen by default.

A password is required to use the *Xlock* client. The same password is used throughout the entire session. If while using *Xlock* you forget the password, you must reboot the network computer or reset the server (in *Setup*) to clear the password and unlock the keyboard and screen.

Starting local XP Window Manager

    xpsh -display *display_name***:0 xpwm**

Starting Local Clients In The *XP.CNF* File

Using the *start* and/or *preload* commands in the remote configuration file
(*XP.CNF*), you can determine which local clients are downloaded and/or
started at boot time. The specified clients are loaded into the network
computer's memory and remain there until started. Even after closing the client,
it remains in RAM so that it can be restarted again. For information about
starting local clients from the remote configuration file, refer to the *start* and
preload commands in *Chapter 2, Remote Configuration* in the *Reference*
manual.

Starting Local Clients with rsh

rsh is a host program used to download local clients to a network computer. **rsh** sends information to the network computer specifying which local clients to download, however, unlike **xpsh**, **rsh** does not receive local client error messages and exit information from the network computer.

Security for **rsh** is set through the *.rhosts* file. If user security is not set in the *.rhosts* file, then users will be able to access all local clients. The *rshd_security* command in the remote configuration file (*xp.cnf*) is used to determine whether users can override the security features set by the system administrator.

Enabling rsh

Before starting local clients with rsh, you must first enable it. To do this, use the *start* command with the parameter RSDH in the remote configuration file (xp.cnf):

start   RSHD   Yes

Editing the *.rhosts* File

The *.rhosts* file is used to authenticate user requests to execute local clients. Entries are either positive or negative, depending on the permissions you want to give users. Positive entries enable user to access the specified local clients; negative entries deny access. The entries should include the hostname, username and client name. The order of entries within the files is important. If the file contains both positive and negative entries, the entry that appears first takes precedence.

Examples

For example, the entry below allows user judyl access to the Setup and Client Launcher clients while logged into the host Sierra:

sierra   judyl   +setup   +launcher

If you do not list specific clients, then all clients are available to the specified user:

sierra   judyl

A negative entry means that the client is not available to the user, but all other clients are. For example, user judyl cannot access the Digital Video Player or the Audio Player, but can access any of the other available clients:

sierra   judyl   -vplay   -aplay

You can also use the positive and negative specification for hostname and usernames. In the following example, user paulb can access all clients from any remote host:

+   paulb

In the next example, any user from any host can access the Setup and Launcher clients:

+   +   +setup   +launcher

In the final example, user davidb is not allowed access to the Setup and Xlock clients from any host:

+   -davidb   +setup   +xlock

For details about the *.rhosts* file, refer to the rhosts man page for your host.

Starting Local Clients with rsh

rsh uses the same local client options as **xpsh**. When using **rsh** to start clients, you do not enter the **-display** environment variable, and you must use the network computer name instead of an address. For example, to start Setup with **rsh**:

rsh *display_name* **setup**

For details about starting local clients using **rsh**, refer to the *Starting Local Clients with xpsh* section earlier in this manual and substitute **rsh** for **xpsh** and omit the **-display** environment variable and the **:0** in all examples.

   NOTE: *rsh can start all the local clients that xpsh can start, except for the Remote Setup client.*

Client Launcher

The local Client Launcher allows users to start local clients by simply selecting a client from a menu using the mouse. Figure 5-1 shows a sample Client Launcher menu. The Client Launcher can be configured automatically using default options, or with a customized configuration file. It can be downloaded to the network computer using the remote configuration file (*XP.CNF*) or using **xpsh**.
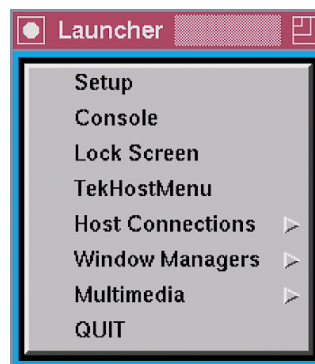

Figure 5-1 Client Launcher Menu

Configuring the Client Launcher

There are two ways to configure the Client Launcher: default automatic configuration, or with a specific configuration file. When the Client Launcher is started, if a user-defined configuration file is not specified, it first searches for a *SYSTEM.LAUNCHER* configuration file. If that file is not found, it configures automatically.

Automatic Configuration

If there is no configuration file present, the Client Launcher will automatically configure and include the following clients by default: Telnet, TekHostMenu, Lock Screen, Console, Audio Player, Audio Mixer, Digital Video, and *Setup*. Serial Port 0 and/or 1 are included if the network computer has serial ports. If Motif Window Manager, XIE, TDEnet, LAT, Tek340, Tek3270, Tek3287, or Tek3179G are authorized, they are included as well.

Configuration Files

The configuration files are used to customize the Client Launcher to include only specific clients so that you can determine which clients are available to users. There are two different types of configuration files:

- The *SYSTEM.LAUNCHER* file configures multiple network computers so that the clients available on the Client Launcher are the same for all who use the file. This allows a system administrator to control which clients are available to users.

- A user-defined configuration file customizes the Client Launcher for individual users.

To create a configuration file:

> *NOTE: Refer to the sample configuration file as a guideline when creating a configuration file.*

1. Create a new file, naming it either *SYSTEM.LAUNCHER* for a system-wide configuration file, or whatever you like for a user-defined file, for example, *LAUNCH*.

2. Move the new file to the site-specific directory referred to by *TEK$XP10_CONFIG:*, *TEK$XP330_CONFIG* or *TEK$XP350_CONFIG:*.

3. In the file, use your favorite text editor to enter the main Client Launcher menu name in uppercase letters.

4. On subsequent lines, enter each of the clients and submenu names (if used) in double quotation marks to include on the Client Launcher followed by the f.exec or f.menu option:

   f.menu   specifies that a submenu is available with additional options. For example, if you use multiple sessions, you could have a submenu named *Sessions Menu* and include Serial 0, Telnet, and Cterm. You can use any name or description you like with the f.menu option, however it must end with the letters *menu*.

   f.exec   specifies a local client to start immediately upon selecting it. Enter the client name exactly as you would on the xpsh command line, usually with all lower case letters and with double quotation marks. For example, "telnet", "console", "setup", and "mwm".

   The order in which you enter clients and submenus in the configuration file determines the order they appear on the Client Launcher.

5. On the last line of the main menu, enter ENDMENU in uppercase letters.

6. Create the submenus, if used, by entering the submenu name in all uppercase letters. On subsequent lines, list the clients to include followed by f.exec option in the same manner described in Step 4.

7. On the last line of each submenu, enter ENDMENU in uppercase letters.

In the following example, the Client Launcher menu contains the following entries: Sessions (displays another menu of available session clients), Console, TekHostMenu, MWM, and *Setup*.

Example 5-1 Sample Client Launcher Configuration File.

```
# Configuration file for Client Launcher
#
MAINMENU
"Sessions"f.menu SESSIONS
"Console"f.exec "console"
"HostMenu"f.exec "HostMenu"
"MWM"f.exec "mwm"
"Setup"f.exec "setup"
"Exit"f.exec "quit"
ENDMENU

SESSIONS
"Serial 0"f.exec "tip -e tip tty0"
"Telnet 220"f.exec "xterm -e telnet"
"Telnet 340"f.exec "tek340 -e telnet"
ENDMENU
```

In the previous example, the f.exec option immediately starts a client or session, and the f.menu option specifies that a submenu is to appear. The word ENDMENU specifies the end of the menu options.

The main Client Launcher menu contains the MAINMENU entries of the configuration file. When Sessions is selected, the submenu listing available session clients displays.

Downloading the Client Launcher

The Client Launcher can be downloaded using the remote configuration file (*XP.CNF*) or with **xpsh**.

Downloading Using the *XP.CNF* File

The *start* command in the *XP.CNF* file can be set to automatically download and start the Client Launcher when the network computer boots. For information about the *start* command and available parameters, refer to Chapter 2, *Remote Configuration* in the *Reference* manual.

Downloading With xpsh

When downloading and starting the Client Launcher using **xpsh**, the following options can be set:

- **-auto** Configures the Client Launcher with the automatic default settings even if a configuration file exists
- **-file filename** Configures the Client Launcher using a user-defined configuration file

Examples

The following example downloads and starts the Client Launcher with automatic configuration:

```
xpsh  launcher -auto
```

The following example downloads and starts the Client Launcher, configuring its contents using a user-defined file named *LAUNCH*:

```
xpsh  launcher  -file DIA1:[GUEST]LAUNCH
```

The following example downloads and starts the Client Launcher, configuring its contents using the *SYSTEM.LAUNCHER* file on the network computer rocky:

```
xpsh -display rocky::0  launcher
```

The following example downloads and starts the Client Launcher with the automatic configuration using the **start** command located in the *XP.CNF* file:

```
startlauncher -auto
```

Starting the Client Launcher

Once the Client Launcher is downloaded, press the Setup key to display the Client Launcher main menu.

> *NOTE: To start the Client Launcher on a UNIX keyboard, hold the AltGraph key (three keys to the right of the space bar) down and press the Help/Setup key (at the bottom left of the keyboard).*

When the Client Launcher is started, it searches for configuration information in the following order:

- In a user-defined configuration file, if specified

- The *SYSTEM.LAUNCHER* configuration file

- If neither configuration file is found, the Client Launcher automatically configures by listing all default and authorized clients.

To open a client listed on the Client Launcher, simply position the mouse pointer on the client name and click the mouse button once. To open a submenu, position the mouse pointer on the menu name. The submenu displays to the right of the Client Launcher main menu (refer to Figure 5-1). Position the mouse pointer an item in the submenu and click the mouse button once.

Starting Local Motif Window Manager

Motif Window Manager (MWM) can be started from within DECwindows and used as the window manager. DECwindows must be running before starting MWM. The following instructions provide information about starting local MWM in ULTRIX DECwindows, DECwindows XUI, (a pre-Motif window manager), and in DECwindows Motif version 1.0.

In Ultrix DECwindows

1. From the DECwindows Session Manager window, select the **Customize** pull-down menu and select **Applications Definitions**.

2. In the Menu Item text area, enter the item name to use for MWM, for example, **TekLocalMwm**.

3. In the Menu Command text area, enter the following command string to start the local MWM: */tekxp/bin/risc_ultrix/xpsh mwm.*

```
           Menu Items

  ┌─────────────────┐
  │ Bookreader      │        ┌──────┐
  │ CDA viewer      │        │  OK  │
  │ Calculator      │        └──────┘
  │ Calendar        │
  │ Cardfiler       │        ┌──────┐
  │                 │        │ Apply│
  └─────────────────┘        └──────┘

                             ┌──────┐
     ┌─────────┐             │Cancel│
     │ Remove  │             └──────┘
     └─────────┘

  Menu Item:

  TekLocalMwm

   Menu Command:

  /tekxp/bin/risc_ultrix/xpsh mwm

               ┌──────┐
               │ ADD  │
               └──────┘
```
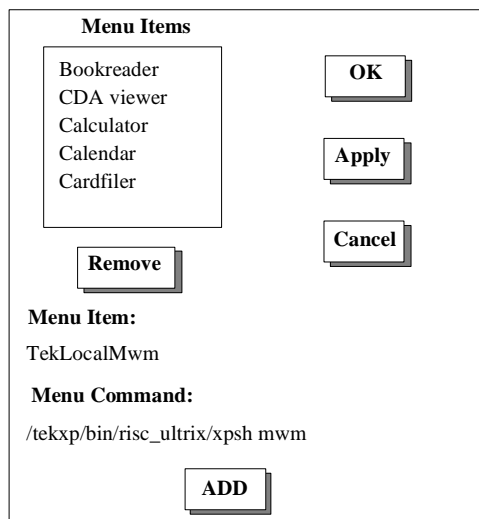
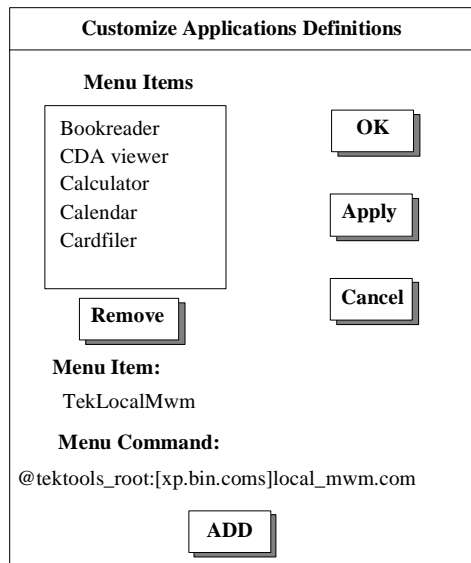**Figure 5-2 Applications Definitions Window.**

4. Select the **Add** button to add the item name into the Menu Items window.

5. Select the **OK** button.

6. Select the **Customize** pull-down menu and select **Window**.

7. In the Window Manager option, select the **Other** push button. Make sure that no window manager specification appears to the right.

8. Select the **OK** button.

9. Select the **Customize** pull-down menu and then select **AutoStart**.

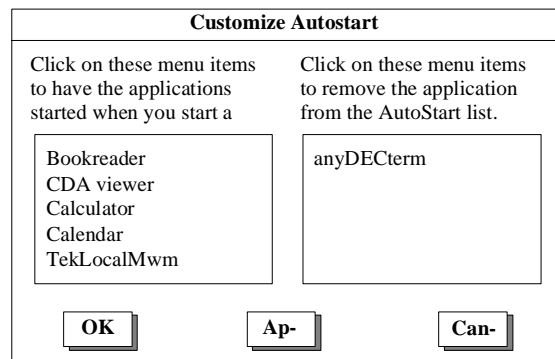| Click on these menu items to have the applications started when you start a	Click on these menu items to remove the application from the AutoStart list.
Bookreader CDA viewer Calculator Calendar TekLocalMwm	anyDECterm

OK	Ap-	Can-
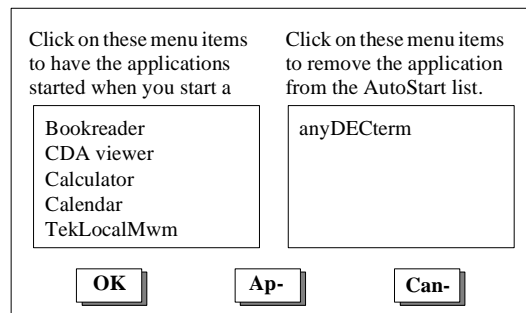
Figure 5-3 AutoStart Window.

NOTE: The items listed in the window differ depending on the available Menu Items.

10. In the left column of menu items, select the item name assigned to MWM in Step 2 (in this example, it is **TekLocalMwm**). The name is added to the right column listing the automatic startup items.

11. Select the **OK** button.

12. Select the **Customize** pull-down menu then select **Save Current Settings**.

13. Quit the session.

    When DECwindows session restarts, the NCD XP local MWM is invoked automatically.

In VMS DECwindows XUI (pre-Motif)

1. From the DECwindows Session Manager window, select the **Customize** pull-down menu and select **Applications Definitions**. The Customize Applications Definitions window displays.

2. In the Menu Item text area, enter the item name to use for MWM, for example, *TekLocalMwm.*

3. In the Menu Command text area, enter the following command string to use the sample local MWM startup procedure: *@tek$tools_root:[xp.bin.coms]local_mwm*

```
┌─────────────────────────────────────────────┐
│         Customize Applications Definitions    │
│                                               │
│   Menu Items                                  │
│                                               │
│   ┌─────────────────┐                         │
│   │ Bookreader      │      ┌──────┐           │
│   │ CDA viewer      │      │  OK  │           │
│   │ Calculator      │      └──────┘           │
│   │ Calendar        │                         │
│   │ Cardfiler       │      ┌──────┐           │
│   │                 │      │ Apply│           │
│   │                 │      └──────┘           │
│   │                 │                         │
│   │                 │      ┌──────┐           │
│   └─────────────────┘      │Cancel│           │
│    ┌────────┐              └──────┘           │
│    │ Remove │                                 │
│    └────────┘                                 │
│   Menu Item:                                  │
│     TekLocalMwm                               │
│     Menu Command:                             │
│  @tektools_root:[xp.bin.coms]local_mwm.com    │
│              ┌──────┐                          │
│              │ ADD  │                          │
│              └──────┘                          │
└─────────────────────────────────────────────┘
```

Figure 5-4 Customize Applications Definitions Window.

Select the **Add** button to add the item name into the Menu Items window.

4. Select the **OK** button to close the Customize Applications Definition window.

5. Select the **Customize** pull-down menu and select **Window**.

6. In the Window Manager option, select the **Other** push button. Make sure that no window manager specification appears to the right.

7. Select the **OK** button.

8. Select the **Customize** pull-down menu and then select **AutoStart**. The Customize Autostart window displays.

<div align="center">

Customize Autostart

Click on these menu items to have the applications started when you start a	Click on these menu items to remove the application from the AutoStart list.
Bookreader CDA viewer Calculator Calendar TekLocalMwm	anyDECterm

[OK]   [Ap-]   [Can-]

</div>

Figure 5-5 Customize Autostart Window.

NOTE: The items listed in the window depending on the available Menu Items.

9. In the left column of menu items, select the item name assigned to MWM in Step 2 (in this example, it is **TekLocalMwm**). The name is added to the right column listing the automatic startup items.

10. Select the **OK** button.

11. Select the **Customize** pull-down menu then select **Save Current Settings**.

12. Quit the session.

    When your DECwindows session restarts, the NCD XP local MWM is invoked automatically.

In VMS DECwindows Motif 1.0

1. From the DECwindow's Session Manager window, select the **Options** pull-down menu and select **Menus**. The Menus window displays.

2. In the Menu Item text area, enter the item name to use for MWM, for example, *TekLocalMwm*.

3. In the DCL Command text area, enter the following command string to use the sample local MWM startup procedure: *@tek$tools_root:[xp.bin.coms]local_mwm*. An up arrow appears below the Item Names list box.
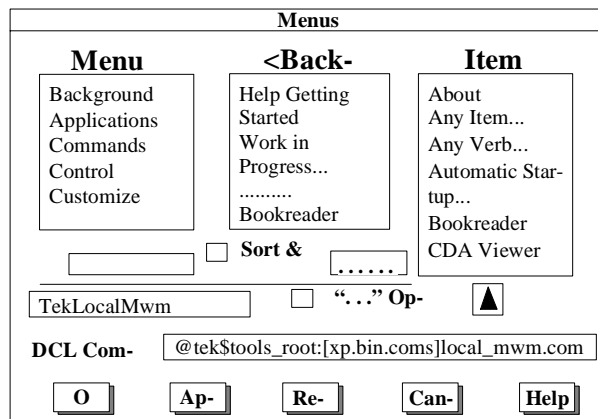
Figure 5-6 Menus Window.

4. Click on the up arrow to add the name defined in Step 2 to the Item Names list box.

5. Select the **OK** button to save the new settings.

6. Select the **Options** pull-down menu and select **Automatic Startup**. The Automatic Startup window appears.

```
┌──────────────────────────────────────────────────────────────┐
│                      Automatic.Startup                         │
├──────────────────────────────────────────────────────────────┤
│  Select an item to add          Select an item, then choose up,│
│  it to the automatic list.      down, or remove arrow.         │
│                                                                │
│  ┌────────────────────────┐    ┌─────────────────────────┐     │
│  │ About                  │    │ Window Manager          │     │
│  │ Any item...            │    │ Link Works Setup        │     │
│  │ Any verb...            │    │ anyDECterm              │     │
│  │ Automatic Startup      │    │                         │     │
│  │ Bookreader             │    │                         │     │
│  │ TekLocalMwm            │    │                         │     │
│  │                        │    │                         │     │
│  └────────────────────────┘    └─────────────────────────┘     │
│                                                                │
│  ┌──────┐   ┌───────┐   ┌───────┐   ┌────────┐   ┌──────┐      │
│  │  OK  │   │ Apply │   │ Reset │   │ Cancel │   │ Help │      │
│  └──────┘   └───────┘   └───────┘   └────────┘   └──────┘      │
└──────────────────────────────────────────────────────────────┘
```
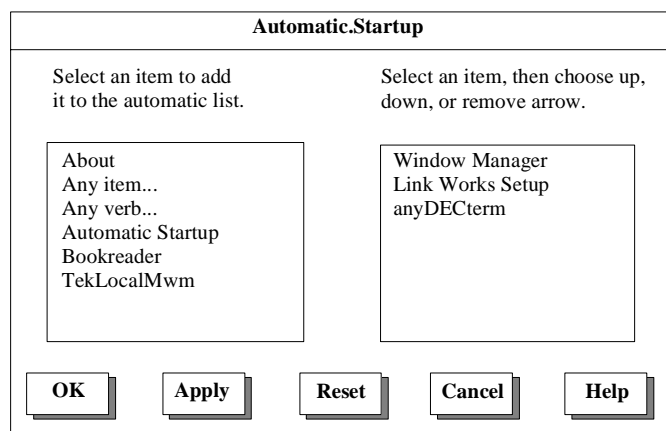
Figure 5-7 Automatic Startup Window

7. In the left column of menu items, select the item name assigned to MWM in Step 2 (in this example, it is **TekLocalMwm**). The name is added to the right column listing the automatic startup items.

8. Scroll the right window until the **Window Manager** item shows. Select it and remove it from the list of automatic startup items. This leaves TekLocalMWM as the window manager.

9. Select the **OK** button to save your new settings.

10. Select the **Options** pull-down menu then select **Save Session Manager**.

11. Quit the session.

    When your DECwindows session restarts, the NCD XP local MWM is invoked automatically.

Motif Window Manager File Access

Accessing MWM Configuration Files

When MWM is started from your host using the **xpsh** command, MWM looks for system-level and user-level customization files on your host. These files are accessed using NFS, TFTP, DAP, or SXP. The access method used is determined by the **-access** argument of the **xpsh** command. (Refer to the **xpsh** man page for information about the **xpsh** command arguments.) The name of each file accessed by MWM is printed in the Console window. Setting up and using NFS file access can reduce MWM startup time.

> *NOTE: You can also start local MWM using the remote configuration file or Setup. However, these methods do not allow MWM access to the system-level and user-level customization files on your host.*

Accessing the MWM Resource Description File

Local MWM searches for a resource description file in the following order:

1. The value of the MWM configFile resource

2. *decw$system_defaults:decw$mwm_rc.dat*

   If none of the above resource description files is found, MWM defaults to a language-specific resource description file from the boot configuration directory which is specified by the rooted logical *TEK$XP_BOOT_CONFIG_ROOT*. The language is specified by the **Language** option in the remote configuration file (*XP.CNF*) or in *Setup*. To see the current language setting, enter *Setup* and look at the **Language** option.

Accessing the MWM Defaults Files

Local MWM is configured from its resource database. MWM builds its resource database from the following sources, listed in the order that MWM accesses them:

1. MWM command line options

2. RESOURCE_MANAGER root window property, if it is set;
   otherwise
   decw$user_defaults:decw$Xdefaults.dat file

   The RESOURCE_MANAGER property is typically set by DECW$SESSION. These values do not override the existing values in the database.

3. *dec$user_defaults:decw$mwm.dat*, if it exists;
   and
   decw$system_defaults:decw$mwm.dat

   For a gray scale display, decw$mwm.dat resources are overridden in *decw$user_defaults:decw$mwm_gray.dat*, if it exists;
   and
   decw$system_defaults:decw$mwm_gray.dat

   For a monochrome display, decw$mwm.dat resources are overridden in *decw$user_defaults:decw$mwm_bw.dat*, if it exists:
   and
   decw$system_defaults:decw$mwm_bw.dat

   These values do not override the existing values in the database.

   If none of the above application specific app-defaults files are found, MWM defaults to a language-specific defaults file from the boot configuration directory which is specified by the rooted logical *TEK$XP_BOOT_CONFIG_ROOT*. The language is specified by the Language option in the remote configuration file (*XP.CNF*) or in *Setup*. To see the current language setting, enter *Setup* and look at the **Language** option.

Creating a Local MWM Resource Description File

You can copy the *system.mwmrc* file to your home directory and then modify the file to customize your Motif environment. Table 5-1 shows the functions you can add to the file.

Table 5-1 MWM Functions

Function	Description
f.beep	Causes a beep
f.cci	Controls the placement and naming of client-command interface (CCI) commands generated by applications
f.circle_down	Moves the top window to the bottom of the window stack
f.circle_up	Moves the bottom window to the top of the window stack
f.exec or !	Executes the following shell command
f.focus_color	Sets the colormap focus to a window
f.focus_key	Sets the keyboard input focus to a window
f.goto	Moves the root window to a specified location
f.kill	Kills an application and its window
f.lower	Moves a window to the bottom of the window stack
f.maximize	Maximizes a window
f.menu	Activates the named menu. This function can be used to create cascading and Popup Menus
f.minimize	Iconifies a window
f.move	Starts an interactive move for a window
f.next_cmap	Installs the next colormap
f.next_key	Moves the keyboard input focus to the next window in the window stack
f.nop	Does nothing
f.normalize	Causes an icon or a maximized window to be displayed at its normal size
f.normalize_and_raise	Causes an icon or a maximized window to be displayed at its normal size and raised to the top of the window stack

Table 5-1 MWM Functions (Continued)

Function	Description
f.pack_icons	Reorganizes the icons according to the current icon placement policy
f.pan	Moves the root window a specified amount
f.pass_keys	Toggles the use of special key bindings
f.post_wmenu	Posts the Window Menu
f.prev_cmap	Installs the previous colormap in the list of colormaps for the window with the colormap focus
f.prev_key	Moves the keyboard input focus to the previous window in the window stack
f.quit_mwm	Exits the window manager without exiting the X Window System
f.raise	Raises a window to the top of the window stack
f.raise_lower	If obscured, raises a window to the top of the window stack; otherwise, lowers it to the bottom of the window stack
f.refresh	Redraws all the windows on the screen
f.refresh_win	Redraws a single window
f.resize	Starts an interactive resize for a window
f.restart	Stops and restarts the window manager
f.restore	Restores an iconified window to its previous state
f.restore_and_raise	Restores an iconified window to its previous state and raises it to the top of its stack
f.screen	Moves a pointer to a specific screen
f.send_msg	Sends a client message to the application
f.separator	Draws a separator in a menu pane
f.set_behavior	Restarts the window manager with the default behavior or reverts to any custom behavior
f.title	Inserts a title in a menu pane
f.track_pan	Continuously moves the root window in the direction of the mouse

Accessing Bitmap Files

The MWM iconImage and bitmapDirectory resources are used to specify paths to bitmap files. The default value for bitmapDirectory is *decw$user_defaults*.

Accessing the Motif Bindings File

MWM reads the *decw$user_defaults:decw$motifbind.dat* file, if it exists, to install a virtual key bindings property on the root window. Example motif bindings files are installed in the *[TEK.XP.EXAMPLES.MWM]* directory by default.

Specifying Virtual Key Bindings

MWM reads the *$HOME/.motifbind* file, if it exists, to install a virtual key bindings property on the root window. Example motif bindings files are installed in the */tekxp/examples/mwm* directory by default.

Setting up Virtual Desktop Panning

The Virtual Desktop Panning feature is available with MWM 2.0. This section provides an example of how you can modify your *.Xdefaults* and *.mwmrc* files to activate virtual panning in MWM. The MWM functions f.pan, f.goto, and f.track_pan need to be bound either to keys or to mouse buttons.

Editing *.mwmrc* for Virtual Desktop Panning

Add the following to your *.mwmrc* file to use virtual panning. Make sure that the name of the button bindings match the name given for the resource value Mwm*buttonBindings in your *.Xdefaults* file.

```
ButtonsMyButtonBindings
{
<Btn2Down>root       f.menu GotoMenu
Meta<Btn1Down>root  f.track_pan
}

Keys MyKeyBindings
{
Meta<Key>Upwindow|rootf.pan     0,-100
Meta<Key>Downwindow|rootf.pan   0,100
Meta<Key>Leftwindow|rootf.pan  -100,0
Meta<Key>Rightwindow|rootf.pan 100,0
}
```

To set up a menu that lets you quickly switch to different locations on the virtual desktop, code it as follows. You can then restart your mwm application.

```
MenuGotoMenu
{
Up-Leftf.goto 1500,1100
Upf.goto       0,1100
Up-Rightf.goto-1500,1100
Leftf.goto     1500,0
Homef.goto     0,0
Rightf.goto    -1500,0
Down-Leftf.goto1500,-1100
Downf.goto     0,-1100
Down-Rightf.goto-1500,-1100
}
```

Editing *.Xdefaults* for Virtual Desktop Panning

Add the following to your *.Xdefaults* file to keep MWM from moving all your windows back to the visible part of the screen at startup:

```
Mwm*positionOnScreen:False
```

Note that it is important to set the positionOnScreen resource to False because MWM automatically repositions all off-screen windows back to the display screen on restart.

To set up a menu to go to preset positions on the virtual canvas, add the following lines:

```
Mwm*GotoMenu*numColumns:3
Mwm*GotoMenu*packing:PACK_COLUMN
Mwm*GotoMenu*orientation:HORIZONTAL
Mwm*GotoMenu*alignment:ALIGNMENT_CENTER
```

For consistency with the *.mwmrc* file, add the following lines:

```
Mwm*buttonBindings:MyButtonBindings
Mwm*keyBindings:MyKeyBindings
```

To prevent the client and icon windows from moving, add the following lines:

```
Mwm*XBiff*iconPinned:True
Mwm*XBiff*clientPinned:True
Mwm*iconPinned:True
```

Unsupported DECwindows mwm Functions

Local mwm does not support the following functions that DECwindows mwm supports:

f.dec_help   Starts the DECwindows help widget

f.dec_customize   Performs customization functions.

Local mwm interprets these functions as f.nop (no operation) and if either is used in a menu, local mwm stipples the item to indicate that it cannot be selected.

If you must have the customizations that f.dec_customize provides, run the DECwindows mwm, use the customization menu items which appear in the Options menu, and save the results in your resource files. From then on, local mwm acquires the customizations when it reads the various resource files.

Troubleshooting MWM

This section contains some information on possible solutions to correct some common MWM problems:

- If MWM does not come up at all:

  - Your local MWM authorization key may not be entered. Enter the correct authorization key. Refer to Chapter 4, *Boot Monitor* of the *Reference* manual for information about the authorization key command.

- If you customize a file which is read by local MWM but the changes are not reflected when you run MWM:

  - Make sure the customized file has read permissions open to the world.

  - If the file is being accessed using DAP, make sure you enter your hostname in the TDEnet host table.

  - If the file is accessed using TFTP, make sure you are using the version of **xpsh** included with the software version 6.1 or greater. If you are using an earlier version of **xpsh**, enter your hostname in the Internet host table. For information about adding hosts to the Internet host table, refer to Chapter 4, *Boot Monitor*.

- If using a 101-key, 102-key, or UNIX keyboard with host-based MWM, you must use the **xmodmap** utility to assign a Select keysym. Host-based MWM requires a Select key and these keyboards do not have a Select keysym. You can assign the Select keysym to any key you wish. For example, to assign the shifted Delete key to Select:

    xmodmap -e "keysym Delete = Delete Select"

- If the keyboard does not behave correctly, such as the rubout key deleting from the right instead of from the left, refer to the *KEYBOARD.FIXES* file located in *TEK$TOOLS_ROOT:[XP.HELP]* for helpful information.

- If MWM prints a message "mwm: Invalid key specification on line 50 of configuration file" in the Console window:

    - Make sure the keysyms used in your *decw$mwm_rc.dat* file exist. For example, the **Select** keysym exists for the VT200 keyboard but not for the 101 keyboard. So if your *decw$mwm_rc.dat* file uses **Select** and you have a 101 keyboard, you will get the above error message.

- DEC-specific enhancements to DECwindows MWM are not supported in local MWM. For example, the following DECwindows MWM window manager functions are interpreted by local MWM as f.nop:

    ```
    f.dec_customize
    f.dec_help
    ```

XP Window Manager

XP Window Manager (XPWM) is a local window manager available with the network computer. XPWM provides a basic window manager that uses a minimum amount of network computer memory.

Accessing the XPWM Defaults File

XPWM is configured from its resource database. This database is built from the following sources, listed in the order that XPWM accesses them (the last setting takes precedence over the first).

1. XPWM default values

2. The application's specific app-defaults file;

   TEK$XP_CONFIG:[<*language*>]APP-DEFAULTS]

3. RESOURCE_MANAGER root window property, if it is set

   The RESOURCE_MANAGER is typically set with the **xrdb** command. These values do not override the existing values in the database.

Starting the XP Window Manager

XPWM can be started with **xpsh**, from the remote configuration file (*xp.cnf*), or from the Client Launcher.

Starting XPWM With xpsh

Enter the following command in the user's session start up file. (If using the NCD-supplied X Display Manager (xdm), enter the command in the *.xsession* file in the user's home directory.)

   xpsh -display *terminal address* **xpwm**

Starting XPWM With the *xp.cnf* File

The *start* and *preload* commands in the *xp.cnf* file can be used to start XPWM. For details about these commands, refer to Chapter 2, *Remote Configuration* in the Reference Manual.

Starting XPWM With the Client Launcher

The Client Launcher can be customized to include those clients that you use most often. The XPWM is listed on the Client Launcher by default as part of the Window Managers sub-menu. To start XPWM, move the mouse pointer to XPWM and click the mouse button. For information about the Client Launcher, refer to the *Client Launcher* section earlier in this chapter.

Using XPWM

You use XPWM much like any other window manager. The windows have many of the same elements as Motif Window Manager and OpenLook Window Manager. Figure 5-9 shows a sample XPWM window and its elements.
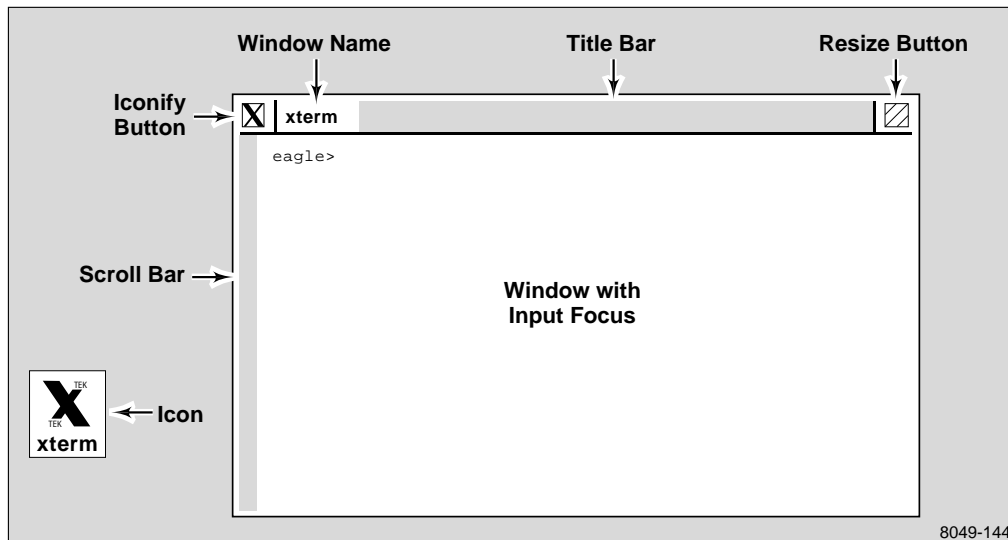
Figure 5-8 Elements of an XPWM Window.

You can move and resize windows using either the mouse alone, or the commands located on the XPWM menu. Table 5-2 shows the mouse interface.

Table 5-2 Working With XPWM Windows.

To	Do This
Move a window	Position the mouse pointer on the title bar, click and drag the window to the new position
Resize a window	Click on the Resize button and drag the window to the new size
Make a window active	Position the mouse pointer in the window and click
Iconify a window	Click on the Iconify button
Un-iconify a window	Click on the window's icon
Raise a window to the top	Position the mouse pointer in the window and click

To access the XPWM menu, position the mouse pointer outside of a window, and click. First select a command, and then move the mouse pointer to the window you want the command to affect. Table 5-3 shows the commands available on the XPWM menu.

Table 5-3 XPWM Menu Command.

Command	Description
Iconify	Iconify a window
Resize	Resize a window
Move	Move a window
Raise	Move a window to the top of other windows
Lower	Move a window behind other windows
Icon Manager	Open the icon manager, which lists the open windows and applications on the screen
Kill	Close a window and any processes running in the window
Delete	Close a secondary window, such as a dialog box for an application.

Table 5-3 XPWM Menu Command. (Continued)

Command	Description
Restart XPWM	Exit and restart the XP Window Manager. Open windows and processes will remain while the window manager restarts.
Exit XPWM	Exit the XP Window Manager

Customizing XPWM

You can change the appearance of XPWM using the resource settings listed in Table 5-4. XPWM does not allow user-defined bindings or user-defined menus.

Table 5-4 XPWM Resource Settings.

Resource	Description
xpwm.IconForeground <color>	Specifies foreground color of icons
xpwm.IconBackground <color>	Specifies background color of icons
xpwm.IconFont <font>	Specifies the font used with icon names
xpwm.TitleForeground <color>	Specifies the foreground color of the title bar
xpwm.TitleBackground <color>	Specifies the background color of the title bar
xpwm.TitleFont <font>	Specifies the font used in the title bar
xpwm.MenuForeground <color>	Specifies the foreground color of the XPWM menu
xpwm.MenuBackground <color>	Specifies the background color of the XPWM menu
xpwm.MenuFont <font>	Specifies the font used in the XPWM menu
xpwm.BorderWidth <integer>	Specifies the width of the border around the windows
xpwm.BorderColor <color>	Specifies the color of the borders around the windows
xpwm.InputFocus <method>	Specifies the method used by the mouse to activate a window. Enter either click or point.

Authorization Key Manager

The Authorization Key Manager enables a system administrator to easily update the authorization keys of several network computers. Authorization keys are used to authorize special options used on the network computer, such as window managers, XIE, TDEnet, and the video player.

Instead of entering each network computer's authorization key one at a time, you can update and maintain them from a central file. The Manager reads the *authkey.dat* file, which contains the authorization keys for those network computers you want to update with new options. When the file is read, those network computers listed in the *authkey.dat* file are updated with a new key.

How the Authorization Key Manager Works

The Authorization Key Manager uses SNMP to query specific broadcast addresses and network computers listed in the *authkey.dat* file, or in the Authorization Key Manager client. Those terminals are then assigned a new authorization key, also listed in the *authkey.dat* file. Therefore, you must have and enable SNMP.

Setting Up SNMP

In the *xp.cnf* file, use the *snmp_comm_list* command to set the community list to **public** and to allow read and write permissions:

snmp_comm_list"host"public   RW

where "host" is the host that performs the GET and SET operations when querying the subnet, public is the community string, and RW indicates read and write permissions.

The *authkey.dat* File

The *authkey.dat* file is located in */tekxp/boot/config* by default and is empty. Edit the file to contain the broadcast address to query, the network computers to update, and the new authorization keys. The following parameters are used in the *authkey.dat* file:

broadcast	specify the broadcast address to query using SNMP.
terminal	for each network computer you want to update with a new authorization key, enter its hardware address.
authorization key	For each network computer, enter the authorization key. Each network computer must have a unique authorization key.

The example below shows a sample *authkey.dat* file:

```
broadcast144.67.33.255
terminal08:00:34:94:33:EJJAB(4%>3+[=T;fjqc
terminal08:46:22:69:47:32AK)&AMB@.?JTOR&]\
terminal08:42:90:00:31:69Jk%3+=]klw\jvv<?!
terminal08:47:35:69:21:21Uu$^qvuIi#=/>1GLq
```

Starting the Authorization Key Manager

You can update authorization keys automatically with the *xp.cnf* file (and the *authkey.dat* file), or you can open the Authorization Key Manager client. The client provides a user interface where you can enter and delete authorization key and network computer information before updating the authorization keys.

Updating the Authorization Key When Booting

To automatically update authorization keys when booting, edit the *xp.cnf* file to uncomment the *update_authkey* command. The network computer reads the *authkey.dat* file when booting and updates the network computer and authorization key information. (Be sure that SNMP is available and enabled.)

Starting the Authorization Key Manager Client With xpsh

Use **xpsh** to open the Authorization Key Manager client as shown in Figure 1. The client's interface allows you to add and delete information from the *authkey.dat* file, and to force the *authkey.dat* file to be read without having to reboot the network computer.

To start the client with **xpsh**, enter the following:

xpsh authkey

Using the Authorization Key Manager Client

The Authorization Key Manager client can be started only with **xpsh**. When it starts, the window shown in appears.

Authorization Key Manager

Terminals List

Ethernet Address	Authorization Key	IP Address	Status
08:00:34:94:33:E	JJAB(4%>3+[=T;fjqc	None	
08:46:22:69:47:32	AK)&AMB@.?JTOR&]\	None	
08:42:90:00:31:69	Jk%3+=]klw\jvv<?!	None	
08:47:35:69:21:21	Uu$^qvuIi#=/>1GLq	None	

Ethernet Address   **Authorization Key**

| | | **Add Entry** | **Delete Entry** |

| **Update Authkey** | **Edit Broadcast List** | **Save Authkey File** | **Exit** |
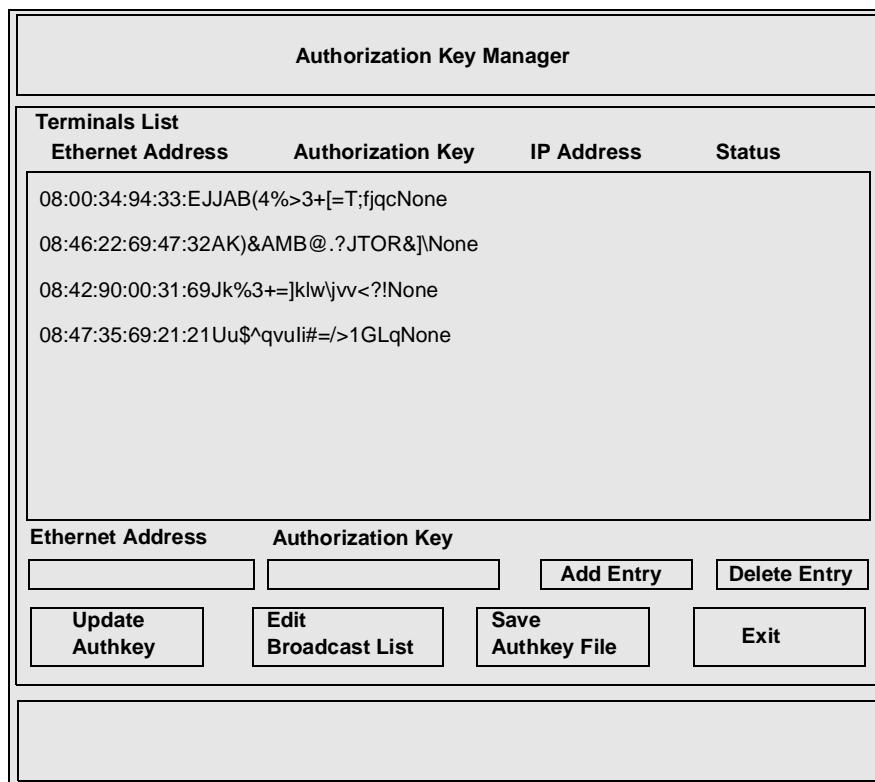
Figure 5-9 Authorization Key Manager Window.

The Authorization Key Manager Window shows the ethernet addresses and authorization keys as listed in the *authkey.dat* file. Before updating authorization keys, you can add and delete information in this window. This information is read in addition to the entries in the *authkey.dat* file. The following topics are discussed:

- Adding and Deleting network computer Information

- Editing the Broadcast List

- Updating Authorization Keys

- Saving The *authkey.dat* File

Adding and Deleting Network Computer Information

The Authorization Key Manager window contains network computer information necessary for updating authorization keys. If you have information in the *authkey.dat* file, it displays in this window.

- To delete an entry, select the information to delete with the mouse and it prefills in the **Ethernet Address** and **Authorization Key** fields. Then select **Delete Entry**

- To add an entry, enter its ethernet address in the **Ethernet Address** field, and its new authorization key in the **Authorization Key** field and select **Add Entry**.

To apply your changes to the *authkey.dat* file, refer to *Saving the Authkey File*.

Editing the Broadcast List

The Authorization Key Manager searches the specified broadcast address for those network computers that match the ethernet addresses listed in the *authkey.dat* file. To view and or edit the broadcast list, select the **Edit Broadcast List** button. The window shown in Figure 5-11 appears.

Figure 5-10 Edit Broadcast List Window.

This window lists the broadcast addresses that the Authorization Key Manager client searches when updating authorization keys. You can add and delete information in this window. Information in this window is read in addition to the entries in the *authkey.dat* file.

- To add a broadcast address, enter the address in the **Broadcast Address** field and select **Add Entry**.

- To delete an address, select the address to delete with the mouse, and then select **Delete Entry**.

To apply your changes to the *authkey.dat* file, refer to *Saving the Authkey File*.

Updating Authorization Keys

When the correct information is in the Authorization Key Manager window, select the **Update Authkey** button. The authorization keys are updated for those network computers listed.

The update status for each network computer is displayed as either Successful or Unreachable. If the status is Unreachable, check that you entered the correct ethernet and authorization key information. Make sure also that you have SNMP enabled.

Saving the Authkey File

After making changes to the ethernet addresses, authorization key, or broadcast information, you can save those changes to the *authkey.dat* file. To save changes, select **Save Authkey File**. The window shown in 1. appears.

```
┌─────────────────────────────────────────────────────────────┐
│                  Authorization Key Manager                    │
├─────────────────────────────────────────────────────────────┤
│  Save Authorization Key File                                  │
│                                                               │
│      Access Method      ┌──────────┐    ┌──────────┐          │
│                         │   TFTP   │    │   NFS    │          │
│                         └──────────┘    └──────────┘          │
│      Host               ┌──────────────────────────────┐     │
│                         └──────────────────────────────┘     │
│      File Name          ┌──────────────────────────────┐     │
│                         └──────────────────────────────┘     │
│                                                               │
│   ┌───────────┐                             ┌───────────┐     │
│   │ Save      │                             │ Return to │     │
│   │ Authkey   │                             │ Main Menu │     │
│   │ File      │                             │           │     │
│   └───────────┘                             └───────────┘     │
├─────────────────────────────────────────────────────────────┤
│                                                               │
│                                                               │
└─────────────────────────────────────────────────────────────┘
```

Figure 5-11 Save Authkey File Window.

1. Select the access method for saving the information to the file: NFS or TFTP.

   NOTE: If you use TFTP as the access method, the file authkey.dat
   must already exist and have world write permissions.

2. Enter the host name on which the *authkey.dat* file is located.

3. Enter the path and file name to which the information is to be saved.

4. Select the **Save Authkey File** button to save the information in the
   Authorization Key Manager client to the *authkey.dat* file.

5. Select **Return to Main Menu** to exit the Save Authkey File window.

Setting Up the XPT/A Graphics Tablet

The XPT/A graphics tablet provides a way to input graphics into your network computer applications. Using the graphics tablet with an appropriate network computer application, you can digitize and insert images, control cursor movements, and make menu selections.

> *NOTE: The network computer must have a serial port in order to connect the XPT/A Graphics Tablet*

1. Install the graphics tablet using the procedure in the *XPT/A Graphics Tablet Manual*.

2. Specify the device description file for each port that a device will be connected using either the remote configuration file or *Setup*:

   - In the remote configuration file, use the **input_ext_config_file_0** or **input_ext_config_file_1** command to specify the device description file. Refer to Chapter 4, *Building a Centralized System*.

   - In *Setup*, select the Configuration Summaries menu and drag on Input Extension. Select the device connected to the appropriate port using the Device on Serial Port 0 or Device on Serial Port 1 option, and then select the core pointer using the Select Core Pointer Device option.

Setting up XBlink

XBlink provides the ability to cause graphics primitives to blink using a set of dynamically loadable X extension functions. By modifying applications to call these functions, a graphic element, such as text or a line, can alternate colors to create a blinking affect. For example, to create the blink affect, a function could be called passing in blue/yellow and 500/500 milliseconds, and return index 5. If text is drawn with color index 5, then every 500 milliseconds the text would alternate between the colors blue and yellow.

The XBlink Extension is applicable only for PseudoColor, DirectColor and GrayScale visuals.

XBlink Authorization

XBlink must be authorized for use on a network computer. To use *Setup* to verify if XBlink is authorized, drag on Statistics and release on Options. If XBlink is listed, it is authorized.

If XBlink was factory-loaded, the authorization key is already entered and XBlink should be available. If XBlink was purchased separately, the authorization key must be entered at the network computer *Boot Monitor* with the **Authorize** command. See Chapter 4 *Boot Monitor* of the *Network Computer Reference* manual.

Enabling XBlink

XBlink is enabled in the remote configuration file with the *enable_xblink* command. Uncomment the command in the *xp.cnf* file, set the parameter to YES, and reboot the network computer.

```
enable_xblinkYES
```

To unload XBlink from the server, comment out the *enable_xblink* command, or set its parameter to NO. Reboot the network computer.

Using XBlink

For details about the XBlink feature and its functions, refer to the xblink man page, documented in Appendix C of the *Network Computer Reference* manual.

Touchscreen Calibration Client

The Trident touchscreen calibration client enables you to calibrate the
touchscreen. The calibration client is shown below.
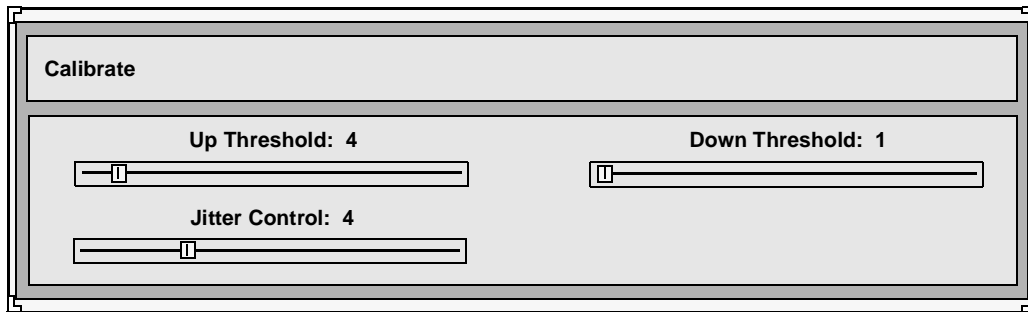
Figure 5-12 Calibration Client.

To invoke the calibration client, first map it to a keysym using the
keysym_action_entry command. For example, to invoke the client with the F1
key, enter the following in the *xp.cnf* file:

```
keysym_action_entryF1TOUCH_CALIBRATEALL
```

Touchscreen jitter can be controlled with the *touchSc_Jitter* command:

```
touchSc_Jitter4  # touch screen jitter control
```

In this example, the 4 indicates that a change of less than 5 pixels when touching
the screen will not move the cursor. The jitter and SAW touchscreen pressure
thresholds are controlled from the calibration client with the Jitter Control
slider. The touch thresholds are controlled with the Up Threshold and Down
Threshold sliders

Chapter 5   Supporting a Centralized System

Chapter 6

Using Additional Fonts
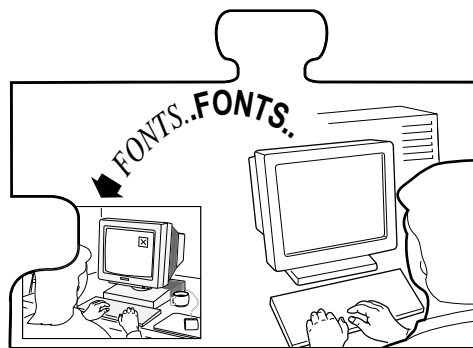
This chapter describes how to set up fonts on the host to support entries added in the remote configuration file and the **FONTS.TBL** file. The network computers use PCF format as standard, but can read SNF, SCF, PCF, BDF, DECW$FONT, .SNFZ, .DECW and many compressed formats.

The font access method is specified in the remote configuration file. The network computer can access fonts via **TFTP, NFS**, **DAP**, or **SXp**. Font files tend to be large; they do not have to be installed on the same disk as the boot files.

> *NOTE: SXp is optional. Refer to your SXp User Manual for information on setting up SXp as a host access method.*

How the X Server Builds the Font Database

At boot time, the X server builds a font database based on the following sequence of events:

1. The X server searches the primary path for a **FONTS.TBL** file.

   If a **FONTS.TBL** file is not found with the primary path, the X server searches the secondary path for a **FONTS.TBL** file. The secondary path is used if the primary path is not specified. Primary and secondary paths are specified in either the remote configuration file or in *Setup*. If fonts are not found through the primary or secondary paths, the X server searches the boot host and the boot method.

   In this example, the primary file path for the configuration files is *TEK$XP_CONFIG:* on the host *IDAHO* and is accessed through DAP. A TDEnet host table entry is required to map *IDAHO* to the DECnet address 11.20.

   ```
   tde_host_table"11.20::"  "idaho::"
   file_access_1DAP
   file_host_name_1"idaho::"
   file_path_1"TEK$XP_CONFIG:"
   ```

   In the following example, the secondary path is */tekxp/boot/fonts* on remote host *oregon* and is accessed by TCP/IP:

   ```
   ip_host_table"123.07.60.01" "oregon"
   file_access_2TFTP
   file_host_name_2"oregon"
   file_path_2"/tekxp/boot/fonts"
   ```

2. When the X server finds a **FONTS.TBL** file, it searches the directories listed in this file for FONTS.DIR and FONTS.ALIAS files. The X server uses the information in the FONTS.DIR and FONTS.ALIAS files to search for specific font files. The X server rejects the path unless it finds both FONTS.DIR and FONTS.ALIAS files.

   NOTE: Once the **FONTS.TBL** *file is found, the X server ignores file_path_1* **and** *file_path_2* **when searching for specific font files.**

   The FONTS.DIR file maps file names to an X logical font descriptive name (XLFD); the FONTS.ALIAS file lists alternative names for the XLFD font names. A typical entry for FONTS.DIR is:

   ```
   5x8.snf -misc-fixed-medium-r-normal--8-80-75-75-c-50-iso8859-1
   ```

   Typical entries for FONTS.ALIAS are:

   ```
   FILE_NAMES_ALIASES
   5x8 -misc-fixed-medium-r-normal--8-80-75-75-c-50-iso8859-1
   ```

3. The network computer resolves font paths in this order:

   a. Primary access and font path

   b. Secondary access and font path

   c. Boot host and boot method

   Access can be a host if using TFTP or DAP as the access method, or a mount point if using NFS. If not resolved, the font path is rejected.

4. Resident fonts are always available unless explicitly removed with the **xset fp-** command. Refer to Table 6-1 for the list of resident fonts.

Resident and Boot Directory Fonts

Resident fonts (Table 6-1) are loaded with the X server, and are always available unless preceded by a FONTS.DIR or FONTS.ALIAS file entry. Boot directory fonts (Table 6-2) are loaded from the installation media into the directory *TEK$BOOT*.

Table 6-1 Resident Fonts.

Font	X Logical Font Description Name (XLFD)
6x10	-misc-fixed-medium-r-normal--10-100-75-75-c-60-iso8859-1
6x13	-misc-fixed-medium-r-semicondensed--13-120-75-75-c-60-iso8859-1
6x13B	-misc-fixed-bold-r-semicondensed--13-120-75-75-c-60-iso8859-1
8x13	-misc-fixed-medium-r-normal--13-120-75-75-c-80-iso8859-1
8x13B	-misc-fixed-bold-r-normal--13-120-75-75-c-80-iso8859-1
9x15	-misc-fixed-medium-r-normal--15-140-75-75-c-90-iso8859-1
9x15B	-misc-fixed-bold-r-normal--15-140-75-75-c-90-iso8859-1
LucidaV2RT10	-bigelow & holmes-lucidav2-medium-r-normal-typewriter-16-100-100-100-m-80-iso8859-1
cursor	cursor

Table 6-2 Boot Directory Fonts.

Font	X Logical Font Description Name (XLFD)
term14_100	-bitstream-terminal-medium-r-normal--18-140-100-100-c-110-iso8859-1
term14_75	-dec-terminal-medium-r-normal--14-140-75-75-c-80-iso8859-1
luBS14	-b&h-lucida-bold-r-normal-sans-14-140-75-75-p-92-iso8859-1
luRS12	-b&h-lucida-medium-r-normal-sans-12-120-75-75-p-71-iso8859-1
helvB12	-adobe-helvetica-bold-r-normal--12-120-75-75-p-70-iso8859-1
olcursor	-sun-open look cursor-----12-120-75-75-p-160-sunolcursor-1
olgl12	-sun-open look glyph-----12-120-75-75-p-113-sunolglyph-1

Table 6-2 Boot Directory Fonts. (Continued)

Font	X Logical Font Description Name (XLFD)
LuciB10	-bigelow & holmes-lucida-bold-r-normal-serif-14-100-100-100-p-97iso2022_r_tek-l442r433
LuciBT10	-bigelow & holmes-lucida-bold-r-normal-typewriter-16-100-100-100-m-80iso2022_r_tek-l442r433
LuciRT10	-bigelow & holmes-lucida-r-normal-typewriter-16-100-100-100-m-80iso2022_r_tek-l442r433
techB14	-bitstream-terminal-bold-r-normal--18-140-100-100-c-110-dec-dectech
deccurs	decw$cursor
decsess	decw$session
fg-22	fg-22
timr10	-adobe-times-medium-r-normal-10-100-75-75-iso8859-1
timr24	-adobe-times-medium-r-normal--24-240-75-75-p-124-iso8859-1
luBS12	-b&h-lucida-bold-r-normal-sans-12-120-75-75-p-79-iso8859-1
LuciV2RT12	-bigelow & holmes-lucidav2-medium-r-normal-typewriter-21-120-100-100-m-100-iso8859-1
LuciV2NT12	-bigelow & holmes-lucidav2-medium-r-condensed-typewriter-21-120-100-100-m-100-iso8859-1
tekdw132	tekdw132
tekdw80	tekdw80
tekdwdhb80	tekdwdhb80
tekdwdht80	tekdwdht80
tekdwhb132	tekdwhb132
tekdwht132	tekdwht132
tktrm132	tktrm132

Installing SNF Fonts

To install specific SNF fonts on a host, perform the following steps.

1. Put the font files in a directory called *TEK$XP_FONTS:[<directory>],* where *<directory>* is a directory name you created for the font files.

   NOTE: The tape provides the FONTS.DIR and FONTS.ALIAS files. Perform the next two steps only if you are adding your own fonts or creating a new font directory.

2. Create a *FONTS.DIR* file in the font directory by running *mkfontdir* in the directory you have just created. You need to run *mkfontdir* even if you are putting fonts into an existing directory from the installation media. Enter:

   $ **mkfontdir TEK$XP_FONTS:[<directory>]**

   The *FONTS.DIR* is updated or created.

3. Create the *TEK$XP_FONTS:[<directory>]FONTS.ALIAS* file and add the string:

   FILE_NAMES_ALIASES

   This allows the font to be accessed by its file name, as well as by the font logical name. If you do not want to access a font by its file name, do not add the FILE_NAMES_ALIASES entry in the *FONTS.ALIAS* file.

   Refer to the **mkfontdir** help message of the *FONTS.DIR* and *FONTS.ALIAS* files.

4. Edit the *TEK$XP_CONFIG:FONTS.TBL* file and add the new path.

   NOTE: If you have added the line *fontSetSelection: 0 to the TPU.DAT file, do not place the NCD-supplied fonts in the fonts.tbl. Instead, use the DECwindows fonts. The NCD fonts do not display correctly if the *fontSetSelection: 0 line exists.

Table 6-3 lists the font directories in the *TEK$XP_FONTS:* directory.

Table 6-3 Font Directories Available on the Installation Media.

Directory	Source, Contents, Application
misc	Cursor and character fonts, MIT miscellaneous fonts
100dpi	X Consortium distribution for 100 dot-per-inch fonts. Some fonts contain eight-bit multinational character sets.
75dpi	X Consortium distribution for 75 dot-per-inch fonts. Some fonts contain eight-bit multinational character sets.
tek100dpi	Tektronix-distributed Lucida fonts
oldx11	X Consortium distribution fonts, including fonts released prior to X Version 11, Release 3
openlook	OPEN LOOK applications fonts
japanese	Japanese fonts
Speedo	Speedo fonts from Bitstream, Inc.
Type1	Courier (typewriter) font from IBM Corporation

Using DECwindows Fonts

To run DECwindows most effectively, use the DECwindows host fonts, making sure that the 75DPI font is listed before the 100dpi font in the *FONTS.TBL* file. By default, the *TEK$XP_CONFIG:FONTS.TBL* contains the following:

```
TEK$SYSCOMMON:[SYSFONT.DECW.75DPI]
TEK$SYSCOMMON:[SYSFONT.DECW.100DPI]
TEK$SYSCOMMON:[SYSFONT.DECW.CURSOR16]
TEK$SYSCOMMON:[SYSFONT.DECW.CURSOR32]
```

Using BDF Fonts

Some font files are in *Bitmap Distribution Format (BDF)*. This portable format stores font information as ASCII text. BDF fonts can be used as they are, or converted to SNF to increase efficiency. Use the utility BDFTOSNF.EXE.

For best results, compile the fonts on the host where they are used. This procedure is primarily of interest to those who want to install third-party fonts.

1. Copy the BDF files to be converted to a separate directory.

2. Change to the new directory.

3. Convert the BDF files to SNF files:

   $ **DEFINE/USER_MODE SYS$OUTPUT MYFONT.SNF**

   $ **BDFTOSNF -p4 -m "-M" -u1 -t MYFONT.BDF**

4. You can remove all of the BDF files in the directory.

   $ **DELETE *.BDF;1**

5. Follow the previous instructions under the heading *Installing Fonts* to make the converted fonts available to the network computer.

For details about the **bdftosnf** utility, refer to the BDFTOSNF man page.

Converting BDF to PCF

A utility, **bdftopcf**, is provided to convert BDF fonts to PCF format.

1. Copy the BDF files to be converted to a separate directory.

2. Change to the new directory.

3. Convert the BDF files to PCF files:

   $ **bdftopcf -o pcf font filename.pcf** *bdf font filename***.bdf**

4. Remove all of the BDF files in the directory.

   $ **rm *.bdf**

5. Follow the previous instructions under the heading *Installing Fonts* to make the converted fonts available to the network computer.

For details about the **bdftopcf** utility, refer to the BDFTOPCF man page.

Chapter 7

Troubleshooting

This chapter contains information to help solve potential problems when booting and using your network computer. Use Table 7-1 to quickly identify the problem you're experiencing and go to the specified page for possible solutions.

Table 7-1 Possible Problems.

Problem	Page #
The network computer cannot find the os file when booting via MOP	7-2
The network computer loads the os file but cannot download files via DAP	7-2
The network computer cannot find the fonts.tbl, nodes.tbl, or hosts.tbl files	7-3
The VMS Autologin window does not appear after booting	7-3

The network computer cannot find the os file when booting via MOP

- Mop may not be enabled. Check circuit characteristics in NCP and verify that the circuit is "on" and the "service" is enabled. See *Chapter 5, Supporting a Centralized System*.

- Make sure that the *os* file is in the MOM$SYSTEM directory. The file *XP10_OS.SYS*, *XP330_OS.SYS* or *XP350_OS.SYS* must reside in the *MOM$SYSTEM* directory and have world read access. Verify that the software was installed correctly. See Chapter 1, *Installing the Software*.

- Make sure that the *os* file has not been renamed. If it has been renamed, the name can be no longer than 14 characters and must have the *.SYS* extension. It must also reside in the *MOM$SYSTEM* directory with world read access. Be sure to change the *os* path to include the new filename.

- Make sure network connections are correctly configured. Check network connections and verify that the network computer is connected to the network and all connections are secured. If using an XP330 network computer, verify that the proper LAN option is selected such as thicknet/thicknet/UTP. The switch should be up for thicknet, and down for thinnet or unsheilded twisted pair. VAX hosts such as VAXstations also have a thicknet/thinnet switch that must be set properly.

- Verify that the boot path is correct:

  XP10:TEK$XP10_BOOT:XP10_OS
  XP200:TEK$XP200_BOOT:XP200_OS
  XP330:TEK$XP330_BOOT:XP330_OS
  XP350:TEK$XP350_BOOT:XP350_OS
  XP400:TEK$XP400_BOOT:XP400_OS

The network computer loads the os file but cannot download files via DAP

- If the file access method is DAP using PROXY login, the PROXY account may not be set up. In the VMS AUTHORIZE utility, use the **SHOW/PROXY** command to verify that the proxy record exists. The default proxy must be flagged (D). Check if intrusion records exist by issuing the command **SHOW INTRUSIONS** at the DCL prompt. If an intrusion record exists, delete it using the **DELETE INTRUSION** command. See Chapter 1, *Installing the Software* for further information.

- Verify that the TEK logicals are defined. Use the command **SHOW LOGICAL TEK*** to verify that the TEK logicals have been defined. If the TEK logicals do not exist, from the SYSTEM account, enter the command: **@SYS$MANAGER:TEK_STARTUP**

The network computer cannot find the fonts.tbl, nodes.tbl, or hosts.tbl files

- Verify that the primary XP file root is correct. Enter *Setup* and drag on Configuration Summaries and release on Host File Access. Verify that Primary File Access is DAP, Primary File Host is the DECnet address or host name of the VAX where the software is installed, and the Primary XP File Root is TEK$XP_CONFIG:

- Verify that the colon exists.

- Verify that the directory and *.tbl* files have world read access. Set the default to the *TEK$XP_CONFIG:* directory and use the command: **DIR/PROT *.TBL** to verify that the files have world access. To set world read access, use the **SET PROT** command as shown below:

  $ **SET PROT=(w:r) filename.tbl**

The VMS Autologin window does not appear after booting

- Verify that DECWindows is running on the VAX. To verify that DECWindows is running, enter the following commands:

  $ **SET DEF SYS$SYSTEM**

  $ **DIR DECW***

  $ **SHOW LOG DECW***

- Verify that the XP_SERVER process is running. To verify that the XP_SERVER process exists, enter the following command:

  $ **SHOW SYSTEM**

  If an XP_SERVER process does not exist, issue the following command from the SYSTEM account:

  $ **@SYS$MANAGER:TEK_STARTUP**

  Verify again that the process exists.

Chapter 7   Troubleshooting

Index

Index

Index

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