Digital TCP/IP Services for OpenVMS

Installation and Configuration

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Documentation Comments

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Preface

This book describes how to install and configure the Digital TCP/IP Services for OpenVMS™ (UCX) software. There is also information provided on how to modify your system resources so that your network configuration runs more efficiently.

Intended Audience

This book is writtten for OpenVMS system managers or network managers who install and configure networking software. The system managers using this book are assumed to have an understanding of TCP/IP networks and terminology.

Document Structure

The following chapters and appendices are in this book:

- Chapter 1 provides details about installing the UCX files.
- Chapter 2 provides details on how to do an initial configuration of the UCX software.
- Chapter 3 provides details on how to modify your operating system to maximize its resources.
- Appendix A provides examples of a UCX installation and initial configuration.
- Appendix B shows the locations on your OpenVMS system of files installed by UCX.
- Appendix C lists and provides the meaning for the acronyms related to open networking.

Related Documents

You might find these documents useful:

- *Internetworking with TCP/IP: Principles, Protocols, and Architecture*, by Douglas Comer (order number ER–TCPIP–TM–001)
- Request for Comments (RFCs) 1155—1157, 1212—1215, and 1441—1452

Terminology

This manual uses the following terminology:

- Abbreviations for the products' names
  - Digital TCP/IP Services for OpenVMS is used to mean both:

    The Digital TCP/IP Services for OpenVMS Alpha™ operating system product

    The Digital TCP/IP Services for OpenVMS VAX™ operating system product

  - UCX is used to mean both products.

- Software components
  - Auxiliary Server is used to mean the UCX implementation of the INETd function, system security, and other features.
  - NFS™ means the UCX implementation of the Network File System (NFS) protocols, including NFS Server, NFS Client, and PC-NFS™.
  - TN3270 means the TELNET software that emulates IBM 3270 model terminals.
- UNIX™ operating system

  UNIX refers to UNIX Version 4.3 of the Berkeley Software Distribution (BSD). The Digital ULTRIX™ and DEC OSF/1™ operating systems are fully compatible with UNIX BSD Version 4.3.
- Networking terms
  - Host and node both mean a system connected to an internet.
  - The term Internet means the network, as defined by RFC 1208, consisting of large networks that use the TCP/IP protocol suite; provides universal connectivity, reaching the Defense Advanced Projects Research Agency (DARPA) Internet, MILNET, NSFnet, CREN, and many worldwide universities, government research labs, military installations, and business enterprises.

    The term internet means interconnected networks using the TCP/IP protocols, functioning as one, virtual network.
  - A VAXcluster™ system is made up of all VAX systems.

    A VMScluster™ system can be made up of either all Alpha systems or a mixture of VAX systems and Alpha systems.

Acronyms

The following acronyms are used throughout this book:

BIND	Berkeley Internet Name Domain
FTP	File Transfer Protocol
SNMP	Simple Network Management Protocol
SMTP	Simple Mail Transfer Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol
UCX	Digital TCP/IP Services for OpenVMS
UDP	User Datagram Protocol

See Appendix C for a full listing of Digital TCP/IP Services for OpenVMS acronyms.

Conventions

The name of OpenVMS AXP has been changed to OpenVMS Alpha. Any references to OpenVMS AXP or AXP are synonymous with OpenVMS Alpha or Alpha. All IP addresses in this book represent fictitious addresses. The following conventions apply to this book.

Convention	Meaning
`UPPERCASE SPECIAL TYPE`	Indicates OpenVMS system output or user input.
UPPERCASE TEXT	Indicates names of OpenVMS and UCX commands, options, utilities, files, directories, hosts, and users.
`lowercase special type`	Indicates UNIX system output or user input, commands, options, files, directories, utilities, hosts, and users.
italic	Indicates a variable.
bold	Indicates a new term defined in the text.
Return	Indicates that you press the Return key.
Ctrl/*x*	Indicates that you press the Control key while you press the key noted by *x*.
[ ]	In command format descriptions, indicates optional elements. You can enter as many as you want.
{ }	In command format descriptions, indicates you must enter at least one listed element.

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1

Installing the UCX Software

This chapter describes how to run VMSINSTAL or the POLYCENTER™ Software Installation (PCSI) utility to install or upgrade the Digital TCP/IP Services for OpenVMS (UCX) software. This chapter provides the following sections:

1. Recommended Order for Installing UCX (Section 1.1)
2. Backing Up the System Disk (Section 1.2)
3. Registering a License Product Authorization Key (Section 1.3)
4. Installing UCX with VMSINSTALL (Section 1.4)
5. Installing UCX with PCSI (Section 1.5)
6. Upgrading UCX (Section 1.6)

1.1 Recommended Order for Installing UCX

Whether you decide to install all the software products using the VMSINSTAL procedure or are using the PCSI utility, follow the order of installation outlined below:

1. Install the OpenVMS software.
2. Shut down all network-related applications.
3. Install or upgrade UCX using VMSINSTAL or PCSI.
4. Reboot your system.
5. Go to the Chapter 2 and follow the instructions for configuring the UCX software.

The installation generally takes about 5 minutes to complete. If this is an upgrade, Digital recommends that you also run the SYS$HELP:HELPLIB.HLB procedure to delete obsolete commands from the top-level online HELP. Running this procedure takes about 20 minutes. For information on the SYS$HELP:HELPLIB.HLB procedure, refer to Section 1.6.

1.2 Backing Up the System Disk

Before you install and configure the UCX software, Digital recommends that you back up the system disk.

Use the backup procedures established at your site. For details on performing a system disk backup, see the section on the Backup utility in the "OpenVMS System Management Subkit."

1.3 Registering a License Product Authorization Key

Ensure that an applicable License Product Authorization Key (PAK) is registered for your UCX product. Before you install software on a newly licensed node or cluster, you must register a PAK using the License Management Facility (LMF). Without a PAK, you can use only DECwindows TCP/IP Transport software.

The PAK is shipped with the kit if you ordered the license and media together. Otherwise, the PAK is shipped separately to the location specified on your license order.

If you are installing UCX as an update on a node or cluster already licensed for this software, you have already completed the License PAK registration requirements. If you are installing prerequisite or optional software along with UCX, review the PAK status and install the PAKs for any prerequisite or optional software before you install UCX.

To register a license, log in to the system manager's account, SYSTEM, and do one of the following:

- Run SYS$UPDATE:VMSLICENSE.COM and enter the data from your License PAK.
- Issue the LICENSE REGISTER command and the appropriate qualifiers at the DCL prompt.

For UCX on multiple cluster nodes, perform a license load on each node.

For complete information about LMF, see the *OpenVMS License Management Utility Manual*.

1.4 Installing UCX with VMSINSTALL

Before you run the VMSINSTAL procedure, you may want to create a log file to record the installation process. Regardless of whether you have a log file, the following outlines the steps for installing UCX software:

1. Ask users to log off the system.
2. Shut off the TCP/IP DECwindows Transport.

   To do this, comment out the DECwindows startup command in your system startup file and restart your system.
3. Log into the SYSTEM account.
4. Set the default directory to SYS$UPDATE.
5. Depending on your hardware and operating system, you may be able to install UCX with PCSI instead of VMSINSTAL. See Section 1.5 for more information on the PCSI utility.

6. The following describes how to invoke VMSINSTAL on various hardware platforms and media:

   If you are installing the UCX software from the Consolidated Software Distribution CD onto an Alpha system, enter the following command:

   ```
   $ @VMSINSTAL ALPHA_UCX040 disc-drive:[ALPHA_UCX040.KITS] OPTIONS N
   ```

   where:

disc-drive	Drive where the CD with the UCX save sets are mounted.
OPTIONS N	Prompts you about displaying and printing the Release Notes.

   If you are installing the UCX software from the Consolidated Software Distribution CD onto a VAX system, enter the following command:

   ```
   $ @VMSINSTAL UCX040 disc-drive:[UCX040.KITS] OPTIONS N
   ```

   where:

disc-drive	Drive where the CD with the UCX save sets are mounted.
OPTIONS N	Prompts you about displaying and printing the Release Notes.

   If you are installing the UCX software from either a TK50 cartridge or a magnetic tape onto a VAX system, enter the following command:

   ```
   $ @VMSINSTAL UCX040 ddcu: OPTIONS N
   ```

   where:

ddcu:	Device where you mounted the distribution media. The fields are: *dd* — device name *c* — controller name *u* — unit number
OPTIONS N	Prompts you about displaying and printing the Release Notes.

7. Read the Release Notes, either online or print them after the installation completes from SYS$HELP:UCX040.RELEASE_NOTES.

8. Select purge options.

   Note

   If UCX is active on your system, either stand-alone or in a cluster, do not answer YES to purging. You will need to purge manually later.

9. Answer the PAK query. Install the PAK either during or after running the installation procedure.

   If you plan to use UCX only for displaying DECwindows applications that use UCX on remote hosts, you do not need to install a PAK.

To continue using the system manager's account and restore the process symbol tables, log out and log in again. VMSINSTAL deletes or changes entries in the process symbol tables during the installation.

Note

To stop the installation at any time, press Ctrl/Y. The installation procedure deletes all the files created up to that point and exits.

1.5 Installing UCX with PCSI

Depending on the type and version of your operating system, you may be able to install UCX using the POLYCENTER Software Installation (PCSI) utility. Complete the following procedure to install UCX from the UCX PCSI kit:

1. To start the installation, enter the product install command with the appropriate qualifiers. An example of this command follows:

   ```
   $ product install ucx /source=DKA400:[UCX040.KIT]
   ```

   where:

   DKA400:[UCX040.KIT] is the directory path for the UCX kit.

   If you do not specify the source qualifier, PCSI searches in the location defined by the logical name PCSI$SOURCE. If you do not specify either the source qualifier or PCSI$SOURCE, the PCSI utility searches the current default directory for the UCX kit.

   The system responds with the following. It also asks you whether you want to continue and other questions about the installation.

   ```
          The following product has been selected:
    Digital AlphaVMS UCX V4.0     [Available]

          Do you want to continue? [YES]

    *** Digital AlphaVMS UCX V4.0: Digital TCP/IP Services for OpenVMS.

            (c) Digital Equipment Corporation 1995. All Rights Reserved.

      Digital Equipment Corporation

          Do you want all the default values for this product? [YES]

          Do you want to view the values? [NO]

      Execution phase starting ...
      The following product will be installed:
          Digital AlphaVMS UCX V4.0
      %PCSI-I-VOLINFO,
      estimated space information for volume DISK$THETA_FT
      -PCSI-I-VOLSPC, 0 required; 3319304 available; 3319304 net

      Portion done:
   0%...10%...20%...30%...40%...50%...60%...70%...80%...90%...100%
      The following product has been installed:
      Digital AlphaVMS UCX V4.0

      Postinstallation: execute "@SYS$UPDATE:UCX$PCSI_MODULE.COM install"
   ```

2. To complete the installation, run the Postinstallation program by entering the following command:

   ```
   $@SYS$UPDATE:UCX$PCSI_MODULE.COM install
   ```

1.6 Upgrading UCX

If another version of UCX exists on your system, follow these steps to upgrade the software:

1. Issue the following command to shut down UCX:

   ```
   $@SYS$MANAGER:UCX$SHUTDOWN
   ```

2. Run VMSINSTAL as described in Section 1.4 or PCSI as described in Section 1.5.

3. If UCX is active on other hosts of a cluster, do not answer YES to the prompt that asks if you want to purge the old version of UCX. Manually purge these files later.

   The following directories contain previous versions of UCX files:

   SYS$HELP
   SYS$LIBRARY
   SYS$MANAGER
   SYS$COMMON:[SYSTEST.UCX]
   SYS$COMMON:[SYSHLP.EXAMPLES.UCX]
   SYS$SPECIFIC:[SYSEXE]
   SYS$COMMON:[SYSEXE]
   SYS$TEST

4. Reconfigure all the application software that was running on your operating system prior to the upgrade.

5. Because you had a prior installation of UCX, there may be some obsolete online HELP information present in the system help file, SYS$HELP:HELPLIB.HLB. To delete this obsolete information, run the following command procedure:

   ```
   SYS$UPDATE:UCX$CLEANUP_HELPLIB.COM
   ```

   Note

   Running the command procedure that removes obsolete online HELP information from your system generally takes 20 minutes.

6. Reboot your system.

7. VMSINSTAL checks for pre-existing startup and shutdown files. If these files are found, the procedure renames UCX$LPD_STARTUP.COM to UCX$LPD_STARTUP.OLD and UCX$LPD_SHUTDOWN.COM to UCX$LPD_SHUTDOWN.OLD. After installation, add the user print queue information from the old startup and shutdown files to their corresponding new files.

2
Configuration

The OpenVMS configuration procedure allows you to customize the UCX software for your system. This chapter describes the following:

1. Recommended Order for Configuring UCX (Section 2.1)
2. Using Menus to Configure Standard UCX Software (Section 2.2)
3. Using Commands to Configure Standard UCX Software (Section 2.3)
4. Configuring Optional UCX Components (Section 2.4)
5. Starting up UCX (Section 2.5)
6. Testing the UCX Configuration (Section 2.6)
7. Completing Optional Postconfiguration Steps (Section 2.7)

2.1 Recommended Order for Configuring UCX

After you install the UCX software, complete the following tasks to configure the parameters of the UCX applications:

1. Configure the standard UCX software.
2. Configure applicable optional UCX components.
3. Start up UCX.
4. Test the UCX configuration.
5. Reboot the system.
6. Complete the optional postconfiguration steps.

Configuring standard UCX software generally takes about 15 minutes. Purging the top-level HELP of obsolete commands generally takes about 20 minutes.

2.2 Using Menus to Configure Standard UCX Software

The standard UCX software has the following three subgroups:

- Core Environment
- Client Components
- Server Components

There are two methods available to configure the standard UCX software. You can either display the configuration menus and answer the prompts or you can enter commands to set the parameters. If you do not have experience configuring UCX, Digital recommends that you use the configuration menus to set parameters. To do this, complete the procedures outlined in this section. For information on entering commands to set parameters, refer to Section 2.3.

To configure UCX, complete the following procedures:

1. Access the Main Configuration menu by entering the following command:

   ```
   $ @SYS$MANAGER:UCX$CONFIG
   ```

   A Main Configuration menu similar to the following displays:

   ```
   TCP/IP Services for OpenVMS Configuration Menu

   Configuration options:

           1 - Core environment
           2 - Client components
           3 - Server components
           4 - Optional components

           5 - Shutdown TCP/IP Services for OpenVMS
           6 - Startup TCP/IP Services for OpenVMS
           7 - Run tests

           A - Configure options 1 - 3
         [E] - Exit configuration procedure

   Enter configuration option:
   ```

2. Access the Core Environment Configuration menu by entering Option 1 from the Main Configuration menu. A Core Environment Configuration menu similar to the following displays:

   ```
   TCP/IP Services for OpenVMS Core Environment Configuration Menu

   Configuration options:

           1 - BIND Resolver
           2 - Domain
           3 - Routing
           4 - Interfaces
           5 - Time Zone

           A - Configure options 1 - 5
         [E] - Exit menu

   Enter configuration option:
   ```

   To use UCX, you must set up the Internet domain and configure the interfaces. Setting up a BIND Resolver, Routing, and Time Zones are optional. If you are unfamiliar with these applications and need more information to determine if you should configure them, see the *Digital TCP /IP for OpenVMS Services Management* guide.

3. Set up the Internet domain by selecting Option 2 from the Core Environment menu and entering the name of your domain. For information on UCX Internet domain naming conventions, see the *Digital TCP/IP for OpenVMS Services Management* guide.

4. Configure interfaces by selecting Option 4 from the Core Environment menu and entering the host name, the Internet address, the network mask (site specific), and the broadcast mask. For information on UCX interface naming conventions, see the *Digital TCP/IP for OpenVMS Services Management* guide.

5. Return to the Main Configuration menu by entering Option (E) from the Core Environment menu.

6. Access the Client Components menu by entering Option 2 from the Main Configuration menu. A Client Components Configuration menu similar to the following displays:

```
TCP/IP Services for OpenVMS Client Components Configuration Menu"

Configuration options:

        1 - FTP
        2 - LPR/LPD
        3 - NFS Client
        4 - REXEC and RSH
        5 - RLOGIN
        6 - SMTP
        7 - TELNET

        A - Configure options 1 - 7
      [E] - Exit menu

Enter configuration option:
```

7. Enable the client applications you plan to use and disable the ones you do not plan to use.
8. Return to the Main Configuration menu by entering Option (E) from the Client Components Configuration menu.
9. Access the Server Components Configuration menu by entering Option 3 from the Main Configuration menu. A Server Component Configuration menu similar to the following displays:

```
TCP/IP Services for OpenVMS Server Components Configuration Menu

Configuration options:

         1 -  BIND
         2 -  BOOTP
         3 -  TFTP
         4 -  FTP
         5 -  LPR/LPD
         6 -  NFS
         7 -  PC-NFS
         8 -  PORTMAPPER
         9 -  TELNET
        10 -  SNMP
        11 -  NTP
        12 -  METRIC
         A -  Configure options 1 - 12
        [E] - Exit menu

        Enter configuration option: ?
```

10. Enable the server applications you plan to use and disable the ones you do not plan to use.

2.3 Using Commands to Configure Standard UCX Software

Advanced users who are familiar with the UCX software configuration procedure and want to bypass the configuration menus can follow these steps:

1. Log in to the SYSTEM account.

2. Enter the configuration command and the appropriate options. An example of the configuration command with options that enable the client for the entire cluster follows:

```
$ @SYS$MANAGER:UCX$CONFIG CLIENT ENABLE CLUSTER
```

If you are not sure which options you want to specify, invoke the UCX$CONFIG command with no parameters and the available options display as follows:

```
@SYS$MANAGER:UCX$CONFIG [ ALL | CLIENT | SERVER | MINIMUM | WORKSTATION ] [ ENABLE | DISABLE ]
```

or

```
@SYS$MANAGER:UCX$CONFIG [ ALL | CLIENT | SERVER | WORKSTATION | MINIMUM ] { ENABLE | DISABLE } CLUSTER
```

where:

Parameter	Description
ALL	Configures the core environment and all client and server components
CLIENT	Configures all client components and related software
SERVER	Configures all server components and related software
WORKSTATION	Configures the BIND Resolver, the domain, dynamic routing, the Internet interfaces, the time zone, Remote Login, Remote Shell, Remote Executive, FTP Client, FTP Server, TELNET Client, TELNET Server, SMTP
MINIMUM	Configures the domain, Internet interfaces, Remote Login, FTP Client, FTP Server, TELNET Client, TELNET Server
ENABLE	Enables all the configured components
DISABLE	Disables all the configured components
CLUSTER	Configures all selected components clusterwide Exception: The only components that you cannot configure clusterwide are BIND Server and SMTP. If you configure at least one cluster interface, the procedure automatically enables IP forwarding.

Note

The procedure performs two levels of enabling and disabling: clusterwide and single node (except for BIND Server and SMTP, which are configured and enabled node-specific only).

2.4 Configuring Optional UCX Components

You may need to configure the optional UCX components if you are doing one or more of the following:

- Running PATHWORKS or DECnet/OSI over UCX.
- Running or developing applications that use the Stanford Research Institute's (SRI) QIO Application Programming Interface (API).
- Allowing guest users to log in to the system at various locations.

To configure optional components, do the following:

1. Access the Main Configuration menu by entering the following command:

   ```
   $ @SYS$MANAGER:UCX$CONFIG
   ```

   A Main Configuration menu similar to the following displays:

   ```
   TCP/IP Services for OpenVMS Configuration Menu

   Configuration options:

           1 - Core environment
           2 - Client components
           3 - Server components
           4 - Optional components

           5 - Shutdown TCP/IP Services for OpenVMS
           6 - Startup TCP/IP Services for OpenVMS
           7 - Run tests

           A - Configure options 1 - 3
         [E] - Exit configuration procedure

   Enter configuration option:
   ```

2. Access the Optional Components Configuration menu by entering Option 4 from the Main Configuration menu. An Optional Components Configuration menu similar to the following displays:

   ```
   TCP/IP Services for OpenVMS Optional Components Menu

   Configuration options:

           1 - Configure PWIP Driver
           2 - Configure SRI QIO Interface
           3 - Set up Anonymous FTP Account and Directories
         [E] - Exit menu
   ```

3. Configure either the PWIP Driver, the SRI QIO Interface, or Anonymous FTP Accounts or Directories.

   If you want to run PATHWORKS or DECnet/OSI over UCX, configure the PWIP Driver. To do this, select Option 1 from the Optional Components menu.

   If you run or develop applications that use the SRI QIO API, select Option 2 from the Optional Components menu.

   Note

   You can also load the interface by entering the following command:

   ```
   $ @SYS$MANAGER:UCX$LOAD_INETDRIVER.COM
   ```

If you want to allow guest users to log onto systems, set up an Anonymous FTP Account and Directories. To do this, obtain the necessary user information code (UIC), determine guest user permissions, and select Option 3 from the Optional Components menu.

2.5 Starting up UCX

You must start UCX after configuring the standard software and optional components, but before either running tests or completing the postconfiguration steps. After you configure UCX, complete the following to startup the software:

1. Access the Main Configuration menu by entering the following command:

   ```
   $ @SYS$MANAGER:UCX$CONFIG
   ```

2. Select Option 6 from the Main Configuration menu.

2.6 Testing the UCX Configuration

You can test the UCX configuration by running the Internet Installation Verification Procedure (IVP). To do one or more of the following, run the IVP:

- If you loaded the Product Authorization Key (PAK) and you want to verify that the lower-layer software and the Portmapper service are correctly installed.
- If you did not load the PAK and you want to verify that UCX is correctly installed for DECwindows to display UCX applications.
- To transfer device socket packets that continuously vary in size, between a sender and a receiver.
- To test the Portmapper service with a pair of client/server programs. Running IVP reports to SYS$OUTPUT the time it took to run the test.

Note

Before you run IVP be sure that UCX is started and you have SYSPRV, OPER, NETMBX, and TMPMBX privileges. You can also use SETPRV to set these privileges.

To run IVP from the configuration menus, do the following

1. Access the Main Configuration menu by entering the following command:

   ```
   $ @SYS$MANAGER:UCX$CONFIG
   ```

2. Select Option 7 from the Main Configuration menu. All IVP errors are fatal and use the same format as system messages, for example:

   %UCX-E-IDENT, *text*.

   Table 2–1 shows the possible causes for IVP errors and what you can do to try to fix the problem.

Table 2–1 Correcting IVP Errors

Problem	Corrective Action
Network configuration is incorrect.	Shut down the UCX software and rerun the configuration procedure.
Startup fails.	Check the SYSGEN parameters and increase them if necessary. Shut down and restart UCX.
The installation kit is defective.	Request a replacement kit.
None of these actions corrects the problem.	Contact your Digital representative.
The IVP fails because the PAK is missing.	Without a PAK, you can use only the DECwindows TCP/IP Transport software. If you want to run all the software, purchase a UCX PAK.

To run the IVP any time after exiting the configuration procedure, issue the following command:

```
$ @SYS$TEST:UCX$IVP
```

Note

To activate your new UCX configuration, reboot the system.

2.7 Completing Optional Postconfiguration Steps

The procedures provided in this section are optional. You complete them after rebooting the system with your new configuration. If you need more information to determine if completing a postconfiguration procedure is necessary, refer to the *Digital TCP/IP Services for OpenVMS Management* guide for a detailed discussion of the applicable component.

2.7.1 Automatically Starting Up and Shutting Down UCX

To start up UCX automatically, add a line to the SYS$MANAGER:SYSTARTUP_VMS.COM file (for OpenVMS Version 5.5, alter the SYS$MANAGER:SYSTARTUP_V5.COM file). After the command line that starts the procedure, insert the following:

```
@SYS$MANAGER:UCX$STARTUP
```

To shut down UCX automatically when the system shuts down, add the following line to the SYS$MANAGER:SYSHUTDOWN.COM file:

```
@SYS$MANAGER:UCX$SHUTDOWN
```

2.7.2 Verifying SYS$SYLOGIN.COM Protections

For the services to start after you log in, the OpenVMS systemwide login procedure, typically SYS$MANAGER:SYLOGIN.COM, must be world-readable and world-executable.

To display its current privileges, type:

```
$ DIRECTORY SYS$MANAGER:SYLOGIN.COM /PROTECTION
```

If protections are not *W:RE*, issue:

```
$ SET PROTECTION=(W:RE) SYS$MANAGER:SYLOGIN.COM
```

2.7.3 Populating Relevant Databases

Add entries to the databases related to the services you configured.

If UNIX hosts exist on your network, you can copy the information in the following databases:

- /etc/hosts
- /etc/networks
- /etc/passwd
- /etc/bootptab

For details, see the *Digital TCP/IP Services for OpenVMS Management* and the *Digital TCP/IP Services for OpenVMS Management Command Reference* guides.

2.7.4 Setting up DECwindows for the TCP/IP Applications

To use DECwindows for TCP/IP applications, add the following line to the SYS$MANAGER:DECW$PRIVATE_SERVER_SETUP.COM command procedure:

```
$ DECW$SERVER_TRANSPORTS == "DECNET,LOCAL,TCPIP"
```

Restart DECwindows with the following:

```
$ @SYS$STARTUP:DECW$STARTUP RESTART
```

If DECnet or DECnet/OSI runs on the same system, start DECnet first.

To display TCP/IP applications via DECwindows on a remote host (DECwindows client) from your system (DECwindows server), do the following:

1. Set up security on the remote host.
2. Put the remote client in the local UCX Hosts Database.
3. Edit SYS$MANAGER:DECW$PRIVATE_SERVER_SETUP.COM as explained above.
4. Set the display for the applications to the remote host:

   ```
   $ SET DISPLAY/CREATE/NODE=remote_host/TRANSPORT=TCPIP
   ```

If your version of DECwindows does not support this command, then reboot your system.

2.7.5 Refining and Completing the NFS Server Configuration

To make the Network File System (NFS) available to users on remote systems running NFS Client, follow these steps:

1. If you are inexperienced with NFS management or NFS on OpenVMS, see the *Digital TCP/IP Services for OpenVMS Management* guide for details.
2. Set up disk device mapping.

   The following command illustrates binding the disk devices to UNIX-style names:

   ```
   UCX> BIND "/usr3" DISK$USER3:
   ```

   You can add this command to the UCX$NFS_SET_FS command procedure.
3. Export file systems.

   The following command illustrates exporting:

   ```
   UCX> ADD EXPORT "/usr3" /HOST="unix.xyz.com"
   ```
4. If you want to configure container file systems (CFS), refer to the following for an example of the commands you enter:

   ```
   UCX> CREATE CONTAINER DISK$USER3:[CONTAINER]
   UCX> BIND DISK$USER3:[CONTAINER] "/cont"
   UCX> ADD EXPORT "/cont" /HOST="unix.xyz.com"
   ```
5. If you want to add proxies, refer to the following for an example of the commands you enter:

   ```
   UCX> ADD PROXY JONES /HOST="unix.xyz.com" /UID=271 /GID=15
   UCX> ADD PROXY UCX$NOBODY /HOST=* /UID=-2 /GID=-2
   UCX> ADD PROXY UCX$NOBODY /HOST=* /UID=0 /GID=1
   ```
6. If you want to monitor mounting, do the following two-step process:

   On the client UNIX system you are mounting, enter the following command:

   ```
   $ REPLY /ENABLE=NETWORK
   ```

   On the server, enter the following command:

   ```
   unix# mount openvms:/usr3 /usr3
   ```
7. If you want to modify root mapping, enter the following command to change default root mapping:

   ```
   UCX> SET NFS /UID=0 /GID=1
   ```

2.7.6 Refining and Completing the NFS Client Configuration

To request the NFS Service, follow these steps:

1. If you are not experienced with managing NFS or running NFS on an OpenVMS system, see the *Digital TCP/IP Services for OpenVMS Management* guide for details.
2. If you have not already done so, add all the remaining proxies.

   ```
   UCX> ADD PROXY JONES /HOST="unix.xyz.com" /UID=271 /GID=15
   UCX> ADD PROXY UCX$NOBODY /HOST=* /UID=-2 /GID=-2
   ```
3. Mount devices.

The following command illustrates mounting the devices:

```
UCX> MOUNT DNFS10: /HOST="unix.xyz.com" /PATH="/usr/exports/public"
```

You can add this to your system startup procedure.

4. Access files.

   The following command illustrates accessing files as though they were local:

   ```
   $ TYPE DNFS10:[JONES]MYFILE.TXT
   ```

2.7.7 Providing the NFS Online Documentation to Users

For remote NFS Client users, UCX includes online NFS documentation that describes how to remotely access files that reside on a system running UCX and offering the NFS Service. To make this documentation available to remote NFS client users:

1. Copy the SYS$HELP:UCX$VMS_FILES.DOC to a public directory.
2. Rename UCX$VMS_FILES.DOC to a UNIX file name such as UCX_VMS_FILES.DOC.
3. Export the public directory so that remote users can mount it.

3

Customizing the OpenVMS Environment for UCX

This chapter provides information that describes how to customize your OpenVMS operating system environment for the UCX software. This chapter has the following sections:

1. Checking the Global Pagelets and Global Sections (Section 3.1)
2. Increasing the Nonpaged Dynamic Pool (Section 3.2)
3. Increasing the Interrupt Stack Pages (VAX Only) (Section 3.3)
4. Assigning User Identification Codes (Section 3.4)

Installing UCX is usually a simple process. Most systems have adequate memory and system resources readily available without modification. However, if you encounter inadequate memory error messages during installation or if you want to tailor your system, Digital recommends that you change the SYSGEN parameters in the MODPARAMS.DAT file and use AUTOGEN to reboot your system.

3.1 Checking the Global Pagelets and Global Sections

UCX requires 42 global sections and 8100 global pagelets. To check the number of available global pagelets and global sections, issue the following WRITE commands with the F$GETSYI lexical functions:

```
$ WRITE SYS$OUTPUT F$GETSYI("FREE_GBLPAGES")
1234
$ WRITE SYS$OUTPUT F$GETSYI("FREE_GBLSECTS")
189
```

To increase the global pagelets and global sections, add statements to the SYS$SYSTEM:MODPARAMS.DAT file that increase the values of the SYSGEN parameters GBLPAGES and GBLSECTIONS.

3.2 Increasing the Nonpaged Dynamic Pool

Add at least 342,000 bytes of nonpaged dynamic pool. This is the default maximum size for UCX.

Follow these steps:

1. Log in to the SYSTEM account.
2. Identify the amount of additional nonpaged pool your system requires. Use a default initial value of 342,000 or use the following formula and table to calculate the amount of NPAGEDYN required:

$$nonpaged\ pool = socket*1280+dbuf*1792+cbuf*256+mtusers*700+mrusers*700$$

Variable	Means
socket	Maximum number of sockets. (A socket system call creates an end point for communication.)
dbuf	Maximum number of data buffers.
cbuf	Maximum number of control buffers.
mtusers	Maximum number of TELNET users.
mrusers	Maximum number of remote login users.

For more information on nonpaged dynamic pool, see the *Digital TCP/IP Services for OpenVMS Management* guide.

3. Refer to the following example and edit the SYS$SYSTEM:MODPARAMS.DAT file to reflect the newly calculated value for the NPAGEDYN and NPAGEVIR parameters.

```
! Add some nonpaged pool for UCX.
!
ADD_NPAGEDYN=342000
ADD_NPAGEVIR=342000
```

3.3 Increasing the Interrupt Stack Pages (VAX Only)

If you are using PATHWORKS Internet Protocol(PWIP), Digital recommends that you increase the number of interrupt stack pages (INTSTKPAGES) to ten or more. This eliminates system startup and system crash warnings.

Note

For information about PATHWORKS, see the PATHWORKS documentation. For a list of PATHWORKS files that the UCX installation procedure copies, see Table B–2.

To increase the number of INTSTKPAGES, add statements to the SYS$SYSTEM:MODPARAMS.DAT file that increase the value of the SYSGEN and INTSKPAGES parameters.

3.4 Assigning User Information Codes

In OpenVMS, a user or group of users are identified by an unique, assigned User Identification Code (UIC) that is in the format [group,member], where group and member are numeric or alphanumeric. For example, a UIC can be either [306,210], [GROUP1, JONES], or simply JONES. The UIC is linked to a system-defined rights database that determines user and group privileges.

The configuration procedure uses the existing group UIC, if it exists. If it does not exist, the default UIC group number for the service accounts, 375 (octal), is used. If this is a first-time configuration but the procedure detects that 375 is in use, you are prompted for a new UIC group number.

Before you assign a new group number, check that it is not already in use by issuing the following command: (type the brackets):

```
$ RUN SYS$SYSTEM:AUTHORIZE
UAF> SHOW /BRIEF [your_group_number,*]
UAF> SHOW /IDENTIFIER /VALUE=UIC:[your_group_number,*]
```

To specify your own UIC group number instead of using the default, assign the value TRUE to the logical name UCX$ASK_GROUP_UIC. The configuration procedure then prompts you for a group UIC.

A
Examples

This appendix show examples of an installation and several configuration scripts.

A.1 Installation

This example installs Digital TCP/IP Services for OpenVMS (UCX) onto an OpenVMS operating system. The UCX installer did the following to obtain the log of the session provided at the end of the section:

- Ensured that sufficient disk space was available and that all other pre-installation requirements were met.
- Received the UCX distribution kit online and copied it into the SYS$SYSDEVICE:[UCX40] directory.
- Ran VMSINSTAL with OPTIONS N and printed the Release Notes.
- Aborted VMSINSTAL to read the Release Notes.
- Ran VMSINSTAL for a second time without options.

For a complete list of files copied by the procedure, see Appendix B.

```
$ @sys$update:vmsinstal

        OpenVMS VAX Software Product Installation Procedure V6.1

It is 26-SEP-1995 at 13:23.

Enter a question mark (?) at any time for help.

* Are you satisfied with the backup of your system disk [YES]?
* Where will the distribution volumes be mounted: sys$sysdevice:[ucx40]

Enter the products to be processed from the first distribution volume set.
* Products: UCX
* Enter installation options you wish to use (none):

The following products will be processed:

  UCX V4.0

        Beginning installation of UCX V4.0 at 13:25

%VMSINSTAL-I-RESTORE, Restoring product save set A ...
%VMSINSTAL-I-RELMOVED, Product's release notes have been moved to SYS$HELP.
* Do you want to purge files replaced by this installation [YES]? yes

        Product:      UCX
        Producer:     Digital Equipment Corporation
        Version:      4.0
        Release Date: OCT-1995
```

```
* Does this product have an authorization key registered and loaded? y
%UCX-I-DONEASK, No further questions will be asked during this installation.
%VMSINSTAL-I-RESTORE, Restoring product save set B ...
%VMSINSTAL-I-RESTORE, Restoring product save set C ...
%VMSINSTAL-I-RESTORE, Restoring product save set D ...
******************************************************************************
       This installation will add the following files . . .
******************************************************************************

       SYS$COMMON:[SYSEXE]UCX$SNMP_AGENT.EXE
       SYS$COMMON:[SYSEXE]UCX$VERSIONS.EXE
       SYS$COMMON:[SYSEXE]UCX$UCP.EXE
       SYS$COMMON:[SYSEXE]UCX$PING.EXE
       SYS$COMMON:[SYSLIB]UCX$IPC_SHR.EXE
       .

       .

       .

       SYS$COMMON:[SYSEXE]UCX$BIND_SERVER.EXE
       SYS$COMMON:[SYSEXE]UCX$BIND_SERVER_XFER.EXE
       SYS$COMMON:[SYSHLP]UCX$FTP_HELP.HLB
       SYS$COMMON:[SYSHLP]UCX$TELNET_HELP.HLB
       SYS$COMMON:[SYSHLP]UCX$NSLOOKUP_HELP.HLB
       SYS$COMMON:[SYSEXE]UCX$ENCODE.COM
       SYS$COMMON:[SYSEXE]UCX$DECODE.COM
%VMSINSTAL-I-MOVEFILES, Files will now be moved to their target directories...
******************************************************************************
   Instructions for Completing DEC TCP/IP Services for OpenVMS Installation
******************************************************************************

           All files have been copied from the installation kit.
           If you are installing this product for the first time,
           upgrading from a previous version, or you want to run
           the IVP, then execute the following command procedure:

           SYS$MANAGER:UCX$CONFIG.COM

           If you would like this product to start when your
           OpenVMS VAX system is started, modify your system
           startup command file (SYS$MANAGER:SYSTARTUP_V5.COM)
           to invoke the DEC TCP/IP Services for OpenVMS startup
           command file:

           SYS$MANAGER:UCX$STARTUP.COM
           NOTE: If you are reinstalling DEC TCP/IP Services for OpenVMS,
           then you must reboot your system.

           For information on the postinstallation steps, see this manual:
           "Digital TCP/IP Services for OpenVMS Installation and
    Configuration."

Registering Digital TCP/IP Services for OpenVMS privileged images

%REGISTER-I-ADDED added UCX$INETACP to registry
%REGISTER-I-SUMMARY  images examined: 1, dependent images: 1
%REGISTER-I-SUMMARY  images examined: 1, dependent images: 0
%REGISTER-I-ADDED added UCX$PWIPDRIVER to registry
%REGISTER-I-SUMMARY  images examined: 1, dependent images: 1
%REGISTER-I-DUP UCX_TRACE, (UCX_TRACE, UCX V3.0-00) already in registry
%REGISTER-I-SUMMARY  images examined: 1, dependent images: 1

       Installation of UCX V4.0 completed at 13:27
```

A.2 Configuration

The UCX configuration procedure looks the same when you run it on OpenVMS Alpha systems and OpenVMS VAX systems. However, the following things are determined by the command line you use to start the procedure and, if you are reconfiguring, your current configuration.

- Menus that appear
- Questions you are asked
- Display of the current configuration information
- Flow from sub-menu to sub-menu
- Movement between client and server components

A.2.1 Configuration: Client Components

This example runs UCX$CONFIG.COM from an OpenVMS VAX operating system and assumes that this is a software upgrade. The UCX system manager did the following to obtain the log of the session provided at the end of the section:

- Specified the CLIENT parameter.
- Configured each component separately.

```
$ set default sys$manager
$ @ucx$config client enable

  TCP/IP Network Configuration Procedure

 This procedure helps you define the parameters required
 to run Digital TCP/IP Services for OpenVMS on this system.

The 'configure all client' option is selected.

The 'silent mode' ENABLE  option is also selected.

        Checking TCP/IP Services for OpenVMS configuration database files.

        No new database files were created.

FTP CLIENT Configuration


LPD CLIENT Configuration

Service is defined in the SYSUAF.
  Nonprivileged user access is not enabled.

By default Digital TCP/IP Services for OpenVMS configures
LPD such that nonprivileged users cannot modify queue entries.

        Digital TCP/IP for OpenVMS supports Line Printer Daemon Protocol
        (RFC 1179) LPD requires the following:
           - Name of the local queue
           - Name of the remote queue
           - Name of the remote host
           - Spooling directory for the local queue

        To add or delete printers in the UCX PRINTCAP database use the
        $RUN SYS$SYSTEM:UCX$LPRSETUP command
```

```
NFS CLIENT Configuration

RSH SERVER Configuration

Service is defined in the SYSUAF.
Service is defined in the UCX$SERVICE database.

REXEC SERVER Configuration

Service is defined in the SYSUAF.
Service is defined in the UCX$SERVICE database.

RLOGIN SERVER Configuration

Service is defined in the UCX$SERVICE database.

SMTP SERVER Configuration

Service is defined in the SYSUAF.
Service is defined in the UCX$SERVICE database.
Configuration is defined in the UCX$CONFIGURATION database.

TELNET SERVER Configuration

Service is defined in the UCX$SERVICE database.



TCP/IP Services for OpenVMS Configuration Menu

Configuration options:

        1 - Core environment
        2 - Client components
        3 - Server components
        4 - Optional components

        5 - Shutdown TCP/IP Services for OpenVMS
        6 - Startup TCP/IP Services for OpenVMS
        7 - Run tests

        A - Configure options 1 - 3
        E - Exit configuration procedure

Enter configuration option:

.
.
.
```

A.2.2 Configuration: Routing

This section shows an example of using the configuration menus to configure the dynamic routing.

```
TCP/IP Services for OpenVMS Configuration Menu

Configuration options:

        1 - Core environment
        2 - Client components
        3 - Server components
        4 - Optional components
```

```
        5 - Shutdown TCP/IP Services for OpenVMS
        6 - Startup TCP/IP Services for OpenVMS
        7 - Run tests

        A - Configure options 1 - 3
        E - Exit configuration procedure

Enter configuration option: 1


TCP/IP Services for OpenVMS CORE ENVIRONMENT Configuration Menu

Configuration options:

        1 - BIND Resolver
        2 - Domain
        3 - Routing
        4 - Interfaces
        5 - Time Zone

        A - Configure options 1 - 5
      [E] - Exit menu

Enter configuration option: 3

DYNAMIC ROUTING Configuration


        Dynamic routing has not been configured.

        If you enable dynamic routing, this host will listen
        for all dynamic routing information coming from other
        hosts to update its internal routing tables.
        It will also supply its own Internet addresses to
        routing requests made from remote hosts.

* Do you want to configure dynamic routing [YES] ?

        If you enable the 'supply' option of dynamic routing,
        this host will supply dynamic routing information to
        other hosts on the network whether it is acting as an
        internetwork gateway or not.

* Do you want this host to supply its dynamic routing information [NO] ?




TCP/IP Services for OpenVMS CORE ENVIRONMENT Configuration Menu

Configuration options:

        1 - BIND Resolver
        2 - Domain
        3 - Routing
        4 - Interfaces
        5 - Time Zone

        A - Configure options 1 - 5
      [E] - Exit menu

Enter configuration option: e

TCP/IP Services for OpenVMS Configuration Menu

Configuration options:

        1 - Core environment
        2 - Client components
        3 - Server components
        4 - Optional components
```

```
        5 - Shutdown TCP/IP Services for OpenVMS
        6 - Startup TCP/IP Services for OpenVMS
        7 - Run tests

        A - Configure options 1 - 3
        E - Exit configuration procedure

Enter configuration option: e
```

A.2.3 Configuration: BIND Server

This section shows an example of using the configuration menus to configure the local host's BIND Server.

```
TCP/IP Services for OpenVMS Configuration Menu

Configuration options:

        1 - Core environment
        2 - Client components
        3 - Server components
        4 - Optional components

        5 - Shutdown TCP/IP Services for OpenVMS
        6 - Startup TCP/IP Services for OpenVMS
        7 - Run tests

        A - Configure options 1 - 3
        E - Exit configuration procedure

Enter configuration option: 3



TCP/IP Services for OpenVMS SERVER Components Configuration Menu

Configuration options:

        1 - BIND          Disabled
        2 - BOOTP         Enabled
        3 - TFTP          Enabled
        4 - FTP           Enabled
        5 - LPR/LPD       Enabled
        6 - NFS           Enabled
        7 - PC-NFS        Enabled
        8 - PORTMAPPER    Enabled
        9 - TELNET        Enabled
       10 - SNMP          Enabled
       11 - NTP    Enabled
       12 - METRIC   Enabled

        A - Configure options 1 - 12
      [E] - Exit menu

Enter configuration option: 1
```

```
BIND SERVER Configuration

Service is defined in the SYSUAF.
Service is defined in the UCX$SERVICE database.
Service is not enabled.

BIND SERVER configuration options:

        1 - Enable service on this node

        E - Exit BIND configuration

Enter configuration option: 1




TCP/IP Services for OpenVMS SERVER Components Configuration Menu

Configuration options:

        1 - BIND          Enabled
        2 - BOOTP         Enabled
        3 - TFTP          Enabled
        4 - FTP           Enabled
        5 - LPR/LPD       Enabled
        6 - NFS           Enabled
        7 - PC-NFS        Enabled
        8 - PORTMAPPER    Enabled
        9 - TELNET        Enabled
       10 - SNMP          Disabled

        A - Configure options 1 - 10
      [E] - Exit menu

Enter configuration option: e




TCP/IP Services for OpenVMS Configuration Menu

Configuration options:

        1 - Core environment
        2 - Client components
        3 - Server components
        4 - Optional components

        5 - Shutdown TCP/IP Services for OpenVMS
        6 - Startup TCP/IP Services for OpenVMS
        7 - Run tests

        A - Configure options 1 - 3
        E - Exit configuration procedure

Enter configuration option: e
```

B

Installed Files

The UCX installation procedure copies all the distribution files built for your operating system.

If you are re-installing UCX, the procedure renames the Configuration Database, in SYS$COMMON:[SYSEXE], from UCX$CONFIGURATION.DAT to UCX$CONFIGURATION.OLD.

B.1 UCX Files

Table B–1 lists and describes the UCX files installed onto your system. Table B–2 lists the UCX file used by PATHWORKS.

Table B–1 UCX Files Installed

File Name - Logical Name	Description
SYS$COMMON:[SYS$LDR] - SYS$LOADABLE_IMAGES:	
UCX$BGDRIVER.EXE	Internet Device Driver
UCX$TNDRIVER.EXE	TELNET and Remote Login Drivers
UCX$DNFSDRIVER_V5.EXE†	OpenVMS V5 NFS Client Driver
UCX$DNFSDRIVER_V6.EXE†	OpenVMS V6 NFS Client Driver
UCX$DNFSDRIVER.EXE	AXP image
UCX$INETDRIVER.EXE	SRI QIO Driver
UCX$INTERNET_SERVICES.EXE†	Internet software
UCX$INTERNET_SERVICES_ V6.EXE†	Internet software
SYS$COMMON:[SYSEXE] - SYS$SYSTEM:	
UCX$INETACP.EXE	Network ancillary control process (NETACP) for the Internet device driver
UCX$INETACP.STB	Global symbol definitions for UCX$INETACP.EXE
UCX$INTERNET_SERVICES_ V6.STB†	Global symbol definitions for UCX$INTERNET_SERVICES_ V6.EXE
UCX$INTERNET_SERVICES_V6_ SEC.STB†	Global symbol definitions for UCX$INTERNET_SERVICES_V6_ SEC.EXE
UCX$INTERNET_SERVICES.STB	Global symbol definitions for UCX$INTERNET_SERVICES.EXE

†OpenVMS VAX-specific

(continued on next page)

Table B–1 (Cont.) UCX Files Installed

File Name - Logical Name	Description
SYS$COMMON:[SYSEXE] - SYS$SYSTEM:	
UCX$INTERNET_SERVICES_ SEC.STB	Global symbol definitions for UCX$INTERNET_SERVICES_ SEC.EXE
UCX$INET_ROUTING.EXE	Dynamic routing
UCX$INET_ROUTING.STB	Global symbol definitions for UCX$INET_ROUTING.EXE
UCX$NET_GLOBALS.STB	Global symbol definitions for UCX Data Structures
UCX$CONVERT.FDL	File definition used by UCX$CONVERT.COM
UCX$CONVERT.COM	Procedure for converting files to STREAM_LF
UCX$BIND_SERVER.EXE	BIND Server
UCX$BIND_SERVER_XFER.EXE	BIND Server's zone transfer
UCX$BOOTP.EXE	Remote Boot Server
UCX$ENCODE.COM	Procedure to execute UUEncode program
UCX$DECODE.COM	Procedure to execute UUDecode program
UCX$FTP.EXE	FTP Client
UCX$FTPC.EXE	FTP Server
UCX$FTPD.EXE	FTP Control Command Server (daemon)
UCX$FTPSERVER.COM	Procedure that starts an FTP child process
UCX$LPD_RCV.EXE	Print receiver
UCX$LPD_SMB.EXE	Print symbiont
UCX$LPRM.EXE	LPRM command
UCX$LPRSETUP.EXE	Setup utility for network printing
UCX$LPQ.EXE	LPQ command
UCX$NSLOOKUP.EXE	`nslookup` utility
UCX$SERVER_NFS.EXE	NFS Server (daemon)
UCX$PCNFSD.EXE	PC-NFS Server (daemon)
UCX$PING.EXE	PING command image
UCX$PORTMAPPER.EXE	Program that maps processes to ports
UCX$RLOGIN.EXE	Remote Login Client
UCX$RPCINFO.EXE	SHOW PORTMAPPER command
UCX$RSH.EXE	Remote Shell

(continued on next page)

Table B–1 (Cont.) UCX Files Installed

File Name - Logical Name	Description
SYS$COMMON:[SYSEXE] - SYS$SYSTEM:	
UCX$SMTP_RECEIVER.EXE	SMTP receiver
UCX$SMTP_SYMBIONT.EXE	SMTP symbiont
UCX$SNMP_AGENT.EXE	SNMP agent
UCX$TELNET.EXE	TELNET Client
UCX$TELNETSYM.EXE	TELNET print symbiont
UCX$TFTP.EXE	TFTP Server (daemon)
UCX$UCP.EXE	UCX Management Control Program (UCP)
UCX$UUENCODE.EXE	UUEncode program image
UCX$UUDECODE.EXE	UUDecode program image
UCX$VERSIONS.EXE	Image for the SHOW VERSION command
UCX$METRIC.EXE	Metric server
UCX$METRIC_VIEW.EXE	Metric view utility
UCX$EXE.ADF	
UCX$HLB.ADF	
UCX$MLB.ADF	
UCX$OBJ.ADF	
UCX$OLB.ADF	
UCX$STB.ADF	
UCX$TLB.ADF	
UCX$DNFSMOUNT_V5.EXE	VAX image
UCX$DNFSMOUNT_V6.EXE	VAX image
UCX$DNFSDISMOUNT_V5.EXE	VAX image
UCX$DNFSDISMOUNT_V6.EXE	VAX image
UCX$DNFSACP_V5.EXE	VAX image
UCX$DNFSACP_V6.EXE	VAX image
UCX$DNFSACP.EXE	ACP image
SYS$COMMON:[SYSLIB] - SYS$LIBRARY:	
UCX$ACCESS_SHR.EXE	Database access routines
UCX$CFS_SHR.EXE	Container file system runtime library

(continued on next page)

Table B–1 (Cont.) UCX Files Installed

File Name - Logical Name	Description
SYS$COMMON:[SYSLIB] - SYS$LIBRARY:	
UCX$INETDEF.ADA	Internet Ada definitions file
UCX$INETDEF.FOR	Internet FORTRAN definitions file
UCX$INETDEF.H	Internet C definitions file
UCX$INETDEF.MAR	Internet MACRO definitions file
UCX$INETDEF.PAS	Internet Pascal definitions file
UCX$INETDEF.PL1	Internet PL/1 definitions file
UCX$INETDEF.R32	Internet BLISS definitions file
UCX$IPC_SHR.EXE	IPC runtime library
UCX$IPC.OLB	IPC object library
UCX$LPD_SHR.EXE	Shared library for printing processes
UCX$SMTP_MAILSHR.EXE	SMTP shared library
UCX$SMTP_PARSESHR.EXE	SMTP parsing routines
UCX$RPCXDR.H	Sun RPC header file
UCX$RPCXDR_SHR.EXE	Sun RPC routines library
SYS$COMMON:[SYSHLP] - SYS$HELP:	
UCX031.RELEASE_NOTES	Release Notes
UCX$UCP_HELP.HLB	Online help for management commands
UCX$VMS_FILES.DOC	Online information about file restrictions for UNIX users of NFS Server
UCX$FTP_HELP.HLB	FTP online help
UCX$TELNET_HELP.HLB	TELNET online help
UCX$NSLOOKUP_HELP.HLB	`nslookup` online help
SYS$COMMON:[SYSHLP.EXAMPLES.UCX] - UCX$EXAMPLES:	
UCX$INTERNET_SERVICES_V6_SEC.EXE†	Internet software with security for OpenVMS V6
UCX$INTERNET_SERVICES_V5_SEC.EXE	Internet software with security for OpenVMS V5

†OpenVMS VAX-specific

(continued on next page)

Table B–1 (Cont.) UCX Files Installed

File Name - Logical Name	Description
SYS$COMMON:[SYSHLP.EXAMPLES.UCX] - UCX$EXAMPLES:	
BUILD_UCX_SECURITY_ DRIVER.COM	Example file to build the security driver
UCX$IOCTL_ROUTINE.C	Programming example
TN3270DEF.MAR	For IBM 3270TE; translation table template that you edit to modify the translation tables.
TRACEROUTE.EXE	Traceroute facility
UCX$TRACE.EXE	Protocol trace facility
UCX_SECURITY_DRIVER.MAR	Security driver source sample
UCX$TCP_CLIENT_IPC.C	Programming example
UCX$TCP_CLIENT_QIO.C	Programming example
UCX$TCP_CLIENT_QIO.MAR	Programming example
UCX$TCP_SERVER_IPC.C	Programming example
UCX$TCP_SERVER_IPC_AUXS.C	C programming example
UCX$TCP_SERVER_QIO.C	Programming example
UCX$TCP_SERVER_QIO.MAR	Programming example
UCX$TCP_SERVER_QIO_AUXS.C	C programming example
UCX$UDP_CLIENT_IPC.C	C programming example
UCX$UDP_CLIENT_QIO.C	C programming example
UCX$UDP_CLIENT_QIO.MAR	MACRO programming example
UCX$UDP_SERVER_IPC.C	C programming example
UCX$UDP_SERVER_QIO.C	C programming example
SYS$COMMON:[SYSMGR] - SYS$MANAGER:	
UCX$BIND_STARTUP.COM	BIND Server startup procedure
UCX$BIND_SHUTDOWN.COM	BIND Server shutdown procedure
UCX$BOOTP_STARTUP.COM	Remote boot server startup procedure
UCX$BOOTP_SHUTDOWN.COM	Remote boot server shutdown procedure
UCX$CALLBACKS.COM	Configuration utilities
UCX$CONFIG.COM	Configuration procedure

(continued on next page)

Table B–1 (Cont.) UCX Files Installed

File Name - Logical Name	Description
SYS$COMMON:[SYSMGR] - SYS$MANAGER:	
UCX$FIXUP.COM	V1 configuration fixup
UCX$FTPD_STARTUP.COM	FTP Server startup procedure
UCX$FTPD_SHUTDOWN.COM	FTP Server shutdown procedure
UCX$INET_STARTUP.COM	Internet startup procedure
UCX$INET_SHUTDOWN.COM	Internet shutdown procedure
UCX$LOAD_INETDRIVER.COM	Command file that loads the SRI QIO programming interface
UCX$REGISTER.COM	Command file that registers privileged UCX images for OpenVMS V6.n
UCX$LPD_RCV_STARTUP.COM	Print receiver startup procedure
UCX$LPD_STARTUP.COM	Print Server startup procedure
UCX$LPD_SHUTDOWN.COM	Print Server shutdown procedure
UCX$NFS_STARTUP.COM	NFS Server startup procedure
UCX$NFS_SHUTDOWN.COM	NFS Server shutdown procedure
UCX$DNFS_SHUTDOWN.COM	NFS Client shutdown procedure
UCX$NFS_SERVER_STARTUP.COM	
UCX$PCNFSD_STARTUP.COM	PC-NFS Server startup procedure
UCX$PCNFSD_SHUTDOWN.COM	PC-NFS Server shutdown procedure
UCX$PORTM_SHUTDOWN.COM	Portmapper shutdown procedure
UCX$PORTM_STARTUP.COM	Portmapper startup procedure
UCX$PRINTCAP.DAT	Printcap Database
UCX$REMOTE_TTY_STARTUP.COM	TELNET and Remote Login Server startup procedure
UCX$STARTUP.COM	UCX startup procedure
UCX$SHUTDOWN.COM	UCX shutdown procedure
UCX$SERVICE_SETUP.COM	UCX Services set up procedure
UCX$RSHD_STARTUP.COM	Remote Shell startup procedure

(continued on next page)

Table B–1 (Cont.) UCX Files Installed

File Name - Logical Name	Description
SYS$COMMON:[SYSMGR] - SYS$MANAGER:	
UCX$REXECD_STARTUP.COM	Remote Executive startup procedure
UCX$SMTP_STARTUP.COM	SMTP queue startup procedure
UCX$SMTP_SHUTDOWN.COM	SMTP queue shutdown procedure
UCX$SMTP_RECV_STARTUP.COM	SMTP receiver startup procedure
UCX$SNMP_STARTUP.COM	SNMP startup procedure
UCX$SNMP_SHUTDOWN.COM	SNMP shutdown procedure
UCX$SNMPD_MIR.DAT	SNMP dictionary of MIB variables
UCX$SYMBOLS.COM	Configuration logical names
UCX$TFTP_STARTUP.COM	TFTP startup procedure
UCX$TFTP_SHUTDOWN.COM	TFTP shutdown procedure
TELNET_SHUTDOWN.COM	
UCX$METRIC_STARTUP.COM	Metric startup procedure
UCX$METRIC_SHUTDOWN.COM	Metric shutdown procedure
UCX$UCP_STARTUP.COM	Management control program startup
SYS$COMMON:[SYSMSG] - SYS$MESSAGES:	
UCX$MSG.EXE	UCX message file
SYS$COMMON:[SYSTEST.UCX] - SYS$TEST:	
UCX$INET_IVP.EXE	Auxiliary Server IVP
UCX$RPCIVP_CLIENT.EXE	RPC Client routines IVP
UCX$RPCIVP_SERVER.EXE	RPC Server routines IVP
SYS$COMMON:[SYSTEST]	
UCX$IVP.COM	UCX IVP

B.2 Files Installed for PATHWORKS Systems

Table B–2 lists and describes the files for PATHWORKS systems that are installed by the UCX installation procedure.

Table B–2 PATHWORKS Files

File	Description
SYS$COMMON:[SYS$LDR]UCX$PWIPDRIVER.EXE	PATHWORKS IP driver
SYS$COMMON:[SYSEXE]UCX$PWIPACP.EXE	PATHWORKS IP ACP
SYS$COMMON:[SYSEXE]UCX$PWIPDRIVER.STB	Global symbol definitions for UCX$PWIPDRIVER.EXE
SYS$COMMON:[SYSEXE]UCX$PWIPSYM.STB	Global symbol definitions for UCX$PWIPSYM.EXE
SYS$COMMON:[SYSMGR]UCX$PWIP_STARTUP.COM	PATHWORKS IP driver startup
SYS$COMMON:[SYSMGR]UCX$PWIP_ SHUTDOWN.COM	PATHWORKS IP driver shutdown
SYS$COMMON:[SYSEXE]UCX$PWIPSHUT.EXE	

C
Acronyms

Table C–1 shows TCP/IP acronyms and other acronyms related to open networking.

Table C–1 Acronyms

Acronym	Meaning
ACL	access control list
ACP	ancillary control process
API	application programming interface
ARP	Address Resolution Protocol
AST	asynchronous system trap
BIND	Berkeley Internet Name Domain
BOOTP	Bootstrap Protocol
BSD	Berkeley Standard Distribution
CFS	container file system
CRA	Cambridge Research Associates
CSLIP	Compressed Serial Line Internet Protocol
DARPA	Defense Advanced Research Projects Agency
DA	domain administrator
DCE	data circuit-terminating equipment
DDN	Defense Data Network
DMCS	Digital Multinational Character Set
DNIC	data network identification code
DNS	Domain Name Service
DST	Daylight Savings Time
EBCDIC	Extended Binary Coded Decimal Interchange Code
EOF	end of file
EOL	end of line
FDDI	Fiber Distributed Data Interface
FID	file identification
FQDN	Fully Qualified Domain Name
FTN	FORTRAN carriage control
FTP	File Transfer Protocol
GID	group identification

(continued on next page)

Table C–1 (Cont.) Acronyms

Acronym	Meaning
GMT	Greenwich Mean Time
ICMP	Internet Control Message Protocol
IDS	IBM 3270 Information Display System
InterNIC	Network Information Center
IP	Internet Protocol
IRP	I/O request packets
ISDN	Integrated Services Digital Networks
IVP	Installation Verification Procedure
LAN	local area network
LFDP	long-format data packet
LMF	License Management Facility
LNA	local network address
LPD	Line Printer Daemon Protocol
LPR	Line Printer Protocol
MBUF	memory buffer
MFD	Master File Directory
MIB	Management Information Base
MTU	message transfer unit
NFS	Network File System
NRCS	National Replacement Character Set
NS	name server
NTP	Network Time Protocol
ODS	On-Disk Structure
ONC RPC	open network computing remote procedure calls
OOB	Out of Band
PAK	Product Authorization Key
PDU	protocol data unit
PID	process identification
PPP	Point-to-Point Protocol
PRN	print file format control
PSDN	Packet Switching Data Network
PWIP	PATHWORKS Internet Protocol
RARP	Reverse Address Resolution Protocol
RCP	Remote Copy
REXEC	Remote Executive
RFC	Request for Comments
RIP	Routing Information Protocol
RLOGIN	Remote Login

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Table C–1 (Cont.) Acronyms

Acronym	Meaning
RLP	Remote Line Printer
RMS	Record Management Services
RPC	remote procedure calls
RRQ	read request
RR	resource record
RSH	Remote Shell
SDC	Socket Device Channel
SLIP	Serial Line Internet Protocol
SMTP	Simple Mail Transfer Protocol
SNMP	Simple Network Management Protocol
SOA	Start of Authority
SPR	Software Performance Report
SRI	Stanford Research Institute
STD	Standard Time Zone
TCP	Transmission Control Protocol
TFTP	Trivial File Transfer Protocol
TP	Time Protocol
UAF	User Authorization File
UCB	unit control blocks
UCP	UCX Management Control Program
UCX	Digital TCP/IP Services for OpenVMS
UDP	User Datagram Protocol
UIC	User Identification Code
UID	user identification
UTC	Universal Coordinated Time
UUCP	UNIX-to-UNIX Copy Program
VFC	variable with fixed-length control
WAN	wide area network
WKS	Well Known Services
XDR	external data representation
XID	exchange identification
YP	Yellow Pages

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